DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION

Trust Land Management Division

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August 7, 2006

Dear Reader:

The Montana Department of Natural Resources, Trust Land Management Division, has prepared an Environmental Assessment for the state trust lands portion of the Tongue River-Badger Hills Amended Coal Bed Natural Gas Project proposed by Fidelity Exploration and Production Company. The state land is comprised of Section 36 [All] and Section 22 [SE4SW4], Township 9 South, Range 40 East, in Bighorn County, Montana.

Please provide written comments on this Environmental Assessment by September 5, 2006. The project proposal will be presented to the State Board of Land Commissioners at their September 18, 2006 meeting. Comments can be submitted either electronically or by mail to the following:

Bobbi Jo Coughlin
Department of Natural Resources and Conservation
Trust Land Management Division
P.O. Box 201601
Helena, MT 59620-1601
bjcoughlin@mt.gov

If you have any questions regarding this Environmental Assessment, please call (406) 444-9518. We appreciate your interest in the management of state trust lands.

Sincerely,

/s/

Bobbi Jo Coughlin
Petroleum Engineer
Minerals Management Bureau

STATE OF MONTANA

DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION

TRUST LAND MANAGEMENT DIVISION

ENVIRONMENTAL ASSESSMENT
TONGUE RIVER – BADGER HILLS AMENDED PLAN OF DEVELOPMENT

Township 9 South, Range 40 East
Section 22: SE4SW4 [Common Schools]
Section 36: ALL [Common Schools]
Big Horn County, Montana

DRAFT

August 7, 2006

CHAPTER 1:
PURPOSE AND NEED FOR ACTION

1.1 Proposed Action

Fidelity Exploration and Production Company (Fidelity) has proposed an amended plan of development (POD) for the Tongue River- Badger Hills Area, which is in an approved expansion area of the CX field (approved by Montana Board of Oil and Gas Conservation on February 12, 2004). The original plan of development included the drilling of 170 Coal Bed Natural Gas (CBNG) wells (20 state) with one well per coal bed per 160 acres. The Bureau of Land Management (BLM) completed an environmental assessment for the project which covered federal, state, and fee development and issued a Finding of No Significant Impact (FONSI) on September 16, 2003. All 85 federal wells were drilled. On December 9, 2003, the BLM State Director stayed Fidelity's operations for the development and production of federal leases in the Badger Hills project area, and ordered a new EA prepared to address issues raised in four requests for State Director Review (Bureau of Land Management, 2004). A new EA was complete and the BLM issued a FONSI on February 9, 2004. The Montana Board of Oil and Gas Conservation (MBOGC) completed an environmental assessment which covered state and fee wells and issued a FONSI on August 6, 2003. The Trust Land Management Division (TLMD) prepared an environmental assessment that tiered from the MBOGC EA for the twenty wells and compressor station on state section 36. The State Board of Land Commissioners approved the project on September 15, 2003.

This amended project proposal involves the drilling and completion of an additional 103 wells (36 federal, 38 fee, 29 state) within the original project boundary, effectively increasing the well density in the project to two wells per coal bed per 160 acres. The MBOGC completed an EA for the 29 state wells and the 43 fee wells in the amended POD and issued a FONSI on July 12, 2006. The permits to drill for the four state wells in Section 22 were issued on July 24, 2006 and the permits to drill for the twenty five state wells in Section 36 were issued on July 26, 2006.

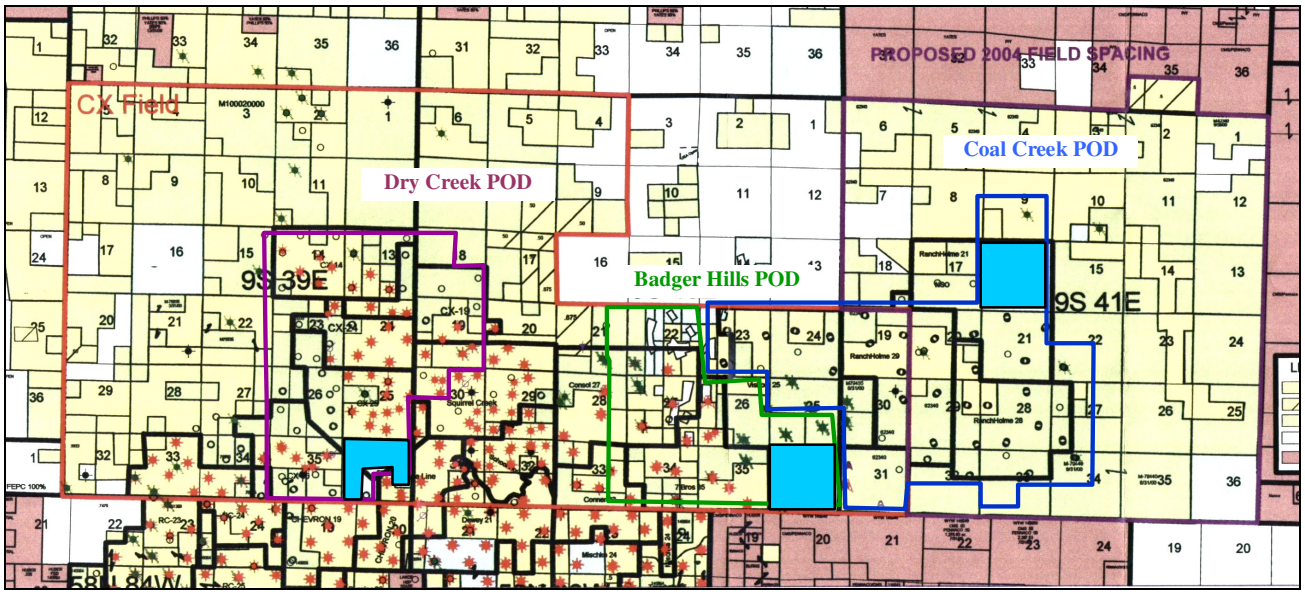

Figure 1: Badger Hills Amended POD area relative to the other approved PODs

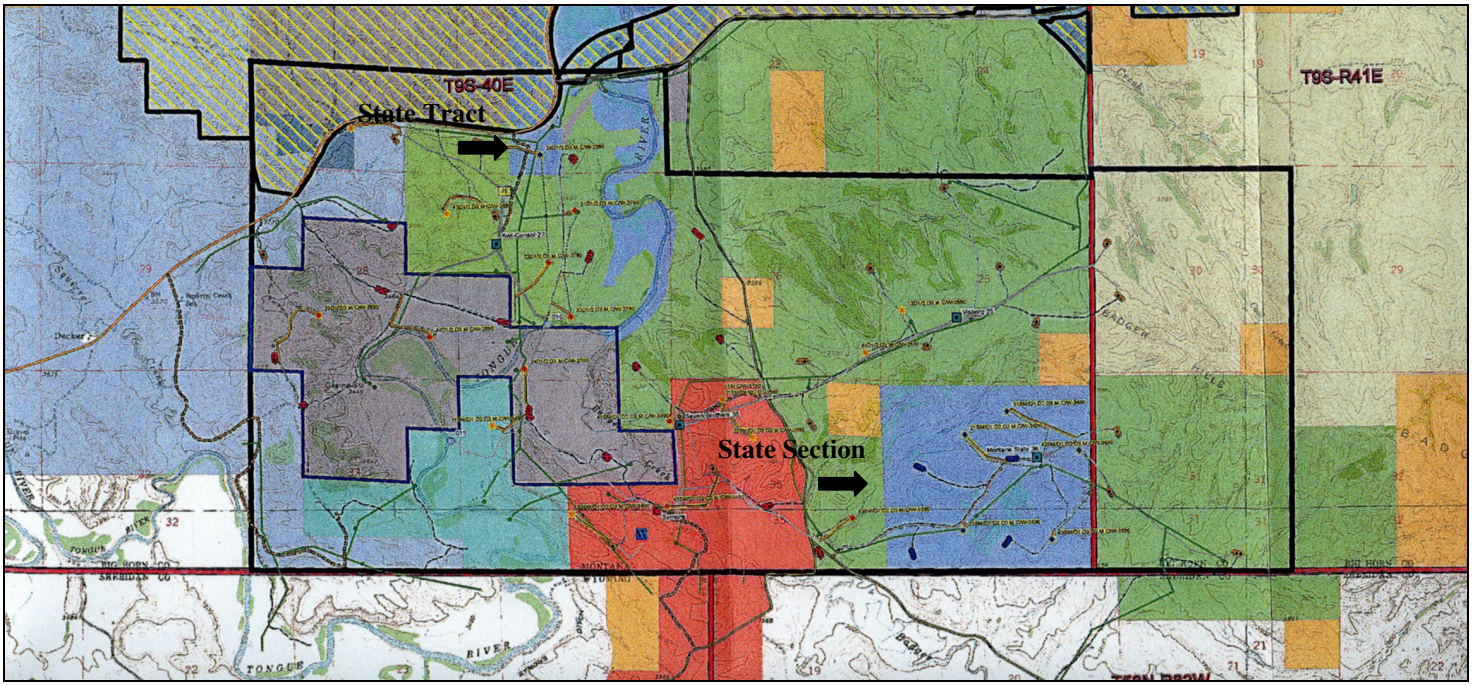

Figure 2: Fidelity's Tongue River-Badger Hills Amended POD Area

This environmental assessment focuses on the 29 proposed wells on state-owned land. It incorporates by reference and tiers off of the three EA's done for the original project area (Bureau of Land Management, Montana Board of Oil and Gas Conservation, and TLMD), and the EA completed by MBOGC for the state and fee wells under this amended plan of development. The pertinent documents that are incorporated by reference and utilized in this analysis are as follows:

- Montana Statewide Final Oil and Gas EIS and Amendment of the Powder River and Billings RMP (MT FEIS) January 2003: MBOGC ROD issued March 26, 2003 and MDEQ ROD issued August 7, 2006.
- The CX Field Expansion approved May 15, 2003;
- The Badger Hills Plan of Development, accepted by Montana Board of Oil and Gas Conservation on May 15, 2003;
- The Montana Board of Oil and Gas Conservation EA for the CX Field Expansion and Tongue River Badger Hills Project, approved August 6, 2003;
- The Trust Land Management Badger Hills EA approved by the State Board of Land Commissioners on September 15, 2003;
- The Bureau of Land Management Badger Hills Environmental Assessment (MT-020-2004-0134) and FONSI issued February 9, 2004;
- The Badger Hills Amended Plan of Development, accepted by Montana Board of Oil and Gas Conservation on May 4, 2006;
- The Montana Board of Oil and Gas Conservation EA for the Badger Hills Amended Plan of Development and FONSI issued July 12, 2006.

1.2 Need for the Action

Fidelity holds valid federal, state, and private oil and gas leases in the Badger Hills Project Area. Fidelity submitted applications to drill coal bed natural gas wells on state land to the Montana Board of Oil and Gas Conservation and to the Department of Natural Resources and Conservation, Trust Land Management Division (TLMD) on July 12, 2006. Oil and Gas leases issued by the State of Montana require the lessee to submit proposed activities on the state lease to the department for review. The Montana Environmental Policy Act (MEPA) requires that an environmental review be completed if the action has a potential for impacting the human environment.

The Montana Department of Natural Resources and Conservation, Trust Land Management Division manages state-owned trust lands under the direction of the Land Board. Both the Land Board and the Department have the fiduciary duty to manage and utilize these lands to generate revenue for the trust beneficiaries, which are the schools throughout the State of Montana. It is TLMD's responsibility to consider environmental impacts and to protect the future income generating capacity of the lands.

Since the first wells were drilled on state lands and began producing in 2003, total revenue has reached approximately $3,061,783 for the school trust fund with current royalty revenue exceeding $83,000 per month.

