Monitoring Wells Plugging
Phase III 2023 (BFO)

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SECTION 01009

GENERAL INFORMATION AND REQUIREMENTS

PART 1: GENERAL

1.1 SUMMARY

A. Description of Work: Furnishing permits, labor, equipment, supplies, and materials, to plug 36 existing Monitor Wells (MW), 1 orphan CBNG plugging and outfall removal, and associated reclamation. All disturbed surfaces shall be graded to provide positive drainage and reclaimed to closely match the existing surrounding areas. Contractor shall apply for and obtain all Federal, State, and local permits needed for this Work including applications and drawings needed for the permits.

Provide all supervision, personnel, labor, materials, tools, equipment, maintenance and repairs, services, and all other facilities and incidentals required for the execution and completion of the Work as specified herein. Provide all backfilling, grading, seeding (+/- 7 acres one site), surface restoration, various water bars (data sheet p. 22), and associated work as shown on the drawings, as specified herein, and as required to complete all components of the Work and all associated structures, complete, in place, and accepted by the Contracting Officer.

B. Location: The work locations are shown on the drawings and exhibits; and work under this contract is in Campbell County, Johnson County, and Sheridan County Wyoming. The work locations are shown on the attached maps and the legal locations are listed below.

Monitoring Wells and Location:

1. **Durham Ranch 14 MW T44N R72W Sec. 14 SENE**
   - **a.** Durham Ranch Sec. 14 Wyodak Coal
     SEO (Wyoming State Engineer's Office) #: P106973.0W
   - **b.** Durham Ranch Sec. 14 Wasatch Sand
     SEO#: P106972.0W
2. **Durham Ranch 6 MW T45N R71W Sec. 6 SWNE**
   - **c.** Durham Ranch Sec. 6 Wyodak Coal
     SEO#: P106975.0W
   - **d.** Durham Ranch Sec. 6 Wasatch Sand
     SEO#: P106974.0W
3. **Kingsbury MW T46N R78W Sec. 25 NWSE**
   - a. KU 33-25-4678S-MON
     API (American Petroleum Institute) #: 49-019-06445

     SEO#: P179493.0W
4. **Napier MW T48N R76W Sec. 24 SESE**
   - a. Napier MW Big George Coal
     API#:49-005-07914 SEO#: P133775.0W
   - b. Napier MW Wasatch Sand
     API#:49-005-07915 SEO#: P133776.0W

5. **Skewed MW's T48N R77W Sec. 21 SENW**
    a. SK1
    b. SK2S
    c. SK2D
    d. SK3
    e. SK4S
    f. SK4D
    g. SK5
    h. SK6
    i. SK7
    j. SK8
    k. SK9
    l. SK10
    m. SK11

Skewed MW's T48N R77W Sec. 21 SENW

    a. SK12
    b. SK13
    c. SK14
    d. SK15
    e. SK16
    f. SK17
    g. SKS18

6. **Sasquatch MW T48N R78W Sec. 26 NWNE**
    a. Sasquatch MW
    API#:49-019-20920

7. **Carr Draw MW T50N R75W Sec. 29 NENE**
    a. Carr Draw MW Gates/Werner Coals
    API#:49-005-07636, SEO#: P177450.0W
    b. Carr Draw MW Overburden Sand/Big George Coal
    API#:49-005-07635, SEO#: P177448.0W

8. **Timar Stock Well T50N R80W Sec. 6 SENE**
    a. Stock Water Well

9. **Coal Gulch MW T51N R78W Sec. 26 SWSW**
    a. Coal Gulch MW Dual Completion
    API#:49-019-24209, SEO#: P159720.0W

10. **Petrified Tree MW T51N R80W Sec. 31 SWNE**
    a. Petrified Tree MW

11. **Remington MW T58N R79W Sec. 30 SWNE**
    a. Remington 30-07A
    API#:49-033-23127, SEO#: P139658.0W
    b. Remington 30-07CK
    API#:49-033-23107, SEO#: P139652.0W
    c. Remington 30-07C

API#:49-033-23126, SEO#: P139649.0W

12. Ford Ranch II POD T58N R75W Sec. 27, 32

a. Ford Ranch II Fed 13CW-32
API#:49-005-59912,
b. Ford Ranch Playa Outfall

1.2 SUBMITTALS

A. No submittals necessary for this project. .

1.3B. QUALITY ASSURANCE

A. Codes and Standards: The Work shall comply with codes and standards applicable to each type of work and as listed in the individual sections of these specifications. This Contract incorporates materials, applications, and tests by reference, with the same force and effect as when they were given in full text.

B. Conflict: Where a conflict occurs between reference documents and project specifications, the project specifications shall govern.

C. Measurements: Where approved shop drawings give specific measurements or rough-in dimensions for equipment, these dimensions shall take precedence over dimensions indicated on the drawings.

1.8 PROJECT/SITE CONDITIONS

A. Access to the Work: Reference the attached maps and exhibits.
Notify BLM a minimum of ten (10) working days before any onsite investigation or site visits to allow for BLM to inform and coordinate with property owners and obtain access permission if needed for access across private properties.

B. Environmental Considerations: Time of year, etc.

1.9 SEQUENCING AND SCHEDULING

A. Work Schedule: The detailed schedule shall be submitted at the pre-work conference and identify specific line-item details with milestones. When requested, submit an updated schedule within 3 calendar days. As a minimum, the estimated start and completion dates shall be shown in the estimate. Onsite work shall not start until a Work Schedule is approved.

1.10 PERMITS, DESIGN AND DRAWINGS

A. The Contractor shall apply for, obtain, and pay for licenses and permits required to perform the Work.

B. Comply with applicable codes and regulations of authorities having jurisdiction, including but not limited to:
1. Wyoming Department of Environmental Quality (WDEQ),

C. Notify the Contracting Officer of existing conditions that differ from those shown on the drawings or identified on the exhibits, or in the specifications.

D. Portions of the contract documents are written in the imperative mode.
    1. Except where specifically intended otherwise, the subject of all imperative statements is the Contractor.
    2. Examples of imperative statements include but are not limited to:
    3. "Provide . . . " means "Contractor shall provide . . ." and
    4. "Install . . . " means "Contractor shall install . . . ".

PART 2: PRODUCTS

(There are no applicable requirements.)

PART 3: EXECUTION

3.1 PROJECT MEETINGS

A. Pre-Work Conference:
    1. Will be held prior to the start of Work. The Contractor will be notified in advance of meeting time, date, and place. The purpose will be to review required work, project drawings and specifications, construction schedules, payroll and payments, and administrative provisions of the Contract. Pre-Work conference will be held in the BLM Buffalo Field Office.
    2. The Contractor, subcontractors, and the persons responsible for coordination of the work shall be present at the meeting.
    3. Contractor shall be prepared to summarize and explain procedures planned for the project and present the submittals requested in the specifications.

B. Progress Meetings:
    1. To be held at the project site, or as determined by the Contracting Officer.
    2. May be called by either the Contracting Officer or the Contractor. Request shall state who should attend and include an agenda.

C. Final Inspection:
    1. To be held at the project site, or as determined by the Contracting Officer.
    2. Notify the Contracting Officer in writing at least five (5) working days before the completion date so the Government can schedule final inspection.
    3. The Contractor’s Superintendent shall be present during this inspection.

3.2 DISPOSAL OF DEBRIS

A. Requirements: See work data sheets for site specific requirements. Disposal of materials in a legal manner and payment of fees required is the Contractor's responsibility. Sale of material onsite is not allowed unless authorized in writing by the Contracting Officer. When hazardous materials are encountered during demolition operations, comply with applicable federal, state, and local regulations, laws, and ordinances concerning removal, handling, and protection against exposure or environmental pollution. Burning of removed materials is not permitted on the work site.

3.3 SALVAGEABLE ITEMS

A. . See work data sheets for site specific requirements. a location determined by the BLM.

3.4 AS-BUILT DRAWINGS (Record Information)

A. General Requirements: Not needed on this contract.

PART 4: MEASUREMENT AND PAYMENT

4.1 METHOD OF MEASUREMENT

A. Units: The work described in this section will not be measured for payment.

4.2 BASIS OF PAYMENT

A. Payment: No direct payment for the work described under this section will be made other than those identified below. Consideration for this item shall be included in the bid price for other items of the Contract.

	ITEM DESCRIPTION	EA (EACH)
1	Durham Ranch 14 MW T44N R72W Sec. 14 SENE"	2
2	Durham Ranch 6 MW T45N R71W Sec. 6 SWNE "	2
3	Kingsbury MW T46N R78W Sec. 25 NWSE"	1
4	Napier MW T48N R76W Sec. 24 SESE"	2
5	Skewed MW's T48N R77W Sec. 21 SENW"	20
6	Sasquatch MW T48N R78W Sec. 26 NWNE"	1
7	Carr Draw MW T50N R75W Sec. 29 NENE"	2
8	Timar Stock Well T50N R80W Sec. 6 SENE"	1
9	Coal Gulch MW T51N R78W Sec. 26 SWSW"	1
10	Petrified Tree MW T51N R80W Sec. 31 SWNE"	1
11	Remington MW T58N R79W Sec. 30 SWNE"	3
12	Ford Ranch Orphan T58N R75W Sec. 27, 32	2

END OF SECTION

SECTION 01060

PERMITS

PART 1 – General

1.1 WORK INCLUDED

A. This section covers Contractor requirements for providing environmental controls and permits consistent with regulatory requirements throughout the duration of the project.
B. The Contractor is responsible for obtaining all permits and licenses necessary for the completion of the Work.

1.2 SUBMITTALS

A. Submit the following in accordance with Section 01300 – Submittals
    a. The Contractor shall perform all Work necessary to apply for and acquire an approved executed copy of the Storm Water Pollution Prevention Permit (SWPPP) prior to start of Work.
    b. The Contractor shall perform all Work necessary to apply for and acquire an approved executed copy of the Wyoming Pollutant Discharge Elimination System (WYPDES) General Permit for Discharges from Construction Activities and submit a copy to BLM.
    c. The Contractor shall perform all Work necessary to apply for and acquire any additional permits for the project.

1.3 REGULATORY REQUIREMENTS

A. In cases of conflict, conform with the most stringent requirement.
B. Laws, Regulations, and Permits:
    a. Perform construction operations, including management of subcontractors, to comply with: applicable Federal, State, and local laws, orders, regulations, and water quality standards concerning control and abatement of air, water, and soil pollution; and terms and conditions of applicable permits issued by permit issuing authority.
C. Contractor Violations:
    a. If noncompliance should occur, immediately (verbally) report noncompliance to the Contracting Officer and to the appropriate regulatory authority. Submit specific written information within two (2) days or sooner if required by the regulatory authority.
    b. Violation of applicable Federal, State, or local laws, orders, regulations, or water quality standards may result in the Contracting Officer stopping unrelated site activities until compliance is achieved.
    c. The Contractor will not be entitled to an extension of time, claim for damage, or additional compensation by reason of such a work stoppage.
    d. Corrective measures required to bring activities into compliance and remediate environmental impacts will be at the Contractor's expense.

1.4 PERMITS

A. The Contractor is responsible for performing all Work to apply for and acquire all permits and licenses necessary for the completion of this Work. The Contractor is responsible for all permits relating to the discharge of water associated with construction activity under the WYPDES, including but not limited to the following: storm water discharge, Storm Water Pollution Prevention Plan, and construction site dewatering.

1.5 CONTRACTOR RESPONSIBILITIES

A. Permits
   a. The Contractor shall be designated as the operator or holder of the permits. The Contractor shall be responsible for all associated fees.
   b. The Contractor shall provide BLM copy of all permits upon request.

B. Prepare, maintain, and proceed in conformity with all needed permits as required by Federal, State, and Local authorities. The Contractor is responsible for obtaining and paying for all permits.

C. During construction, the Contractor is responsible for all maintenance to the pollution prevention plan and any other permit requirements. When the Contractor has completed work on the project and has been issued the final payment, the Government will continue maintenance on the pollution prevention plan requirements. When all criteria have been met, the Government will file the Notice of Termination for the permit.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

A. See Work Data Sheet for detailed information.
B. Work Dates & Constraints:

1. Notify BLM a minimum of ten (10) working days before any onsite investigation or site visits to allow for BLM to inform property owners and obtain access permission if needed for access across private properties.
2. Final deliverable products, and at a minimum, the executed permits and work shall adhere to the construction specifications herein and all necessary permits requirements.

Pre-Work Conference:

A pre-work conference will be held virtually using Microsoft Teams prior to the start of Work. The Contractor will be notified in advance of meeting time and date. The purpose will be to review the project requirements, and contractual administrative provisions. Site visits will not be conducted during this meeting but may be held in conjunction with the field work as necessary. The Contractor shall be prepared to summarize and explain procedures for obtaining technical specifications and plans from the sites.

PART 4 – MEASUREMENT AND PAYMENT

4.1 METHOD OF PAYMENT

A. No direct payment for the work described under this section will be made. Consideration for this item shall be included in the bid price for other items of the Contract. Payment for this section will be subsidiary to the Contract.

END OF SECTION

SECTION 01330

SUBMITTAL PROCEDURES

PART 1: GENERAL

1.1 SUMMARY

A. Section Includes: Requirements for submittals of the work schedules.

B. Requirements: Refer to specifications for submittals required. Allow a minimum 10 working days for review. Review time commences upon receipt by the Contracting Officer (CO). Submittals shall be delivered to the CO and the Contracting Officers Representative (COR). Submittals shall be submitted using a submittal transmittal cover sheet.

Submittal shall use a Transmittal Submittal cover sheet and shall be submitted as a whole by discipline topic, e.g. all pipe shall be submitted as one package, schedules shall be submitted as one complete submittal.

1.2 QUALITY ASSURANCE

A. Approval: Written approval of the submittals is an indication the Contractor's submittals have been reviewed and there are no objections, except as noted. Installation of material based on written approval of submittals shall not relieve the Contractor of the responsibility for incorporating material which conforms to the requirements of the drawings and specifications. Written approval of deviations shall apply only to those deviations or omissions from the requirements of the drawings and specifications brought to the Contracting Officer's attention in writing. After written approval of an item, the Contractor may submit a substitution request for approval, if the approved item cannot be purchased or delivered in time to avoid delay in completion of the project.

PART 2: PRODUCTS

There are no applicable requirements.

PART 3: EXECUTION

3.1 WORK SCHEDULE:

A. Requirements: The schedule shall be submitted at the pre-work conference. When requested, the Contractor shall submit an updated schedule within three (3) working days. As a minimum, the estimated start and completion dates as well as milestones shall be shown in the schedule.

3.2 DESIGN COMPUTATIONS

A. Requirements: Not needed for this contract.

3.3 SHOP DRAWINGS

A. General: Not needed for this contract.

C. Substitutions: The Contractor shall present requests for substitutions to the Contracting Officer according to the following:
   1. Deliver sufficient calculations and data to justify selection of the proposed item and permit comparison with the original item.
   2. Show complete layout of system, except that which is identical to Contract documents, unless unchanged portion must be shown to indicate clearances.
   3. Include drawings, same (or larger) scale as Contract drawings, marked to show differences. Include detail drawings of supports for equipment and load calculations, stamped and signed by a Wyoming Licensed Professional Engineer.
   4. Submit complete technical data including test data, drawings, manufacturer's literature, samples, and complete performance specifications.
   5. The Contractor is responsible for the cost of redesign and modifications to this or other parts of the project caused by the substitutions.

PART 4: MEASUREMENT AND PAYMENT

4.1 METHOD OF MEASUREMENT

A. Units: The work described in this section will not be measured for payment.

4.2 BASIS OF PAYMENT

A. Payment: No direct payment for the work described under this section will be made. Consideration for this item shall be included in the bid price for other items of the Contract.

END OF SECTION

SECTION 01500

TEMPORARY FACILITIES AND CONTROLS

PART 1: GENERAL

1.1 SUMMARY

A. Section Includes: Requirements for temporary facilities, controls, first aid, and sanitary facilities.

1.2 SUBMITTALS

A. First Aid Plans: Submit three (3) copies of plans for providing medical attention for injured or disabled employees, including onsite emergency facilities and ambulance service, before start of operations.

1.3 QUALITY ASSURANCE

A. Regulations: Comply with applicable local regulations for haul routes over public highways, roads, or bridges. Comply with industry standards and applicable laws and regulations of authorities having jurisdiction including, but not limited to the following:
   1. Health and safety regulations.
   2. Utility company regulations.
   3. Environmental protection regulations.
   4. Prevention and control of air pollution.
   5. Prevention and control of water pollution.

1.4 EXPLOSIVES

A. Explosives: Shall not be permitted.

PART 2: PRODUCTS

2.1 TOILET UNITS

A. Temporary Toilet Units: Provide self-contained, single-occupant toilet units of the chemical, aerated recirculation, or combustion type. Provide units properly vented and fully enclosed with a glass-fiber-reinforced polyester shell or similar nonabsorbent material.

PART 3: EXECUTION

3.1 INSTALLATION

A. Toilets: Install self-contained toilet units specified in Part 2 of this specification section. Shield toilets to ensure privacy. Use of pit-type privies will not be permitted.
   1. Provide separate facilities for male and female personnel.
   2. Provide toilet tissue, paper towels, paper cups, and similar disposable materials for each facility. Provide covered waste containers for used material.
   3. Provide hand wash stations with disinfection products.

B. First-Aid Facilities: Make first-aid facilities and services obvious and easily available for providing emergency aid to personnel on the site.

3.2 HAUL ROUTES, ROADWAYS, PARKING AREAS, AND STORAGE/STAGING AREAS

A. Examination: Investigate the condition of available public or private roads for clearances, restrictions, bridge-load limits, bond requirements, and other limitations that affect or may affect access and transportation operations to and from the jobsite.

B. Established Roadways as Haul Routes: Use existing available public highways, roads, or bridges as haul routes subject to the applicable local regulations. Tracked or heavy vehicles are not allowed. Contractor is responsible for damage caused by construction traffic.
   1. Provide and use means of removing mud and lose gravel from vehicle tires before entering existing paved roads. Road repair and cleanup shall be at no cost to the Government.
   2. Provide barricades, flag persons, lighting, signs, and other necessary precautions for safety of the public where haul routes cross public highways or roads.

C. Temporary Roadways and Haul Routes: Construction of haul roads are authorized for this project.

D. Storage/Staging Areas: The Contractor may construct a temporary area for trailers, equipment, and materials, located as approved by the Contracting Officer. Fencing of materials or equipment shall [not] be required at this site; however, the Contractor shall be responsible for cleanliness and orderliness of the area used and for the security of any material or equipment stored in this area. Trailers, materials, or equipment shall not be placed or stored outside the designated [fenced] area unless such trailers, materials, or equipment are assigned a separate and distinct storage area by the Contracting Officer away from the vicinity of the construction site but within government property boundaries.

E. Maintenance: Maintain haul routes, roadways, parking and storage areas, in a sound, smooth condition. Maintain the [roadbed, side slopes, structures, and surfacing] of roads and areas until completion and acceptance of all the work under this contract. Maintain the surfacing of gravel-surfaced roads and areas in a smooth condition until completion and acceptance of all work under this contract.

F. Removal: Remove materials used to construct temporary roadways, areas, and haul routes prior to contract completion. Recycle all salvageable materials as approved by the Contracting Officer.

3.3 AIR POLLUTION CONTROL

A. Air Quality Permits: Contractor shall be responsible for obtaining any air quality permits needed.

B. Responsibility: Contractor shall be responsible for damages resulting from dust originating from Contractor operations.
   1. Government may stop any construction activity contributing to air pollutant levels which are excessive or in violation of Federal, State, or local laws and additional expenses resulting from work stoppage will be responsibility of Contractor.

C. Requirements: Utilize such methods and devices as are reasonably available to prevent, control, and otherwise minimize atmospheric emissions or discharges of air contaminants.
   1. Do not operate equipment and vehicles that show excessive emissions of exhaust gases until corrective repairs or adjustments reduce such emissions to acceptable levels.
   2. Provide dust control and abatement during construction. Prevent, control, and abate dust pollution on rights-of-way provided by Government or elsewhere during performance of work. Provide labor, equipment, and materials, and use efficient methods wherever and whenever required to prevent dust nuisance or damage to persons, property, or activities, including, but not limited to, crops, orchards, cultivated fields, wildlife habitats, dwellings and residences, agricultural activities, recreational activities, traffic, and similar conditions.

3.4 WATER POLLUTION CONTROL

A. Contractor Water Pollution Violations: If noncompliance should occur, report the noncompliance to the Contracting Officer immediately (orally), with the specific information submitted in writing within two (2) calendar days. Consistent violations of applicable Federal, State, or local laws, orders, regulations, or Water Quality Standards may result in the Contracting Officer stopping all site activity until compliance is ensured. The Contractor shall not be entitled to any extension of time, claim for damage, or additional compensation by reason of such a work stoppage. Corrective measures required to bring activities into compliance shall be at the Contractor's expense.

B. Stormwater Discharge Permit Associated with a Construction Site:
   1. Notice of Intent: Both the Government and the Contractor shall sign the Notice of Intent (NOI) to obtain coverage under a stormwater general permit to control stormwater discharges from the construction site as required under section 402 of the Clean Water Act (Public Law 92-500, as amended).
   2. Pollution Prevention Plan: The Contractor shall prepare a Pollution Prevention Plan as required by the permit. The Contractor shall comply with all terms and conditions to obtain and maintain this stormwater discharge permit.

C. Pollution Controls: Control pollutants by use of sediment and erosion controls, wastewater and stormwater management controls, construction site management practices, and other controls including State and local control requirements.
   1. Sediment and Erosion Controls: Establish methods for controlling sediment and erosion which address vegetative practices, structural control, silt fences, straw dikes, sediment controls, and operator controls as appropriate. Institute stormwater management measures as required, including velocity dissipators, and solid waste controls which address controls for building materials and offsite tracking of sediment.
   2. Wastewater and Stormwater Management Controls: Use methods of dewatering, unwatering, excavating, or stockpiling earth and rock materials which include prevention measures to control silting and erosion, and which will intercept and settle any runoff of sediment-ladened waters. Prevent wastewater from general construction activities such as drain water collection, aggregate processing concrete batching, drilling grouting, or other construction operations, from entering flowing or dry watercourses without the use of approved turbidity control methods. Divert stormwater runoff from upslope areas away from disturbed areas.
      a. Turbidity prevention measures: Use methods for prevention of excess turbidity which include, but are not restricted to, intercepting ditches, settling ponds, gravel filter entrapment dikes, flocculating processes, recirculation, combinations thereof, or other approved methods that are not harmful to aquatic life. All such wastewaters discharged into surface waters shall contain the least concentration of settleable material possible and shall meet all conditions of section 402, the National Pollutant Discharge Elimination System (NPDES) permit. Do not operate mechanized equipment in waterbodies without having first obtained a section 404 permit, and then only as necessary to construct crossings or perform the required construction.
   3. Construction Site Management: Perform construction activities by methods that will prevent entrance, or accidental spillage, of solid matter, contaminants, debris, or other pollutants or wastes into streams, flowing or dry watercourses, lakes, wetlands, reservoirs, or underground water sources. Such pollutants and wastes include, but are not restricted to: refuse, garbage, cement, sanitary waste, industrial waste, hazardous materials, radioactive substances, oil and other petroleum products, aggregate processing tailings, mineral salts, and thermal pollution.

a. Do not stockpile, or deposit excavated materials or other construction materials, near or on, stream banks, lake shorelines, or other watercourse perimeters where they can be washed away by high water or storm runoff, or can in any way encroach upon the watercourse.
b. Place all oil or other petroleum product (hereinafter referred to collectively as oil) storage tanks at least 20 feet from streams, flowing or dry watercourses, lakes, wetlands, reservoirs, and any other water source.
c. Diked storage areas shall be at least 12 inches high or graded and sloped to permit safe containment of leaks and spills equal to the capacity of all tanks and/or containers located in each area plus a sufficient amount of freeboard to contain the 25-year rainstorm.
d. Provide diked areas with an impermeable barrier at least 10 mils thick. Provide areas used for refueling operations with an impermeable liner at least 10 mils thick buried under 2 to 4 inches of soil.

3.5 MAINTENANCE AND REMOVAL

A. Maintenance: Maintain temporary structures, facilities, and controls as long as needed for safe and proper completion of the work and as directed by the Contracting Officer.
B. Removal: Remove temporary structures, facilities, and controls as rapidly as progress of the work will permit and as approved by the Contracting Officer.

3.6 PROTECTION

A. Barriers: Provide earthen embankments and similar barriers around excavation and subgrade construction, sufficient to prevent flooding by runoff from heavy rains.

3.7 WASTE

A. Collection and Disposal of Waste: Collect waste from construction areas and elsewhere daily. Comply with requirements of NFPA 241 for removal of combustible waste material and debris. Enforce requirements strictly. Do not hold materials more than seven (7) days during normal weather or 3 days when the temperature is expected to rise above 80 degrees F (27 degrees C). Handle hazardous, dangerous, or unsanitary waste materials separately from other waste by containerizing properly. Dispose of material lawfully.

3.8 CLEANUP

A. Restoration of Storage Area: Upon completion of the project and after removal of trailers, materials, and equipment from within the fenced area, remove the fence [and walkways]. Restore areas used by the Contractor for the storage of equipment or material, or other use, to the original or better condition. Remove gravel used to traverse grassed areas and restore the area to its original condition, including topsoil and seeding as necessary. [See Section 02923 Seeding.]

