

Montana Board of Oil and Gas Conservation

Environmental Assessment

For

Fidelity Exploration & Production Company

Tongue River – Deer Creek North Project, Plan of Development (Amended 2005)

This site-specific analysis tiers to and incorporates by reference the information and analyses contained in the Final Statewide Oil and Gas Environmental Impact Statement - January 2003 (Final CBNG EIS) jointly prepared by the Bureau of Land Management (BLM), Montana Department of Environmental Quality (MDEQ), and the Montana Board of Oil and Gas Conservation (MBOGC) and adopted by the MBOGC on March 26, 2003, and the Programmatic EIS on Oil and Gas Drilling In Montana (Programmatic EIS), prepared under the supervision of the Office of the Governor and adopted by the MBOGC on December 28, 1989. This includes the analysis specific to state lands managed by the Montana Department of Natural Resources and Conservation's (DNRC) Trust Land Management Division (TLMD) for this project. Authority to conduct operations on state lands requires an additional decision by the TLMD and Land Board. Additionally, requests are made for wells to be drilled upon federal lands managed by the Bureau of Land Management (BLM). Authority to conduct operations on federal lands requires an additional decision by the BLM.

Proposed Action – Title: Fidelity Exploration & Production Company (Fidelity) Deer Creek North, Amended Plan of Development (POD).

Location of Proposed Action

The proposed POD includes Coal Bed Natural Gas (CBNG) development drilling for lands (as described in Board Order 87-2005) in Sections 1-12, 14, 15 & 22, Township 9 South, Range 41 East, in the CX Field, Big Horn County, Montana. The proposed additional wells are located within the boundaries of the previously-approved Deer Creek North POD (March 2004). The surface ownership in the project area includes privately owned (fee) lands; land owned by the State of Montana (state) and federally owned lands (federal). The mineral ownership includes fee, state and federal estates. Fidelity proposes to drill an additional 184 CBNG (112 fee, 4 state, 68 federal) wells in the POD area and produce water and natural gas typically from the Dietz, Monarch and Carney coals with additional exploration and production of the Smith and Wall coals, and possibly other deeper coals (e.g., Carlson, King and Roberts). The proposed action is the drilling and production of 184 CBNG wells. This Environmental Assessment (EA) analyzes the impacts associated with proposed fee and state wells. It is anticipated that an additional assessment will be carried out by BLM to assess federal wells.

Purpose and Need

The proposed action involves the further development of CBNG resources known to exist within the current CX Field and to increase well density on lands contained within the Deer Creek North POD. The lands involved are state trust, fee and federal, all under oil and gas lease. Recovery of natural gas resources is a direct benefit to the mineral owners, both public and private, to state and local governments, and to public schools as recipients of both tax receipts and royalties from school trust land. Natural gas has become a fuel of choice for environmental reasons, and national demand, as well as the price received for this commodity, has increased substantially during recent years. This Environmental Assessment (EA) is the site-specific analysis for Fidelity's POD to ensure that CBNG development of its leases occurs in an orderly, efficient, economically and environmentally responsible manner that provides measures to protect the environment and surface owner assets.

Description of the Proposed Action

The Tongue River – Deer Creek North project was initiated with submission of the Fidelity Tongue River – Deer Creek North POD. This action is a request to increase well density within the project, as described in the Tongue River – Deer Creek North POD (Amended). Of the proposed new drilling, the 184 wells will be under the regulatory jurisdiction of the MBOGC and BLM.

The Proposed Action includes the use of existing infrastructure and facilities. Access to well sites, battery locations and other facilities is to occur on existing improved and existing/proposed two-track roads. Approximately 8.46 miles of existing access roads (4 miles existing 2-track and 4.46 miles existing improved/all-weather roads) and 4.38 miles of proposed 2-track roads will address needs of proposed action. Approximately 9.3 miles of utility corridors with water, gas and power lines, and 0.57 miles of buried power cable outside a utility corridor will be utilized. A total of 4 existing central gathering and metering facilities are to be used for the amended POD along with 15 existing compressor stations. No new batteries and compressors are being proposed for this amendment. Two proposed discharge points (Outfalls 015 and 016) may be used for water discharge while containment/storage ponds have been proposed (as needed) to support management of water produced in association with natural gas produced from various underground coal seams. Wells will be drilled, one per coal bed, on shared sites with up to five wells located on a common well site (or pad) to develop the Dietz, Monarch and Carney coal seams and possibly additional coal seams (e.g., Smith, Wall, Carlson, King and Roberts).

Wells are expected to be drilled with truck-mounted, water well type rigs. Because this type of rig can be set up on uneven terrain, a pad site may not be constructed unless topography requires it. A pad will be constructed where terrain interferes with safe operation of vehicles and equipment. Approximately one acre of surface will be disturbed during drilling and completion operations. An estimated total of 116 acres may be disturbed during the drilling process on fee and state lands. Two mud pits may be

constructed (6'Wx15'Dx15'L) to contain drilling fluids and water. Topsoil is stripped and saved during any surface disturbing operations and used for reclamation of the disturbed area.

Well heads, compressors, and other surface facilities will be equipped with appropriate frost boxes painted an unobtrusive color and fenced to protect against damage by cattle. Electronic flow devices or chart recorders will measure natural gas and water production.

Fidelity has submitted a surface use plan, water management plan and reclamation plan for this POD, as required in the March 26, 2003 MBOGC Record of Decision (ROD) for the EIS. The initial and amended POD for this project includes a number of maps and exhibits which are available for public inspection at the MBOGC offices in Helena and Billings.