1.3 Relevant Plans, EISs, EAs, Regulations, and Other Documents

1.3.1 Montana MT Final Oil and Gas EIS and Amendment of the Powder River and Billings Resource Management Plans (MT FEIS) including MBOGC ROD issued March 26, 2003 and MDEQ ROD issued August 7, 2003;

1.3.2 The Fidelity Exploration and Production Company CX Field Expansion Proposal, approved by the Montana Board of Oil and Gas Conservation on May 15, 2003;
1.3.3 The Fidelity Exploration and Production Company Badger Hills Plan of Development accepted by the Montana Board of Oil and Gas Conservation on May 15, 2003;
1.3.4 The Montana Board of Oil and Gas Conservation EA for the CX Field Expansion and Tongue River Badger Hills Project, approved August 6, 2003;
1.3.5 The Trust Land Management Badger Hills EA approved by the State Board of Land Commissioners on September 15, 2003;
1.3.6 The Bureau of Land Management Badger Hills Environmental Assessment (MT-020-2004-0134) and FONSI issued February 9, 2004;
1.3.7 The Badger Hills Amended Plan of Development, accepted by Montana Board of Oil and Gas Conservation on May 4, 2006;
1.3.8 The Montana Board of Oil and Gas Conservation EA for the Badger Hills Amended Plan of Development and FONSI issued July 12, 2006.

1.4 Objectives of the Action

1.4.1 **Objective #1**: Develop a coal bed natural gas project in southeastern Montana encompassing federal, fee, and state surfaces and minerals.
1.4.2 **Objective #2**: Operate state and fee wells in conjunction with adjacent/nearby federal and fee lease wells, sharing facilities constructed and operating on the leases.
1.4.3 **Objective #3**: Increase the revenue generated for the State of Montana school trust fund.

1.5 Decision(s) That Must Be Made

The Minerals Management Bureau Chief of the Trust Land Management Division of the Montana Department of Natural Resources and Conservation must review the CBNG Plan of Development for state lands (as briefly described in Section 1.1 and in detail in Section 2.2) and determine if the selected alternative (plan) would or would not be a major state action, significantly affecting the quality of the human environment. If the Bureau Chief determines that it would not significantly affect the quality of the human environment, then he could prepare and sign a ROD (Record of Decision) and the project could proceed, subject to approval by the Land Board. Otherwise, an EIS and a ROD must be prepared and signed before the Badger Hills Amended Project could proceed on state land.

1.6 Scope of This Environmental Analysis

1.6.1 Issues Studied in Detail

1.6.1.1 Air Quality (Issue #1)

Increased activity in the project area could result in increased air emissions from drilling equipment and increased travel to and from the well locations for the duration of the project.

1.6.1.2 Cultural Resources (Issue #2)

Land disturbance caused by constructing the well pads and the infrastructure that is necessary for completion of this project could have an impact on the cultural resources in the area.

1.6.1.3 Hydrology (Issue #3)

Coal bed natural gas production carries water from the coal seams during the initial production phases. Management of produced water currently utilizes direct discharge of treated and untreated water to the Tongue River at authorized discharge points under two sting MPDES permits, delivery by flowline to coal mines for dust suppression, storage and evaporation, and, to a lesser extent, delivery by flowline for stockwater.

1.6.1.4 Lands and Realty (Issue #4)

There are currently two State of Montana oil and gas leases in Section 22. One is for common schools land and the other is for Water Resource Division land within the section. There is no agriculture and grazing lessee in Section 22. There are four easements on this state tract. Burlington Northern Railroad and Plum Creek Timber hold an easement for 135.19 acres in E2W2 of the section for coal mining, private plant facilities, railroad and roadway. Big Horn County Road Department has an easement for Highway 314 which runs through SE4NW4 and E2SW4 of the section (11.8 acres). Powder River Energy Corporation holds an easement for a transmission line in E2NW4 (3.89 acres). Consolidation Coal Company holds an easement for a railroad in SE4SW4 of the section (5.11 acres).

There is one State of Montana oil and gas lease in Section 36. There is also a grazing lease covering the entire 571.88 acres in Section 36 for a total of 114 AUMs. Powder River Energy Corporation also holds an easement for the powerline that runs west to east through the section. It was installed as part of the original Badger Hills plan of development and services the existing wells in the project area.

1.6.1.5 Soils (Issue #5)

Construction of the well pads and infrastructure and the increased travel on the all weather road and existing and new two track trails on the state sections could result in soil impacts and effect soil productivity depending on area and degree of physical effects. Erosion could also be a problem throughout the duration of this project.

1.6.1.7 Vegetation (Issue #6)

Construction of the well pads and infrastructure and the increased travel on the two track trails and resource roads on the state sections could result in the temporary removal of vegetation. Increased activity in the area also increases the potential of noxious weed introduction.

1.6.1.8 Wildlife (Issue #7)

Coal bed natural gas development could alter the habitat or create disturbance that could be detrimental to wildlife species.

1.6.1.9 Social and Economic (Issue #8)

Coal bed natural gas development would positively impact the revenue generated for the school trust fund.

1.6.2 Issues Eliminated From Further Study

1.6.2.1 Noise (Resource #1)

Coal bed natural gas development would increase the noise level in the project area during the initial drilling phase.

Rationale for Elimination: This project area lies within the existing CX Ranch field and a previously developed project area. Coal bed natural gas development is occurring throughout the entire field. There is one existing compressor station on section 36, but no additional compressors would be needed on state lands for the proposed wells. The increased level of noise would only occur during the weeks that it would take to drill the wells.

1.6.2.2 Aesthetics (Resource #2)

Drilling and completing the twenty nine wells on state lands would require that an insulated fiberglass cover and a pump panel be placed on the surface to house the well casing, piping, valves, flow meters and pressure gauges.

Rationale for Elimination: This project area lies in an area of hills and valleys, making the long-range visibility of these well housings improbable. Section 36 currently has infrastructure in place and there are wells surrounding the state land in section 22 of the project area. In addition, the covers and panels are small (less than 4 feet tall) and would be painted in a manner to blend in with the landscaping whenever possible.

1.6.2.3 Recreation (Resource #3)

None of the state lands within this POD lies within crucial mule deer winter habitat.

Rationale for Elimination: There is no public access to the state lands in section 36, which makes recreational use difficult. Highway 314 runs through the state tract in section 22, which limits the opportunities available for recreation.

1.7 Applicable Permits, Licenses, and Other Consultation Requirements

1.7.1 MPDES Discharge Permit MT0030457 for discharge of untreated CBNG waters
1.7.2 MPDES Discharge Permit MT0030724 for discharge of treated CBNG waters
1.7.3 MDEQ Air Quality Permit 3303-00 for Montana State 36 Battery and Compressor Station
1.7.4 MDEQ Air Quality Permit 3250-00 for Consol 27 Batter and Compressor Station
1.7.5 Montana Board of Oil and Gas Conservation permits to drill proposed wells
1.7.6 Air Quality Permits from MDEQ for drilling rig operations

CHAPTER 2:
ALTERNATIVES INCLUDING THE PROPOSED ACTION

2.1 Introduction

The purpose of this chapter is to describe and compare the alternatives by summarizing the environmental consequences. There are two alternatives outlined in this chapter: the No Action Alternative (Alternative A) and the Proposed Action (Alternative B). Based on the descriptions of the relevant resources in Chapter 3: Affected Environment and the predicted effects of both alternatives in Chapter 4: Environmental Consequences, this chapter presents the predicted attainment of project objectives and the predicted effects of all alternatives on the quality of the human environment in comparative form, providing a basis for choice among the options for the decision maker and the public.

2.2 Description of Alternatives

2.2.1 Alternative A: No Coal Bed Natural Gas Development (No Action)

2.2.1.1 Principal Actions of Alternative A

Additional coal bed natural gas on state land would not be developed. However, ongoing DNRC permitted and approved activities would continue in the project area:

- Livestock grazing: an existing surface lease for 114 AUMs (animal unit months) would continue on section 36 of the project area.
- Vehicle access: all existing two track trails would continue to be utilized to access existing coal bed natural gas wells and facilities. Existing trails would continue to be used for other uses such as use by the surface lessee. A resource road traveling south through tract 22 of the project area would continue to be utilized to access the battery in section 27.
- Existing coal bed natural gas development: Selection of Alternative A would not prevent the existing twenty wells on state land and related infrastructure from being produced and utilized. Communitization agreements for CBNG development off state land, but within communitized areas would remain in effect.
- Powder River Energy Corporation holds an easement for an overhead powerline running through section 36.
- Powder River Energy Corporation holds an easement for a transmission line in E2NW4 of Section 22.
- Consolidation Coal Company holds an easement for a railroad in SE4SW4 of Section 22.
- Big Horn County Road Department holds an easement for a highway in SE4NW4 and E2SW4 of Section 22.
- Burlington Northern Railroad and Plum Creek Timber hold an easement for coal mining, private plant facilities, railroad, and roadway in E2W2 of Section 22.
- Offset Development: Selection of Alternative A would not prevent additional coal bed natural gas development on offset lands.

2.2.1.2 Past Relevant Actions

The plan of development area is within the existing CX Field boundaries. There are currently 583 productive coal bed natural gas wells in the existing field and permits have been issued for all of the fee and state wells in the Badger Hills Amended POD, including the 29 state wells analyzed in this environmental assessment. In addition, Fidelity holds valid permits to drill for 4 state wells within the Deer Creek North Amended POD (approved by the Land Board on April 17, 2006). Fidelity also obtained permits and approval to drill an additional 20 state wells as part of the Coal Creek Amended POD (approved by the Land Board on July 17, 2006).

2.2.1.3 Present Relevant Actions Not Part of the Proposed Action

The Montana Board of Oil and Gas Conservation issued a FONSI for the Badger Hills Amended POD EA on July 12, 2006. Based on the analysis of cumulative impacts from development of state and private minerals, they determined that there would be no significant direct, indirect, or cumulative impacts as a result of additional CBNG development in the POD area. As a result, additional fee minerals would be developed in the POD area surrounding the state section.

2.2.1.4 Reasonably Foreseeable Relevant Actions Not Part of the Proposed Action

Fidelity Exploration and Production Company and Pinnacle Gas Resources have other Plans of Development that are being drafted for other lands within the existing CX Field and outlying areas. Coal bed natural gas development would likely continue in the area over the next 30 years.

All of these activities would also occur if Alternative B, which is described in Section 2.2.2, were implemented.

2.2.2 Alternative B: Additional coal bed natural gas development on state lands (Proposed Action)

2.2.2.1 Principal Actions of Alternative B

- A total of 29 coal bed natural gas wells would be drilled on six separate pad locations on the state tracts, with five wells per pad site. One pad would be located in SE4SW4 of Section 22 and the remaining five pads would be located in Section 36. Each well would be drilled to a different coal seam within the Fort Union Formation. Approximately ½ acre of land would be disturbed for each five-well pad during the construction phase. There would be less than 3 acres of land disturbance total for all six well pads. (See Table 1 for state well list).
- Underground power lines would be placed from three separate power drops to the well pads.
- Highway 314 runs through the western half of section 22. An all weather road travels south off the highway and runs to the Kwt-Consol 27 battery in section 27. The proposed well pad on the state tract in section 22 would be accessed by a two track trail that runs would run east from the existing wellpad in the 14-2290 wellpad in the SW quarter of the section. The gas and water line for this well pad would be co-located with this two track trail.

- There is an all weather road that runs from the country road in section 35 to the Montana State 36 battery. The proposed well pads in section 36 would be accessed from two track trails off the main resource road. Each two track trail would be located in the same corridor as the water lines and gas line for each of the five proposed wells pads in the section.
- Four inch underground water lines would be run from well pads on the state tract to an authorized untreated water discharge outfall (outfall 15) under MPDES permit MT0030457 or to a treatment facility in Section 34 and then discharged into the Tongue River at outfall 16 under MPDES permit MT0030724. Initially, approximately 174 gallons per minute would be produced and potentially discharged from the state coal bed natural gas wells. Each individual well would have a polyethylene flowline installed below grade from the wellhead. The gas from the well pad in section 22 and would be transported to the Kwt-Consol 27 batter and the gas from the well in section 36 would be transported to the Montana State 36 better in the NE4 of the section. The corridors for the water lines and the gas lines would be identical. Additional beneficial uses include irrigation, transport of water to the Spring Creek and Decker Coal Mines, dust control, and stock water use.
- Fidelity would continue to monitor each discharge point on the Tongue River and file reports in accordance with their existing MPDES permits.

