



**U.S. Department of the Interior**

Bureau of Land Management  
Rock Springs Field Office

June 2005



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## **Finding of No Significant Impact and Decision Record for the Bitter Creek Shallow Oil and Gas Project, Sweetwater County, Wyoming**



### MISSION STATEMENT

It is the mission of the Bureau of Land Management to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations.

**FINDING OF NO SIGNIFICANT IMPACT  
AND  
DECISION RECORD  
  
FOR  
  
BITTER CREEK SHALLOW OIL AND GAS PROJECT**

**Prepared by**

**Bureau of Land Management  
Rock Springs Field Office  
Rock Springs, Wyoming**

**WY-040-EA04-007**

**June 2005**

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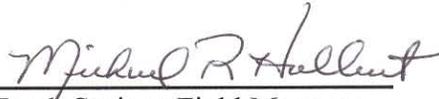
**FINDING OF NO SIGNIFICANT IMPACT  
BITTER CREEK SHALLOW OIL AND GAS PROJECT**

**FINDING OF NO SIGNIFICANT IMPACT  
BITTER CREEK SHALLOW OIL AND GAS  
PROJECT**

Based on my review of the analysis in the Bitter Creek Shallow Oil and Gas Project Environmental Assessment (EA), I have determined that the Proposed Action is in conformance with the approved land use plan and will not have any significant impact on the human, natural, and physical environment. Therefore, an environmental impact statement is not required.

The EA shows that adverse impacts to surface ownership/land use and grazing; socioeconomics/environmental justice; cultural resources; soils/watershed; water resources; geology/minerals/paleontology/; air quality/noise; vegetation/wetlands/noxious weeds; wildlife/fisheries; threatened, endangered, candidate, and special status species; wild horses; visual resources; transportation; and from the use of hazardous materials would all be minor, short term, necessary and due impacts. Potentially, substantial positive economic impacts could result for the company, and local, state, and federal governments.

The Green River Resource Management Plan (GRRMP) provides for the use of these public lands for natural shallow gas exploration and drilling such as this. The Proposed Action would be in conformance with these land use plans, and no amendments to our RMP would be necessary to implement the Proposed Action.

  
Michael R. Hallert  
Rock Springs Field Manager

6/24/2005  
Date

**FINDING OF NO SIGNIFICANT IMPACT  
DECISION RECORD**

**For  
BITTER CREEK SHALLOW OIL AND GAS PROJECT**

**FINDING OF NO SIGNIFICANT IMPACT  
DECISION RECORD**

**For  
BITTER CREEK SHALLOW OIL AND GAS  
PROJECT**

**INTRODUCTION**

Infinity Oil & Gas of Wyoming, Inc. and Yates Petroleum Corporation (the Operators) have notified the Bureau of Land Management (BLM), Rock Springs Field Office that they propose to explore and potentially develop shallow natural oil and natural gas within the administrative boundary of the Rock Springs Field Office. The Bitter Creek Shallow Oil and Gas Project Area is generally located in Townships 18 and 19 North, Ranges 99 and 100 West, 6<sup>th</sup> Principal Meridian, Sweetwater County, Wyoming.

The Operators propose to drill a maximum of 61 wells with an estimated 326 acres of total surface disturbance. The total project area encompasses approximately 17,961 acres, 11,768 acres are federal surface and minerals and 6,193 acres are private surface and minerals. There are no state lands within the project area. Exploration and drilling is expected to last approximately two to four years, with an anticipated projected life-of-project (LOP) of 15 to 20 years.

The Bitter Creek Shallow Oil and Gas Project area is located immediately south of I-80 approximately 30 miles east of Rock Springs and approximately 75 miles west of Rawlins. Access to the project area is by I-80 east of Rock Springs, abandoned County Road 84 south of Point of Rocks, County Road 19S south of I-80 toward Bitter Creek, and numerous unnamed dirt roads. Public access into the interior of the project area is available on numerous unnamed unpaved roads and two-track roads.

Approximately 5 to 7 days would be required to drill, log, and run casing for each well; three additional days would be required to run a bond log, perforate the well casing and run an electric pump. The size of each drill site location will be approximately 200 feet by 300 feet (or 1.4 acres), and only those areas necessary to conduct drilling and completion operations would be cleared of vegetation. All available vegetation and topsoil would be salvaged and stockpiled for future reclamation operations. It is possible that some site disturbance may be required to place the drill rig on level ground. A reserve pit would be constructed on each drill site location to hold drilling fluids and cuttings. The reserve pit would be lined to prevent leakage and would be approximately 55 feet wide, 75 feet long and 10 feet deep. Drilling depths within the project area would vary from approximately 2,000 feet to 4,000 feet.

Each well would be designed with a 3-inch water discharge line and a 4-inch product line that would be placed within common road corridors to the extent practicable. Water for drilling purposes would be purchased from Anadarko's commercial water well. Disposal of produced water, if any, would be through injection wells (EA page 2-4). No surface disposal or discharge of produced water is proposed.

Following drilling, completion and testing, oil and/or gas produced as a result of the proposed project would be transported by buried gathering lines and pipelines that would be installed adjacent to existing common corridors whenever practicable. Equipment would be powered by electricity, propane, or portable diesel engines until natural gas fired generators are operational. The presence of high volumes of gas would require the installation of additional compression; however, no additional compressor stations are proposed. Gas lines would be tied into compressor stations. The Operators predict that approximately 6.6 miles of gathering line and pipelines would need to be constructed cross country. These pipeline ROWs would be a maximum of 50 feet wide and would utilize standard pipeline construction. Production and maintenance operations would occur on a year-round basis and would last for the life-of-project (15 – 20 years).

Currently, several existing roads access the proposed project area. The Operators would use these existing crowned and ditched roads to the extent practicable, and construct new roads in accordance with standards presented in BLM Manual Section 9113 only where necessary to obtain access to specific drill sites.

If the wells are non-productive or non-economical, they would be appropriately plugged; and all disturbed areas would be recontoured, reseeded, and otherwise reclaimed in compliance with applicable federal, state, or private landowner specifications.

A public scoping notice was released on October 17, 2003 for a 30-day review period. Seventeen comment letters were received and comments received during that period were considered and documented in the analysis. Comments received can be found in Appendix A of this decision.

## **ALTERNATIVES CONSIDERED**

*The Environmental Assessment for the Bitter Creek Shallow Oil and Gas Project* analyzed two alternatives.

The Proposed Action considered exploration and potential drilling of 61 shallow gas wells. Of the 61 wells, all would be located on public lands managed by the BLM. Sixty-one (61) wells was determined by Infinity Oil & Gas of Wyoming, Inc. and Yates Petroleum Corporation to be the maximum number necessary to implement this project and to provide: (1) adequate surface area and geological coverage, (2) flexibility in the exploration program due to uncertainty in reservoir characteristics, and (3) an appropriate number of wells to evaluate project viability in a timely fashion. Additionally, 61 wells provides flexibility in repositioning a pod or group of wells in the event that the exploratory drilling attempts encounter poor quality reservoirs or indicate a need to drill future wells on denser spacing. Drilling is expected to last approximately two to four years, with a projected LOP of 15 to 20 years. Non-producing or abandoned wells and roads, portions of producing well pads and roads that are not required during the production phase of the project, and buried pipelines would be reclaimed at the first seasonally appropriate time after disturbance.

The Proposed Action considers drilling on 160-acre spacing. The proposed well count permits an examination of reservoir and geological properties, as well as characteristics that allow for production from depths of 2,000 feet to 4,000 feet. Wells would target oil

and gas reservoirs in the Almond and Lance Formations. In addition to wellpads and associated construction, the Operators anticipate that additional infrastructure such as access roads and pipelines would be necessary to develop this resource. The Proposed Action is discussed in depth in Chapter 2, Proposed Action and Alternatives.

Under the No Action Alternative, the BLM examined the conditions associated with surface disturbance for roads and pipelines. Drilling on federal lands would not be allowed with a No Action decision and the 61 wells proposed for federal surface would not be allowed. This alternative provides a benchmark, enabling the decision makers to compare the magnitude of environmental effects of the alternatives.

No other alternatives were analyzed in detail. Exploration activities were centered where the best geologic and hydrologic information could be obtained outside of sensitive areas.

### **ALTERNATIVES CONSIDERED BUT NOT ANALYZED IN DETAIL**

Horizontal or directional drilling might allow the clustering of surface facilities; however, this alternative has not been given further consideration for the following reason:

- Project Depth. Based on the shallow geologic environment of the project area and the proposed well spacing, directional or horizontal drilling would not be technically feasible or practical within the project area. Some Almond gas seams may correlate between wells over long distances, but there are a high number of seams or riders that do not correlate from well to well. Thin or discontinuous target zones are poor prospects for horizontal drilling. This project is only targeting depths of 2,000-4,000 feet.

### **DECISION**

Based upon the analysis of the potential environmental impacts described in the Environmental Assessment for the Bitter Creek Shallow Oil and Gas Project and in consideration of the public, industry, and governmental agency comments received during the public scoping, the BLM approves the Proposed Action as described in Chapter 2 of the EA for the exploration and potential drilling of 61 wells and associated facilities within the project area. The decision incorporates BLM Responses in Appendix A; Project-Wide Mitigation and Procedures in Appendix B; Additional BLM Required Mitigation identified in Appendix C; U.S. Fish and Wildlife Service Final Conference Opinion or Conformation letter in Appendix D; and Standard Seed Mixtures in Appendix E.

### **APPROVED PROJECT COMPONENTS**

This decision authorizes processing of APD or ROW applications for the following project components on BLM-administered public lands and/or minerals within the Bitter Creek Project Area, subject to the requirements identified in Appendices B, C, and E of this decision. Approval of component permits is required prior to surface activities.

- Development of 61 shallow gas wells in the Bitter Creek Project area, of which 61 wells will be located on federal lands managed by the BLM. Construction of well pads on federal lands will cause an estimated initial total disturbance of 326 acres and a LOP disturbance of 92 acres. Single well pads would be approximately 200 feet by 300 feet (1.4 acres).
- Estimated initial disturbance of new roads (including pipelines installed in a common corridor) would be 123 acres with the LOP disturbance at 92 acres.
- Construction of approximately 6.6 miles of gathering lines and pipelines would be installed adjacent to existing common corridors, when practical. The lines would be wholly reclaimed resulting in LOP disturbance of zero acres.

As proposed, all production water will be reinjected into existing water disposal wells located within the project area. Other ancillary facilities may be necessary to meet the production needs. These facilities include but are not limited to:

- Produced water disposal equipment
- Individual well site compression if necessary
- Individual well site liquids recovery units
- Electrical power lines
- Gas metering stations
- Pipeline pigging facilities
- Field storage buildings
- Cathodic protection facilities

The number and location of such facilities are unknown at this time but most will be installed within the boundaries of existing or approved disturbances and would be subjected to appropriate environmental analysis once proposed.

**Approval of the Proposed Action is Conditional upon the Following:**

- Implementation of the measures found in Appendix B project-wide mitigation.
- Implementation of the additional mitigation measures described in Appendix C.
- Adherence to any additional conditions of approval attached to the approved APD.
- Adherence to oil and gas leases and ROW grant stipulations.

## **RATIONALE FOR DECISION**

The decision to approve the Proposed Action is based on the following: 1) consistency with resource management plan and land use plan; 2) national policy; 3) agency statutory requirements; 4) relevant resource and economic issues; 5) application of measures to avoid or minimize environmental impacts; 6) finding of no significant impact; and 7) public comments.

### **1. Consistency with Resource Management Plan and Land Use Plan**

The Proposed Action is in conformance with the intent, meaning and scope of the Green River Resource Management Plan (RMP). The objectives for oil and gas management are to “provide consideration for oil and gas leasing, exploration, and development of oil and gas while protecting other values.” The objective of the realty program is to “manage the public lands to support the goals and objectives of other resource programs” and “to respond to public demand for land use authorization.” All public lands affected by the proposal are leased for oil and gas with appropriate mitigation including the requirement for an acceptable plan of which the criteria can be found in Appendix B and C of this decision record.

### **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 Mineral Leasing Act of 1920, as amended and the Federal Land Policy and Management Act of 1976, as amended. 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 of foreign energy supplies. The BLM oil and gas program is designed to encourage such development. 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 and formal conferencing with the U.S. Fish and Wildlife Service (USFWS). Cultural surveys and compliance with Section 106 of the National Historic Preservation Act will be completed prior to approval of permits for individual components.

### **4. Relevant Resource and Economic Issues**

Potential environmental impacts from the Bitter Creek Shallow Oil and Gas Project proposal to surface and subsurface resources identified in the Environmental Assessment are considered minor and all deemed acceptable with mitigation identified in Appendices B and C of this decision record. The economic benefits derived from the implementation of the Proposed Action in the form of continuing employment opportunities, equipment, services, and potential revenues should production are considered important.

## **5. Application of Measures to Avoid or Minimize Environmental Impacts**

Federal environmental protection laws, such as *the Clean Air Act*, *Clean Water Act*, and the *National Historic Preservation Act*, apply to all lands and are included as part of the standard oil and gas lease terms and the terms and conditions of rights-of-way grants. The adoption of the measures identified in Chapter 2.0 and 4.0 of the project EA and contained in this Decision Record in Appendices B and C provide practicable means to avoid or minimize potential environmental impacts. Should conditions warrant, additional measures could be applied to individual permits or ROW subject to additional analysis.

## **6. Finding of No Significant Impact**

Based upon the analysis contained in the Environmental Assessment for the Bitter Creek Shallow Oil and Gas Project and with the implementation of the protection measures identified in Appendix B and Appendix C of this decision, I have determined that the proposed action will not cause any significant impacts on the human, natural, and physical environment. Therefore, an environmental impact statement is not required.

## **7. Opportunity for Public Involvement**

BLM initiated public scoping on October 17, 2003. Seventeen (17) comments were received in response to the EA during the 30-day comment period that ended November 17, 2003. All issues, concerns, and alternatives brought forth during public scoping have been considered during the analysis. The following is a list of those responding to the request for public comment:

- U.S. Fish and Wildlife Service
- Petroleum Association of Wyoming
- Biodiversity Conservation Alliance
- National Wildlife Federation
- Anadarko E&P Co. Inc.
- Black Butte Coal Co.
- Sweetwater County Planning Commission
- State of Wyoming
  - Governor's Office
  - Department of Environmental Quality
  - State Historic Preservation Office
  - State Engineer's Office
  - Office of State Lands and Investments
  - Wyoming Game and Fish Department
- General Public
  - Ron Anderson – Mormon Trail Association
  - Tim A. Kaumo – JFC Engineers Architects Service
  - Dave Welch - OCTA

A summary of the substantive comments and the BLM's response to comments are found in Appendix A.

