THE DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
CASPER FIELD OFFICE

ENVIRONMENTAL ASSESSMENT (EA WY-060-04-065) FOR THE ANTELOPE MINE COAL BED NATURAL GAS PLAN OF DEVELOPMENT

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Attachment 2: Bowers Oil & Gas, Inc.,Antelope Coal Mine POD, Coalbed Natural Gas Project, Biological Assessment, Casper and Buffalo Field Offices

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PLAN OF DEVELOPMENT

PROPOSED BY BOWERS OIL AND GAS, INC. CONVERSE AND CAMPBELL COUNTIES, WYOMING

1. PURPOSE AND NEED FOR THE PROPOSED ACTION

1.1 Introduction

Bowers Oil and Gas, Inc. (BOG) submitted to the Casper Field Office (CFO) of the Bureau of Land Management (BLM) a Plan of Development (POD) indicating their intent to drill and develop coal bed natural gas (CBNG) wells west of the Antelope Coal Mine in north central Converse County and south central Campbell Counties in Wyoming. The POD describes the drilling of six CBNG wells located on federal oil and gas leases WYW138120 and WYW142771 issued by the BLM to BOG, and the supporting infrastructure for these wells. The surface owners in the POD area are Patricia Litton (Litton) and the Antelope Coal Mine (ACM). BOG submitted the Antelope Mine (AM) POD containing Applications for Permit to Drill (APD), Form 3160-3, for the following wells: BOG-Fed # 4-29, BOG-Fed # 5-29, BOG-Fed # 1-28, BOG-Fed # 2-28, BOG-Fed # 3-28, and BOG-Fed # 4-28 in Sections 28 and 29, T. 41 N., R. 71, Converse and Campbell Counties, Wyoming.

BOG drilled three fee CBNG wells in Section. 29, T. 41 N., R. 71 W. within the project area in the fall of 2003 that are presently shut-in, awaiting drilling and development of the six federal AM POD wells: the BOG Fee # 1-29, BOG Fee # 2-29, and the BOG Fee # 3-29. The Antelope Mine CBNG POD includes the infrastructure (gas lines, water lines, power lines, roads, compressor, metering facility, and sales line) to develop the three fee wells already drilled in addition to the six proposed federal wells.

All externally proposed actions on public lands or resources under BLM jurisdiction must be reviewed for National Environmental Policy Act (NEPA) compliance. The site specific Antelope Mine (AM) CBNG POD Environmental Assessment (EA) No. WY060-04-065 was prepared to aid in NEPA compliance, to analyze impacts of the proposed action on the quality of the human environment, to provide a mechanism for interdisciplinary review and for developing mitigation measures for the proposed action. This EA tiers into and incorporates by reference the information and analysis contained in the Final Powder River Oil and Gas Project Environmental Impact Statement and Resource Management Plan Amendment (PRB FEIS), No. WY-070-02-065 (April 2003), 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 PRB EIS. The Record of Decision (ROD) for the PRB FEIS approves the proposed amendments to the Buffalo and Platte River RMPs described in the PRB FEIS. This EA is available for public review at the Casper Field Office at 2987 Prospector Drive, Casper, WY (Telephone: (307) 261-7600) or on the BLM Casper web site at http://www.wy.blm.gov/cfo/.

1.2 Purpose and Need

The purpose of the proposed action is to drill and develop CBNG resources on the federal oil and gas mineral leases issued by the BLM to BOG. The CBNG on the federal mineral leases will be drained by the surrounding proposed fee mineral development wells and future mineral development of fee and state leases in the area if the federal mineral leases are not developed in a timely manner. The proposed action is needed because the holders of mineral leases have a right to develop the mineral resources underneath the federal leases they hold, as long as development can be accomplished without unnecessary and undue environmental degradation. Also, federal royalties on the produced federal minerals will be lost, and the lessee will be deprived of the federal gas they have the rights to develop if the operator is not permitted to develop the CBNG resource in the project area.

1.3 Conformance With Applicable Land Use Plans

The proposed action is in conformance with the development and land use decisions contained in the Platte River Resource Area (PRRA) Resource Management Plan (RMP) Environmental Impact Statement (EIS) and Record of Decision (ROD) (BLM, 1985), as well as the terms and conditions of the approved RMP for the public lands administered by the Buffalo Field Office (BFO) and the PRB EIS, as required by 43 CFR 1610.5.

2. THE PROPOSED ACTION AND ALTERNATIVES

2.1 Description of the Proposed Action (Alternative A)

Proposed Action Title/Type: Bowers Oil and Gas Inc.'s Antelope Mine CBNG POD for six coal bed natural gas well APDs and associated infrastructure for the six wells and three previously drilled fee wells in the project area.

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

Table 2.1a – Federal Well List

Well (Federal)	Location	County	Lease	Surface Owner	Depth (ft)
BOG-Fed # 4-29	Lot 13, Sec. 29, T. 41 N., R. 71 W.	Converse	WYW142771	*ACM	295
BOG-Fed # 5-29	Lot 9, Sec. 29, T. 41 N., R. 71 W.	Converse	WYW142771	ACM	281
BOG-Fed # 1-28	Lot 13, Sec. 28, T. 41 N., R. 71 W.	Converse	WYW138120	ACM	315
BOG-Fed # 2-28	Lot 11, Sec. 28, T. 41 N., R. 71 W.	Converse	WYW138120	ACM	302
BOG-Fed # 3-28	Lot 5, Sec. 28, T. 41 N., R. 71 W.	Campbell	WYW138120	ACM	364
BOG-Fed # 4-28	Lot 2, Sec. 28, T. 41 N., R. 71 W.	Campbell	WYW138120	**Litton	393

* ACM – Antelope Coal Mine

** Litton – Patricia Litton

BOG drilled three fee CBNG wells in Section. 29, T. 41 N., R. 71 W. within the project area in the fall of 2003 that are presently shut-in, awaiting drilling and development of the six Federal AM POD wells: the BOG Fee # 1-29, BOG Fee # 2-29, and the BOG Fee # 3-29. The AM CBNG POD includes the infrastructure (gas lines, water lines, power lines, roads, compressor, metering facility, and sales line) to develop the three fee wells already drilled in addition to the six proposed federal wells.

Applicant: Bowers Oil and Gas, Inc.

Surface Owners: Antelope Coal Mine (ACM) and Patricia Litton (Litton).

The proposed action as described in the POD includes the following:

- ¿ The drilling and completion of six total federal CBNG wells in the Anderson and Canyon Coal Zones of the Tongue River Member of the Fort Union Formation to depths ranging from 281 to 393 feet.
- ¿ Constructing an improved and un-improved road network.
- ¿ Implementing a Water Management Plan (WMP) in which pumped coal bed water will be discharged at 2 outfalls: one directly into the Spring Creek drainage, and the other into an unnamed tributary of Spring Creek. The discharge points will be installed at high water level, and with erosion control mitigation. An existing in-channel reservoir within the unnamed tributary of Spring Creek will control flow down the tributary into Spring Creek, and erosion control mitigation measures will be implemented downstream of the reservoir. The WMP was formulated with the concurrence of the landowners of record, and the Wyoming Department of Environmental Quality (DEQ) has issued the discharge permits (NPDES) for the WMP.
- ¿ Buried gas lines and water lines will be installed between the wells and the measurement facility. A raptor-approved above ground electric power grid will be constructed. The buried lines will be constructed along the existing and proposed roads, if possible.
- ¿ A compressor station will be constructed adjacent to a single gas measuring facility consisting of 3 gas measurement points; a buried product line will be constructed from the compressor station to a gas trunk line off lease southeast of the compressor station...

Refer to the Master Surface Use Plan (MSUP), Master Drilling Plan (MDP), and the WMP in the POD for a detailed description of the drilling, construction and water management plans to be implemented in the project area. The POD contains maps of the proposed well location and infrastructure layout. Standard CBNG drilling, development, and construction practices are also available for review in Volume 1 of the Final PRB FEIS.

Table 2.1b below is a summary of the estimated surface disturbance resulting from the BOG proposed action:

Table 2.1b– Surface Disturbance Estimates

Component	No.	Description (Update 05/04/2004)	Length (ft)	Area (ac)	Term
Wells	6	Drill/complete - 2 (5'X15') pits, soil piles, rig level		0.60	Short
Production	6	Production - wellhead		0.005	Long
Roads		Improved 2-track	6600	4.55	Long

Roads		Existing 2-track	12,144		
Roads		Proposed Road	2450	1.69	Long
Corridor		Gas and water lines inside road corridor	6910	2.38	Short
Corridor		Gas and waterlines outside road corridor	9080	6.25	Short
Gas line		Existing – Outside corridor – Third party	6917		
Gas Line		Sales Line – Outside Corridor	1100	0.51	Short
Power lines		Power poles (overhead lines)-within POD	15,840	0.10	Long
Power lines		Existing	1320		
Outfalls	2			0.01	Long
Reservoir	1	Existing			
Metering	3	Headers, metering equipment – In POD		0.015	Long
Compressor	1	Compressor facilities – In POD		0.11	Long

2.2 Environmentally Preferred Alternatives to the Proposed Action (Alternative B)

During and after the pre-approval on-site inspection on 12/15/2003, alternatives to the original POD received from the operator were identified and assessed to ensure that potential impacts of the proposed action to the natural resources would be minimized. Well pad layouts, access road locations, facilities locations, and utility line routes were analyzed during the inspection for alternate locations that would reduce the amount of anticipated surface environmental impact to the environment. The alternative locations, construction details, the amount of subsurface disturbance for each project component, and the design of the roads, facilities and utility lines was discussed and analyzed by the inter-disciplinary team members and the BOG representatives during and after the on-site inspection, and at the operator's meeting in January 2004 in order to select alternatives that would accomplish the objectives of the proposed action without causing unnecessary and undue environmental degradation. The location and design of the components of the WMP and the proposed erosion control mitigation measures were inspected and analyzed during the on-site inspection. Alternatives to the WMP, as proposed by BOG, were analyzed by the BLM inter-disciplinary team members during and after the site inspection, and discussed at the operator's meeting to select the alternative that would be most protective of the soil, vegetation, biological and water resources in the project area and in potentially affected downstream drainages. The alternatives to different components of a proposed action are routinely analyzed and applied as pre-approval changes and/or as Conditions of Approval (COAs) to the proposed action. The specific proposed modifications identified and analyzed by the BLM for the Antelope Mine POD are listed as follows:

- ¿ The BLM recommended that the electric lines be buried in the same disturbance corridors as the gas and water lines rather than be constructed above ground as proposed by BOG. The environmental benefits resulting from this alternative action would be:
    1. Little to no additional surface disturbance would be added along the proposed gas and water line corridor and the entire disturbance corridor could be reclaimed at the same time.
    2. All of the utility disturbance would be short-term disturbance versus long-term disturbance for the overhead electric lines.
    3. The potential for raptor collision with the overhead electric lines would be eliminated.
    4. Elimination of the unnatural linear element of the overhead electric lines that would detract from the visual resource of the project area.

Due to safety concerns associated with the burial of single phase electric lines in proximity to buried gas lines, BOG elected to construct overhead electric lines for the power supply. The BLM will require that the above ground power lines be built to protect raptors, including wintering bald eagles, from accidental electrocution using methods detailed by the Avian Power Line Interaction Committee (1996).

- ¿ BOG-Fed#5-29 – Location of the well moved 50 feet to the west to provide a greater distance to the drainage from the surface disturbance at the well site.
- ¿ BOG-Fed# 2-28 – The relocation of the access road to reduce the potential safety and environmental hazards of a steep approach to the unnamed drainage crossing was discussed. It was determined later that the least surface disturbance and environmental degradation would occur if the road was located along the buried gas and water line disturbance corridor originally proposed for this well.
- ¿ During the on-site inspection a raptor nest was observed along Spring Creek near the main access road and within direct line of sight of proposed wells and the proposed metering facility. Raptors were also observed in flight in the project area during the on site inspection. The BLM required that additional research be performed to locate raptor data from previous studies in the general area, and that a bald eagle winter roost survey be performed over the project area prior to initiating any activity.
- ¿ During the onsite inspection, the operators meeting and correspondence with BOG, the BLM, recommended that, at a minimum, the main access road to the metering facility be constructed using a design prepared by a certified engineer according to BLM Gold Book standards (BLM Manual Sec. 9113). BOG, in conformance with the written wishes of the landowner (Litton), proposes to grade the existing farm road and apply scoria gravel to the surface. The remainder of the road network will consist of existing 2-track roads with only minimal (spot) or no upgrading.
- ¿ During a preliminary drive-by on-site investigation performed in September 2003 by the BLM Physical Scientist, it was noted and recorded that suitable habitat for the Ute ladies'-tresses orchid (ULT) might be present along the Spring Creek drainage in the project area. After being notified of the consultation results of informal BLM consultation with the U.S. Fish and Wildlife Service (FWS) in September 2003 (regarding ULT), BOG contracted a Threatened and Endangered Vegetation Species (T&E) survey to be conducted in the project area. Although marginal to good habitat for ULT were noted in portions of Spring Creek in the project area, no individual plants were located and the results of the previous 2001 Antelope Mine survey were verified in those portions of the project area that overlapped the earlier survey. The survey report recommended clearance for anticipated construction activity, but that new road disturbance should be minimized, wherever possible. The BLM Wildlife Biologist accepted the findings of the T&E survey.

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 changes listed below in Section 2.2.1 are changes to the original proposed action as described in Section 2.1 (Alternative A). These changes will be incorporated as pre-approval changes to the POD or as site-specific COAs.

2.2.1 Changes to the Original Proposed Action

- ¿ Due to safety concerns associated with the burial of single phase electric lines in proximity to buried gas lines, BOG elected to construct overhead electric lines for the power supply. The BLM will require that the above ground power lines be built to protect raptors, including wintering bald eagles, from accidental electrocution using methods detailed by the Avian Power Line Interaction

Committee (1996).

- ¿ The BLM required that the BOG-Fed#5-29 location of the well to be moved 50 feet to the west to provide a greater distance to the drainage from the surface disturbance at the well site.
- ¿ The BLM required that additional research be performed to locate raptor data from previous studies in the general area, and that a bald eagle winter roost survey be performed over the project area prior to initiating any activity. BOG subsequently contracted a bald eagle survey and a wildlife data analysis to be conducted in the project area.
- ¿ After being notified of the consultation results of informal BLM consultation with the U.S. Fish and Wildlife Service (FWS) in September 2003 (regarding ULT), BOG contracted a Threatened and Endangered Species (T&E) survey (including ULT) to be conducted in the project area.

2.2.2 Site Specific Mitigation Measures

The above changes and mitigation measures to the proposed action will be analyzed as a part of **Alternative B**. 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 ROD Appendix A, are incorporated and analyzed in this alternative.

2.3 No Action Alternative (Alternative C)

A No Action Alternative was analyzed on pages 2-54 through 2-62 in Volume 1 of the PRB FEIS. This alternative would not approve any new federal wells, and the oil and gas resources in the PRB would be developed only on state and private mineral ownership. The authority of the DOI to implement a "No Action" alternative that would preclude oil and gas development is limited, however; 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." Under the No Action Alternative, BOGs proposed action would be denied.

3. THE AFFECTED ENVIRONMENT

The initial applications to drill were received on November 25, 2003. A preliminary field inspection of the proposed Antelope Mine POD was performed in September 2003 by Ken McMurrough, BLM Physical Scientist. A field inspection performed on December 15, 2003 included the following persons:

Ken McMurrough, BLM Physical Scientist (Lead)
Joe Meyer, BLM Physical Scientist (Hydrologist)
John Mesrobian, BLM Lead Petroleum Technician
Patrick Moore, BLM Assistant Field Manager, CFO, Mineral and Lands
Lee Eisenberger, Litton land owner representative
Terry Steen, BOG representative

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.

3.1 Critical Elements of the Human Environment

Table 3.1 – Table of Critical Elements of the Human Environment - Antelope Mine POD CBNG Project

Critical Elements of the Human Environment	Source of Regulations	Status in Project Area	Addressed in EA
Air	The Clean Air Act of 1955, as amended	Not Affected	Yes
Areas of Critical Environmental Concern	Federal Land Policy and Management Act of 1976	Not Present	No
Cultural Resources	National Historic Preservation Act of 1966, as amended	Not Affected	Yes
Environmental Justice	Executive Order 12898	Not Affected	No
Farm Lands (Prime or Unique)	Surface Mining Control and Reclamation Act of 1977	Not Affected	No
Floodplains	Executive Order 119888, as amended	Not Affected	No
Native American Religious Concerns	American Indian Religious Freedom Act of 1978	Not Affected	No
Threatened or Endangered Species	Endangered Species Act of 1976, as amended	Potentially Affected	Yes
Wastes, Hazardous or Solid	Resource Conservation and Recovery Act of 1976, and Comprehensive Environmental Response, Compensation, and Liability Act of 1980.	Not Affected	No
Water Quality, Drinking or Ground	Safe Drinking Water Act of 1974, as amended and Clean Water Act of 1977	Potentially Affected	Yes
Wetlands/Riparian Zones	Executive Order 11990	Potentially Affected	Yes
Wild and Scenic Rivers	Wild and Scenic Rivers Act of 1968, as amended	Not Present	No
Wilderness	Federal Land Policy and Management Act of 1976 and Wilderness Act of 1964	Not Present	No
Invasive, Nonnative Species	Wyoming Weed and Pest Control Act	Potentially Affected	Yes

3.2 General Setting

The project area is located in the Northern Great Plains that includes most of northeastern Wyoming. The vegetation in the Northern Great Plains is primarily sagebrush and mixed grass prairie, and the climate is semi-arid, with the annual potential evapotranspiration of 31 inches exceeding the average annual precipitation of 11 inches by 20 inches. May and June are the wettest months (4.39 inches), and February is the driest month (0.29 inches). Snowfall averages 25.1 inches per year with most of the snowfall occurring in March and December. July is the warmest month, with a daily mean temperature of 70 degrees F., and January is the coldest month, with a daily mean temperature of 20.5 degrees F.