Table 1
Well List for State Section

Well Number	Township	Range	Section	Spot Call
State 24C/W-2290	9S	40E	22	SESW
State 24D1/2-2290	9S	40E	22	SESW
State 24D3-2290	9S	40E	22	SESW
State 24M-2290	9S	40E	22	SESW
State 31C/W-3690	9S	40E	36	NWNE
State 31D2-3690	9S	40E	36	NWNE
State 31D3-3690	9S	40E	36	NWNE
State 31M-3690	9S	40E	36	NWNE
State 31SM/D1-3690	9S	40E	36	NWNE
State 21C/W-3690	9S	40E	36	NENW
State 21D2-3690	9S	40E	36	NENW
State 21D3-3690	9S	40E	36	NENW
State 21M-3690	9S	40E	36	NENW
State 21SM/D1-3690	9S	40E	36	NENW
State 23C/W-3690	9S	40E	36	NESW
State 23D2-3690	9S	40E	36	NESW
State 23D3-3690	9S	40E	36	NESW
State 23M-3690	9S	40E	36	NESW
State 23SM/D1-3690	9S	40E	36	NESW
State 42C/W-3690	9S	40E	36	SENE
State 42D2-3690	9S	40E	36	SENE
State 42D3-3690	9S	40E	36	SENE
State 42M-3690	9S	40E	36	SENE
State 42SM/D1-3690	9S	40E	36	SENE
State 43C/W-3690	9S	40E	36	NESE
State 43D2-3690	9S	40E	36	NESE
State 43D3-3690	9S	40E	36	NESE
State 43M-3690	9S	40E	36	NESE
State 43SM/D1-3690	9S	40E	36	NESE

2.2.2.2 Mitigation and Monitoring

The Montana Department of Natural Resources and Conservation, Trust Land Management Division has developed the Coal Bed Natural Gas Field Operating and Reclamation Requirements to mitigate disturbances and cumulative impacts to the environment. A copy of these requirements is provided in Appendix A of this environmental assessment.

The Montana Department of Environmental Quality has the regulatory authority over the monitoring of water quality and air quality issues. Montana Board of Oil and Gas Conservation has the regulatory authority over oil field operations. In conjunction with these regulating agencies, Fidelity has identified the following

mitigation and monitoring measures in addition to the standard requirements enforced by MDEQ and MBOGC:

- Each surface discharge point would be monitored and sampled, and reports would be submitted in accordance with its respective MPDES permit requirements.
- Sampling locations along the Tongue River at locations upstream and downstream of the permitted outfalls would be maintained under the respective MPDES permit requirements.
- Fidelity's Storm Water Pollution Prevention Plan for major construction activities requires bi-weekly monitoring and monitoring following major runoff events.
- Groundwater monitoring and mitigation of impacts to existing water users would take place according to the water well agreement negotiated with each landowner.
- The USGS would continue to monitor the Tongue River watershed at their various stream flow monitoring stations in the Tongue River.
- Regional ground water monitoring programs have been implemented in the coal bed aquifers in the area and are administered by the BLM, the MDEQ, and MDNRC. Montana Bureau of Mines and Geology (MBMG) has installed several monitoring wells in the Tongue River, Powder River and Rosebud Creek watersheds.

2.3 Summary Comparison of the Activities, the Predicted Achievement of Project Objectives, and the Predicted Environmental Effects of All Alternatives

2.3.1 Summary Comparison of Project Activities

Project Activity	Alternative A (No Action)	Alternative B (Proposed Action)
Drill Additional CBNG wells on state land	0 Wells Drilled	29 State Wells Drilled
Overhead Power lines Installed	None	None
Underground Power lines	None	Six corridors branching off of four drops
Two Track Trails/All Weather Roads	One existing all weather road in section 22 and one existing all weather road in section 36; four existing two track trails on section 36	Six new two track trails used to access each of the proposed well pads
Water lines/Gas lines	Water line and gas line for each of existing 20 state wells.	Water line and gas line installed for each new well.
Water Discharge	Currently, approximately 1957 gpm discharged into Tongue River under existing permits (some state produced water) and beneficially used by farmers and ranchers	Increased discharge under the existing MPDES permits – up to 1600 gpm untreated authorized and up to 1700 gpm treated water discharge authorized
Water Treated – Discharged	Currently, approximately 600 gpm treated water discharged into Tongue River under existing permit.	Most of the volume of water produced would be treated prior to discharge. Permit approved allowing 1700 gpm treated water discharge.

Water Quality/Air Quality Monitoring	Required under existing MPDES permit	Required under existing MPDES permit.

2.3.2 Summary Comparison of Predicted Achievement of Project Objectives

Project Objective	Alternative A (No Action)	Alternative B (Proposed Action)
Develop a coal bed natural gas project in southeastern Montana encompassing federal, fee, and state surfaces/minerals	No additional state minerals would be developed. Federal and fee minerals would continue to be developed. Existing state wells would continue to produce	Additional state, federal, and fee minerals would be developed.
Operate state/fee wells with adjacent/nearby federal lease wells, sharing facilities constructed and operating on the leases	Federal and fee wells would be operated together. Additional state wells would not be drilled.	State, fee, and federal wells would share new and existing facilities to reduce the amount of land disturbance.
Increase the revenue generated for mineral owners	No additional revenue generated for school trust.	State trust fund would receive 12.5% of all additional gas production from section 36 for an additional $3.9 million to the Common School trust. In addition, the four proposed wells in section 22 would generate an additional $297,000 for the Common School trust and an additional $8000 for Water Resources Division over the life of the project.

2.3.3 Summary Comparison of Predicted Environmental Effects

Issue	Alternative A (No Action)	Alternative B (Proposed Action)
Air Quality	No impact to air quality from state activity. Pollutant emissions would occur from additional federal and fee mineral development. Emissions would be regulated by MDEQ. Existing permit for Montana State 36 battery and compressor station.	Pollutant emissions would occur in the short term but would remain below the limits. Emissions would be regulated by MDEQ. Existing permit for Montana State 36 battery and compressor station which would service 25 proposed wells on section 36 and an existing permit for Consol 27 battery and compressor station which would service the four proposed state wells on section 22.
Cultural Resources	No impact to cultural resources from state activity.	Mitigation measures would be enforced to avoid the one cultural resource site identified on state lands.
Hydrology	No impact to hydrology from state activity. No additional discharge from state lands. Discharge would continue from state, fee, and federal wells within the existing CX field under their current MPDES permits.	Additional discharge into the Tongue River under the existing MPDES permits. 1600 gpm untreated water authorized and 1700 gpm treated water authorized for discharge into Tongue River.
Lands and Realty	No impact to lands and realty from state activity. Existing grazing lease, oil and gas leases and easements would remain in effect for state lands.	29 additional CBNG wells would be drilled on state lands and related infrastructure put in place. The existing grazing lease, oil and gas leases, and easements would remain in place.

Soils	No additional impact to soils from state activity. Grazing of state section 36 would continue, which may have minor impacts on the soil, such as compaction and erosion. Vehicle travel on designated all weather roads and two track trails would continue which may have impacts on the soil.	Increased chance for soil compaction due to increased vehicle travel and increased chance for erosion due to additional topsoil and vegetation removal. Degradation in soil quality could also occur.
Vegetation	No impact to vegetation from state activity. Grazing on state section 36 would continue to harvest vegetation.	Some vegetation would be removed for new well pad construction. Vehicle travel could decrease vegetation quality and quantity. It also increases potential for introduction of noxious weeds.
Wildlife	No impact to wildlife from state activity. Additional offset federal and fee mineral development may impact wildlife in the area.	Mitigation and timing stipulation for sage grouse and sharp tailed grouse as well as a golden eagle nest.
Social and Economic	No impact to social and economic factors from state activity. State and local income tax would be increased due to federal/fee mineral development. No additional revenue generated for the state trust fund.	State and local income tax increase from federal/fee/state development. State trust fund would receive 12.5% of royalties from new wells on section 36 in addition to existing wells for an additional $3.9 million total royalty revenue. IN addition, the four proposed wells in section 22 would generate an additional $297,000 for the common school trust and an additional $8000 for Water Resources.

2.4 Identification of the Preferred Alternative

Alternative B: Coal bed natural gas development is the preferred alternative.

CHAPTER 3:
AFFECTED ENVIRONMENT

3.1 Introduction

This chapter details the existing condition of the environmental resources and factors of the Badger Hills Amended POD that would affect or that would be affected by implementing either Alternative A or Alternative B. Chapter 3 focuses on the site-specific issues described in Section 1.6.1.

This description of the existing environment in Chapter 3, the description of the activities of Alternative A: No Action in Chapter 2, and the predicted effects of Alternative A in Chapter 4 combine to establish the **baseline conditions** against which the decision maker and the public could compare the potential effects of Alternative B: Coal bed natural gas development on state lands.

3.2 Description of Relevant Affected Resources

3.2.1 Air Quality

Air pollution is controlled through the ambient air quality and emission standards established by the Clean Air Act and under Montana laws implemented by the Montana Department of Environmental Quality (MDEQ). The Clean Air Act Amendments of 1977 created a system for the Prevention of Significant Deterioration (PSD) of “attainment” and “unclassified” area. This program is designed to limit the increase in pollutant areas above a legally defined baseline level (Montana Ambient Air Quality Standards (MAAQS) establishes upper limits), depending on the classification of the area. PSD Class I areas have more stringent limits that PSD Class II areas. The allowable incremental impacts for NO_2, SO_2, and PM_{10} within PSD Class I areas are very restricted (MT FEIS).

The closest PSD Class I defined area is the Northern Cheyenne Indian Reservation, which lies approximately 22 miles north of the project area. Pollutants throughout the project area are very limited due to the small number of industrial facilities and residential sources.

Bitter Creek Pipelines, LLC, obtained a permit (#3303-00) on April 6, 2004 from the Montana Department of Environmental Quality (MDEQ) for the construction and operation of the Montana State 36 Battery located on state section 36 of the project area. The permit outlines emission limitations, testing requirements, operational reporting requirements, and general conditions. A separate permit was obtained for the Kwt Consol 27 battery in Section 27 and the central compressor station in Sections 34 and 35 (permit #3250-00). MDEQ has the regulatory authority over all air quality issues. An environmental assessment was completed for each of the issued air quality permits.

3.2.2 Cultural Resources

Cultural Resources are tangible remains of past human activity within the landscape. Cultural Resources are identified and defined as geographic units or "sites" where past human activity occurred and evidence of past use could be documented. Generally, any site of human activity older than 50 years could be considered a cultural resource.

Multiple surveys have been conducted on the areas within the Badger Hills POD boundary. In 1972, Sharrock inventoried 2840 acres, which included the NW4 of Section 22. None of the sites identified in his search were located in Section 22. In the same year, the University of North Dakota conducted a cultural resource inventory for the Bureau of Land Management. No sites were located on state lands. A portion of Section 36 was studied by Historical Research Associates (HRA) in 1980 within the proposed CX Ranch mine permit area, but no sites were found. Then, in 1980, Gregg examined 3905 acres, including lands within section 22. Two prehistoric and three historic sites were identified, but none on state lands.

Fidelity contracted Ethnoscience to conduct a class III inventory of the previously uninvestigated private, BLM, and state lands within the POD boundary. The survey was conducted between February 13, 2006 and March 8, 2006. The inventory was conducted as a block survey using pedestrian transects spaced no more than 30 meter intervals. One site (24BH3353) consisting of a prehistoric lithic scatter situated on a small south-facing terrace was identified. There were 30 pieces of chipped stone flaking debris and four stone tools observed. This site is recommended not eligible to the National Register of Historic Places (NRHP) under criteria A, B, and C. However, there is insufficient evidence available to provide a recommendation regarding NRHP eligibility under Criterion D.

3.2.3 Hydrology

The entire Badger Hills Amended POD lies within the Tongue River Watershed. Fidelity currently produces 583 CBNG wells within the Tongue River Montana Project (TRMP) of which 31 are DNRC Conservation Easement wells, the water of which is permitted to be pumped solely to the Decker Coal Mine. Total water production from the remaining 552 producing wells TRMP wells is approximately 1957 gallons per minute (gpm) with nearly all of the water being discharged into the Tongue River or transferred to the Spring Creek Coal Mine for industrial use. A small percentage of the produced water is used by local ranchers for livestock watering.

3.2.3.1 Surface Water

The Tongue River Watershed covers approximately 1477 square miles (Fidelity Exploration and Production, 2003). It originates in the Big Horn Mountains in Wyoming and runs north and is perennial throughout its length to the Yellowstone River. There are many tributaries to the Tongue River, including Deer Creek and Coal Creek, both near the project area.