## APPEAL

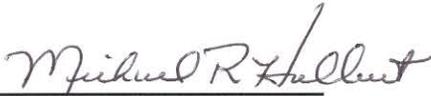
Under BLM regulation, this decision is subject to administrative review in accordance with 43 CFR 3165. Any request for administrative review of this decision must include the information required under 43 CFR 3165.3(b) including all supporting documentation. Such a request must be filed in writing with the State Director (920), Bureau of Land Management, P.O. Box 1828, Cheyenne, Wyoming 82003, within 20 business days of the date such notice of decision was received or considered to have been received. This decision will be considered to have been received seven (7) business days from the date it is mailed.

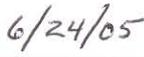
The decision of the State Director could be appealed to the Interior Board of Land Appeals in accordance with the regulations contained in 43 CFR 3165.4 and 43 CFR 4. Each adverse party to any such appeal must be provided with all documentation in accordance with 43 CFR 4.413(a). The adverse party to any appeal of the decision by the State Director includes:

James A. Tuell  
Infinity Oil & Gas of Wyoming, Inc.  
950 17<sup>th</sup> Street, Suite 800  
Denver, Colorado 80202-2818

David Lanning  
Yates Petroleum Corporation  
105 South Fourth Street  
Artesia, New Mexico 88210

## SIGNATURE

  
\_\_\_\_\_  
Rock Springs Field Manager

  
\_\_\_\_\_  
Date

**APPENDIX A**

**SUMMARY OF SCOPING NOTICE COMMENTS  
AND  
BLM RESPONSES**



## APPENDIX A

### SUMMARY OF SCOPING NOTICE COMMENTS AND BLM RESPONSES

The Scoping Notice was released for a 30-day public review period on October 17, 2003. Seventeen comment letters were received. The letters were reviewed to determine whether the information they provided would warrant a determination other than a Finding of No Significant Impact (FONSI). Substantive comments with responses are summarized below (in italics) with the BLM responses to each immediately following the comment. The BLM would like to thank all commenters for taking the time to review the scoping notice and provide comments.

#### 1. Wyoming Game and Fish Department (WGFD)

##### a. *Terrestrial Considerations:*

*The project area lies primarily within the boundaries of the Bitter Creek antelope herd unit, south of Rock Springs mule deer herd unit, within the Baggs mule deer herd, and the Petition elk herd unit.*

Two big game species, pronghorn and mule deer, occur within the Bitter Creek Project area. Population estimates for big game herds are based upon WGFD models presented in the most recent annual big game herd unit reports (WGFD 2004a). Approximately 16,520 acres (99%) of the Bitter Creek Project area is designated as winter/yearlong antelope range, whereas the remaining 120 acres (1%) is designated as crucial winter/yearlong habitat (WGFD 2004a) (EA Figure 3.7 page 3-39). The crucial winter/yearlong habitat is located at the southern portion of the Bitter Creek Project area. Mule deer within the Bitter Creek Project area belong to South Rock Springs Mule Deer Herd (herd unit 424). The South Rock Springs Mule Deer Herd had a 2003 post-hunt population estimate of 7,200, approximately 61% the population objective of 11,750 animals (WGFD 2004). All of the Bitter Creek Project area is winter/yearlong mule deer range. No mule deer crucial winter range occurs within the project area (EA page 3-38).

The Proposed Action would add 326 acres of additional surface disturbance (less than a 1% addition to existing disturbance) as well as additional indirect disturbance resulting from human activity. Currently, of the CIAA approximately 60,091 acres (3.26%) for pronghorn and approximately 51,839 acres (or 3.51%) for mule deer is disturbed. No crucial habitats would be disturbed (EA 4-28).

The Bitter Creek Project area is in the Petition elk herd unit; however, the area is classified as “undetermined” range type. Elk in the Petition herd unit are found to the south of the Bitter Creek Project area in scattered bands at higher elevations on ridges such as Powder Rim, Flat Top Mountain, Kinney Rim, etc. No elk use the project area (EA Section 3.4.4.2).

- b. *There are one (1) known sage grouse leks found within or adjacent to the project area.*

There are no greater sage-grouse leks within the Bitter Creek Project area; however, one abandoned lek is located approximately 0.4 miles to the south. The BLM and WGFD define an abandoned lek as any lek that has not been active in any year during a consecutive ten-year period. Data collected by BBCC indicates that this lek has not been occupied for the past 15 years (BBCC 2004b). There are no other leks within 2 miles of the Bitter Creek Project area; however, four leks are located within 8 miles of the Bitter Creek Project area. The Bitter Creek Project area does, however, contain potential greater sage-grouse nesting habitat. The CIAA for greater sage-grouse includes the Bitter Creek Project area and a 30-mile area around it (Figure 3.6) (EA page 3-33).

No occupied greater sage-grouse leks or other important habitats have been documented within 2 miles of the Bitter Creek Project area, and so the Proposed Action would not be expected to have impacts on local greater sage-grouse populations. Yet, some suitable greater sage-grouse nesting habitat does occur in the area, and surveys for nesting grouse would be conducted if determined to be warranted by BLM. If nesting grouse were present, avoidance would take place until nesting was complete. Some individual greater sage-grouse could be impacted due to bird/vehicle collisions due to increased traffic. These accidents would likely be uncommon and have negligible impacts on local grouse populations. (EA page 4-18).

- c. *Aquatic Considerations:*

*The WGFD identified an isolated, self-sustaining population of Flannelmouth suckers adjacent to the project area. The Flannelmouth sucker has been categorized as a Status 1 species. The Department recommends that no loss of habitat function occur. Some modification of the habitat may occur, provided that habitat function is maintained.*

The flannelmouth sucker has been observed spawning in Bitter Creek in the late spring. Most of these animal species are mobile enough that they would avoid direct mortality from surface disturbing activities; however, a loss of suitable habitat would likely result in a reduction in population size unless suitable unpopulated habitat occurs nearby. Flannelmouth sucker would be protected as a result of applicant committed protection measures to avoid disturbance to Bitter Creek, especially during the spawning season (see Section 2.2.1.7). There would be no surface water depletions associated with the Proposed Action; therefore, there would be no effect to the four Colorado River endangered fish species (EA page 4-18).

- d. *The WGFD recommends that the best management be applied to minimize sediment impacts to the watercourses adjacent to the project area both ephemeral and perennial. Sediment change loading could have a negative impact to this population of Flannelmouth suckers.*

Best Management Practices are being used, as defined in Section 2.2.1.8. Several of these BMPs are designed to protect Bitter Creek from additional sediment loading, including applicant-committed environmental protection measures listed under range resources, soils, water resources, and wildlife. The final measure under wildlife addresses flannelmouth sucker specifically.

2. **Anadarko E&P Co.**

- a. *Anadarko recommends the EA address the association between local government and the revenues and job opportunities created by this project. The EA should discuss and analysis the socio-economics concerning this project.*

Rock Springs is the city closest to the project area. Most of the workforce would likely reside in Rock Springs, Green River, or Point of Rocks, thereby benefiting the economy of the local communities and Sweetwater County (EA page 3-56). Workers currently employed by the Operators have established residence in Sweetwater County. Any new workers that would be employed by the Operators would likely replace existing workers and there would be a minimal change in the total number of employees. The Operators would continue to hire qualified contractors from Sweetwater County. As a result, the Proposed Action would have negligible impacts on the infrastructure and social services of local, county, or state governments.

The project would generate substantial revenues for state, county, and local governments as well as area school districts through ad valorem taxes, severance taxes, federal royalties, and other taxes on facilities and production.

The Bitter Creek Project could result in a very small increase in population in Sweetwater County, although existing industry expertise and services in the general area are generally adequate to support additional oil and gas development. There is, however, beginning to be a shortage of drilling rigs and crews, and this project would add minimally to that shortage because there would be up to two wells drilling at any one time for the next 2-4 years. Jobs created by the project would be well paying jobs, and well above the present personal per capita income in Sweetwater County (EA page 4-36).

3. **National Wildlife Federation**

*Thank you for the notice and please keep us on the mailing list.*

Thank you for your comments.

4. **Petroleum Association of Wyoming**

- a. *Address socio-economic impacts and the positive affects the project will have for the State of Wyoming. A section should discuss the “local economy” significance criteria.*

Rock Springs is the city closest to the project area. Most of the workforce would likely reside in Rock Springs, Green River, or Point of Rocks, thereby benefiting the economy of the local communities and Sweetwater County (EA page 3-56).

The Bitter Creek Project could result in a very small increase in population in Sweetwater County, although existing industry expertise and services in the general area are generally adequate to support additional oil and gas development. Jobs created by the project would be well paying jobs, and well above the present personal per capita income in Sweetwater County (EA page 4-36).

- b. *Have reasonable alternatives.*

In accordance with 40 CFR 1502.14(a), the BLM is required to define issues and reasonable alternative. The range of alternative consists not only of the Proposed Action and No Action Alternative analyzed in detail, but also includes a horizontal and/or directional drilling alternative. The operator has evaluated the economic and technical and feasibility of drilling two or more wells from one pad directionally or horizontally. The EA describes why this alternative was considered but eliminated from detailed study (EA page 2-21).

5. **Black Butte Coal Co.**

- a. *Black Butte Coal Co. addressed their concerns about development of gas wells on established reclamation (DEQ requires 10 years for coal mines, while O&G requirements are only 2 years).*

The Operators and BBCC have an agreement in place to coordinate activities when the Operators drill or construct on reclaimed lands within the BBCC Mine Permit Boundary. The WDEQ/LQD views disturbances caused by oil and gas development to be non-mine related, and does not hold mine operators responsible for impacts caused by oil and gas operators. Therefore, the Operators would be responsible for reclaiming any disturbance they cause on lands within the BBCC Mine Permit Boundary (EA page 2-8).

- b. *BBC addressed their concerns about development of wells in areas of future coal mining (Area in which future pits will be developed by Black Butte).*

Section 4.2.2.1 states that “Because of coal reserves have been recovered, the Proposed Action would not interfere with the orderly development of coal reserves...” The BLM expects lessees to mutually resolve any development conflicts if existing oil or gas leases within the Bitter Creek

Project area are developed at the same time that mining operations are being conducted (EA page 4-7).

- c. *BBC had a concern about large amounts of traffic.*

To the extent practicable, the Operators would not use BBCC's haulroads or access roads to access any of their lease areas. However, if no other suitable access route is available, the Operators would notify BBCC and would only use those road segments agreed upon by the Operators and BBCC. If the Operators use BBCC's haulroads or access roads, the Operators would maintain such roads, ditches, and culverts in good working condition and would share the maintenance costs of said roads with BBCC (EA page 2-16).

## 6. Sweetwater County Board of County Commissioner

- a. *Encourage Infinity O&G of Wyoming, Inc., and Yates Petroleum to obtain all necessary permits and to develop this project in an environmentally sound manner.*

The Operators would minimize all unnecessary disturbances and would reclaim and revegetate as much short-term disturbance as practicable.

Development activities would be approved prior to initiation of construction through applicable permitting procedures including filing with BLM the appropriate *Application for Permit to Drill (APD)*, *Notice of Staking (NOS)*, or any necessary right-of-way application with an appropriate map. A *Master Surface Use Plan (MSUP)*, *Master Drilling Plan (MDP)*, and an addendum to the *Master Surface Use Plan-Comprehensive Transportation Plan* and the project map shall be given to the BLM.

Approval of all planned operations would be obtained in accordance with authority prescribed in *Onshore Oil and Gas Order No. 1* (43 CFR 3160). All best management practices will be obtained to ensure the health of the environment (EA Chap. 2).

- b. *Determine/assess the impact of development on water resources as part of the approval process.*

The potential impacts to groundwater resources from the Proposed Action include water consumption during drilling, completion, testing, and production operations. During the exploration and development of each well, water and fluids used for drilling would be stored in reserve pits at each well location. All pits would be lined to reduce or limit any subsurface or groundwater contamination. Therefore, there would be negligible impacts to groundwater resources from leaking reserve pits.

The potential impacts to groundwater resources include cross-aquifer mixing through the well bore. These potential down-hole impacts would

be minimized by the implementation of well drilling, casing, and cementing procedures conducted in accordance with Onshore Oil and Gas Order No.2 contained in 43 CFR 3160. Therefore, the Proposed Action would have negligible impacts on the groundwater resources due to cross-aquifer mixing.

The surface water resources from the Proposed Action include increased turbidity, salinity, and sedimentation due to increase runoff and erosion. Erosion on disturbed areas would increase above current rates until they are successfully re-vegetated. The potential for erosion and stream sedimentation would be minimized through the implementation of the applicant-committed environmental protection measures and Best Management Practices (BMPs). Therefore, the Proposed Action would not result in any changes in the flow or water quality in any perennial stream (EA pages 4-13 and 4-14).

- c. *Address socio-economic data related to the cumulative effects of the existing and the proposed oil and gas field development within the Rock Springs and Rawlins BLM Resource Area.*

The Bitter Creek Project itself is a relatively small project and would contribute little to cumulative impacts to socioeconomics. Because the Operators have been active for several years in the same area on private surface, their infrastructure is already in place. Oil and natural gas development associated with the Proposed Action within the CIAA (Sweetwater County) would add to the economic viability of Sweetwater County, the State of Wyoming, and the United States. The Proposed Action would be another source of tax revenue for the municipal, county, state, and federal governments--a desirable outcome from an economic development perspective--in addition to the Black Buttes Coal Mine and other oil and gas development. The Proposed Action would add to the economic stability for the various government entities.

## **7. Office of the Governor**

*This office will offer no State position, however, please continue to provide this office with either six (6) hard copies or electronic copy of continued information for review.*

Thank you for your comment and concern.

## **8. Department of Environmental Quality**

- a. *Storm Water associated with construction: A permit is required anytime a project results in clearing, grading, or otherwise disturbing one or more acres. Also any discharge to "water of the state" must be permitted under NPDES.*

The Operators would develop a Storm Water Pollution Prevention Plan (SWPPP) in accordance with WDEQ/WQD regulations for all project activities to ensure that storm water runoff would not cause surface water

pollution. The SWPPP would include measures to prevent and limit storm water pollution and provisions for periodic inspection of storm water pollution prevention devices and practices. The Operators would install and maintain all appropriate runoff and erosion control measures as described in the SWPPP, such as water bars, berms, and interceptor ditches. Copies of the SWPPP and inspection reports would be filed in the Operators appropriate offices (EA 2-19).