PART 4: MEASUREMENT AND PAYMENT

4.1 METHOD OF MEASUREMENT

A. Units: The work described in this section will not be measured for payment.

4.2 BASIS OF PAYMENT

A. Payment: No direct payment for the work described under this section will be made. Consideration for this item shall be included in the bid price for other items of the Contract.

END OF SECTION

SECTION 02050
REMOVAL AND DISPOSAL OF STRUCTURES AND OBSTRUCTIONS

PART 1 GENERAL

1.1 SUMMARY

A. The Work involved in this category consists of removing and satisfactorily disposing of pipes, water storage tanks, fencing, rip rap, and other items designated for removal on the plans, exhibits, specifications, and/or directed by the Contracting Officer Representative (COR).
B. Removed items shall be properly disposed of as required by Federal, State, and Local Government regulations. The COR shall receive written notification of disposal procedures and may require the Contractor to certify that proper disposal methods were used.
C. It shall also include the salvaging of designated material, as shown on the plans, specifications, exhibits, and as listed herein, including backfilling the resulting trenches, holes, and pits. In addition, it shall include all transportation as identified herein.
D. Materials removed and not designated to be salvaged or incorporated into the work shall become the property of the Contractor.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Section 02310, Site Grading

PART 2: PRODUCTS (NOT USED)

PART 3: EXECUTION

A. Demolition and Disposal
1. All existing pipes, water storage tanks, fencing, rip rap, and other items designated for removal on the plans, specifications, exhibits, and/or directed by the Contracting Officer Representative (COR), shall be removed and disposed of by the Contractor unless otherwise specified.
2. Any damage to such existing facilities or structures resulting from carelessness or negligence on the Contractor's part shall be satisfactorily restored to its original condition or replaced with new at the Contractor's expense.

PART 4: MEASUREMENT AND PAYMENT

4.1 METHOD OF MEASUREMENT

A. Units: The work described in this section will not be measured for payment.

4.2 BASIS OF PAYMENT

A. Payment: No direct payment for the work described under this section will be made. Consideration for this item shall be included in the bid price for other items of the Contract.

END OF SECTION

SECTION 02231

CLEARING AND GRUBBING

PART 1: GENERAL

1.1 SUMMARY

A. Section Includes: Clearing of vegetation, and grubbing of stumps, roots, and debris; disposal of unutilized materials; and other incidental work related to preparing the site for later use.

B. Related Sections:
General Information and RequirementsSection 01009

1.2 DEFINITIONS

A. Clearing: Clearing shall consist of the felling, trimming, and cutting of obstructions such as trees into sections and the satisfactory disposal of the trees and other surface vegetation designated for removal, including down timber, snags, brush, and rubbish occurring in the areas to be cleared.

B. Grubbing: Grubbing shall consist of the removal and disposal of below-surface stumps, roots larger than 3-inches (75 millimeters) in diameter, and matted roots from the designated grubbing areas.

C. Hazardous Waste: Substance likely to cause death or injury by reason of being explosive, flammable, poisonous, corrosive, oxidizing, irritating, or otherwise harmful; and includes, but is not limited to flammable dust, flammable fiber, combustible liquid, dangerous chemical, flammable gas, liquified flammable gas, and flammable liquid.

1.3 PROJECT/SITE CONDITIONS

A. Work Limits: Area to be cleared and grubbed will be the excavation area. Scalping of topsoil during clearing operations will not be permitted.

B. Burning of Slash: Shall not be permitted.

C. Landscape Preservation: Protect vegetation outside the work limits from injury. Existing trees and shrubs shall not be disturbed or damaged.

PART 2: PRODUCTS

2.1 EQUIPMENT

A. Spark Arresters: Shall meet the requirements of the U.S. Forest Service Spark Arrester Guide, Volume 2, dated 1993.

PART 3: EXECUTION

3.1 PROTECTION

A. Trees, Shrubs, and Existing Facilities: Protection shall be according to Section 01500 - Temporary Facilities and Controls.

B. Utility Lines: Protect existing utility lines that are indicated to remain from damage. Notify the Contracting Officer immediately of damage to or an encounter with an unknown existing utility line. The Contractor shall be responsible for the repairs of damage to existing utility lines that are indicated or made known to the Contractor prior to the start of clearing and grubbing operations. When utility lines which are to be removed are encountered within the area of operations, the Contractor shall notify the Contracting Officer 72 hours prior to interruption of the service.

3.2 CLEARING

A. Requirements: Clear trees, stumps, roots, brush, and other vegetation in areas to be graded; cut off flush with or below the original ground surface, except such trees and vegetation indicated or directed to be left standing. Trees designated to be left standing within the cleared areas shall be trimmed of dead branches 1-1/2 inches (40 mm) and shall be trimmed of all branches the heights indicated on the drawings and directed by the Contracting Officer. Limbs and branches to be trimmed shall be neatly cut close to the bole of the tree or main branches. Cuts more than 1-1/2 inches (40 mm) in diameter shall be painted with an approved tree-wound paint. Trees and vegetation to be left standing shall be protected from damage incident to clearing, grubbing, and construction operations by the erection of barriers or by such other means as the circumstances require. Clearing shall also include the removal and disposal of existing obstructions that obtrude, encroach upon, or otherwise obstruct the work.

3.3 GRUBBING

A. Requirements: Material to be grubbed, together with logs and other organic or metallic debris not suitable for foundation purposes, shall be removed to a depth of not less than 18 inches (450 mm) below the original surface level of the ground in areas indicated to be grubbed and in areas indicated as construction areas under this contract, such as areas for buildings, and areas to be paved. Depressions made by grubbing shall be filled with suitable material and compacted to make the surface conform with the original adjacent surface of the ground.

B. Low Embankment Areas: When the finished subgrade is less than 3 feet (1 m) above the original ground, remove stumps, roots, and debris to a minimum of 6 inches (150 mm) below the original ground. Backfill stump and root holes with approved material and compact before placing embankment material.

C. High Embankment Areas: When the finished subgrade is 3 feet (1 m) or more from the original ground, stumps may be cut flush and left in place. Removal of undisturbed stumps and roots and nonperishable solid objects will not be required. The surface of the original ground shall be scarified before starting the embankment operation.

3.4 DEBRIS

A. Trees and Limbs: Dispose of per Section 01009 – General Information and Requirements. Burning will not be permitted.

PART 4: MEASUREMENT AND PAYMENT

4.1 METHOD OF MEASUREMENT

A. Units: The work described in this section will not be measured for payment.

4.2 BASIS OF PAYMENT

A. Payment: No direct payment for the work described under this section will be made. Consideration for this item shall be included in the bid price for other items of the Contract.

END OF SECTION

RANGELAND DRILL SEEDING SPECIFICATION NO. 17230

C.1.0 GENERAL:

C.1.1 See work data sheet and general reclamation plan for seeding requirements.

C.1.2 References:

a. Federal Specifications

FS JJJ-S-181 Seeds, Agricultural

C.1.3 Certification: Furnish three (3) copies of written certification from the supplier of the Contractor-furnished seed that it conforms to the requirements of this specification.

C.2.0 DEFINITIONS: None

C.3.0 CONTRACTOR-FURNISHED ITEMS:

C.3.1 Source Quality Control: Seed furnished shall meet the requirements of the Federal Seed Act (7 U.S.C. Secs. 1551-1610 incl.), the seed laws and the noxious weed laws of the state to which the seed is to be shipped.

C.3.2 Seed Testing: The Contractor shall furnish at the delivery points sealed certified samples taken by a bonded, professional seed sampler or county agent. In submitting such samples, the Contractor's sampler must draw seed as prescribed by the Federal Seed Act (7 U.S.C. Secs. 1551-1610 incl.) and submit a certification to this effect with each sample. Enough samples, fully representative of each lot of seed furnished, must be supplied to provide enough seed for retesting, should this be necessary. Seed not meeting the minimum requirements set forth in this specification will not be accepted.

C.3.3 Containers and Labels: Deliver Contractor-furnished seed in original, unopened containers and in acceptable condition for germination and marked with (1) name and address of the shipper, (2) net weight, (3) seed name, (4) percentages of purity and of germination, (5) lot number, (6) date of test, and (7) percentage of maximum weed seed content clearly marked for each kind of seed. The seed must have been tested within the last three (3) months for certification.

C.3.4 Seed Species: Shall conform to the following:

Species	Common Name	PLS lbs/acre
Elymus trachycaulus spp. *trachycaulus*	Slender wheatgrass	3.0
Pascopyrum smithii	Western Wheatgrass	2.5
Pseudoroegneria spicata ssp. *spicata*	Bluebunch Wheatgrass	1.75
Elymus elymoides	Bottlebrush Squirreltail	1.25
Leymus cinerus	Basin Wildrye	1.25
Nassella viridula	Green Needlegrass	1.0
Calamovifolia longifolia	Prairie Sandreed	0.75
Bouteloua dactyloides	Sideoats Grama	0.5
Poa Secunda	Sandberg Bluegrass	0.15
Festuca saximontana	Rocky Mountain Fescue	0.15
Sporobolus contractus	Sand Dropseed	0.03
Atriplex canescens	Fourwing Saltbush	0.5
Peritoma serrulata	Rocky Mountain Beeplant	0.25
Sphaeralcea coccinea	Scarlet Globemallow	0.1
Dalea purpurea	Purple Prairie Clover	0.2
Artemisia tridentate	Wyoming Big Sagebrush	0.1
Triticum aestivum x Secale cereale	Quickguard	5.0
	Total PLS	18.38
*PLS = pure live seed, Northern Plains adapted species		

C.4.1 Surface Conditions: Seed shall not be drilled under conditions when it cannot be properly covered with soil, such as in snow, when the ground is frozen, or when soil has excessive moisture content. When such conditions are encountered, the Contractor shall stop work and notify the Contracting Officer.

C.4.2 Seeding: Seeding shall be installed on the contour.

C.4.3 Average Depth of Seeding: Shall be ¼ to ½ inches deep.

C.4.4 Special Requirements:

C.5.10 Tests for Uniformity: The Contracting Officer will make tests to determine uniformity of seed application.

C.5.11 Tests for Rate of Application: Drills require calibration to ensure the specified seeding rate is achieved. The following method will be used: Seed a predetermined small acreage using either measured area or lineal drill seeding length converted to acres. Determine the amount of seed used and adjust until desired rate is obtained.

END OF SECTION

SECTION E - INSPECTION AND ACCEPTANCE

RANGELAND DRILL SEEDING SPECIFICATION NO. 17230, Rev 8-89

E.1.0 52.252-02 CLAUSES INCORPORATED BY REFERENCE (APR 1984)
This Contract incorporates the following clauses by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available.

I. FEDERAL ACQUISITION REGULATION (48 CFR CHAPTER 1) CLAUSES
52-246-04 Inspection of Services - Fixed-Price (Apr 1984)

E.2.0 INSPECTION:
The Contracting Officer will make periodic inspections as a basis for payments and recommendations for adjustments in work quality. The Contractor is encouraged to observe inspections while they are being made and have a supervisor on site to confer with the Contracting Officer.

E.3.0 ACCEPTANCE:
Work performed according to the specifications and Part III will be considered acceptable for payment purposes.

4.1 METHOD OF MEASUREMENT

A. Units: The work described in this section will not be measured for payment.

4.2 BASIS OF PAYMENT

A. Payment: No direct payment for the work described under this section will be made. Consideration for this item shall be included in the bid price for other items of the Contract.

END OF SECTION

FINDING OF NO SIGNIFICANT IMPACT & DECISION RECORD
FOR
Lance Oil & Gas, Inc.
Coal Gulch/Highland Unit
ENVIRONMENTAL ASSESSMENT –WY-070-04-161

DECISION: It is my decision to approve Alternative C as described in the attached Environmental Assessment (EA) and authorize the Lance Oil & Gas, Inc.'s Coal Gulch/Highland Unit Coal Bed Natural Gas (CBNG) POD comprised of the following 19 Applications for Permit to Drill (APDs), as follows:

Name	Number	TWP	RNG	SEC	QTR	Lease Number
Highland Unit Fed.	12-22	51N	78W	22	SWNW	WYW149364
Highland Unit Fed.	14-22	51N	78W	22	SWSW	WYW149364
Highland Unit Fed.	21-22	51N	78W	22	NENW	WYW149364
Highland Unit Fed.	23-22	51N	78W	22	NESW	WYW149364
Highland Unit Fed.	24-22	51N	78W	22	SESW	WYW149364
Highland Unit Fed.	32-22	51N	78W	22	SWNE	WYW149364
Highland Unit Fed.	41-22	51N	78W	22	NENE	WYW149364
Highland Unit Fed.	43-22	51N	78W	22	NESE	WYW149364
Highland Unit Fed.	12-23	51N	78W	23	SWNW	WYW149364
Highland Unit Fed.	14-23	51N	78W	23	SWSW	WYW149364
Coal Gulch Fed.	12-26	51N	78W	26	SWNW	WYW148215
Coal Gulch Fed.	14-26	51N	78W	26	SWSW	WYW148215
Coal Gulch Fed.	12-27	51N	78W	27	SWNW	WYW146349
Coal Gulch Fed.	13-27	51N	78W	27	NWSW	WYW146349
Coal Gulch Fed.	21-27	51N	78W	27	NENW	WYW146349
Coal Gulch Fed.	32-27	51N	78W	27	SWNE	WYW153355
Coal Gulch Fed.	34-27	51N	78W	27	SWSE	WYW153355
Coal Gulch Fed.	41-27	51N	78W	27	NENE	WYW153355
Coal Gulch Fed.	43-27	51N	78W	27	NESE	WYW153355

This approval is subject to adherence with all of the operating plans and mitigation measures contained in the Master Surface Use Plan of Operations, Drilling Plan, Water Management Plan, and information in individual APDs. This approval is also subject to operator compliance with all mitigation and monitoring requirements contained within the Powder River Oil and Gas Project Environmental Impact Statement and Resource Management Plan Amendment (PRB FEIS) approved April 30, 2003.

RATIONALE: The decision to authorize Alternative C, as described in the attached Environmental Assessment (EA), is based on the following:

- The Operator, in their Plan of Development, has committed to:
    - Comply with all applicable Federal, State and Local laws and regulations.
    - Obtain the necessary permits from other agencies for the drilling, completion and production of these wells including water rights appropriations, the installation of water management facilities, water discharge permits, and relevant air quality permits.
    - Provide water well agreements to the owners of record for permitted water wells within the area of influence of the action.
    - Provide water analysis from a designated reference well in each coal zone.

- Alternative C will not result in any undue or unnecessary environmental degradation.
- It is in the public interest to approve these wells, as the leases are being drained of federal gas, resulting in a loss of revenue for the government.
- Mitigation measures applied by the BLM will alleviate or minimize environmental impacts.
- Alternative C is the environmentally-preferred Alternative.
- The proposed action is in conformance with the PRB FEIS and the Approved Resource Management Plan for the Public Lands Administered by the Bureau of Land Management (BLM), Buffalo Field Office, April 2001.
- Based on current information, we determined that no significant impacts in the spread of WNV would occur from the implementation of this project.

FINDING OF NO SIGNIFICANT IMPACT: Based on the analysis of the potential environmental impacts of the proposed action in the attached environmental assessment, I have determined that NO significant impacts are expected and, therefore, an environmental impact statement is not required.

ADMINISTRATIVE REVIEW AND APPEAL: Under BLM regulations, this decision is subject to administrative review in accordance with 43 CFR 3165. Any request for administrative review of this decision must include information required under 43 CFR 3165.3(b) (State Director Review), including all supporting documentation. Such a request must be filed in writing with the State Director, Bureau of Land Management, P.O. Box 1828, Cheyenne, Wyoming 82003, no later than 20 business days after this Decision Record is received or considered to have been received.

Any party who is adversely affected by the State Director's decision may appeal that decision to the Interior Board of Land Appeals, as provided in 43 CFR 3165.4.

/s/ Dennis R. Stenger 7/30/2004

Field Manager: _____ Date: _____

BUREAU OF LAND MANAGEMENT
BUFFALO FIELD OFFICE
ENVIRONMENTAL ASSESSMENT (EA)
FOR
Lance Oil & Gas, Inc.
Coal Gulch/Highland Unit
PLAN OF DEVELOPMENT
WY-070-04-161

INTRODUCTION

This site-specific analysis tiers into and incorporates by reference the information and analysis contained in the Powder River Basin Oil and Gas Project Environmental Impact Statement and Resource Management Plan Amendment (PRB FEIS), #WY-070-02-065 (approved April 30, 2003), pursuant to 40 CFR 1508.28 and 1502.21. This document is available for review at the Buffalo Field Office. This project EA addresses site-specific resources and/or impacts that are not covered within the PRB FEIS.

1 PURPOSE AND NEED

The purpose for the proposal is to define and produce coal bed natural gas (CBNG) on one or more valid federal oil and gas mineral leases issued to the applicant by the BLM. Analysis has determined that federal CBNG is being drained from the federal leases by surrounding fee or state mineral well development. The need exists because without approval of the Applications for Permit to Drill (APDs), federal lease royalties will be lost and the lessee will be deprived of the federal gas they have the rights to develop.

1.1 Conformance with Applicable Land Use Plan and Other Environmental Assessments:

The proposed action is in conformance with the terms and the conditions of the Approved Resource Management Plan for the Public Lands Administered by the Bureau of Land Management, Buffalo Field Office (BFO), April 2001 and the PRB FEIS, as required by 43 CFR 1610.5

2 ALTERNATIVES INCLUDING THE PROPOSED ACTION

2.1 Alternative A - No Action

A No Action Alternative was considered in the PRB FEIS Volume 1, pages 2-54 through 2-62. This alternative would consist of no new federal wells. An oil and gas lease grants the lessee the "right and privilege to drill for, mine, extract, remove, and dispose of all oil and gas deposits" in the lease lands, "subject to the terms and conditions incorporated in the lease." Thus, under this alternative, the operator's proposal would be denied.

2.2 Alternative B Proposed Action

Description of the Proposed Action: The main, existing two-track access road is proposed to be upgraded to an improved road (including utility corridor) and is approximately 4.35 miles in length (15.82 acres, 30' width). The approximate amount of proposed two-track access roads including utilities is 2.73 miles (4.63 acres, 14' width). There are no existing or proposed screw compressors.

Proposed Action Title/Type: Lance Oil & Gas, Inc.'s Coal Gulch/Highland Unit Plan of Development (POD) for 19 coal bed natural gas well APD`s and associated infrastructure.

Proposed Well Information: There are 19 wells proposed within this POD, as follows:

Name	Number	TWP	RNG	SEC	QTR	Lease Number
Highland Unit Fed.	12-22	51N	78W	22	SWNW	WYW149364
Highland Unit Fed.	14-22	51N	78W	22	SWSW	WYW149364
Highland Unit Fed.	21-22	51N	78W	22	NENW	WYW149364
Highland Unit Fed.	23-22	51N	78W	22	NESW	WYW149364
Highland Unit Fed.	24-22	51N	78W	22	SESW	WYW149364
Highland Unit Fed.	32-22	51N	78W	22	SWNE	WYW149364
Highland Unit Fed.	41-22	51N	78W	22	NENE	WYW149364
Highland Unit Fed.	43-22	51N	78W	22	NESE	WYW149364
Highland Unit Fed.	12-23	51N	78W	23	SWNW	WYW149364
Highland Unit Fed.	14-23	51N	78W	23	SWSW	WYW149364
Coal Gulch Fed.	12-26	51N	78W	26	SWNW	WYW148215
Coal Gulch Fed.	14-26	51N	78W	26	SWSW	WYW148215
Coal Gulch Fed.	12-27	51N	78W	27	SWNW	WYW146349
Coal Gulch Fed.	13-27	51N	78W	27	NWSW	WYW146349
Coal Gulch Fed.	21-27	51N	78W	27	NENW	WYW146349
Coal Gulch Fed.	32-27	51N	78W	27	SWNE	WYW153355
Coal Gulch Fed.	34-27	51N	78W	27	SWSE	WYW153355
Coal Gulch Fed.	41-27	51N	78W	27	NENE	WYW153355
Coal Gulch Fed.	43-27	51N	78W	27	NESE	WYW153355

County: Johnson

Applicant: Lance Oil & Gas, Inc.

Surface Owners: BLM

The proposed action involves the development of the project, which includes the following:

- Drilling of 19 total federal CBM wells in Fort Union coal zone to depths of approximately 1,900 feet.

- Development of a cluster of groundwater monitor wells in SESE 25, T51N, R78W. See section F. Monitor Well Drilling Guidelines; 7/13/04, page 12, in the Conditions of Approval.

- An unimproved and improved road network.

- A water management plan that involves the following infrastructure and strategy: Treatment and discharge of produced water to the mainstem of the Upper Powder River. Treatment facility located at an existing reservoir site in Section 36, T51N, R78W.

- A buried gas, water and power line network, and no central gathering/metering facilities or compression facilities.

For a detailed description of design features, construction practices and water management strategies associated with the proposed action, refer to the Master Surface Use Plan, Drilling Plan and Water Management Plan in the Plan of Development (POD) and individual APDs. Also see the subject POD and/or APDs for maps showing the proposed well locations and associated facilities described above. More information on CBNG well drilling, production and standard practices is also available in the PRB FEIS, Volume 1, pages 2-9 through 2-40 (January 2003).

Implementation of committed mitigation measures contained in the Master Surface Use Plan, Drilling Program and Water Management Plan, in addition to the Standard Conditions of Approval contained in the PRB FEIS Record of Decision Appendix A, are incorporated and analyzed in this alternative.

Additionally, the Operator, in their Plan of Development, has committed to:

- Comply with all applicable Federal, State and Local laws and regulations.
- Obtain the necessary permits for the drilling, completion and production of these wells including water rights appropriations, the installation of water management facilities, water discharge permits, and relevant air quality permits.
- Provide water well agreements to the owners of record for permitted water wells within the area of influence of the action.
- Provide water analysis from a designated reference well in each coal zone.

2.3 Alternative C – Environmentally Preferred

Modifications, or alternatives, to the original proposal received from the operator, were identified as the result of the pre-approval onsite inspection. At the on-site, all areas of proposed surface disturbance were inspected to ensure that potential impacts to natural resources would be minimized. In some cases, access roads were re-routed, and well locations, pipelines, discharge points and other water management control structures were moved, modified, mitigated or dropped from further consideration to alleviate or minimize environmental impacts. Alternatives to the different aspects of the proposed action are always considered and applied as pre-approval changes, site specific mitigation and/or Conditions of Approval (COAs), if they will alleviate or minimize environmental effects of the operator's proposal. The specific changes identified for the Coal Gulch/Highland Unit POD are listed below under 2.3.1:

2.3.1 Changes as a result of the on-site

1. Highland Unit Federal 12-22-5178: For safety concerns, spot upgrades will be done to the two-track access road and to reserve sage grouse habitat, the location will be brush hogged.
2. Highland Unit Federal 14-22-5178: Due to the close proximity of a drainage, the pit will be lined. An 18" culvert will be installed in the drainage of the proposed access road. Culvert will be installed to BLM standards and specifications.
1. Highland Unit Federal 21-22-5178: Pad will be designed and the pit will be lined. Expedient reclamation will be done on the location area following completion of the drilling of the well.
2. Highland Unit Federal 24-22-5178: Due to the close proximity of a drainage, the pit will be lined.
3. Highland Unit Federal 32-22-5178: Due to the close proximity of a drainage area, the well was moved southeasterly approximately 100 feet. A vehicle turnout will be incorporated into the proposed location.
4. Highland Unit Federal 41-22-5178: Spot upgrades will be done on the proposed access road.
5. Highland Unit Federal 43-22-5178: Proposed two-track access road will be brush hogged.
6. Highland Unit Federal 14-23-5178: To reduce surface disturbance, the proposed location was moved approximately 450 feet northerly to a wider and flatter area. Pit will be lined.
7. Coal Gulch Unit Federal 12-26-5178: Pit will be lined.
8. Coal Gulch Federal 13-27-5178: Due to the close proximity of a drainage, the pit will be lined.
9. Coal Gulch Federal 21-27-5178: Existing two-track road, going past the proposed well location in a northerly direction-to the top of the hill, will be reclaimed.
10. Coal Gulch Unit Federal 23-27-5178: Due to Wildlife concerns, there will be no approval for drilling, installation of any infrastructure for production equipment or facilities, or any proposed access to this proposed well location.
11. Coal Gulch Unit Federal 34-27-5178: Proposed access will have some spot upgrades and the hilltop area will be reclaimed.
12. Coal Gulch Unit Federal 41-27-5178: Proposed two-track access road will have some spot upgrades and the access will be brush hogged to temporarily remove the vegetation.

2.3.2 Programmatic mitigation measures identified in the PRB FEIS ROD

Programmatic mitigation measures are those, determined through analysis, which may be appropriate to apply at the time of APD approval if site specific conditions warrant. These mitigation measures can be applied by BLM, as determined necessary at the site-specific NEPA APD stage, as *Conditions of Approval* (COAs) and will be in addition to stipulations applied at the time of lease issuance and any standard conditions of approval.

1. All stock tanks will be equipped with BLM approved wildlife escape ramps in order to reduce wildlife loss.

2. During construction, emissions of particulate matter from well pad and resource road construction will be minimized by application of water, or other dust suppressants, with at least 50 percent control efficiency. Roads and well locations constructed on soils susceptible to wind erosion could be appropriately surfaced or otherwise stabilized to reduce the amount of fugitive dust generated by traffic or other activities, and dust inhibitors (surfacing materials, non-saline dust suppressants, and water) could be used as necessary on unpaved collector, local and resource roads that present a fugitive dust problem. The use of chemical dust suppressants on BLM surface will require prior approval form the BLM authorized officer.