There are two unnamed ephemeral drainages of Deer Creek that cross through the state section. More information relating to the surface waters within the project area could be found in Chapter 3 of the MT FEIS and the original Coal Creek POD Joint EA.

Historical data obtained from USGS show a range of EC and SAR values for the Tongue River that vary significantly from one point to another. These values could be found in the joint EA and also discussed in Chapter 3 of the MT FEIS.

Fidelity has an existing MPDES permit (MT0030457) that expires on March 31, 2011 that allows discharge into the Tongue River through 15 specified outfalls. Discharge between November 1 and February 28 shall not exceed 2500 gpm. Between March 1 and June 30, the maximum discharge rate is 2375 gpm, and from July 1 to October 31, the maximum discharge rate is 1600 gpm. Additional flow restrictions are applicable during the July 1 to October 31 seasonal period. Total discharges to the upper reach of the Tongue River are limited to 1000 gpm. The remainder of the permitted flows may be discharged below the final Wyoming border. Other limitations imposed on this permit include:

- Total suspended solids (TSS) monthly average of 25 and daily maximum of 30 mg/L for all permitted outfalls.
- Effluent pH shall remain between 6.5 and 9.0 standard units. Any single analysis beyond the limitation is a violation of the permit conditions.
- When daily stream flow values are less than 35 cubic feet per second (cfs) as recorded at USGS gauging station at the State Line near Decker, the permittee shall conduct daily instream monitoring of specific conductance at an identified location. The permittee shall cease discharging to the Tongue River if the measured instream specific conductance exceeds the following value on any two consecutive calendar days and cannot recommence until the flow in the Tongue River at the gauge identified exceeds 35 cfs:

November 1 through March 1:	2500 µS/cm
March 2 through October 31:	1500 µS/cm

- Effluent flow rate must be monitored continuously.
- pH, temperature, specific conductivity, and total dissolved solids must be measured weekly by permit identified measurement types.
- Total suspended solids, sodium, calcium, magnesium, sodium adsorption ratio, ammonia, fluoride, total nitrogen, nitrate, Kjeldahl nitrogen, and phosphorous must be measured monthly by permit identified measurement types.
- Oil and grease and whole effluent toxicity must be measured quarterly by permit identified measurement types.
- Special conditions outlined in the permit include supplemental effluent monitoring, instream monitoring of the Tongue River for

outlined parameters, nutrient monitoring, mandatory effluent diffuser installation ground water monitoring, and toxicity reduction evaluation if necessary.

Fidelity has also obtained a second MPDES permit that allows for 1700 gpm of treated produced coal bed natural gas water to be discharged through one permitted outflow. Treatment consists of ion exchange and fluoride removal with provisions to allow blending of raw produced waters up to the instream water quality standards. The permit expires on March 31, 2011. The limitations imposed through this permit include:

- Between November 1 and March 1:
  - Total Suspended Solids average monthly maximum is 25 mg/L and daily maximum is 30 mg/L.
  - Total Nitrogen average monthly maximum is 1.2 mg/L and daily maximum is 1.7 mg/L
  - Sodium Adsorption Ratio average monthly maximum is 5 and daily maximum is 7.5.
  - Specific Conductance average monthly maximum is 1500 µS/com and daily maximum is 2500 µs/cm.
  - Percentage of untreated produced water shall not exceed 23% of the produced water delivered to the facility.
- Between March 2 and June 30:
  - Total Suspended Solids average monthly maximum is 25 mg/L and daily maximum is 30 mg/L.
  - Total Nitrogen average monthly maximum is 1.3 mg/L and daily maximum is 1.8 mg/L
  - Sodium Adsorption Ratio average monthly maximum is 3 and daily maximum is 4.5.
  - Specific Conductance average monthly maximum is 1000 µS/com and daily maximum is 1500 µs/cm.
  - Percentage of untreated produced water shall not exceed 14% of the produced water delivered to the facility.
- Between July 1 and October 31:
  - Total Suspended Solids average monthly maximum is 25 mg/L and daily maximum is 30 mg/L.
  - Total Nitrogen average monthly maximum is 1.1 mg/L and daily maximum is 1.6 mg/L
  - Sodium Adsorption Ratio average monthly maximum is 3 and daily maximum is 4.5.
  - Specific Conductance average monthly maximum is 1000 µS/com and daily maximum is 1500 µs/cm.
  - Percentage of untreated produced water shall not exceed 14% of the produced water delivered to the facility.

Other permit limitations include:

- Effluent pH shall remain between 6.5 and 9.0 standard units.

- Treated effluent flow rate and raw water used in blending must be monitored continuously.
- pH, temperature, and specific conductivity must be measured daily by permit identified measurement types.
- Total suspended solids, total dissolved solids, sodium, calcium, magnesium, sodium absorption ratio, ammonia, and fluoride must be measured weekly by permit identified measurement types.
- Total nitrogen, nitrate + nitrate, Kjeldahl nitrogen, and phosphorous must be measured monthly by permit identified measurement types.
- Whole effluent toxicity, mercury, radium, and arsenic must be measured quarterly by permit identified measurement types.
- Special conditions outlined in the permit include supplemental effluent monitoring, groundwater monitoring, nutrient monitoring, mandatory mixing zone diffuser installation, and toxicity reduction evaluation if necessary.

3.2.3.2 Ground Water

The sands and coals of the Fort Union formation are a major source of groundwater in the project area. Wells within these formations can produce as much as 40 gpm, but typically yield closer to 15 gpm. This formation generally is encountered from approximately 50 feet to 600 feet in the project area. CBNG produced water quality information by coal seam is presented in the Table 2 below.

Table 2
Coal Bed Natural Gas Produced Water Quality

Coal Seam	**pH**	**TDS (mg/L)**	**SAR**	**EC (□mhos/cm)**
Dietz 1	8.0	1640	55.8	2710
Dietz 2	8.3	1670	66.7	2700
Dietz 3	8.0	1630	71.3	2630
Monarch	8.3	1470	84.9	2390
Carney	8.3	1620	70.8	2610

A groundwater rights search was done for the Badger Hills POD. Several stock reservoirs and direct flow surface water rights were permitted within and downstream of the project area. In addition, nineteen permitted water wells existing within a one-mile radius of the POD area. Two state surface water rights exist in the project area. The first is a provisional permit for pollution abatement in SWNWSE of Section 14. The second water rights lies in the NENWNE of Section 16 and is also a provisional permit for pollution abatement.

Two state groundwater rights also lie within the project boundary. Both lie within section 15 and both are stock water rights utilized by Decker Coal Company.

3.2.4 Lands and Realty

The surface of the state section 36 is leased to Deanna L. Visborg for grazing purposes. A small percentage of the state section is covered with sagebrush (Artemisia tridentata), which limits the overall potential AUM's for this grazing lease. The AUM's for this lease is set at 114. Section 36 also has an easement issued to Powder River Energy Corporation for an overhead powerline that services the existing wells in the POD and other areas of the CX field.

There is currently no surface lessee on the state lands in section 22. However, there are four easements within the tract. The first easement was issued to Burlington Northern Railroad and Plum Creek Timber for coal mining, private plant facilities, railroad, and roadway encompassing 135.19 acres in E2W2 of the section. The second easement is held by Big Horn County Road Department which encompasses 11.8 acres in the SE4NW4 and E2SW4 of Section 22 for Highway 314. The third easement was issued to Powder River Energy Corporation for 3.89 acres for a transmission line in E2NW4 of Section 22. The final easement was issued to Consolidation Coal Company for a railroad encompassing 5.11 acres.

3.2.5 Soils

Information regarding soil composition was presented in the Badger Hills Amended POD that was submitted to MBOGC, BLM, and DNRC in May 2006. The report was done based on the Soil Survey of Big Horn County Area, a 1977 publication of the USDA Soil Conservation Service and USDI Bureau of Indian Affairs, in cooperation with the Montana Agricultural Experiment Station (WWC Engineering, 2003).

Soils in the project area have developed in alluvium and residuum derived from the Tongue River Member of the Fort Union Formation and the Eocene Wasatch Formation (WWC Engineering, 2003). Light to dark yellow and tan siltstone and sandstones with coal seams in a matrix of shale comprise the lithology of the project area. In many areas the near surface coals have burned, baking the surrounding rock, producing red, hard porcellanite generally referred to as clinker or scoria. Topographic and geomorphic variations are prominent in the area due to the differences in lithology. An erosion resistant cap of clinker or sandstone often protects high ridges and hills.

Within state section 36, three different soil types exist (WWC Engineering, 2003) and all are Thedalund complexes. These soils formed in material weathered in place of shale. They consist of moderately undulating to very steep, well drained soils in the sedimentary uplands. Permeability is moderate and available water capacity is low to moderate. These complexes are generally suitable for rangeland and wildlife use, but not farming. The Thedalund-Midway (THe) complex, is made up of rolling soils in the sedimentary uplands and has slopes ranging from 8 to 15 percent. Runoff is medium, and the hazard of erosion is moderate. The Thedalund-Travessilla loams (THk) complex is made up of

undulating and rolling soils in the sedimentary uplands. Runoff is medium and the hazard of erosion is slight. The final complex, the Thedalund-Wibaux stony loams, hilly complex is made up of hilly and steep soils in the sedimentary uplands. It is 45 to 60 percent Thedalund stony loam, 25 to 35 percent Wibaux stony loam, and 10 to 20 percent Shale outcrop. Runoff is rapid, and the hazard of erosion is severe.

There are three different soil types present on the state tract proposed for development in section 22. The Haverson loam (Hfb) consist of deep, well drained soils on flood plains and low terraces. Runoff is medium, and the hazard of erosion is moderate. This soil is generally used for irrigated and dry farmed crops and hay. The second soil type is the McRrae loam (Mr). These soils are on fans and foot slopes. Runoff is medium, and the erosion hazard is moderate. These soils formed in loam and clay loam alluvium and are used for irrigated and dry farmed crops. Permeability is moderate and available water capacity is high. The third type in section 22 is shale outcrop (Soc). This is located on deeply dissected parts of shale uplands. The areas consist of a single shale escarpment or headwall or a combination of buttes, hills, and ridges that are 80 percent or more outcrops of soft shale. Along the river valleys shale outcrop in places is capped by terrace gravel 10 to 40 feet thick. Runoff is very rapid, and the hazard of erosion of severe. The runoff water carries large amounts of sediment.

3.2.6 Vegetation

The Badger Hills POD is classified as part of the Central Grasslands. Principal species found throughout this area include western wheatgrass, prairie junegrass, big sagebrush, and silver sagebrush (Wagers, 2006). The project area is sparsely vegetated with sagebrush, prairie grasses, yucca, juniper, and pine, providing a ground surface visibility of approximately 0 to 30 percent.

A 1996 field evaluation of section 36 revealed the following species and composition around the well pads and proposed infrastructure:

COMMON NAME	SCIENTIFIC NAME	COMPOSITION
Bluebunch wheatgrass Western wheatgrass	Agropyron spicatum Agropyron smithii	20%
Green needlegrass	Stipa viridula	5%
Needle and Thread	Stipa comata	10%
Blue grama	Bouteloua gracilis	10%
Prairie junegrass Sandbergs bluegrass	Koeleria cristata Poa sandbergii	10%
Threadlead sedge	Carex filifolia	5%
Forbs		10%
Big Sagebrush	Artemisia tridentate	10%
Plains Pricklypear Cactus Broom Snakeweed Fringed Sagewort False-tarragon sagewart Cudweed sagewart	Opuntia Polyacantha Gutierrezia sarothrae Artemisia frigida Artemisia dracunculus Artemisia ludoviciana	10%
Kentucky Bluegrass Cheatgrass Others	Poa pratensis Bromus tectorum	10%

The most recent surface evaluation done on Section 22 was in 1987. The survey covered 26.32 acres in the SESW, which is where the proposed well pad is located. The following species and composition was identified around the well pad and proposed infrastructure:

COMMON NAME	SCIENTIFIC NAME	COMPOSITION
Western wheatgrass	Agropyron smithii	20%
Green needlegrass	Stipa viridula	5%
Needle and Thread	Stipa comata	10%
Prairie junegrass Sandbergs bluegrass	Koeleria cristata Poa sandbergii	20%
Forbs		10%
Big Sagebrush	Artemisia tridentate	15%
Plains Pricklypear Cactus Fringed Sagewort Kentucky Bluegrass Forbs	Opuntia Polyacantha Artemisia frigida Poa pratensis	20%

A search of the Montana Natural Heritage Program's Plant Species of Concern List revealed no element occurrences on state lands (Montana Natural Heritage Program, 2003).