- b. *Section 404 is not a state permit but is required from the US Army Corps of Engineers anytime work occurs within waters of the United States..*

The Operators would evaluate all project facilities for the potential occurrence of waters of the U.S., special aquatic sites, and jurisdictional wetlands. All project-related facilities would be located outside of these sensitive areas. If complete avoidance is not practicable, the Operators would minimize potential impacts to wetlands using project modifications and minor relocations. The Operators would coordinate all activities that involve dredge or fill of wetlands with the U.S. Army Corp of Engineers (COE) (EA page 2-17).

## 9. Wyoming State Historic Preservation Office (SHPO)

*Assure the project is conducted in accordance with Section 106 of the National Historic Preservation Act and Advisory Council regulations 36 CFR 800. These regulations require survey, evaluation and protection of significant historic and archeological sites **prior** to any disturbance.*

All investigations completed in support of undertakings discussed in the EA would result in the submittal of reports meeting the current professional standards required by the BLM. The Operators would forego any ground disturbance until such a time as all the terms of the Section 106 consultation process have been completed and the BLM provides a written *Notice to Proceed*.

If the BLM and the Wyoming State Historic Preservation Office (SHPO) make a consensus determination that a cultural resource is eligible for consideration for inclusion in the National Register of Historic Places (NRHP), or if a listed property is identified, the Operators would use avoidance as the preferred method for reducing effects to said resource.

## 10. State of Engineer's Office

*If the water produced from these wells is considered by-product water (water which is a by-product of activities of some nonwater-related economic activity, such as oil well separator system) an application for a permit to appropriate water must be filed with and approved by the State Engineer before the water can be put to beneficial use.*

Disposal of produced water would be via existing or new injection wells or through disposal at a commercial water disposal facility located in the general area. Produced water would be injected into existing wells (EA

Figure 3.3) permitted and drilled to the Fox Hills Formation, which is located between the Lance and Almond Formations. Injection wells would be permitted by the WOGCC. Prior to issuing a permit, the WOGCC must have evidence and data to support a WOGCC finding that the proposed injection well will not endanger fresh water sources (EA pages 2-4, 2-5).

## 11. Office of State Lands and Investments

*Our office has no specific concerns regarding this action at this juncture of the NEPA process.*

Thank you for your comments.

## 12. U.S. Department of Interior Fish and Wildlife Service (USFWS)

- a. *Determine if a biological assessment is necessary, if so be in compliance of section 102 of NEPA and incorporate into the NEPA document.*

The description and evaluation of impacts to species listed under the Endangered Species Act has been completed in Sections 3.4.1 and 4.3.1. The proposed project would not affect any listed species, the evaluation is located within the EA, and a Biological Assessment is unnecessary.

- b. *If a biological assessment is not required (i.e. all other actions), the lead Federal agency is responsible for review of proposed activities to determine whether listed species will be affected.*

Thank you for your comment. Our field specialist reviews the EA and addressed all species that could be possibly affected by the proposed action.

***Bald Eagle:*** *In order to reduce potential adverse effects to the bald eagle, a disturbance-free buffer zone of 1 mile should be maintained around eagle nests and winter roost sites. Activity within 1 mile of an eagle nest or roost may disturb the eagles and result in take. Activity should be conducted outside of February 15 through August 15 to protect nesting birds and November 1 through April 15 to protect roosting birds.*

No bald eagle nests or winter roosts are known to occur in the Bitter Creek Project area and the lack of suitable nesting or winter roosting habitat likely precludes its use for such activities by bald eagles. The nearest of these areas is the Green River, approximately 50 mile west of the Bitter Creek Project area. Searches of the Wyoming National Diversity Database revealed no records of bald eagles in the vicinity of the Bitter Creek Project area, including the Jim Bridger Reservoir located approximately 10 miles to the north (WNDD 2004) (EA pages 3-28, 3-29).

***Black-footed Ferret:*** *Surveys are recommended.*

Potential black-footed ferret habitat may occur within the Bitter Creek Project area; however, the area is outside any area requiring black-footed ferret surveys (USFWS 2004). No recent black-footed ferret observations have been recorded in the vicinity of the Bitter Creek Project area (WNDD 2004) (EA page 3-28).

**Ute ladies'-tresses:** *A perennial, terrestrial orchid and blooms from late July through August, however, depending on location and climatic conditions, it may bloom in early July or still be in flower as late as early October. A survey should be conducted by a knowledgeable botanist.*

There has been no recent historical record of the species' occurrence in the project area; probability of encountering the species during the Proposed Action is very unlikely.

**The yellow-billed cuckoo:**

The yellow-billed cuckoo has been identified as potentially occurring in the riparian areas west of the Continental Divide; however, it is highly unlikely that the species occurs in the Bitter Creek Project area because suitable riparian habitat is not present. Furthermore, no observations have been recorded in the vicinity (WNDD 2004). The Bitter Creek Project would not affect yellow-billed cuckoo, and the species is not discussed further in this EA).

**Sage Grouse:** *Suggest BLM work with the local Wyoming Game and fish biologist to identify important sage grouse habitat within the project area, and appropriate mitigative measures to minimize potential impacts from the proposed project. No project activities that may exacerbate habitat loss or degradation should be permitted in important habitats.*

There are no greater sage-grouse leks within the Bitter Creek Project area; however, one abandoned lek is located approximately 0.4 miles to the south. The BLM and WGFD define an abandoned lek as any lek that has not been active in any year during a consecutive ten-year period. Data collected by BBCC indicates that this lek has not been occupied for the past 15 years (BBCC 2004b). There are no other leks within 2 miles of the Bitter Creek Project area; however, four leks are located within 8 miles of the Bitter Creek Project area. The CIAA contains 42 known greater sage-grouse leks (WGFD 2003b) and approximately 3.7% (84,795 acres) of the CIAA for greater sage-grouse has been disturbed or has been authorized to be disturbed by various projects (EA Figure 3.6).

**Mountain Plover:** *The Service has withdrawn the proposal for listing and we will no longer be reviewing project impacts to the species. The BLM is encouraged to continue providing protection for this species as under the MBTA.*

- *Avoidance of suitable habitat during the plover nesting season (April 10 – July 10)*

- *Prohibition any permanent above ground structures such as powerlines that may provide perches for avian predators.*
- *Prohibition of ground disturbing activities in prairie dog towns.*

The mountain plover nests over much of Wyoming, but its preferred breeding habitat is limited to bare and sparsely vegetated habitats (WGFD 2004). Mountain plover have been observed in the Bitter Creek Project area. If construction-related activities within potential mountain plover nesting habitat would be scheduled, between March 15 through August 15, surveys for the presence of nesting mountain plovers would be conducted in accordance with current survey protocol. Appropriate mitigation measures (i.e., seasonal avoidance) as directed by the BLM would be implemented if nesting mountain plovers are identified (EA page 2-21).

- c. *The BLM is responsible for evaluating all potential impacts to listed species on private and State lands within the project area.*

A list of federally listed threatened, endangered, proposed, and candidate (TEPC) species that may occur in the Bitter Creek Project area was compiled from information provided by the Wyoming State Office of the USFWS (2004) and the Wyoming Natural Diversity Database (WNDD) (2004) (EA Table 3.4). BLM-sensitive species are those that may warrant future designation as candidate species but available data are not sufficient for the USFWS to make such a designation decision; however, these species have been designated as BLM-sensitive species by the BLM.

The CIAA for BLM-sensitive species is the Bitter Creek Project area and a 4-mile buffer, an area of 126,560 acres, 25.4% (32,168 acres) of which has been disturbed.

- d. *The BLM should develop measures to avoid or minimize impact to listed species on non-Federal lands that would occur as direct or indirect result of the project.*

Mitigation measures have been established to minimize the impact possibility generated by the Biter Creek Project (EA page 2-20).

- e. *Consider sensitive species or species at risk in the project area.*

Mitigation measures have been established to minimize the impact possibility generated by the Biter Creek Project (EA page 2-20).

- f. *BLM has a mandatory obligation to protect the many species of migratory birds, including eagles and other raptors. Work that could lead to the take of a migratory bird including an eagle, their young, eggs, or nests should be coordinated with our office before any actions are taken. Removal of any active migratory bird nest or nest tree is prohibited. Permits for nest manipulation, including removal or relocation may, under certain circumstances. Be issued for inactive nest only. Therefore, if nesting migratory birds are present on, or near the project area, timing is a significant consideration and needs to be addressed in the EA.*

Mitigation measures have been established to minimize the impact possibility generated by the Biter Creek Project (EA page 2-20).

- g. *BLM need to take measures to avoid wetlands losses in accordance with Section 404 of the Clean Water Act, Executive Order 11990 and Executive Order 11988, as well as the goal of “no net loss of wetlands.”*

No formal jurisdictional wetland delineations have been conducted within the Bitter Creek Project area. According to National Wetland Inventory (NWI) maps produced by the USFWS, there are likely less than 14 acres (less than 0.1% of the Bitter Creek Project area) of potential wetlands in the Bitter Creek Project area. The potential wetland areas are widely scattered and include 18 separate areas (USFWS 1997).

Surface disturbing activities will be avoided within 500 feet of wetlands and riparian areas (EA page 4-12).

- h. *Plans for mitigation unavoidable impact to wetland and riparian areas should include mitigation goals and objectives, methodologies, time frames for implementation, success criteria, and monitoring to determine if the mitigation is successful. The mitigation plan should also include a contingency plan to be implemented should the mitigation not be successful.*

Surface disturbing activities will be avoided within 100 feet of ephemeral channels and 500 feet of wetlands and riparian areas.

**Ron Anderson**  
**Mormon Trail Association**

*Our association will defer to Terry Del Bene of the Rock Springs BLM office to represent our interest, concerning the Overland Trail. Please keep us on the mailing list.*

Thank you for your comments. Terry Del Bene was an interdisciplinary team member for the collaboration of the EA.

**Tim A Kaumo**  
**JFC Engineers Architects Service**

*Please make record of my support for the Bitter Creek Shallow Gas Development Project. I feel it is very important to our economy to continue.*

Thank you for your comment and support.

**Dave Welch**  
**OCTA**

*The Overland Trail probably passes through the southern extremities of the project area. OCTA has previously expressed its concern that the exact location of the trail may not have been determined to the degree that is required for the*

*section 106 process. The EA should address this cultural and historical resource issue and adequate mapping should be performed before permits are issued. Please keep on mailing list.*

The Overland Trail is noted as the most notable historic site in the Bitter Creek Project area (EA Figure 3.12). The BLM has completed an evaluation of the portion of the Overland Trail located near the Bitter Creek Project area and determined that only 1.41 mile of the trail segment located within the Bitter Creek Project area contribute to the eligibility of the site and must continue to be protected from future impacts (personal communication, December 3, 2004, with Terry Del Bene, BLM cultural resource specialist, Rock Springs Field Office) (EA page 3-50).

## **Biodiversity Conservation Alliance**

- a. *Bitter Creek drains into the Upper Green River system, which supports 4 species of endangered warmwater fishes: the razorback sucker, bonytail, Colorado pikeminnow, and humpback chub (Section 7 consultation). The Flannelmouth sucker and the Bluehead sucker also hold ecological importance of the Bitter Creek.*

The razorback sucker, bonytail, Colorado pikeminnow and the humpback chub are all listed as federally endangered. They are considered Colorado River species. These species would not occur within the project area but they could be affected by water depletions resulting from the Proposed Action. The flannelmouth sucker has been observed spawning in Bitter Creek in the late spring. Flannelmouth sucker would be protected as a result of applicant committed protection measures to avoid disturbance to Bitter Creek, especially during the spawning season (EA Section 2.2.1.7). There would be no surface water depletions associated with the Proposed Action; therefore, there would be no effect to the four Colorado River endangered fish species (EA page 4-18).

The Bluehead sucker is not federally listed but is a BLM-sensitive species. To our knowledge it does not occur in Bitter Creek; however, if it does, impacts would be similar to those for flannelmouth sucker--no effect.

- b. *Details, including but not limited to, exact well locations which in fact determines the overall environmental impacts on various lands used and/or resources.*

An environmental impact is defined as a change in the quality or quantity of a given resource due to a modification in the existing environment resulting from project related activities. Impacts may be beneficial or adverse, may be a primary result (direct) or secondary result (indirect) of an action, and may be permanent and long-term or temporary and of short duration. Impacts may vary in degree from a slightly discernible change to a total change in the environment. This impact assessment assumes that all applicant-committed measures described in the Proposed Action would be successfully implemented.

Under the Proposed Action, the Operators propose to utilize a traditional well pad design used in southwest Wyoming. Single well pads would be approximately 200 feet by 300 feet in size (approximately 1.4 acres). All available vegetation and topsoil would be salvaged and stockpiled for future reclamation operations. Well pads would be constructed and leveled using standard cut-and-fill construction techniques (EA page 2-4). The exact location of each well is uncertain but all activities will meet BLM and WOGCC standards.

- c. *Commercial Water disposal Facility: If water will be misted into the atmosphere, facilities must be in place to guarantee that water is contained within the facility.*

The water will not be misted into the atmosphere. Each well would be designed with a 3-inch water discharge line and 4-inch product line that would be placed within common road corridors to the extent practicable. Disposal of produced water would be via existing or new injection wells or through disposal at a commercial water disposal facility located in the general area. Produced water would be injected into existing wells (EA Figure 3.3) permitted and drilled to the Fox Hills Formation, which is located between the Lance and Almond Formations. Injection wells would be permitted by the WOGCC. Prior to issuing a permit, the WOGCC must have evidence and data to support a WOGCC finding that the proposed injection well will not endanger fresh water sources (EA page 2-5). No produced water would be disposed of via surface water drainage.

- d. *Part of the project area occurs on land in the floodplain of Bitter Creek.*

The Operators would avoid building in floodplains or, if they do build in or disturb floodplains or riparian areas, would obtain all appropriate approval and permits from the appropriate agencies (BLM, WDEQ, COE). This would include construction of pipeline crossings (EA page 2-19).

- e. *This project appears to entail the production of highly saline, highly sodic wastewater often rich in heavy metals such as selenium and barium. For these reasons, oil and gas drilling should **never** occur in the midst of playas or other wetlands [Ex. Order 11988 and 11990].*

The EA discloses on page 4-22 that wells would not be drilled in wetlands (EA Section 4.3.3.1). Precise locations of wells are determined at the APD stage of permitting, at which time all potential impacts would be considered.

- f. *Impacts on wildlife:  
Vehicle traffic with associated noise and dust.*

Additional vehicle traffic would also be required for the transportation of personnel and expendable supplies such as fuel, drilling fluid additives, water, etc. The specific amount of vehicle traffic would vary, depending on the progress of drilling operations, but would likely not exceed 6-7 vehicle trips/day for each drill site during drilling operations (EA page 2-4).