3. Wildlife species are dynamic and new individuals may have moved into the Highland and Coal Gulch project area after the initial wildlife surveys were completed. The Record of Decision for the PRB FEIS includes a programmatic mitigation measure that states, "The companies will conduct clearance surveys for threatened and endangered or other special-concern species at the optimum time". The measure requires companies to coordinate with the BLM before November 1 annually to review the potential for disturbance and to agree on inventory parameters. Should this project not be completed by January 15, and surface disturbance is planned for that year, Lance will coordinate with the BLM to determine if additional surveys will be required.

2.3.3 Site specific mitigation measures

1. A monitor well will be drilled in SESE 25, T51N, R78W. Please see monitor well drilling guidelines (Section F, page 11) in the Conditions of Approval.

2. Prior to commencement of any construction activities; all proposed access routes, pipelines, culvert placements, spot upgrades, etc., will be staked.

3. To prevent unneeded surface disturbance, such as excessive rutting, no access or surface disturbing activities will be authorized during wet conditions. All operations will cease until more favorable conditions occur.

4. No surface disturbing activity shall occur within ½ mile of all identified raptor nests from February 1 through July 31, annually, prior to a raptor nest occupancy survey for the current breeding season.

5. If an undocumented raptor nest is located during project construction or operation, the Buffalo Field Office (307-684-1100) shall be notified within 24 hours.

6. Power lines will be built to standards identified by the Avian Power Line Interaction Committee (1996) and additional USFWS specifications to minimize electrocution potential (T&C6).

7. Creation of raptor hunting perches will be avoided within 0.5-mile of a documented sage grouse lek site. Perch inhibitors will be installed to deter avian predators from preying on sage grouse.

8. No surface disturbing activities are permitted within 2 miles of the sage grouse lek located in Section 27, T51N, R78W, between March 1 and June 15, prior to completion of a greater sage grouse lek survey**. This condition will be implemented on an annual basis for the duration of surface disturbing activities.**

    a. If an active lek is identified during the survey, the 2 mile timing restriction (March 1-June 15) will be applied and surface disturbing activities will not be permitted until after the nesting season. If surveys indicate that the identified lek is inactive during the current breeding season, surface disturbing activities may be permitted within the 2 mile buffer until the following breeding season (March 1). The required sage grouse survey will be conducted by a BLM approved biologist following WGFD protocol. All survey results shall be submitted in writing to a Buffalo BLM biologist and approved prior to surface disturbing activities.

9. Noise from industrial development shall not exceed 49 decibels at identified sage grouse lek sites.

10. Well metering, maintenance and other site visits within 0.5 miles of a documented sage grouse lek site shall be minimized as much as possible during the breeding season (March 1– June 15), and restricted to between 0900 and 1500 hours. This stipulation applies to the construction traffic on the proposed improved road within 1/4 mile of the lek site.

11. No discharge of federally produced water is permitted to the reservoir currently sited in section 36, T51N, R78W.

12. The final brine pond that holds the effluent waste stream from the treatment facility must be netted to protect wildlife.

13. No discharge of federal water from this POD is approved without submitting an approved NPDES permit to the authorized officer.

14. This analysis is for treat and discharge only: Any changes to the approved water management strategy will require sundries and additional submittals to BLM/BFO.

15. All disturbances associated with and above the ordinary high water line of the treatment facility reservoir must be revegetated before October 15 of 2004.

16. The treated water discharge point on the Powder River must be sited above the 25 year flood high water line, and the discharge water carried non-erosively to the Powder River.

17. All off channel pits must be bonded, including the treatment pits.

18. Springs in the POD area must be monitored yearly, and the water quality and flow data submitted to the BLM authorized officer

19. The reservoir that is located in section 36, T51N, R78W must be fenced to protect wildlife.

The above changes and mitigation measures to the proposed action resulting from the on-site will be analyzed in ALTERNATIVE C.

Implementation of committed mitigation measures contained in the Master Surface Use Plan, Drilling Program and Water Management Plan, in addition to the Standard Conditions of Approval contained in the PRB FEIS Record of Decision Appendix A, are incorporated and analyzed in this alternative. All permanent above-

ground structures (e.g., production equipment, tanks, etc.) not subject to safety requirements will be painted to blend with the natural color of the landscape. The paint used will be a color which simulates "Standard Environmental Colors." The color selected for the Coal Gulch/Highland POD is Carlsbad Canyon, 2.5Y 6/2.

Please contact David G. Seward, Natural Resource Specialist, @ (307) 684-1043, Bureau of Land Management, Buffalo, if there are any questions concerning these surface use COAs.

2.4 Alternatives considered but not analyzed in detail

The operator (Lance Oil and Gas) submitted an alternative water management strategy that involved the storage and retention of produced water in new reservoirs. At the time of the review, sufficient detail was lacking to assess the consequences of this strategy. If the treat and discharge scenario for this POD is not realized, the operator will have to provide additional details for the reservoirs and NPDES permits before discharge of federal water, and the onsite review of the reservoirs.

3 DESCRIPTION OF AFFECTED ENVIRONMENT

Applications to drill were received on March 8, 2004. Field inspections of the proposed Coal Gulch/Highland Unit CBM project were conducted on 5/11/2004 by Mark Sydnor, Tim Kalus, John Bartow, LD Gilbert, Arlene Kosic, Bill Ostheimer, Ken Peacock, Steve Janzen, and David G. Seward.

This section describes the affected environment that would be affected by implementation of the Alternatives described in Section 2. Aspects of the affected environments described in this section focus on the relevant major issues. Certain critical environmental components require analysis under BLM policy. These items are presented below in Table 3.1.

Table 3.1 - Critical elements requiring mandatory evaluation are presented below.

Mandatory Item	Potentially Impacted	No Impact	Not Present On Site	BLM Evaluator
Threatened and Endangered Species	X			Kosic
Floodplains	X			Ken Peacock
Wilderness Values			X	David G. Seward
ACECs		X		David G. Seward
Water Resources	X			Ken Peacock
Air Quality		X		David G. Seward
Cultural or Historical Values			X	Robert C. Wilson
Prime or Unique Farmlands			X	David G. Seward
Wild & Scenic Rivers			X	David G. Seward
Wetland/Riparian	X			Ken Peacock
Native American Religious Concerns			X	Robert C. Wilson
Hazardous Wastes or Solids		X		David G. Seward
Invasive, Nonnative Species	X			David G. Seward

Mandatory Item	Potentially Impacted	No Impact	Not Present On Site	BLM Evaluator
Environmental Justice		X		David G. Seward

3.1 Topographic Characteristics of Project Area

The proposed Coal Gulch/Highland Unit POD is east of the City of Buffalo, Wyoming in Johnson County. Access is through the Kennedy Ranch, off the Lower Powder River Road, approximately 10.3 miles north of Interstate 90. The topography is typical of the Powder River Breaks with numerous draws and prominent ridgelines, with elevations ranging from approximately 4,200 to 4,600 feet above sea level. The area has a wide variety of uses, including habitat for the many species of wildlife inhabiting the area, but the development taking place of Coal Bed Natural Gas, conventional oil and gas, and ranching.

3.2 Vegetation & Soils

Species typical of short grass prairie comprise the project area flora. Specific species observed throughout the project area include Sagebrush, Fringed sagewort, Bluebunch, Prairie Junegrass, Treadleaf sedge, Needle and thread, and some cheatgrass. Differences in dominant species within the project area vary with soil type, aspect and topography.

Using the Natural Resource Conservation Service, (NRCS, USDA), Technical Guides for the Major Land Resource Area 58B Northern Rolling High Plains, in the 10-14" Northern Plains precipitation zone, the landforms and the soils of this site vary little throughout the proposed POD area, with some Sandy and Sandy Loam areas, but the dominant soil is Loamy. Soils differ with topographic location, slope and elevation. Topsoil depths to be salvaged for reclamation range from 4 to 8 inches on ridges 8 to 12 inches in bottomland. Erosion potential varies from slight to moderate depending on the soil type, vegetative cover and slope. Reclamation potential of soils also varies throughout the project area but the NRCS technical guide rates this area as fair.

The Loamy soils of this site are deep to moderately deep (greater than 20" to bedrock), well drained & moderately permeable. Layers of the soil most influential to the plant community varies from 3 to 6 inches thick. These layers consist of the A horizon with very fine sandy loam, loam, or silt loam texture and may also include the upper few inches of the B horizon with sandy clay loam, silty clay loam or clay loam texture

Due to the higher elevations, some areas have a Shallow-Loamy type of soil classification, the soils of this site are shallow (less than 20"to bedrock) well-drained soils formed in alluvium over residuum or residuum. These soils have moderate permeability and may occur on all slopes. The bedrock may be any kind which is virtually impenetrable to plant roots, except igneous. The surface soil will have one or more of the following textures: very fine sandy loam, loam, silt loam, sandy clay loam, silty clay loam, and clay loam. Thin ineffectual layers of other textures are disregarded. Layers of the soil most influential to the plant community vary from 3 to 6 inches thick.

3.2.1 Wetlands/Riparian/Floodplains

The Powder River is a main tributary to the Missouri River via the Yellowstone River. It is an interstate river that drains millions of acres with a widely varying flow regime. At the hydrograph peak, the Powder often flows greater than 10,000 cfs at Arvada, Wyoming. Low peak flows at the same gage are in the 100's of cfs. This reflects a highly variable stream with large areas of floodplain inundation and potential for wetland and riparian development.

Wetland and riparian systems on the main stem of the Powder River may be affected by direct discharge of treated water. The Powder River System is so large and extensive that wetlands and riparian communities are common, extensive and adapted to the natural range of flow and water quality conditions of the Powder River.

3.2.2 Invasive Species

No state-listed noxious weeds and invasive/exotic plant infestations were discovered by a search of inventory maps and/or databases or during subsequent field investigation by the proposed project proponent.

3.3 Wildlife

The topography throughout the Highland and Coal Gulch project area is classic Powder River breaks, cut by numerous draws with prominent ridgelines. Elevation ranges from 4,200 to 4,570 feet above sea level. The major vegetation community in the survey area is sagebrush and native grasses. The most common tree in the project area is juniper. Current land uses within the project area include livestock grazing (Maechtle 2003). Wildlife species common to prairie and sagebrush habitats are identified in the Final Environmental Impact Statement and Proposed Plan Amendment for the Powder River Basin Oil and Gas Project (PRB FEIS 3-114).

The habitat types within the Highland and Coal Gulch Unit project area are of importance to many wildlife species. Prior to project approval several resources were consulted to identify wildlife species that may occur in the proposed project area. Resources that were consulted include the wildlife database compiled and managed by the BLM Buffalo Field Office (BFO) wildlife biologists, the PRB FEIS, the Wyoming Game and Fish Department (WGFD) big game and sage grouse maps, the Wyoming Natural Diversity Database (WYNDD), and a wildlife survey report prepared by Big Horn Environmental Consultants (Big Horn). A Biological Assessment (Kosic and Bills 2004) was completed by a BLM biologist prior to project approval. The Biological Assessment was submitted to the USFWS for formal consultation. Species that have been identified in the project area or that have been noted as being of special importance are described below.

3.3.1 Big Game

Big game species expected to be within the project area include pronghorn, mule deer, and elk. The WGFD has determined the entire project area to be Yearlong range for pronghorn and Winter/Yearlong for mule deer. **Yearlong** use is when a substantial portion of a population makes general use of the habitat on a year-round basis. **Winter/Yearlong** use is when a population of animals make general use of suitable habitat sites within a range on a year-round basis. During the winter months there is a significant influx of additional animals into the area from other seasonal ranges.

Elk were observed in the project area in May of 2004. The proposed project area is located less than three miles west of Fortification Creek. There are approximately 122,931 acres of elk ranges within Fortification Creek. Crucial winter, parturition, winter yearlong, and yearlong ranges occur with varying degrees of overlap in the Fortification Creek area. In Wyoming elk occur throughout the state in a variety of habitats. Elk rely on a combination of browse, grasses and forbs, depending on their availability throughout the seasons. Elk are migratory, moving between summer and winter ranges. Extensive on going and future CBNG development were noted in the PRB FEIS as a potential management concern for the Fortification Creek elk herd unit. Big game range maps are available in the PRB FEIS (3-119-143), the project file, and from the WGFD.

3.3.2 Aquatics

The Highland and Coal Gulch POD is located within the Kinney Draw and N. Fork Coal Gulch watersheds. The Highland and Coal Gulch POD proposes 7 reservoirs and 6 discharge points. The discharge for all produced CBNG water will be piped to an existing off-channel treatment unit in Section 36, T51N, R78W. Treated water will then be discharged into two on-channel units for subsequent discharge to Deer Gulch.

Kinney Draw and N. Fork Coal Gulch are intermittent to ephemeral drainages flowing mostly in response to rainfall and snowmelt (CBM Associates 2004). The Wyoming Department of Environmental Quality (DEQ) regulates effluent discharge through the National Pollution Discharge Elimination System in compliance with the Federal Water Pollution Control Act and the Wyoming Environmental Quality Act. The Wyoming DEQ established effluent limits for the protection of game and non game, aquatic life other than fish, wildlife, and other water uses. Impact to any downstream fish species will likely be minimal. Fisheries will not be discussed any further in this document.

3.3.3 Migratory Birds

A wide variety of migratory birds may be found in the proposed project area at some point throughout the year. Migratory birds are those that migrate for the purpose of breeding and foraging at some point in the calendar year. Migratory bird species of management concern that may occur in the project area are listed in the PRB FEIS (3-151).

3.3.4 Raptors

No raptor nests were located within the project area by Big Horn and no historical records of raptors have been recorded in the BLM database.

3.3.5 Threatened and Endangered Species and Sensitive Species:

3.3.5.1 Threatened and Endangered Species

Within the BLM Buffalo Field Office there are five species that are Threatened, Endangered, or Candidate for listing under the Endangered Species Act. Threatened and Endangered Species that are known to occur in the proposed project area are discussed below.

3.3.5.1.1 Black-Footed Ferret

The black-footed ferret is an endangered species that is closely associated with prairie dogs. A black-footed ferret requires at least 80 acres of black-tailed prairie dog colony for survival. Big Horn did not identify prairie dog towns within the project area. As no prairie dog towns exist, there will be no effect to black-footed ferrets. Additionally, the Wyoming Game and Fish Department believes the combined effects of poisoning and sylvatic plague on black-tailed prairie dogs have greatly reduced the likelihood of a black-footed ferret population persisting east of the Big Horn Mountains (Grenier 2003). The USFWS have also concluded that black-tailed prairie dog colonies within Wyoming are unlikely to be inhabited by black-footed ferrets (Kelly 2004). The black-footed ferret will not be discussed further in this document.

3.3.5.1.2 Bald Eagle

The U.S. Fish and Wildlife Service lists bald eagles as threatened through out Wyoming. Eagles typically build nests in the crown of large mature trees such as cottonwoods or conifers that are close to a reliable aquatic prey source. Fish and waterfowl are the primary prey for nesting eagles; however prairie dogs, big game and livestock carrion may also be part of their diet, particularly in winter. Winter roosts are typically associated with cottonwood galleries or coniferous trees. Although many roosts are near water bodies, upland ponderosa pine stands are also important as they provide thermal cover (Anderson and Patterson, 1988).

The Highland and Coal Gulch project area is marginally suited for bald eagle roosting and nesting. Few scattered cottonwoods are found throughout the project area and a significant water body with a reliable prey base is present. The Highland and Coal Gulch POD is located approximately two miles from the Powder River. Bald eagle surveys conducted by Big Horn in 2003 and 2004 have not documented bald eagle roost or

nest sites within the project area. Additionally, aerial surveys conducted by the BLM in December of 2003 and January of 2004 have not documented bald eagle roost sites in the project area. The majority of the Powder River was frozen at the time of the surveys, only individual birds were observed. There are also no bald eagle nests or roosts in the project vicinity documented in the BLM database, WGFD records, or published literature (Patterson and Anderson, 1985; Jenkins et al., 1980).

3.3.5.1.3 Canada Lynx

Canada lynx is a threatened species in Wyoming which occurs primarily in spruce-fir and lodgepole pine forests with 8-12 degree slopes at elevations between 7,995-9,636 feet (Ruggiero et al., 1999). Conifer forests are not present and elevations within the Highland and Coal Gulch project area range between 4,200 to 4,570 feet. Suitable Canada lynx habitat is not present within the project area. The Canada lynx will not be discussed any further in this document.

3.3.5.1.4 Ute Ladies'-Tresses Orchid

Ute ladies'-tresses orchid is a threatened species that occurs primarily on moist, sub-irrigated or seasonally flooded soils in valley bottoms, gravel bars, old oxbows, or floodplains bordering springs, lakes, rivers, or perennial streams at elevations between 1, 780 and 6, 800 feet (PRB FEIS 3-177). The orchids are known to occur in Converse County along a tributary of Antelope Creek. Wetland habitat for Ute ladies'-tresses orchid does not exist within the project area (Maechtle 2004). No roads or ancillary facilities are proposed in potential Ute ladies' tresses orchid habitat. CBNG discharges may disrupt surface activities as normally dry ephemeral drainages become perennially wet due to constant discharge of CBNG water. Kinney Draw and N. Fork Coal Gulch are intermittent to ephemeral drainages flowing mostly in response to precipitation and snowmelt. There will be no effect to Ute ladies-tress' orchids. This species will not be discussed further in this document.

3.3.5.1.5 Black-Tailed Prairie Dog

The black-tailed prairie dog is a candidate species. Candidate species are those species for which the USFWS has sufficient information on biological vulnerability and threats to warrant issuance of a proposed rule for listing, but for which publication of a proposed rule is precluded by other higher priority listing actions (PRB FEIS 3-172). Big Horn did not identify prairie dog towns within the project area. Prairie dogs will not be discussed further in this document.

3.3.5.2 Sensitive Species

The Wyoming USDI - Bureau of Land Management (BLM) has prepared a list of sensitive species to focus species management efforts toward maintaining habitats under a multiple use mandate. The authority for this policy and guidance comes from the Endangered Species Act of 1973, as amended; Title II of the Sikes Act, as amended; the Federal Land Policy and Management Act (FLPMA) of 1976; and Department of Interior Manual 235.1.1A. Sensitive species that are known to occur in the proposed project area are discussed below.

3.3.5.2.1 Greater Sage Grouse

Greater sage grouse are found in prairie, sagebrush shrublands, other shrublands, wet meadows, and agricultural areas; they depend upon substantial sagebrush stands for nesting and winter survival (PRB FEIS 3-194-196). The project area is comprised of prairie and sagebrush communities. BLM biologists identified sage grouse droppings in Section 27, T51N, R78W during the onsite visit. The droppings were found in a relatively flat and heavily grazed area. Big Horn also observed two male sage grouse strutting in Section 27 during the surveys conducted in 2004 (Maechtle verbal communication). The area was determined to be an active lek site. The 23-27 well and its associated infrastructure are proposed within ¼ mile of the lek site.

3.3.5.2.2 Mountain Plover

Mountain plovers are a common breeding resident within the Powder River Basin. This species uses high, dry, short grass prairie with vegetation typically shorter than 4 inches tall. Plover nest sites are associated with heavily grazed short-grass vegetation with slopes less than 5 percent, typically found in prairie dog colonies (PRB FEIS 3-178). Mountain plover habitat does not exist within the Highland and Coal Gulch project area. All of the terrain within the project area is sloped greater than 10 percent. The grassland component is well established and averaging greater than 8 inches with minimal bare ground. Additionally, no prairie dog towns are located within the project area (Maechtle 2003). A map modeling habitat suitability is available at the Buffalo Field Office.

3.4 West Nile Virus

West Nile virus (WNV) is a mosquito-borne disease that can cause encephalitis or brain infection. Mosquitoes spread this virus after they feed on infected birds and then bite people, other birds, and animals. WNV is not spread by person-to-person contact, and there is no evidence that people can get the virus by handling infected animals.

Since its discovery in 1999 in New York, WNV has been firmly established in the United States and has continued to spread west. Birds are the natural vector/host and serve not only to amplify the virus, but spread it rapidly throughout the country; they are the only known animal to infect mosquitoes. Though less than 1% of mosquitoes are infected with WNV, they still are very effective in transmitting the virus to humans, horses, and wildlife. The *Culex* genus appears to be the most important mosquito group that vector, WNV.

The human health issues related to WNV are well documented and may continue to escalate as the virus moves west. In Wyoming, 392 human cases, with 8 deaths, were attributed to the WNV in 2003. Human cases of WNV in Wyoming occur primarily in the late summer or early fall. There is some evidence that the incidence of WNV tapers off over several years after a peak following initial outbreak (Litzel and Mooney, personal conversations). If this is the case, occurrences in Wyoming are likely to increase over the next few years, followed by a gradual decline in the number of reported cases.

Although most of the attention has been focused on human health issues, WNV has had an impact on vertebrate wildlife populations. At a recent conference at the Smithsonian Environmental Research Center, scientists disclosed WNV had been detected in 157 bird species, horses, 16 other mammals, and alligators (Marra et al 2003). In the eastern US, avian populations have incurred very high mortality, particularly crows, jays and related species. Raptor species also appear to be highly susceptible to WNV. During 2003, 36 raptors were documented to have died from WNV in Wyoming including Golden eagle, red-tailed hawk, ferruginous hawk, American kestrel, Cooper's hawk, northern Goshawk, great-horned owl, prairie falcon, and Swainson's hawk (Cornish et al. 2003). Actual mortality is likely to be greater. Population impacts of WNV on raptors are unknown at present. The Wyoming State Vet Lab determined 22 sage-grouse in one study project (90% of the study birds), succumbed to WNV in the PRB in 2003. While birds infected with WNV have many of the same symptoms as infected humans, they appear to be more sensitive to the virus (Rinkes 2003).

Mosquitoes can potentially breed in any standing water that lasts more than 4 days. In the Powder River Basin, there is generally increased surface water availability associated with CBNG development. This increase in potential mosquito breeding habitat provides opportunities for mosquito populations to increase. Preliminary research conducted in the Powder River Basin indicates WNV mosquito vectors were notably more abundant on a developed CBNG site than two similar undeveloped sites (Walker et al. 2003). Reducing the population of mosquitoes, especially species that are apparently involved with bird-to-bird transmission of WNV, such as some *Culex* species, can help to reduce or eliminate the presence of virus in a given geographical area (APHIS 2002). The most important step any property owner can take to control such

mosquito populations is to remove all potential man-made sources of standing water in which mosquitoes might breed (APHIS 2002).

The most common pesticide treatment is to place larvacidal briquettes in small standing water pools along drainages or every 100 feet along the shoreline of reservoirs and ponds. It is generally accepted that it is not necessary to place the briquettes in the main water body because wave action prevents this environment from being optimum mosquito breeding habitat. Follow-up treatment of adult mosquitoes with Malathion may be needed every 3 to 4 days to control adults following application of larvacide (Mooney, personal conversation). These treatment methods seem to be effective when focused on specific target areas, especially near communities, however they have not been applied over large areas nor have they been used to treat a wide range of potential mosquito breeding habitat such as that associated with CBNG development.

The WDEQ and the Wyoming Department of Health sent a letter to CBNG operators on June 30, 2004. The letter encouraged people employed in occupations that require extended periods of outdoor labor, to be provided educational material by their employers about WNV to reduce the risk of WNV transmission. The letter encouraged companies to contact either local Weed and Pest Districts or the Wyoming Department of Health for surface water treatment options.

3.5 Water Resources

The Coal Gulch project area is within the Upper Powder River 4th order watershed. The Upper Powder River watershed contains the main stem of the Powder River from near the confluence of the North, Middle and South forks of the Powder River on the south to near the Montana state line on the north. The watershed boundary to the north simply divides the mainstem Powder River into an Upper and Middle sections to limit watershed size. The Powder River leaves the State of Wyoming, flowing into Montana, near Moorhead, MT. At the time of the onsite inspections, live surface water within the POD boundary was limited to the channel of the Powder River. Coal Gulch and Deer Gulch are dry ephemeral channels; Lance has constructed a large reservoir in the upper reaches of Deer Gulch that is used as a full containment structure for CBNG discharges, and as the focus of their water treatment strategy.

The primary use of channelized surface water in the Powder River Basin is flood irrigation. The majority of the irrigation water rights are along streams, such as the Powder River, due to wider floodplains, more irrigable land, and perennial stream flow, although some irrigation rights do exist on intermittent streams. Impounded water in upland areas is primarily permitted with livestock watering as the beneficial use.

3.5.1 Groundwater

3.5.1.1 Groundwater Quality

Produced water chemical analysis utilizing an existing nearby well was submitted with the POD application. Produced groundwater should have a similar water quality signature to the sample provided. For the irrigation water quality parameters of EC, SAR and TDS, the sample indicates that an EC of 3950 umhos/cm, SAR of 37 and TDS of 2590 mg/l may be expected. Wyoming Department of Environmental Quality (WDEQ) water quality parameters for groundwater classifications (Chapter 8 – Quality Standards for Wyoming Groundwater) specifies the following limits for the same parameters: 500 mg/l TDS for drinking water (Class I), 2000 mg/l for Agricultural Use and 5000 mg/l for Livestock Use; a site specific SAR ranging from 8 to 10; with no quantitative limit for EC.

Two springs in the area were also sampled, from strata estimated to outcrop at 4300 ft above msl. The elevation of the springs is most likely from water bearing zones above the Big George coal. The water quality from both spring samples indicates that the water is highly mineralized with TDS and EC above the Livestock standard. Sulfate, Iron, Magnesium and Aluminum are also elevated well above the expected water quality of

water pumped from the coal. This zone could potentially be affected by infiltration of water produced from the coal impounded on the surface.