3.2.1 Physiographic Setting

The project area is in a high plains area within the eastern portion of the Powder River Basin (PRB), with elevation ranging from 4600 to 4970 feet above sea level. The topography varies from relatively flat stream bottoms to rolling hills, with some prominent ridges and eroded drainages. The project area is located in the lower reaches of Spring Creek, approximately one mile upstream of the confluence with Antelope Creek. Spring Creek is an intermittent drainage through the project area, with some potholes present that retain water for an extended duration during the year. Most of the channel is dominated by grassy swales vegetated with primarily upland species. Portions of the channel are well defined, but in other areas the channel is broad, flat and poorly defined.

3.2.2 Geology

The project area is located on the west-dipping east flank of the PRB on the western edge of the Tertiary Paleocene outcrop area that extends in a north-south direction over a large portion of the east flank on the PRB. The surface in the project area is comprised of the Tertiary Eocene Wasatch Formation, which covers most of the surface in the broad, synclinal region of the PRB, and the Paleocene Fort Union Formation. The Anderson and Canyon coal beds of the Tongue River Member of the Fort Union Formation are the CBNG targets at about 250 to 400 feet in the subsurface in the project area.

3.3 Soils

Tables 3.3a and 3.3b below list the pre-dominant soil complexes and their properties that are present on the surface at the disturbance sites within the project area.

Table 3.3a – Soil Complexes In Surface Disturbance Areas in BOG Antelope Mine POD

Soil Complex	Soil Map Unit No.	Description Of Main Components	Est. Coverage In Disturbed Areas
Shingle-Rock outcrop-Samday, 10-15% slopes	131	40% Shingle clay loam, 25% Rock outcrop, 20% Samday clay loam	56%
Hiland-Bowbac sandy loams, 0-6% slopes	121	70% Hiland sandy loam, 20% Bowbac sandy loam	13%
Theedle-Kishona association, 0-6% slopes	140	45% Theedle loam, 35% Kishona loam	9%
Forkwood-Cambria-Cushman, 6-15% slopes	115	30% Forkwood fine sandy loam, 30% Cambria sandy loam, 30% Cushman loam	8%
Haverdad-Lohmiller, 0-6% slopes	120	50% Haverdad fine sandy loam, 30% Lohmiller clay loam	8%
Hiland-Bowbac, 6-15% slopes	122	60% Hiland sandy clay loam, 30% Bowbac sandy loam	6%

Table 3.3b – Soil Properties In Surface Disturbance Areas In BOG Antelope Mine POD							
Soil Map Unit No.	Soil Profile	Perm-eability	Available Water Capacity	Runoff	Water Erosion Hazard	Wind Erosion Hazard	Potential Plant Community
131	shallow, well-drained	slow-moderate	very low	rapid	severe	slight	western wheatgrass, bluebunch wheatgrass, needleandthread, little bluestem, green needlegrass
121	deep-moderately deep, well-drained	moderate	low-moderate	slow-medium	slight-moderate	moderate	western wheatgrass, thickspike wheatgrass, needleandthread
140	deep-moderately deep, well-drained	moderate	low-high	medium	moderate	moderate	western wheatgrass, thickspike wheatgrass, needleandthread
115	deep-moderately deep, well-drained	moderate	high-moderate	medium	moderate-severe	moderate	western wheatgrass, thickspike wheatgrass, needleandthread
120	deep, well-drained	moderate-slow	high-moderate	slow-medium	Slight-moderate	moderate	green needlegrass, slender wheatgrass, needleandthread, cottonwood trees
122	deep-moderately deep, well-drained	moderate-moderately rapid	low-moderate	medium	moderate	moderate	western wheatgrass, thickspike wheatgrass, needleandthread

Major soil components in the Antelope Mine CBNG POD proposed disturbance areas area are clay loams, sandy loams and loams. Most are deep to moderately deep (greater than 20" to bedrock), but the two most widespread soils in the project area, the Shingle and Samday clay loams, are shallow. All soil complexes in the project area are well-drained. The permeability of most of the soil complexes range from slow to moderate, and the available water capacity varies from very low to high. Runoff for most of the soil complexes varies from slow to medium except for the Shingle and Samday clay loams, which have rapid runoff. The hazard for water erosion for the six soil units is mostly moderate, but ranges from slight (Shingle and Samday clay loams) to severe (Cambria sandy loam and Cushman loam). The hazard for wind erosion for the six soil units is moderate except for the Shingle and Samday clay loams, which is slight. The potential plant communities for the soil complexes in the project area include western wheatgrass, bluebunch wheatgrass, needleandthread, little bluestem, green needlegrass, thickspike wheatgrass, and cottonwood trees (Haverdad-Lohmiller complex in Antelope Creek drainage). For more detailed information, refer to the Soil Survey of North Converse County and the Soil Survey of South Campbell County, or contact the Natural Resources Conservation Service (www.nrcs.usda.gov/).

3.4 Vegetation

The project area is located in the Antelope Creek Watershed that is dominated by Shortgrass Prairie (76.7%) and Sagebrush Shrubland (18.9%) vegetation types. Mixed Grass Prairie (2.3%) is the only other significant (>1%) vegetation type. From Table 3-20 of the PRB FEIS, it is noted that the existing vegetation disturbance from oil and gas development in the Antelope Creek watershed is distributed as such: Shortgrass Prairie (75.7%), Sagebrush Shrubland (21.8%), and Mixed Grass Prairie (1.7%).

The project area is comprised of approximately 60% grasslands, 35% sagebrush-grasslands, 3% drainage bottoms, and 2% other (rock, bare soil, roads, reservoirs, etc.) (BKS 2003). Grasslands are most prevalent in the western two-thirds of the survey area and are comprised of upland species including, but not limited to, needle-and-thread grass, blue grama, junegrass, cheatgrass, and native wheatgrass. More mesic species are present in limited areas of some drainage bottoms. The average height of grasses in most of the survey area exceeded 8 inches during June 2003. However, some sites in the northern and extreme western portions of the one-half-mile perimeter, where sheep had grazed, were generally shorter than 4 inches at that time.

Wyoming big sagebrush, the primary shrub, occurs in a patchy mosaic of moderately dense to sparse stands throughout the project area. This habitat type is most concentrated in the eastern third of the POD, and the northern and eastern portions of the perimeter. Shrub height generally ranges from 12 to 20 inches, with moderately dense to low crown closure. Sage density and height are greatest in the northeastern corner of the POD and half-mile perimeter. Small patches of silver sage, rabbitbrush , fringed sage, Great Plains yucca and greasewood also occur in the project area, though the latter species is limited to benches adjacent to Antelope Creek just beyond the southern boundary of the half-mile perimeter.

Numerous forbs and cacti are present in the project area, including globemallow, spiderwort, scarlet gaura, lupine, yarrow, onion, pricklypear, and pincushion cactus among others. Trees are limited to a small stand of mature live cottonwoods along the western edge of the POD, a small mixed stand of mature live and dead cottonwoods in the southeastern portion of the perimeter, and a few isolated mature cottonwoods along some of the drainages in the survey area.

3.4.1 Wetland/Riparian

The U.S. Fish and Wildlife Service (FWS) defines wetlands as: lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water, and have one or more of the following 3 attributes:

(1) at least periodically, the land supports predominantly hydrophytes,
(2) the substrate is predominantly undrained hydric soil,
(3) the sub-strata is non-soil and is saturated with water or covered by shallow water at some time during the growing season of each year.

Riparian areas are ecosystems whose soils and soil moisture are influenced by the high water table due to the proximity to adjacent rivers, streams, creeks, or subsurface water, and are unique because of their linear form.

Antelope Creek and the unnamed drainages feeding into Antelope Creek in the project area exhibit ephemeral to intermittent flow regimes characterized by irregular streamflows. The vegetation within these channels is generally made up of upland species; however, where water discharge from surface springs is present and in low areas along the drainages, narrow bands or pockets of wetland vegetation have developed along these intermittent and ephemeral channels.

Wetlands generally include swamps, marshes, bogs, and similar areas. Non-navigable, isolated intrastate wetlands (e.g. playas) and other waters of the U. S. are not considered jurisdictional, and therefore are not within the extent of Corps of Engineers (COE) regulatory review. There are no jurisdictional wetlands in the project area.

3.4.2 Invasive Species

The Wyoming State Legislature enacted the Wyoming Weed and Pest Control Act in 1973. The Act legitimately established each Wyoming County as a Weed and Pest Control District. The project area falls within the Campbell County and Converse County Weed and Pest Control Districts located in Gillette and Douglas, respectively (see below).

District	Address	City	State	Zip Code	Phone Number
State Weed & Pest Coordinator	2219 Carey Ave.	Cheyenne	WY	82002	(307) 777-6585
Campbell Co. Weed & Pest Control District	PO Box 191	Gillette	WY	82717	(307) 682-4369
Converse Co. Weed & Pest Control District	PO Box 728	Douglas	WY	82633	(307) 358-2775

The following is a list of designated and prohibited noxious weeds for Wyoming:

WYOMING WEED & PEST CONTROL ACT DESIGNATED LIST

Designated Noxious Weeds .S. 11-5-102 (a)(xi)
and
Prohibited Noxious Weeds W.S. 11-12-104

(1) Field bindweed (Convolvulus arvensis L.)
(2) Canada thistle (Cirsium arvense L.)
(3) Leafy spurge (Euphorbia esula L.)
(4) Perennial sowthistle (Sonchus arvensis L.)
(5) Quackgrass (Agropyron repens (L.) Beauv.)
(6) Hoary cress (whitetop) (Cardaria draba and Cardaria pubescens (L.) Desv.)
(7) Perennial pepperweed (giant whitetop) (Lepidium latifolium L.)
(8) Ox-eye daisy (Chrysanthemum leucanthemum L.)
(9) Skeletonleaf bursage (Franseria discolor Nutt.)
(10) Russian knapweed (Centaurea repens L.)
(11) Yellow toadflax (Linaria vulgaris L.)
(12) Dalmatian toadflax (Linaria dalmatica (L.) Mill.)
(13) Scotch thistle (Onopordum acanthium L.)
(14) Musk thistle (Carduus nutant L.)
(15) Common burdock (Arctium minus (Hill) Bernh.)

(16) Plumeless thistle (Carduus acanthoides L.)
(17) Dyers woad (Isatis tinctoria L.)
(18) Houndstongue (Cynoglossum officinale L.)
(19) Spotted knapweed (Centaurea maculosa Lam.)
(20) Diffuse knapweed (Centaurea diffusa Lam.)
(21) Purple loosestrife (Lythrum salicaria L.)
(22) Saltcedar (Tamarix spp.)
(23) Common St. Johnswort (Hypericum perforatum)
(24) Common Tansy (Tanacetum vulgare)

The Wyoming internet CBM Clearinghouse map viewer (http://www.cbmclearinghouse) indicated that Skeleton Leaf Bursage (SLB) is present in the project area, and that Leafy Spurge (LS), though not present in the project area, is present south of the project area in parts of Converse County. BOG contacted the Converse County Weed and Pest Control Department (CCWPCD) and developed a Weed Control Plan (WCP) that was included in the Surface Use Plan of the APD. CCWPCD indicted that SLB is located throughout the general project area and that one of the main ways for the species to spread was in surface disturbance areas that provide soft areas for seed germination. The WCP contains prevention and treatment mitigation for SLB and other potential invasive weed species.

3.4.2.1 Skeleton Leaf Bursage

Skeleton Leaf Bursage is a bushy, leafy plant similar in growth habits to slimleaf bursage, but easily distinguished by its leaves, which are silvery white beneath and green above , and also distinguished from slimleaf bursage by larger burs (1/8 to l/3 inch long) with longer spines (1/12 to 3/16 inch long), which are straight, not hooked at the tip. It is common in sandy soil and known in some areas to cause nitrate poisoning in livestock, but the extent or losses are unknown. Most sources list it as a native plant, common to plains region.

It can be expected wherever land is cultivated, in meadows, stream banks, waste places, pastures and poorly irrigated fields, dry regions of the plains. It survives well under a variety of soil moisture conditions. It is a perennial that reproduces by seeds and creeping roots and flowers from July to September. Although a native plant of the plains region, is designated as noxious in some states. It is a difficult weed to eradicate because of its extensive horizontal root system.

3.4.2.2 Leafy Spurge

Leafy spurge, a Eurasian native, was brought to the United States as a seed impurity around 1827. It has spread aggressively in rangelands and other dry areas throughout the northern half of the U.S. and can cause severe irritation to the mouths and digestive tracts of domestic and wild grazing animals. Its spreading and persistent nature makes it a serious problem weed wherever it grows. The seed capsules explode when dry, shooting the seeds as far as 15 feet and the seeds remain viable in the soil for up to 8 years

Leafy spurge normally grows 2 to 3 feet tall from a woody crown that is below the soil surface. Each crown area produces several upright stems, giving the plant a clump-like appearance. The plant bears numerous linear-shaped leaves with smooth margins. The leaves have a characteristic bluish-green color but turn yellow or reddish-orange in the fall. Stems originating from crown buds and roots begin growth

in late April, making leafy spurge one of the first plants to emerge in the spring. The early and rapid growth gives leafy spurge a competitive advantage over crop and pasture plants. All parts of the plant contain a milky juice called latex, which is a useful identifying characteristic. Leafy spurge produces a flat-topped cluster of yellowish-green petal-like structures called bracts, which bear the true flowers (Figure 1). The showy, yellow bracts appear in late May and early June, giving the plant the appearance of "blooming." However, the true flowers, which are small and green, do not develop until mid-June. The distinction between bract appearance and true flowering is important for timing of herbicide applications. Spring-applied herbicides are more effective on plants with developing true flower parts than on plants with developed bracts but undeveloped flowers.

Although leafy spurge can be controlled using herbicides alone, the best long-term solution is an integrated approach that incorporates herbicides with grazing, competitive grass species, and/or biological control agents (see Integrated management of leafy spurge, NDSU Extension Service Circular W-866R).

3.5 Wildlife

The project area is located in the Antelope Creek Watershed that is dominated by Shortgrass Prairie (76.7%) and Sagebrush Shrubland (18.9%) vegetation types. Mixed Grass Prairie (2.3%) is the only other significant (>1%) vegetation type. Common wildlife species that typically occur in Short Grass Prairie, Mixed Grass Prairie and Sagebrush Shrublands are listed in the PRB EIS (p. 3-114 and 3-115).

Common raptor species expected to occur within the project area are discussed in the PRB EIS (p. 3-141 to 3-147).

Several species of upland game birds may occur within the project area and these are discussed in the PRB FEIS (p. 3-148 to 3-150).

A wide variety of migratory birds may be found in the proposed project area at some point throughout the year. Migrant birds are those that migrate from wintering grounds to breeding grounds in North America. Migratory bird species of management concern that may occur in the project area are listed in the PRB FEIS (p. 3-151).

The habitat types within the Antelope Mine 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 and Casper Field Offices wildlife biologists, the PRB FEIS, the Wyoming Game and Fish Department (WGFD) big game and sage grouse maps, and wildlife survey reports prepared by Bowers Oil and Gas, (TWC 2004 and BKS 2003). A Biological Assessment (BA - CFO and BFO 2004) (Attachment 1, this EA) was completed by BLM biologists prior to project approval. The Biological Assessment was submitted to the FWS for formal consultation and a Biological Opinion was received back from the FWS on July 13, 2004. Species that have been identified in the project area or that have been noted as being of special importance are described below.

3.5.1 Big Game

The big game species expected in the project area are mule deer and pronghorn antelope. For both antelope and mule deer the Wyoming Game and Fish Department (WGFD), has determined that the project area to be yearlong range use. Yearlong use is when a substantial portion of a population makes general use of the habitat on a year-round basis. There is no crucial winter range for mule deer or

pronghorn antelope in the project area, although there is severe winter range use for antelope approximately 3 miles to the southeast of the project area. Big game range maps are available in the PRB FEIS (p. 3-119, 3-125, 3-135, 3-145) and from the WGFD.