3.2.6.2 Noxious Weeds

No state listed noxious weeds were discovered by a search of inventory maps, databases, or field evaluations.

3.2.7 Wildlife

Fidelity contracted Hayden-Wing Associates (HWA) to perform baseline wildlife surveys of the Badger Hills POD in 2003 and general wildlife surveys during 2004 on and around proposed coal be natural gas development areas. Surveys conducted included aerial surveys for wintering bald eagles on and within a one mile buffer of the POD, ground surveys of greater sage grouse leks and sharp tailed grouse leks on and within a one mile buffer of the POD, ground surveys for burrowing owl nests on and within 0.5 miles of the POD, ground surveys for potential mountain plover habitat on and within 0.5 miles of the POD, ground surveys to determine the presence/absence of breeding mountain plover on and within 0.5 miles of the POD, ground surveys of black tailed prairie dog colonies on and within 0.5 miles of the POD, and aerial surveys of mule deer within designated winter range.

3.2.7.1 Raptors

Nine raptor nests were found within the Badger Hills POD boundary and twelve nests were located within the one mile buffer of the Badger Hills POD. None of the nests were located on state surface. Two red tailed hawk nests were located approximately ½ mile south east of proposed activity on section 22. One Golden Eagle nest lies just under ¼ mile of the proposed wells in SESE of Section 36. There is also an American Kestrel nest approximately ½ mile from the proposed development on section 36.

One active bald eagle nest was located within the Badger Hills Amended POD and or its one-mile buffer.It was located in the SE4 of Section 28 and is over one mile from proposed development on state land. The bald eagle is listed under the Endangered Species Act of 1973, as amended in 1982. The regulations and guidelines require a No Surface Occupancy (NSO) within ½ mile of nests that have been active during the past 7 years.

3.2.7.2 Prairie Dogs

Two black-tailed prairie dog colonies were located in or partially within the Badger Hills Amended POD boundary. The largest lies mainly in section 27 and is 40.1 acres in size. It is approximately ½ mile from the proposed state development in section 22. A smaller colony lies in sections 33 and 34 of the project area and is 20.4 acres in size. It is approximately 1 ½ miles from the proposed state development in section 22 and over 2 miles from the proposed state development in section 36.

There is one small black-tailed prairie dog colony that lies outside the POD boundary in Wyoming that is approximately 4.1 acres in size. This colony is approximately ½ mile from the proposed development in section 36.

According to the USFWS guidelines for determining suitable black-footed ferret habitat, a black tailed prairie dog complex is defined as an aggregation of two or more neighboring prairie dog colonies separated by a distance of less than 4.34 miles and totaling 80 acres or more. The three towns within this POD area and its 0.5 mile buffer along with other colonies throughout the area meet these criteria and would be considered suitable habitat for black-footed ferrets.

3.2.7.3 Plover

Three areas of potential mountain plover habitat were found on and within the 0.5 miles buffer of the POD. Two were located within the POD and the other is entirely outside the POD, but within the 0.5-mile buffer. Of these three potential habitats, none is within a 0.5-mile buffer of the proposed development on the state sections. No mountain plover were seen or heard during the surveys conducted in 2003 or 2004.

3.2.7.4 Greater Sage Grouse and Sharp Tailed Grouse

Ground surveys for greater sage grouse leks and sharp tailed grouse leks were done by Hayden Wing Associates, University of Montana, Spring Creek Coal Company, and Decker Coal Company to check the activity status of known leks and to search for new or undocumented leks (Hayden Wing, 2006). Greater sage grouse and sharp tailed grouse lek data collected in 2005 was also incorporated into the wildlife report.

There were no leks located within the POD boundary. However, four leks lie within the two mile boundary of the state proposed activity. Three of the leks were inactive sharp tailed grouse leks and one is an active sharp tailed grouse lek. The active lek is located in Section 20 of Township 9 South, Range 41 East and is approximately two miles away from proposed activity on state lands.

3.2.7.5 Big Game

The entire project area lies outside the area designated by the BLM as crucial mule deer winter habitat. Sightings throughout the project area include elk, mule deer, and pronghorn.

3.2.7 Social and Economic

Development and production activity continues to include state land ownership in the CX Field and surrounding areas, located in Big Horn County. Royalty revenues received for the month of May 2006 totaled $83,661.68 generated from approximately 2284 acres of state owned land in the Badger Hills POD, Dry Creek POD, Coal Creek POD and Deer Creek North POD. Twenty wells in Section 36 of the original Badger Hills project were drilled and completed, with eleven hooked up in December 2003 and the remaining 9 hooked up in January 2004. Total royalties for CBNG wells in this state section to date is $2,098,962.03. The Badger Hills POD also encompassed several other tracts of state land that were not developed, but were within communitized areas. This included common schools and water resources land in Sections 22, 26, and 27 of Township 9 South, Range 40 East. These communitized lands have generated

an additional $444,077.98 in royalty revenue. Total royalty generated for the state trust lands for all CBNG production in the Badger Hills POD through May 2006 is $2,543,040.01. Total CBNG royalties for all state production is $3,061,783.40.

A more in depth analysis of the social and economic conditions of the project area could be found in Chapter 3: Affected Environment, and the Socioeconomic appendix of the MT FEIS.

CHAPTER 4:
ENVIRONMENTAL CONSEQUENCES

4.1 Introduction

This chapter forms the scientific and analytic basis for the summary comparison of effects presented in Chapter 2 of this Environmental Assessment. This chapter describes the environmental consequences or effects of the proposed action and the cumulative effects of concurrent and future state activities within the analysis areas.

4.2 Predicted Attainment of Project Objectives of all Alternatives

4.2.1 Predicted Attainment of Project Objective #1: Develop a coal bed natural gas project in southeastern Montana encompassing federal, fee, and state surfaces and minerals.

4.2.1.1 Alternative A: No Coal Bed Natural Gas Development (No Action)
Under this alternative, existing coal bed natural gas development would remain on the state tracts as approved in the original Badger Hills POD and federal and fee lands adjacent to the state section would be developed on 2 wells per coal bed per 160 acres in the project area. Since this project areas lies within the existing CX field, increased development, including infill drilling, would expand around the underdeveloped state section in all directions. Natural gas from the coal beds on the state tract could be drained and produced without compensation from offset wells drilled on the adjacent sections.

4.2.1.2 Alternative B: Coal Bed Natural Gas Development (Proposed Action)
Under this alternative, increased coal bed natural gas development would occur on the state tract concurrently with the other lands in the Badger Hills Amended POD area. This provides a more reasonable, efficient, and systematic means of developing the gas field. In addition, concurrent development of the state section with the federal and private lands would prevent drainage, protect the correlative rights of the state, thereby ensuring the state receives payment for the minerals removed from the state tract.

4.2.2 **Predicated Attainment of Project Objective #2:** Operate state and fee wells in conjunction with adjacent/nearby federal lease wells, sharing facilities constructed and operating on the leases.

4.2.2.1 Alternative A: No Coal Bed Natural Gas Development (No Action)
Under this alternative, new fee and federal wells would be operated independently of any state activity. As a result, if additional development of this state section were to be considered at a later date, additional facilities and infrastructure may be required on the state surface in order to produce the wells.

4.2.2.2 Alternative B: Coal Bed Natural Gas Development (Proposed Action) Under this alternative, fee, federal, and state wells would be operated together, eliminating the need of unnecessary land disturbances and additional infrastructure.

4.2.3 **Predicted Attainment of Project Objective #3:** Increase the revenue generated for the State of Montana school trust fund.

4.2.3.1 Alternative A: No Coal Bed Natural Gas Development (No Action) Under this alternative, the economic contribution to the School Trust and Water Resources Division would be limited to the current lease and license rentals and royalties generated from the existing 20 wells on section 36 and the 9 wells that are communitized in Section 22 that were approved under the original Badger Hills POD. This would have a direct effect upon the TLMD's fiduciary obligation to generate revenue for the beneficiaries of the school trust fund. Increased development would continue around the state section allowing drainage of state minerals. This would reduce or eliminate the potential for additional development of the state minerals in the future.

4.2.3.2 Alternative B: Coal Bed Natural Gas Development (Proposed Action) Under this alternative, twenty-nine additional wells would be drilled on state lands (25 on Section 36 and 4 on Section 22). This would positively impact local and state tax revenue. The state school trust would receive royalty revenue equivalent to 12.5% of the gross value of the additional produced natural gas from the state tract as well as 12.5% of production from the existing 20 wells. The state school trust fund and Water Resources would also receive royalty revenue for the additional four wells in section 22 in addition to the existing nine communitized wells. Based upon performance of the other wells in the CX field and the current gas price, this would generate over $3.9 million royalty revenue for the Common School Trust for the additional 25 wells in Section 36, over $297,000 for the Common School trust and over $8000 for Water Resources Division from the additional 4 wells in Section 22 over the life of the project.

4.3 Predicted Effects on Relevant Affected Resources of All Alternatives

4.3.1 Predicted Effects on Air Quality (Issue #1)

4.3.1.1 Alternative A: No Coal Bed Natural Gas Development (No Action)

Direct and Indirect**:** There would be no direct or indirect impacts as a result of this alternative.

Cumulative: No cumulative impacts as a result of new state activities. Development of minerals on federal and fee lands would continue under the No Action alternative. Pollutant emissions would occur from the drilling activities on these lands and could deteriorate air quality in the project area. Since there is no additional state development, only activities on fee and federal lands would contribute to the cumulative impacts on air quality. These cumulative impacts are discussed in more

detail in the environmental assessments completed by MDEQ for the Badger Hills POD along with the permits issued for the batteries within the POD, the original Badger Hills POD EAs done by Bureau of Land Management, Montana Board of Oil and Gas Conservation, and TLMD, the MBOGC EA for the state and fee wells within the Amended POD, and in the MT FEIS.

4.3.1.2 Alternative B: Coal Bed Natural Gas Development (Proposed Action)

Direct and Indirect: Pollutant emissions would occur during the drilling phase of the twenty nine wells on state lands. Localized short term increases in CO, No_x, SO_2, $PM_{2.5}$ and PM_{10} concentrations would occur. However, maximum concentrations are expected to remain well below the applicable state, local, and federal air quality standards. The Montana Department of Environmental Quality has the regulatory authority to review and issues permits covering all new or modified air pollution emission sources. MDEQ issued an air quality permit on April 6, 2004 for the Montana State 36 battery (permit #3303-00), which would service all of the 25 new wells in section 36. MDEQ also issued an air quality permit on March 24, 2004 for the Consul 27 Battery (permit #3298-00), which would service all of the 4 new wells in Section 22. For emission limitations, testing and reporting requirements, and general conditions, please see the MDEQ permits.

The following mitigation measures have been proposed for this alternative:

- Fidelity would install remote monitoring equipment to minimize the amount of vehicle traffic to and from the individual well sites. This would decrease the pollutant emissions during the production phase of the project.
- The Montana Board of Oil and Gas Conservation regulates gas venting. They prohibit venting of commercial quantities of gas. Since infrastructure is already in place on the state section and throughout CX Field, only a limited amount of testing would occur prior to well hookup.

Cumulative: The cumulative impacts to air quality are addressed in the MT FEIS, which analyzed cumulative impacts of drilling up to 26,000 coal bed natural gas wells within Montana.

4.3.2 Predicted Effects on Cultural Resources (Issue #2)

4.3.2.1 Alternative A: No Coal Bed Natural Gas Development (No Action)

Direct and Indirect: There would be no direct or indirect impacts to cultural resources as a result of state activity under this alternative.

Cumulative: There would be no cumulative impacts to cultural resources under this alternative.

4.3.2.2 Alternative B: Coal Bed Natural Gas Development (Proposed Action)

Direct and Indirect: One cultural resource site was identified from a 2006 Class III inventory by Ethnoscience. Site 24BH3353 is a prehistoric lying in the NW corner of Section 36 and parts of Sections 25, 26, and 35. This site is recommended not eligible to the National Register of Historic Places (NRHP) under Criteria A, B, and C, but insufficient evidence is available to provide a recommendation regarding NRHP eligibility under Criterion D. However, the proposed activity would not disturb the cultural resource site as precautions would be taken to avoid the site. The nearest proposed development is approximately ½ mile from the site.