3.5.1.2 Groundwater Quantity

A search of the Wyoming State Engineers Office Ground Water Rights Database for this area showed 7 registered stock and domestic water wells within the POD boundary with total depth ranging from flowing at the surface (spring) to 875 feet below the surface. All existing wells are at depths over 500 feet above the target coal zone in the POD area. The intervening strata are generally of low permeability (0.13 to 1.33 ft/day), given the fine, interbedded nature of the Wasatch sediments (WWRC, 1997).

For additional information on water, please refer to the PRB FEIS (January 2003), Chapter 3, Affected Environment pages 3-1 through 3-36 (groundwater) and 3-36 through 3-56 (surface water).

3.5.2 Surface Water

The project area is within the North Fork Coal Gulch and Deer Gulch which are tributaries to the Upper Powder River 4th Order drainage system. Most of the drainages in the area are ephemeral (flowing only in response to a precipitation event or snow melt) to intermittent (flowing only at certain times of the year when it receives water from alluvial groundwater, springs, or other surface source – PRB FEIS Chapter 9 Glossary). The channels are variable, ranging from incised, eroding channels in the breaks in the west of the POD area to well vegetated grassy swales, often lacking defined bed and bank, nearer the Powder River.

The PRB FEIS presents the historic mean Electrical Conductivity (EC, in μmhos/cm) and Sodium Adsorption Ratio (SAR) by watershed at selected United States Geological Survey (USGS) Gauging Stations in Table 3-11. (PRB FEIS page 3-49). These water quality parameters "illustrate the variability in ambient EC and SAR in streams within the Project Area. The representative stream water quality is used in the impact analysis presented in Chapter 4 as the baseline for evaluating potential impacts to water quality and existing uses from future discharges of CBM produced water of varying chemical composition to surface drainages within the Project Area" (PRB FEIS page 3-48). For the Upper Powder River Watershed, the EC ranges from 1800 umhos/cm at maximum monthly flow to 3400 umhos/cm at low monthly flow; the SAR ranges from 4.76 at maximum monthly flow to 7.83 at low monthly flow. These values were determined at the USGS station located at Arvada, Wyoming (PRB FEIS page 3-49).

The operator has identified two natural springs within this POD boundary at T51N, R78W, Sections 16 and 29. The estimated flow of the springs is 5 gpm each, with a water quality of 6095 μmhos/cm conductivity, 6370 mg/l total dissolved solids and a sodium adsorption ratio (SAR) of 3 for the spring in section 16, and 5410 EC, 5590 TDS and 2.8 SAR for the Section 29 spring.

For more information regarding surface water, please refer to the PRB FEIS Chapter 3 Affected Environment pages 3-36 through 3-56.

3.6 Cultural Resources

Class III cultural resource inventories were conducted for the Coal Gulch/Highland Unit project prior to on-the-ground project work (BFO project no. CRT-04-037). Two new and no previously identified cultural properties were identified. Site JO2375 will be affected by the proposed undertaking but has been determined not eligible for the NRHP. Identification efforts have determined that the proposed undertaking will have **no effect** to historic properties. These items are presented below in Table 3.2.

Table 3.2 – Cultural Resource Inventories of Historical Properties are presented below.

Site Number	Site Type	Eligibility	Criteria	Affect?	Concurrence?
48JO1896	Historic Depression	not eligible		No	
48CA2375	Prehistoric lithic scatter	not eligible		Yes	

3.7 Other Mineral Resources

There are no other mineral resources that will be adversely impacted by the proposal.

4. ENVIRONMENTAL CONSEQUENCES

The changes to the proposed action plan of development, which resulted in development of Alternative C as the preferred alternative, have reduced the potential impact to the environment which will result from this action. The environmental consequences of Alternative C are described below.

4.1 Vegetation & Soils Direct and Indirect Effects

Overall impacts to vegetation and soils from surface disturbance should be minor, based on the operator's plans and BLM applied mitigation. Of the 19 proposed well locations, 14 can be drilled without a well pad being constructed and 5 will definitely require a constructed (cut & fill) well pad, the Coal Gulch Unit Federals 14-26-5178 and 43-27-5178, and the Highland Unit Federals 21-22-5178, 41-22-5178 and 32-22-5178. As such, minor surface disturbance would occur with the drilling of the majority of the wells. This disturbance would only involve minor digging-out of rig wheel wells (for leveling drill rig on minor slopes), reserve pit construction (estimated approximate size of 10 x 15 x 30 feet), and compaction (from vehicles driving/parking at the drill site).

Estimated disturbance associated with these 19 wells would involve approximately; 0.1 acre/well or 1.4 acres for the wells not needing a designed pad and the other 5 wells requiring cut & fill pad construction would disturb approximately 0.11 acres/well pad for a total of 0.55 acre. The total estimated disturbance for all 19 wells would be 1.95 acres. On the 14 well locations this would be a short-term, minor impact with expedient, successful reclamation and site-stabilization, as committed to by the operator in their POD Surface Use Plan and as required by BLM in Conditions of Approval (COAs). The 5 locations requiring cut/fill pads will need more extensive reclamation due to the increased amount of surface disturbance, and as mentioned earlier, successful reclamation and site-stabilization, as committed to by the operator in their POD Surface Use Plan and as required by BLM in Conditions of Approval (COAs), will ensure the locations will be re-vegetated and reclaimed.

Approximately 4.35 miles of improved roads would be constructed to provide access to various well locations. Approximately 3.59 miles of new and existing two-track trails would be utilized to access well sites. The majority of proposed pipelines (gas and water) have been located in "disturbance corridors." Disturbance corridors involve the combining of 2 or more utility lines (water, gas, power) in a common trench, usually along access routes. This practice results in less surface disturbance and overall environmental impacts. Approximately 0.72 miles of pipeline would be constructed outside of corridors. Expedient reclamation of disturbed land with stockpiled topsoil, proper seedbed preparation techniques, and appropriate seed mixes, along with utilization of erosion control measures (e.g., water wings, culverts) would ensure land productivity/stability is regained and maximized.

The PRB FEIS made predictions regarding the potential impact of produced water to the various soil types found throughout the Basin, in addition to physical disturbance effects. "Government soil experts state that SAR values of only 13 or more cause potentially irreversible changes to soil structure, especially in clayey soil types, that reduce permeability for infiltration of rainfall and surface water flows, restrict root growth, limit permeability of gases and moisture, and make tillage difficult." (PRB FEIS page 4-144).

Table 4.1 - [1]SUMMARY OF DISTURBANCE

Facility	Number or Miles	Factor	Acreage of Disturbance	Duration of Disturbance
Wells	19	0.1/acre/14 0.11/acre/5	1.40 0.55	Long Term
Gather/Metering Facilities	0	Site Specific	0	Long Term
Screw Compressors	0	Site Specific	0	Long Term
Monitor Wells	1	0.1/acre	0.1	Long Term
Impoundments Water Discharge Points	0 2	0 ac/WDP	0 0.02	
*Wetlands Filled	----	Site Specific	0	
Channel Disturbance Headcut Mitigation* Channel Modification Pipeline Crossing* Road Crossing*	 None None None	 Site Specific Site Specific Site Spec or 0.01 acres Site Spec or 0.01 acres	 0 0 0 0	
Improved Roads No Corridor With Corridor	 0.13 4.35	 14' Width 24' Width	 0.22 12.65	Long Term
2-Track Roads No Corridor With Corridor	 0.13 3.46	 12' Width 14' Width	 0.19 5.87	Long Term
Pipelines No Corridor With Corridor	 0.72	 14' Width	 1.22	Short Term
Buried Power Cable No Corridor	0	0		Short Term
Overhead Powerlines Existing	3.65 0.0	15' Width	6.64	Short Term
Additional Disturbance	0	Site Specific	0	

*Already included in other categories of disturbance, but separated here for USCOE General Permit 98-08 reporting.

The designation of the duration of disturbance is defined in the PRB FEIS (pg 4-1 and 4-151). "For this EIS,

[1] This summary of disturbance relates to Alternative C

short-term effects are defined as occurring during the construction and drilling/completion phases. Long-term effects are caused by construction and operations that would remain longer".

4.1.1 Wetland/Riparian/Floodplains

The treated water is processed in section 36, T51N R78W, with the treated effluent piped to the Powder River, the only effects that will be realized are to the riparian and wetland communities along the mainstem of the Powder River. The treated water quality of the discharge stream must meet the anti-degradation standard of WDEQ for direct discharge to the Powder River. This standard is site specific and determined on a case by case basis by WDEQ. At the time of this EA, the NPDES permit had not been received by the BLM, but receipt is a condition of approval for water produced from this POD. The estimated volume of flow for the CBNG wells for this POD is very small when compared to the Powder River. Even at minimum low flows, the Powder River discharges 75 cfs, measured at Arvada, Wyoming, compared to the a treated flow of 1.1 cfs. This would represent the 'worst case' scenario, where full, maximum POD flows would be discharged to Powder River during the minimum natural streamflow conditions of the last 70 years. This scenario reflects a small increase in streamflow of the Powder River, but is unlikely to occur since development is phased, and the 75 cfs minimum monthly streamflow is based on a 70 year period of record.

At anything other than minimum flows, the additional discharge would be undetectable due to the assimilative capacity of the Powder River at flows routinely over 1000 cfs at Arvada, Wyoming. Also, the discharge stream is predicted to have a treated water quality very similar to the Powder River (8 to 10 SAR, and EC of 3000 umhos/cm) (WMP, Appendix G). This compares favorably to the receiving water of the Powder River (See table 4.5, below). As a result, detrimental effects to Powder River wetlands/riparian/floodplains from this discharge are not anticipated.

The PRB FEIS identified effects to gallery forests of mature cottonwood trees stating that "(they) may be lost by bank undercutting caused by the increased surface water flows in channels." Included in the ROD is programmatic mitigation "which *may be* appropriate to apply at the time of APD approval if site specific conditions warrant." (ROD, page A-30). One of the conditions included in that section addresses the impact to trees in A.5.8-2: "To reduce adverse effects on existing wetlands and riparian areas, water discharge should not be allowed if increased discharge volumes or subsequent recharge of shallow aquifers will inundate and kill woody species, such as willows or cottonwoods." (ROD, Page A-32).

"Continuous high stream flows into wetlands and riparian areas would change the composition of species and dynamics of the food web. The shallow groundwater table would rise closer to the surface with increased and continuous stream flows augmented by produced water discharges. Vegetation in riparian areas, such as cottonwood trees, that cannot tolerate year-round inundated root zones would die and would not be replaced. Other plant species in riparian areas and wetland edges that favor inundated root zones would flourish, thus changing the plant community composition and the associated animal species. A rise in the shallow ground groundwater table would also influence the hydrology of wetlands by reducing or eliminating the seasonal drying periods that affect recruitment of plant species and species composition of benthic and water column invertebrates. These changes to the aquatic food web base would affect the higher trophic levels of fish and waterfowl abundance and species richness for wetlands and riparian areas." (PRB FEIS Page 4-175).

Should the Coal Gulch/Highland Unit water management strategy change, other effects to wetlands could be realized in ephemeral channels that receive discharge, and effluent discharges to the Powder River. Should a need for changes arise, the operator would need to prepare and submit a sundry if the Water Management strategy changes.

4.1.2 Invasive Species

Utilization of existing facilities and surface disturbance associated with construction of proposed access roads, pipelines, water management infrastructure, produced water discharge points and related facilities would present opportunities for weed invasion and spread. Produced CBNG water would likely continue to modify existing soil moisture and soil chemistry regimes in the areas of water release and storage. The activities related to the performance of the proposed project would create a favorable environment for the establishment and spread of noxious weeds/invasive plants such as salt cedar, Canada thistle and perennial pepperweed. However, mitigation as required by BLM applied COAs will ensure that potential impacts from noxious weeds and invasive plants will be minimal.

4.1.3 Cumulative Effects

The PRB FEIS stated that cumulative impacts to soils could occur due to sedimentation from water erosion that could change water quality and fluvial characteristics of streams and rivers in the sub-watersheds of the Project Area. SAR in water in the sub-watersheds could be altered by saline soils because disturbed soils with a conductivity of 16 mmhos/cm could release as much as 0.8 tons/acre/year of sodium (BLM 1999c). Soils in floodplains and streambeds may also be affected by produced water high in SAR and TDS. (PRB FEIS page 4-151).

As referenced above, the PRB FEIS did disclose that cumulative impacts may occur to soils and vegetation as a result of discharged produced CBNG water. The cumulative effects on vegetation and soils relative to this project are anticipated to be minimal for the following reasons:

- They are proportional to the total amount of water predicted to be produced in the Upper Powder River watershed and that amount of cumulatively produced water is only approximately 13.6% of the total predicted for this watershed in the PRB FEIS (see section 4.4.2.1).
- The WDEQ/WQD enforcement of the terms and conditions of the NPDES permit that are designed to protect irrigation downstream.
- The water management plan for the Coal Gulch/Highland POD proposes that produced water will not contribute to significant flows downstream in ephemeral drainages, but will instead be treated and discharged to the mainstem of the Powder River under an NPDES permit issued by WDEQ.

No additional mitigation measures are required.

4.2 Wildlife

The proposed Alternative C action is fully described in the Coal Gulch-Highland Unit Plan of Development Book. The water disposal pipelines, gas gathering pipelines, electric power lines, and roads are co-located in corridors wherever possible. The project includes the following: 19 wells, 5 engineered well pads, 0.13 miles of proposed improved roads (including spot upgrades), 4.4 miles of proposed improved road utility corridor (improved road plus gas, water & electric), 3.1 miles of proposed 2-track road corridor (proposed gas, water and electric), 1.1 miles of proposed utility corridor (water, gas and electric, no road), 0.7 miles of proposed pipeline not in a corridor, 7 proposed reservoirs, 9 proposed discharge points and 3.7 miles of proposed overhead power lines. The project description corresponds to the July 21, 2004 CBNG project surface use data summary form. Stock tanks will be equipped with BLM approved wildlife escape ramps. In addition to the minimization measures discussed below, BLM has committed to monitoring road-associated carcasses, jackrabbit sized and larger, along project (operator-maintained) roads.

Alternative C differs from alternative B due to the following; one well and its associated infrastructure was removed from the project design due to a sage grouse lek site, and an improved road was re-routed due to rough topography and erosion concerns. These modifications decreased the disturbance to the project design by 6 acres. The total disturbance for Alternative C is expected to be approximately 38 acres (28 acres long term and 10 acres short term).

4.2.1 Big Game Direct and Indirect Effects

Under the proposed alternative approximately 38 acres of Yearlong range for pronghorn and Winter/Yearlong range for mule deer will be directly disturbed. Seasonal ranges for elk will also be directly disturbed. Extensive on going and future CBNG development were noted in the PRB FEIS as a potential management concern for the Fortification Creek elk herd unit. Impacts caused by CBNG development are unknown at this time; however, increased road density, produced water discharge, loss of vegetation, fragmentation, and increased human activity have the potential to adversely affect elk herds subject to substantial CBNG development (PRB FEIS 3-132-139). Numerous studies suggest that elk move considerable distances to avoid disturbance (Cole et al. 1997, Edge and Marcum 1985, Lyon 1979, Perry and Overly 1976, Rowland et al. 2000, Ward 1976). Existing literature shows that elk reduce their use of habitats within ½ mile of disturbance (PRB FEIS 4-201-207). Human activities associated with operation and maintenance could also displace big game. Both direct and indirect impacts to big game are analyzed in the PRB FEIS (4-181-211). The Highland and Coal Gulch Units are located in the WGFD Elk Hunt Area # 129, which is managed by the WGFD for a zero population objective. Due to this, no additional mitigation or monitoring measures will be included for elk.

4.2.1.1 Cumulative effects

The cumulative effects associated with Alternative C are within the analysis parameters and impacts described in the PRB FEIS. For details on expected cumulative impacts, please refer to the referenced PRB FEIS, Volume 2, Chapter 4, page 4-211. No additional mitigation measures are required.

4.2.2 Migratory Birds Direct and Indirect Effects

Disturbance of prairie and sagebrush habitats within the project area could impact migratory birds. Prompt re-vegetation of short-term disturbance areas should reduce habitat loss impacts. Additional direct and indirect effects to migratory birds are discussed in the PRB FEIS (4-231-235).

4.2.2.1 Cumulative effects

The cumulative effects associated with Alternative C are within the analysis parameters and impacts described in the PRB FEIS. For details on expected cumulative impacts, please refer to the referenced PRB FEIS, Volume 2, Chapter 4, page 4-235. No additional mitigation measures are required.

4.2.3 Raptors Direct and Indirect Effects

No raptor nests were located within the project area by Big Horn and no historical records of raptors have been recorded in the BLM database. However, the wells, discharge points, roads, and pipelines may impact raptors foraging within the Highland and Coal Gulch Unit project area. Direct and indirect impacts to raptors, from oil and gas development, are analyzed in the PRB FEIS (4-216-221).

4.2.3.1 Cumulative effects

The cumulative effects associated with Alternative C are within the analysis parameters and impacts described in the PRB FEIS. For details on expected cumulative impacts, please refer to the referenced PRB FEIS, Volume 2, Chapter 4, page 4-221. See programmatic, site specific and general mitigation measures.

4.2.4 Threatened and Endangered and Sensitive Species

Within the BLM Buffalo Field Office there are five species that are Threatened, Endangered, or Candidate for listing under the Endangered Species Act. Threatened and Endangered Species were considered in the Highland and Coal Gulch Unit Biological Assessment and a summary is provided in Table 4.2 below (Kosic & Bills 2004). Threatened and Endangered Species that are known to occur in the proposed project area are further discussed Table 4.2.

Table 4.2 Habitat descriptions and projected effects on Threatened, Endangered, and Candidate species.

Common Name (scientific name)	Habitat	Presence	Project Effects	Rationale
Endangered				
Black-footed ferret (*Mustela nigripes*)	Black-tailed prairie dog colonies or complexes > 80 acres.	NP	NE	No prairie dog towns exist in the project area.
Threatened				
Bald eagle (*Haliaeetus leucocephalus*)	Mature forest cover often within one mile of large water body.	S	LAA	Power lines, roads and a significant increase in levels of human activity.
Canada lynx (*Lynx canadensis*)	Large continuous tracts of mesic coniferous forest.		NE	Forest cover not present.
Ute ladies'-tresses orchid (*Spiranthes diluvialis*)	Riparian areas with permanent water.	NP	NE	Habitat not present.
Candidate				
Black-tailed prairie dog (*Cynomys ludovicianus*)	Prairie habitats with deep, firm soils and slopes less than 10 degree.	NP	NJ	No prairie dog towns exist in the project area.

Presence
K Known, documented observation within project area.
S Habitat suitable and species suspected to occur within the project area.
NS Habitat suitable but species is not suspected to occur within the project area.
NP Habitat not present and species unlikely to occur within the project area.

Effect Determinations
Listed Species
LAA Likely to adversely affect
NE No Effect.
NLAA May Affect, not likely to adversely effect individuals or habitat.
Candidate Species
J Is likely to jeopardize candidate.
NJ Is not likely to jeopardize candidate species.

4.2.4.1 Threatened and Endangered Species Direct and Indirect Effects

4.2.4.1.1-Bald eagle

The Highland and Coal Gulch project area is marginally suited for bald eagle roosting and nesting. Few scattered cottonwoods are found throughout the project area and a significant water body with a reliable prey base is present. The Highland and Coal Gulch POD is located approximately two miles from the Powder River. Bald eagle surveys conducted by Big Horn in 2003 and 2004 have not documented bald eagle roosts or nests within the project area. Additionally, aerial surveys conducted by the BLM in December of 2003 and January of 2004 have not documented bald eagle roost sites in the project area. The majority of the Powder River was frozen at the time of the surveys, only individual birds were observed. There are also no bald eagle nests or roosts in the project vicinity documented in the BLM database, WGFD records, or published literature (Patterson and Anderson, 1985; Jenkins et al., 1980).

The presence of roads and overhead power lines may adversely affect foraging bald eagles. There are 3.7 miles of proposed overhead power lines and approximately 4.5 miles of proposed improved roads within the project area. Bald eagles forage opportunistically throughout the Powder River Basin including the project area. Although measures are included in the project design to minimize power line electrocutions and road-related moralities, some risk of harm remains. Twenty-two raptors including 16 golden eagles were electrocuted within Wyoming's Powder River Basin in 2003; 12 electrocutions were on recently constructed lines which did not fully meet APLIC standards (USFWS).

4.2.4.2 Sensitive Species Direct and Indirect Effects

The Wyoming USDI Bureau of Land Management (BLM) has prepared a list of sensitive species to focus species management efforts toward maintaining habitats under a multiple use mandate. The authority for this policy and guidance comes from the Endangered Species Act of 1973, as amended; Title II of the Sikes Act, as amended; the Federal Land Policy and Management Act (FLPMA) of 1976; and Department of Interior Manual 235.1.1A.

Sensitive species were considered in the Highland and Coal Gulch Unit Biological Assessment and a summary is provided in the Table 4.3 below (Kosic & Bills 2004). Sensitive species that are known to occur in the proposed project area are further discussed in Table 4.3.

Table 4.3 Habitat descriptions and Project Effects on BLM Buffalo Field Office Sensitive Species.

Common Name (scientific name)	Habitat	Presence	Project Effects	Rationale
Amphibians				
Northern leopard frog (*Rana pipiens*)	Beaver ponds, permanent water in plains and foothills	S	MIIH	Additional water will effect existing waterways.
Spotted frog (*Ranus pretiosa*)	Ponds, sloughs, small streams in mountain environments.	NP	NI	Prairie not mountain habitat.
Birds				
Baird's sparrow (*Ammodramus bairdii*)	Grasslands, weedy fields	S	MIIH	Sagebrush cover will be affected.
Brewer's sparrow (*Spizella breweri*)	Basin-prairie shrub	S	MIIH	Sagebrush cover will be affected.
Burrowing owl (*Athene cunicularia*)	Grasslands, basin-prairie shrub and prairie dog towns.	S	MIIH	Grassland and basin-prairie shrub habitats will be affected.
Ferruginous hawk (*Buteo regalis*)	Basin-prairie shrub, grasslands, rock outcrops	S	MIIH	Grassland and shrubland habitats will be affected.
Greater sage-grouse (*Centrocercus urophasianus*)	Basin-prairie shrub, mountain-foothill shrub	K	MIIH	Sagebrush cover will be affected.
Loggerhead shrike (*Lanius ludovicianus*)	Basin-prairie shrub, mountain-foothill shrub	S	MIIH	Sagebrush cover will be affected.
Long-billed curlew (*Numenius americanus*)	Grasslands, plains, foothills, wet meadows	NP	NI	Wet meadows not present.
Mountain plover (*Charadrius montanus*)	Short-grass prairie with slopes < 5%	NP	NI	Habitat not present.
Northern goshawk (*Accipiter gentilis*)	Conifer and deciduous forests	NP	NI	Habitat not present.
Peregrine falcon (*Falco peregrinus*)	Cliffs	NP	NI	No nesting habitat present.

Common Name (scientific name)	Habitat	Presence	Project Effects	Rationale
Sage sparrow (*Amphispiza billneata*)	Basin-prairie shrub, mountain-foothill shrub	S	MIIH	Sagebrush cover will be affected.
Sage thrasher (*Oreoscoptes montanus*)	Basin-prairie shrub, mountain-foothill shrub	S	MIIH	Sagebrush cover will be affected.
Trumpeter swan (*Cygnus buccinator*)	Lakes, ponds, rivers	NP	NI	Suitable habitat not present.
White-faced ibis (*Plegadis chihi*)	Marshes, wet meadows	NP	NI	Permanently wet meadows not present.
Yellow-billed cuckoo (*Coccyzus americanus*)	Riparian woodlands with dense shrub understory.	NP	NI	Streamside habitats not present
Fish				
Yellowstone cutthroat trout (*Oncoryhynchus clarki bouvieri*)	Mountain streams and rivers in Tongue River drainage	NP	NI	Outside species range.
Mammals				
Fringed myotis (*Myotis thysanodes*)	Conifer forests, woodland chaparral, caves and mines	NP	NI	Habitat not present.
Long-eared myotis (*Myotis evotis*)	Conifer and deciduous forest, caves and mines	NP	NI	Habitat not present.
Spotted bat (*Euderma maculatum*)	Cliffs over perennial water, basin-prairie shrub	NP	NI	Cliffs & perennial water not present.
Swift fox (*Vulpes velox*)	Grasslands	S	MIIH	Grassland habitat will be affected.
Townsend's big-eared bat (*Corynorhinus townsendii*)	Forests, basin-prairie shrub, caves and mines	NP	NI	Basin-prairie shrub present.

Common Name (scientific name)	Habitat	Presence	Project Effects	Rationale
Plants				
Porter's sagebrush (*Artemisia porteri*)	Sparsely vegetated badlands of ashy or tufaceous mudstone and clay slopes 5300-6500 ft.	NP	NI	Habitat not present.
William's wafer parsnip (*Cymopterus williamsii*)	Open ridgetops and upper slopes with exposed limestone outcrops or rockslides, 6000-8300 ft.	NP	NI	Habitat not present.

Presence
K Known, documented observation within project area.
S Habitat suitable and species suspected to occur within the project area.
NS Habitat suitable but species is not suspected to occur within the project area.
NP Habitat not present and species unlikely to occur within the project area.