3.5.2 Fisheries

The proposed Antelope Mine project area is located within the Antelope Creek sub-watershed of the Cheyenne River Basin. Existing limiting factors of the Cheyenne River Basin, such as extreme fluctuations in stream flow and temperature, low aquatic invertebrate production, and high turbidity, limit the ability of most streams to support game fish, particularly cold- and cool-water species. Within the proposed project area, the Antelope Creek and its drainages have been classified as either ephemeral or intermittent. No fish have been identified in the Antelope Creek sub-watershed list in the PRB FEIS (Table 3-54). The Wyoming Department of Environmental Quality (DEQ) regulates effluent discharge through the National Pollution Discharge Elimination System (NPDES) 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 fish, 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.

3.6 Threatened and Endangered Species (T&E), Special Status Species

A Biological Assessment (BA) (Attachment 1) for the BOG Antelope Mine POD CBNG project was prepared by the Casper and Buffalo offices of the BLM in accordance with Section 7 of the Endangered Species Act (ESA) to display the possible effects to endangered, threatened, experimental, proposed, or candidate species known to occur, or that may occur within the area influenced by the proposed action. The BA is tiered to the PRB FEIS, and the FWS Final Biological and Conference Opinion (FBCO) for the Powder River Basin Oil and Gas Project, Campbell, Converse, Johnson, and Sheridan Counties, Wyoming.

Surveys for Ute ladies'-tresses (ULT) were conducted on September 12, 2003 by BKS Environmental Associates, Inc. (BKS). Earlier ULT surveys had been conducted for ACM in 2000 or 2001 by BKS. Thunderbird Wildlife Consulting, Inc. (TWC) conducted bald eagle surveys on December 12, 2003, January 28, 2003, and February 6, 2004. Informal consultation with the Brad Rogers, FWS, was made by e-mail and telephone on September 9, 2003, and May 12 and 24, 2004.

3.6.1 Bald Eagles

Several trees are available for bald eagle roosting or nesting in the project area, but neither activity has been documented. No bald eagles were observed on or within one mile of the Antelope Mine CBNG project area during roost surveys conducted in winter 2003-2004. Individual eagles have infrequently been seen foraging within the one-mile survey are, or seen perched in cottonwood trees along Antelope Creek just south of the POD: however, no communal bald eagle roosts (six or more eagles) have been documented in the vicinity of the proposed POD. Wildlife surveys of various kinds have been conducted in the specific and general area for 20 years. A BLM contract bald eagle survey (Patterson and Anderson, 1985) documented the Antelope Creek roost, about 8 miles east of the project area, but no roosts in the project area. No bald eagle nests have been documented in the project area, and there are no concentrations of food bases in the project area, including big game, livestock, or fisheries/waterfowl.

3.6.2 Ute ladies'-tresses

The ULT orchid prefers periodically disturbed sites with non-clay that remain wet into late summer. A population in northern Converse County within the Antelope Creek drainage is the nearest known population, approximately 20 miles upstream of the project area. BKS evaluated this established population and the habitat on September 5, 2003 (BKS 2003).

Spring Creek and an unnamed tributary to Spring Creek are drainages within the proposed project area. Lack of supporting hydrology was described as limiting the potential ULT habitat to pockets along Spring Creek (BKS 2003) as these are not perennial streams. No ULT plants were found during the September 2003 survey in the project area. Earlier ULT surveys conducted for ACM in 2000 or 2001 also resulted in negative findings (BKS 2003).

3.6.3 Black-footed Ferrets

No surveys for black-footed ferrets have been conducted in the three small prairie dog colonies in the project area; however, such surveys were conducted in two other colonies nearby from October 1978 through July 1979 as part of baseline studies at the Antelope Coal Mine, and in a third colony during the winter of 1999-2000 (TWC, 2004). No evidence of ferrets have been has been recorded in the vicinity during surveys over the last 26 years.

3.6.4 Other T&E and Candidate Species

The proposed project area is not within the expected range of preble's meadow Jumping Mouse or Colorado Butterfly Plant, and does not contain sand dunes, which is the expected habitat for blowout penstemon. (BLM BA 2004).

One black-tailed prairie dog colony (14 acre) is located within the project area, and an existing 2-track road is located about 200 feet south of this colony (TWC 2004). The 2-track would remain unimproved, but vehicle traffic would increase on the 2-track road. Two other small prairie dog colonies (3 and 5 acres) are within the 1-mile inventory zone of the project area (TWC 2004). No development is proposed within any prairie dog habitat.

3.6.5 Sensitive Species

3.6.5.1 Greater Sage Grouse

The nearest known sage-grouse lek is approximately 7.0 miles southeast of the project area. Sage grouse occur occasionally in the area, but there are no special sage grouse habitats within the proposed project area.

3.6.5.2 Mountain Plover

Annual surveys for mountain plover have been conducted at Antelope Mine from 1982 through 2003. Results of these surveys demonstrated that the mountain plover is a regular migrant in the vicinity of Antelope Mine, and a small breeding population returns there every each year (TWC 2004). However, mountain plover have only been documented within the POD project area itself in 9 of the last 22 years. Most of these observations occurred in the south-central (SW¼ Sec. 29 and N½ Sec. 32, T. 41 N., R. 71 W.) or extreme northeastern (SE¼NE¼ Sec. 28 and SW¼NW¼ Sec. 27, T. 41 N., R. 71 W.) portions of the project area. Two Mountain Plover Use Areas (MPA), based on clusters of plover sightings made from 1982-1988, were delineated by the ACM staff biologist in 1988 (TCM 2004). Only three single sightings of a lone plover adult in early spring have been made in three of the last six years in or near the

project area, indicating that the plover were migrants passing through the area. Two of these observations were made in the prairie dog colony in the NW¼NW¼, Sec. 28, 41 N., R. 71 W. No development is proposed within the colony, but the BOG AM CBNG project would result in increased vehicular traffic along the aforementioned 2-track road about 200 feet south of the colony. Current POD construction plans will disturb only one small portion of any of the habitat (at well site BOG-Fed 4-29) that falls within the northern extent of one of the MPAs.

3.6.5.3 Raptors

Portions (70-80%) of the project area were included in survey coverage from 1982-2002 for the ACM and the entire project area was surveyed in 2003 (TWC 2004). Thirteen intact raptor nests or nest sites (Table 1, Exhibit 1, TCM 2004) were present within 1 mile of the ACM POD project area in 2003. Seven of the 13 nests had been found during previous monitoring for the ACM, and the remaining 6 discovered during a baseline survey for the mine in 2003. None of the nests will be physically disturbed by the proposed action; however, 5 of the 13 are within ½ mile of proposed construction within the project area.

3.6.5.4 Other BLM Special Status

Six other species could occur within the AM project area based on habitat and range considerations: the Brewer's sparrow, sage thrasher, loggerhead shrike, long-billed curlew, swift fox, and the northern leopard frog (TWC 2004). Each of the avian species has been recorded in the general vicinity of the project area since annual monitoring began in 1982; however, only the Brewer's sparrow has been recorded with any regularity. Brewer's sparrows were seen and heard in the big sagebrush stands in the northeast corner of the project area and perimeter throughout recent years, including 2003.

Little, if any, potential habitat is present for the sage thrasher, loggerhead shrike, and the long-billed curlew in the project area, and have rarely been seen in or within ½ mile of the project area in the last 10 years (TCM 2004).

No sightings of swift fox have been reported in the project area during baseline studies or subsequent annual monitoring since the late 1970s (TWC 2004). Northern leopard frogs could be present in some of the reservoirs or standing pools within Spring Creek that fall within the project area boundary. The discharge of water from CBNG development might improve wetland habitat and suitable year-round habitat for leopard frogs, unless the water is of low quality (high selenium and salt levels).

3.7 West Nile Virus

The PRB FEIS and ROD included a programmatic mitigation measure that states, "The BLM will consult with appropriate state agencies regarding West Nile Virus (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 larvicides 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.

3.8 Water Resources

The project area is within the lower reaches of Spring Creek, approximately one mile upstream of the confluence with Antelope Creek.

3.8.1 Groundwater

Wyoming Department of Environmental Quality (WDEQ) water quality parameters for groundwater classifications (Chapter 8 – Quality Standards for Wyoming Groundwater) define 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.

The PRB FEIS Record of Decision includes a Monitoring, Mitigation and Reporting Plan (MMRP). The objective of the plan is to monitor those elements of the analysis where there was limited information available during the preparation the FEIS. The MMRP called for the use of adaptive management where changes could be made based on monitoring data collected during implementation.

Specifically relative to groundwater, the plan identified the following, PRB FEIS ROD page E-4:

- ¿ The effects of infiltrated waters on the water quality of existing shallow groundwater aquifers are not well documented at this time;
- ¿ Potential impacts will be highly variable depending upon local geologic and hydrologic conditions;
- ¿ It may be necessary to conduct investigations at representative sites around the basin to quantify these impacts;
- ¿ Provide site specific guidance on the placement and design of CBM impoundments, and;
- ¿ Shallow groundwater wells would be installed and monitored where necessary.

The BLM has installed shallow groundwater monitoring wells at five impoundment locations throughout the PRB to assess ground-water quality changes due to infiltration of CBNG produced water. The most intensively monitored site has a battery of nineteen wells that have been installed and monitored jointly by the BLM and USGS since August, 2003. Water quality data has been sampled from these wells on a regular basis. That impoundment lies atop approximately 30 feet of unconsolidated deposits (silts and sands) that overlie non-uniform bedrock on a side ephemeral tributary to Beaver Creek and is approximately one and one-half miles from the Powder River. Baseline investigations showed water in two sand zones, the first was at a depth of 55 feet and the second was at a depth of 110 feet. A fifty-foot thick shale layer separated the two water-bearing zones. The water quality of the two water-bearing zones fell in the WDEQ Class III and Class I classifications respectively. Preliminary results from this sampling indicate increasing levels of total dissolved solids and other inorganic constituents over a six-month period resulting in changes from the initial WDEQ classifications.

The on-going shallow groundwater impoundment monitoring at four other impoundment locations are less intensive and consist of batteries of between 4 and 6 wells. Preliminary data from two of these other sites also are showing an increasing TDS level as water infiltrates while two other sites are not.

As stated in the MMRP, an Interagency Working Group has been established to implement an adaptive management approach. BLM is working with the WDEQ and the Interagency Working Group regarding the monitoring information being collected and assessed to determine if changes in mitigation are warranted.

A search of the Wyoming State Engineers Office Ground Water Rights Database for this area showed 3 registered stock and domestic water wells within one mile of the POD boundary with aquifer depths of 28, 250 and 495 feet. 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).

3.8.2 Surface Water

The project area is located in the lower reaches of Spring Creek, approximately one mile upstream of the confluence with Antelope Creek. Spring Creek is an intermittent drainage through the project area, with some potholes present that retain water for an extended duration during the year. Most of the channel is dominated by grassy swales vegetated with primarily upland species. Portions of the channel are well defined; in other areas the channel broadens and flattens becoming less well defined.

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 Antelope Creek Watershed, the EC ranges from 1,800 at Maximum monthly flow to 2,354 at Low monthly flow and the SAR ranges from 2.82 at Maximum monthly flow to 2.60 at Low monthly flow. These values were determined at the USGS station located on Antelope Creek near Teckla, WY(PRB FEIS page 3-49).

The Wyoming Department of Environmental Quality conducted a Cumulative Hydrologic Impact Assessment (CHIA) of the Antelope Creek Drainage for the Horse Creek Amendment, Antelope Coal Mine. The report (November, 2001) states:

> "In general, surface water quality at the Antelope Coal Mine is poor. Pre-mining surface water quality sampling of Antelope Creek and some tributaries in the vicinity of Antelope Coal Mine indicate surface water quality was generally a calcium-sodium-sulfate type ($CaNaSO_4$). The pH ranged from 6.7 to 8.2. In addition to high salinity, concentrations of other trace contaminants resulted in surface water that was typically in excess of criteria for agriculture (irrigation) and domestic use. TDS concentrations in surface water were lower in areas where the coal seam discharges groundwater to the surface. Suspended sediment loads ranged from 100-300 mg/l for discharges up to 21.5 cfs. Based on existing data, surface water in the vicinity of Antelope Coal Mine was suitable for livestock"

Forty-three water quality samples obtained by Antelope Coal Company on Antelope Creek just below the confluence with Spring Creek, and very near the project boundary have an average TDS of 2,902, and average SAR of 3.5. These average values are consistent with the water quality values from the USGS gauging Station on Antelope Creek near Teckla, WY, which was used in the Powder River Basin FEIS to predict cumulative surface water quality impacts.

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

The operator has identified two natural springs within the POD boundary in T. 41 N, R. 71 W., Sec.28 and 29.

3.9 Cultural Resources

The Antelope Coal Mine Cultural report is on file with the BLM. It is titled Class III and Class I Cultural Resource Inventories of Lands within Antelope Coal Company's West Antelope Creek LBA submitted November 13, 2001 by GCM Services, Inc. This report was approved by the BFO on July 13, 2002.

3.10 Air Quality

Most oil and gas well drilling operations potentially could affect the air quality, either from emissions from equipment associated with construction, drilling, testing, completing or producing of wells or from gaseous escapes from chemicals or mud additives associated with drilling, completion or producing of wells. In areas with natural gas or associated gas potential, potential contamination from the gas or associated gas contaminants such as H2S or CO2 exist. Neither of these contaminants are found in the CBNG from the Anderson and Canyon Coalbeds which is the source and reservoir for the CBNG in the project area. Wind erosion from disturbed soil surface areas associated with construction of the well pads, infrastructure facilities, roads, pipelines or WMP components is a potential source of wind-blown dust.

4. ENVIRONMENTAL CONSEQUENCES

The changes to the proposed action POD, which resulted in development of Alternative B (Alternative A with modifications) as the preferred alternative, have reduced the potential impact to the environment that will result from the proposed action. The environmental consequences of Alternative B are described below.

4.1 Soils And Vegetation Direct and Indirect Effects

The drilling and development of the 6 proposed wells will directly disturb approximately 15.71 acres of soils and vegetation (Table 4.1). There will be two water discharge points, one new gathering/metering facility, one compressor station, 1.25 miles of improved 2-track, 0.46 miles of new proposed 2-track roads, 1.3 miles of road corridor (road plus 1 or more utilities together), 1.72 miles of utility corridor (2 or more utilities in the same ditch, not following a road), and 3.0 miles of proposed overhead electric lines. Disturbance is expected to be 6.48 acres long term and 9.23 acres short term. The BOG-Fed#5-29 well location will be moved 50 feet to the west to provide a greater distance to the drainage from the surface disturbance at the well site. Overall impacts to soils and vegetation from surface disturbance should be minor, based on the BOG's SUP and the applied mitigation measures developed in this EA. All of the six proposed well locations will be drilled without a well pad being constructed. As such, minor surface disturbance would occur with the drilling 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 30 feet), and compaction (from vehicles driving/parking at the drill site). Estimated disturbance associated with these six wells would involve approximately 0.1 acre/well for a total of 0.6 acres. This would be a short-term, minor impact with expedient, successful reclamation and site-stabilization, as committed to by the operator in the BOG SUP and as required by BLM in Conditions of Approval (COAs).

Approximately 3.55 miles of existing two-track trails (1.25 miles improved) would be utilized to access well sites. The 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, often along access routes. This practice results in less surface disturbance and overall environmental impacts. 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., waterbars, water wings, culverts, rip-rap, gabions etc.) would ensure land productivity/stability is regained and maximized.

No structures are proposed for the proposed dry drainage crossings as shown on the Antelope Mine CBNG project maps. If future structures are required, a Sundry Notice shall be filed with the BLM CFO and these structures would be constructed in accordance with sound engineering practices and BLM standards.

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 summarizes the proposed surface disturbance:

Table 4.1 – Surface Disturbance Estimates

Component	No.	Description (Update 05/04/2004)	Length (ft)	Area (ac)	Term
Wells	6	Drill/complete - 2 (5'X15') pits, soil piles, rig level		0.60	Short
Production	6	Production - wellhead		0.005	Long
Roads		Improved 2-track	6600	4.55	Long
Roads		Existing 2-track	12,144		
Roads		Proposed Road	2450	1.69	Long
Corridor		Gas and water lines inside road corridor	6910	2.38	Short
Corridor		Gas and waterlines outside road corridor	9080	6.25	Short
Gas line		Existing – Outside corridor – Third party	6917		
Gas Line		Sales Line – Outside Corridor	1100	0.51	Short
Power lines		Power poles (overhead lines)-within POD	15,840	0.10	Long
Power lines		Existing	1320		
Outfalls	2			0.01	Long
Reservoir	1	Existing			
Metering	3	Headers, metering equipment – In POD		0.015	Long
Compressor	1	Compressor facilities – In POD		0.11	Long

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

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).

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. However, mitigation as required by BLM applied COAs and as outlined in the BOG Weed Management Plan will ensure that potential impacts from noxious weeds and invasive plants will be minimal.