Hearing Process and Public Involvement

Fidelity presented its Deer Creek North POD amendment to the MBOGC on December 8, 2005 as Docket No. 588-2005 to amend Board Order 87-2005 and provide for 2 wells per coal bed for each 160 acre governmental spacing unit. The Deer Creek North POD (Amended) was approved by the MBOGC on December 8, 2005, by Order 508-2005. The MBOGC 2003 ROD and MBOGC Order 99-1999 apply to this proposed action. Order 99-1999 was established by the MBOGC to recognize the Montana Department of Natural Resource (MDNRC) Controlled Ground Water Area for the Powder River Basin and to establish minimum requirements for information to be considered at a public hearing. The order also requires development and implementation of a groundwater monitoring plan, as part of establishing field spacing for CBNG development. Fidelity's amended POD complies with the requirements of both the EIS ROD and Order 99-1999.

Public Hearings are advertised in the statewide *Helena Independent Record* and the official newspaper of the county in which the proposed operations are to take place. In addition, notice of the public hearing is mailed to the MBOGC's mailing list and a notice is published on its Web site. The proposed project has fulfilled public notice requirements.

Other Regulatory Requirements

Table 1-1, Page 1-14, of the Final Statewide Oil & Gas EIS identifies the applicable permits and reviews for CBNG activities and the agencies responsible for each. Table 1-2 of the same document identifies the permitting activities associated with CBNG development. Approval of PODs must be made by the BLM for federal interests and by the MBOGC for state and fee interests under the preferred alternative adopted by both agencies, as presented in the Final Statewide Oil & Gas EIS. In this case, the 184 proposed wells are under both BLM and MBOGC permitting jurisdiction, located on fee, federal and state minerals and surface. Of the 184 proposed wells, four are located on state-managed lands and the TLMD procedures for CBNG development require separate approval by the state land board. Produced water discharge permits and stormwater discharge permits for state trust lands and fee lands are the responsibility of the MDEQ. In addition, the MDEQ will manage air quality permits for activities in the State of Montana. The BLM will

manage permitting activities for wells on federal lands. This EA deals with the assessment of fee and state wells.

Alternatives

Alternatives are presented to address the relevant major issues in the proposed action. A “no action” alternative was considered in the 2003 Montana Statewide EIS. Under this alternative, no proposed wells in the Deer Creek North POD would be drilled. However, taking no action on the current proposal would prohibit the lawful recovery of private property (i.e., coal bed natural gas) and would place the state trust mineral resources in jeopardy of drainage by offsetting wells not located on land under jurisdiction of the state. The 2003 Montana Statewide EIS considered other alternatives, including the Preferred Alternative, which is consistent with Fidelity’s amended Deer Creek North POD.

For this EA, Alternative A is the “No Action” Alternative. In this alternative, no approval would be issued for the POD and no additional wells would be drilled or produced. This alternative was included to provide the required basis for comparison with Alternative B, the “Proposed Alternative.”

Alternative B is the operator’s proposed action. Under this alternative, Fidelity’s Deer Creek North POD (Amended) would be approved, including drilling and production of the 116 state and fee wells, and construction of any additional associated infrastructure. This EA analyzes full implementation of Fidelity’s proposal, while incorporating mitigating measures identified during project review that would avoid or reduce impacts to area resources. Alternative B is the agency’s preferred alternative.

Table 1 presents a descriptive summary of the two alternatives.

Alternatives Considered but Eliminated from Detailed Analysis

The alternatives listed below were considered in order to resolve planning questions or issues but were not analyzed in detail because of technical, legal or other constraints.

Injection of All Produced Water: This alternative was suggested as a means to reduce the amount of produced water requiring management by other means (e.g., treatment or surface discharge). However, the feasibility of injection of produced water is quite variable and site specific. The likelihood of successful injection has not been well established in the Montana portion of the Powder River Basin. In fact, the variable geology, and limited porosity and permeability of the potential receiving units in the Powder River Basin, along with the very limited success of injection in Wyoming’s portion of the Powder River Basin, demonstrate that injection is likely not feasible in the project area. While some limited injection may be feasible at selected sites, this alternative cannot be the basis for comprehensive water management program. Rock units below the level of the nearest perennial or intermittent stream are usually already saturated with water, and have very little available porosity in which to store additional water. Confined coal or sandstone units in the Fort Union formation are naturally under

hydrostatic pressure, and the total volume of those units capable of storing injected water is very small, often less than 1% by volume. Re-injecting into former producing coal beds may not be possible within several miles of active gas fields, since this would re-pressurize the subject coal, eventually interfering with the production of natural gas in other active fields or in different mineral estates.

Furthermore, the regulatory burden for injection into shallow, drinking water aquifers could require a lead time of one year or more before permit approval. For these reasons, injection of produced water is proposed, at most, as one of multiple produced water management techniques. During the development process, the operator may seek to evaluate potential injection zones for technical and economic feasibility. In the event that injection is proven to be feasible, where appropriate, injection of produced water will be utilized as one of the POD water management options.

Phased Development: Phased development is an alternative that was considered, but not analyzed in detail. As applied specifically to this project area, phased development of CBNG was not considered because of several important legal and regulatory arguments, including the protection of correlative rights, prevention of waste, and the fact that phased development is implicit in the current permitting process. Discussion of each of these arguments is presented below:

- **Protection of Correlative Rights:** The MBOGC is required to protect correlative rights to minimize drainage of mineral resources by off-lease drilling and production. Drainage can be prevented by minimum setbacks from lease boundaries and mirror-image locations off-setting well location exceptions. Drainage is also prevented given the operator has the express freedom to drill any legal well locations. Two contiguous tracts must be equally drillable or drainage may occur by the first well to be drilled. If the offsetting well is delayed, such as by a phased development restriction on the number of CBNG wells per year, drainage could occur.
- **Prevention of Waste:** MCA Section 82-11-111(1) provides: “The board shall make such investigations as it considers proper to determine whether waste exists or is imminent or whether other facts exist which justify action by the board under the authority granted by this chapter with respect thereto.” Waste is defined at 82-11-101(16) as follows:

(16) (a) "Waste" means:

(i) physical waste, as that term is generally understood in the oil and gas industry;

(ii) the inefficient, excessive, or improper use of, or the unnecessary dissipation of reservoir energy;

(iii) the location, spacing, drilling, equipping, operating, or producing of any oil or gas well or wells in a manner which causes or tends to cause reduction in the quantity of oil or gas ultimately recoverable from a pool under prudent and proper operations or which causes or tends to cause

unnecessary or excessive surface loss or destruction of oil or gas; and (iv) the inefficient storing of oil or gas. (The production of oil or gas from any pool or by any well to the full extent that the well or pool can be produced in accordance with methods designed to result in maximum ultimate recovery, as determined by the board, is not waste within the meaning of this definition.)