Project Effects
NI No Impact.
MIIH May Impact Individuals or Habitat, but will not likely contribute to a trend towards Federal listing or a loss of viability to the population or species.
WIFV* Will Impact Individuals or Habitat with a consequence that the action may contribute to a trend towards Federal listing or cause a loss of viability to the population or species. (Trigger for a Significant Action as defined in NEPA)
BI Beneficial Impact

4.2.4.2.1-Greater Sage Grouse

BLM biologists identified sage grouse droppings in Section 27, T51N, R78W during the onsite visit. The droppings were found in a relatively flat and heavily grazed area. Big Horn also observed two male sage grouse strutting in Section 27 during the surveys conducted in 2004 (Maechtle verbal communication). The area was determined to be an active lek site. The 23-27 well and its associated infrastructure were proposed within ¼ mile of the lek site. The well and its associated infrastructure were removed from the project design. Timing stipulations will be applied for every year of surface disturbance activities.

4.2.4.3 Cumulative effects

The cumulative effects associated with Alternative C are within the analysis parameters and impacts described in the PRB FEIS. For details on expected cumulative impacts, please refer to the referenced PRB FEIS, Volume 2, Chapter 4, page 4-271. See programmatic, site specific and general mitigation measures.

4.3 West Nile Virus

The PRB FEIS and ROD included a programmatic mitigation measure that states, "The BLM will consult with appropriate state agencies regarding WNV. If determined to be necessary, a condition of approval will be applied at the time of APD approval to treat mosquitoes for any CBM discharge waters that become stagnant." This project is likely to result in standing surface water which may potentially increase mosquito breeding habitat. BLM has consulted with applicable state agencies, County Weed and Pest and the State Health Department, per above mitigation in the PRB ROD page 18, regarding the disease and the need to treat. BLM has also consulted with the researchers that are studying the dynamics of WNV species and its effects in Wyoming.

There is no evidence that treatment, either through the use of larvacides or malithion, on a site specific or basin-wide scale will have any effect on the overall spread of the disease. The State agencies have not instituted state-wide treatment for mosquitoes due to WNV, nor are they requiring any mitigation specific to permitting for CBM operations.

Cumulatively, there are many sources of standing water, beyond CBM discharge, throughout the PRB that would add to the potential for mosquito habitat. Sources include; natural flows, livestock watering facilities, coal mining operations, and outdoor water use and features in and around communities.

BLM will keep monitoring this issue by continuing to consult with the State agencies and the researchers working in the area in order to stay abreast of the most current developments and any need to apply mitigation. Based on current information, we determined that no significant impacts in the spread of WNV would occur from the implementation of this project.

4.4 Water Resources

The operator has submitted a comprehensive WMP for this project. It is incorporated-by-reference into this EA pursuant to 40 CFR 1502.21. The WMP incorporates sound water management practices, monitoring of downstream impacts within the Upper Powder River primary watershed and the secondary watershed and commitment to comply with Wyoming State water laws/regulations. It also addresses potential impacts to the environment and landowner concerns. Qualified hydrologists, in consultation with BLM hydrologists and staff, developed the water management plan. Adherence with the plan, in addition to BLM applied mitigation (in the form of COAs), should minimize project area and downstream potential impacts from proposed water management strategies.

Summary of Water Management Strategy

The maximum water production is predicted to be 25.5 gpm per well or 485 gpm (1.1 cfs) for this POD. The PRB FEIS projected the total amount of water that was anticipated to be produced from CBNG development per year (Table 2-8 Projected Amount of Water Produced from CBM Wells under Alternatives 1, 2A and 2B pg 2-26). For the Upper Powder River drainage, the projected volume produced within the watershed area was 159,000 acre-feet in 2004 (maximum production is estimated in 2006 at 171,500 acre-feet). As such, the volume of water resulting from the production of these wells is 0.5 of 1 percent of the total volume projected for 2004, which will result in an insignificant increase to the present volume of water produced from coal bed natural gas in the Powder River Basin. This volume of produced water is also within the predicted parameters of the PRB FEIS.

Addition of this amount of treated water to the Powder River would not result in significant flow impacts: The 2 year peak flow for the Powder River is orders of magnitude larger, and the additional discharge would not be a detectable amount, much less an erosive flow. Finally, the water quality of the treated discharge would be near the ambient low flow levels of the receiving waters. At high flows of the Powder River, the discharge would be masked by the very large assimilative capacity of natural flows greater than 1000 cfs.

Proposed CBNG wells discharged to a single outfall which will be fully contained in an existing reservoir. Treatment will proceed through cation exchange ponds located at the site of the existing treatment reservoir. At the final, fully treated pond, the treated discharge water is piped to a discharge point on the Powder River, where it is directly discharged (see WMP Appendix G). Discharge to surface facilities would occur across rock aprons, providing passive treatment by increasing the turbulence and aeration. Aeration adds dissolved oxygen to the produced water which oxidizes susceptible ions; these ions may then precipitate. This is particularly true for dissolved iron. Because iron is one of the key parameters for monitoring water quality, the precipitation of iron oxide near the discharge point will improve water quality at downstream locations.

No new impoundments are planned for construction in the Coal Gulch 1 POD area under alternative C. A second alternative, not analyzed in detail, would utilize 7 new reservoirs. Under this 'contingency' alternative, new impoundments totaling approximately 51.2 a-ft of storage will be used to contain produced water. Of these water impoundments, all are on channel reservoirs. See Table 4.4 for a comparison of the alternatives. At the request of the operator's representative, Mr. Tim Kalus, these reservoirs were not on-site inspected, but were included in the WMP as 'contingency' storage. If the operator chooses to construct these reservoirs, the water management plan will need to address discharge and ephemeral channel flows, headcut mitigation, and an on-site inspection will be conducted.

Table 4.4 Comparison of hydrologic and disturbance impacts by Alternative associated with different Water Management Strategies.

	Number of Reservoirs	Additional Disturbance	In Channel Mitigation Req'd? (Headcut)	Discharge Water Quality	Resurfacing Impacts
Alternative C (Environmnetally Preferred) (Treat and Discharge)	1	None, existing reservoir	No. Completely contained	Treated to a minimum SAR of 9.8	Probably less

Infiltration Pond Alternative	7	15.0 Ac	Probably. Not assessed.	Unknown. Mixed watershed discharge or untreated WQ	Probably greater

The WDEQ has assumed primacy from United States Environmental Protection Agency for maintaining the water quality in the waters of the state. The Wyoming State Engineers Office (WSEO) has authority for regulating water rights issues and permitting impoundments for the containment of surface waters of the state. At the time of this Environmental Assessment, the NPDES permit was not issued by WDEQ, however, the operator may not discharge federal water without the approved application. See Site Specific COA #8.

4.4.1 Groundwater

4.5.1.1 Groundwater Quality

The PRB FEIS predicts an infiltration rate of 40% to groundwater aquifers and coal zones in the Upper Powder River drainage area (PRB FEIS pg 4-5). For this action, it may be assumed that a maximum of 194 gpm will infiltrate at or near the discharge point and impoundment (0.4 cfs). This water will saturate the near surface alluvium and deeper formations prior to mixing with the groundwater used for stock and domestic purposes. According to the PRB FEIS, "the increased volume of water recharging the underlying aquifers of the Wasatch and Fort Union Formations would be chemically similar to alluvial groundwater" (PRB FEIS, pg 4-54). Leaching, as impounded water infiltrates and moves through Wasatch formation sediments, is not quantified.

Shallow ground water monitoring is ongoing at several impoundment sites across the basin to verify the above FEIS prediction, and to quantify leaching effects on shallow aquifers. Due to the limited data available from these sites, the still uncertain overall fate or extent of change that is occurring due to infiltration at those sites, and the extensive variable site characteristics both surface and subsurface, it is not reliable at this time to infer that findings from these monitoring wells should be directly applied to other impoundment locations across the basin. The WDEQ has developed interim guidance for impoundment siting that is available on the WDEQ website, and is applicable to all NPDES permits issued after August 1, 2004.

However, site characteristics can be compared between the proposed impoundments in the Coal Gulch/Highland Unit POD and the currently most intensively monitored site along Beaver Creek which is showing elevated constituents in sub-surface water bearing zones. The sites differ in that the reservoirs associated with the Coal Gulch/Highland Unit POD are high in drainages with no surficial immediate evidence of alluvium, or any obvious preferential pathways to shallow groundwater. Because of these differences, it is unknown whether infiltrating water would affect sub-surface water bearing zones to the degree evidenced at the Beaver Creek site.

The actual water quality of the producing coal zones in this POD will be sampled to verify the water analysis submitted for the pre-approval evaluation. The operator will also drill a cluster of monitor wells. These wells will become part of the long term groundwater monitoring well network. All monitoring and analyses data will be submitted to the BLM Authorizing Officer and will be posted periodically on the CBNG website www.cbmclearinghouse.com.

4.5.1.2 Groundwater Quantity

The PRB FEIS predicts that one of the environmental consequences of coal bed natural gas production is possible impacts to the groundwater levels. "The effects of development of CBM on groundwater

resources would be seen as a drop in the water level (drawdown) in nearby wells completed in the developed coal aquifers and underlying or overlying sand aquifers." (PRB FEIS page 4-1). In the process of de-watering the coal zone to increase natural gas recovery rates, this project may have some effect on the static water level in the water wells in the area. The permitted water wells in the area produce from zones above the targeted coal bed natural gas producing zones (the well depths range from flowing at the surface to 875 ft) compared to approximately 1,800 feet to the Big George. As mitigation for possible impacts, the operator has committed to offer water well agreements to holders of properly permitted domestic and stock wells within the circle of influence of the proposed wells.

Recovery of the coal bed aquifer was predicted in the PRB FEIS to "resaturate and repressurize the areas that were partially depressurized during operations. The amount of groundwater storage within the coals and sands units above and below the coals is enormous. Almost 750 million acre-feet of recoverable groundwater are stored within the Wasatch - Tongue River sand and coals (PRB FEIS Table 3-5). Redistribution is projected to result in a rapid initial recovery of water levels in the coal. The model projects that this initial recovery period would occur over 25 years." (PRB FEIS page 4-38).

The development of coal bed natural gas and the production and discharge of water in the area surrounding the existing natural spring may affect the flow rate or water quality of the springs located in the vicinity of the POD. The relatively flat lying nature of the Wasatch Formation, and the thickness of the intervening Wasatch Formation strata, and its relatively low permeability's make this unlikely. The operator has submitted a water quality analysis for the springs, and this is discussed in section 3.5.1.2 and 3.5.2. The operator must submit yearly flow and water quality monitoring data for these springs (Site specific COA # 14).

Adherence to the drilling plan, the setting of casing at appropriate depths, following safe remedial procedures in the event of casing failure, and utilizing proper cementing procedures will protect any potential fresh water aquifers above the target coal zone. This will ensure that ground water will not be adversely impacted by well drilling and completion operations.

4.4.1.3 Groundwater Cumulative Effects

As stated in the PRB FEIS, "The aerial extent and magnitude of drawdown effects on coal zone aquifers and overlying and underlying sand units in the Wasatch Formation also would be limited by the discontinuous nature of the different coal zones within the Fort Union Formation and sandstone layers within the Wasatch Formation." (PRB FEIS page 4-64).

Development of CBM through 2018 (and coal mining through 2033) would remove 4 million acre-feet of groundwater from the coal zone aquifer (PRB FEIS page 4-65). This volume of water "cumulatively represents 0.5 percent of the recoverable groundwater stored in the Wasatch – Tongue River sands and coals (nearly 750 million acre-feet, from Table 3-5). All of the groundwater projected to be removed during reasonably foreseeable CBM development and coal mining would represent less than 0.3 percent of the total recoverable groundwater in the Wasatch and Fort Union Formations within the PRB (nearly 1.4 billion acre-feet, from Table 3-5)." (PRB FEIS page 4-65). No additional mitigation is necessary.

4.4.2 Surface Water

The primary beneficial use of the surface water in the Powder River Basin is specified as the irrigation of crops (PRB FEIS pg 4-69). A maximum volume of 25.5 gallons per minute (gpm) is projected is to be produced from these 19 wells, for a total of 485 gpm for the POD. The quality for the water produced from the Big George target coal zone from these wells is predicted to be similar to the sample water quality collected from a location near the POD. That water quality was determined to be 3950 μmhos/cm electrical conductivity (EC)**,** 2590 mg/1 total dissolved solids (TDS) and 36.9 sodium adsorption ratio (SAR). This sample was obtained from the discharge point in Section 36, T51N, R78W in October of

2003. After treatment, EC in the effluent water is predicted to be 3100 umhos/cm, SAR is reduced to 10 or less, for these two important irrigation water quality parameters. Discharge of treated water of this quality is regulated by WDEQ/WQD under NPDES; the NPDES permit was unavailable at the time of this environmental analysis. Site specific COA #1 stipulates that the NPDES must be provided to the BLM before discharging water from these wells.

By comparison, the Upper Powder River has an SAR of 4.8 at maximum monthly flow to 7.8 at low monthly flow. Similarly, EC in the Powder River ranges from 3400 umhos/cm at low flow to 1800 umhos/cm at maximum monthly flow. WDEQ water quality parameters for groundwater classifications (Chapter 8 – Quality Standards for Wyoming Groundwater) stipulate the following limits for TDS: 500 mg/l TDS for drinking water (Class I), 2000 mg/l for Agricultural Use and 5000 mg/l for Livestock Use. SAR limits for Groundwater used for agriculture is 8. For more information, please refer to the Water Management Plan (WMP) included in this POD.

Phased reclamation plans for the treatment facility impoundment must be submitted and approved on a site-specific, case-by-case basis, as they are no longer necessary for disposal of CBNG water, as required by BLM applied COAs. The anticipated total maximum volume of water discharged in this POD is 485gpm, or 1.1 cfs. Based on the onsite review of 2 discharge points, they have been appropriately sited and utilize appropriate water erosion dissipation design. Existing water management facilities specified in alternative C were evaluated for compliance with best management practices during the onsite. Reclamation of the treatment facility will be required in the year completed.

Alternative (2A), the approved alternative in the Record of Decision for the PRB FEIS, states that the peak production of water discharged to the surface will occur in 2006 at a total contribution to the mainstem of the Upper Powder River of 68 cfs (PRB FEIS, pg 4-87). The predicted maximum discharge rate from these 19 wells is anticipated to be a total of 485 gpm or 1.1cfs to a treatment facility, then directly discharged to the Powder River. Some infiltration and leaching may occur from the temporary storage in the treatment reservoir, but all water (1.1 cfs) is proposed to be discharged to the Powder River after treatment. As stated above, improved treated water quality, and the assimilative capacity of the Powder River at all but the lowest of flows should make this discharge undetectable. Further the proposed treat and discharge scenario must be deemed to be protective of all designated uses of the Powder River under NPDES permitting by WDEQ. No discharge is permitted without this permit (SS COA #1), and a condition of approval has been added to this analysis that will limit the volume of water discharged within this project area to that which was analyzed in the NPDES permit application. Infiltration from the treatment facility will be required to be monitored down gradient from the facility.

For comparison to existing and proposed surface water and groundwater quality in the area, the criteria applied in the evaluation of waters discharged to the Upper Powder River under the preferred alternative (2A) in the PRB FEIS (pg 4-73, 4-85 and Appendix B) are listed below in Table 4.5.

Table 4.5: Comparison of Regulated Water Quality Parameters to Predicted Water Quality

Predicted Values	**TDS, mg/l**	**SAR**	**EC,** μmhos/cm
Most Restrictive Proposed Limit (FEIS)		2.0	1000
Least Restrictive Proposed Limit (FEIS)		10	3200
Primary Watershed at Arvada Gauging station			
Historic Data Average at Maximum Flow		4.8	1800
Historic Data Average at Minimum Flow		7.8	3400
WDEQ Quality Standards for Wyoming Groundwater (Chapter 8)			
Drinking Water (Class I)	500		
Agricultural Use (Class II)	2,000	8	

Livestock Use (Class III)	5,000		
Predicted Produced Water Quality			
Big George	2590	36.9	3950
After Treatment	-	9.8	3100

In the WMP portion of the POD, the operator provided an analysis of the potential development in the watershed above the project area (WMP page 5). Based on the area of the North Fork Coal Gulch watershed above the POD (4.1 sq mi) and an assumed density of 1 well per location every 80 acres, the potential exists for the development of 33 wells which could produce a maximum produced water volume of 826 gpm or 1.8 cfs. The BLM agrees with the operator that this is not expected to occur because:

- Some of these wells have already been drilled and are producing.
- New wells will be phased in over several years, and
- A decline in well discharge generally occurs after several months of operation.

The potential maximum volume of produced water within the watershed upstream of the project area, 1.8 cfs, is much less than the volume of run off estimated from the 2-year storm event for N F Coal Gulch. Therefore, the estimated volume of water produced from the full development in the watershed above the project area is significantly less than the natural run off from the area, even though alternative C plans no direct discharge to ephemeral channels.

4.4.2.1 Surface Water Cumulative Effects

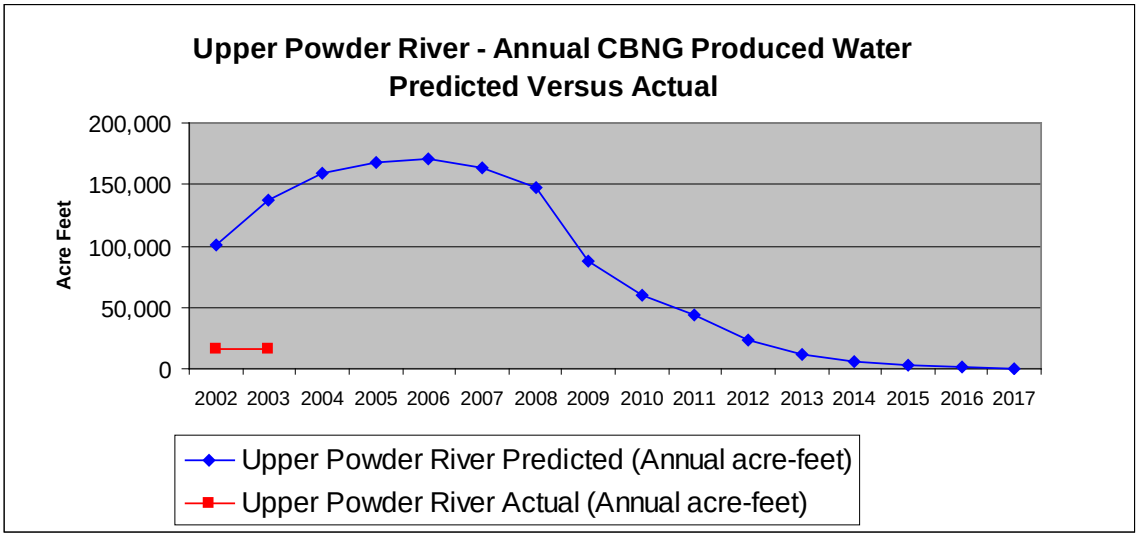
The analysis in this section includes cumulative data from Fee, State and Federal CBNG development in the Upper Powder River watershed. These data were obtained from the Wyoming Oil and Gas Conservation Commission (WOGCC).

As of December 2003, all producing CBNG wells in the Upper Powder River watershed have discharged a cumulative volume of 32,335 acre-ft of water compared to the predicted 238,454 acre-ft disclosed in the PRB FEIS (Table 2-8, page 2-26). These figures are presented graphically in Figure 4.1 and Table 4.4 following. This volume is 86% less than the total predicted produced water analyzed in the PRB FEIS for the Upper Powder River 4th order watershed.

Figure 4.1: Actual vs predicted water production in the Upper Powder River watershed.

Year	Upper Powder River Predicted (Annual acre-feet)	Upper Powder River Predicted (Cumulative acre-feet from 2002)	Upper Powder River Actual (Annual acre-feet)		Upper Powder River Actual (Cumulative acre-feet from 2002)	
			A-ft	% of Predicted	A-Ft	% of Predicted
2002	100,512	100,512	15,729	15.7	15,729	15.7
2003	137,942	238,454	16,606	12.0	32,335	13.6
2004	159,034	397,488				
2005	167,608	565,096				
2006	171,423	736,519				
2007	163,521	900,040				
2008	147,481	1,047,521				

2009	**88,046**	**1,135,567**				
2010	**60,319**	**1,195,886**				
2011	**44,169**	**1,240,055**				
2012	**23,697**	**1,263,752**				
2013	**12,169**	**1,275,921**				
2014	**5,672**	**1,281,593**				
2015	**2,242**	**1,283,835**				
2016	**1,032**	**1,284,867**				
2017	**366**	**1,285,233**				
Total	**1,285,233**					



The PRB FEIS identified downstream irrigation water quality as the primary issue for CBNG produced water. Conductivity (EC) and Sodium Adsorption Ratio (SAR) are the parameters of concern for suitability of irrigation water. The water quality analysis in the PRB FEIS was conducted using produced water quality data, where available, from existing wells within each of the ten primary watersheds in the Powder River Basin. These predictions of EC and SAR can only be reevaluated when additional water quality sampling is available. The BLM requires each POD approved under the PRB FEIS to have a designated reference well to be sampled within 60 days of initial production. There is also a series of monitoring wells that are providing additional data. This new data will be evaluated periodically to assess effects.

The PRB FEIS states, "Cumulative effects to the suitability for irrigation of the Powder River would be minimized through the interim Memorandum of Understanding that the Montana and WDEQ's have signed. This MOU was developed to ensure that designated uses downstream in Montana would be protected while CBM development in both states continued. As the two states develop a better understanding of the effects of CBM discharges through the enhanced monitoring required by the MOU, they can adjust the permitting approaches to allow more or less discharges to the Powder River drainage. Thus, through the implementation of in-stream monitoring and adaptive management, water quality standards and interstate agreements can be met." (PRB FEIS page 4-117)

No additional mitigation measures are required.

Refer to the PRB FEIS, Volume 2, page 4-115 – 117 and table 4-13 for cumulative effects relative to the Upper Powder River watershed and page 117 for cumulative effects common to all sub-watersheds.

4.5 Cultural Resources

Identification efforts have determined that the proposed undertaking will have **no effect** to historic properties. If any cultural values [sites, artifacts, human remains (Appendix L PRB FEIS)] are observed during operation of this lease/permit/right-of-way, they will be left intact and the Buffalo Field Manager notified. Further discovery procedures are explained in the ***Conditions of Approval*** (General) (III)(A)(1).

5. CONSULTATION/COORDINATION

Contact	Title	Organization	Present at Onsite?
Mark Sydnor		Western Gas Resources	Yes
Tim Kalus		Western Gas Resources	Yes
John Bartow		Lance	Yes
LD Gilbert		Lance	Yes
Arlene Kosic	Wildlife Biologist	BLM	Yes
Bill Ostheimer	Nat. Resource Spec.	BLM	Yes
Ken Peacock	Hydrologist	BLM	Yes
Steve Janzen	Civil Engineer	BLM	Yes
David G. Seward	Nat. Resource Spec.	BLM	Yes
Brian Kelly	Field Supervisor	USFWS	No*

*Not present on the onsite but consulted with.

6. OTHER PERMITS REQUIRED

A number of other permits are required from Wyoming State and other Federal agencies. These permits are identified in Table A-1 in the PRB FEIS Record of Decision.

7. REFERENCES AND AUTHORITIES

The National Environmental Policy Act of 1969 (NEPA), as amended (Pub. L. 91-90, 42 U.S.C. 4321 et seq.).

Code of Federal Regulations (CFR)

- 40 CFR All Parts and Sections inclusive Protection of Environment Revised as of July 1, 2001.
- 43 CFR All Parts and Sections inclusive - Public Lands: Interior. Revised as of October 1, 2000.

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Maechtle, Thomas, L. February 2004. Coal Gulch/ Highland Bald Eagle Winter Roost Survey. Big Horn Environmental Consultants. 8pp

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8. LIST OF INTERDISCIPLINARY TEAM PREPARERS AND REVIEWERS

David G. Seward, Natural Resource Specialist
Willy Frank, Supervisory Natural Resource Specialist
Ken Peacock, Hydrologist
Steve Klimetz, Petroleum Engineer
Norma Cope, Legal Instruments Examiner
Robert C. Wilson, Archaeologist
Arlene Kosic, Wildlife Biologist
Jim Sparks, Assistant Field Manager, Resources
Dennis R. Stenger, Field Manager

Interdisciplinary Team Lead: David G. Seward

FINDING OF NO SIGNIFICANT IMPACT & DECISION RECORD
FOR
Anadarko Petroleum Corporation
County Line Water Management Plan
ENVIRONMENTAL ASSESSMENT WY-070-01-020

DECISION: It is my decision to authorize the Anadarko Petroleum Corporation's County Line Water Management Plan.

This approval is subject to adherence with all of the operating plans and mitigation measures contained in the Master Surface Use Plan of Operations, Drilling Plan, Water Management Plan, and information in individual APDs. This approval is also subject to operator compliance with all mitigation and monitoring requirements contained within the Wyodak Drainage Coal Bed Methane Environmental Assessment (EA) approved March 26, 2001, and the Wyodak Coal Bed Methane EIS approved November 17, 1999. In addition, approval is subject to the attached Conditions of Approval.

RATIONALE: The decision to authorize the proposed action will not result in any undue or unnecessary environmental degradation. The lessee has the right to develop their existing federal leases provided no significant adverse or irreversible impacts occur to critical resources. It is in the public interest to approve the water management plan serving these wells, as the leases are being drained of federal gas, resulting in a loss of revenue for the government.