The Operators would ensure that mufflers on motorized equipment are maintained according to manufacturers' specifications (EA page 2-11).

Lands within an approved mine permit boundary are not usually accessible to the general public and are not subject to the state air quality standards. Rather, they are governed by federal Mine Safety and Health Administration respirable dust standards and regulations designed to protect worker safety (30 CFR 70, 72, 74, and 75 et seq.) (EA page 3-4). The Operators would control fugitive dust. The BLM would approve the procedure (e.g., application of water and magnesium chloride) for dust abatement at facility construction sites as well as locations for use and application rates. If required for the Proposed Action, the Operators would obtain water from non-surface depleting sources permitted by the Wyoming State Engineers Office. Speed limits would be observed on roads to reduce the production of fugitive dust.

The Operators propose to implement the following mitigation measures seen in Appendix B and procedures to avoid/reduce environmental impacts.

*Impact on habitat use.*

*Sage Grouse and lek sites: Survey the project area for sage grouse leks, nesting and brood-rearing habitat occurs in the immediate vicinity of lek sites. No construction activities should be allowed within 2 miles of a lek site.*

There are no greater sage-grouse leks within the Bitter Creek Project area; however, one abandoned lek is located approximately 0.4 miles to the south. The BLM and WGFD define an abandoned lek as any lek that has not been active in any year during a consecutive ten-year period. Data collected by BBCC indicates that this lek has not been occupied for the past 15 years (BBCC 2004b). There are no other leks within 2 miles of the Bitter Creek Project area; however, four leks are located within 8 miles of the Bitter Creek Project area. The Bitter Creek Project area does, however, contain potential greater sage-grouse nesting habitat. The CIAA for greater sage-grouse includes the Bitter Creek Project area and a 30-mile area around it (Figure 3.6) (EA page 3-33).

No occupied greater sage-grouse leks or other important habitats have been documented within 2 miles of the Bitter Creek Project area, and so the Proposed Action would not be expected to have impacts on local greater sage-grouse populations. Yet, some suitable greater sage-grouse nesting habitat does occur in the area, and surveys for nesting grouse would be conducted if determined to be warranted by BLM. If nesting grouse were present, avoidance would take place until nesting was complete. Some individual greater sage-grouse could be impacted due to bird/vehicle collisions due to increased traffic. These accidents would likely be uncommon and have negligible impacts on local grouse populations (EA page 4-18).

Raptor nesting: Potential habitat for Ferruginous hawks, Golden eagles, Prairie falcons, and others.

The Operators would conduct raptor nest surveys (including for burrowing owls) during the raptor nesting period (February 1 through July 31) within 1.0 mile of any proposed drill site prior to the initiation of construction or drilling activities. If an active nest is identified, the Operators would restrict construction and drilling activities for active raptor nests located within 0.5 to 1.0 mile (1.0 mile for ferruginous hawk and bald eagle nests, 0.5 mile for other raptors) of a proposed well, road, or pipeline site.

A raptor mitigation plan would be developed and implemented with the concurrence of the BLM, USFWS, and the WGFD. The raptor mitigation plan would identify appropriate mitigation techniques to be implemented as described in the *Raptor Mitigation Handbook* (Wyoming Cooperative Fishery and Wildlife Research Unit 1994) and the *Raptor Management Techniques Manual* (National Wildlife Federal 1987).

Approximately 69 raptor nests are known to occur within the Bitter Creek Project area (EA Figure 3.10). Fifty-three of these nests were identified as ferruginous hawk nests, six were identified as red-tailed hawk nests, one is an American kestrel nest, four are prairie falcon nests, four are golden eagle nests, and the identity of the raptor building one nest is unknown (BBCC 2004b). Three nests (all ferruginous hawk nests) within the Bitter Creek Project area were active in 2003 (BBCC 2004b). Raptors typically have multiple nesting sites, and surveys have determined that in the Black Butte area, depending upon the specific species and specific birds, some raptors may have as many as 17 different nests in a particular territory (BBCC 2004b).

The CIAA for raptors includes the Bitter Creek Project area and a 2-mile buffer area (approximately 67,800 acres) (EA Figure 3.10 and page 3-43). Applicant-committed environmental protection measures would avoid active raptor nests to protect nesting raptors. BBCC has also developed an extensive raptor mitigation plan to address potential impacts of mining on individual raptors and this plan has been successfully implemented and potential impacts on nesting raptors have been minimized (BBCC 2004a). Reductions in prey species abundance would be negligible and would not be expected to adversely affect raptor populations. Therefore, cumulative impacts to raptors would be low to moderate (EA page 4-29).

Mountain Plover: Survey for nesting habitat during the brief period in spring when plovers are visible.

The mountain plover nests over much of Wyoming, but its preferred breeding habitat is limited to bare and sparsely vegetated habitats (WGFD 2004). Mountain plover have been observed in the Bitter Creek Project area. If construction-related activities within potential mountain plover nesting habitat would be scheduled, between March 15 through August 15, surveys for the presence of nesting mountain plovers would be conducted

in accordance with current survey protocol. Appropriate mitigation measures (i.e., seasonal avoidance) as directed by the BLM would be implemented if nesting mountain plovers are identified (EA page 2-21).

*White-tailed prairie dogs: The impacts of the proposed project on prairie dogs and direct effects on the latter species must be studied.*

Prairie dogs are the main food of black-footed ferrets (Sheets et al. 1972). The *Black-footed Ferret Survey Guidelines for Compliance with the Endangered Species Act* (USFWS 1989) defines potential black-footed ferret habitat as any white-tailed prairie dog towns or complexes greater than 200 acres in size. Some prairie dogs are known to occur within the Bitter Creek Project area; however, prairie dog towns in the area have not been delineated. Seven white-tailed prairie dog colonies occur in the Bitter Creek Project area. Active holes will be avoided on a case-by-case basis.

Potential black-footed ferret habitat may occur within the Bitter Creek Project area; however, the area is outside any area requiring black-footed ferret surveys (USFWS 2004). No recent black-footed ferret observations have been recorded in the vicinity of the Bitter Creek Project area (WNDD 2004) (EA page 3-28). It is unlikely that any black-footed ferrets occur in the project area; therefore, there would be no effect to the species and it is not discussed further in this EA.

*Short-horned lizard, Pygmy rabbit, rare and declining shorebirds; must consider impacts to other wildlife that may be found in the project area:*

Pygmy rabbits are limited to areas of dense and tall big sagebrush in predominantly sandy soils (Clark and Stromberg 1987). No pygmy rabbits have been documented within 6 mi of the Bitter Creek Project area (WNDD 2004) (EA page 3-30).

Because there are no permanent surface water bodies (except Bitter Creek) within the Bitter Creek Project area, it is unlikely that many waterfowl and shorebirds would typically nest in the area. However, several species of waterfowl and wading/shore birds may seasonally utilize portions of Bitter Creek or the BBCC sedimentation ponds located within the Bitter Creek Project area.

There are no short-horned lizards charted in the area.

Shorebirds would be minimal because no wetlands or other suitable habitat would be affected and because these very mobile birds could temporarily move to adjacent undisturbed habitats. Overall, impacts to birds would be negligible to low, and populations would be regulated primarily by weather, disease, and other natural causes. Mitigation measures described in the Proposed Action to minimize surface disturbance and to ensure timely reclamation and stabilization would keep project-related impacts to amphibians, reptiles, and fish to negligible levels.

Wild Horses: Effects the project has on the horse and their area.

Direct impacts to wild horse populations could result from the temporary loss of 326 acres of habitat due to vegetation removal; displacement of wild horses due to disturbance by project-related activities; direct mortality due to construction-related activities; and an increased likelihood of horse/vehicle collisions due to increased traffic. Few wild horses use the Bitter Creek Project area. The "herd-appropriate management level" for the Salt Wells herd, as determined by the BLM, is 251-365 wild horses, and the herd is currently estimated to have approximately 480 wild horses (personal communication, January 5, 2005, with Jay D'Ewart, Range Conservationist/Wild Horse Specialist, BLM, Rock Springs Field Office, Wyoming). There is plenty of habitat for wild horses to utilize in and around use the Bitter Creek Project area. Overall, impacts to wild horse population in the Salt Wells WHHMA would be negligible.

Game Animals:

*Mule deer*

*Antelope*

*Crucial winter range; must be identified, on permanent facilities (roads or drilling pads) should be built. All human activities must be prohibited on such lands between November 15 through April 15.*

The WGF (2004) states that impacts from development of 1-4 wells and up to 20 acres of disturbance per section to mule deer and pronghorn crucial winter ranges would be moderate with appropriate mitigation measures. This is the range of surface disturbance that would occur in the Bitter Creek Project area and, no crucial winter ranges would be disturbed.

Ninety-nine percent of the Bitter Creek Project area is pronghorn winter/yearlong range and 1% is pronghorn crucial winter range. The Operators would not construct or drill in pronghorn crucial winter range from November 15 to April 30, although activity on producing wells would continue through that period of the year. All of the Bitter Creek Project area is mule deer winter/yearlong range. There is no mule deer crucial winter range.

- g. *Increase in salinity and sodicity associated with well-water discharge possibly damage to plant and animal life in the area.*

The Proposed Action would result in some unavoidable increase in turbidity, salinity, and sedimentation due to increased runoff and erosion from 326 acres of total disturbance. Once natural gas production associated within the Proposed Action has been completed (15-20 years), impacts to surface water resource would return to pre-disturbance levels. Each well would include a 3-inch water discharge line and 4-inch production line. Disposal of produced water would be via existing injection wells permitted and drilled to the Fox Hills Formation or through disposal at a commercial water disposal facility located in the general area.

No surface disposal of produced water is proposed. A separator and storage tank with metering equipment would be placed at some or all of the new well locations.

*h. Effects of the dewatering of aquifers must be adequately addressed.*

To protect accessible high quality water aquifers, the Operators would case and cement all wells during drilling in accordance with BLM *Onshore Oil and Gas Order No. 2*. High quality water aquifers are defined as aquifers with known water quality of 10,000 ppm TDS or less. The Operators would utilize well casing and welding techniques of sufficient integrity to contain all fluids under high pressure during drilling and well completion. The Operators would ensure that all wells would adhere to the appropriate BLM cementing policy as specified in the APD.

The water would be purchased from Anadarko's commercial water well. No dewatering of aquifers necessary.

*i. Area should be surveyed for rare native plants and mitigation measures.*

Site-specific mitigation for BLM-sensitive species would be addressed during the APD process. Where warranted and directed by the BLM, surveys for BLM-sensitive species would be conducted using standard survey techniques and mitigation measures would be implemented to minimize potential impacts to those plants and animals.

Existence may be endangered because of the destruction, drastic change, or severe curtailment of habitat, or because of over exploitation, disease, predation, or even unknown reasons. Plant taxa from very limited areas (e.g. the type localities only), or from restricted fragile habitats usually are considered endangered.

Ute ladies'-tresses - there has been no recent historical record of the species' occurrence in the project area; probability of encountering the species during the Proposed Action is very unlikely.

*j. Shoshone, Comanche, and Ute tribes should be consulted regarding potential cultural and/or sacred significances of the project area (Overland Trail and relationship of the trail to the project area).*

Sites within the Bitter Creek Project area that may be associated with Native American sacred/respected places include features such as stone circles, cairns, and petroglyphs. These properties, based on consultation with Native American Tribes, may also be classified as Traditional Cultural Properties (TCP). Eight sites contain stone circles, two contain cairns, and one has prehistoric petroglyphs.

The Overland Trail is the most notable historic site in the Bitter Creek Project area (EA Figure 3.12). The BLM has completed an evaluation of the portion of the Overland Trail located near the Bitter Creek Project area and determined that only 1.41 miles of the trail segment located within the

Bitter Creek Project area contribute to the eligibility of the site and must continue to be protected from future impacts (personal communication, December 3, 2004, with Terry Del Bene, BLM cultural resource specialist, Rock Springs Field Office).

- k. *EA should include all possible measures to prevent adverse environmental impacts due to toxic substances used and/or disposed.*

Under the Proposed Action, hazardous and solid waste would likely be generated by the Operators. However, no hazardous or solid waste would be disposed of on-site. The Operators would handle and dispose of all hazardous waste in accordance with applicable state and federal rules and regulations. Any release of hazardous substances in excess of reportable quantities, established in 40 CFR 117, would be reported as required by CERCLA, as amended. If a release of a reportable quantity of any hazardous substances occurs, a report would be furnished to WDEQ and all other appropriate federal and state agencies (EA page 4-16).

As a result, any hazardous or solid waste generated by these facilities is handled in accordance with specific federal and state rules and regulations. Therefore, cumulative impacts associated with hazardous and solid wastes within the CIAA would likely be negligible.

- l. *Analysis of the possibility of subsidence and earthquakes due to ground water drawdown and degasification of the target strata.*

Water withdrawal is minimal and would not cause subsidence. The water is contained within the formations, not in voids. The same is true of natural gas. Drilling has occurred in the general area for many years and not subsidence has occurred as a result of such development.

- m. *Disclose the extent of hydraulic fracturing inherent to the project, nor the effects of toxic fracturing fluids on groundwater or other resources, to satisfy NEPA "hard look" requirements.*

Section 2.2.1.4 discloses that surface and production casing would be installed to prevent mixing of condensates, oil, gas, and/or water between formations. All wells are fractured, but all frac fluids are recovered and there are no impacts to ground water or other resources.

- n. **Reclamation**; *the use of native species for reseeding purposes. Soil potential for revegetation must be evaluated.*

Overall, impacts to vegetation would be low. The Operators would utilize only certified weed-free mulch and seed during reclamation operations, and would continue to implement invasive nonnative species control measures included in Proposed Action. Overall, adverse impacts from invasive non-native plant species would likely be low.

Invasive nonnative species are easily established and commonly found on all newly disturbed and reclaimed sites throughout Wyoming. Assuming permanent vegetation (i.e., those species that were intentionally seeded) eventually become established, invasive and nonnative species can act to reduce soil erosion by holding the soil, breaking up the impact of direct precipitation on the soil, and by acting to alter the microclimate of the soil (e.g., reduce soil temperatures, lower wind speeds, collect snow fall, and reduce soil evaporation) until such time as desirable plant species become established.

The Operators would be responsible for final reclamation and revegetation of newly disturbed area within the fenced property. However, no fences would be built that would interfere with big game movements (EA page 2-14).