(b) The loss of gas to the atmosphere during coal mining operations is not waste within the meaning of this definition.

The MBOGC's primary responsibility, as defined in the statutes quoted above, is to assure efficiency and prevent waste in the production of oil and gas resources, including CBNG. Requiring a particular operator or operators to phase production by deferring development in one or more areas could cause waste. In the case of CBNG development, restricting an operator's number of wells could reduce the efficiency of an operator's depressurization of producing coal beds and thereby reduce ultimate CBNG recovery. The MBOGC does not have the authority to impose such an order since it would violate MBOGC's fiduciary responsibilities.

- **Implicit Phased Development:** The MBOGC, as well as other state and federal regulatory agencies, have numerous permitting mechanisms in place to address drilling and pit construction, produced water management, air emissions, etc. that must be satisfied before CBNG development can occur. These permitting mechanisms require ongoing analysis to allow development to continue. The MBOGC's position is that these permitting mechanisms implicitly result in phased development of the resource. This implicit phasing of development, which comprises the Preferred Alternative, also achieves the objective of managing resource conservation and development.

Cumulative Effects

Cumulative effects are the result of impacts from other past, present or reasonably foreseeable future actions that would overlap in time and locale with the direct effects of the proposed action or alternatives, thus resulting in "cumulative effects" distinctly different (greater or less) than the direct effects. The actions listed below have been considered as potential contributors to cumulative effects:

- **Existing Montana CBNG Development:** According to MBOGC records via Web site as of December 13, 2005, approximately 784 CBNG wells have been drilled in Big Horn, Custer, Powder River and Rosebud Counties. Approximately 147 wells, or less than 20%, are identified as federal wells. The status of these wells includes drilling, shut-in, producing and plugged. Currently 605 CBNG wells, all but six in Big Horn County, are considered to be in production. The main development is found in the CX Field near Decker, Montana. The CX Field, which includes the existing, producing Badger Hills, Dry Creek, and Coal Creek project areas, is a CBNG-producing field operated by Fidelity Exploration

& Production Company. The field encompasses approximately 56 sections between the Montana/Wyoming state line and the Decker and Spring Creek coal mines. The CBNG wells in the CX Field are completed in the Dietz 1, Dietz 2, Dietz 3, Monarch and Carney coal seams. A portion of the produced water from the CX Field is discharged to the Tongue River under a valid MPDES permit. These discharges are analyzed in the surface water impact assessment prepared for the Fidelity Deer Creek North POD project. Increased well density in the Deer Creek North POD is not likely to have cumulative effects to the existing project areas.

- **CX Field (Coal Creek POD):** Fidelity has proposed and received approval to amend the Coal Creek POD. The proposal is similar to the amended Deer Creek North POD, for increasing well density within the project area. The POD specifies drilling and producing an additional 236 CBNG wells (43 fee, 20 state and 173 federal,) and constructing and operating associated infrastructure within the CX Field. The project area is immediately south and west of the Deer Creek North project area. The scope and nature of the Coal Creek POD, as well as its proximity to the Deer Creek North project, results in only minor potential for cumulative effects to resources in the project area.
- **CX Field (Pond Creek POD):** Fidelity has proposed and received approval for the Pond Creek POD. The POD includes the drilling and producing 78 CBNG wells and construction and operation of associated infrastructure within the CX Field. The project area is immediately north and west of existing production in the CX Field. The scope and nature of the Pond Creek POD, as well as its proximity to the Deer Creek North project, results in only a minor potential for cumulative effects to resources in the project area.
- **Coal Creek Field (Dietz POD):** Pinnacle Gas Resources (Pinnacle) has proposed this POD for the drilling and producing of 132 CBNG wells, along with constructing and installing the associated infrastructure in an area of the Coal Creek Field and reclaiming disturbed areas. The project area is within the Coal Creek Field, immediately north and northeast of the Deer Creek North project area. The 132 wells will be drilled on 42 sites. These CBNG wells will be completed in the four Fort Union coal seams. Due to the immediate proximity of this project from the Fidelity project area, it does appear likely that the Dietz POD could have the potential to affect the drainage of resources from the Deer Creek North area.
- **Decker Coal Mine:** The Decker Mine is a surface coal mine operated by Decker Coal Company, a Kiewit subsidiary. The East Decker Mine is located immediately west of the Fidelity Deer Creek North project area. The mining method consists of open pit strip mining. Overburden and interburden are removed by draglines, shovels and trucks, front-end loaders and trucks or dozers. The permitted mine operations area is approximately 11,400 surface acres. The average annual coal production is 10 million short tons. Although located in close

proximity to the Fidelity project, the scope and nature of the Decker Coal Mine, results in only a minor potential for cumulative effects.