4.1.3 Soils and Vegetation 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 Antelope Creek watershed and that amount of cumulatively produced water is only approximately 20% of the predicted discharge for the Antelope Creek watershed in the year 2003 in the PRB FEIS (see Section 4.5.4).
- ¿ The WDEQ/WQD enforcement of the terms and conditions of the NPDES permit that are designed to protect irrigation downstream.
- ¿ Predicted water quality changes using the mass balance modeling techniques outlined in the PRB FEIS, and actual reported produced water volumes through December 2003, indicate only minor changes to irrigation season EC and SAR values (Table 4.5.4.a)

No additional mitigation measures are required.

4.2 Wildlife

The proposed action is described in the Antelope Mine CBNG POD. The drilling and development of the 6 proposed wells will directly disturb approximately 15.71 acres of wildlife habitat (Table 4.1). There will be two water discharge points, one new gathering/metering facilities, one compressor station, 1.25 miles of improved 2-track, 0.46 miles of new proposed 2-track roads, 1.3 miles of road corridor (road plus 1 or more utilities together), 1.72 miles of utility corridor (2 or more utilities in the same ditch, not following a road), and 3.0 miles of proposed overhead electric lines. Disturbance is expected to be 6.48 acres long term and 9.23 acres short term. The BOG-Fed#5-29 well location will be moved 50 feet to the west to provide a greater distance to the drainage from the surface disturbance at the well site.

4.2.1 Big Game Direct and Indirect Effects

The big game species expected in the project area are mule deer and pronghorn antelope. For both antelope and mule deer the Wyoming Game and Fish Department (WGFD), has determined that the project area to be yearlong range use. Yearlong use is when a substantial portion of a population makes general use of the habitat on a year-round basis. There is no crucial winter range for mule deer or pronghorn antelope in the project area, although there is severe winter range use for antelope approximately 3 miles to the southeast of the project area. Big game range maps are available in the PRB FEIS (p. 3-119, 3-125, 3-135, 3-145) and from the WGFD.

Under the proposed alternative, pronghorn and mule deer yearlong habitat and mule deer will be disturbed. The drilling of each coal bed natural gas well should last approximately three days, 18 days total for the 6 wells. Big game are likely to be displaced from the project area during infrastructure construction; most individuals are expected to return following construction. Human activities associated with operation and maintenance could also displace big game. Metering will be done at the central facilities visited once or twice per month, greatly reducing site visits and potential big game disturbance. Prompt reclamation is proposed for all short-term disturbances in the project area. Reclamation should minimize habitat loss for big game. Both direct and indirect impacts to big game are analyzed in the PRB FEIS (p. 4-181 to 4-211).

4.2.2 Big Game Cumulative Effects

The cumulative effects associated with Alternative B 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.

4.2.3 Migratory Birds Direct and Indirect Effects

A wide variety of migratory birds may be found in the proposed project area at some point throughout the year. Migrant birds are those that migrate from wintering grounds to breeding grounds in North America. Migratory bird species of management concern that may occur in the project area are listed in the PRB FEIS (p. 3-151).

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. Produced water is to be discharged into surface drainages; the increased water may increase mosquito breeding habitat and transmission of West Nile Virus. Many migratory bird species, particularly corvids, are susceptible to West Nile Virus. Additional direct and indirect effects to migratory birds are discussed in the PRB FEIS (p. 4-231 to 4-235).

4.2.4 Migratory Birds Cumulative Effects

The cumulative effects associated with Alternative B 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.

4.2.5 Raptors Direct and Indirect Effects

Portions (70-80%) of the project area were included in survey coverage from 1982-2002 for the ACM and the entire project area was surveyed in 2003 (TWC 2004). Thirteen intact raptor nests or nest sites (Table 1, Exhibit 1, TCM 2004) were present within 1 mile of the Antelope Mine CBNG project area in 2003. Seven of the 13 nests had been found during previous monitoring for the ACM, and the remaining 6 discovered during a baseline survey for the mine in 2003. None of the nests will be physically disturbed by the proposed action; however, 5 of the 13 are within ½ mile of proposed construction within the project area.

The wells, discharge points, roads, pipelines, and overhead transmission lines may impact raptors nesting and foraging within the Antelope Mine CBNG project area. Direct and indirect impacts to raptors, from oil and gas development, are analyzed in the PRB FEIS. Thirteen intact raptor nests or nest sites (Table 1, Exhibit 1, TCM 2004) were present within 1 mile of the project area in 2003. Seven of the 13 nests had been found during previous monitoring for the Antelope Coal Mine, and the remaining 6 discovered during a baseline survey for the mine in 2003. None of the nests will be physically disturbed by the proposed action; however, 5 of the 13 are within ½ mile of proposed construction within the project area.

Mitigation measures for raptors in the Antelope Mine CBNG project area are included in the mitigation measures listed in section 4.4 below that will also be included in the site-specific COAs for the proposed action.

4.2.6 Raptors Cumulative Effects

The cumulative effects associated with Alternative B 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. No additional mitigation measures are required.

4.3 Threatened and Endangered and Special Status Species

The following mitigation measures for Threatened, Endangered, Proposed, or Candidate Species were listed in the Antelope Mine CBNG Biological Assessment (see Attachment 2 – extracted from Powder River Oil and Gas Project (PROGP) Programmatic Biological Opinion (PBO), 2002).

Required Mitigation

1. If any dead or injured threatened, endangered, proposed, or candidate species is located during construction or operation, the U.S. Fish and Wildlife Service's Wyoming Field Office (307-772-2374) and law enforcement office (307-261-6365) and BLM Casper Field Office (307-261-7600) shall be notified within 24 hours (T&C1)
2. Operator constructed roads will be designed for a maximum travel speed of 25 mph to minimize road related wildlife mortality (CM11). Maximum travel speeds on operator maintained roads shall not exceed 25 mph.
3. Native seed mixes (selected by landowner, or if requested, by the BLM CFO) will be used to re-establish short grass prairie vegetation during reclamation (T&C19).
4. If any dead or injured sensitive species is located during construction or operation, the BLM Casper Field Office (307-261-7600) shall be notified within 24 hours.
5. The Record of Decision for the Powder River Basin 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" (M32). 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, 2005, Bowers Oil & Gas will coordinate with the BLM to determine if additional resurvey will be required.
6. The contract biologist shall contact the BLM prior to initiating any wildlife surveys.
7. No surface disturbing activity will be allowed within ½ mile of all documented raptor nest from February 1 through July 31, annually, prior to a raptor nest occupancy survey for the current breeding season. This timing stipulation affects the entire project area.
8. Surveys to document raptor nest activity in the area shall be conducted between April 15 and June 30. Surveys outside this window may not depict nesting activity. If a survey identifies active raptor nests, a ½ mile timing buffer will be implemented. The timing buffer restricts any surface disturbing activities within ½ mile of occupied raptor nests from February 1 to July 31.
9. Well metering and other site visits within 0.5 miles of occupied raptor nests shall be minimized as much as possible during the breeding season (February 1 – July 31), and restricted to between 0900 and 1500 hours.
10. If an undocumented raptor nest is located during project construction or operation, the Casper Field Office (307-261-7600) shall be notified within 24 hours.
11. If a raptor nest within 0.5 miles of the project is determined to be occupied, nest occupancy checks shall be completed for the first five years following project completion. The occupancy check shall be conducted no earlier than June 1 or later than June 30 and any evidence of nesting success/production shall be recorded. Survey results will be submitted to a Casper BLM biologist in writing no later than July 31 of each survey year.
12. If a mountain plover is located during project construction or operation, the Casper Field Office (307-261-7600) shall be notified within 24 hours.
13. Proposed well BOG Fed # 4-29 may be constructed outside the mountain plover nesting season (after August 1 and before March 15). A mountain plover nesting survey shall be conducted by a BLM approved biologist following the most current version of the FWS Mountain Plover Survey

Guidelines (FWS 2002 or most current version) in the 2004 survey period. The survey period is from May 1 to June 15.

14. If a mountain plover nest is documented, the following conditions shall apply:
    A. A seasonal disturbance-free buffer zone of 0.25 mile will be maintained around all active mountain plover nest sites outside of black-tailed prairie dog towns between March 15 and July 31 (T&C13).
    B. Documented nesting areas will be surveyed for five years following project completion. Surveys will be conducted by a BLM approved biologist and follow the most current version of the Service's Mountain Plover Survey Guidelines (USFWS 2002 or most current version).
    C. Maximum allowed travel speed on roads within 0.5 mile of identified mountain plover nesting areas shall not exceed 25 miles per hour from March 15 to July 31 (T&C17). Work schedules and shift changes should be set to avoid the periods from one-half hour before to one-half hour after sunrise and sunset during June and July, when mountain plovers and other wildlife are most active T&C22).
    D. No dogs will be permitted at work sites to reduce the potential for harassment of plovers (T&C23).

Recommended Mitigation

- ¿ Remote technology (telemetry, central metering facility, etc.) should be utilized to reduce human activities which are potentially disturbing to wildlife.

4.3.1 Threatened and Endangered Species Direct and Indirect Effects

4.3.1.1 Bald Eagle

The proposed Antelope Mine CBNG project will result in an adverse affect to the bald eagle through the development of the proposed action. Bald eagles forage opportunistically throughout the PRB including the project area. The presence of overhead power lines may adversely affect foraging bald eagles. BOG proposes to construct an additional 3 miles of overhead power lines that may increase the risk to foraging eagles. Measures have been included in the project design to minimize the risk, such as building overhead power lines to raptor safe standards, and access roads are proposed to remain 2-track with a 25 mph maximum speed design criterion to be included as a COA for future development/improvement of roads in the project area. Despite the lack of special habitats and the mitigation measures added to reduce impacts, some risk of harm remains (BLM BA 2004).

The FWS Antelope Mine CBNG BO is also tiered to the Incidental Take Statement (ITS) accompanying the FWS PBO for the Powder River Oil and Gas Project. The Antelope Mine CBNG project is a component of the approximately 7,136 miles of new improved roads and 5,311 miles of overhead power lines identified in the PBO. This total level of affect has been anticipated to cause the incidental take of up to foue bald eagles within the Powder River Oil and Gas Project. The FWS has determined that the following Reasonable and Prudent Measures (RPMs) contained in the ITS accompanying the PBO are needed to minimize the effects of the anticipated take:

- ¿ RMP 1: The BLM shall ensure implementation of all conservation measures identified and committed to as part of the proposed action (fully described in September 3, 2002 Final Biological Assessment (FBA) for the Powder River Oil and Gas Project.
- ¿ RMP 2: The BLM shall ensure direct habitat disturbance does not exceed that discussed in the

FBA and evaluated in the FWS Antelope Mine CBNG BO. Through minimization and monitoring of direct habitat disturbance, indirect disturbance to the species will also be minimized.

¿ RMP 3: Reduce the possibility of vehicular collision with bald eagles, including reducing the amount of carrion present as a result of vehicular collision to discourage foraging by bald eagles.

¿ RMP 4: Reduce the possibility of electrocutions of bald eagles.

No additional RMPs are necessary or appropriate to minimize the effects of the anticipated incidental take. The FWS attached a non-discretionary list of applicable Terms and Conditions (T&Cs) for BLM compliance in order to be exempt from section 9 of the ESA. The T&Cs are attached (Attachment 1) to this document and are included as an attachment to the FWS Antelope Mine CBNG BO. The following is a list of mitigation measures (not included in section 4.3 list above) to be included as site-specific operator COAs for the proposed action:

¿ Power lines will be built to standards identified by the Avian Power line Interaction Committee (1996) to minimize electrocution potential. Moreover power lines will be built to the additional specification (see T&C 6, Attachment1):

<u>For new distribution lines and facilities:</u>

A. Bury distribution lines where feasible.
B. Raptor-safe structures (e.g., with increased conductor-conductor spacing) are to be used that provide adequate spacing for bald eagles (i.e. minimum 60" for bald eagles).
C. Equipment installations (overhead service transformers, capacitors, reclosers, etc.) are to be made bald eagle safe (e.g., by insulating the bushing conductor terminations and by using covered jumper conductors).
D. Jumper conductor installations (e.g. corner, tap structures, etc.) are to be made bald eagle safe by using covered jumpers or providing adequate separation.
E. Employ covers for arrestors and cutouts, when necessary.
F. Lines should avoid high avian use areas such as wetlands, prairie dog towns, and grouse leks.

<u>For modification of existing facilities:</u>

A. Existing structures, such as dead ends, tap or junction poles, transformers, reclosers and capacitor banks or other structures with less than 60" between conductors or a conductor and ground will need to be retrofitted to provide adequate spacing for bald eagles (i.e. minimum 60" for bald eagles).
B. Cover exposed jumpers
C. Gap any pole top ground wires
D. Isolate grounded guy wires (install insulating link)
E. On transformers, install insulated bushing covers, covered jumpers, and cutout covers and arrestor covers, if necessary
F. If bald eagle mortalities occur on existing lines and structures, bald eagle protection measures are to be applied (e.g. modify for raptor-safe construction, install safe perches or perching deterrents, nesting platforms or nest deterrent devices, etc.)
G. In areas where midspan collisions are a problem, install line-marking devices that have been proven effective. All transmission lines that span streams and rivers, should maintain proper spacing and have markers installed

¿ A minimum year-round disturbance-free buffer zone (no surface occupancy (NSO)) of 0.5 mile will be established for all bald eagle nests. An alternative would be development of a site management plan, as discussed in the GYBEWG and the MBEWG, by the BLM (with the cooperation and approval of the FWS) for each bald eagle nest or winter roost site. Each site management plan will include the following zones: Zone 1 (Occupational Nesting Zone), Zone 2 (Primary use areas), and Zones 3 (home ranges). The BLM will restrict and monitor the types of activities to occur within each of these zones. No surface occupancy or use is allowed within 0.5 miles of known bald eagle nest sites which have been active within the past 5 years.

¿ A seasonal disturbance-free buffer zone of 1 mile will be established for all bald eagle nests (February 15 - August 15). This buffer zone and timing may be adjusted based on site specific information through coordination with and with written concurrence of the Service's Wyoming Field Office.

- ¿ A year-round disturbance-free buffer zone of 0.5 mile will be established for all bald eagle roost sites. This buffer zone restriction may be adjusted based on site specific information through coordination with and with written concurrence of the FWS Wyoming Field Office.

- ¿ An additional seasonal buffer zone of 0.5 mile will be established for all bald eagle roost sites (November 1 - April 1). This buffer zone will start at the outside boundary of the 0.5 mile year-round disturbance-free buffer zone and extend out an additional 0.5 mile. However, within this seasonal buffer zone less restrictive measures such as remote monitoring of wells and/or restricting well maintenance visitations or human activity critical to project operations to between 9:00 AM and 3:00 PM may be allowed after coordination with the FWS's Wyoming Field Office and a demonstration that measures more protective of bald eagles are not reasonable or feasible.

- ¿ Nest productivity monitoring will be conducted by the BLM or a BLM-approved biologist in areas with high levels of development (i.e., areas with greater than or equal to 4 well pads/section) within 1 mile of a bald eagle nest between March 1 and mid-July to determine nesting success (i.e., number of nestlings/fledglings per nest).

- ¿ Appropriately-timed surveys for active bald eagle nests and winter roost sites will be conducted within 1 mile of proposed actions prior to permit (*i.e.* Application for Permit to Drill/POD, Right-of-way grants, or Sundry Notices) approval.

4.3.1.2 Ute's Ladies' Tresses Orchid

The proposed BOG CBNG POD will result in an adverse affect to ULT orchids and its habitat (BLM BA 2004). T&C and CMs for ULTs were not included in the Antelope Mine POD BA because the project area does not contain suitable habitat. The determination of affects was made based upon water releases impacting possible ULT populations downstream of the proposed project area. The Antelope Mine CBNG POD is a component of the overall effects analyzed in the Powder River Basin Oil and Gas Project programmatic biological opinion (PBO), which identified that the short-term disturbance of 202,843 acres of ground and the discharge of CBNG produced water from 606 surface discharge facilities would be likely to result in the direct loss of ULT orchids. Suitable habitat for ULT will be avoided wherever possible. Programmatic mitigation as outlined in Appendix A, Programmatic Mitigation, Section A.5.11.9., of the Powder River Basin Oil and Gas Project ROD shall be applied when and where applicable in the project area. No additional mitigation for ULT is required.

4.3.1.3 Black-tailed Prairie Dog/ Black-footed Ferret

Development of the Antelope Mine CBNG project may adversely affect black-tailed prairie dogs (BLM BA 2004). One black-tailed prairie dog colony (14 acre) is located within the project area, and an existing 2-track road is located about 200 feet south of this colony (TWC 2004). The 2-track would remain unimproved, but vehicle traffic would increase on the 2-track road. Two other small prairie dog colonies (3 and 5 acres) are within the 1-mile inventory zone of the project area (TWC 2004). No development is proposed within any prairie dog habitat, but vehicle traffic would increase, and may result in collisions with prairie dogs. The 25-mph speed limit COA should reduce the potential for prairie dog loss by vehicle collision.

Prairie dogs are the main food source of black-footed ferrets, and few ferrets been collected outside of prairie dog colonies. The lack of black-footed ferret observations or sign in the vicinity of the project area in the last two decades suggests that they are not likely to occur in the project area. Also, since no development is proposed within any prairie dog habitat, the ferret (if present) main food source would also be outside the project development area. The BLM BA for the Antelope Mine CBNG project indicated there would be no affect to black-footed ferrets.