- o. Effects of the project on biological soil crusts. These soil crusts, consisting of bryophytes, cyanobacteria, fungi and lichens, and mosses, fulfill a role in desert ecosystem.*

Some scattered and isolated soil crusts have been observed in the Bitter Creek Project area. However, the fact that biological soil crusts exist in the Bitter Creek Project area does not limit development or other surface-disturbing activities. Biological soil crusts are integral to topsoil, and in fact are part of the topsoil. As such, biological soil crusts receive the same level of protection as all do topsoil resources, which are considered to be a valuable resource. The BLM mandates that a minimum of 6 inches of topsoil or suitable subsoil be salvaged from all areas that would be disturbed. During reclamation operations, the salvaged topsoil is replaced, recontoured, and seeded with native species to increase reclamation success. It is unlikely that construction activities related to the Proposed Action would be located on contiguous areas of biological soil crusts. Should such an area be identified during the APD process, efforts would be made to avoid these contiguous biological soil crust areas, much as any area identified as having sensitive or fragile soils would be avoided (EA page 4-11).

- p. Require a 500-foot buffer for vegetation, between surface disturbances and drainage channels, playas, and wetlands. Requirements to avoid stream channels and riparian vegetation need to be ironclad.*

Mitigation indicates that surface disturbing activities will be avoided within 100 feet of ephemeral channels and 500 feet of wetlands and riparian areas (EA page 4-12).

- q. All reserve pits must always be lined with impermeable fabric, because they will contain hazardous chemicals.*

Reserve pits would be lined with a 12-mil reinforced poly-liner to temporarily contain drilling fluids, cuttings and produced water.

Water required for the Proposed Action would be obtained from existing wells within the Bitter Creek Project area, and no impacts to existing water rights would occur. During the exploration and development of each well, water and fluids used for drilling would be stored in reserve pits at each well location. All pits would be lined to reduce or limit any subsurface or groundwater contamination. Therefore, there would be negligible impacts to groundwater resources from leaking reserve pits (EA page 4-14).

- r. *All reserve pit contents should be carefully removed by operator and disposed of at a site built specifically to handle toxic waste.*

BLM regulations allow placement of production water in reserve pits for periods up to 90 days. When the pit is backfilled, cuttings and drilling muds would be covered to a depth of at least 3 feet. If drilling or production fluids remain in the pit after one year, alternate methods of drying, removal of the fluids, or other treatment measures would be implemented by the Operators in consultation with the BLM (EA page 2-7).

- s. ***Alternative:** The use of “pitless drilling” techniques, which entail closed-loop systems for drilling fluids and therefore don’t require reserve pits, should be analyzed in detail; we urge their use for all wells.*

There are no potential environmental impacts due to conventional drilling that require pitless drilling techniques. Such techniques would add to the expense of drilling and would provide no environmental benefits.

- t. *The need to employ directional drilling technologies to reduce environmental impacts of mineral development is a high priority of the Bush administration.*

The Operators have evaluated the economic and technical and feasibility of drilling two or more wells from one pad using directional/horizontal drilling techniques, and determined that such techniques are not feasible. Economically, the cost of drilling two wells from one pad (one vertical well and one directional well) would increase the cost of the directional well by 50-75% over the cost of a vertical well from another well pad. This additional cost applies only to drilling the well. In all cases, directional drilling would be complicated due to the shallow depths of the natural gas resources, the lenticular characteristics of the reservoirs, and poor downhole stability associated with horizontal drilling at shallow depths. Therefore, this alternative was eliminated from further analysis in this EA (Section 2.4 – Alternatives Considered But Eliminated From Detailed Study).

## **APPENDIX B**

### **PROJECT – WIDE MITIGATION AND PROCEDURES**



## **APPENDIX B**

### **Project-Wide Mitigation Measures and Procedures**

#### **Project-Wide Mitigation Measures and Procedures**

Infinity Oil & Gas of Wyoming, Inc. and Yates Petroleum Corporation (the Operators) propose to implement the following mitigation measures, procedures, and management requirements on public lands administered by the BLM to avoid land use impacts. An exception to a mitigation measure and/or design feature may be approved on public land on a case-by-case basis when deemed appropriate by the BLM. An exception would be approved only after a thorough, site-specific analysis determined that the resource or land use for which the measure was put in place is not present or would not be significantly impacted.

#### **Preconstruction Planning and Design Measures**

- Prior to the initiation of the construction, the Operators and the BLM would make on-site interdisciplinary team inspections of each proposed and staked facility site (e.g., well sites), new access road, access road reconstruction area, and pipeline alignment projects so that site-specific recommendations and mitigation measures can be identified and developed.
- The Operators would notify Black Butte Coal Company (BBCC) of proposed well pad and road sites located within the BBCC mine permit boundary and, if requested, the Operators would conduct an on-site inspection with representatives of BBCC prior to construction.
- New road construction and maintenance of existing roads in the Bitter Creek Project Area would be accomplished in accordance with WSO BLM Manual 9113 Supplement
- The Operators would prepare and submit an APD for each drill site on federal leases to the BLM for approval prior to initiation of construction, and would be subject to additional environmental review. Prior to construction, the Operators or its contractors would also submit Sundry Notices and/or ROW applications for pipelines and access road segments on federal leases. The APD would include a Surface Use Plan that would show the layout of the drill pad over the existing topography, dimensions of the pad, volumes and cross sections of cut and fill (when required), location and dimensions of reserve pit(s), and access road egress and ingress. The APD, Sundry Notice, and/or ROW application plan would also itemize project administration, time frame, and responsible parties.
- Construction activities would be slope-staked when required by the BLM for steep and/or unstable slopes and BLM approval would be received prior to start of construction.

#### **Resource-Specific Requirements**

The Operators proposes to implement the following resource-specific mitigation measures, procedures, and management requirements on public lands managed by the BLM.

## **Range Resources and Other Land Uses**

Mitigation requirements listed under Soils, Vegetation, and Wildlife also apply to Range Resources and Other Land Uses.

- The Operators would coordinate with the affected livestock operators to ensure that livestock control structures remain functional during drilling and production operations.
- The Operators would use special care to minimize disturbance during the planning and construction of well pads and associated facilities located on sites that have been previously reclaimed and re-vegetated by BBCC.
- The Operators would install a fence around disturbed areas near each well pad that have been reclaimed and re-vegetated previously by BBCC, to differentiate area of responsibilities with the BBCC mine permit boundary.
- The Operators would be responsible for final reclamation and re-vegetation of newly disturbed area within the fenced property.
- Upon the completion of construction operation, the Operators would provide BBCC with “as-built” maps of areas that were reclaimed by BBCC but have been re-disturbed as result of the Proposed Action. These maps would show all site-specific surface disturbance created by the Operators, including the location of well pads, stockpiles, roads, pipelines, etc.

## **Vegetation (Nonnative, Invasive and Noxious Weed) and Wetlands Monitoring and Management**

Other mitigation measures under Soils and Water Resources would also apply to Vegetation and Wetlands. The primary mitigation activities concerning Vegetation and Wetlands are as follows:

- File noxious weed monitoring forms with the BLM and implement, if necessary, a weed control and eradication program.
- Evaluate all project facility sites for occurrence and distribution of waters of the U.S., special aquatic sites, and jurisdictional wetlands. All project facilities would be located outside of these sensitive areas. If complete avoidance is not possible, minimize impacts through modification and minor relocations. Coordinate activities that involve dredge or fill into wetlands with the COE.
- The Operators would conduct all reclamation and re-vegetation operations in accordance with Appendix B.
- As directed by the BLM, the Operators would conduct site-specific surveys for plants species of concern and their habitats prior to initiation of any surface disturbance. If plant species of concern or their habitats are found, impacts to these plant species would be

minimized by avoiding such habitat to the extent practicable. Minor adjustments to the location of project-related facilities would be made to avoid plant species of concern and/or their habitat. Copies of completed surveys would be provided to the BLM.

- Invasive/noxious weed management strategies and control techniques would be incorporated into the preconstruction planning and design process for all surface disturbance activities, including road, pipeline, well pad and ancillary facility construction. The Operators would monitor the success of weed control as described in the Reclamation Plan in Appendix B of the EA.
- The Operators would inventory and remove existing invasive/noxious weed and/or seed sources that could be transported into relatively weed-free areas by passing vehicles.
- Muddy off-road equipment would be cleaned before moving into relatively weed-free areas.
- The Operators would minimize removal of native vegetation during construction of roads, pipelines, well pads and ancillary facilities.
- Disturbed areas would be stabilized and vegetation reestablished on all bare ground using mixtures and treatment guidelines prescribed in the approved APD/ROW as soon as practical to minimize weed spread.
- Gravel, top soil and fill would be stored in relatively weed-free areas.
- Disturbed, re-disturbed, and re-vegetated sites would be monitored to ensure that desired species are thriving and invasive/noxious weeds are not present, and treated, reseeded and fertilized as necessary.
- Roads and other disturbed areas would be monitored throughout the life of the project and for three years after reclamation to insure that invasive/noxious weeds are identified and eradicated.
- The Operators would ensure that all invasive/noxious weed control measures adhere to standards in the Decision Record for the Rock Springs District Noxious Weed Control EA or applicable updated guidance.
- The Operators would cooperate with the Sweetwater County Weed and Pest District to identify appropriate methods of weed control.
- Before treatment of invasive/noxious weeds, the Operators would submit a Pesticide Use Proposal (PUP) to the BLM for approval, and ensure that all pesticides intended for use are on the BLM's approved label list for use on public lands (the label list is updated each year). The PUP(s) must be approved prior to any spraying. PUP's can be approved for up to three years.

- The Operators would ensure that pesticide applicators are certified with an up to date Pesticide Applicator's License before performing spraying work.
- Pesticide Application Records would be submitted to the BLM RSFO each year. Treatments would comply with all federal and state regulations regarding use of pesticides, including those outlined in the following:
  - BLM Information Bulletin No. WY-98-106, *Weed Management Guidance*;
  - Instruction Memorandum No. WY-99-29, *Executive Order #13112 : Invasive Species*;
  - Washington Information Bulletin No. 99-110; *Submission of Pesticide Use Report*;
  - Information Bulletin No. WY-2000-25: *Annual Pesticide Use Report*.
- The Operators would evaluate all project facilities for the potential occurrence of waters of the U.S., special aquatic sites, and jurisdictional wetlands. All project-related facilities would be located outside of the sensitive areas. If complete avoidance is not practicable, the Operators would minimize potential impacts to wetlands using project modifications and minor relocations.
- The Operators would coordinate all activities that involve dredge or fill of wetlands with the U.S. Army Corp of Engineers (COE).

## Air Quality

- All BLM conducted or authorized activities (including natural gas development alternatives) must comply with applicable local, state, tribal and Federal air quality regulations and standards. The Operators would adhere to all applicable ambient air quality standards, permit requirements (including preconstruction, testing, and operating permits), motorized equipment and other regulations, as required by the State of Wyoming, Department of Environmental Quality, Air Quality Division (WDEQ-AQD).
- The Operators would not allow burning garbage or refuse at well locations or other facilities. Any other open burning would be conducted under the permitting provisions of Chapter 10, Section 2 of the Wyoming Air Quality Standards and Regulations.
- The Operators would initiate immediate abatement of fugitive dust (by application of water, chemical dust suppressants, or other measures) 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 exceedances of applicable air quality standards. The BLM would approve the control measure, location, and application rates. If watering is the approved control measure, the operator must obtain the water from state-approved, non-surface depleting source(s) permitted by the Wyoming State Engineers Office.
- Speed limits would be observed on roads to reduce the production of fugitive dust.

- The Operators would obtain the appropriate permits and/or follow state protocol for approval of all on-site temporary or permanent equipment used in association with this project from the WDEQ-AQD.

## **Transportation**

- The Operator would use existing crowned and ditched roads within the Bitter Creek Project area to the extent practicable, and construct new roads only where necessary to obtain access to specific drill sites.
- To the extent practicable, the Operators would not use BBCC's haul roads or access roads to access any of their lease areas. However, if no other suitable access route is available, the Operator would notify BBCC and would only use those road segments agreed upon by the Operators and BBCC.
- Standards for road design would be consistent with WSO BLM Manual 9113 Supplement. Newly constructed *Resource Roads*; spur roads that provide point access and connect to local or collector roads, would be crowned and ditched with a 14-foot wide travel-way and a design speed of 30 mph.
- The Operators would initiate immediate abatement of fugitive dust (by application of water, chemical dust suppressants, or other measures) when air quality, soil loss, or safety concerns are identified by the BLM or the WDEQ-AQD. The BLM would approve the control measure, location, and application rates. If watering is the approved control measure, the operator must obtain the water from state-approved, non-surface depleting source(s) permitted by the Wyoming State Engineers Office.
- If the Operators use BBCC's haul roads or access roads, the Operators would maintain such roads, ditches, and culverts in good working condition and would share the maintenance costs of said roads with BBCC.
- Areas with important resource values, steep slopes and fragile soils would be avoided where possible in planning for new roads.

## **Minerals/Paleontology**

Mitigation measures presented in the Soils and Water Resources sections would avoid or minimize many of the potential impacts to the surface and mineral resources. Protection of subsurface mineral resources from adverse impacts would be provided by the BLM casing and cementing policy contained in Onshore Order No. 2.

Impacts to fossil resources can be reduced by the implementation of paleontologic resource mitigation measures. These measures include the following:

- The Operators would inform all field personnel not to search for, scavenge, or remove any paleontological resources found in the Bitter Creek Project area. The need for an on-the-

ground survey could be waived by the BLM during the APD process if it is determined that the proposed drilling site would not impact geologic outcrop areas, the area has previously been surveyed for paleontological resources, or the area has been previously disturbed. If a survey is conducted and significant fossils are discovered, BLM may require the proponent to alter the construction plan to avoid disturbing the locality or mitigate the site by either collecting a sample of the fossil material or fully excavating of the locality. The BLM may require, based on the paleontologist's recommendation, that construction activities be monitored for the presence of previously undocumented scientifically important fossils during surface disturbing activities.

- Field Survey. Detailed preconstruction field surveys should be performed by a qualified paleontologist holding a BLM Paleontological Resources Use Permit prior to approval of any surface disturbing activities within the Bitter Creek Project area where construction would disturb surface exposures or subsurface bedrock. Field surveys would involve a visual examination of the formation by a BLM-approved paleontologist in areas of exposure, and would recommend additional mitigation, if necessary. If paleontological resources are discovered during construction or drilling operations, the find would be reported immediately to the BLM AO and construction operations would be suspended within 250 feet of said find. An evaluation of the paleontological discovery would be made by a BLM-approved professional paleontologist within 5 working days, weather permitting, to determine the appropriate action(s) to prevent the potential loss of any significant paleontological value. Operations within 250 feet of such discovery would not be resumed until written authorization to proceed is issued by the BLM AO. The Operators would bear the cost of any required paleontological appraisals, surface collection of fossils, or salvage of any large conspicuous fossils or important scientific interest discovered during the operations.