The proposed action is in conformance with the Wyodak EIS, the Wyodak Drainage EA and the Approved Resource Management Plan for the Public Lands Administered by the Bureau of Land Management, Buffalo Field Office, April 2001.

FINDING OF NO SIGNIFICANT IMPACT: Based on the analysis of the potential environmental impacts of the proposed action in the attached environmental assessment, I have determined that NO significant impacts are expected and, therefore, an environmental impact statement is not required.

Acting Field Manager: Richard A Jander Date: 11/01/01

BUREAU OF LAND MANAGEMENT
BUFFALO FIELD OFFICE
ENVIRONMENTAL ASSESSMENT
FOR
Anadarko Petroleum Corporation
County Line Water Management Plan
PLAN OF DEVELOPMENT
WY-070-01-020

This site-specific analysis tiers into and incorporates by reference the information and analysis contained in the Wyodak Drainage Environmental Assessment (EA), #WY-070-01-034 (approved March 26, 2001), pursuant to 40 CFR 1508.28 and 1502.21. This project EA addresses site-specific resources and/or impacts that are not covered within the Wyodak CBM EIS and the Wyodak Drainage EA. The Water Management Plan (WMP) is for the Alpha and Beta PODs which are being authorized as drainage wells, pursuant to 43 CFR 3100 subparts 0-3 (d) & 2-1, in addition to 3120.1-1(d), in order to protect federal oil and gas leases from drainage.

Proposed Action Title/Type: Anadarko Petroleum Corporation's County Line Water Management Plan for the Alpha and Beta (County Line Project) plans of development.

Location of Proposed Action and Lease Numbers:
Section(s): 9, 10, 15, 17, 20, 21, and 22, 48N 77W

County: Johnson

Applicant: Anadarko Petroleum Corporation

Surface Owners: Wardner Ranch, Harriet Land and Livestock, and Bureau of Land Management

Conformance with Applicable Land Use Plan and Other Environmental Assessments: This proposed action is in conformance with the terms and conditions of the Approved Resource Management Plan for the Public Lands Administered by the Bureau of Land Management, Buffalo Field Office, April 2001. as required by 43 CFR 1610.5. This action is also in conformance with the programmatic Wyodak CBM EIS and the Wyodak Drainage CBM EA.

Need for the Proposed Action:
The need for the proposal is to incorporate the WMP into the approved APDs for the Alpha and Beta PODs. The Alpha and Beta Environmental Assessments do not cover the additional disturbance, which will result from the WMP. The WMP is necessary for authorizing discharge of water associated with coal bed methane (CBM). The discharge of water allows for production of coal bed methane (CBM), a natural gas, on one or more valid federal oil and gas mineral leases issued to the applicant by the BLM. Analysis has determined that federal coal bed methane is being drained from the federal leases by surrounding fee well development. Without expedient approval of the WMP, federal lease royalties will be lost and the lessee will be deprived of development of the federal gas that he has acquired the right to develop.

Description of the Proposed Action:
The proposed action involves the development of the project, which includes the following:

- Construction of 23 outfalls and additional stock watering tanks and buried water line associated with the structures.
- Construction of a field wide gathering system. The water gathering system, mirroring the gas gathering system and road network, would be installed the same time as the gas system in order to minimize land disturbance.
- The enhancement of 1 existing reservoir.

For more details on design features and construction practices of the proposed action, refer to the Master Surface Use Plan, Drilling Plan and Water Management Plan in the Plan of Development (POD) and individual Applications for Permit to Drill (APDs). These plans have been written and reviewed to ensure minimal environmental impacts to both surface and subsurface resources. Also see the subject POD and APDs for maps showing the proposed well locations and associated facilities described above. More information is available in the Wyodak Drainage EA and the Wyodak EIS.

Description of Affected Environment & Impacts of the Proposed Action:
Field inspections of the proposed County Line CBM project WMP were conducted on 5/24/01, 5/31/01, 6/14/01, and 7/6/01 with APC, Greystone Consulting, and BLM . Applications to drill were received on 8/13/99.

Critical elements requiring mandatory evaluation are presented below.

Mandatory Item	Potentially Impacted	No Impact	Not Present On Site	BLM Evaluator
*Threatened or Endangered Species		X		Gerard
Floodplains		X		Casey Freise/Schultz
Wilderness Values			X	Casey Freise
ACEC's			X	Casey Freise
Water Resources	X			Casey Freise/Schultz
Air Quality		X		Casey Freise
Cultural or Historical Values		X		Earle/Wilson
Prime or Unique Farmlands			X	Casey Freise
Wild & Scenic Rivers			X	Casey Freise
Wetland/Riparian	X			Casey Freise/Schultz
Native American Religious Concerns			X	Earle/Wilson
Hazardous Wastes or Solids		X		Casey Freise
Invasive,	X			Casey Freise

Nonnative Species				
Environmental Justice		X		Casey Freise

*Also includes special status species

TOPOGRAPHIC CHARACTERISTICS OF PROJECT AREA:
The project is confined within an area of steep upland prairie hills, with numerous dendritic drainages, and gentle rolling rangeland adjacent to the Powder River. The stream channels are primarily grassy swales in the upper reaches and become more defined further down stream. The stream channels are well defined in their lower reaches due to forces of stream flows. Slopes of the main streams in the project area are discussed and listed in the Water Management Plan submitted with the Plan of Development.

VEGETATION & SOILS:
Species typical of short grass prairie comprise the project area flora. Specific species observed throughout the project area include sagebrush, wheat grass, cheat grass, needleandthread, and occasional Juniper trees. The gentle slopes and uplands with deeper soils primarily grow Western Wheat Grass, Sage, Cheat Grass, and Needleandthread Grass. The steeper hillsides with shallow soils, primarily grow Bluebunch Wheat Grass, Cheat Grass, Sage and occasional Juniper trees. The grassy swales, which receive intermittent flows from rain events, primarily grow Western Wheat Grass, Green Needle Grass, and some invasive species including Salt Cedar, Cocklebur, and Canadian Thistle.

Invasive, non-native species-Downy brome (cheat grass) is listed by the State of Wyoming as a noxious weed, however the densities found in this allotment are similar to those found throughout the Powder River Basin and NE Wyoming. Due to the widespread existence of this plant throughout the West it has not been identified for treatment nor has a long-term treatment plan been developed for this area.

Soils differ with topographic location, slope and elevation. The soils located on the gentle rolling uplands and ridges vary from sandy loams to clay loams. The soils are moderately deep, well-drained and moderately permeable with a topsoil ranging from 3-6". Reclamation potential is high for these soils. Erosion potential varies from minor to high depending on the soil type, vegetative cover and slope. The soils located on the steep hillsides are primarily a very shallow clay loam and may not exist, where bedrock outcrops. The reclamation potential for the steep hillsides will be low. The soils located in the upper grassy swales are typically deep, well drained and may vary from sandy loam to clay loam. The reclamation potential should be high.

Stream crossings, including culverts and fords (low water crossings) are shown on the Master Surface Use Plan and the Water Management Plan maps. These structures will be constructed in accordance with sound, engineering practices and BLM standards.

At the on-sites, all areas of proposed surface disturbance were inspected to ensure that potential impacts to surface resources would be minimized. In some cases discharge points and reservoir/stock pit locations were moved or dropped from further consideration to alleviate environmental issues, such as steep slopes, erosive soils, drainage areas, head-cuts, etc.

SUMMARY OF DISTURBANCE:
All existing disturbance has been analyzed under the Alpha (WY-00-070-081) and Beta (WY-00-070-080) Environmental Assessments. See the Alpha and Beta Environmental Assessments for the figures on

the associated disturbance. For the WMP waterlines will be constructed outside of existing corridors and will cause additional disturbance. The disturbance includes 1.2 miles of pipeline with a 14' corridor, which will cause 2 acres of short term disturbance. The BLM proposes to drill 7 monitoring infiltration wells. Five of the seven wells will require a drill rig, while the remaining two will be drilled with a hand auger. The impacts associated with the manually drilled wells will be insignificant, while the others will be approximately .1/acre for a total of .5 acres of disturbance.

WILDLIFE:
Impacts to wildlife will be minor with expedient reclamation of disturbed lands and adherence to operational plans. Although there may be some short-term displacement during construction, wildlife will most likely return following completion of the project. Operations following construction will be limited to periodic operator monitoring of gas wells.

The additional produced CBM water into reservoirs and stream channels may eventually add a limited amount of habitat for waterfowl. Regardless, the additional development of water should be beneficial to most wildlife species. Considering that the primary existing use of the land is for private domestic stock grazing, the development of suitable riparian habitat may be limited.

Based on both a record search and field review of the proposed project area, there does not appear to be any potential critical habitat for threatened, endangered or special status species.

CULTURAL: Cultural resource inventories were conducted on the County Line Water Management Plan project prior to on-the-ground project work (BFO project no. CRT-00-024). No potential national historic register eligible sites will be impacted by proposed operations. Any cultural resources that are discovered during operations will be avoided or otherwise mitigated by the operator to ensure no adverse impacts occur to such resources.

SURFACE & GROUND WATER: The project area is within the Powder River drainage system.
The operator has submitted a comprehensive water management plan (WMP) for their project. It is incorporated-by-reference into this EA pursuant to 40 CFR 1502.21. The WMP incorporates sound water management practices, monitoring of downstream impacts and commitment to comply with Wyoming State water laws/regulations. It also addresses potential impacts to the environment and landowner concerns. Certified hydrologists, in consultation with the BLM, developed the water management plan. Adherence with their plans, in addition to BLM applied mitigation and monitoring, should minimize in channel and downstream potential impacts from constant discharge of project water.

Based on the onsite review of discharge points, they have been appropriately sited and utilize appropriate water erosion dissipation design. Existing facilities were evaluated for compliance with best management practices during the onsite.

To manage the produced water, 1 existing reservoirs will enhanced within the project area. In addition to loss through evaporation and seepage, they will allow flexibility in the timing and quantity of surface discharge to receiving channels. This will minimize erosional problems and potentially allow for streambed enhancement through wetland-riparian species establishment. Potential sedimentation build-up in the reservoirs will occur, but can be controlled through a concerted monitoring and maintenance program. Although initial field review has occurred on these sites and design criteria contained in the WMP are sound, additional field work and analysis will need to take place prior to permitting of these facilities (see Conditions of Approval under Mitigation Section) on BLM surface. Design criteria,

erosion control, reclamation, and monitoring plans contained in the WMP, in addition to BLM applied mitigation should ensure that minimal impacts to the environment occur from these potential reservoirs.

Several potential downstream impacts could result from the discharge of water from the Alpha and Beta PODs. A continuous flow from the discharge points would change the dynamics of the existing ephemeral draws to having more perennial stream channel characteristics. Vegetation could change from native grass mixtures to more water tolerant species typical of perennial streams. The change in vegetation will help with channel stability, but may be less desirable for livestock and wildlife forage. Some erosion may occur during the transition of ephemeral plant species to perennial vegetation. In addition, CBM discharges may affect surface activities as dry channels become perennially wet due to CBM discharge. Additional low water crossings and culverts will need to be constructed to access certain areas of the project area.

For a description of ground water, please refer to the Wyodak EIS and the Wyodak Drainage EA. There should be no adverse impacts to existing water wells within the project area, based on the operator's commitment to offer water well agreements to properly permitted wells within the circle of influence of the proposed CBM wells. There may be cumulative ground water impacts from the total maximum well development scenario analyzed within the EIS study area. These impacts are discussed in the referenced Wyodak EIS.

For more detailed information regarding the potential water impacts and mitigation, please refer to water management plan (available for review in the Buffalo BLM office).

Cumulative Impacts: For details on expected cumulative impacts, please refer to the referenced Wyodak Drainage EA and Wyodak EIS.

Description of Proposed Mitigation Measures: Implementation of committed mitigation measures contained in the Master Surface Use Plan, Drilling Program and Water Management Plan, in addition to the following Conditions of Approval and the mitigation contained in the Wyodak Drainage CBM EA and Wyodak CBM Project EIS, would ensure that no adverse environmental impacts would result from approval of the proposed action:

Conditions Of Approval

A. Site Specific Conditions of Approval:

1. Due to concerns for downstream impacts, BLM will only authorize temporary discharge locations for Van Houten Draw, Sue Draw, and No Name Tributary. BLM will allow 6 months, from the time of water management approval, for APC to modify the DEQ permits. The new discharge locations must be moved to the high water levels at Fallen Eagle Reservoir and Sue Reservoir for permanent discharge locations. Discharge locations that will be move to the Fallen Eagle Reservoir include A2-003, A2-004, A2-005, A2-006, A2-007, A2-008, A2-009, and A2-010. Discharge locations that will move to Sue Reservoir include B2-001 and B2-002. Once the permanent discharge locations are established, Van Houten Draw will no longer receive CBM discharge.

2. No remediation will be required for the headcuts located in Van Houten Draw prior to discharge. APC will be required to monitor the impacts from the temporary discharge. If any negative

impacts are observed after the 6 months of discharge to Van Houten Draw, APC will remediate the problem areas with appropriate mitigation.

3. Temporary surface pipe may be used for the discharge of water to the temporary discharge locations. In addition, surface pipe may also be used for all discharge locations if weather and soil conditions are not favorable to the permanent construction and stabilization/reclamation of water lines and discharge points. Once weather and soil conditions are favorable to construction and stabilization/reclamation, APC will construct the water lines as described in the Water Management Plan.

4. As determined by APC, all wells will be limited to a maximum of 45 gpm. If APC sees a need for modifications of the above amount, a Sundry outlining the reason for modification, must be submitted to the BLM for approval.

5. APC shall deliver baseline data on soil, vegetation, and channel morphology that has been collected to the BLM within 90 days of receiving the data, or within 120 days of the approval date of this Water Management Plan, which ever comes first.

6. As field development matures, water flows will decrease and riparian species should be replaced by native species associated with upland soils. Given these changes, APC will undertake remedial action if it is determined that riparian species within a drainage experience a detrimental effect from the CBM water such that channel stability is threatened. Additionally, APC will undertake remedial action if re-establishment of upland vegetation within an affected drainage is unduly affected.

7. BLM may require APC to construct fences to allow for management of livestock grazing on newly constructed reclamation.

B. Standard Conditions of Approval:

1. The operator is committed to all of the mitigation measures and monitoring contained in the Wyodak Coal Bed Methane Project Environmental Impact Statement (EIS) approved November 17, 1999 and the Wyodak Drainage Environmental Assessment (EA) approved March 26, 2001. The operator is also committed to the **Standard "Conditions of Approval" for APDs, BLM-Buffalo Field Office**.

2. The operator shall submit a **Sundry Notice** for approval **prior to construction** of any new surface disturbing activities that are not specifically addressed in the approved Master Surface Use Plan, Plan of Development or individual APDs.

3. A pre-construction field meeting shall be conducted prior to beginning any dirt work approved under this POD. The operator shall contact the BLM Authorized Officer (Casey Freise@ 307-684-1189) at least 4-days prior to beginning operations so that the meeting can be scheduled. The operator is responsible for having all contractors present (dirt contractors, drilling contractor, pipeline contractor, project oversight personnel, etc.) including the overall field operations superintendent, and for providing all contractors copies of the approved POD, project map and BLM *Conditions of Approval* pertinent to the work that each will be doing.

C. During Construction

1. Remove all available topsoil (depths vary from 4" on ridges to 12+ in bottoms) from all areas of surface disturbance. Clearly segregate topsoil from spoil material. Topsoil stockpiled for an extended period will be signed and stabilized with a vegetation cover crop. Seed with annual ryegrass or other suitable cover crop.

2. With the overall objective of minimizing surface disturbance and retaining land stability & productivity, the operator shall utilize equipment that is appropriate to the scope and scale of work being done for roads, well pads and pipelines (utilize equipment no larger than needed for the job.)

3. The operator will not push soil material and overburden over side slopes or into drainages. All soil material disturbed will be placed in an area where it can be retrieved and where it doesn't impede watershed and drainage flows.

4. If any cultural values (sites, artifacts or remains) are observed during operation of this lease/permit/right-of-way, they will be left intact and the Buffalo Area Manager notified. The authorized officer will conduct an evaluation of the cultural values to establish appropriate mitigation, salvage or treatment.

5. If paleontological resources, either large or conspicuous, and/or a significant scientific value are discovered during construction, the find will be reported to the Authorized Officer immediately. Construction will be suspended within 250 feet of said find. An evaluation of the paleontological discovery will be made by a BLM approved professional paleontologist within five (5) working days, weather permitting, to determine the appropriate action(s) to prevent the potential loss of any significant paleontological values. Operations within 250 feet of such a discovery will not be resumed until written authorization to proceed is issued by the Authorized Officer. The applicant will bear the cost of any required paleontological appraisals, surface collection of fossils, or salvage of any large conspicuous fossils of significant scientific interest discovered during the operation.

6. The operator shall utilize wheel trenchers or ditch witches to construct all pipeline trenches associated with this project, except where extreme topography or other environmental factors preclude their use.

D. During Operations

1. Pipeline construction shall not block nor change the natural course of any drainage.

2. Pipeline trenches shall be compacted during backfilling. Pipeline trenches shall be maintained in order to correct settlement and erosion.

3. Sewage shall be placed in a self-contained, chemically treated toilets or other BLM approved systems on location.

4. The operator shall immediately institute a multi-year noxious weed control program on all disturbed lands associated with this project. On BLM surface lands, this will require a BLM authorized pesticide use permit prior to spraying of any commercial herbicides.

E. Reclamation

1. Disturbed lands will be recontoured back to conform with existing undisturbed topography. No depressions will be left that trap water or form ponds.

2. All disturbed lands associated with this project, including well locations, pipelines and access roads, will be expediently reclaimed and reseeded in accordance with the master surface use plan. The operator will drill seed on the contour to a depth of .5 inch, followed by cultipaction to compact the seedbed, preventing soil and seed losses. To maintain quality and purity, certified seed with a minimum germination rate of 80% and a minimum purity of 90% will be used. In lieu of a different seed mix desired by the landowner on private lands, use the following.

SPECIES-CULTIVAR	LBS PLS/ACRE
Western Wheatgrass-Rossanna	4
Bluebunch Wheatgrass	3
Needle and Thread Grass	2
Green Needlegrass-Lodorm	3
TOTAL	12

On slopes too steep for machinery to operate, twice the specified amount of seed may be broadcast and raked by hand. Complete fall seeding after September 15 and prior to prolonged ground frost. Complete spring seeding after the frost has left the ground and prior to May 15.

3. Water bars are to be constructed at least one (1) foot deep, parallel to the contour, with approximately two (2) feet of drop per 100 feet of water bar, to ensure drainage. Water bars are to be extended into established vegetation. All water bars are to be constructed with the berm on the downhill side of the water bar, to prevent soft material from silting in the trench. The initial water bars should be constructed at the top of the backslope. Subsequent water bars should follow the following general spacing guidelines:

% Slope	Spacing Interval (feet)
2 or <	200
2 – 4	100
4 – 5	75
5 or >	50

CONSULTATION/COORDINATION:
Lee Fyock – Greystone Consulting
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UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Buffalo Field Office
Buffalo, Wyoming

Optional Environmental Assessment (EA), FONSI/DR Short Form
For Coal Bed Methane Related Actions

EA#- WY-070-05-055

Proposed Action Title/Type: County Line 2 Water Management Plan (Delta, Epsilon, & Beta-2 PODs)
Location of Action: Johnson T48N, R77W
Section(s): 9, 21, 26, 27, 28, 29, 32, 33, 34, & 35
Applicant (if any): Anadarko Petroleum Corp.

Conformance with Applicable Land Use Plan:
The proposed action is in conformance with the Approved Resource Management Plan for the Public Lands Administered by the Bureau of Land Management, Buffalo Field Office, April 2001 and the Powder River Basin Oil and Gas Project Environmental Impact Statement and Resource Management Plan Amendment (PRB FEIS), #WY-070-02-065 (approved April 30, 2003).

The Plan has been reviewed to determine if the proposed action conforms to the land use plan terms and conditions as required by 43 CFR 1610.5. The Plan conforms to 43 CFR 1610.5 terms and conditions.

Relationship to Other Environmental Documents:
This site-specific analysis tiers to and incorporates by reference the information and analysis contained in the PRB FEIS and the Beta 2 Addition, Delta, and Epsilon PODs EA#s WY-070-03-210, WY-070-04-057, and WY-070-04-088 respectively.

Purpose & Need for Proposed Action: The operator has submitted a revised water management plan (WMP) due to changes in the treatment processes and the addition of land application for the water produced from the wells in the aforementioned PODs.

Description of Proposed Action (include mitigation required by policy, BLM manuals and the applicable Land Use Plan): The operator proposes the CBNG produced water to be handled in three different ways.

1. Treatment to meet Wyoming Department of Environmental Quality (WDEQ) National Pollutant Discharge Elimination System (NPDES) permits. The treatment systems will employ commercial ion exchange and/or reverse osmosis technologies.
2. Agricultural irrigation to grow crops on private surface located in T48N R77W Sec. 20, 21, 29, & 30,
3. Pumped to existing outfalls in Burger Draw per attached NPDES permits.
   Refer to EA#s WY-070-03-210, WY-070-04-057, and WY-070-04-088 for more information regarding this action.

Description of Affected Environment:

Floodplains / Land Application Disposal
The water produced from the proposed action will be added to existing infrastructure and will be used for existing irrigation and new irrigation sites. The operator has used some of these managed irrigation or land application disposal sites for over two years. The land application will use both a center pivot application and water canon delivery systems. Crops will be harvested and hay fields established, with the potential for grazing during the non-irrigation season. Landowner preference will help determine the plant species selection and management of the forage produced.

Land Application Disposal (LAD) is described in the PRB FEIS and Record of Decision (ROD) as, "A rest rotation cycle consisting of repeated phases of disposal, soil amendment, rest, and disposal until the limitations of repeated soil amendments are reached, and a portion of the site would be reclaimed. LAD would not be designed as traditional irrigation sites, in that return flows would not be anticipated because the produced water would be applied at agronomic rates and consumptive use by crops would be 100 percent plus leaching fraction". The irrigation quality of the Coal Bed Natural Gas (CBNG) production water and the variability of soils within the project area may have the potential to cause long term soil impacts. The key to this produced water disposal approach is management. If not properly managed, produced water has the potential to cause negative impacts to the physical and chemical properties of soil.

Private landowners may seek assistance from the Natural Resources Conservation Service (NRCS) to address irrigation practices for the land application of discharge water. The NRCS is the Federal agency capable of providing technical agronomic guidance to private property owners.

Critical Element Affected	**Potentially Affected**	**Critical Element**	**Potentially**
Air Quality	Yes ☐ No ☒	T&E Species	Yes ☐ No ☒
ACEC	Yes ☐ No ☒	Wastes, Haz./Solid	Yes ☐ No ☒
Cultural Resources	Yes ☐ No ☒	Water Quality	Yes ☐ No ☒
Farmlands, Prime/Unique	Yes ☐ No ☒	Wetlands/Riparian	Yes ☐ No ☒
Floodplains	Yes ☒ No ☐	Wild and Scenic Rivers	Yes ☐ No ☒
Nat. Amer. Rel. Concerns	Yes ☐ No ☒	Wilderness	Yes ☐ No ☒
Environmental Justice	Yes ☐ No ☒	Invasive Species	Yes ☒ No ☐

Environmental Consequences:

Floodplains / Land Application Disposal
The BLM is responsible for analyzing the proposed action using available data provided in the Water Management Plan (WMP) for the Plan of Development (POD), disclose potential impacts of the proposed action, assure the appropriate permits are submitted, and apply mitigation where necessary. Management of LAD is critical to the success of the operation. Therefore the success or failure of the project is the responsibility of the owner of the irrigated lands, CBNG operator or its representatives, and their successors. Literature review indicates potential impacts may exist.

The irrigation quality of the CBNG production water and the variability of soils within the project area may have the potential to cause long term soil impacts.

The WDEQ regulates discharge of produced water to 'waters of the state' under the NPDES program authorized by the Clean Water Act. WDEQ regulations for surface water include water quality standards to protect downstream irrigators. Where produced water will be used for irrigation WDEQ requires through their NPDES permit that, "no water may runoff and enter waters of the state". If the acceptable agronomic application rate is exceeded and water leaves the irrigation site and enters 'waters of the state', this may result in an NPDES permit enforcement action.

The operator proposes to add the water produced from these Federal wells to two existing irrigation (land application disposal) systems, and develop 6 new irrigation sites. BKS Consulting has determined that managed irrigation of CBNG produced water from the County Line 2 POD is feasible.

Soils: BKS Consulting has identified soil series, delineated soil map unit polygons and sampled the representative soils for baseline data at each existing and proposed site. The soil analysis of the Delta/Epsilon/Beta-2 POD indicates the presence of chemical and physical properties that limit the potential to successfully irrigate these soils without impacts. The National Soil Survey Handbook (NSSH 1996) soil interpretations rating guides indicated the following restrictive soil and site features:

Soil surface layer texture in some pedons indicates the potential for a slow water intake rate which may result in increased runoff potential. Sites with slopes greater than 3% indicate a potential for increased runoff. Soils with bedrock less than 40 inches from the soil surface have a lower soil available water holding capacity (AWHC), and consequently have a potential to accumulate salts within the root zone and could adversely affect the predicted soil leaching fraction and predicted water balance within the project area. Soil permeability could be a limitation due to the percentage of clay portrayed in the lab analysis.

Review of the lab data indicate that a number of the site locations have evidence of soil chemistry with elevated Electrical Conductivity (EC) levels > 4 MMHOS/CM indicating potential soil salinity issues. There were also sites that indicated an elevated Sodium Adsorption Ratio (SAR) levels >13 indicating potential sodium concerns.