- **Spring Creek Coal Mine:** The Spring Creek Mine is a surface coal mine owned and operated by Spring Creek Coal Company. The mine is located approximately eight miles northwest of the Fidelity Deer Creek North POD's northwest boundary. The mining method consists of open pit strip mining. Overburden and interburden are removed by draglines, shovels and trucks, front-end loaders and trucks, or dozers. The permitted mine operations area is approximately 7,000 surface acres. The average annual coal production is 11 million short tons. The scope and nature of the Spring Creek Coal Mine, as well as its proximity to the Deer Creek North project, results in only a minor potential for cumulative effects.
- **Existing Wyoming CBNG Development:** According to the Wyoming Oil and Gas Conservation Commission (WOGCC) Web site on June 1, 2005; 26,353 CBNG wells have been drilled in the state. These wells range from spudded, producing or abandoned. Generally, in Wyoming, CBNG development has occurred since the early 1990's, mostly in the Powder River Basin of north central/eastern Wyoming. The CBNG development is primarily located between the cities of Gillette and Sheridan. From 2002 to 2005, the Upper Tongue River Basin had 4,281 wells drilled and 63,630 acre-feet of produced water (2002, 2003, 2004 January to March 2005 (actual), and March to June 2005 (estimated)). The scope and nature of the Wyoming CBNG development, as well as its distance from the Fidelity project, would not likely create cumulative effects to resources in the Fidelity project area.
- **Coal Creek Field (Coal Creek POD):** Pinnacle has proposed this POD and received approval for the drilling and producing of 48 CBNG wells, along with constructing and installing the associated infrastructure in an area of the Coal Creek Field and reclaiming disturbed areas. The project area is within the Coal Creek Field, immediately north and west of the Pinnacle Dietz project and northwest of the Fidelity Deer Creek North project area. The 48 wells will be drilled on 24 sites. These CBNG wells will be completed in the Wall and Flowers/Goodale coal seams. Due to the distance of this project from the Fidelity project area, the Coal Creek POD would not likely create cumulative effects to resources in the Fidelity project area.
- **Gravel/Scoria Quarries:** Some gravel or scoria would be used to surface project roads and would come from permitted mineral material sites. Surface disturbance associated with gravel or scoria quarries would not exceed existing permit limits. The potential for cumulative or connected effects from mineral material excavation is minimal.
- **Absaloka Coal Mine:** The Absaloka Mine, owned and operated by Westmoreland Resources, is a surface coal mine located adjacent to the Crow Reservation. The mine is located approximately forty five (45) miles northwest

of the Deer Creek North project area. The mining method consists of open pit strip mining of Crow Tribe mineral resources. The distance of the Absaloka Coal Mine from the Deer Creek North project area makes it unlikely that there would be any cumulative effects to project area resources.

- **Castle Rock-Stevens POD:** Powder River Gas has submitted a POD to the MBOGC for development of 284 CBNG wells in Powder River County, including constructing and operating the associated infrastructure, and reclaiming disturbed areas. The project area is approximately forty (40) miles east-northeast of the Deer Creek North project. The 284 wells will be drilled on 71 sites. These CBNG wells will be completed in the Cook/Otter, Pawnee, Sawyer Knobloch or Terret/Stag coal beds. Due to the distance of this project from the Deer Creek North project area, the Castle Rock-Stevens POD would not likely create cumulative effects to resources in the project area.
- **Conventional Oil and Gas Development:** A total of 1,991 conventional oil and gas wells have been drilled in Big Horn and Rosebud counties, with approximately 22% being federal or Indian wells. The conventional oil and gas wells within approximately 20 miles of the Deer Creek North project area have been abandoned. Cumulative effects from conventional oil and gas development are not likely.
- **Wolf Mountain Coal:** Wolf Mountain Coal, Inc. proposes to build a coal processing plant on private land for retail sales of coal in Lot 1, Section 18, T. 8 S., R. 40 E. BLM recently issued a right-of-way (MTM93074) for a power line across Federal surface in the NE $\frac{1}{4}$ SE $\frac{1}{4}$, Section 13, T. 8 S., R. 39 E., to provide power to the proposed site. Due to the distance of the Wolf Mountain plant from the Deer Creek North project area; this processing plant would likely not create cumulative effects to resources in the Deer Creek North project area.
- **Tongue River Railroad:** The Surface Transportation Board has published a Draft Supplemental Environmental Impact Statement for the Tongue River Railroad Company's (TRRC) proposed rail line construction in Rosebud and Big Horn Counties, Montana. The document analyzes the proposed 17.3 mile "Western Alignment" route, which had been preceded by two related applications that were considered and approved by the Board in 1986 and 1996, respectively. The proposed Western Alignment is an alternative route for the southernmost portion of the 41-mile Ashland to Decker alignment; known as the Four Mile Creek Alternative. The proposed Western Alignment bypasses the Four Mile Creek alignment, which is generally located from the Birney Road (Hwy 566) and the Tongue River Canyon junction, running west to Hwy 314, then south to the Decker Mine. The Western Alignment would continue south along the Tongue River on the ridge, but paralleling the river and ending near the Spring Creek Mine area. If approved and constructed, this proposed route could approach within approximately three miles of the Fidelity Deer Creek North project area. Because effects from the two actions would not occur in the same area and likely

not at the same time, no cumulative effects are anticipated to occur from the TRR and the Deer Creek North POD.

Affected Environment and Environmental Consequences

Fidelity's Deer Creek North Plan of Development covers approximately 8,152 acres in southern Big Horn County, Montana. The area is in the northwestern portion of the Powder River Basin and lies in the upper Tongue River drainage basin. The project is located in the area approximately 1.5 miles east of the Tongue River Reservoir.

Air Quality

Ambient air quality in the project area is good. Coal mining operations in the area may cause localized elevation in suspended particulates or sulfur dioxide. The West Decker, East Decker, and the Spring Creek mines are south and west of the proposed project area.

Air pollution is regulated under the federal Clean Air Act (CAA) and under Montana statutes and regulations implemented by the MDEQ. The southern boundary of the Northern Cheyenne Reservation lies approximately 18.5 miles north-northeast of the proposed Deer Creek North Project and is the closest PSD (Prevention of Significant Deterioration) Class I area; the project area is in a PSD Class II area, which allows for moderate, controlled air quality impacts.

Air quality could be impacted by suspended particulate matter generated during drilling and production primarily due to dust associated with travel on unimproved roads; emissions from drilling rig engines, field and main compressor facilities, and venting natural gas during testing of wells prior to hookup. The produced natural gas in CX Field contains no Hydrogen Sulfide (H₂S), and is very nearly pure methane (CH₄).