After review of the paleontologist's report, the BLM will determine the need for any additional mitigation measures. These could include collection of specimens and monitoring of excavation.

- Worker Instruction. Construction personnel would be instructed about the types of fossils they could encounter and the steps to take if they uncover fossils during construction. Workers would be informed that destruction, collection or excavation of vertebrate, scientifically-significant invertebrate or plant fossil materials from federal land without a federal permit is illegal, and that they and their company could face charges if they knowingly destroy or remove fossils.
- Discovery Contingency. Should fossil resources be uncovered during surface disturbance associated with the Proposed Action, authorized personnel should immediately notify the BLM and work should cease immediately in the area of the discovery until authorized by the BLM Authorized Officer (AO). A BLM-approved paleontologist may be needed to evaluate the fossil material. If fossil remains of significance are identified, then additional mitigation measures may be required. Additional mitigation could include avoidance, collection, identification, or monitoring, and may delay resumption of work.

If field surveys do not reveal significant fossils, no additional work for paleontology may be recommended in the areas surveyed.

## **Soils**

Other mitigation measures listed herein would also apply to Soils. The primary mitigation activities concerning Soils are as follows:

- Reduce the area of disturbance to the absolute minimum necessary for construction and production operations, while providing for the safety of the operation.
- Whenever practicable, the Operators would bury all pipelines in common corridors to avoid creating additional areas of disturbance.
- Avoid using frozen or saturated soils as construction material.
- The Operators would not conduct any pre-construction, construction, or reclamation activities when soils are too wet to adequately support construction equipment. If construction equipment creates ruts greater than 4 inches deep, support would be deemed inadequate and construction activities would be discontinued until soil conditions improve or appropriate remedial action is taken to ensure operations could continue without deep rutting.
- “Limiting disturbance on slopes greater than 25%” (USDI-BLM, 1997, p. 159).
- Design cutslopes in a manner that would allow retention of topsoil, surface treatment such as mulch, and subsequent re-vegetation.
- Selectively strip and salvage topsoil or the best suitable medium for plant growth from all disturbed areas to a minimum depth of 6 inches on all well pads.
- Where possible, minimize disturbance to vegetated cuts and fills on existing roads that are improved.
- Install runoff and erosion control measures such as water bars, berms, and interceptor ditches if needed.
- If topsoil or suitable subsoil is to be stockpiled for more than 2 years, the Operators would seed all topsoil and/or subsoil stockpiles with the appropriate seed mixture presented in Appendix B. Stockpiles would have a maximum slope of 5:1 or less on the long axis and a maximum of 1:1 on the side slopes. If a topsoil stockpile is located on or adjacent to ground that slopes 3:1 or more, runoff would be diverted around the stockpile via interceptor ditches. Interceptor ditches would be V-shaped--1-foot deep and 3-feet wide, with gently sloping sides--and would empty onto native, undisturbed vegetation. All stockpiles would be located so as not to affect existing drainage channels.

- Install culverts for ephemeral and intermittent drainage crossings. Design all drainage crossing structures to carry the 25- to 50-year discharge event, or as otherwise directed by the BLM.
- Implement minor routing variations during access road layout to avoid steep slopes adjacent to ephemeral or intermittent drainage channels. Disturbance would not encroach within 500 feet of perennial surface water and/or riparian areas and 100 feet of the thalweg in ephemeral channels.
- Include adequate drainage control devices and measures in the road design (e.g., road berms and drainage ditches, diversion ditches, cross drains, culverts, out-sloping, and energy dissipaters) at sufficient intervals and intensities to adequately control and direct surface runoff above, below, and within the road environment to avoid erosive concentrated flows. In conjunction with surface runoff or drainage control measures, use erosion control devices and measures such as temporary barriers, ditch blocks, erosion stops, matts, mulches, and vegetative covers. Implement a revegetation program as soon as possible to re-establish the soil protection afforded by a vegetal cover.
- Upon completion of construction activities, restore topography to near pre-existing contours at the well sites, along access roads and pipelines, and other facilities sites; replace up to 6 inches of topsoil or suitable plant growth material over all disturbed surfaces; apply fertilizer as required; seed; and mulch.

## **Water Resources**

Other mitigation measures listed in the Soils, and Vegetation and Wetlands sections would also apply to Water Resources. The primary mitigation activities concerning Water Resources are as follows:

- Limit construction of drainage crossings to no-flow periods or low-flow periods.
- Minimize the area of disturbance within perennial, ephemeral and intermittent drainage channel environments.
- The Operators would prohibit construction of well sites, access roads, pipelines, or any other surface disturbance activities within 500 feet of or on 100-year floodplains, wetlands, riparian areas, or perennial streams and within 100 feet of natural vegetation between all construction areas and the inner gorge of intermittent and ephemeral drainage channels. Proposals for linear crossings in these areas would be considered on a case-by-case basis.
- The Operators would not construct any facilities within 600 feet of any seep or spring.
- Design channel crossings to minimize changes in channel geometry and subsequent changes in flow hydraulics.

- Maintain vegetation barriers occurring between construction activities and perennial, ephemeral and intermittent flows or channels, with the exception of approved right angle linear feature crossings, which, with the exception of the active travel path of a roadway, should be reclaimed.
- Design and construct interception ditches, sediment traps/silt fences, water bars, silt fences and revegetation and soil stabilization measures if needed.
- Construct channel crossings by pipelines such that the pipe is buried a minimum of 4 feet below the channel bottom.
- Regrade disturbed channel beds to the original geometric configuration and replace the same or similar bed material.
- Case wells during drilling, and case and cement all wells in accordance with *Onshore Order No. 2* to protect all high quality water aquifers. High quality water aquifers are aquifers with known water quality of 10,000 total dissolved solids or less. Include well casing and welding of sufficient integrity to contain all fluids under high pressure during drilling and well completion. Further, wells would adhere to the appropriate BLM cementing policy.
- Construct the reserve pits in cut rather than fill materials, or compact and stabilize fill. Inspect the subsoil material of the pit to be constructed in order to assess soil stability and permeability, and determine whether reinforcement and/or lining are required. If lining is required, as specified in the GRRMP (50 feet or less to ground water and permeability greater than  $10^{-7}$  cm/hour), line the reserve pit with a reinforced synthetic liner at least 12 mils in thickness with a bursting strength of 175 x 175 pounds per inch. Reserve Pit lining requirements will be handled on a case-by-case basis during the APD process taking into consideration water quality, soil permeability, and depth to groundwater.
- The Operators would ensure that reserve pits would be constructed and maintain to a minimum of ½ of the total depth the original ground surface at the lowest point within the pit. To prevent seepage of fluids, drilling mud gel or poly-liners would be utilized to line reserve pits in areas where subsurface material would not contain fluids.
- The Operators would maintain two feet of freeboard on all reserve pits to ensure the reserve pits are not in danger of overflowing. If leakage is found outside the pit, the operators would shut down drilling operations until the problem is corrected.
- Extract hydrostatic test water used in conjunction with pipeline testing and all water used during construction activities from sources with sufficient quantities and through appropriation permits approved by the State of Wyoming.
- Discharge hydrostatic test water in a controlled manner onto an energy dissipater. The water is to be discharged onto undisturbed land that has vegetative cover, if possible, or into an established drainage channel. Prior to discharge, treat or filter the water to reduce

pollutant levels or to settle out suspended particles if necessary. If discharged into an established drainage channel, the rate of discharge would not exceed the capacity of the channel to safely convey the increased flow, and the hydrostatic test water quality would be equal to or better than the receiving waters. Coordinate all discharge of test water with the Wyoming State Engineer's Office, the Wyoming Department of Environmental Quality, Water Quality Division (WDEQ-WQD), and the BLM.

- Discharge all concentrated water flows within access road ROWs onto or through an energy dissipater structure (e.g., riprapped aprons and discharge points) and into undisturbed vegetation.
- Develop and implement a pollution prevention plan for storm water runoff at drill sites, as required per WDEQ-WQD storm water National Pollution Discharge Elimination System permit requirements. The WDEQ-WQD requires operators to obtain a field permit for fields of 20 wells or more.
- Exercise stringent precautions against pipeline breaks and other potential accidental discharges of toxic chemicals into adjacent streams. If liquid petroleum products are stored on-site in sufficient quantities (criteria contained in 40 CFR 112), a Spill Prevention Control and Countermeasures plan would be developed in accordance with 40 CFR 112, dated December 1973.
- Coordinate all crossings or encroachments of waters of the U.S. with the Army Corps of Engineers (COE).
- Discharge all water produced from the gas bearing formation(s) into tanks, pumps, pipelines, and existing injection wells to preclude contamination of surface waters with high mineral content formation water.
- The Operators would submit a *Notice of Intent* (NOI) to the Wyoming Department of Environmental Quality/Water Quality Division (WDEQ/WQD) to request coverage under the large construction general permit (WYR10-0000). This NOI is for construction projects that disturb 5 acres or more only. The Operators would develop a Storm Water Pollution Prevention Plan (SWPPP) in accordance with WDEQ/WQD regulations for all project activities to ensure that storm water runoff would not cause surface water pollution. The SWPPP would include measures to prevent and limit storm water pollution and provisions for periodic inspection of storm water pollution prevention devices and practices. The Operators would install and maintain all appropriate runoff and erosion control measures as described in the SWPPP, such as water bars, berms, and interceptor ditches. Copies of the SWPPP and inspection reports would be filed in the Operators appropriate offices.
- The Operators would exercise stringent precautions to prevent pipeline breaks and other potential accidental discharges of petroleum and/or hazardous chemicals into stream channels. If liquid petroleum products storage capacity exceeds criteria contained in 40

CFR 112, the Operators would develop and implement a Spill Prevention Control and Countermeasures (SPCC) plan in accordance with 40 CFR 112.

## **Fisheries**

- No fisheries mitigation is needed beyond that indicated under Water Resources and Special Status Species Fish.

## **Wildlife**

The primary mitigation activities concerning Wildlife are as follows:

- The Operators would prohibit all unnecessary off-site activities by project personnel. The Operators would inform all project personnel of applicable wildlife laws and penalties associated with unlawful taking or harassment of wildlife.
- The Operators would not conduct any project-related activities within crucial winter/yearlong range for pronghorn antelope from November 15 to April 30. However, the Operators may request an exception from the seasonal restriction stipulation from the BLM, and the BLM would evaluate the request on a case-by-case basis and would inform the Operator if the exception would be granted.
- To facilitate big game movement and minimize the potential for injuries, the Operators would not fence any access roads.
- The Operators would conduct raptor nest surveys (including for burrowing owls) during the raptor nesting period (February 1 through July 31) within 1.0 mile of any proposed drill site prior to the initiation of construction or drilling activities. If an active nest is identified, the Operators would restrict construction and drilling activities for active raptor nests located within 0.5 to 1.0 mile (1.0 mile for ferruginous hawk and bald eagle nests, 0.5 mile for other raptors) of a proposed well, road, or pipeline site. If an active nest is located, the BLM would be notified immediately and if necessary, a raptor mitigation plan would be developed and implemented with the concurrence of the BLM, USFWS, and the WGFD. The raptor mitigation plan would identify appropriate mitigation techniques to be implemented as described in the *Raptor Mitigation Handbook* (Wyoming Cooperative Fishery and Wildlife Research Unit 1994) and the *Raptor Management Techniques Manual* (National Wildlife Federal 1987).
- The Operators would minimize disturbance to all raptor nesting habitats (e.g., rock outcrops, bluffs, cliffs, etc).
- The Operators would ensure that all project-related powerline structures would be constructed in accordance with *Suggested Practices for Raptor Protection on Powerlines: the State of the Art in 1994* (Avian Powerline Interaction Committee 1996).

- If construction-related activities within potential mountain plover nesting habitat would be scheduled between March 15 through August 15, surveys for the presence of nesting mountain plovers would be conducted in accordance with current survey protocol. Survey results would be submitted the BLM for review and approval prior to the initiation of construction-related activities. Appropriate mitigation measures (i.e., seasonal avoidance) as directed by the BLM would be implemented if nesting mountain plovers are identified.
- In order to protect flannelmouth sucker spawning, pipeline crossings of Bitter Creek would occur with proper mitigation or be bored, and no new road crossings would be built. Impacts to Bitter Creek would be avoided during the spawning season for flannelmouth sucker (May to July).
- During reclamation, establish a variety of forage species that are useful to resident herbivores.
- Do not perform construction activities within 0.25 mile of existing greater sage-grouse leks at any time except as authorized in writing by exception, including documented supporting analysis, by the Authorizing Official. All surface disturbances would abide by greater sage-grouse stipulations as detailed in the GRRMP ROD and supporting documents.
- Provide for greater sage-grouse lek protection during the breeding, egg-laying and incubation period (March 1 - June 30) by restricting construction activities within a two-mile radius of active greater sage-grouse leks. Exceptions may be granted if the activity would occur in unsuitable nesting habitat.

### **Special Status Species**

The primary mitigation activities concerning Special Status Species are as follows:

#### **Special Status Plants**

- Employ site-specific recommendations developed by the BLM Specialists for staked facilities.
- Minimize impacts due to clearing and soil handling.
- Monitor and control noxious weeds.
- Comply with Section 404(b)(1) guidelines of the federal Clean Water Act.
- Perform clearance surveys for plant species of concern.

#### **Special Status Animals**

- Implement measures discussed in Chapter 4 (Section 4.3) in compliance with the Endangered Species Act.

## **Visual Resources**

The primary mitigation activities concerning Visual Resources are as follows:

- Utilize existing topography, vegetation, and color that mimic the existing environment to screen roads, pipeline corridors, drill rigs, well heads, and production facilities from view.
- Paint well and central facilities site structures with flat colors (e.g., Carlsbad Canyon or Desert Brown) that blend with the adjacent surrounding undisturbed terrain, except for structures that require safety coloration in accordance with Occupational Safety and Health Administration (OSHA) requirements.
- The Operators would conduct reclamation operation on all disturbed area as soon as practicable.
- The Operators would follow BLM's best management practices for visual resource management.

## **Noise**

Mitigation concerning Noise is as follows:

- Muffle and maintain all motorized equipment according to manufacturers' specifications.

## **Recreation**

Measures under Wildlife, Transportation, Soils, Health and Safety, and Water Resources could apply to Recreation. The primary mitigation activities concerning Recreation are as follows:

- Minimize conflicts between project vehicles and equipment, and recreation traffic by posting appropriate warning signs, implementing operator safety training, and requiring project vehicles to adhere to the preferred design speed of 30 mph.
- Monitor recreational use of roads, especially during hunting seasons.