4.3.2 Sensitive Species Direct and Indirect Effects

4.3.2.1 Greater Sage Grouse

There are no special sage grouse habitats within the proposed project area. .

4.3.2.2 Mountain Plover

Only three single sightings of a lone plover adult in early spring have been made in three of the last six years in or near the project area, indicating that the plover were migrants passing through the area. Two of these observations were made in the prairie dog colony in the NW¼NW¼, Sec. 28, 41 N., R. 71 W. No development is proposed within the colony, but the BOG Antelope Mine CBNG project would result in increased vehicular traffic along the aforementioned 2-track road about 200 feet south of the colony. Current POD construction plans will disturb only one small portion of any of the habitat (at well site BOG-Fed 4-29) that falls within the northern extent of one of the MPAs.

An analysis of direct and indirect impacts to mountain plover due to oil and gas development is included in the PRB FEIS. The mitigation measures for mountain plover that are included as COAs for the proposed action are listed in Section 4.3, No. 12-13 above in this EA.

4.3.2.3 Sensitive Species Cumulative Effects

The cumulative effects associated with Alternative B 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. No additional mitigation measures are required.

4.4 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 larvicides 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.

4.5 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 Antelope Creek watershed to comply with Wyoming State water laws/regulations. It also addresses potential impacts to the environment and landowner concerns. Qualified hydrologists, in consultation with the BLM, 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.

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.

The maximum water production is predicted to be 14 gpm per well or 126 gpm (0.28 cfs or 203 acre-feet per year) for this POD. As of December 2003 the average water production for wells in the Antelope Creek Watershed was 8.0 gpm according to data obtained from the Wyoming Oil and Gas Conservation Commission web site. 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 Antelope Creek drainage basin, the projected volume produced within the watershed area was 17,271 acre-feet in 2003 (maximum production is estimated in 2004 at 17,685 acre-feet). As such, the volume of water resulting from the production of these wells is 1.1% of the total volume projected for 2003, 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.

4.5.1 Groundwater

The PRB FEIS predicts 28% of the CBNG produced water will recharge groundwater aquifers and coal zones in the Antelope Creek drainage area (PRB FEIS pg 4-5). For this action, it may be assumed that a maximum of 35 gpm will infiltrate at or near the discharge points and impoundments. 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). Analysis of impacts to changes in groundwater quality resulting from coal mining in the Antelope Creek Drainage (WDEQ 2001) near this POD indicate: "Initially, TDS concentrations may

increase in the backfill aquifer. However, with time, the TDS concentrations will decrease and approach pre-mine groundwater quality. Even with the changes in TDS and other constituents, groundwater quality in most instances has the same use classification as the pre-mine groundwater." It is likely that the infiltration of CBM produced water will have effects similar to the recharge of backfill areas near the coal mines. Therefore, the chemical nature and the volume of the discharges water will not degrade the antecedent groundwater.

The PRB FEIS predicts that one of the environmental consequences of coal bed natural gas production is possible impacts to the groundwater. "The effects of development of CBNG 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 dewatering 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 2003 Annual Report of the Gillette Area Groundwater Monitoring Organization indicate that changes to groundwater levels in the vicinity of the proposed POD have already occurred. Impacts from development of CBNG wells in this POD will be in addition to any impacts that have already occurred as a result of coal mining in the area. The permitted water wells in the area produce from zones above, below and in the targeted coal bed natural gas producing zones. As mitigation, 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).

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.

In order to determine the actual water quality of the producing formations in this POD, and to verify the water analysis submitted for the pre-approval evaluation, the operator has committed to designate a reference well within the POD boundary. The well will be sampled for analysis within sixty days of initial production and a copy of the water analysis will be submitted to the BLM Authorizing Officer.

Shallow ground water monitoring is ongoing at several impoundment sites across the basin. 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.

However, site characteristics can be compared between the proposed impoundments in the Antelope Mine 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 Antelope Mine POD are existing structures which have impounded natural run-off events for many years. Alluvial materials in and around the impoundments have

been subjected to numerous leaching volumes over the years, and should not contribute elevated levels of dissolved solids as a result of the infiltration of CBM produced water.

4.5.2 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.

4.5.3 Surface Water Direct and Indirect Effects

Based on the analysis performed in the PRB FEIS, the primary beneficial use of the surface water in the Powder River Basin is the irrigation of crops (PRB FEIS EIS pg 4-69). The water quality projected for this POD is 380 mg/l TDS which is within the WDEQ criteria for agricultural use (2000 mg/l TDS), however direct land application is not included in this proposal. If at any future time the operator entertains the possibility of irrigation or land application with the water produced from these wells, the proposal must be submitted as a sundry notice for separate environmental analysis and approval by the BLM.

A maximum volume of 14 gallons per minute (gpm) is projected is to be produced from these 9 wells, for a total of 126 gpm for the POD. The quality for the water produced from the Canyon and Anderson target coal zones 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 634 µmhos/cm electrical conductivity (EC), 380 mg/1 total dissolved solids (TDS) and 6.4 sodium adsorption ratio (SAR). By comparison WDEQ water quality parameters for groundwater classifications (Chapter 8 – Quality Standards for Wyoming Groundwater) define 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. For more information, please refer to the Water Management Plan (WMP) included in this POD.

Based on the onsite review of 2 discharge points, they have been appropriately sited and utilize appropriate water erosion dissipation design. The anticipated total maximum volume of water discharged in this POD is 126 gpm. Existing and proposed water management facilities were evaluated for compliance with best management practices during the onsite inspection.

The operator has obtained a National Pollutant Discharge Elimination System (NPDES) permit for the discharge of water produced from this project from the WDEQ. Permit effluent limits were set at the following:

Table 4.5.3.a - Permit Effluent Limits (NPDES page 2)	
Total Petroleum Hydrocarbons	10 mg/l max
pH	6.5 to 8.5
Total Dissolved Solids	5000 mg/l max
Specific Conductance	2000mg/l max
Sulfates	3000 mg/l max
SAR	10
Radium 226	1 pCi/l max
Dissolved iron	1000 µg/l max
Dissolved manganese	910 µg/l max
Total Barium	1800 µg/l max
Total Arsenic	2.4 µg/l max

Water produced in association with this POD will be directly discharge at two outfall points as permitted by WDEQ NPDES permit WY0037052. The NPDES permit was issued under option 2 of the coal bed methane permitting options. Under this permitting option, the produced water is immediately discharged to a class 2 or class 3 receiving stream, which is eventually a tributary to a class 2AB perennial water of the state. The permit establishes effluent limits for the end of pipe, which are protective of all the designated uses defined in Chapter 1 of Wyoming Water Quality Rules and Regulations. The daily maximum flow for this facility is 0.32 MGD and must be monitored monthly. The permit limits total petroleum hydrocarbons to 10 mg/l and must be monitored yearly. The pH must remain within 6.5 an 8.5 standard units. Effluent limits for total dissolved solids (5,000 mg/l) and sulfates (3,000 mg/l) are included to protect stock and wildlife watering. In order to monitor and regulate coal bed methane discharge for compliance with Chapter 1, Section 20 (protection of agricultural water supply), effluent limits for sodium adsorption ratio (SAR) and specific conductance are included in this permit. The Wyoming DEQ has determined that an SAR of 10 and specific conductance of 2,000 micromohos/cm is intended to be protective of agriculture use in the Belle Fourche and Cheyenne River drainages.

The discharge of wastewater and the effluent limits that are established in this permit have been reviewed by the WDEQ to ensure the levels of water quality necessary to protect the designated uses of the receiving waters are maintained and protected. An antidegradation review was conducted by WDEQ and verifies that the permit conditions, including the effluent limitations established, provide a level of protection to the receiving water consistent with the antidegradation provisions of the Wyoming surface water quality standards.

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 2004 at a total contribution to the mainstem of the Antelope Creek Drainage of 12 cfs (PRB FEIS EIS pg 4-81). The predicted maximum discharge rate from the 9 wells in this POD anticipated to be a total of 126 gpm or 0.28 cfs. Using an assumed conveyance loss of 20% (PRB FEIS EIS pg 4-74), this action may add a maximum 0.22 cfs to Antelope Creek flows, or 2.0% of the predicted total CBNG produced water contribution. The addition of the water produced from these wells will not significantly impact

the water quantity in the mainstem of Antelope Creek. For more information regarding the maximum predicted water impacts to the Powder River resulting from the discharge of produced water, see Table 4-6 (PRB-EIS pg 4-85).

The proposed method for surface discharge provides passive treatment through the aeration supplied by the energy dissipation configuration at each discharge point outfall. Aeration adds dissolved oxygen to the produced water that can oxidize susceptible ions, which 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.

The quality for the water produced from the Canyon and Anderson coal zones is predicted to be similar to the sample water quality collected from a location near the POD. That water quality was determined to be 634 µmhos/cm EC**,** 380 mg/l TDS and 6.4 SAR. 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 Antelope Creek Watershed under the preferred alternative (2A) in the PRB FEIS (pg 4-73, 4-85 and Appendix B) are listed below in Table 3: Comparison of Regulated Water Quality Parameters to Predicted Water Quality.

Table 4.5.3b - Comparison of Regulated Water Quality Parameters to Predicted Water Quality

Predicted Values	**TDS, mg/l**	**SAR**	**EC,** µmhos/cm
Most Restrictive Proposed Limit		10	2000
Least Restrictive Proposed Limit		10	2500
Primary Watershed at Antelope Creek Near Teckla, WY Gauging station			
Historic Data Average at Maximum Flow		2.8	1,800
Historic Data Average at Minimum Flow		2.6	2,354
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		
WDEQ Water Quality Requirement for NPDES Permit # WY0037052			
At discharge point	5,000	10	2,000
Predicted Produced Water Quality			
Coal Zone 1	380	6.4	634

In order to determine to actual water quality of the producing formations in this POD and to verify the water analysis submitted for the pre-approval evaluation, the operator has committed to designate a reference well to each coal zone within the POD boundary. The well will be sampled

for analysis within sixty days of initial production. A copy of the water analysis will be submitted to the BLM Authorized Officer.

As stated previously, the operator has committed to offer water well agreements to properly permitted domestic and stock water wells within the circle of influence of the proposed CBNG wells.

The development of coal bed natural gas and the production and discharge of water in the area surrounding the existing natural spring are not likely to affect the flow rate or water quality of the spring, since the primary source of flow to springs in the area is generally clinker deposits near the land surface.

4.5.4 Surface Water Cumulative Effects

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

As of December 2003, all producing CBNG wells in the Antelope Creek watershed discharged an annual volume of 3,869 acre-ft of water compared to the predicted 17,271acre-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 80% less than the annual predicted produced water analyzed in the PRB FEIS for the Antelope Creek watershed.

Figure 4.5.4a Actual vs predicted water production in the Antelope Creek Watershed.

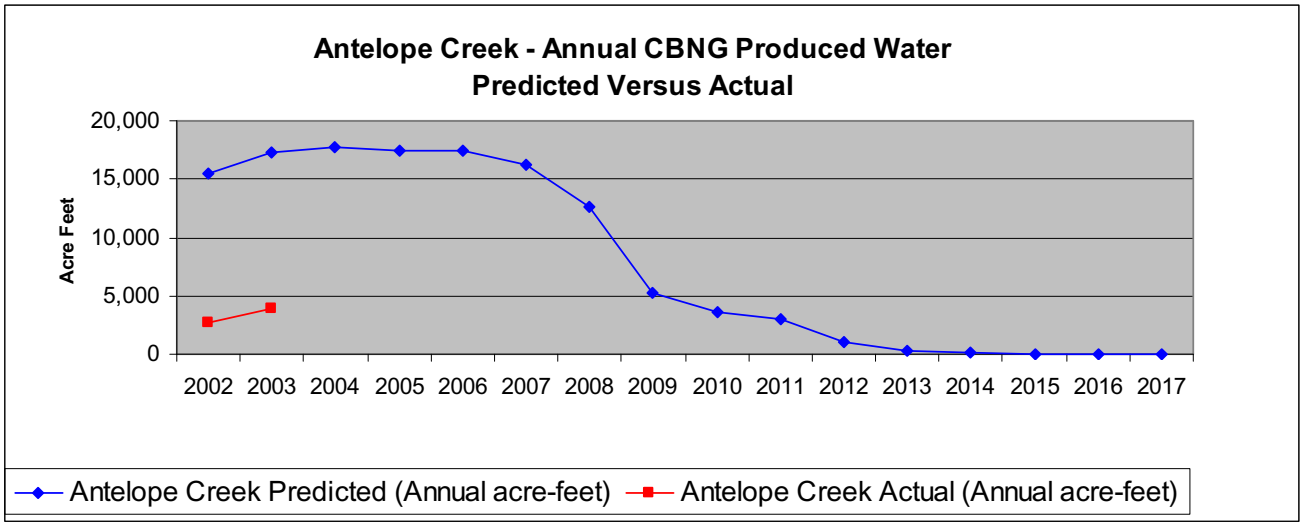


Table 4.5.4a PRB FEIS predicted vs. actual produced water volumes Antelope Creek Watershed					
Year	Predicted Water Production (Annual	Actual Water Production (Annual acre-feet)	Predicted Cumulative Water Production (Acre-feet	Actual Cumulative Water Production (acre-feet starting 2002)	Percentage Actual vs. Predicted Cumulative Water Production

	acre-feet)		starting 2002)		
2002	**15,460**	**2,643**	**15,460**	**2,643**	**17%**
2003	**17,271**	**3,869**	**32,731**	**6,512**	**20%**
2004	**17,685**		**50,416**		
2005	**17,503**		**67,919**		
2006	**17,385**		**85,304**		
2007	**16,180**		**101,484**		
2008	**12,613**		**114,097**		
2009	**5,226**		**119,323**		
2010	**3,574**		**122,897**		
2011	**2,956**		**125,853**		
2012	**1,041**		**126,894**		
2013	**363**		**127,257**		
2014	**124**		**127,381**		
2015	**40**		**127,421**		
2016	**13**		**127,434**		
2017	**3**		**127,437**		
Total	**127,437**	**6512**			

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.

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 relative to this project are anticipated to be minimal for the following reasons:

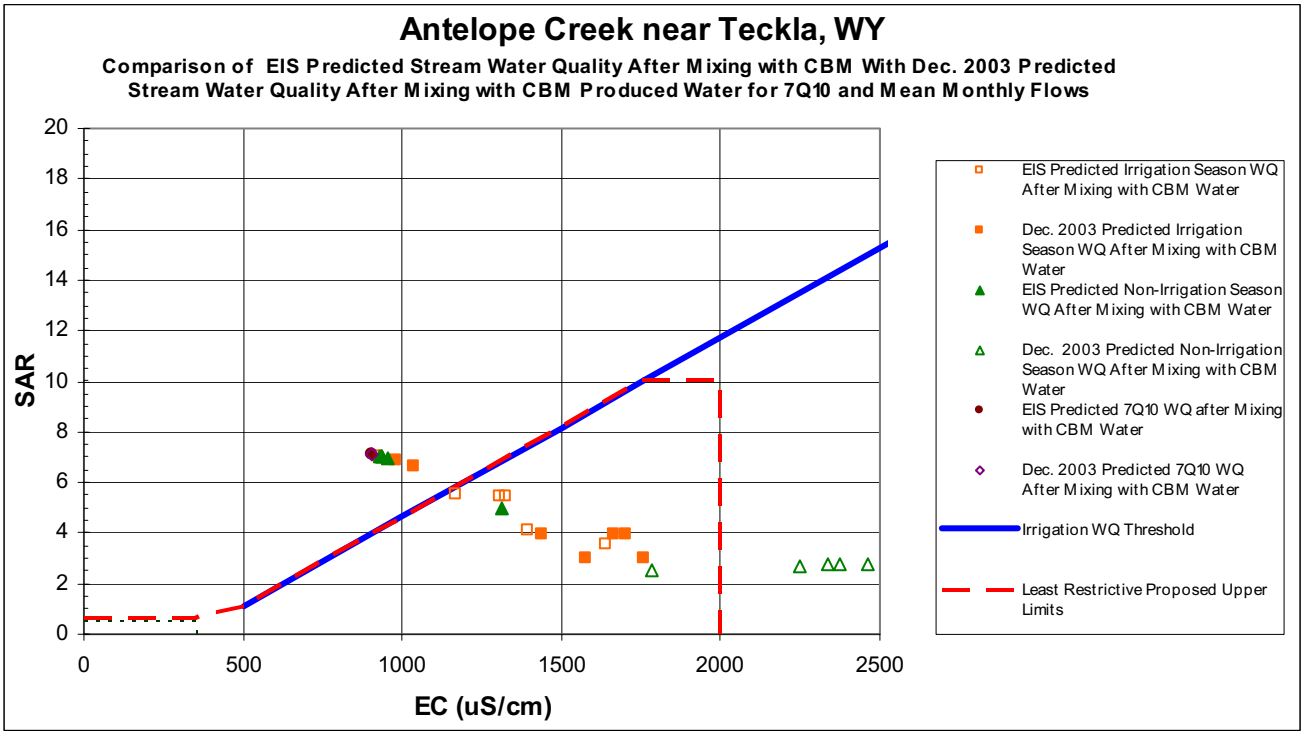
- ¿ They are proportional to the total amount of water predicted to be produced in the Antelope Creek 4th level watershed and that amount of cumulatively produced water is only approximately 20% of the total predicted in the PRB FEIS.
- ¿ The WDEQ/WQD enforcement of the terms and conditions of the NPDES permit that are designed to protect irrigation downstream.