Air quality regulations require certain new or existing modified air pollution emission sources (including CBNG compression facilities) to undergo a permitting review before construction can commence. The MDEQ has the primary authority to review and require permits and/or control devices prior to construction. A source emitting less than 25 tons of any regulated pollutant, excluding hazardous air pollutants (HAPs), without controls, does not require a permit. This amended POD, however, does not anticipate the installation of any new compressors to meet the anticipated compression requirements of the project. Therefore, at this level of compression, it does not appear that a Montana Air Quality Permit (MAQP) would be required. However, if additional compressors are needed, the operator may need to obtain a MAQP for applicable emissions.

Mitigation proposed by the operator includes implementation of speed limits on unpaved roads to reduce dust emissions, installation of telemetry equipment at wellheads to monitor well performance, thereby minimizing travel to individual well sites, and use of natural gas to fuel field and sales compressor engines. Gas venting is minimized by a MBOGC regulatory requirement prohibiting venting of commercial quantities of gas. Because substantial infrastructure already exists in the area of the CX Field, extensive

well testing prior to pipeline hookup is not anticipated. Some gas emission may occur from boreholes drilled as monitor wells, mineral exploration holes and other boreholes of unknown origin. The operator is required to plug such emission sources, and Fidelity has demonstrated its willingness to promptly report and plug these sources.

The drilling of CBNG wells, although a temporarily intense activity is of relatively minor concern for air quality impacts since drilling actually occurs only for a limited time during the life of the project. The water well rigs employed are smaller than those commonly used to drill conventional oil and gas wells in the state and do not have high horsepower engines. Typically, no more than 1-2 days are required to drill a well to the depths proposed. Air quality impacts are not expected to be significant and the operator's proposed mitigation measures are adequate. MDEQ permitting requirements mitigate longer-term impacts from point sources such as field and sales compressor engines.

Water Quality and Quantity

The Deer Creek North Project is located in the upper Tongue River watershed in an area that receives an average of approximately 12 inches of annual precipitation. The project area is approximately 1.5 miles east of the Tongue River Reservoir. As required in the EIS ROD, a water management plan for the project has been prepared by WWC Engineering (WWC) and is incorporated into this EA by reference.

Fidelity expects the initial water production from the new wells proposed in this project will be approximately 6 gallons per minute (gpm), declining by approximately 30% per year, based upon the production of existing wells in the area. The proposed 116 fee and state wells will initially produce an estimated 696 gpm of water. Fidelity proposes the following water management options for the Deer Creek North project: storage and managed irrigation, industrial and stock water use, treatment prior to discharge to Tongue River, and direct discharge to Tongue River. Fidelity will utilize one or a combination of these options after water quality and quantity values have been established. Each option will be implemented in compliance with local, state, and federal regulatory guidelines, rules and regulations. Any new storage impoundments will be located in upland locations and sited in "off-channel" areas to avoid interfering with natural runoff and to avoid capture of water that would otherwise travel to downstream water rights holders. Any discharge of untreated and treated water will be in accordance with pending Montana Pollutant Discharge Elimination System (MPDES) discharge permits (MT 0030457 and MT 0030724, respectively).

Surface use agreements and water well mitigation agreements have been accepted by or offered to, all private landowners in the project area. A total of 46 registered water wells have been mitigation agreements or been offered agreements in the project area. A list of wells is available for review within the POD submittal. Water well mitigation agreements have been offered to all owners of registered wells/springs within one mile of the project boundary.

The Hydrology and Groundwater section of the Final Statewide Oil & Gas EIS discusses

the Powder River Basin groundwater, surface water, and stratigraphy in detail. The stratigraphic section in the project area includes alluvial aquifers under and near stream channels, the coalbed aquifers, and the impermeable aquitards that impede or prevent vertical movement of water between coalbed aquifers. Monitoring reports document the effect of CBNG water withdrawal as well as the compartmentalized nature of the coalbed aquifers due to faulting in the Powder River Basin of Montana. Many faults are visible at the surface and have been mapped by geological researchers. These down-to-the-basin faults have been shown to retard or prevent the movement of water (and gas) across the fault boundary; as a result, drawdowns of water pressure in the coalbed aquifers are not uniform. Local groundwater chemistry is described in the referenced water management plan. Regional groundwater quality is characterized in the Final Statewide Oil & Gas EIS.

The proposed water management plan relies on accepted methods of water management. The potential impacts of each are described in the Final Statewide Oil & Gas EIS. Water well mitigation agreements effectively guarantee replacement of water if a legitimate well owner/water user is adversely impacted. The hydrogeology of the coalbed aquifers in the project area minimizes any potential impacts that water withdrawn from coal seams would have on users of shallow alluvial aquifers.

Produced water discharge is authorized by MDEQ, in compliance with the water quality standards in place at the time the permit is issued; MBOGC's authorization of the Fidelity Deer Creek North Project does not constitute approval to either discharge produced waters to waters of the state or to discharge produced water in excess of the amount authorized by MDEQ. Overall impacts to water quality due to discharge of CBNG water to the Tongue River were thoroughly discussed in the Final Statewide Oil & Gas EIS. The Montana Board of Environmental Review (BER) has adopted numerical water quality standards for electrical conductivity (EC) and sodium adsorption ratio (SAR). The Final Statewide Oil & Gas EIS analyzed a number of discharge scenarios incorporating the current EC and SAR standards. Any future discharge permits would be required to meet the EC and SAR standards. Approval of the proposed action is anticipated to have minimal effect on surface water quality in the Tongue River.