## **Socioeconomics**

The primary mitigation activities concerning Socioeconomics are as follows:

- Implement hiring policies that would encourage the use of local or regional workers who would not have to relocate to the area.
- Coordinate project activities with ranching operations to minimize conflicts involving livestock movement or other ranch operations. This would include scheduling of project activities to minimize potential disturbance of large-scale livestock movements. Establish

effective and frequent communication with affected ranchers to monitor and correct problems and coordinate scheduling.

- The Operators and its subcontractors would obtain Sweetwater County sales and use tax licenses for purchases made in conjunction with the project so that project-related sales and use tax revenues would be distributed to Sweetwater County.

## **Cultural Resources**

The primary mitigation activities concerning Cultural Resources are as follows:

- The Operators would adhere to the determinations arrived at through the National Historic Preservation Act, Section 106 consultation process (see 36 CFR 800). The Operators would fund all appropriate cultural resources inventories and investigations for all lands considered within the scope of a federal undertaking. In those instances where previous adequate inventories exist, additional Class III (intensive) inventories may not be required by the BLM. All investigations completed in support of undertakings discussed in this EA would result in the submittal of reports meeting the current professional standards required by the BLM. The Operators would forego any ground disturbance until such a time as all the terms of the Section 106 consultation process have been completed and the BLM provides a written *Notice to Proceed*.
- If the BLM and the Wyoming State Historic Preservation Office (SHPO) make a consensus determination that a cultural resource is eligible for consideration for inclusion in the National Register of Historic Places (NRHP), or if a listed property is identified, the Operators would use avoidance as the preferred method for reducing effects to said resource.
- If the BLM and the Wyoming State Historic Preservation Office (SHPO) make a consensus determination that a cultural resource is eligible for consideration for inclusion in the National Register of Historic Places (NRHP), or if a listed property is identified, and the property cannot be avoided, the Operators would fund all measures deemed necessary to mitigate the effects to the historic property as determined by the BLM in consultation with the Wyoming SHPO and other consulting parties, as appropriate. The Operators would be responsible for funding any mitigation plans as well as the implementation of those plans once they are accepted by the BLM in consultation with the Wyoming SHPO and other consulting parties, as appropriate.
- In the event that any previously unknown or unanticipated cultural remains are encountered during construction, the Operators would cease all operations in the immediate area of the discovery and protect said area from further impacts. The BLM Authorized Officer (AO) would be notified immediately. The Operators would fund all investigations and measures necessary, as determined by the BLM in consultation with the Wyoming SHPO and other consulting parties, to assess, protect, and mitigate any discovered cultural items as appropriate. This may include funding and implementation of mitigation plans once they

are accepted by the BLM in consultation with the Wyoming SHPO and other consulting parties, as appropriate. Development-related activities within the area of any discovery, including any protective buffer, would not resume until a written *Notice to Proceed* is issued by the AO.

- The Overland Trail would not be used as an access or for any commercial purposes.
- The Operators would follow BLM's best management practices for visual resource management.

## **Health and Safety**

Measures listed under Air Quality and Water Quality would also apply to Health and Safety. The primary mitigation activities concerning Health and Safety are as follows:

- Sanitation facilities installed on the drill sites and any resident camp site locations would be approved by the WDEQ-WQD.
- To minimize undue exposure to hazardous situations, require measures that would preclude the public from entering hazardous areas and place warning signs alerting the public of truck traffic.
- Haul all garbage and rubbish from the drill site to a State-approved sanitary landfill for disposal. Collect and store any garbage or refuse materials on location prior to transport in containers approved by the BLM.
- Spill Prevention Control and Countermeasure Plans would be written and implemented as necessary in accordance with 40 CFR 112 to prevent discharge into navigable waters of the United States.
- Any hazardous wastes, as defined by the Resource Conservation and Recovery Act (RCRA), would be transported and/or disposed of in accordance with all applicable federal, state, and local regulations.
- During construction and upon commencement of production operations, the Operators would have a chemical or hazardous substance inventory for all such items that may be at the site. The Operators would institute a Hazard Communication Program for its employees and would require subcontractor programs in accordance with the Occupational Safety and Health Administration (OSHA) regulations (ref. 29 CFR 1910.1200). These programs are designed to educate and protect the employees and subcontractors with respect to any chemicals or hazardous substances that may be present in the work place. It would be required that as every chemical or hazardous material is brought on location, a Material Safety Data Sheet (MSDS) would accompany that material and would become part of the file kept at the field office, as required by 29 CFR 1910.1200. All employees would receive the proper training in storage, handling, and disposal of hazardous substances.

- Chemical and hazardous materials would be inventoried and reported in accordance with the Superfund Amendments and Reauthorization Act (SARA) Title III (40 CFR 335), if quantities exceeding 10,000 pounds or the threshold planning quantity are to be produced or stored in association with the Proposed Action. The Operators would prepare and submit the appropriate forms and threshold planning quantities of particular materials produced or stored within the Bitter Creek Project area to EPA. The appropriate Section 311 and 312 forms would also be submitted at the required times to the State and County Emergency Management Coordinators and the local fire departments.
- The Operators would avoid the creation of hazardous wastes as defined by RCRA wherever possible. The Operators would ensure that any hazardous waste, as defined by the *Resource Conservation and Recovery Act* (RCRA), that might be generated by the Operators would be transported and/or disposed of in accordance with all applicable federal, state, and local regulations.
- The Operators would put crews in appropriate safety clothing during big game seasons, and would request that their crews report any poaching they might observe.

### **Socioeconomics**

The primary mitigation activities concerning Socioeconomics are as follows:

- The Operators would implement hiring policies that would encourage the use of local or regional workers that would not have to relocate to the general area.
- The Operators would coordinate project activities with ranching operations to minimize conflicts involving livestock movement or other ranch operations. This would include scheduling of project-related activities to minimize potential disturbance of large-scale livestock movements. The Operators would establish effective and frequent communication with affected ranchers to monitor and correct problems and coordinate scheduling.

**APPENDIX C**

**ADDITIONAL**  
**BLM – REQUIRED MITIGATION**



## APPENDIX C

### ADDITIONAL BLM-REQUIRED MITIGATION

The following additional mitigation measures were identified during the analysis and will be applied by the BLM during the permitting process for individual components as deemed necessary to further reduce adverse impacts upon the environment. Furthermore, additional site-specific mitigation measures may be identified and applied during APD and ROW application reviews.

Lease stipulation will be enforced where applicable. Development activities on all lands will be conducted in accordance with all appropriate federal, state, and county, laws, rules and regulations.

Only some resource values identified during analysis are included.

#### Air Quality

- The Operators will adhere to all applicable ambient air quality standards, permit requirements (including preconstruction, testing, and operating permits), motorized equipment and other regulations, as required by the State of Wyoming, Department of Environmental Quality, Air Quality Division (WDEQ-AQD).
- If air quality analysis indicates exceedances in NO<sub>x</sub>, the following types of control measures could be implemented; the reduction of compression requirements, electric compression or the use of nonselective catalytic reduction (NCR), lean combustion, or selective catalytic reduction (SCR) control technologies.

#### NO<sub>x</sub> Mitigation

- Compressors and well pump sources powered by electric motors could reduce NO<sub>x</sub> emissions within the immediate project area. However, increased NO<sub>x</sub> emissions are likely to result at the point of electrical generation. No additional compression is proposed.
- Proposed Action related NO<sub>x</sub> emissions could be offset through the application of controls at non-project sources.

#### Particulate Matter Mitigation

- Roads and well locations constructed on soils susceptible to wind erosion could be appropriately surfaced to reduce the amount of fugitive dust generated by vehicle traffic.
- Water or other dust suppressants could be applied as necessary on unpaved roads and construction areas to reduce problem fugitive dust emissions.
- The Operators should establish and enforce speed limits on all project related unpaved roads to reduce vehicle fugitive dust.

## **Paleontology**

- If necessary collection, identification, and curation of the fossil remains and potentially monitoring of on-going surface disturbance in the area of discovery will be performed.
- If fossil resources are uncovered as a result of survey of lands slated for disturbance associated with the Proposed Action or No Action Alternative, the project proponent and authorized personnel should immediately notify the BLM for consideration for further action.
- If such fossil resources are discovered during surface disturbance, work should cease immediately in the area of the discovery until the fossil remains can be evaluated for scientific significance by a BLM-permitted paleontologist.
- If fossil remains of significance are identified either during survey or during excavation then additional mitigation may be proposed as necessary.

## **Soils**

- All roads would be constructed to appropriate BLM road standards.
- Where possible, minimize disturbance to vegetated cuts and fills on existing roads that are improved.
- Selectively strip and salvage topsoil or the best suitable medium of plant growth from all disturbed area to a minimum depth of 6 inches on all well pads.
- Install runoff and erosion control measures such as water bars, berms, and interceptor ditches if needed.
- Install culverts for ephemeral and intermittent drainage crossings. Design all drainage crossings structures to carry the 25- to 50-year discharge event, or as otherwise directed by the BLM. Culverts outlets may need to be rock armored to prevent scouring of drainage banks.
- Implement minor routing variations during access road layout to avoid steep slopes adjacent to ephemeral or intermittent drainage channels. Disturbance will not encroach within 500 feet of perennial surface water and 100 feet of the thalweg in ephemeral channels.
- Runoff directly impacting Bitter Creek may require additional erosion or salinity control measures.
- Include adequate drainage control devices and measures in the road design (e.g., road berms and drainage ditches, diversion ditches, cross drains, culverts, out-sloping, and energy dissipaters) at sufficient intervals and intensities to adequately control and direct surface runoff above, below, and within the road environment to avoid erosive concentrated flows. In conjunction with surface runoff or drainage control measures, use erosion control devices and measures such as

temporary barriers, ditch blocks, erosion stops, mulch, mulches, and vegetative covers. Implement a revegetation program as soon as possible to re-establish the soil protection afforded by a vegetal cover.

- No uncontrolled runoff would be allowed to enter reclaimed areas on the Black Butte Coal Mine.
- Where feasible, locate pipelines immediately adjacent to roads to avoid creating separate areas of disturbance and to reduce the total area of disturbance.
- Reduce the area of disturbance to the absolute minimum necessary for construction and produce operations while providing for safety of the operation.
- Well pads in areas which are heavily grazed may need to be fenced.
- Upon completion of construction activities, restore topography to near pre-existing contours at the well sites, along access roads and pipelines, and other facilities sites; replace up to 6 inches of topsoil or suitable plant growth material over all disturbed surfaces; apply fertilizer as required; seed; and mulch.

### **Water Resource**

- The BLM may deny the proposed surface disturbance within 500 feet of perennial surface water and/or wetland areas and/or within 100 feet of intermittent and ephemeral drainage channels.
- The BLM may deny activities in areas with high erosion potential and/or rugged topography.
- An exception to a mitigation measure and/or design feature may be approved on public land on a case-by-case basis when deemed appropriate by the BLM.
- An exception would be approved only after a thorough, site-specific analysis determined that the resource or land use for which the measure was put in place is not present or would not be significantly impacted.
- Should any existing permitted groundwater rights (water wells) be adversely affected by the Proposed Action, the Operators should rework, replace, or otherwise compensate the owner/permittee.
- Limit construction of all drainage crossing to no-flow periods or low-flow periods.
- Discharge all concentrated water flow within access road ROWs onto or through an energy dissipater structure (e.g., riprapped aprons and discharge point) and discharge into undisturbed vegetation.
- Develop and implement a pollution prevention plan (PPP) for storm water runoff at drill sites as required by Wyoming Department of Environmental Quality (WDEQ) storm water National Pollution Discharge Elimination Systems (NPDES) permit

requirements. The WDEQ requires operators to obtain a field permit for fields of 20 wells or more.

- Maintain vegetation barriers occurring between construction activities and perennial, ephemeral and intermittent flow or channels, with the exception of approved right angle linear feature crossing, which, with the exception of the active travel path or a roadway, shall be reclaimed.
- Case wells during drilling, and case and cement all wells in accordance with Onshore Order No. 2 to protect all high quality water aquifers. High water aquifers with known water quality of 10,000 TDS or less. Include well casing and welding of sufficient integrity to contain all fluids under high pressure during drilling and well completion. Further, wells will adhere to the appropriate BLM cementing policy.
- Construct the reserve pits in cut rather than fill materials or compact and stabilize fill. Inspect the subsoil material of the pit to be constructed in order to assess soil stability and permeability and whether reinforcement and/or lining are required. If lining is required, as specified in the GRRMP Decision Record as approved in 1997 (50 feet or less to ground water and permeability greater than  $10^{-7}$  cm/hour), line the reserve pit with a reinforced synthetic liner at least 12 mils in thickness and a bursting strength of 175 x 175 pounds per inch (ASTMD 75179). Reserve pit lining requirements will be handled on a case-by-case basis during the APD process taking into consideration water quality, soil permeability, and depth to groundwater.
- Maintain two feet of freeboard on all reserve pits to ensure the reserve pits are not in danger of overflowing. Shut down drilling operations until the problem is corrected if leakage is found outside the pit.
- Discharge all water produced from the gas bearing formation(s) into tanks, pumps, pipelines, and existing injection wells to preclude contamination of surface water with high mineral content formation water.
- Extract hydrostatic test water used in conjunction with pipeline testing and all water used during construction activities from sources with sufficient quantities and through appropriation permits approved by the State of Wyoming.
- Discharge hydrostatic test water in a controlled manner onto an energy dissipater. The water is to be discharged onto undisturbed land that has vegetative cover, if possible, or into an established drainage channel. Prior to discharge, treat or filter the water to reduce pollutant levels or to settle out suspended particles if necessary. If discharged into an established drainage channel, the rate of discharge will not exceed the capacity of the channel to safely convey the increased flow. And the hydrostatic test water quality will be equal to or better than the receiving waters. Coordinate all discharge of test water with the Wyoming State Engineer's Office (WSEO), Wyoming Department of Environmental Quality/Water Quality Division (WDEQ/WQD), and the BLM.
- Coordinate all crossings or encroachments of waters of the United States with the U.S. Army Corps of Engineers (COE).

- Shall existing water wells be adversely affected by the project, the company shall rework, replaced, or otherwise compensate the well owner.

### **Health and Safety**

- The Operators should coordinate emergency response planning with the Sweetwater County Emergency Management Agency and provide documentation regarding compliance with Federal Hazardous Material Regulations and the Uniform Fire Code.
- If hazardous materials are present within fracturing fluids, the BLM may deny the discharge of these fluids to reserve pits.
- Exercise stringent precautions against pipeline breaks and other potential accidental discharges of toxic chemicals into adjacent streams. If liquid petroleum products are stored on-site in sufficient quantities (per criteria contained in 40 CFR 112), a Spill Prevention Control and Countermeasures (SPCC) plan will be developed in accordance with 40 CFR 112.