The mass balance model used in the FEIS was updated with actual well production data from December 2003 (Table 4.7) to evaluate current cumulative impacts versus predicted impacts. The produced water quality and water handling methods projected in the FEIS were used with the actual water production information. Data from Table 4.7 is displayed graphically in Figure 4.2. Projections of the current level of CBNG produced water discharge in Antelope Creek indicate that decreases in stream EC will not be as great as projected in the EIS, and increases in SAR will not be as great as projected in the EIS. Cumulative impacts to water quality in the Antelope Creek Watershed are significantly less than those analyzed in the EIS. As discussed in the CHIA of the Antelope Creek Drainage for the Horse Creek Amendment, Antelope Coal Mine, surface water quality in the vicinity of the project area is generally poor, and is suitable primary for livestock water. Predicted changes in water quality resulting from this project will not result in

significant changes in ambient water quality, and will not result in impacts to downstream water users.

Table 4.5.4b Predicted Changes in Water Quality – PRB EIS versus Dec. 2003							
Antelope Creek near Teckla, WY		Stream Water Quality		EIS Predicted		Dec. 2003 Predicted	
		Before CBM		Mixed	Mixed	Mixed	Mixed
	Monthly Mean StreamFlow Cubic Feet per Second	EC (uS/cm)	SAR (--)	EC (uS/cm)	SAR (--)	EC (uS/cm)	SAR (--)
7Q10				905	7.10	905	7.10
Nov	0.20	2460	2.74	947	6.98	1003	6.82
Dec	0.30	2372	2.79	964	6.93	1040	6.70
Jan	0.26	2335	2.74	955	6.95	1020	6.75
Feb	0.46	2251	2.71	986	6.84	1086	6.51
Mar	10.97	1782	2.52	1435	4.33	1595	3.49
Apr	7.94	1949	2.77	1454	4.82	1665	3.95
May	58.82	1800	2.82	1703	3.29	1757	3.03
Jun	7.77	2005	2.80	1477	4.86	1701	3.99
Jul	23.52	1661	2.48	1484	3.56	1576	3.00
Aug	6.42	1684	2.47	1273	4.91	1438	3.93
Sep	0.33	2214	2.52	963	6.90	1036	6.64
Oct	0.16	2354	2.60	937	7.00	979	6.87

Figure 4.5.4b Predicted Changes to Surface Water Quality.



No additional mitigation measures are required.

Refer to the PRB FEIS, Volume 2, page 4-81 and table 4-4 for cumulative effects relative to the Antelope Creek watershed and page 4 -117 for cumulative effects common to all sub-watersheds.

4.6 Cultural Resources

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 Casper Field Manager notified. Further discovery procedures are explained in the ***Conditions of Approval*** (General) (III)(A)(1).

4.7 Air Quality

Wind erosion from disturbed soil surface areas associated with construction of the well pads, infrastructure facilities, roads, pipelines or WMP components is a potential source of wind-blown dust.
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., waterbars, water wings, culverts, rip-rap, gabions etc.) would ensure land productivity/stability is regained and maximized. The applied soil and vegetation mitigation measures contained in the BOG SUP and the applied oil and vegetation mitigation measures included as operator COAs should reduce the potential for air contamination from wind-blown soils. The majority of the

surface disturbance is from buried line construction which is short term if reclamation is expedient and properly implemented.

5. CONSULTATION/COORDINATION

Contact	Title	Organization	Present at On-site
Terry Steen	Representative	Bowers Oil and Gas, Inc.	Yes
Lee Eisenberger	Representative	Patricia Litton	Yes
Brad Rogers	Biologist	U.S. Fish and Wildlife Service	No

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

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.

The Endangered Species Act of 1973, Section 7(a)(2), as amended (50 CFR 402.14)

The Federal Land Policy and Management Act, as amended. Public Law 94-579. U.S. Department of the Interior, Bureau of Land Management and Office of the Solicitor (editors). 2001.

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

Bowers Oil and Gas, Inc. Antelope Coal Mine POD, Coalbed Natural Gas Project, Biological Assessment, Casper and Buffalo Field Offices, May 2004,

Bowers Oil and Gas, Inc. Antelope Coal Mine Plan-of-Development Bald Eagle Roost Surveys, Wildlife Features, and Habitat Assessment. Prepared for Bowers Oil and Gas, Inc. by Thunderbird Wildlife Consulting, Inc., March 2, 2004.

Buffalo Field Office Coal Bed Natural Gas APD and POD Preparation Guide, Revised May 9, 2003.

Final Powder River Oil and Gas Project Environmental Impact Statement and Resource Management Plan Amendment and Record of Decision. Prepared by the Department of the Interior, Bureau of Land Management, Wyoming State Office in Campbell, Converse, Johnson and Sheridan Counties, Wyoming. Approved April 30, 2003.

Final Resource Management Plan/ Environmental Impact Statement for the Platte River Resource Area. Prepared by the United States Department of the Interior, Bureau of Land Management, Casper Field Office, November, 1984.

Final South Powder River Basin Coal Environmental Impact Statement. Prepared by the Bureau of Land Management, Casper Field Office, December, 2003.

Marra PP, Griffing SM, McLean RG. West Nile virus and wildlife health. Emerg Infect Dis [serial online] 2003 Jul. Available from: URL: http://www.cdc.gov/ncidod/vol9no7/03-0277.htm.

Powder River Basin Oil and Gas Project Programmatic Biological Opinion, Prepared by the U.S.Fish and Wildlife Service, Wyoming Field Office, December 17, 2002, U.S.

Record of Decision for the Resource Management Plan/ Final Environmental Impact Statement for the Platte River Resource Area, Casper District. Prepared by the United States Department of Interior, Casper District.

Threatened and Endangered Vegetation Species Survey for the Proposed CBM Antelope Project. Prepared for Bowers Oil and Gas by BKS Environmental Associates, Inc., October, 2003.

Tiered Biological Opinion, Bowers Oil and Gas, Inc., Antelope Mine Coal Bed Natural Gas Plan-of-Development in Converse and Campbell Counties. Review prepared by the U. S. Fish and Wildlife service, Wyoming Field Office, Cheyenne, Wyoming, July 2004. Tiered to U.S. Fish and Wildlife Service, December 17, 2002, Powder River Basin Oil and Gas Project Programmatic Biological Opinion

Cumulative Hydrologic Impact Assessment, Antelope Creek Drainage, Wyoming Department of Environmental Quality, Land Quality Division, 2001.

8. LIST OF INTERDISCIPLINARY TEAM PREPARERS AND REVIEWERS

Ken McMurrough, Physical Scientist, Team Co-Lead
Joe Meyers, Physical Scientist (Hydrologist), Team Co-Lead

Ellen Burris, Legal Land Examiner
Sherry Grose, Legal Assistant
Lloyd Wright, Petroleum Engineer
Chris Arthur, Archaeologist

Bob Specht, Geologist
Sarah Bucklin-Comiskey, Wildlife Biologist
Jum Wright. Wildlife Biologist
Patrick Moore, Assistant Field Manager, Mineral and Lands
Randy Sorenson, Realty Specialist (Acting Assistant Field Manager)

_____ _____

Assistant Field Manager, Mineral and Lands Date
Casper Field Office

ATTACHMENT 1

ENVIRONMENTAL ASSESSMENT (EA WY-060-04-065) FOR THE ANTELOPE MINE COAL BED NATURAL GAS PLAN OF DEVELOPMENT

Conservation Measures, Reasonable and Prudent Measures, Terms and Conditions, and Conservation Measures

taken from

Final Biological and Conference Opinion for the Powder River Basin Oil and Gas Project, Campbell, Converse, Johnson, and Sheridan Counties, Wyoming (Formal Consultation No. ES-6-WY-02-F006) which transmitted the U. S. Fish and Wildlife Service's (FWS) Biological and Conference Opinion based on its review of the proposed Powder River Basin Oil and Gas Project located in Campbell, Converse, Johnson, and Sheridan Counties, Wyoming, and its effects on the bald eagle ,mountain plover, and Ute ladies'-tresses orchid in accordance with section 7 of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

Conservation Measures

The BLM has attempted to minimize some of the direct and indirect impacts of the project to listed and proposed species, as well as the habitats for these species by incorporating the following conservation measures into the proposed project. These measures (taken verbatim from the September 3, 2002, FBA and identified as "mitigation") are as follows:

Bald Eagle

CM1. In the event that a bald eagle (dead or injured) is located during construction or operation, the FWS Wyoming Field Office (307- 772-2374) and the FWS Law Enforcement Office (307-261-6365) will be notified within 24 hours.

CM2. Site-specific project areas will be evaluated for suitable bald eagle nesting and roosting habitat prior to permit approval. Suitable nesting habitat is any mature stand of conifer or cottonwood trees in association with rivers, streams, reservoirs, lakes or any significant body of water. Suitable roosting habitat is defined as any mature stand of conifer or cottonwood trees.

CM3. The BLM shall monitor all take (*incidental*of bald eagle habitat associated with the preferred alternative. The actual measurement of disturbed habitat is the responsibility of the Bureau but can be delegated to the Bureau's agent (consultant, contractor, etc). A written summary will be provided to the FWS Wyoming Field Office semi-annually. The semi-annual report will include field survey reports for endangered, threatened, proposed and candidate species for all actions covered under

the FEIS for the Powder River Basin Oil and Gas Project and the Record Of Decision (ROD). The semi-annual reports will include all actions completed 30 days prior to the reporting dates. The first report will be due six months after the signing of the ROD and on the anniversary dates of the signing of the ROD. Reporting will continue for the life of the project.

CM4. The BLM shall monitor all road-associated carcasses, jackrabbit sized and larger, along project (operator-maintained) roads.

CM5. All power lines would be built to protect raptors, including wintering bald eagles, from accidental electrocution using methods detailed by the Avian Power Line Interaction Committee (1996).

CM6. Special habitats for raptors, including wintering bald eagles, would be identified and considered during the review of the Application for Permit to Drill/Plan of Development (APD/POD) or Sundry Notices.

CM7. Surveys for active bald eagle nests and winter roost sites will be conducted within suitable habitat by a BLM-approved biologist. Surface disturbing activities will not be permitted within 1-mile of suitable habitat prior to survey completion.

CM8. A minimum disturbance-free buffer zone of 0.5 mile (i.e., no surface occupancy) would be established year round for all bald eagle nests. A seasonal minimum disturbance-free buffer zone of 1-mile would be established for all bald eagle nest sites (February 1 - August 15).

CM9. A seasonal minimum disturbance-free buffer zone of 1-mile would be established for all bald eagle winter roost sites (November 1 - April 1). These buffer zones and timing restrictions may be adjusted based on site-specific information through coordination with, and after written approval from the FWS.

CM10. Within 0.5 mile of bald eagle winter roost sites additional measures such as remote monitoring and restricting maintenance visitation to between 9:00 AM and 3:00 PM may be necessary to prevent disturbance (November 1 - April 1).

CM11. Maximum design speed on all operator constructed and maintained roads shall not exceed 25 miles per hour to minimize the chance of a collision with a bald eagle, other wildlife, or livestock.

CM12. Additional mitigation measures may be necessary if the site-specific project is determined by a BLM biologist to have an adverse affect to bald eagles or their habitat.

Black-footed Ferret

CM13. Site-specific project areas will be evaluated for suitable black-footed ferret habitat prior to permit approval. Suitable habitat consists of a black-tailed prairie dog town

or complex greater than 80 acres (USFWS 1989). A prairie dog town is a group of intact prairie dog holes whose density exceeds 8 burrows/acre; a complex consists of 2 or more neighboring prairie dog towns each less than 4.34 miles (7 kilometers) from the other (USFWS 1989).

CM14. Prairie dog colonies will be avoided wherever possible.

CM15. If suitable prairie dog colonies cannot be avoided, surveys will be conducted in compliance with the FWS guidelines (USFWS 1989). The entire colony or complex affected will be surveyed, even if part of the colony has a burrow density below eight burrows per acre.

CM16. If any black-footed ferrets are located, the Service will be consulted. Absolutely no disturbance will be allowed within prairie dog colonies inhabited by black-footed ferrets.

CM17. Additional mitigation measures may be necessary if the site-specific project is determined by a BLM biologist to have an adverse affect to black-footed ferrets or their habitat.

Ute ladies'-tresses

CM18. At the discretion of the surface owner, native species would be planted to re-establish special habitats.

CM19. Site-specific project areas will be evaluated for suitable Ute ladies'-tresses orchid habitat prior to permit approval. Suitable habitat is characterized by moist soils near springs, lakes, or perennial streams; most occurrences are in alluvial substrates along riparian edges, gravel bars, old oxbows, and moist to wet meadows in the floodplains of perennial streams (USFWS 1995).

CM20. Suitable habitat will be avoided wherever possible.

CM21. If suitable habitat for Ute ladies'-tresses cannot be avoided, surveys will be conducted in compliance with the FWS's guidelines (USFWS 1995) by a BLM-approved biologist or botanist. Be aware, surveys can only be conducted between July 20 and August 31.

CM22. Moist soils near wetlands, streams lakes or springs in the project area will be promptly revegetated if construction activities impact the vegetation in these areas. Revegetation will be designed to avoid the establishment of noxious weeds.

CM23. Companies operating in areas identified with weed infestations or suitable Ute ladies'-tresses orchid habitat will be required to submit an integrated pest management plan prior to APD approval. The components of the integrated pest management plans are outlined in the CBM APD and POD Preparation Guide. Mitigation will be determined on a site-specific basis and may include such measures

as spraying herbicides prior to entering areas and washing vehicles before leaving infested areas. Infestation areas of noxious weeds have been identified through the County Weed and Pest Districts and are available at the BLM Casper Field Office.

CM24. Additional mitigation measures may be necessary if the site-specific project is determined by a Bureau biologist to have an adverse affect to Ute ladies'-tresses orchids or their habitat.

Mountain Plover

CM25. In the event that a mountain plover (dead or injured) is located during construction or operation, the FWS Wyoming Field Office (307- 772-2374) and the Service's Law Enforcement Office (307-261-6365) will be notified within 24 hours.

CM26. Site-specific project areas will be evaluated for suitable mountain plover nesting habitat prior to permit approval. Flat areas of short-grass prairie or low shrubs with a prevalence of bare ground characterize suitable mountain plover nesting habitat. Typically the vegetation height is less than 4 inches, and bare ground is greater than 30 percent.

CM27. The BLM shall monitor all take of mountain plover habitat associated with the preferred alternative. The actual measurement of disturbed habitat is the responsibility of the BLM but can be delegated to the BLM's agent (consultant, contractor, etc). A written summary will be provided to the FWS's Wyoming Field Office semi-annually. The semi-annual report will include field survey reports for endangered, threatened, proposed and candidate species for all actions covered under the FEIS for the Powder River Basin Oil and Gas Project and the ROD. The semi-annual reports will include all actions completed 30 days prior to the reporting dates. The first report will be due 6 months after the signing of the ROD and on the anniversary dates of the signing of the ROD. Reporting will continue for the life of the project.

CM28. No ground-disturbing activities shall occur in suitable nesting habitat prior to surveys for nesting mountain plovers conducted in compliance with the Service's Mountain Plover Survey Guidelines (USFWS 2002). A BLM-approved biologist will conduct the surveys. Once occupied mountain plover nesting habitat is located, the Bureau shall initiate section 7 consultation with the FWS on any project-related activities proposed for such habitat. The amount and nature of ground-disturbing activity shall be limited within identified nesting areas in a manner to avoid the abandonment of these areas.

CM29. Operators and the BLM shall be provided by the FWS with educational material illustrating and describing the mountain plover, its habitat needs, life history, threats, and gas development activities that may lead to incidental take of eggs, chicks, or adults with requirements that these materials be posted in common areas and circulated in a memorandum among all employees and service providers.

CM30. A disturbance-free buffer zone of 0.25 mile would be established around all mountain plover nesting locations between March 15 and July 31.

CM31. Project-related features that encourage or enhance the hunting efficiency of predators of mountain plovers would not be constructed within 0.25 mile of known mountain plover nest sites.

CM32. Construction of ancillary facilities (e.g., compressor stations, processing plants) shall not be located within 0.5 mile of known nesting areas. The threats of vehicle collision to adult mountain plovers shall be minimized, especially within breeding aggregation areas.

CM33. Where possible, roads will be located outside of mountain plover nesting areas. Maximum allowed travel speed on roads within 0.5 mile of identified mountain plover nesting areas shall not exceed 25 miles per hour from March 15 to July 31.

CM34. Maximum design speed on all operator constructed and maintained roads shall not exceed 25 miles per hour.