The following mitigation measures would be enforced for this alternative:

- If any cultural values (sites, artifacts, human remains) are observed that were not previously addressed and reviewed, they would be left intact, operations stopped, and the TLMD notified immediately. Fidelity is responsible for informing all persons in the area who are associated with this project that they would be subject to prosecution for knowingly disturbing historic of archaeological sites, or for collecting artifacts. TLMD would conduct an evaluation of the cultural values to establish appropriate mitigation, salvage, or treatment. If additional archaeological survey work is required, lessee would be responsible for this expense. [This is required in both the lease agreement and the Coal Bed Natural Gas Field Operating and Reclamation Requirements in Appendix A].

Cumulative: No cumulative impacts to cultural resources would occur as a result of state land development. No sites have been determined eligible for the National Register within this section at this time.

4.3.3 Predicted Effects on Hydrology (Issue #3)

4.3.3.1 Alternative A: No Coal Bed Natural Gas Development (No Action)

Direct and Indirect: No direct or indirect impacts to hydrology would occur as a result of state activity under this alternative. The existing twenty wells in section 36 and the existing 9 nine wells in section 22 would continue to produce and water from these wells will continue to be discharged under the existing MPDES permits.

Cumulative: The twenty existing state wells in section 36 and the nine existing communitized wells in section 22 would continue to produce under this alternative in addition to the existing federal and fee wells in the original project and the additional fee wells approved under the MBOGC EA for the Amended POD area. However, no additional impacts would occur under this alternative. Additional development of federal and fee minerals in Amended POD would continue, which would have impacts to both the groundwater and the surface water in the area. Information regarding the cumulative impacts of federal and fee mineral development an be found in MBOGC's EA for the Amended POD and the MT FEIS.

4.3.3.2 Alternative B: Coal Bed Natural Gas Development (Proposed Action)

Direct and Indirect: Fidelity currently produces water from 583 coal bed natural gas wells in the TRP area, of which 31 are Montana Department of Natural Resources and Conservation (DNRC) Conservation Easement wells, the water from which is permitted to be pumped solely to the Decker Coal Mine. The current water production rate from the remaining 552 wells is approximately 1957 gallons per minute (gpm) with nearly all of that being discharged into the Tongue River under existing MPDES permits (MT0030457 for untreated discharge or MT0030724 for treated discharge) or transferred to the Spring Creek Coal Mine for industrial uses. A small percentage of the produced water is provided to local ranchers to supplement livestock watering as needed.

The 170 federal, fee, and state wells in the original Badger Hills POD have all been drilled and are producing. The permits have been issued for the 38 fee and 29 state wells in the amended POD area. The 36 federal wells in the amended POS area will not be drilled until the Bureau of Land Management completes an environmental assessment for the project. The 38 fee and 29 state wells within the Badger Hills amended POD will add approximately 400 gpm of produced water in addition to the existing 1957 gpm that is produced from the remaining wells in CX field. Total water production from all producing wells and wells that have been approved and are awaiting completion will be approximately 3655 gpm. Initial water production from the state wells in this amended POD only, based on a 6 gpm initial production rate assumption, would be 174 gpm. The total water produced will steadily decline over time to approximately 3 gpm. This water would be discharged to the Tongue River under one of the two existing MPDES permits. Once the water production exceeds the volume permitted in the untreated water discharge permit (MT0030457), water would be transported to a water treatment facility, which is located within the POD boundary on section 34. There is an existing storage pond at the treatment facility with a capacity of 44.6 acre feet for backup storage during treatment facility downtime. In addition, a second “emergency bypass” holding pond is proposed at the treatment facility with a capacity of 17 acre feet. The discharge permit for untreated water, the discharge permit for treated water, and the storage ponds would provide Fidelity with sufficient water management capacity to accommodate anticipated water production from existing and proposed Badger Hills project development. No pits or ponds would be located on the state section.

Cumulative Impacts: The two principal constituents of CBNG water that present the greatest concern are SAR and salinity (Horpestad & Skaar, 2001). Depending on the relative amounts of these two constituents and the makeup of the soil, direct discharge of CBNG water onto the surface could result in deterioration of soil hydraulic characteristics and decrease of crop production as the energy that the crops need to extract the water

from the soil increases. Thresholds for SAR and salinity have not become standard, as the affects are very site specific. However, the MPDES permits have water quality standards that must be adhered to. The Badger Hills Amended POD water management plan incorporates water treatment prior to discharge. Under an approved water management plan, 95 percent or more of the total salts (primarily sodium) would be removed from the water. This would increase the quality of the water and also minimize the impacts that discharging the untreated water would have on the soil. No water discharge would occur on the state section. Discharge to waters of the state is regulated by MDEQ. Other beneficial use is at the discretion of the landowners and subject to any applicable regulations. Additional information regarding the cumulative impacts could be found in the MT FEIS and the Amended POD by MBOGC.

4.3.4 Predicted Effects on Lands and Realty (Issue #4)

4.3.4.1 Alternative A: No Coal Bed Natural Gas Development (No Action)

Direct and Indirect**:** There would be no direct or indirect impacts to lands and realty as a result of state activity under this alternative. The existing surface grazing lease would not be impacted and there would be no effects to the available grazing land. Grazing patterns would not change. The existing easements on both section 22 and section 36 would remain in effect.

Cumulative: Under this alternative, no cumulative impacts would occur as a result of state activities.

4.3.4.2 Alternative B: Coal Bed Natural Gas Development (Proposed Action)

Direct and Indirect**:** Under this alternative, the existing surface grazing lease on section 36 would remain in effect. Total lands available for grazing purposes on section 36 would be reduced by approximately 2.5 acres during the construction phase. However, this would be short term. After the wells have been completed and temporary disturbance reclaimed, the total area unavailable for grazing would be less than ¾ acre. The five existing easements (four on section 22 and one on section 36) would remain in effect.

Cumulative: Under this alternative, no cumulative impacts would occur to the lands and realty as a result of state activity. The increase in produced water would serve as a beneficial use to our surface lessee in the future. If such beneficial use were proposed for the state section, that proposal would have to be reviewed and approved by the Department and the appropriate permits would have to be obtained.

4.3.5 Predicted Effects on Soils (Issue #5)

4.3.5.1 Alternative A: No Coal Bed Natural Gas Development (No Action)

Direct and Indirect: Under this alternative, no additional coal bed natural gas development would occur on the state section. The existing surface

grazing lease would remain in effect, which would allow for the continuing harvest of vegetation on state lands. The existing roads and two track trails would continue to be utilized to access the approved wells.

Cumulative: Under this alternative, no cumulative impacts would occur as a result of additional state activities. The twenty existing wells on section 36 would continue to produce. Additional information regarding the cumulative impacts as a result of fee, federal, and state mineral development is available in the MT FEIS.

4.3.5.2 Alternative B: Coal Bed Natural Gas Development (Proposed Action)

Direct and Indirect: Under this alternative, the project area would be developed as proposed in the Amended POD. Six separate well pads (five on section 36 and one on section 22) would be constructed for the purpose of drilling twenty-nine coal bed natural gas wells. It is estimated that each five well pad site would disturb approximately ½ acre. Topsoil would be moved and stockpiled prior to pad construction. Two mud pits would be excavated on the pad site to contain drilling fluids and water. Upon completion of a productive well, approximately three quarters of the disturbance would be reclaimed according to the Coal Bed Natural Gas Field Operating and Reclamation Requirements in Appendix A, and the other quarter would be reclaimed upon plugging and abandoning the wells.

Drilling and completing the wells under Alternative B may cause minimal compaction, erosion, and soil quality degradation. Topsoil removal reduces the soil quality on the wellsites. The longer the soil remains exposed to the atmosphere and adverse weather conditions, the more likely erosion would occur (Muckel, 2004). All of the soils found in the state section have moderate to high erosion hazards. This erosion rate is increased when accompanied by high winds and rain periods. The following mitigation measures would be enforced to minimize soil damage and erosion:

- Construction is restricted to dry or frozen conditions
- Excavation of the well pad and pits must be done immediately before construction instead of exposing the soil for several months
- Cover the disturbed soils with vegetation or mulch as soon as possible
- Other requirements are outlined in Appendix A.

In addition to the well pad construction, there would be six new two track trails (one for each proposed well pad) on the state tracts. The water, gas, and underground power lines would be installed in a common corridor to reduce the potential for erosion, compaction, and soil quality deterioration. In most cases, the utility corridors would lie along the two track trails. In general, vehicle travel could compact the soil. Depending on the amount of compaction, infiltration could be decreased and the potential for runoff

and erosion could increase. Compaction potential is increased in wet conditions. As a mitigation measure, vehicle travel would be restricted to dry and frozen conditions and only on approved roads. Travel across undisturbed rangeland or unapproved trails would be prohibited.

Cumulative: State and local laws and the Clean Water Act require that erosion and sediment control plans be developed prior to construction. Montana Department of Environmental Quality has the regulatory authority over water quality issues and they would address these issues when necessary. The MT FEIS has further details on the cumulative impacts to soils from CBNG development.
Mitigation measures for soil impacts are outlined in the Coal Bed Natural Gas Field Operating and Reclamation Requirements in Appendix A of this assessment.

4.3.6 Predicted Effects on Vegetation (Issue #6)

4.3.6.1 Alternative A: No Coal Bed Natural Gas Development (No Action)

Direct and Indirect: No direct or indirect effects on vegetation would occur to state land as a result of this alternative. The existing surface grazing lease would remain in effect, which would continue to allow for harvest of vegetation. Compaction could occur as a result of animals walking across the rangeland, but the impacts are very minimal. The twenty existing wells in section 36 would continue to produce and vehicle traffic for these wells would continue. However travel is restricted to approved routes, so no additional impact should occur as a result of this alternative.

Cumulative: No cumulative impacts to vegetation would occur as a result of state activities under this alternative.

4.3.6.2 Alternative B: Coal Bed Natural Gas Development (Proposed Action)

Direct and Indirect: Well pad construction, road construction, and infrastructure would require that the vegetation and topsoil be removed on approximately 3 acres of the state section. This would temporarily reduce the amount of vegetation available to livestock and wildlife. The impacts to vegetation from vehicle travel would include plant growth restriction due to soil compaction and the increased potential for introduction of noxious weeds to the surface. In addition, the well pad disturbance would remove vegetation temporarily until reseeding is complete. However, these impacts would be short term and minimal.

Mitigation measures that would be enforced include:

- Upon completion of a commercial well, 75% of the disturbed well pad area would be reseeded with native grasslands and techniques outlined in Appendix A and site specific reclamation plans prescribed by the land offices.
- Vehicle travel would be restricted to dry or frozen conditions

- Prevention and control measures would be required for noxious weeds as outlined in Appendix A.

Cumulative: A reduction in the vegetation amounts and quality would reduce the number of acres of land available for grazing. However, disturbance is short term and minimal. Any land that is disturbed would be reclaimed and reseeded. The total number of AUMs available for grazing would be modified during the 2007 field evaluation if deemed necessary.

4.3.7 Predicted Effects on Wildlife (Issue #7)

4.3.7.1 Alternative A: No Coal Bed Natural Gas Development (No Action)

Direct and Indirect: No direct or indirect impacts as a result of state activity under this alternative.

Cumulative: There would be no cumulative impacts as a result of state activity under this alternative. However, federal and fee minerals would be developed which could impact the wildlife in the area. For details on the cumulative impacts on wildlife for federal, fee, and state development, refer to the original Badger Hills EAs done by the Bureau of Land Management and Montana Board of Oil and Gas Conservation as well as the Statewide FEIS.

4.3.7.2 Alternative B: Coal Bed Natural Gas Development (Proposed Action)

4.3.7.2.1 Raptors

Direct and Indirect: During the wildlife survey conducted by HWA, nine raptor nests were found within the Badger Hills POD Boundary. None of these nests were located on state lands. The closest nest was the Red-tailed hawk, which is approximately ¾ mile from proposed state activity. In total, there were 6 Red Tailed Hawk nests, one Great Blue Heron Rookery nest, one Great Horned Owl nest, and one Bald Eagle nest. No Burrowing Owl nests were found in the POD area. Both the Bald Eagle and the Burrowing Owl are listed on the Montana Species of Concern List. The bald eagle nest was approximately 1 ½ mile from proposed activity on state lands.