### **Noise**

- In addition to measures described in Section 2.2.1.8, measures to mitigate noise impacts would include the following:
- In any area of operations (drill site, compressor site, etc.) where noise levels may exceed federal OSHA safe limits, the Operators and contractors would provide and require the use of proper personnel protective equipment by employees.
- BLM may require that noise levels be limited to no more than 10dBA above background levels at greater sage-grouse leks.

### **Special Status Wildlife, Fish, and Plant Species**

- The BLM may deny all project development actions within area where threatened, endangered, proposed, candidate, and other sensitive plant and animal species are found or are likely to occur.
- No fisheries mitigation is needed beyond that indicated under Water Resources and Special Status Species.
- BLM may require that noise level increases be limited to no more than 10dBA above background levels at greater sage-grouse leks. To provide additional protection for greater sage-grouse and other area wildlife, the BLM may require powerlines to be buried.
- Do not perform construction activities within 0.25 mile of existing greater sage-grouse leks at any time except as authorized in writing by exception, including documented supporting analysis by the Authorizing Officer. All surface disturbances will abide by greater sage-grouse stipulations as detailed in the GRRMP Decision Record as approved 1997.

- Provide for greater sage-grouse lek protection during the breeding, egg-laying and incubation period (March 1 - June 30) by restricting construction activities within a two-mile radius of active leks. Exception maybe granted if the activity will occur in unsuitable nesting habitat.
- Monitor and control noxious weeds.
- The Operators are to comply with Section 404(b)(1) guidelines of the federal Clear Water Act (CWA).

### **Wildlife**

- Limit construction activities in accordance with BLM authorizations within big game crucial winter range from November 15 to April 30.
- Prohibit unnecessary off-site activities of operational personnel in the vicinity of the drill sites. Inform all project employees of applicable wildlife laws and penalties associated with unlawful take and harassment.
- Complete a raptor survey of the Bitter Creek Project area prior to construction to ensure that well sites are located away from potential conflict area.
- If “active” raptors nest are identified from survey, clear well sites within one mile of raptor nest identified prior to the commencement of drilling and construction during the raptor nesting period (February 1 through July 31).
- No permanent above ground structures will be constructed within 825 feet of an active raptor nest (NSO).
- During reclamation, establish a variety if forage species that are useful to resident herbivores.

### **Cultural Resources**

- Impacts to cultural resources would be mitigated following procedures as specified in 36 CFR 800 and/or the national programmatic agreement for cultural resources and statewide protocol.
- Mitigation procedures will be implemented if a site considered eligible (under “Criterion d” only) or listed on the National Register is impacted.
- If unanticipated or previously unknown cultural resources are discovered at any time during construction, all construction activities will halt and the BLM Authorized Officer (AO) will be immediately notified. Work will not resume until a Notice to Proceed is issued by the BLM AO.
- All resources identified during these inventories would be evaluated for eligibility for the National Register of Historic Places (NRHP) by BLM, and the State Historic Preservation Office (SHPO) would be consulted as necessary under the statewide protocol.

- Avoidance is preferred and is achieved through redesign of a project, elimination of the project, or minimizing impacts. However, these means are not always possible.
- Mitigation of adverse effects to properties would be accomplished by the documentation of physical remains.
- Mitigation would include data recovery of prehistoric and historic sites and could include documentation through detailed drawings and photographs of standing structures.
- Data recovery plans are subject to review and approval by the BLM, SHPO, and the Advisory Council on Historic Preservation.

### **Transportation**

- Existing roads shall be used as collectors and local roads whenever possible. Standards for road design shall be consistent with BLM Road Standards Manual Section 9113.
- Roads not required for routine operation and maintenance of producing wells and ancillary facilities will be permanently blocked, reclaimed, and revegetated.
- Areas with important resource values, steep slopes and fragile soils shall be avoided where possible in planning new roads.

### **Mitigation for impacts on State highways would include:**

- The Operators are responsible for obtaining all required WYDOT permits and approvals for constructing or improving road access to WYO 430.
- Coordination with WYDOT and the Sweetwater Road and Bridge Department to ensure that all approaches to WYO 430 are adequate to handle tractor trailer combinations.
- Coordination with WYDOT and the Sweetwater Road and Bridge Department to ensure that all approaches to WYO 430 are paved or otherwise treated to allow trucks to shed mud gravel before entering the highway.

### **Mitigation for County Roads would include:**

- The Operators will obtain access permits and/or licenses from the Sweetwater County Engineer's Department for any crossings, access to or utilization through Sweetwater County road rights of way.
- The Operators is encouraged to participation in the Wamsutter – Continental Divide Transportation Planning Committee, if appropriate.

- There will be operator and contractor policies to reinforce speed limits and other traffic safety laws on county and operator-maintained roads within the Bitter Creek Project area.
- The Operators will provide assistance to the Sweetwater Road and Bridge Department in obtaining gravel, water and dust suppressant for application on affected county roads.

### **Visual Resources**

- Utilize existing topography, vegetation, and color that mimic the existing environment to screen roads, pipeline corridors, drill rigs, well heads, and production facilities from view.
- Paint well and central facilities site structures with flat colors that blends with the adjacent surrounding undisturbed terrain, except from structures that require safety coloration in accordance with Occupational Safety and Health Administration (OSHA) requirements.

### **Socioeconomics**

- The Operators should ensure that its non-local contractors have secured adequate temporary housing for employees.
- The Operators should ensure that all purchases of tangible goods are properly credited to Sweetwater County for sales and use tax purposes.
- The Operators should coordinate emergency response planning with the Sweetwater County Emergency Management Agency.
- The property and sales and use taxes associated with the Proposed Action would provide revenues to local governments in Sweetwater County to offset the anticipated minimal Proposed Action-related demand for law enforcement and emergency response services. However, there would be a lag between the time development begins and the time substantial project-related tax revenues flow to the county.

### **Rangeland Resources**

- The BLM will recommend that the Operators establish speed limits in the Bitter Creek project area.
- The Operators should coordinate with the affected livestock operators to minimize disruption during livestock operations, including calving season.

**APPENDIX D**

**UNITED STATES FISH AND WILDLIFE SERVICE  
FINAL CONFERENCE OPINION OR CONFORMATION LETTER  
FOR THE  
BITTER CREEK SHALLOW OIL AND GAS PROJECT  
SWEETWATER COUNTY, WYOMING**





# United States Department of the Interior

BUREAU OF LAND MANAGEMENT  
Rock Springs Field Office  
280 Highway 191 North  
Rock Springs, Wyoming 82901-3447



1792 (040)  
1310 (040)  
6840 (040)

## Memorandum

**To:** Darlene Horsey, Environmental Protection Specialist  
**From:** Bernie Weynand, Assistant Field Manager, Resources  
**Date:** February 17, 2005

Re: Effects Determinations and Actions under Section 7, Endangered Species Act for The Bitter Creek Shallow Oil and Gas Project

A review of the proposed action has resulted in a "No Effect" determination for Threatened or Endangered species which may occur in the vicinity of the project area. Consultation with the United States Fish and Wildlife Service (USFWS) may be initiated when the proponent responds to comments on the draft Environmental Assessment concerning Colorado River water depletions.

After discussion with Pat Deibert and Kathleen Irwin from the USFWS, the determination for bald eagle in the draft EA will be changed from "May Affect, Not Likely to Adversely Affect" to "No Effect". This change is based upon the lack of favorable nesting, roosting or foraging habitat for bald eagles in the vicinity of the project area.

With the exception of Colorado River water depletions, consultation with the USFWS is not required. Consultation requirements under the Endangered Species Act can be found in 50 CFR, Part 402 - INTERAGENCY COOPERATION - ENDANGERED SPECIES ACT OF 1973, as amended, June 3, 1986.

*Bernie Weynand*



# United States Department of the Interior

BUREAU OF LAND MANAGEMENT  
Rock Springs Field Office  
280 Highway 191 North  
Rock Springs, Wyoming 82901-3447



1792 (040)  
1310 (040)  
6840 (040)

## Memorandum

**To:** Darlene Horsey, Environmental Protection Specialist  
**From:** Bernie Weynand, Assistant Field Manager, Resources  
**Date:** June 27, 2005

Re: Effects Determinations and Actions under Section 7, Endangered Species Act for The Bitter Creek Shallow Oil and Gas Project

A review of the proposed action, involving an analysis of potential habitat and the potential for Colorado River water depletions, has resulted in a "No Effect" determination for Threatened or Endangered species which may occur in the vicinity of the project area. This determination includes listed Colorado River fish species.

After discussion with Pat Deibert and Kathleen Irwin from the USFWS, the determination for bald eagle in the draft EA will be changed from "May Affect, Not Likely to Adversely Affect" to "No Effect". This change is based upon the lack of favorable nesting, roosting or foraging habitat for bald eagles in the vicinity of the project area.

Consultation with the USFWS is not required. Consultation requirements under the Endangered Species Act can be found in 50 CFR, Part 402 – INTERAGENCY COOPERATION – ENDANGERED SPECIES ACT OF 1973, as amended, June 3, 1986.

*Bernie Weynand*

**APPENDIX E**

**STANDARD SEED MIXTURES  
ROCK SPRINGS FIELD OFFICE**



## Appendix E

### Standard Seed Mixtures

The following procedures will be followed by Infinity Oil & Gas of Wyoming, Inc. and Yates Petroleum Corporation to assure that disturbed areas are stabilized and that revegetation efforts are enhanced.

#### Scarification.

- Prior to reseeding, all compacted areas would be scarified by ripping or chiseling to loosen compacted soils. Scarification promotes water infiltration, better soil aeration and root penetration. Scarification would be done when soils are dry in order to promote shattering of compacted soil layers.

#### Seedbed Preparation.

- Appropriate seed bed preparation is critical for seed establishment. Seedbed preparation would be conducted immediately prior to seeding to prepare a firm seedbed conducive to proper seed placement and moisture retention. Seedbed preparation would also be performed to break up surface crusts and to eliminate weeds that may have developed between final grading and seeding. In most cases, chiseling is sufficient because it leaves a surface smooth enough to accommodate a tractor-drawn drill seeder and rough enough to catch broadcast seed, as well as trap moisture and runoff. In low to moderate saline soils, a firm, weed-free seedbed is recommended. With high salinity levels, particularly when a high water table is involved, a fallow condition may not provide the best seedbed.
- If existing vegetation and weeds are chemically eradicated, the remaining dessicated roots and stems improve moisture infiltration and percolation, reduce evaporation from the soil surface, and protect emerging seedlings (Majerus 1996).

#### Seed Mixtures.

- Seed mixtures would be specified on a site-specific basis and their selection would be justified in terms of local vegetation and soil conditions. Livestock palatability and wildlife habitat needs would be given consideration in seed mix formulation. The recommended general seed mixtures shown in Table B-3.2 and Table B-3.5 of the EA were developed from observation of successful revegetation projects in the Green River Basin region and observation of dominant species in the project area. BLM guidance for native seed use is BLM Manual 1745 (Introduction, Transplant, Augmentation, and Reestablishment of Fish, Wildlife, and Plants). The Wyoming Game and Fish Department (WGFD) recommends that BLM consider shrub, forb, and grass species in seed mixtures.
- BLM would coordinate with the WGFD to insure that the correct shrub, forb, and grass species are incorporated into seed mixtures on public lands. Native species

to be considered include bluebunch wheatgrass, streambank wheatgrass, bottlebrush squirreltail, needle-and-thread grass and Wyoming big sagebrush.

- Fall seeding would occur from about September 15 until ground freeze or snow pack prevents critical seed soil coverage. The optimum time to seed a forage or cover crop in saline-alkaline soils is late fall (mid-October to December), or during a snow-free period during the winter (Majerus 1996). Ideally, in saline-alkaline soils, the seed should be in the ground before the spring season so that it can take advantage of the diluting effects of early spring moisture. Spring seeding would be completed by May 30 or as directed by the BLM.
- Seed would be used within 12 months of testing.

#### Seeding Method.

- Drill seeding would be used where the terrain is accessible by equipment. The planting depth for most forage species is 1/4 to 1/2 inch (5-10 mm). A double disk drill equipped with depth bands would ensure optimum seed placement. The seed would be separated by boxes to prevent seed from separating due to size and weight. Rice hulls or other appropriate material would be added to the seed as necessary to prevent separation. The drill would be properly calibrated so that seed is distributed according to the rates specified for each seed mix.
- Broadcast seeding, especially in areas too steep for drill seeding or where approved by the BLM, should occur onto a rough seedbed and then should be lightly harrowed, chained or raked to cover the seed. The broadcast seeder should be properly calibrated or the seeding should occur over a calculated known area so that the proper seeding rate is applied.

#### Mulching.

- Where mulching is deemed necessary, a certified weed-free, straw or hay mulch would be crimped into the soil at an application rate of two to four tons per acre. Mulches would be applied by blowers, spreaders or by hand. The mulch would be spread uniformly over the area so that 75 percent or more of the ground surface is covered. Mulch would be crimped to a depth of two to three inches.

Bureau of Land Management Recommended Seed Mixes

Plant Species	Variety (if applicable)	Recommended Drill Seeding Rate (lbs/ac PLS) <sup>A</sup>
<b>SALINE/SODIC SOILS</b>		
Western wheatgrass	'Rosanna'	4.0
Sandberg bluegrass		2.0
Indian ricegrass		3.0
Bottlebrush squirreltail		1.0
Slender wheatgrass		3.0-4.0
Scarlet globemallow		1.0
Gardner saltbush		2.0
TOTAL		17.0
<b>WETLAND/HIGH WATER SOILS</b>		
Tufted hairgrass		2.0
Basin wildrye		5.0
Slough grass		6.0
Bluejoint reedgrass		3.0
Alkali sacaton		1.0
TOTAL		17.0
<b>UPLAND SOILS</b>		
Thickspike wheatgrass	'Critana'	4.0
Western wheatgrass	'Rosanna'	4.0
Indian ricegrass		4.0
Shadscale		1.0
Scarlet globemallow		1.0
Winterfat		2.0
Gardner saltbush		1.0
Sandberg bluegrass		2.0
Slender wheatgrass		3.0-4.0
TOTAL		22.0-23.0

<sup>A</sup> Pounds/acre Pure Live Seed. (Source: USDI-PFO 1999 and Glennon 2003)

Standard success criteria would be based on attainment of total vegetation cover. Standard success criteria would be based on attainment of 50% of predisturbance cover in three years and 80% of predisturbance cover in five years. These identified seed mixes could be modified or added to by BLM, as needed or required to meet the RSFO objectives for reclamation.