CM35. Work schedules and shift changes should be set to avoid the periods from 30 minutes before to 30 minutes after sunrise and sunset during June and July, when mountain plovers and other wildlife are most active.

CM36. The BLM shall monitor all road-associated carcasses, jackrabbit sized and larger, along project (operator-maintained) roads. The presence of carrion could attract mountain plover predators.

CM37. Creation of hunting perches or nest sites for avian predators within 0.5 mile of identified nesting areas shall be avoided by burying power lines, using the lowest possible structures for fences and other structures, and by incorporating perch-inhibiting devices into their design.

CM38. Capped and abandoned wells shall be identified with markers no taller than 4 feet with perch inhibiting devices on top to avoid creation of raptor hunting perches within 0.5 mile of nesting areas.

CM39. Reclamation of areas of previously suitable mountain plover habitat would include the seeding of vegetation to produce suitable habitat for mountain plovers.

CM40. To minimize destruction of nests and disturbance to breeding mountain plovers from reclamation activities, no grading, seeding, or other ground-disturbing activities shall occur from April 10 to July 10 unless surveys consistent with the FWS's Mountain Plover Survey Guidelines (USFWS 2002) find that no mountain plovers are nesting in the area.

CM41. Additional mitigation measures may be necessary if the site-specific project is determined by a BLM biologist to have an adverse affect to mountain plovers or their habitat.

REASONABLE AND PRUDENT MEASURES

The FWS believes the following reasonable and prudent measures (RPM) are necessary and appropriate to minimize impacts of incidental take of bald eagles and mountain plovers.

Bald Eagle and Mountain Plover

RPM1. The BLM shall ensure implementation of all conservation measures identified and committed to as part of the action (outlined above in Project Description and more fully described throughout the September 3, 2002, FBA).

RPM2. The BLM shall ensure direct habitat disturbance does not exceed that discussed in the FBA and evaluated in this Biological/Conference Opinion. Through minimization and monitoring of direct habitat disturbance, indirect disturbance to the species will also be minimized.

Bald Eagle

RPM3. Reduce the possibility of vehicular collision with bald eagles, including reducing the amount of carrion present as a result of vehicular collision to discourage foraging by bald eagles.

RPM4. Reduce the possibility of electrocutions of bald eagles.

RPM5. Reduce the likelihood of disruption of nesting and roosting activities.

Mountain Plover

The following reasonable and prudent measures are designed first to avoid direct impacts to nesting mountain plovers through activity-specific nest searches, and second, to avoid or minimize impacts to known nesting aggregations by 1) avoiding or minimizing direct and indirect take of adults, eggs, or chicks on these areas, and 2) avoiding the abandonment of nesting aggregation areas.

RPM6. Minimize indirect disturbance to the species through minimization and monitoring of direct habitat disturbance.

RPM7. The BLM shall locate nesting areas and prevent direct take and indirect take within them.

RPM8. The BLM shall work to avoid abandonment of nesting areas.

RPM9. The BLM shall reduce the possibility of vehicular collisions with mountain plovers.

RPM10. The BLM shall limit project-related features that increase the population levels or hunting efficiency of predators of the mountain plover in the vicinity of known plover nest sites.

RPM11. Operators and BLM employees shall be shown how to identify the mountain plover and provided information about its habitat requirements, natural history, status, threats, and

possible impacts of gas development activities. Incidental observations of mountain plovers shall be solicited from all operator and Bureau field personnel.

TERMS AND CONDITIONS

In order to be exempt from the prohibitions of section 9 of the Act, the BLM must comply with the following terms and conditions (T&C), which implement the reasonable and prudent measures described above and outline required reporting/monitoring requirements. These terms and conditions are nondiscretionary.

All Species

T&C1. In the event that a bald eagle (dead or injured) or mountain plover (dead or injured) is located during construction and operation, the FWS's Wyoming Field Office (307-772-2374) and the FWS's Law Enforcement Office (307-261-6365) will be notified within 24 hours. The action agency must provide for monitoring the actual number of individuals taken. Because of difficulty in identification, all small birds found dead should be stored in a freezer for the Service to identify.

T&C2. The BLM shall monitor all loss of (1) bald eagle (nesting and roosting habitat as defined in the status of the species section of his Biological and Conference Opinion) and (2) suitable mountain plover habitat associated with all actions covered under the DBA; the *Draft Statement and Draft Planning Amendment for the Powder River Basin Oil and Gas Project,* the revised FBA dated September 3, 2002, the *Final Statement for the Powder River Basin Oil and Gas Project,* and the ROD for this project. The actual measurement of habitat loss can be the responsibility of the Bureau or Bureau's agent (consultant, contractor, etc.) with a written summary provided to the FWS's Wyoming Field Office semi-annually, or immediately if the Bureau determines that a site specific project proposed under the Powder River Basin Oil and Gas Project (*i.e.* Application for Permit to Drill/POD, Right-of-way grants, or Sundry Notices) will adversely affect a listed species. The tracking will include the location and acres of habitat loss, field survey reports, what stipulations were applied, and a record of any variances granted to timing and/or spatial buffers. For the purposes of this biological opinion, habitat loss is defined as the permanent or temporary alteration of habitat in such a way as to displace a species into unsuitable areas or impair/disrupt or prevent normal behavioral patterns such as breeding, feeding or sheltering. The monitoring of habitat loss for these species will commence from the date the ROD is signed. It is the responsibility of the Bureau to ensure that semi-annual reports are complete and filed with the Service in a timely manner. The semi-annual report will include field survey reports for endangered, threatened, proposed and candidate species for all actions covered under the FEIS for the Powder River Basin Oil and Gas Project and ROD. The semi-annual reports will include all actions completed under this biological and conference opinions up to 30 days prior to the reporting dates. The first report will be due 6 months after the signing of the ROD and thereafter on the anniversary dates of the signing of the ROD and 6 months after the signing of the ROD. Reporting will continue for the life of the project.

T&C3. The BLM will initiate informal section 7 consultation with the Service when 50 percent of the allowed incidental take has occurred for either the bald eagle or the mountain plover to determine if additional measures need to be implemented to further minimize the potential for take of listed species.

T&C4. The BLM shall require implementation of all conservation measures/mitigation measures for all species identified in the revised FBA prepared for the project and dated September 3, 2002, the FEIS for the Powder River Basin Oil and Gas Project, and the ROD. These measures are identified in the DESCRIPTION OF PROPOSED ACTION section of this Biological and Conference Opinion.

T&C5. The BLM shall monitor for compliance with all Terms and Conditions.

Bald Eagle

T&C6. Power lines will be built to standards identified by the Avian Power Line Interaction Committee (1996) to minimize electrocution potential. Moreover, power lines will be built according to the additional specifications listed below. The BLM will ensure that these additional standards to minimize bald eagle mortalities associated with utility transmission lines, will be incorporated into the stipulations for all project actions (*i.e.* Application for Permit to Drill/POD, Right-of-way grants, or Sundry Notices). It should be noted that these measures vary in their effectiveness to minimize mortality, and may be modified as they are tested in the field and laboratory. Local habitat conditions should be considered in their use. The Service does not endorse any specific product that can be used to prevent and/or minimize mortality, however, we are providing a list of *Major Manufacturers of Products to Reduce Animal Interactions on Electrical Utility Facilities.* The following represents areas where bald eagle protection measures will be applied when designing/constructing new distribution lines or modifying existing facilities:

For new distribution lines and facilities:

A. Bury distribution lines where feasible.
B. Raptor-safe structures (e.g., with increased conductor-conductor spacing) are to be used that provide adequate spacing for bald eagles (i.e. minimum 60" for bald eagles).
C. Equipment installations (overhead service transformers, capacitors, reclosers, etc.) are to be made bald eagle safe (e.g., by insulating the bushing conductor terminations and by using covered jumper conductors).
D. Jumper conductor installations (e.g. corner, tap structures, etc.) are to be made bald eagle safe by using covered jumpers or providing adequate separation.
E. Employ covers for arrestors and cutouts, when necessary.
F. Lines should avoid high avian use areas such as wetlands, prairie dog towns, and grouse leks.

For modification of existing facilities:

A. Existing structures, such as dead ends, tap or junction poles, transformers, reclosers and capacitor banks or other structures with less than 60" between conductors or a conductor and ground will need to be retrofitted to provide adequate spacing for bald eagles (i.e. minimum 60" for bald eagles).
B. Cover exposed jumpers
C. Gap any pole top ground wires
D. Isolate grounded guy wires (install insulating link)
E. On transformers, install insulated bushing covers, covered jumpers, and cutout covers and arrestor covers, if necessary
F. If bald eagle mortalities occur on existing lines and structures, bald eagle protection measures are to be applied (e.g. modify for raptor-safe

construction, install safe perches or perching deterrents, nesting platforms or nest deterrent devices, etc.)

G. In areas where midspan collisions are a problem, install line-marking devices that have been proven effective. All transmission lines that span streams and rivers, should maintain proper spacing and have markers installed.

T&C7. A minimum year-round disturbance-free buffer zone (no surface occupancy (NSO)) of 0.5 mile will be established for all bald eagle nests. An alternative would be development of a site management plan, as discussed in the *GYBEWG* and the *MBEWG*, by the Bureau (with the cooperation and approval of the Service) for each bald eagle nest or winter roost site. Each site management plan will include the following zones: Zone 1 (Occupational Nesting Zone), Zone 2 (Primary use areas), and Zones 3 (home ranges). The BLM will restrict and monitor the types of activities to occur within each of these zones. No surface occupancy or use is allowed within 0.5 miles of known bald eagle nest sites which have been active within the past 5 years.

T&C8. A seasonal disturbance-free buffer zone of 1 mile will be established for all bald eagle nests (February 15 - August 15). This buffer zone and timing may be adjusted based on site specific information through coordination with and with written concurrence of the FWS's Wyoming Field Office.

T&C9. A year-round disturbance-free buffer zone of 0.5 mile will be established for all bald eagle roost sites. This buffer zone restriction may be adjusted based on site specific information through coordination with and with written concurrence of the FWS's Wyoming Field Office.

T&C10. An additional seasonal buffer zone of 0.5 mile will be established for all bald eagle roost sites (November 1 - April 1). This buffer zone will start at the outside boundary of the 0.5 mile year-round disturbance-free buffer zone and extend out an additional 0.5 mile. However, within this seasonal buffer zone less restrictive measures such as remote monitoring of wells and/or restricting well maintenance visitations or human activity critical to project operations to between 9:00 AM and 3:00 PM may be allowed after coordination with the FWS's Wyoming Field Office and a demonstration that measures more protective of bald eagles are not reasonable or feasible.

T&C11. Nest productivity monitoring will be conducted by the BLM or a BLM -approved biologist in areas with high levels of development (i.e., areas with greater than or equal to 4 well pads/section) within 1 mile of a bald eagle nest between March 1 and mid-July to determine nesting success (i.e., number of nestlings/fledglings per nest).

T&C12. Appropriately-timed surveys for active bald eagle nests and winter roost sites will be conducted within 1 mile of proposed actions prior to permit (*i.e.* Application for Permit to Drill/POD, Right-of-way grants, or Sundry Notices) approval.

Mountain Plover

T&C13. A seasonal disturbance-free buffer zone of 0.25 mile will be maintained around all active mountain plover nest sites outside of black-tailed prairie dog towns between March 15 and July 31.

T&C14. Disturbance to prairie dog towns will be avoided where possible. Mountain plover nests on prairie dog towns will have a year-round disturbance-free buffer zone of 0.25 mile once

nesting has been confirmed. An exception may be granted by the authorized officer only after the Bureau consults with the FWS's Wyoming Field Office on a case by case basis and the operator agrees to adhere to any new operational constraints recommended by the Service.

T&C15. Habitat suitability surveys will be conducted by a BLM biologist or BLM approved biologist prior to permit (*i.e.* Application for Permit to Drill/POD, Right-of-way grants, or Sundry Notices) approval.

T&C16. Surveys for nesting mountain plovers will be conducted by a BLM biologist or BLM approved biologist if ground disturbing activities are anticipated to occur in suitable habitat between April 10 and July 10. The earlier date will facilitate detection of early-breeding plovers. Surveys will follow the most current version of the FWS's Mountain Plover Survey Guidelines (USFWS 2002 or most current version).

T&C17. Roads will be located outside of nesting plover habitat wherever possible. Maximum allowed travel speed on roads within 0.5 mile of identified mountain plover nesting areas shall not exceed 25 miles per hour from March 15 to July 31.

T&C18. Creation of raptor hunting perches will be avoided within 0.5-mile of identified nesting areas. Where artificial hunting perches are created within 0.5-mile of identified nesting areas perch inhibitors will be installed to deter avian predators from preying on mountain plovers and nests.

T&C19. Native seed mixes will be used to re-establish short grass prairie vegetation during reclamation.

T&C20. No ground-disturbing activities shall occur in suitable nesting habitat prior to surveys conducted in compliance with the FWS's 2002 Mountain Plover Survey Guidelines (attached) regardless of the timing of the disturbance. Once occupied mountain plover nesting habitat is located, the BLM shall reinitiate section 7 consultation with the Service on any project-related activities proposed for such habitat or within 0.25-mile of such habitat. The amount and nature of ground-disturbing activities shall be limited within and adjacent to identified nesting areas in a manner to avoid the abandonment of these areas.

T&C21. There will be No Surface Occupancy (NSO) of ancillary facilities (e.g. compressor stations, processing plants, etc.) within 0.5 mile of known nesting areas. Variance may be granted only after consultation with and agreement of the Service.

T&C22. Work schedules and shift changes should be set to avoid the periods from one-half hour before to one-half hour after sunrise and sunset during June and July, when mountain plovers and other wildlife are most active.

T&C23. No dogs will be permitted at work sites to reduce the potential for harassment of plovers.

T&C24. The FWS will provide the BLM and operators with educational material illustrating and describing the mountain plover, its habitat needs, life history, threats, and gas development activities that may lead to incidental take of eggs, chicks, or adults. The BLM and operators shall ensure these material are posted in common areas and circulated in a memorandum among all employees and service providers.

The reasonable and prudent measures, with their implementing terms and conditions, are designed to minimize the impact of incidental take that might otherwise result from the proposed action. If, during the course of the action, this level of incidental take is exceeded, such incidental take represents new information requiring reinitiation of consultation and review of the reasonable and prudent measures provided. The Bureau must immediately provide an explanation of the causes of the taking and review with the Service the need for possible modification of the reasonable and prudent measures.

Note: Incidental take coverage for the mountain plover does not occur until the mountain plover is listed as a threatened species. The mountain plover is currently protected by the Migratory Bird Treaty Act. Therefore, take of this migratory bird is prohibited, the issuance of this conference opinion notwithstanding.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations (CR) are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

CR1. Develop programmatic standards and guidelines to be incorporated into Land Use Plan amendments or revisions for all future actions related to oil and gas development. Conservation measures should apply to all phases of oil and gas development, including operations and maintenance activities.

CR2. To improve bald eagle nesting and roosting habitat cottonwood regeneration should be encouraged within the project area through reduction, modification and/or removal of domestic grazing, recreational use, or mineral extraction, if those activities are identified as being a cause of lack of regeneration.

CR3. Road-killed animals (excluding migratory birds) should be promptly removed from areas within 0.5-mile of identified mountain plover nesting areas. Removing carrion from or near roads as soon as possible would minimize the possibility of vehicular collision with bald eagles foraging on or near roads and to avoid attracting avian and mammalian predators of mountain plover.

CR4. Surveys of the entire project area should be conducted for mountain plovers (both nesting and brood rearing activities) to provide an estimate of population numbers in the area and availability of suitable habitat, and impacts of CBM development on this species.

CR5. Conduct research to better understand the effects of oil and gas development on breeding mountain plovers. The focus of research should be to measure recruitment to the fall population, philopatry, and site fidelity between developed and undeveloped mountain plover breeding concentration areas on or near the project area. This effort would require close monitoring of a large sample of breeding adults, and possibly color-marking or radio-marking adults and juveniles.

CR6. Mountain plover display high site fidelity and their long term absence from an area may preclude natural re-occupation of suitable habitat. If long term monitoring does not document any significant numbers of mountain plover in suitable habitat in the project area, translocate young mountain plover to unoccupied habitat to attempt re-establishment of local populations. Monitor marked birds to determine success of translocation.

CR7. Surveys of all suitable habitat within the project area and all adjacent drainages should be conducted for Ute ladies'-tresses to determine the status and distribution of this species in the general vicinity.

CR8. Re-establish prairie dog colonies in reclaimed or suitable habitat for nesting mountain plovers by translocating prairie dogs from occupied colonies within the area.

CR9. Utilize remote monitoring technology to reduce site visits to well pads and ancillary facilities thereby, reducing wildlife disturbances and mortalities.

In order for the FWS to be kept informed of actions minimizing or avoiding adverse effects or benefitting listed species or their habitats, the FWS requests notification of the implementation of any conservation recommendations.