Soils, Vegetation, Land Use

Fort Union and Wasatch Formations are at the surface in the Deer Creek North project area; the Fort Union is the older of these two Tertiary-aged formations and is composed of sandstone, siltstone, clay-shale, impure limestone, and coal while the Wasatch Formation is composed of light-colored massive sandstones, drab-colored shale, and lignite. Erosion in the project area has created a rugged, badland topography where the more resistant sandstone and scoria ("clinker") form hills and buttes. Increased precipitation during Modern and Pleistocene climate episodes increased surface water flows and created isolated alluvial terraces and gravel-capped benches.

Soils in the project area are described generally in the Soils Appendix of the Final Statewide Oil & Gas EIS and in more detail in the POD. Soils consist primarily of

shallow to very deep, well-drained soils formed in-situ of materials weathered from silty clay and silty shale bedrock. Due to the variability of topography and bedrock, soil groups vary throughout the project area. Soil K-factors for the project area indicate medium to high runoff and moderate to severe erosion potential for disturbed soils. Principle vegetation in the area includes grassland (approximately 70%), forest (approximately 20%), and shrub-land (approximately 10%). Fidelity proposes the possibility of utilizing managed irrigation as part of its water management plan.

The proposed CBNG development activity includes surface/shallow soil disturbances required to construct gas and water handling infrastructure, drill wells and construct access roads. Approximately 4.38 miles of new 2-track road will be constructed with an estimated land disturbance of 4.24 acres. The operator has located proposed construction activities to avoid steep slopes and surface disturbance that would require removal of trees. The operator is responsible for construction of erosion/sedimentation controls during construction and production operations. Specific road locations, surfacing requirements and interim and final reclamation of disturbed areas and roads on private surface is subject to consultation between Fidelity and the landowner. However, MBOGC rules require stockpiling of topsoil as well as prompt re-vegetation of disturbed areas. Reseeding of disturbed areas will be done with a seed mix acceptable to the surface owner. Without specific instructions from the surface owner, BLM or National Resource Conservation Service (NRCS)-recommended seed mixtures will be utilized. Part of the area included in the Deer Creek North POD is managed by the TLMD. Site-specific stipulations and management requirements for this project will be discussed in TLMD's assessment and applicable decision. No significant cumulative or irreversible effects to existing land use or to soils are expected from the proposed action.

Health Hazards/Noise

CBNG produced in this area of Montana apparently does not contain H₂S or other contaminants that could effect public safety and health. The near pure methane produced from Powder River Basin CBNG wells is lighter than air and does not accumulate in low areas; therefore little or no exposure hazard exists for the general public. Closed buildings and frost-boxes around well-heads may allow accumulations of CBNG, however, these facilities are generally off-limits to the general public. CBNG operators have established strictly enforced no-smoking policies and other operating procedures to avoid fire or explosion hazards to their employees and authorized visitors. Tank batteries and compressor buildings are equipped with combustible gas detectors.

Exposure to noise from drilling CBNG wells is generally short-term in nature and consists of relatively low levels since the water-well type drilling rigs used are smaller and have smaller engines than conventional oil or gas drilling rigs (the 1989 Programmatic EIS describes typical drilling rigs used in Montana). CBNG drilling rigs commonly operate only during daylight hours. CBNG wells in the Montana portion of the Powder River Basin typically take only one to two days to drill. Field compressors are another source of noise, operating on a nearly continuous basis (i.e., except for occasional maintenance and repair/replacement). No new compressors are proposed in

this POD.

In addition to human residents, noise could affect wildlife. The Final Statewide Oil & Gas EIS and especially the Biological Opinion Appendix discuss potential effects to Threatened and Endangered Species from noise disturbance. The relatively short duration drilling operations and construction activities may result in noise levels that could impact noise-sensitive populations; however, ongoing CBNG production and associated maintenance activities will likely have little noise impact. Fidelity will locate batteries and field compressors to avoid identified sensitive habitat. The operator also agrees to avoid construction or drilling activities within a quarter-mile of sage grouse or sharp tail grouse leks during the nesting season to protect these species from noise disturbance during this critical period.

Wildlife/Recreation

Hayden-Wing Associates prepared the Wildlife and Habitat Review of the Deer Creek North POD area for Fidelity and is available for review at the Helena and Billings offices of the MBOGC. The MBOGC does not have authority to implement any special wildlife stipulations, acquiesce to third party surveys, or to provide habitat for wildlife on private surface. However, the operator has completed a baseline survey that includes the entire Deer Creek North project area, as stated above. No known active greater sage-grouse leks exist near the project area. Sharp-tailed grouse leks have been recorded within and near the POD boundary and mountain plover habitat may be present in the POD area. Wells, roads, and batteries will be located to avoid disturbing sage grouse, sharp-tailed grouse, and mountain plover nesting sites in the project.

The Tongue River Reservoir, a state-managed recreational area, lies near the POD area . Dispersed recreation may occur in parts of the POD area during hunting season. Surface owners control access to most of the project area and one section is managed by the State TLMD. Any recreational opportunities that may exist are not anticipated be affected by this action.

Historical/Cultural/ Paleontological Resources

The MBOGC cannot require archeological/cultural surveys on fee surface property, since the underlying MBOGC regulations generally do not apply to private property. The Deer Creek North project includes Fee and State-managed acreage. Cultural resources records were reviewed (Ethnoscience, Inc., 2004-2005), as part of the POD preparation process.

The Ethnographic Overview of Southeast Montana prepared by Peterson and Deaver (2002) for the Final Statewide Oil & Gas EIS provides a current inventory of historical and cultural sites of the project area obtained from the Montana State Historical Preservation Office (SHPO) database. The area has seen limited archeological reconnaissance; three investigations were undertaken between 1973-1981, prior to CBNG development. Direct impacts to cultural sites can be avoided by carefully locating roads and other infrastructure facilities. For this amended POD, if culturalsites cannot be

avoided, then suggestions for mitigation will need to be discussed with the surface owner, whether ranch owners or TLMD.