A golden eagle nest was located approximately ¼ mile south of the proposed state well pad in the SESE of Section 36. To mitigate impacts the following mitigation measures would be enforced:

- No surface occupancy (NSO) between March 1 and August 15 within ¼ mile of the golden eagle nest.

In addition, Fidelity would utilize remote monitoring of the wellpad, which allows the wells to be monitored from the battery, would minimize the vehicle activity near the wellpad.

Cumulative: The cumulative impacts to raptors from the development of the entire project area may include direct habitat

loss and displacement due to infrastructure and human disturbance. These and other potential impacts are outlined in the MT FEIS.

4.3.7.2.2 Prairie Dogs

Direct and Indirect: During the wildlife surveys, no prairie dog colonies were found on state lands. The nearest colony was approximately ½ mile from the proposed development in section 22 and was 40.1 acres in size. Based on USFWS guidelines for determining suitable black-footed ferret habitat, a black tailed prairie dog complex is defined as an aggregation of two or more neighboring prairie dog colonies separated by a distance of less than 4.34 miles and totaling 80 acres or more. The three towns within the POD and its 0.5 mile buffer along with the surrounding area meet these criteria and would be considered suitable habitat for black footed ferrets.

There would be no direct contact with the prairie dog complex as a result of activity on state lands. All state development would occur within sections 22 and 36. The nearest colony is almost a mile from proposed state development. As a result, minimal disturbance would occur to black tailed prairie dogs as a result of state activities.

Cumulative: Three total prairie dog colonies were located on or partially within ½ mile of the Badger Hills POD. Of these three colonies, two are in or partially within the POD boundary. These colonies lie within parts of section 27, 28, 33, and 34, which are primarily fee minerals. The cumulative impact to prairie dogs is discussed in more detail in the MT FEIS.

4.3.7.2.3 Mountain Plover

Direct and Indirect: Three areas of potential mountain plover habitat were found within the POD or within the ½ mile buffer of the state tracts within POD. The closest potential mountain plover habitat is approximately ½ mile from any proposed development.

Surface use is prohibited within ¼ mile of active mountain plover nest sites. There is no evidence that mountain plover actually exist in this area, it is only a potential habitat area. In addition, state development would be beyond the ½ mile no surface occupancy buffer. Impacts to mountain plover as a result of state mineral development would be minimal.

Cumulative: There would be no cumulative impacts to mountain plover as a result of state activities. The potential mountain plover habitat within the POD area lies within Sections 27, 28, 33, and 34, which is primarily fee minerals with private surface ownership.

Details regarding cumulative impacts to mountain plover can be found in the MT FEIS.

4.3.7.2.4 Greater Sage Grouse and Sharp Tailed Grouse

Direct and Indirect: The most common impacts to sage grouse and sharptailed grouse due to CBNG development are human disturbance and habitat alteration. There are no documented or recorded leks within the POD boundary or on state lands within the POD. There are three inactive leks within the two mile boundary of state lands and one active sharp tailed grouse lek within the two mile boundary. The active lek is located in section 20 and is approximately 1 ¾ miles from proposed state development. The impact to grouse would be minimal as a result of state activities. The following mitigation measures would be enforced, if necessary, to minimize impacts to sharptail and sage grouse leks:

- A No Surface Occupancy (NSO) within ¼ mile of the known leks.
- A No Surface Occupancy (NSO) between March 1 and June 15 in grouse nesting habitat within 2 miles of a known lek.

Cumulative: Increased activity in the vicinity of sage grouse leks and sharp tailed grouse leks may affect this species through human disturbance and habitat alternation. Additional information regarding cumulative impacts to grouse could be found in the MT FEIS.

4.3.7.2.5 Big Game

Direct and Indirect: Mule deer may be impacted by habitat fragmentation, habitat disturbance, and human disturbance. Neither of the state tracts within the POD lie within crucial mule deer winter range. Deer populations would likely only be effected for a short amount of time while well drilling and infrastructure construction are occurring. The loss of vegetation as a result of construction operations could also impact deer populations. As the production phase is implemented and restoration of the disturbed well pad sites is complete, deer would likely return to the area.

Cumulative: Disturbance to big game by activity and construction activities is short term and deer populations would only be temporarily effected. It is anticipated that populations would return to the area in the production phase of this project.

4.3.8 Predicted Effects on Social and Economic Factors (Issue #8)

4.3.8.1 Alternative A: No Coal Bed Natural Gas Development (No Action)

Direct and Indirect**:** Under this alternative, additional development of state minerals would not occur. As a result, no additional economic contribution to the School Trust would occur above the current lease rentals, license payments, and royalties from the twenty existing wells in section 36 and

the nine wells that we are currently communitized with in section 22. This would have a direct effect upon the TLMD's fiduciary obligation to generate revenue for the beneficiaries of the school trust fund. Additional development would continue around the state section allowing for drainage of state minerals. This would reduce or eliminate the potential for development of state minerals in the future.

Cumulative: There would still be an increase in state and local taxes due to coal bed natural gas development from federal and fee minerals. There would be little difference in employment opportunities between the two alternatives.

4.3.8.2 Alternative B: Coal Bed Natural Gas Development (Proposed Action)

Direct and Indirect: Under this alternative, additional state minerals would be developed. As a result, the state school trust would receive royalty revenue equivalent to 12.5% of the gross value of the additional produced natural gas from the state section in addition to the 12.5% that the state received for the existing 20 wells in section 36 and the royalties received for the nine communized wells in section 22. Based upon performance of the other wells in the CX field and the state section along with the current gas price, this would generate over $3.9 million to the Common School Trust for the wells in section 36 over the 10-15 year life of the project. The four proposed well in section 22 would generate an additional $297,000 for the Common School Trust and approximately $8000 for the Water Resources Division over the 10-15 year life.

Cumulative: There would be an increase in the state and local taxes due to coal bed natural gas development of state, federal, and fee minerals. The increase in production would create a minimal increase in the number of the jobs relating to the activity.

CHAPTER 5:
AGENCY CONSULTATION AND PUBLIC COMMENT

The following agencies were consulted throughout the development of this Environmental Assessment:

- Fidelity Exploration and Production Company
- Montana Board of Oil and Gas Conservation
- Montana Department of Natural Resources and Conservation – Water Resources Division
- Bureau of Land Management Wildlife Biologist

Public comment has been solicited via press release, website posting, and mail out to interested parties.

Prepared by: Bobbi Jo Coughlin, Petroleum Engineer, Minerals Management Bureau

/s/

August 7, 2006

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APPENDIX A

COAL BED NATURAL GAS FIELD OPERATING AND RECLAMATION REQUIREMENTS

*DNRC refers to DNRC Trust Land Management Division (TLMD)

A. Notifications

a. Notify the DNRC, Southern Land Office at least 48 hours prior to beginning any construction and/or drilling operations (406-247-4400).
b. Any variances from the following guidelines or the site specific stipulations must be approved by DNRC.
c. The lessee (lessee includes lessee, operator, contractors, or any other agent conducting activities on lease premises pursuant to authority conveyed by the state lessee) shall obtain approval prior to construction of any new surface disturbing activities that are not specifically addressed in the approved operating plan or POD Surface Use Plan.
d. Phased reclamation plans would be submitted to DNRC for approval prior to individual POD facility abandonment.
e. A notice of Intent to Abandon must be submitted for approval. Upon completion of plugging, a copy of the Subsequent Report of Abandonment must also be submitted.
f. If any cultural values (sites, artifacts, human remains) are observed that were not previously addressed, reviewed, and approved by DNRC, they would be left intact, operations stopped, and the DNRC notified immediately. The lessee is responsible for informing all persons in the area who are associated with this project that they would be subject to prosecution for knowingly disturbing historic or archaeological sites, or for collecting artifacts. DNRC would conduct an evaluation of the cultural values to establish appropriate mitigation, salvage, or treatment. If additional archaeological survey work is required, lessee would be responsible for this expense.

B. Construction

a. <u>Vehicle Travel</u>:
    i. Construction and other project related traffic would be restricted to approved routes. Cross country vehicle travel would not be allowed.
    ii. Maximum speed on all lessee constructed and maintained roads would not exceed 25 miles per hour.
    iii. The lessee shall restrict travel on unimproved two-track roads during periods of inclement weather or spring thaw when the possibility exists for excessive surface resource damage (e.g. rutting in excess of 4 inches, travel outside two-track roadway, etc). This applies to pre-approval APD-POD planning (surveying, staking), drilling, production, and reclamation operations.

b. Construction activities could only occur pursuant upon DNRC written approval of the operating plan.
c. All construction activities for off wellpad facilities would be addressed in an operation plan submitted by Fidelity Exploration and Production Company.
d. Soil:
    i. Stockpiled topsoil and pit material must be stored to prevent material from entering drainages.
    ii. Equipment couldnot be stored on the topsoil stockpile.
    iii. The lessee would limit vegetation removal and the degree of surface disturbance, utilizing all practicable measures to minimize erosion and stabilize disturbed soils.
    iv. Topsoil would be salvaged for use in reclamation on all areas of surface disturbance (roads, locations, pipelines, etc). Clearly segregate topsoil from excess spoil material.
    v. The lessee would not push soil material and overburden over side slopes or into drainages. All soil material disturbed would be placed in an area where it could be retrieved without creating additional undue surface disturbance and where it does not impeded watershed and drainage flows.
    vi. Construct the backslope no steeper than ½:1, and construct the foreslope no steeper than 2:1 unless otherwise directed by DNRC.
    vii. Maintain a minimum 20 foot undisturbed vegetative border between toe of fill pad and/or pit areas and the edge of adjacent drainages, unless otherwise directed by DNRC.
e. Drilling, casing, and cementing operations shall be designed and conducted as requested by MBOGC.
f. Construction and drilling activity would not be conducted using frozen or saturated material during periods when watershed damage or excessive rutting is likely to occur.
g. With the overall objective of minimizing surface disturbance and retaining land stability and productivity, the lessee shall use equipment that is appropriate to the scope and scale of work being done for roads and well pads (use equipment no larger than needed for the job).
h. To minimize electrocution potential to birds of prey, all overhead electrical power lines would be constructed to standards identified by the Avian Power Line Interaction Committee (1996).
i. The lessee shall use wheel trenches or ditch witches to construct all pipeline trenches, except where extreme topography or other environmental factors preclude their use.
j. Reserve pits:
    i. Reserve pits would be adequately fenced during and after drilling operations until pit is reclaimed so as to effectively keep out wildlife and livestock. Adequate fencing is defined as follows:
        1. Construction materials would consist of steel or wood posts. Three or four strand wire (smooth or barbed) fence or hog panel (16 foot length by 50 inch height) or plastic snow fence

must be used with connectors such as fence staples, quick-connect clips, hog rings, hose clamps, twisted wire, etc.