ATTACHMENT 2

ANTELOPE MINE CBNG PROJECT
ENVIRONMENTAL ASSESSMENT

Bowers Oil & Gas, Inc.
Antelope Coal Mine POD
Coalbed Natural Gas Project
Biological Assessment
Casper and Buffalo Field Offices

INTRODUCTION

This biological assessment was prepared to display the possible effects to Endangered, Threatened, Experimental, Proposed, or Candidate species known to occur, or that may occur within the area influenced by the proposed action. It was prepared in accordance with Section 7 of the Endangered Species Act.

Biological Assessment objectives are:

1. To comply with the requirements of the Endangered Species Act such that actions of Federal agencies should not jeopardize or adversely modify critical habitat of federally-listed species.

2. To provide a process and standard by which to ensure that threatened, endangered, proposed, and candidate species receive full consideration in the decision-making process.

In addition, the USDI Bureau of Land Management (BLM) Wyoming has prepared a list of sensitive species to focus species management efforts towards 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 the Department Manual 235.1.1A.

The goals of sensitive species management are to:
- ¿ Maintain vulnerable species and habitat components in functional BLM ecosystems.
- ¿ Ensure sensitive species are considered in land management decisions.
- ¿ Prevent a need for species listing under the Endangered Species Act.
- ¿ Prioritize needed conservation work with an emphasis on habitat.

Proposed Action and Location

Bowers Oil & Gas Co., Inc. has applied for a permit to drill and operate 9 coalbed natural gas wells, located in Township 41N, Range 71 W, Sections 28-29; Converse and Campbell Counties, Wyoming. The Plan of Development (POD) is for the Antelope Coal Mine Unit. The existing facilities within the lease area include 2.61 miles of 2-track and 1.31 miles of gas pipeline, which is a third party line passing through the area. The project proposes one gathering/metering facility, one compressor, 1.25 miles of improved (graveled) 2-track without utilities, 0.53 mile of proposed 2-track with buried utility corridor, 0.75 mile of proposed 2-track without utility corridor, 2.61 miles of existing 2-track without utility corridor, 2.17 miles of buried utilities not associated with a road, 3.0 miles of overhead electricity, and 2 discharge points (Table 1). Utilities consist of natural gas pipelines and water pipelines. The project summary was derived from the November 25, 2003 Master Surface Use Plan as supplemented by November 18, December 18 2003, and February 11 letters.

More description of design features, construction practices, and water management strategies associated with the Antelope Coal Mine POD are included in the Master Surface Use Plan (MSUP), Drilling Plan, and Water Management Plan (WMP). More information on CBNG well drilling, production and standard practices is also available in the Powder River Basin Final Environmental Impact Statement (BLM 2003: Volume 1, pages 2-9 through 2-40).

This biological assessment is being prepared early in the permitting process. Several well and road locations are likely to change due to resource concerns. It is expected that project modifications should decrease the overall acreage of direct disturbances; final figures shall be supplied upon project approval or construction completion.

Habitat Description

The project is located within the Powder River Basin at the Converse/Campbell County line, approximately one mile east of Wyoming Highway 59. A description of the project area is found in the enclosed report by Thunderbird Wildlife Consulting, Inc. (TWC 2004) at pages 1-3.

Field Visits

Surveys for Ute ladies'-tresses were conducted on September 12, 2003 by BKS Environmental Associates, Inc. (BKS). Earlier Ute ladies'-tresses surveys had been conducted for Antelope Coal Mine in 2001 or 2000 (BKS 2003). TWC's field surveys were conducted December 12, 2003, January 28, 2004 and February 6, 2004 for bald eagles. TWC's report discusses other wildlife surveys, which were conducted during the past 10-to-20 years. BLM conducted field visits on September 10, 2003 and December 2003.

Table 1. Proposed Facilities and Summary of Disturbance: Bowers Oil and Gas, Inc Antelope Coal Mine Coalbed Natural Gas Plan of Development.

Facility	Number or Miles	Factor	Acreage of Disturbance	Duration of Disturbance
Wells	9	0.1ac/well	0.9	Short Term
Compressor Stations	1	2 ac/Facility	2.0	Long Term
Gathering/Metering Facilities	1	2 ac/facility	2.0	Long Term
Monitor Wells	0	0.1ac/well	0	Long Term
Impoundments				Long Term
Existing	1	Site Specific	0	
Proposed	0	Site Specific	0	
Water Discharge Points	2	Site Specific or 0.01 ac/WDP	0.02	
*Wetlands Filled	----	Site Specific	0.0	
Channel Disturbance				
Headcut Mitigation		Site Specific	0.0	
Channel Modification		Site Specific	0.0	
Pipeline Crossing*		Site Spec or 0.01 acres	0.0	
Road Crossing*		Site Spec or 0.01 acres	0.0	
Exist. Improved Rds w new utilities	0.0	24' Corridor	0.0	Long Term
Improved Roads				
With utilities	0.0		0.0	
Without utilities	0.0		0.0	
Existing 2-track Roads w new utilities	0.0	14' Corridor	0.0	Long Term
Proposed 2-Track Roads w utilities	0.53	14' Corridor	0.89	
Proposed 2-track Roads w/o utilities	2.00	14' Corridor	3.39	
Pipelines and Buried Electrical lines (not coridorred)	2.17	14' Corridor	3.68	Short Term
Overhead Electrical Lines	3.00	12' Corridor	4.36	Short Term
Total Long Term Disturbance			8.30	
Total Short Term Disturbance			8.94	
Total Disturbance			17.24	

Consultation History

Informal consultation with the Service was conducted during Brad Roger's visit to the BLM office on September 9, 2003.

Determinations

Threatened and Endangered Species

The proposed Antelope Mine CBNG Plan of Development **may affect and is likely to adversely affect** bald eagles.

Several trees are available for roosting or nesting, but neither activity has been documented. Wildlife surveys of various kinds have been conducted in the specific and general area for 20 years. Also, the BLM contract bald eagle survey (Patterson and Anderson 1985) documented the Antelope Creek roost, which is about 8 miles east of the project area, but no roost nor nest was documented here. Nests of other raptor species have been documented here, but not of bald eagles. There are no concentrations of food bases, including big game or livestock or fisheries/waterfowl.

Bald eagles forage opportunistically throughout the Powder River Basin including the project area. The presence of overhead power lines may adversely affect foraging bald eagles. Additional overhead electricity is proposed with this project, which may increase the risk to foraging eagles. Measures have been included within the project design to minimize the risk, such as building overhead electric lines to raptor safe standards, and access roads are proposed to remain as 2-tracks. A 25-mph maximum design criterion for all roads will be included as a COA for possible future development/improvement of roads. Despite these measures, some risk of harm remains.

There would be **no affect** to black-footed ferrets and their habitat from implementation of the proposed CBNG development.

One small (14 acres) prairie dog colony is located within the project area, and an existing 2-track is about 200 feet south of this colony (TWC 2004). The 2-track would remain unimproved, but vehicle traffic would increase on the 2-track. Two other small colonies (3acres and 5 acres) are within the one-mile inventory zone of the project area (TWC 2004). No development is proposed within any prairie dog habitat.

The proposed CBNG development may affect, but is not likely to adversely affect Ute ladies'-tresses and their habitat.

The orchid prefers periodically disturbed sites with non-clay soils which remain wet into late summer. A population in northern Converse County within the Antelope Creek drainage is the nearest known population, approximately 20 miles upstream of the project area. BKS evaluated this established population and the habitat on September 5, 2003 (BKS 2003).

Spring Creek and an unnamed tributary to Spring Creek flow through the proposed project area. Lack of supporting hydrology was described as limiting the potential Ute's habitat to pockets along Spring Creek (BKS 2003). BKS's survey of this habitat resulted in not finding any orchid plants within the survey area. Earlier Ute ladies'-tresses surveys, which had been conducted for Antelope Coal Mine in 2001 or 2000, also resulted in negative findings (BKS 2003).

Although multiple surveys have been conducted in the area with negative results, the plant is fickle in being observable. That is, above-ground growth or flowering is not consistently available where plants are known to be present. Therefore, it is still possible that the plant may be present, but not observed. Proposed development includes use of one existing 2-track and two proposed new pipeline crossings of Spring Creek. The existing 2-track crosses the creek just about at BKS point # 26, which is a dry portion of the creek. A corridor containing 3"-4" gas and water pipelines with overhead electricity would cross the creek downstream of BKS point # 26. A single gas suction (4"-8") line would cross the creek upstream of BKS point # 25, which is also a dry portion of the creek. In summary, none of the development would cross at portions of the stream which hold water (personal conversation with Ken McMurrough, BLM Surface Protection Specialist). These crossings should cause a low level of impact to the stream, and the impacts should be for a short term of time.

The proposed project area is not within the expected range of **Preble's Meadow Jumping Mouse** or **Colorado Butterfly Plant,** and does not contain sand dunes, which is the expected habitat for **blowout penstemon**.

Candidate Species

Development of the proposed Antelope Coal Mine POD may adversely affect **black-tailed prairie dogs**. One small (14 acres) prairie dog colony is located within the project area, and an existing 2-track is about 200 feet south of this colony (TWC 2004). The 2-track would remain unimproved, but vehicle traffic would increase on the 2-track, and may result in collisions with prairie dogs.

Protective/Minimization Measures for Threatened, Endangered, Proposed, or Candidate Species (See Powder River Oil and Gas Project Biological Opinion)

1. If any dead or injured threatened, endangered, proposed, or candidate species is located during construction or operation, the U.S. Fish and Wildlife Service's Wyoming Field Office (307-772-2374) and law enforcement office (307-261-6365) and BLM Casper Field Office (307-261-7600) shall be notified within 24 hours (T&C1)
2. Operator constructed roads will be designed for a maximum travel speed of 25 mph to minimize road related wildlife mortality (CM11). Maximum travel speeds on operator maintained roads shall not exceed 25 mph.
3. Native seed mixes will be used to re-establish short grass prairie vegetation during reclamation (T&C19).

Table 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.	NS	NE	Project facilities will not occur within the prairie dog colony.
Threatened				
Bald eagle (*Haliaeetus leucocephalus*)	Mature forest cover often within one mile of large water body.	S	LAA	Potential habitat; overhead power lines are proposed.
Utes ladies'-tresses orchid (*Spiranthes diluvialis*)	Riparian areas with water present into late summer.	NS	NLAA	Some pools along the stream; no orchids were found; no disturbance at the pools.
Candidate				
Black-tailed prairie dog (*Cynomys ludovicianus*)	Prairie habitats with deep, firm soils on slopes < 10%.	K	LAA	No development is proposed within the prairie dog colony.

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

Sensitive Species (Determinations are included in Table 3.)

Greater Sage Grouse

There are no sage grouse leks in or near the proposed project area. Sage grouse occur occasionally in the area, but there are no special habitats within the proposed project area. See the Thunderbird Wildlife Consulting, Inc. report (TWC 2004).

Mountain Plover

Mountain plover nesting has been documented within the prairie dog colony. No development is proposed within the colony, but increased traffic would use 2-track, which is located 200 feet south of the colony. See the Thunderbird Wildlife Consulting, Inc. report (TWC 2004).

Raptors

Surveys for raptor nests were conducted throughout the project area and a one-mile buffer during 2003, and much of the project area has a 20-year history of raptor nest surveys (TWC 2004). Thirteen intact raptor nests or nest sites were described by TWC (2004). See the Thunderbird Wildlife Consulting, Inc. report (TWC 2004) for details of raptor species, nest locations, and nest history.

No surface disturbing activity will be allowed within ½ mile of all documented raptor nest from February 1 through July 31, annually, prior to a raptor nest occupancy survey for the current breeding season. This timing stipulation affects the entire project area.

Required Mitigation Measures (See Powder River Oil and Gas Project Final EIS)

4. If any dead or injured sensitive species is located during construction or operation, the BLM Casper Field Office (307-261-7600) shall be notified within 24 hours.
5. The Record of Decision for the Powder River Basin EIS 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" (M32). 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, 2005, Bowers Oil & Gas, Inc. will coordinate with the BLM to determine if additional resurvey will be required.
6. The contract biologist shall contact the BLM prior to initiating any wildlife surveys.
7. No surface disturbing activity will be allowed within ½ mile of all documented raptor nest from February 1 through July 31, annually, prior to a raptor nest occupancy survey for the current breeding season. This timing stipulation affects the entire project area.
8. Surveys to document raptor nest activity in the area shall be conducted between April 15 and June 30. Surveys outside this window may not depict nesting activity. If a survey identifies active raptor nests, a ½ mile timing buffer will be implemented. The timing buffer restricts any surface disturbing activities within ½ mile of occupied raptor nests from February 1 to July 31.

9. Well metering and other site visits within 0.5 miles of occupied raptor nests shall be minimized as much as possible during the breeding season (February 1 – July 31), and restricted to between 0900 and 1500 hours.
10. If an undocumented raptor nest is located during project construction or operation, the Casper Field Office (307-261-7600) shall be notified within 24 hours.
11. If a raptor nest within 0.5 miles of the project is determined to be occupied, nest occupancy checks shall be completed for the first five years following project completion. The occupancy check shall be conducted no earlier than June 1 or later than June 30 and any evidence of nesting success/production shall be recorded. Survey results will be submitted to a Casper BLM biologist in writing no later than July 31 of each survey year.
12. If a mountain plover is located during project construction or operation, the Casper Field Office (307-261-7600) shall be notified within 24 hours.
13. Proposed well BOG Fed 4-29 may be constructed outside the mountain plover nesting season (after August 1 and before March 15). A mountain plover nesting survey shall be conducted by a Bureau approved biologist following the most current version of the Service's Mountain Plover Survey Guidelines (USFWS 2002 or most current version) in the 2004 survey period. The survey period is from May 1 to June 15.
14. If a mountain plover nest is documented, the following conditions shall apply:
    A. A seasonal disturbance-free buffer zone of 0.25 mile will be maintained around all active mountain plover nest sites outside of black-tailed prairie dog towns between March 15 and July 31 (T&C13).
    B. Documented nesting areas will be surveyed for five years following project completion. Surveys will be conducted by a Bureau approved biologist and follow the most current version of the Service's Mountain Plover Survey Guidelines (USFWS 2002 or most current version).
    C. Maximum allowed travel speed on roads within 0.5 mile of identified mountain plover nesting areas shall not exceed 25 miles per hour from March 15 to July 31 (T&C17). Work schedules and shift changes should be set to avoid the periods from one-half hour before to one-half hour after sunrise and sunset during June and July, when mountain plovers and other wildlife are most active T&C22).
    D. No dogs will be permitted at work sites to reduce the potential for harassment of plovers (T&C23).

Recommended Mitigation Measures

#12. Remote technology (telemetry, central metering facility, etc.) should be utilized to reduce human activities which are potentially disturbing to wildlife.

_____ _____

Willie Fitzgerald **Date**
Wildlife Biologist

Table 3. Habitat Descriptions and Project Effects on BLM Casper 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 affect existing waterways.
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	S	MIIH	No disturbance within the prairie dog colony.
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	S	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	S	MIIH	Grasslands and floodplains will be affected.
Mountain plover (*Charadrius montanus*)	Sparse shrub and grasslands with vegetation < 4 inches and slopes < 5%	S	MIIH	Suitable nesting habitat present.
Northern goshawk (Accipiter gentilis)	Conifer and deciduous forests	NP	NI	No forest habitat present.
Peregrine falcon (Falco peregrinus)	cliffs	NP	NI	No nesting habitat.
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 is not present.

Common Name (scientific name)	Habitat	Presence	Project Effects	Rationale
White-faced ibis (Plegadis chihi)	Marshes, wet meadows	NP	NI	Permanently wet meadows are not present.
Yellow-billed cuckoo (Coccyzus americanus)	Riparian cottonwood forest with a dense shrub understory.	NP	NI	Cottonwood riparian is present, but not with dense understory.
Mammals				
Fringed myotis (Myotis thysanodes)	Conifer forests, woodland chaparral, caves and mines	NP	NI	Habitat is not present.
Long-eared myotis (Myotis evotis)	Conifer and deciduous forest, caves and mines	NP	NI	Habitat is not present.
Spotted bat (Euderma maculatum)	Cliffs over perennial water, basin-prairie shrub	NP	NI	Habitat is not present.
White-tailed prairie dog (Cynomys leucurus)	Basin-prairie shrublands and grasslands	NP	NI	Habitat is 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	Habitat is not present.
Plants				
Porter's sagebrush (Artemisia porteri)	Sparsely vegetated badlands of ashy or tufaceous mudstone and clay slopes 5300-6500 ft.	NP	NI	Habitat is not present.
Nelson's milkvetch (Astragalus nelsonianus	Alkaline clay flats, shale bluffs and gullies, in sparsely vegetated sagebrush, juniper, & cusion plant communities at 5200-7600 ft.	NP	NI	Habitat is not present.
Many-stemmed spider-flower (Cleome multicaulis	Semi-moist, open saline banks of shall ponds & lakes with baltic rush & bulrush 5900 ft.	NP	NI	Habitat is 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 is not present.
Laramie false sagebrush (Sphaeromeria simplex)	Cushion plant communities on rocky limestone ridges & gentle slopes 7500-8600 ft.	NP	NI	Habitat is 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 Indivduals 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

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