Social/Economic

Social and economic effects of CBNG development are discussed in the 2003 Statewide Oil & Gas EIS and in the Socioeconomic Appendix of the EIS. The proposed action involves increased well density in the existing CX Field. Additional demands on governmental services, impacts on county facilities, and significant relocation or population increases are not expected to result from implementation of the proposed action. The likely increase in natural gas production from additional wells in the project will result in a significant increase in both state and county tax income. Royalty owners and the State School Trust will also benefit from natural gas production. Natural gas is expected to increase in value due to potential market shortfalls and increasing demand for natural gas as both a space heating fuel and as a fuel for generation of electricity. Implementation of the proposed action will increase gas reserves and production in Big Horn County.

On February 25, 2005, United States Magistrate Judge Richard Anderson issued a ruling that declared a portion of the analysis contained in the Montana Statewide FEIS to be deficient, due to its failure to consider a reasonable range of alternatives. *NPRC v. BLM*, CV 03-69-BLG-RWA, consolidated with *Northern Cheyenne Tribe v. Norton*, CV 03-78-BLG-RWA. This case is currently on appeal to the Ninth Circuit Court of Appeals. The case was brought under federal law and pertains to federal lands in the project area, and has no bearing on this EA, which is limited in scope to state and fee mineral resources.

Remarks/Special Concerns

The proposed action includes drilling an additional 184 wells and construction of infrastructure needed to produce the wells within the existing Deer Creek North project area.

Measurement of gas production and produced water, and reporting of gas and water production is required as part of the MBOGC's regulatory program. Wells in the Deer Creek North POD area will be added to the monitoring requirements established for the CX Field. The project area will be included in the groundwater monitoring program. Data will be collected from the new wells and compiled with existing information. The Technical Advisory Committee (TAC), established by DNRC's Controlled Groundwater Area for the Powder River Basin, reviews operator's groundwater monitoring plans and annual report(s).

Sections 82-11-172 MCA, through 82-11-174, MCA, known as the "Coal Bed Methane Production Offset Act", requires the MBOGC to issue drilling permits to protect mineral resources under its jurisdiction from drainage by wells permitted by other agencies not under its jurisdiction (BLM jurisdiction over federal mineral resources). Production from adjacent/offsetting wells, not under the jurisdiction of the MBOGC may drain gas from

Montana State Trust leases and fee leases unless additional wells within the Deer Creek North project are promptly permitted, drilled and produced.

Summary: Evaluation of Impacts and Cumulative Effects

The 2003 Statewide Oil & Gas EIS identified and analyzed the cumulative effects of CBNG development in the Powder River Basin. The CX Field and its environs formed the analogue for the analysis used in the EIS, as it was the only source of CBNG project level data available in Montana. The EIS is directly applicable to the proposed action and accurately identifies impacts and mitigation appropriate to this EA. The following table summarizes impacts and mitigation applicable to the amended Deer Creek North project.

Resource	Summary of Impacts and Mitigation	
	Alternative A – No Action	Alternative B – Proposed Action
Air Quality	No change from existing conditions	Minimal impact from well drilling operations due to short duration; air permit requirements mitigate impacts from significant point sources; voluntary speed limits, minimizing traffic to individual wells to mitigate fugitive dust impacts. This proposed action does not significantly increase air quality impacts.
Water Quality and Quantity	No change from existing conditions	Project does not increase surface discharge of produced water beyond that currently permitted. MDEQ has adopted numeric standards for discharge to protect downstream agricultural uses should any additional discharge be proposed in the future. New off-channel containment impoundments will be constructed as needed. Enlargement of existing impoundments may be required in the future. MBOGC inspectors will periodically monitor sites. Cumulative effects on groundwater quantity are limited to the coal zones being produced; water well mitigation agreements protect groundwater appropriators; DNRC Controlled Ground Water Area order outlines jurisdiction and procedures. Overall impacts to water quantity and quality are mitigated below the level of significance for the proposed action.
Soils, Vegetation, Land Use	No change from existing conditions	Short-term damage to vegetation and some disruption of existing land use is expected. The operator has proposed no new surfaced roads and the addition of 4.38 miles of 2-track roads disturbing an estimated 4.24 acres; MBOGC

Resource	Summary of Impacts and Mitigation	
	Alternative A – No Action	Alternative B – Proposed Action
		requirements for prompt re-vegetation of disturbed areas minimize overall and cumulative effects. Operator has negotiated surface use agreements with surface owners that protect land uses in the project area. No significant impact to these resources is expected.
Health Hazards/Noise	No change from existing conditions	Minimal long-term impacts are expected as a result of the operator's careful selection of sites to minimize potential effects. Short-term impacts related to noise levels during drilling and construction activities are less than those described in the 1989 Programmatic EIS. Operator has substantive programs intended to protect safety of workers and public.
Wildlife/ Recreation	No change from existing conditions	Operator has relocated proposed well sites and infrastructure to avoid wildlife nesting/mating grounds. Operator will install devices to discourage raptor roosting on power poles within ¼ mile of active leks and will use raptor protective power line structure where underground utilities are not practical. Voluntary vehicle speed limits are also protective of wildlife. TLMD staff will perform site review and analysis of the state-managed mineral leases and surfaces in the project. With the voluntary mitigation, potential effects to wildlife due to approval of the proposed action are not considered significant or long term.
Historical/ Cultural/ Paleontological Resources	No change from existing conditions	Cultural and historical resource surveys have been conducted on nearby lands as part of the 2003 Montana Statewide Oil & Gas EIS. Although antiquities laws generally do not apply to private landowners, the operator has voluntarily agreed to consult with the surface owner and halt construction if resources are discovered on private land. TLMD will review the Deer Creek North POD and will assess State Trust Lands. If cultural resource sites are identified in the area; then through voluntary mitigation efforts no significant impact on these resources is expected from the proposed action.