Amendments: The soil amendment rates and timing will be determined by analysis of soil chemistry lab data and water chemistry by DR. Oster per conservation with BKS soils consultant 7/29/04. Application volume will be at an agronomic rate and will be monitored to prevent saturated soils and ponding (WMP table 11).

Water: Water will be applied to the irrigation areas at agricultural rates to maintain soil moisture content for favorable crop conditions and for maintaining grazing cover and forage.

The plan calls for irrigation rates to be regulated so that infiltration rate of the least permeable soil horizon would not be exceeded. If however, the site is not properly regulated, indirect effects could include elevated groundwater levels which could result in saline seeps and change of vegetation composition. Other indirect effects include the potential for leaching of soluble salts to groundwater. Irrigation for agricultural production will be used when the mean daily air temperature is above freezing. The irrigation project application rate will be at a projected

agronomic rate to prevent soil saturation, ponding or runoff and erosion to waters of the state and the associated WDEQ compliance violations and potential impacts to downstream landowners. When the irrigation system is not in use due to weather or soil restrictions, produced water will be pumped via pipelines to the permitted treatment facilities where raw water will be treated and discharged directly as described in the (WMP).

The water quality analysis of the Delta/Epsilon/Beta-2 POD (WMP addendum 4, representative water quality analysis) water samples showed an average Electrical Conductivity of 4267 umhos/cm. The United States Department of Agriculture (USDA) defines water with an Electrical Conductivity greater than 4 dS/m (4000 umhos/cm) as saline water. This EC limitation is important in the vegetation selection for the LAD site. This coal bed methane product water has a very high salinity hazard which is not suitable for irrigation under ordinary conditions based on standards used for irrigation suitability in Agriculture Handbook No. 60. Irrigation with this water quality on range or crop lands should be done with great care and managed closely. With time, salts from the product water can accumulate in the root zone to concentrations which will affect plant growth and long term productivity of the site.

The water quality analysis of the Delta/Epsilon/Beta-2 POD samples had an average Sodium Adsorption Ratio (SAR) of 33. The United States Department of Agriculture (USDA) defines water with a Sodium Adsorption Ratio (SAR) greater than 12 as sodic. This coal bed methane product water has a very high sodium hazard which is generally unsatisfactory for irrigation based on standards used for irrigation suitability in Agriculture Handbook No. 60. The sodium hazard of CBM produced irrigation water can cause soil crusting and impair soil hydraulic conductivity - affecting water availability and aeration, important to vegetation growth and yield. Upon wetting soils with swelling clay, sodium causes the degree of swelling in the clay to increase, causing dispersion and migration of clay particles. Elevated sodium and chloride concentrations can harm some woody plants due to direct toxicity as they are taken up by the root cells. Water with elevated sodium and chloride, directly applied to the plant leaves, can burn the leaves. Ions can accumulate in the leaves, causing leaf burn along the outer edge of the leaves. Sodium can indirectly affect crop growth by causing calcium, potassium, and magnesium deficiencies or by adversely affecting soil physical properties.

Vegetation:
The area has a potential benefit of cash crop hay production and increased grazeable forage production. Potential impacts may also include increased ground cover and organic matter accumulation, enhanced wildlife habitat, and increased management options related to the existing agriculture operation.

The introduced vegetation species will be either disked and seeded or interseeded directly into native sod. This will be dependant on landowner wishes and site capabilities.

Monitoring:
Sites need to be closely monitored to assure long-term soil health and productivity is maintained. The Water Management Plan (WMP) addresses monitoring by stating soils will be sampled two to three times during the growing season, at a minimum. Composite samples by field may be collected to reduce laboratory costs.

Monitoring of the LAD site must insure that the applied stoichiometric calculated soil amendments are mitigating any potential impacts caused by the application of very high saline and very high sodic waters. Monitoring will include an evaluation of soil chemical and physical

properties, runoff, erosion, water quantity and quality and vegetative performance. Specific soil chemistry and physical property action levels need to be established to ensure that the soil is not measurably impacted and that remedial actions can be implemented before soil damage takes place. Detailed information concerning monitoring requirement, conditions requiring action and the remedial measures are described in detail in Table 11 of the water management plan. APC will provide direct push sampling of the ground water at the irrigation sites to monitor for impacts to shallow groundwater

Summary:
The addition of the water produced in association with Federal minerals to the existing and newly developed managed irrigation system will not change the water quality, the water quantity, alter the amendment program used for the irrigation sites, nor impact the soil characteristics at those sites..

The WMP states the proposed project will be implemented on private property with the approval from the landowner. The landowner has been provided a copy of the management and closure plan and has authorized the use of this plan in writing.

Following the proposed treatment procedures and the monitoring program described in the WMP should insure that potential impacts are identified and mitigated. State and Federal agency permit requirements will assure compliance to the plan. Analysis of environmental consequences is based on the County Line 2 Water Management Plan (WMP) LAD proposal provided by PBS&J for Anadarko Petroleum Corporation and BKS Consulting.

On split estate, the BLM has no control over the management or associated liability of the LAD site located on private surface. Reclamation and mitigation practices maybe difficult to achieve and are expensive and are the soul responsibility of the operator and landowner, for any current or future liability associated with land application of CBNG production water from the Delta/Epsilon/Beta-2 POD.

Invasive Species:
Surface disturbance associated with construction of proposed pipelines, water management infrastructure, produced water discharge points and LAD sites would present opportunities for weed invasion and spread. Produced CBNG water would likely continue to modify existing soil moisture and soil chemistry regimes in the areas of water release and storage (i.e. land application). The activities related to the performance of the proposed project would create a favorable environment for the establishment and spread of noxious weeds/invasive plants such as salt cedar, russian and diffuse knapweed. However, mitigation as required by BLM applied COAs will ensure that potential impacts from noxious weeds and invasive plants will be minimal. In addition, the operator submitted an integrated pest management plan, for the Delta and Epsilon PODs to address the management strategies that will be implemented on weed control.

Cultural Resources: The revised water management plan would impact one cultural site: 48JO1811, a multi-component site determined not eligible for the National Register of Historic Places. Since the site is not a historic property (as defined by the National Historic Preservation Act), no mitigation is proposed.

Description of Impacts: The revised water management plan will include an additional treatment site (WET site) and modifications to the skewed reservoir treatment site. The new site and modifications have not been analyzed. The WET treatment site is located off an existing

access road and will disturb approximately 7 acres. An above ground storage tank will be utilized for land application on fee surface. The modifications to the skewed site will disturb approximately .5 additional acres. The two water storage tanks associated with LAD will disturb .1 acre each and the access pipeline corridor will be .4 miles long disturbing 1 acre. One additional outfall is proposed on the Powder River and will disturb .01 acre and the pipeline .2 miles in length will disturb .3 acres. The new disturbance for the revisions will total 5.01 acres. The Beaver Creek and Skewed reservoir treatment sites as well the outfalls were previously analyzed in the Delta, Epsilon, Beta II additions EAs. For more information on impacts, please refer to EA#s WY-070-03-210, WY-070-04-057, and WY-070-04-088.

Cumulative Impact Analysis: For a complete description of cumulative impacts, please refer to the PRB Final EIS Volume 2, Chapter 4, pages 4-1 through 4-364. Specifically, groundwater cumulative impacts are discussed on pages 4-64 through 4-69 and surface water cumulative impacts are discussed on pages 4-115 through 4-117 and 4-122 through 4-124.

OTHER PERMITS REQUIRED

A number of other permits are required from Wyoming State and other Federal agencies. These permits are identified in Table A-1 in the PRB FEIS Record of Decision.

The following permits and documents are required for the Applications for Permits to Drill (APD), POD approval:

- Wyoming Department of Environmental Quality (WDEQ) – National Pollutant Discharge Elimination System (NPDES) permit and Chapter 3 permits are required. The WDEQ permits the LAD water treatment facility and/or the LAD irrigation system through the Chapter 3 permit conditions, therefore regulates impacts to soil and potential mitigation requirements on private surface;
- WSEO - U.W. 5 ground water appropriation permit and an SW-3 surface water appropriation permit with irrigation as a beneficial use;
- Wyoming Oil and Gas Conservation Commission (WOGCC)-Form 14A permit if over fee or state mineral lease;
- Wyoming State law and constitution clearly establish that surface water and ground water are property of the State to be managed under a regulatory program administered by the State Engineers Office (appropriation) and WDEQ (quality).

Description of Proposed Mitigation Measures (applied as Conditions of Approval):

Conditions of Approval

A. Site Specific :

1. The owner of irrigated lands, CBNG operator and its representatives responsible for the management and operation of the LAD facility are responsible for ensuring that soil health and productivity are not damaged by the land application of CBNG produced water. This will be demonstrated and documented through adherence to the monitoring plan as proposed in the WMP.

2. The owner of irrigated lands, CBNG operator and its representatives responsible for the management and operation of the LAD facility are responsible for assuring the LAD irrigation practice complies with all State and Federal agency regulations.

3. Landowner approval, monitoring, mitigation measures, reclamation and site closure plan need to be addressed in the surface use agreement between the company and the surface landowner. This will be confirmed with the landowner at the time of the pre-construction field meeting.

4. The operator and their contractors shall ensure that all use, production, storage, transport and disposal of hazardous and extremely hazardous materials associated with the treatment facilities will be in accordance with all applicable existing or hereafter promulgated federal, state and local government rules, regulations and guidelines. All project-related activities involving hazardous materials will be conducted in a manner to minimize potential environmental impacts. In accordance with OSHA requirements, a file will be maintained onsite containing current Material Safety Data Sheets (MSDS) for all chemicals, compounds and/or substances which are used in the course of construction, drilling, completion and production operations.

5. If sodium concentrations exceed 17,000 mg/L, then the evaporation pond should be designed with effective wildlife exclusionary devices to prevent access by migratory birds or other options should be considered for the containment and disposal of the concentrated brine stream.

6. An engineered reclamation plan or design for modification of the skewed impoundment must be submitted to the BLM authorizing officer by no later than March 1, 2005. The reclamation plan or design for modification must be approved by the BLM authorizing officer prior to commencement. The modification must include, but is not limited to, bypass design, pit lining, zeolite clean-up, etc. The operator will be subject to an Incidence of Noncompliance (INC) with failure to meet the above timeframe.

7. The Van Houten Draw, Burger Draw, and Beaver Creek drainages must be routinely monitored for invasive species, primarily Salt Cedar. All invasive species (i.e. Salt Cedar) must be killed that are located on Anadarko Petroleum Corp. leased acreages.

General

1. If any cultural values [sites, artifacts, human remains (Appendix L FEIS)] are observed during operation of this lease/permit/right-of-way, they will be left intact and the Buffalo Field Manager notified. The authorized officer will conduct an evaluation of the cultural values to establish appropriate mitigation, salvage or treatment. The operator is responsible for informing all persons in the area who are associated with this project that they will be subject to prosecution for knowingly disturbing historic or archaeological sites, or for collecting artifacts. If historic or archaeological materials are uncovered during construction, the operator is to immediately stop work that might further disturb such materials, and contact the authorized BLM officer (AO). Within five working days the AO will inform the operator as to:

    - whether the materials appear eligible for the National Register of Historic Places;
    - the mitigation measures the operator will likely have to undertake before the site can be used (assuming in situ preservation is not necessary); and,
    - a time-frame for the AO to complete an expedited review under 36 CFR 800.11 to confirm, through the State Historic Preservation Officer, that the findings of the AO are correct and that mitigation is appropriate. The AO will provide technical and procedural guidelines for the conduct of mitigation. Upon

verification from the AO that the required mitigation has been completed, the operator will then be allowed to resume construction measures.

2. If paleontological resources, either large or conspicuous, and/or a significant scientific value are discovered during construction, the find will be reported to the Authorized Officer immediately. Construction will be suspended within 250 feet of said find. An evaluation of the paleontological discovery will be made by a BLM approved professional paleontologist within five (5) working days, weather permitting, to determine the appropriate action(s) to prevent the potential loss of any significant paleontological values. Operations within 250 feet of such a discovery will not be resumed until written authorization to proceed is issued by the Authorized Officer. The applicant will bear the cost of any required paleontological appraisals, surface collection of fossils, or salvage of any large conspicuous fossils of significant scientific interest discovered during the operation.
3. Please contact Casey Freise, Natural Resource Specialist, @ (307) 684-1189, Bureau of Land Management, Buffalo, if there are any questions concerning these surface use COAs.
4. The operator will comply with all the regulations and reporting requirements of the NPDES permits as issued by the WDEQ for this action. In the event that water quality parameters are not met, water production from all federal wells discharging to these drainages from this POD will be suspended. Production from these wells may only be resumed when the parameters of the NPDES permit can be met.

B. Construction

1. A pre-construction field meeting shall be conducted prior to beginning any dirt work approved under this POD. The operator shall contact the BLM Authorized Officer (responsible NRS @ 307-684-1189) at least 4-days prior to beginning operations so that the meeting can be scheduled. The operator is responsible for having all contractors present (dirt contractors, drilling contractor, pipeline contractor, project oversight personnel, etc.) including the overall field operations superintendent, and for providing all contractors copies of the approved POD, project map and BLM Conditions of Approval pertinent to the work that each will be doing.
2. The operator will limit vegetation removal and the degree of surface disturbance wherever possible. Where surface disturbance cannot be avoided, all practicable measures will be utilized to minimize erosion and stabilize disturbed soils.
3. Construction and drilling activity will not be conducted using frozen or saturated soil material during periods when watershed damage or excessive rutting is likely to occur.
4. Remove all available topsoil (depths vary from 4 inches on ridges to 12+ inches in bottoms) from constructed well locations including areas of cut and fill, and stockpile at the site. Topsoil will also be salvaged for use in reclamation on all other areas of surface disturbance (roads, pipelines, etc.). Clearly segregate topsoil from excess spoil material. Any topsoil stockpiled for one year or longer will be signed and stabilized with annual ryegrass or other suitable cover crop.
5. The operator will not push soil material and overburden over side slopes or into drainages. All soil material disturbed will be placed in an area where it can be retrieved without creating additional undue surface disturbance and where it does not impede watershed and drainage flows.

6. Construct the backslope no steeper than 1½:1, and construct the foreslope no steeper than 2:1, unless otherwise directed by the BLM Authorized Officer.
7. Maintain a minimum 20-foot undisturbed vegetative border between toe-of-fill of pad and/or pit areas and the edge of adjacent drainages, unless otherwise directed by the BLM Authorized Officer.
8. The operator shall utilize wheel trenchers or ditch witches to construct all pipeline trenches, except where extreme topography or other environmental factors preclude their use.
9. Construction and other project-related traffic will be restricted to approved routes. Cross-country vehicle travel will not be allowed.
10. Pipeline construction shall not block nor change the natural course of any drainage. Pipelines shall cross perpendicular to drainages. Pipelines shall not be run parallel in drainage bottoms. Suspended pipelines shall provide adequate clearance for maximum runoff.
11. Pipeline trenches shall be compacted during backfilling. Pipeline trenches shall be routinely inspected and maintained to ensure proper settling, stabilization and reclamation.
12. Operators are required to obtain a National Pollution Discharge Elimination System (NPDES) Storm Water Permit from the Wyoming DEQ for any projects that disturb five or more acres (changing to one acre in March 2005). This general construction storm water permit must be obtained from WDEQ prior to any surface disturbing activities and can be obtained by following directions on the WDEQ website at http://deq.state.wy.us. Further information can be obtained by contacting Barb Sahl at (307) 777-7570.
13. The operator shall submit a Sundry Notice (Form 3160-5) to BLM for approval prior to construction of any new surface disturbing activities that are not specifically addressed in the approved APD or POD Surface Use Plan.
14. The operator will be responsible for prevention and control of noxious weeds and weeds of concern on all areas of surface disturbance associated with this project (well locations, roads, water management facilities, etc.) Use of pesticides shall comply with the applicable Federal and State laws. Pesticides shall be used only in accordance with their registered uses and within limitations imposed by the Secretary of Interior. Prior to the use of pesticides on public land, the holder shall obtain from the BLM authorized officer written approval of a plan showing the type and quantity of material to be used, pest(s) to be controlled, method of application, location of storage and disposal of containers, and any other information deemed necessary by the authorized officer to such use.
15. All permanent above-ground structures (e.g. , production equipment, tanks, etc.) not subject to safety requirements will be painted to blend with the natural color of the landscape. The paint used will be a color which simulates "Standard Environmental Colors." The color selected is (Carlsbad Canyon (2.5Y 6/2)).
16. Sewage shall be placed in a self-contained, chemically treated porta-potty on location.

C. Reclamation

1. All disturbed lands associated with this project, including the pipelines, access roads, water management facilities, etc will be expediently reclaimed and reseeded in accordance with the surface use plan and any pertinent site-specific COAs.

2. Disturbed lands will be recontoured back to conform with existing undisturbed topography. No depressions will be left that trap water or form ponds.

3. Distribute the topsoil evenly over the entire location and other disturbed areas. Prepare the seedbed by disking to a depth of 4-to-6 inches following the contour.

4. Waterbars are to be constructed at least one (1) foot deep, on the contour with approximately two (2) feet of drop per 100 feet of waterbar to ensure drainage, and extended into established vegetation. All waterbars are to be constructed with the berm on the downhill side to prevent the soft material from silting in the trench. The initial waterbar should be constructed at the top of the backslope. Subsequent waterbars should follow the following general spacing guidelines:

Slope (percent)	Spacing Interval (feet)
≤ 2	200
2 – 4	100
4 – 5	75
≥ 5	50

5. The operator will drill seed on the contour to a depth of 0.5 inch, followed by cultipaction to compact the seedbed, preventing soil and seed losses. To maintain quality and purity, the current years tested, certified seed with a minimum germination rate of 80% and a minimum purity of 90% will be used. On BLM surface or in lieu of a different specific mix desired by the surface owner, use the following:

SPECIES-CULTIVAR	LBS PLS/ACRE
Thickspike wheatgrass – Sodar	**4**
Bluebunch wheatgrass – Goldar	**4**
Indian ricegrass – Paloma	**2**
Needle-and-thread	**1**
White Prairie Clover	**1**
Blue Flax	**1**
Total	**13**

   - Slopes too steep for machinery may be hand broadcast and raked with twice the specified amount of seed. Complete fall seeding after September 15 and prior to prolonged ground frost. To be effective, complete spring seeding after the frost has left the ground and prior to May 15.

6. Phased reclamation plans will be submitted to BLM for approval prior to individual POD facility abandonment via a Notice of Intent (NOI) Sundry Notice. Individual facilities, such as well locations, pipelines, discharge points, impoundments, etc. need to be addressed in these plans as they are no longer needed. Individual items that will need to be addressed in reclamation plans include:

   - Configuration of reshaped topography, drainage systems, and other surface manipulations
   - Waste disposal
   - Revegetation methods, including specific seed mix (pounds pure live seed/acre) and soil treatments (seedbed preparation, fertilization, mulching, etc.). On private surface, the landowner should be consulted for the specific seed mix.

- Other practices that will be used to reclaim and stabilize all disturbed areas, such as water bars, erosion fabric, hydro-mulching, etc.
- An estimate of the timetables for beginning and completing various reclamation operations relative to weather and local land uses.
- Methods and measures that will be used to control noxious weeds, addressing both ingress and egress to the individual well or POD.
- Decommissioning/removal of all surface facilities
- Closure and reclamation of areas utilized or impacted by produced CBM water, including discharge points, reservoirs, off-channel pits, land application areas, livestock/wildlife watering facilities, surface discharge stream channels, etc

7. BLM will not release the performance bond until all disturbed areas associated with the APD/POD have been successfully revegetated (evaluation will be made after the second complete growing season) and has met all other reclamation goals of the surface owner and surface management agency.
8. A Notice of Intent to Abandon and a Subsequent Report of Abandonment must be submitted for abandonment approval.
9. For performance bond release approval, a Final Abandonment Notice (with a surface owner release letter on split-estate) must be submitted prior to a final abandonment evaluation by BLM.
10. Soil fertility testing and the addition of soil amendments may be required to stabilize some disturbed lands.
11. Any mulch utilized for reclamation needs to be certified weed free.

D. Treatment Facility Locations

1. Reduce the backslope to 2:1 and the foreslope to 3:1, unless otherwise directed by the BLM Authorized Officer. Reduce slopes by pulling fill material up from foreslope into the toe of cut slopes.
2. Production facilities (including dikes) must be placed on the cut portion of the location and a minimum of 15 feet from the toe of the back cut unless otherwise approved by the BLM Authorized Officer.
3. Any spilled or leaked oil, produced water or treatment chemicals must be reported in accordance with NTL-2A and immediately cleaned up in accordance with BLM requirements. This includes clean-up and proper disposition of soils contaminated as a result of such spills/leaks.
4. Distribute stockpiled topsoil evenly over those areas not required for production and reseed as recommended.

Consultation/Coordination:

Contact	Title	Organization	Phone Number	Present at Onsite?
Jeff Kline	Water Programs Manager	Anadarko Petroleum	(832) 636-2611	Yes
Pat Walker	Senior Production Foreman	Anadarko Petroleum	(307)685-4131	Yes

Reviewers: Elizabeth Burghard – Cultural Specialist, Larry Gerard – Wildlife Specialist, Arnie Irwin – Soil Scientist, Mike McKinley – Hydrologist, Casey Freise – Natural Resource Specialist, Paul Beels NEPA Coordinator, & Willy Frank Supervisory Natural Resource Specialist

Preparer(s): Casey Freise

Date: 12/21/04

FINDING OF NO SIGNIFICANT IMPACT/DECISION RECORD

I have determined that the proposed action is in conformance with the Approved Resource Management Plan for the Public Lands Administered by the Bureau of Land Management, Buffalo Field Office, April 2001 and the Powder River Basin Oil and Gas Project Environmental Impact Statement and Resource Management Plan Amendment (PRB FEIS), #WY-070-02-065 (approved April 30, 2003). I have reviewed this environmental assessment including the analyses of potentially significant environmental impacts. I have determined that the proposed action, with the mitigation measures described below, will not have any significant impacts on the human environment and that an EIS is not required. It is my decision to implement the project with the mitigation measures identified above as Conditions of Approval.

Authorized Official: _____ Date: 20 Jan 05

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Buffalo Field Office
Buffalo, Wyoming

Optional Environmental Assessment (EA), FONSI/DR Short Form
For Coal Bed Methane Related Actions

EA#- WY-070-05-055

Proposed Action Title/Type: County Line 2 Water Management Plan (Delta, Epsilon, & Beta-2 PODs)
Location of Action: Johnson T48N, R77W
Section(s): 9, 21, 26, 27, 28, 29, 32, 33, 34, & 35
Applicant (if any): Anadarko Petroleum Corp.

Conformance with Applicable Land Use Plan:
The proposed action is in conformance with the Approved Resource Management Plan for the Public Lands Administered by the Bureau of Land Management, Buffalo Field Office, April 2001 and the Powder River Basin Oil and Gas Project Environmental Impact Statement and Resource Management Plan Amendment (PRB FEIS), #WY-070-02-065 (approved April 30, 2003).

The Plan has been reviewed to determine if the proposed action conforms to the land use plan terms and conditions as required by 43 CFR 1610.5. The Plan conforms to 43 CFR 1610.5 terms and conditions.

Relationship to Other Environmental Documents:
This site-specific analysis tiers to and incorporates by reference the information and analysis contained in the PRB FEIS and the Beta 2 Addition, Delta, and Epsilon PODs EA#s WY-070-03-210, WY-070-04-057, and WY-070-04-088 respectively.

Purpose & Need for Proposed Action: The operator has submitted a revised water management plan (WMP) due to changes in the treatment processes and the addition of land application for the water produced from the wells in the aforementioned PODs.

Description of Proposed Action (include mitigation required by policy, BLM manuals and the applicable Land Use Plan): The operator proposes the CBNG produced water to be handled in three different ways.

1. Treatment to meet Wyoming Department of Environmental Quality (WDEQ) National Pollutant Discharge Elimination System (NPDES) permits. The treatment systems will employ commercial ion exchange and/or reverse osmosis technologies.
2. Agricultural irrigation to grow crops on private surface located in T48N R77W Sec. 20, 21, 29, & 30,
3. Pumped to existing outfalls in Burger Draw per attached NPDES permits.
   Refer to EA#s WY-070-03-210, WY-070-04-057, and WY-070-04-088 for more information regarding this action.

Description of Affected Environment:

Floodplains / Land Application Disposal
The water produced from the proposed action will be added to existing infrastructure and will be used for existing irrigation and new irrigation sites. The operator has used some of these managed irrigation or land application disposal sites for over two years. The land application will use both a center pivot application and water canon delivery systems. Crops will be harvested and hay fields established, with the potential for grazing during the non-irrigation season. Landowner preference will help determine the plant species selection and management of the forage produced.

Land Application Disposal (LAD) is described in the PRB FEIS and Record of Decision (ROD) as, "A rest rotation cycle consisting of repeated phases of disposal, soil amendment, rest, and disposal until the limitations of repeated soil amendments are reached, and a portion of the site would be reclaimed. LAD would not be designed as traditional irrigation sites, in that return flows would not be anticipated because the produced water would be applied at agronomic rates and consumptive use by crops would be 100 percent plus leaching fraction". The irrigation quality of the Coal Bed Natural Gas (CBNG) production water and the variability of soils within the project area may have the potential to cause long term soil impacts. The key to this produced water disposal approach is management. If not properly managed, produced water has the potential to cause negative impacts to the physical and chemical properties of soil.