2. Construction standards: Posts shall be firmly set in ground. If wire is used it must be taut and evenly spaced, from ground level to top wire, to effectively keep out animals. Hog panels must be tied and sturdy. Fence must be at least 2 feet from edge of pit. Three sides must be fenced prior to commencing drilling, and the fourth side of the fence immediately upon completion of drilling, prior to rig release. Fence must be left up and maintained in adequate condition until pit is closed.

ii. The reserve pit would be oriented to prevent collection of surface runoff. After the drilling rig is moved, the lessee may need to construct a trench on the uphill side of the reserve pit to divert surface drainage around it. If constructed, the trench would be left intact until the pit is closed.

iii. The reserve pit would be lined with an impermeable liner if required by the DNRC or MBOGC. An impermeable liner is any liner having a permeability less than 10-7 cm/sec. The liner would be installed so that it would not leak and would be chemically compatible with all substances that may be put in the pit. Liners made of any man-made synthetic material would be of sufficient strength and thickness to withstand normal installation and pit use. In gravelly or rocky soils, a suitable bedding material such as sand would be used prior to installing the liner.

iv. The reserve pit would be constructed so that at least half of its total volume is in solid cut material (below natural ground level).

v. The only fluids/waste materials which are authorized to go into the reserve pit are RCRA exempt exploration and production wastes:

1. Drilling muds and cutting
2. Rigwash
3. Excess cement and certain completion and stimulation fluids defined by EPA as exempt

vi. It may not include drilling rig waste, such as:

1. Hydraulic fluids
2. Engine oil
3. Oil filters
4. Cement, drilling mud, or other product sacks
5. Paint, pipe dope, chemical, or other product container.
6. Chemicals and chemical rinsate.

vii. Any evidence of non-exempt wastes being put into the reserve pit may result in the DNRC requiring specific testing and closure requirements.

k. <u>Culverts</u>:

i. Culverts would be placed on channel bottoms on firm, uniform beds, which have been shaped to accept them, and aligned parallel

to the channel to minimize erosion. Backfill would be thoroughly compacted.

ii. All culverts would be appropriately sized.

l. Pipelines:

i. Pipeline construction shall not block nor change the natural course of any drainage. Pipelines shall cross perpendicular to drainages. Pipelines shall not be run parallel in drainage bottoms. Suspended pipelines shall provide adequate clearance for maximum runoff.

ii. Pipeline trenches shall be compacted during backfilling. Pipeline trenches shall be routinely inspected and maintained to ensure proper settling, stabilization, and reclamation.

m. During construction, emissions of particulate matter from well pad and road construction would be minimized by application of water or other non-saline dust suppressants with at least 50 percent control efficiency. Dust inhibitors (surfacing materials, non-saline dust supressants, and water) would be used as necessary on unpaved roads that present a fugitive dust problem. The use of chemical dust suppressants on state surface would require prior approval from DNRC.

n. Lessees are required to obtain a National Pollution Discharge Elimination System (NPDES) Storm Water Permit from MDEQ as required prior to any suface disturbing activities.

o. If in the process of air drilling the wells there is a need to use mud, all circulating fluids would be contained either in an approved pit or in an aboveground containment tank. The pit or containment tank would be large enough to safely contain the capacity of all expected fluids without danger to overflow. Fluid and cuttings would not be squeezed out of the pit, and the pit would be reclaimed in an expedient manner.

p. Production facilities (including dikes) must be placed on the cut portion of the location and a minimum of 15 feet from the toe of the back cut unless otherwise approved by DNRC.

q. A complete copy of the Application for Permit to Drill (APD), including conditions, stipulations, and the H2S contingency plan (if required) shall be available for reference at the well site during the construction and drilling phases.

r. This drilling permit is valid for either one year from the approval date or until lease expiration, whichever comes first.

C. Operations/Maintenance

a. Waste Disposal:

i. Trash or other debris must not be disposed of on the pad.

ii. Burning of materials or oil is not allowed.

iii. All waste, other than human waste and drilling fluids, would be contained in a portable trash cage. This waste would be transported to a State approved waste disposal site immediately upon completion of drilling operations. No trash or empty barrels would be placed in the reserve pit or buried on location. All state

and local laws and regulations pertaining to disposal of human and solid waste would be complied with.

iv. Sewage shall be placed in a self-contained, chemically treated porta-potty on location.

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

b. The lessee shall complete CBNG wells (case, cement, and under ream), or abandon as soon as possible, but no later than 30 days after drilling operations, unless an extension is given by DNRC.

c. Confine all equipment and vehicles to the access road(s), pad(s), and area(s) specified in the approved APD or POD.

d. Rat and mouse holes shall be filled and compacted from the bottom to the top immediately upon release of the drilling rig from the location.

e. Noxious Weeds:

i. The lessee would be responsible for prevention and control of noxious weeds and weeds of concern on all areas of surface disturbance associated with this project (well locations, roads, water management facilities, etc.) Use of pesticides shall comply with the applicable State laws. Pesticides shall be used only in accordance with their registered uses and within limitations. Lessee shall monitor disturbed areas for the presence of noxious weeds from June through September throughout the life of the field.

ii. Control efforts must be done as necessary and as specified by DNRC once noxious weeds are identified with the intent of erradicating and preventing seed production.

f. All permanent above-ground structures (e.g. production equipment, tanks, etc.) not subject to safety requirements would be painted to blend with the natural color of the landscape. The paint used would be a color acceptable to DNRC.

g. Lessees are advised that prior to installation of any oil and gas well production equipment which has the potential to emit air contaminants, the owner or lessee of the equipment must notify the Montana Department of Environmental Quality (MDEQ) to determine permit requirements. Examples of pertinent well production equipment include fuel-fired equipment (e.g. diesal generators), separators, storage tanks, engines, and dehydrators.

h. Fire Safety:
    i. During the fire season (June-October), the lessee shall institute all necessary precautions to ensure that fire hazard is minimized, including, but not limited to, mowing vegetation on the access route(s) and well location(s), keeping fire fighting equipment readily available when drilling, etc. DNRC may also require additional measures for fire prevention.
    ii. If a fire is started by lessee activities, the lessee may be liable for suppression costs by 50-63-103, MCA.
i. Erosion:
    i. Upgrade and maintain access roads and drainage control (e.g. culverts, drainage dips, ditching, crowning, surfacing, etc.) as necessary and as directed by DNRC to prevent soil erosion and accommodate safe, environmentally sound access.
    ii. DNRC may direct additional control measures for roads, pipelines, drainages, or other surface disturbances as needed.
j. Any spilled or leaked oil, produced water, or treatment chemicals must be reported in accordance with MBOGC requirements and immediately cleaned up in accordance with DNRC requirements. This includes cleanup and proper disposition of soils contaminated as a result of such spills/leaks.
k. Changes in operational and/or environmental conditions may require additional or modified requirements.
l. No construction or routine maintenance activities shall be performed during periods when the soil is too wet to adequately support construction equipment. If such equipment creates ruts in excess of 4 inches deep, the soil shall be deemed too wet to adequately support construction equipment.
m. All water discharge must comply with State law and must have permit prior to commencing.
n. Landscape those areas not required for production to the surrounding topography as soon as possible. The fluids and mud must be dry in the reserve pit before recontouring pit area. The lessee would be responsible for recontouring and reseeding of any subsidence areas that develop from closing a pit.

D. Dry Hole/Reclamation

a. When individual facilities such as well locations, pipelines, discharge points, impoundments, etc. are no longer needed, they need to be addressed in a reclamation plan and approved by the DNRC. Individual items that would need to be addressed in reclamation plans include, but are not limited to:
    i. Configuration of reshaped topography, drainage systems, and other surface manipulations.
    ii. Waste disposal

iii. Revegetation methods, including specific seed mix (pounds pure live seed/acre) and soil treatments (seedbed preparation, fertilization, mulching, etc.).
iv. Other practices that would be used to reclaim and stabilize all disturbed areas, such as water bars, erosion fabric, hydro-mulching, etc.
v. An estimate of the timetables for beginning and completing various reclamation operations relative to weather and local land uses.
vi. Methods and measures that would be used to control noxious weeds, addressing both ingress and egress to the individual well or POD.
vii. Decommissioning/removal of all surface facilities.
viii. Closure, reclamation, or approved transfer of areas utilized for produced CBNG water, including discharge points, reservoirs, off-channel pits, land application areas, livestock/wildlife watering facilities, surface discharge stream channels, etc.

b. For abandonment, surfacing material and culverts must be removed unless requested to remain in place by DNRC. The roads and ditches must be recontoured and seeded in accordance with DNRC requirements.
c. <u>Pit reclamation</u>:
    1. All pit(s) must be emptied of all fluids within 90 days after completion of drilling operations. The pit must be closed properly to assure protection of soil, water, and vegetation.
    2. Squeezing of pit fluids and cuttings is prohibited. Pits must be dry of fluids or they must be removed via vac truck or other environmentally acceptable method and disposed of in a State approved location prior to backfilling, recontouring, and replacement of topsoil.
    3. The pit may not be cut or trenched.
    4. Pit mud/sludge material may be buried onsite after the material has dried.
    5. The pit material must be covered with a minimum of 1 ½' of soil.
    6. The lessee would be responsible for recontouring any subsidence areas that develop from closing a pit.
    7. The plastic pit liner (if any) may be folded in with prior BOGC approval.
d. The reclamation effort would be evaluated as a success if the previously disturbed area is stabilized, all potential water erosion is effectively controlled and the vegetative stand is established with at least 70% cover.
e. All disturbed lands associated with this project, including the pipelines, access roads, water management facilities, etc. would be expediently reclaimed and reseeded in accordance with the surface use plan and any pertinent site-specific reclamation.

f. Disturbed lands would be recontoured back to conform with existing undisturbed topography. No depressions would be left that trap water or form ponds.
g. Before the location has been reshaped and prior to redistributing the topsoil, the lessee would rip or scarify the drilling platform and access road on the contour, to a depth of at least 12 inches. The rippers are to be no further than 24 inches apart.
h. Topsoil shall be evenly distributed.. Prepare the seedbed by disking to a depth of 4 to 6 inches following the contour.
i. Waterbars are to be constructed at least one foot deep, on the contour with approximately two feet of drop per 100 feet of waterbar to ensure drainage, and extended into established vegetation. All waterbars are to be constructed with their berm on the downhill side to prevent the soft material from silting in the trench. The initial waterbar should be constructed at the top of the backslope. Subsequent waterbars should follow the following general spacing guidelines:

Slope (Percent)	Spacing Interval (Ft)
<2	200
2-4	100
4-5	75
>5	50

j. The lessee would drill seed on the contour to a depth of 0.5 inch, followed by cultivation to compact the seedbed, preventing soil and seed losses.
    i. Slopes too steep for machinery may be hand broadcast and raked with twice the specified amount of seed. To be effective, complete spring seeding after the frost has left the ground and prior to May 15. Fall or dormant seedings must be completed according to NRCS timing recommendations.
k. A Final Abandonment Notice must be submitted prior to a final abandonment evaluation by DNRC.
l. Soil fertility testing and the addition of soil amendments may be required to stabilize some disturbed lands.
m. Reduce the backslope to 2:1 and the foreslope to 3:1 unless otherwise directed by DNRC. Reduce slopes by pulling fill material up from foreslope into the top of cut slopes
n. The lessee shall seed all disturbed areas, using an agreed upon method suitable for the location. Seeding shall be repeated if a satisfactory stand is not obtained as determined by DNRC upon evaluation after the following growing season. The lessee shall seed all disturbed areas with the seed mixture(s) listed below unless otherwise approved by DNRC area office. The seed mixture(s) shall be planted in the amounts specified in pounds of pure live seed (PLS)/acre. There shall be no primary or secondary noxious weed seed in the seed mixture. Seed shall be tested

and the viability testing of seed shall be done in accordance with State law(s) and within six months prior to purchase. The seed mixture container shall be tagged in accordance with State law(s) and available for inspection by DNRC.

o. Seed shall be planted using a drill equipped with a depth regulator to ensure proper depth of planting where drilling is possible. The seed mixture shall be evenly and uniformly planted over the disturbed area. Smaller/heavier seeds have a tendency to drop to the bottom of the drill and are planted first. The lessee shall take appropriate measures to ensure this doesn't occur. Where drilling is not possible, seed shall be broadcast and the area shall be raked or chained to cover the seed. When broadcasting the seed, the pounds per acre noted below are to be doubled. The seeding would be repeated until a satisfactory stand is established as determined by DNRC. Evaluation of growth would not be made before completion of the second growing season after seeding. DNRC is to be notified a minimum of seven days prior to seeding of the project.

   i. **Seed Mixture** (silty, clayey, or silt clay loams)

      a) The combination must include at least four of the following species. Western wheatgrass must be included in the mix. Thickspike wheatgrass may be substituted for wheatgrass only when western wheatgrass in unavailable. Species and variety substitution may be approved by the DNRC Area Office.

Species of Seed	Variety	Common Name	Pound/acre PLS)*
Pascopyrum smithii	Rosanna	Western Wheatgrass	3.00
Pseudoroegneria spicata	Goldar	Bluebunch wheatgrass	2.00
Stipa viridula	Lodom	Green needlegrass	2.00
Elymus trachycaulus	Pryor	Slender wheatgrass	2.00
Stipa comata		Needle and thread	1.00
Bouteloua curtipendula		Sideoats Grama	2.00
Schizachyrium scoparium		Little bluestem	2.00

p. ** Pure live seed (PLS) formula: % of purity of seed mixture times % germination of seed mixture = portion of seed mixture that is PLS.*