Resource	Summary of Impacts and Mitigation	
	Alternative A – No Action	Alternative B – Proposed Action
Social/ Economic	No change from existing conditions	Some short-term impacts to private landowner/residents of the area are expected; relocation or population increases are not expected. Increases in state and county taxes are likely. Royalty owners will benefit from the proposed action. Most adverse impacts occur during drilling and infrastructure construction and are short term. No significant increase in demand for local government services or long-term adverse impacts are likely from this amended project.
Remarks/ Special Concerns	No change from existing conditions	Key wells in the Deer Creek North POD area will be added to the groundwater monitoring program established for the CX Field. Data from the project area will be included in future annual groundwater monitoring reports. The operator has offered surface use agreements and water well mitigation agreements to surface owners and water users in the project area. Production from wells on offsetting/nearby minerals not under the jurisdiction of the MBOGC (i.e., federal wells), may cause drainage from state and fee minerals unless offsetting “protective” wells are promptly permitted and drilled.

Fidelity has proposed voluntary mitigation efforts that are intended to reduce overall impacts of the proposed project. This voluntary mitigation accompanied by the regulatory programs enforced by state and federal agencies reduce the long term, cumulative effects of the proposed action below the level of significance; therefore, I conclude that the approval of the Deer Creek North Plan of Development (Amended, 2005) does **not** constitute a major action of state government significantly affecting the quality of the human environment, and does **not** require the preparation of an environmental impact statement.

Approved by (MBOGC):

Original signed by

_____ Date: January 18, 2005
Thomas P. Richmond, Administrator

Contacts and References:

- Final Statewide Oil and Gas EIS, adopted March 2003 (MBOGC, MDEQ, BLM)
- Final Programmatic EIS, Adopted December 1989 (MBOGC)
- Montana 2002 and 2003 Baseline Wildlife Inventory (Hayden-Wing Associates)
- Plan of Development Deer Creek North Project – March 2005
- Environmental Assessment Deer Creek North Project – August 2005 (BLM)

Table 1. Fidelity Deer Creek North POD (Amended)--Comparison of Alternatives

Project Component	Alternative A – No Action	Alternative B – Proposed Action with Additional Mitigation (preferred alternative)
Number and type of wells and drill sites	0 new State wells 0 new Fee wells	184 New Wells, 112 Fee and 4 State (proposed)
Drill site construction	No drill site construction	Well pad construction would be as described in the Deer Creek North POD.
Drilling Operations	No drilling operations	116 new Fee and State wells would be drilled in the same manner as described in the Deer Creek North POD.
Disposal of drilling and water treatment wastes	No waste would be generated	<p>15 feet x 15 feet x 6 feet reserve pits for the disposal of drilling waste with reserve pits constructed as needed at each drill site with up to five wells drilled per site.</p> <p>Reserve pit closure occurs within 90 days of well completion. After evaporation of fluids, the pit is backfilled with soil and topsoil and compacted to prevent settling, as described in the Deer Creek North POD.</p> <p>Garbage would be stored in containers at the well site and taken off site to an approved facility for disposal. Sewage is handled with portable toilets, as described in the Deer Creek North POD.</p> <p>Any excess brine or reject water that is not recycled to other beneficial uses would be transported and injected into a licensed Class I deep disposal well in Wyoming.</p>
Gas & Water Pipelines & Electrical Lines	None constructed	<p>Approximately 1.45 acres of utility corridor will be built along existing 2-track roads and 4.38 acres of utility corridors will be built within new 2-track roads. No new utility corridors will be built along <u>existing improved/all-weather roads</u></p> <p>Buried high density polyethylene flow-</p>

Project Component	Alternative A – No Action	Alternative B – Proposed Action with Additional Mitigation (preferred alternative)
		<p>line to carry gas from the proposed wells to the central collection point.</p> <p>Produced water would be transported through buried, high density polyethylene flow-lines from each well site to the chosen water management option. If the treatment and discharge option is utilized, the water would be transported through buried, high density polyethylene and steel central pipeline to the treatment facility and to an existing discharge point adjacent at the Tongue River.</p> <p>Electricity would be brought to the new wells and facilities from existing major power lines in the Deer Creek North project area. Electricity would be routed to drop points above ground on poles. At power drop points, electricity will be routed to buried underground cable placed in trenches dug to well sites. Multiple wells will be serviced from each power drop point.</p>
Road maintenance and use	Road maintenance and use would remain in the current condition.	<p>Access would be primarily by way of 4.0 miles of existing and 4.38 miles of new two-track roads to new fee wells, plus the use of 4.46 miles of existing all-weather county roads.</p> <p>Earthen materials would come from adjacent locations owned by local ranchers. Gravel/scoria from permitted pits would be used when necessary for surfacing material.</p> <p>Vehicle access will be negotiated with surface owners via a surface use agreement.</p>
Discharge of Produced Water	No water would be produced or discharged	Water produced from the proposed state and fee wells will be stored for irrigation, treated and/or discharged into Tongue River (under MPDES Permits # MT-

Project Component	Alternative A – No Action	Alternative B – Proposed Action with Additional Mitigation (preferred alternative)
		0030457 and # MT-0030724), industrial and stock watering use and/or stored for future beneficial use.
Reclamation Measures	No reclamation needed	The disturbed surfaces will be reclaimed in accordance with the agreements with surface owners and TLMD. The disturbed areas would be seeded with a certified seed mix agreed to by the NRCS and the surface owner.
Reclamation Timeframes	No reclamation needed	Reclamation would take place as defined in the Deer Creek North POD.
Air Quality Monitoring	No effects	Per MDEQ permit requirements.
Wildlife Monitoring	None required	Monitoring of specific wildlife species is not required on fee surface: The disturbed areas will be located to avoid disturbing sage grouse, sharp-tailed grouse, and mountain plover nesting sites. Drilling activities will be avoided during bald eagle nesting season. TLMD requirements will be applied for State Trust minerals.
Soils Monitoring	None required	Sites would be monitored by onsite visits during various stages of development and reclamation to ensure accelerated erosion is not occurring.
Water Quality Monitoring	None required	Per MPDES requirements.