Private landowners may seek assistance from the Natural Resources Conservation Service (NRCS) to address irrigation practices for the land application of discharge water. The NRCS is the Federal agency capable of providing technical agronomic guidance to private property owners.

Critical Element	Potentially Affected	Critical Element	Potentially Affected
Air Quality	Yes ☐ No ☒	T&E Species	Yes ☐ No ☒
ACEC	Yes ☐ No ☒	Wastes, Haz./Solid	Yes ☐ No ☒
Cultural Resources	Yes ☐ No ☒	Water Quality	Yes ☐ No ☒
Farmlands, Prime/Unique	Yes ☐ No ☒	Wetlands/Riparian	Yes ☐ No ☒
Floodplains	Yes ☒ No ☐	Wild and Scenic Rivers	Yes ☐ No ☒
Nat. Amer. Rel. Concerns	Yes ☐ No ☒	Wilderness	Yes ☐ No ☒
Environmental Justice	Yes ☐ No ☒	Invasive Species	Yes ☒ No ☐

Environmental Consequences:

Floodplains / Land Application Disposal
The BLM is responsible for analyzing the proposed action using available data provided in the Water Management Plan (WMP) for the Plan of Development (POD), disclose potential impacts of the proposed action, assure the appropriate permits are submitted, and apply mitigation where necessary. Management of LAD is critical to the success of the operation. Therefore the success or failure of the project is the responsibility of the owner of the irrigated lands, CBNG operator or its representatives, and their successors. Literature review indicates potential impacts may exist.

The irrigation quality of the CBNG production water and the variability of soils within the project area may have the potential to cause long term soil impacts.

The WDEQ regulates discharge of produced water to 'waters of the state' under the NPDES program authorized by the Clean Water Act. WDEQ regulations for surface water include water quality standards to protect downstream irrigators. Where produced water will be used for irrigation WDEQ requires through their NPDES permit that, "no water may runoff and enter waters of the state". If the acceptable agronomic application rate is exceeded and water leaves the irrigation site and enters 'waters of the state', this may result in an NPDES permit enforcement action.

The operator proposes to add the water produced from these Federal wells to two existing irrigation (land application disposal) systems, and develop 6 new irrigation sites. BKS Consulting has determined that managed irrigation of CBNG produced water from the County Line 2 POD is feasible.

Soils: BKS Consulting has identified soil series, delineated soil map unit polygons and sampled the representative soils for baseline data at each existing and proposed site. The soil analysis of the Delta/Epsilon/Beta-2 POD indicates the presence of chemical and physical properties that limit the potential to successfully irrigate these soils without impacts. The National Soil Survey Handbook (NSSH 1996) soil interpretations rating guides indicated the following restrictive soil and site features:

Soil surface layer texture in some pedons indicates the potential for a slow water intake rate which may result in increased runoff potential. Sites with slopes greater than 3% indicate a potential for increased runoff. Soils with bedrock less than 40 inches from the soil surface have a lower soil available water holding capacity (AWHC), and consequently have a potential to accumulate salts within the root zone and could adversely affect the predicted soil leaching fraction and predicted water balance within the project area. Soil permeability could be a limitation due to the percentage of clay portrayed in the lab analysis.

Review of the lab data indicate that a number of the site locations have evidence of soil chemistry with elevated Electrical Conductivity (EC) levels > 4 MMHOS/CM indicating potential soil salinity issues. There were also sites that indicated an elevated Sodium Adsorption Ratio (SAR) levels >13 indicating potential sodium concerns.

Amendments: The soil amendment rates and timing will be determined by analysis of soil chemistry lab data and water chemistry by DR. Oster per conservation with BKS soils consultant 7/29/04. Application volume will be at an agronomic rate and will be monitored to prevent saturated soils and ponding (WMP table 11).

Water: Water will be applied to the irrigation areas at agricultural rates to maintain soil moisture content for favorable crop conditions and for maintaining grazing cover and forage.

The plan calls for irrigation rates to be regulated so that infiltration rate of the least permeable soil horizon would not be exceeded. If however, the site is not properly regulated, indirect effects could include elevated groundwater levels which could result in saline seeps and change of vegetation composition. Other indirect effects include the potential for leaching of soluble salts to groundwater. Irrigation for agricultural production will be used when the mean daily air temperature is above freezing. The irrigation project application rate will be at a projected

agronomic rate to prevent soil saturation, ponding or runoff and erosion to waters of the state and the associated WDEQ compliance violations and potential impacts to downstream landowners. When the irrigation system is not in use due to weather or soil restrictions, produced water will be pumped via pipelines to the permitted treatment facilities where raw water will be treated and discharged directly as described in the (WMP).

The water quality analysis of the Delta/Epsilon/Beta-2 POD (WMP addendum 4, representative water quality analysis) water samples showed an average Electrical Conductivity of 4267 umhos/cm. The United States Department of Agriculture (USDA) defines water with an Electrical Conductivity greater than 4 dS/m (4000 umhos/cm) as saline water. This EC limitation is important in the vegetation selection for the LAD site. This coal bed methane product water has a very high salinity hazard which is not suitable for irrigation under ordinary conditions based on standards used for irrigation suitability in Agriculture Handbook No. 60. Irrigation with this water quality on range or crop lands should be done with great care and managed closely. With time, salts from the product water can accumulate in the root zone to concentrations which will affect plant growth and long term productivity of the site.

The water quality analysis of the Delta/Epsilon/Beta-2 POD samples had an average Sodium Adsorption Ratio (SAR) of 33. The United States Department of Agriculture (USDA) defines water with a Sodium Adsorption Ratio (SAR) greater than 12 as sodic. This coal bed methane product water has a very high sodium hazard which is generally unsatisfactory for irrigation based on standards used for irrigation suitability in Agriculture Handbook No. 60. The sodium hazard of CBM produced irrigation water can cause soil crusting and impair soil hydraulic conductivity - affecting water availability and aeration, important to vegetation growth and yield. Upon wetting soils with swelling clay, sodium causes the degree of swelling in the clay to increase, causing dispersion and migration of clay particles. Elevated sodium and chloride concentrations can harm some woody plants due to direct toxicity as they are taken up by the root cells. Water with elevated sodium and chloride, directly applied to the plant leaves, can burn the leaves. Ions can accumulate in the leaves, causing leaf burn along the outer edge of the leaves. Sodium can indirectly affect crop growth by causing calcium, potassium, and magnesium deficiencies or by adversely affecting soil physical properties.

Vegetation:
The area has a potential benefit of cash crop hay production and increased grazeable forage production. Potential impacts may also include increased ground cover and organic matter accumulation, enhanced wildlife habitat, and increased management options related to the existing agriculture operation.

The introduced vegetation species will be either disked and seeded or interseeded directly into native sod. This will be dependant on landowner wishes and site capabilities.

Monitoring:
Sites need to be closely monitored to assure long-term soil health and productivity is maintained. The Water Management Plan (WMP) addresses monitoring by stating soils will be sampled two to three times during the growing season, at a minimum. Composite samples by field may be collected to reduce laboratory costs.

Monitoring of the LAD site must insure that the applied stoichiometric calculated soil amendments are mitigating any potential impacts caused by the application of very high saline and very high sodic waters. Monitoring will include an evaluation of soil chemical and physical

properties, runoff, erosion, water quantity and quality and vegetative performance. Specific soil chemistry and physical property action levels need to be established to ensure that the soil is not measurably impacted and that remedial actions can be implemented before soil damage takes place. Detailed information concerning monitoring requirement, conditions requiring action and the remedial measures are described in detail in Table 11 of the water management plan. APC will provide direct push sampling of the ground water at the irrigation sites to monitor for impacts to shallow groundwater

Summary:
The addition of the water produced in association with Federal minerals to the existing and newly developed managed irrigation system will not change the water quality, the water quantity, alter the amendment program used for the irrigation sites, nor impact the soil characteristics at those sites..

The WMP states the proposed project will be implemented on private property with the approval from the landowner. The landowner has been provided a copy of the management and closure plan and has authorized the use of this plan in writing.

Following the proposed treatment procedures and the monitoring program described in the WMP should insure that potential impacts are identified and mitigated. State and Federal agency permit requirements will assure compliance to the plan. Analysis of environmental consequences is based on the County Line 2 Water Management Plan (WMP) LAD proposal provided by PBS&J for Anadarko Petroleum Corporation and BKS Consulting.

On split estate, the BLM has no control over the management or associated liability of the LAD site located on private surface. Reclamation and mitigation practices maybe difficult to achieve and are expensive and are the soul responsibility of the operator and landowner, for any current or future liability associated with land application of CBNG production water from the Delta/Epsilon/Beta-2 POD.

Invasive Species:
Surface disturbance associated with construction of proposed pipelines, water management infrastructure, produced water discharge points and LAD sites would present opportunities for weed invasion and spread. Produced CBNG water would likely continue to modify existing soil moisture and soil chemistry regimes in the areas of water release and storage (i.e. land application). The activities related to the performance of the proposed project would create a favorable environment for the establishment and spread of noxious weeds/invasive plants such as salt cedar, russian and diffuse knapweed. However, mitigation as required by BLM applied COAs will ensure that potential impacts from noxious weeds and invasive plants will be minimal. In addition, the operator submitted an integrated pest management plan, for the Delta and Epsilon PODs to address the management strategies that will be implemented on weed control.

Cultural Resources: The revised water management plan would impact one cultural site: 48JO1811, a multi-component site determined not eligible for the National Register of Historic Places. Since the site is not a historic property (as defined by the National Historic Preservation Act), no mitigation is proposed.

Description of Impacts: The revised water management plan will include an additional treatment site (WET site) and modifications to the skewed reservoir treatment site. The new site and modifications have not been analyzed. The WET treatment site is located off an existing

access road and will disturb approximately 7 acres. An above ground storage tank will be utilized for land application on fee surface. The modifications to the skewed site will disturb approximately .5 additional acres. The two water storage tanks associated with LAD will disturb .1 acre each and the access pipeline corridor will be .4 miles long disturbing 1 acre. One additional outfall is proposed on the Powder River and will disturb .01 acre and the pipeline .2 miles in length will disturb .3 acres. The new disturbance for the revisions will total 5.01 acres. The Beaver Creek and Skewed reservoir treatment sites as well the outfalls were previously analyzed in the Delta, Epsilon, Beta II additions EAs. For more information on impacts, please refer to EA#s WY-070-03-210, WY-070-04-057, and WY-070-04-088.

Cumulative Impact Analysis: For a complete description of cumulative impacts, please refer to the PRB Final EIS Volume 2, Chapter 4, pages 4-1 through 4-364. Specifically, groundwater cumulative impacts are discussed on pages 4-64 through 4-69 and surface water cumulative impacts are discussed on pages 4-115 through 4-117 and 4-122 through 4-124.

OTHER PERMITS REQUIRED

A number of other permits are required from Wyoming State and other Federal agencies. These permits are identified in Table A-1 in the PRB FEIS Record of Decision.

The following permits and documents are required for the Applications for Permits to Drill (APD), POD approval:

- Wyoming Department of Environmental Quality (WDEQ) – National Pollutant Discharge Elimination System (NPDES) permit and Chapter 3 permits are required. The WDEQ permits the LAD water treatment facility and/or the LAD irrigation system through the Chapter 3 permit conditions, therefore regulates impacts to soil and potential mitigation requirements on private surface;
- WSEO - U.W. 5 ground water appropriation permit and an SW-3 surface water appropriation permit with irrigation as a beneficial use;
- Wyoming Oil and Gas Conservation Commission (WOGCC)-Form 14A permit if over fee or state mineral lease;
- Wyoming State law and constitution clearly establish that surface water and ground water are property of the State to be managed under a regulatory program administered by the State Engineers Office (appropriation) and WDEQ (quality).

Description of Proposed Mitigation Measures (applied as Conditions of Approval):

Conditions of Approval

A. Site Specific :

1. The owner of irrigated lands, CBNG operator and its representatives responsible for the management and operation of the LAD facility are responsible for ensuring that soil health and productivity are not damaged by the land application of CBNG produced water. This will be demonstrated and documented through adherence to the monitoring plan as proposed in the WMP.

2. The owner of irrigated lands, CBNG operator and its representatives responsible for the management and operation of the LAD facility are responsible for assuring the LAD irrigation practice complies with all State and Federal agency regulations.

3. Landowner approval, monitoring, mitigation measures, reclamation and site closure plan need to be addressed in the surface use agreement between the company and the surface landowner. This will be confirmed with the landowner at the time of the pre-construction field meeting.

4. The operator and their contractors shall ensure that all use, production, storage, transport and disposal of hazardous and extremely hazardous materials associated with the treatment facilities will be in accordance with all applicable existing or hereafter promulgated federal, state and local government rules, regulations and guidelines. All project-related activities involving hazardous materials will be conducted in a manner to minimize potential environmental impacts. In accordance with OSHA requirements, a file will be maintained onsite containing current Material Safety Data Sheets (MSDS) for all chemicals, compounds and/or substances which are used in the course of construction, drilling, completion and production operations.

5. If sodium concentrations exceed 17,000 mg/L, then the evaporation pond should be designed with effective wildlife exclusionary devices to prevent access by migratory birds or other options should be considered for the containment and disposal of the concentrated brine stream.

6. An engineered reclamation plan or design for modification of the skewed impoundment must be submitted to the BLM authorizing officer by no later than March 1, 2005. The reclamation plan or design for modification must be approved by the BLM authorizing officer prior to commencement. The modification must include, but is not limited to, bypass design, pit lining, zeolite clean-up, etc. The operator will be subject to an Incidence of Noncompliance (INC) with failure to meet the above timeframe.

7. The Van Houten Draw, Burger Draw, and Beaver Creek drainages must be routinely monitored for invasive species, primarily Salt Cedar. All invasive species (i.e. Salt Cedar) must be killed that are located on Anadarko Petroleum Corp. leased acreages.

General

1. If any cultural values [sites, artifacts, human remains (Appendix L FEIS)] are observed during operation of this lease/permit/right-of-way, they will be left intact and the Buffalo Field Manager notified. The authorized officer will conduct an evaluation of the cultural values to establish appropriate mitigation, salvage or treatment. The operator is responsible for informing all persons in the area who are associated with this project that they will be subject to prosecution for knowingly disturbing historic or archaeological sites, or for collecting artifacts. If historic or archaeological materials are uncovered during construction, the operator is to immediately stop work that might further disturb such materials, and contact the authorized BLM officer (AO). Within five working days the AO will inform the operator as to:

    - whether the materials appear eligible for the National Register of Historic Places;
    - the mitigation measures the operator will likely have to undertake before the site can be used (assuming in situ preservation is not necessary); and,
    - a time-frame for the AO to complete an expedited review under 36 CFR 800.11 to confirm, through the State Historic Preservation Officer, that the findings of the AO are correct and that mitigation is appropriate. The AO will provide technical and procedural guidelines for the conduct of mitigation. Upon

verification from the AO that the required mitigation has been completed, the operator will then be allowed to resume construction measures.

2. If paleontological resources, either large or conspicuous, and/or a significant scientific value are discovered during construction, the find will be reported to the Authorized Officer immediately. Construction will be suspended within 250 feet of said find. An evaluation of the paleontological discovery will be made by a BLM approved professional paleontologist within five (5) working days, weather permitting, to determine the appropriate action(s) to prevent the potential loss of any significant paleontological values. Operations within 250 feet of such a discovery will not be resumed until written authorization to proceed is issued by the Authorized Officer. The applicant will bear the cost of any required paleontological appraisals, surface collection of fossils, or salvage of any large conspicuous fossils of significant scientific interest discovered during the operation.
3. Please contact Casey Freise, Natural Resource Specialist, @ (307) 684-1189, Bureau of Land Management, Buffalo, if there are any questions concerning these surface use COAs.
4. The operator will comply with all the regulations and reporting requirements of the NPDES permits as issued by the WDEQ for this action. In the event that water quality parameters are not met, water production from all federal wells discharging to these drainages from this POD will be suspended. Production from these wells may only be resumed when the parameters of the NPDES permit can be met.

B. Construction

1. A pre-construction field meeting shall be conducted prior to beginning any dirt work approved under this POD. The operator shall contact the BLM Authorized Officer (responsible NRS @ 307-684-1189) at least 4-days prior to beginning operations so that the meeting can be scheduled. The operator is responsible for having all contractors present (dirt contractors, drilling contractor, pipeline contractor, project oversight personnel, etc.) including the overall field operations superintendent, and for providing all contractors copies of the approved POD, project map and BLM Conditions of Approval pertinent to the work that each will be doing.
2. The operator will limit vegetation removal and the degree of surface disturbance wherever possible. Where surface disturbance cannot be avoided, all practicable measures will be utilized to minimize erosion and stabilize disturbed soils.
3. Construction and drilling activity will not be conducted using frozen or saturated soil material during periods when watershed damage or excessive rutting is likely to occur.
4. Remove all available topsoil (depths vary from 4 inches on ridges to 12+ inches in bottoms) from constructed well locations including areas of cut and fill, and stockpile at the site. Topsoil will also be salvaged for use in reclamation on all other areas of surface disturbance (roads, pipelines, etc.). Clearly segregate topsoil from excess spoil material. Any topsoil stockpiled for one year or longer will be signed and stabilized with annual ryegrass or other suitable cover crop.
5. The operator will not push soil material and overburden over side slopes or into drainages. All soil material disturbed will be placed in an area where it can be retrieved without creating additional undue surface disturbance and where it does not impede watershed and drainage flows.

6. Construct the backslope no steeper than 1½:1, and construct the foreslope no steeper than 2:1, unless otherwise directed by the BLM Authorized Officer.
7. Maintain a minimum 20-foot undisturbed vegetative border between toe-of-fill of pad and/or pit areas and the edge of adjacent drainages, unless otherwise directed by the BLM Authorized Officer.
8. The operator shall utilize wheel trenchers or ditch witches to construct all pipeline trenches, except where extreme topography or other environmental factors preclude their use.
9. Construction and other project-related traffic will be restricted to approved routes. Cross-country vehicle travel will not be allowed.
10. Pipeline construction shall not block nor change the natural course of any drainage. Pipelines shall cross perpendicular to drainages. Pipelines shall not be run parallel in drainage bottoms. Suspended pipelines shall provide adequate clearance for maximum runoff.
11. Pipeline trenches shall be compacted during backfilling. Pipeline trenches shall be routinely inspected and maintained to ensure proper settling, stabilization and reclamation.
12. Operators are required to obtain a National Pollution Discharge Elimination System (NPDES) Storm Water Permit from the Wyoming DEQ for any projects that disturb five or more acres (changing to one acre in March 2005). This general construction storm water permit must be obtained from WDEQ prior to any surface disturbing activities and can be obtained by following directions on the WDEQ website at http://deq.state.wy.us. Further information can be obtained by contacting Barb Sahl at (307) 777-7570.
13. The operator shall submit a Sundry Notice (Form 3160-5) to BLM for approval prior to construction of any new surface disturbing activities that are not specifically addressed in the approved APD or POD Surface Use Plan.
14. The operator will be responsible for prevention and control of noxious weeds and weeds of concern on all areas of surface disturbance associated with this project (well locations, roads, water management facilities, etc.) Use of pesticides shall comply with the applicable Federal and State laws. Pesticides shall be used only in accordance with their registered uses and within limitations imposed by the Secretary of Interior. Prior to the use of pesticides on public land, the holder shall obtain from the BLM authorized officer written approval of a plan showing the type and quantity of material to be used, pest(s) to be controlled, method of application, location of storage and disposal of containers, and any other information deemed necessary by the authorized officer to such use.
15. All permanent above-ground structures (e.g. , production equipment, tanks, etc.) not subject to safety requirements will be painted to blend with the natural color of the landscape. The paint used will be a color which simulates "Standard Environmental Colors." The color selected is (Carlsbad Canyon (2.5Y 6/2)).
16. Sewage shall be placed in a self-contained, chemically treated porta-potty on location.

C. Reclamation

1. All disturbed lands associated with this project, including the pipelines, access roads, water management facilities, etc will be expediently reclaimed and reseeded in accordance with the surface use plan and any pertinent site-specific COAs.

2. Disturbed lands will be recontoured back to conform with existing undisturbed topography. No depressions will be left that trap water or form ponds.

3. Distribute the topsoil evenly over the entire location and other disturbed areas. Prepare the seedbed by disking to a depth of 4-to-6 inches following the contour.

4. Waterbars are to be constructed at least one (1) foot deep, on the contour with approximately two (2) feet of drop per 100 feet of waterbar to ensure drainage, and extended into established vegetation. All waterbars are to be constructed with the berm on the downhill side to prevent the soft material from silting in the trench. The initial waterbar should be constructed at the top of the backslope. Subsequent waterbars should follow the following general spacing guidelines:

Slope (percent)	Spacing Interval (feet)
≤ 2	200
2 – 4	100
4 – 5	75
≥ 5	50

5. The operator will drill seed on the contour to a depth of 0.5 inch, followed by cultipaction to compact the seedbed, preventing soil and seed losses. To maintain quality and purity, the current years tested, certified seed with a minimum germination rate of 80% and a minimum purity of 90% will be used. On BLM surface or in lieu of a different specific mix desired by the surface owner, use the following:

SPECIES-CULTIVAR	LBS PLS/ACRE
Thickspike wheatgrass – Sodar	**4**
Bluebunch wheatgrass – Goldar	**4**
Indian ricegrass – Paloma	**2**
Needle-and-thread	**1**
White Prairie Clover	**1**
Blue Flax	**1**
Total	**13**

- Slopes too steep for machinery may be hand broadcast and raked with twice the specified amount of seed. Complete fall seeding after September 15 and prior to prolonged ground frost. To be effective, complete spring seeding after the frost has left the ground and prior to May 15.

6. Phased reclamation plans will be submitted to BLM for approval prior to individual POD facility abandonment via a Notice of Intent (NOI) Sundry Notice. Individual facilities, such as well locations, pipelines, discharge points, impoundments, etc. need to be addressed in these plans as they are no longer needed. Individual items that will need to be addressed in reclamation plans include:

   - Configuration of reshaped topography, drainage systems, and other surface manipulations
   - Waste disposal
   - Revegetation methods, including specific seed mix (pounds pure live seed/acre) and soil treatments (seedbed preparation, fertilization, mulching, etc.). On private surface, the landowner should be consulted for the specific seed mix.

- Other practices that will be used to reclaim and stabilize all disturbed areas, such as water bars, erosion fabric, hydro-mulching, etc.
- An estimate of the timetables for beginning and completing various reclamation operations relative to weather and local land uses.
- Methods and measures that will be used to control noxious weeds, addressing both ingress and egress to the individual well or POD.
- Decommissioning/removal of all surface facilities
- Closure and reclamation of areas utilized or impacted by produced CBM water, including discharge points, reservoirs, off-channel pits, land application areas, livestock/wildlife watering facilities, surface discharge stream channels, etc

7. BLM will not release the performance bond until all disturbed areas associated with the APD/POD have been successfully revegetated (evaluation will be made after the second complete growing season) and has met all other reclamation goals of the surface owner and surface management agency.
8. A Notice of Intent to Abandon and a Subsequent Report of Abandonment must be submitted for abandonment approval.
9. For performance bond release approval, a Final Abandonment Notice (with a surface owner release letter on split-estate) must be submitted prior to a final abandonment evaluation by BLM.
10. Soil fertility testing and the addition of soil amendments may be required to stabilize some disturbed lands.
11. Any mulch utilized for reclamation needs to be certified weed free.

D. Treatment Facility Locations

1. Reduce the backslope to 2:1 and the foreslope to 3:1, unless otherwise directed by the BLM Authorized Officer. Reduce slopes by pulling fill material up from foreslope into the toe of cut slopes.
2. Production facilities (including dikes) must be placed on the cut portion of the location and a minimum of 15 feet from the toe of the back cut unless otherwise approved by the BLM Authorized Officer.
3. Any spilled or leaked oil, produced water or treatment chemicals must be reported in accordance with NTL-2A and immediately cleaned up in accordance with BLM requirements. This includes clean-up and proper disposition of soils contaminated as a result of such spills/leaks.
4. Distribute stockpiled topsoil evenly over those areas not required for production and reseed as recommended.

Consultation/Coordination:

Contact	Title	Organization	Phone Number	Present at Onsite?
Jeff Kline	Water Programs Manager	Anadarko Petroleum	(832) 636-2611	Yes
Pat Walker	Senior Production Foreman	Anadarko Petroleum	(307)685-4131	Yes

Reviewers: Elizabeth Burghard – Cultural Specialist, Larry Gerard – Wildlife Specialist, Arnie Irwin – Soil Scientist, Mike McKinley – Hydrologist, Casey Freise – Natural Resource Specialist, Paul Beels NEPA Coordinator, & Willy Frank Supervisory Natural Resource Specialist

Preparer(s): Casey Freise

Date: 12/21/04

FINDING OF NO SIGNIFICANT IMPACT/DECISION RECORD

I have determined that the proposed action is in conformance with the Approved Resource Management Plan for the Public Lands Administered by the Bureau of Land Management, Buffalo Field Office, April 2001 and the Powder River Basin Oil and Gas Project Environmental Impact Statement and Resource Management Plan Amendment (PRB FEIS), #WY-070-02-065 (approved April 30, 2003). I have reviewed this environmental assessment including the analyses of potentially significant environmental impacts. I have determined that the proposed action, with the mitigation measures described below, will not have any significant impacts on the human environment and that an EIS is not required. It is my decision to implement the project with the mitigation measures identified above as Conditions of Approval.

Authorized Official: _____ Date: 20 Jan 05