

Montana Board of Oil and Gas Conservation

Environmental Assessment

For

Fidelity Exploration & Production Company

Dry Creek Plan of Development (2003)

This site-specific analysis tiers into and incorporates by reference the information and analysis contained in the Final Statewide Oil and Gas EIS -January 2003 (Final CBM EIS) jointly prepared by the Bureau of Land Management, Montana Department of Environmental Quality, 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. Additionally, this analysis tiers into and incorporates the analysis contained in the DNRC Trust Land Management Division (TLMD) EA for this project, which was completed by staff February 10, 2004 and approved by the Land Board on February 17, 2004. This project level EA addresses site-specific resources and impacts not covered in the 2003 EIS or the 1989 EIS.

Proposed Action – Title: Fidelity Exploration & Production Company Dry Creek Plan of Development.

Location of Proposed Action

The proposed Plan of Development (POD) includes Coal Bed Natural Gas (CBM) development drilling in sections 13, 25, and 36 of Township 9 South, Range 39 East, MPM, Big Horn County Montana. Eleven wells are located on State Trust Lands and three wells are located on private land. Twenty-four wells located on federal land were submitted for approval by the Bureau of Land Management. The proposed wells lie within the existing CX Field. The TLMD February 10, 2004 EA includes a map depicting the area proposed for development.

Purpose and Need

The proposed action involves the further development of CBM resources known to exist within the current CX Field and to expand CBM development to lands reasonably believed productive of these resources. The lands involved are a mix of private, state-owned and federal lands, 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 government and public schools, as recipients of tax receipts and, in the case of state-owned lands, income to the school trust accounts. Natural gas has become a fuel of choice for environmental reasons and demand as well as the price received for this commodity has increased substantially during recent years.

The assessment will determine the applicability and sufficiency of the overarching Environmental Impact Statements, the extent to which the EIS's adequately describe and mitigate impacts and the need for appropriate site-specific mitigation.

Description of the Proposed Action

Fidelity Exploration & Production Company proposes to expand the CX Field by drilling approximately 38 new wells. Of these wells, 3 fee wells and 11 state wells are under the regulatory jurisdiction of the MBOGC. The descriptions of State wells are in the TLMD EA and the three fee wells are located in section 13 and 25 of T9S. R39E.

The Proposed Action includes use of existing infrastructure for the proposed wells. Construction of about 1.9 miles of two-track access road, and about 2.6 miles of new corridor with co-located water, gas, and power lines is proposed. About 2 miles of buried power cable will be laid. Existing outfalls will be used for water discharge and some enlargement of existing ponds may be necessary to provide storage capacity for managed irrigation: up to an additional 250 acre-feet of impoundment may be constructed. Water will be supplied to Spring Creek Coal for industrial purposes as well as provided to the CX Ranch for livestock water. Wells will be drilled, one per coal bed, on shared sites with up to four wells located on a common well site. The operator proposes to co-locate electric power, gas and water lines, and roads to the extent possible to minimize disturbance.

Wells are drilled with truck mounted water well type rigs; because this type of rig can be set up on uneven terrain, the surface is generally not bladed or a pad site constructed unless topography requires it. A 100' square area is typically mowed to accommodate the rig and small reserve pits, about 6' x 15' x 15' are constructed to serve all of the drilling wells on that site. A total of about ½ acre is required for the three to five wells drilled on a site (the actual number of wells per site depends upon the number of coal seams to be developed at that site). Wells are completed using 7" steel well casing set and cemented to surface from the top of the target coal bed. Small diameter tubing and an electric submersible pump are installed in the well. Topsoil is stripped and saved from any surface disturbing operation and used for reclamation of the disturbed area.

Wells will be equipped with telemetry systems to reduce traffic to individual sites by pumpers and travel to well sites during wet or soft ground conditions will be restricted to emergencies.

Well heads will be equipped with 5' frost boxes painted an unobtrusive color and fenced to protect the facility from damage by cattle. Electronic flow devices will measure natural gas production and water will be measured through ultrasonic flow meters; a panel installed at the well starts and stops the pump based on fluid level measurement.

Fidelity has submitted a surface use plan, water management plan, and reclamation plan as required in the March 26th MBOGC Record of Decision. The Plan of Development for this

project includes a number of maps and exhibits that are available for public inspection at the MBOGC offices in Helena and Billings.

Hearing Process and Public Involvement

The MBOGC held a public hearing on Docket 440-2003 Dry Creek Plan of Development, on December 4, 2003 at the Billings Professional Club, Sheraton Hotel, Billings, MT. Public hearings are required for expansion of CBM projects when well density is proposed to be increased from an exploration density of one well per 640 acres to a project level density. Both requirements under the 2003 Record of Decision (ROD) and Order 99-99 apply to this proposed action. Order 99-99 was established by the MBOGC to recognize the DNRC's Controlled Ground Water Area for the Powder River Basin and to establish minimum requirements for information to be considered at a public hearing. Fidelity's application complies with the information submission requirements of both the ROD and Order 99-99.

Public Hearings are advertised in the Helena Independent Record and the official newspaper of the county in which the proposed operations are to take place. Additionally notice of the public hearing is mailed to the MBOGC's mailing list and a notice is published on its web site. The applicant, in matters affecting the permanent spacing of wells, must give actual notice to affected owners no less than 20 days prior to the hearing; order 99-99 requires notice to record water rights holders within one-half mile of the external boundaries of the project area.

Other Regulatory Requirements

Table 1-1, page 1-14 of the Final CBM EIS identifies the applicable permits and reviews for CBM activities and the agencies responsible for each; Table 1-2 of the same document identifies the permissible activities associated with CBM development. Approval of Plans of Development must be made by the U.S. Bureau of Land Management for Federal lands and by the MBOGC for state and private lands under the preferred alternative adopted by both agencies in the Final CBM EIS. In this case, most of the wells under MBOGC jurisdiction are on state managed lands and the Trust land Management Division procedures for CBM drilling require separate approval action by the state Land Board. Water discharge permits, air quality permits and storm water discharge permits are the responsibility of the MT Department of Environmental Quality.

Alternatives

A no action alternative was considered in the 2003 CBM EIS. Under this alternative some of the wells in this proposed action could be drilled; the no action alternative considered wells authorized in the CX project area under the Northern Plains Resource Council-MBOGC settlement agreement to be the only CBM development that could occur under the no action alternative. Taking no action on the current proposal would prohibit the lawful recovery of private property (i.e.: natural gas) and would place the state school trust lands

in jeopardy of drainage of mineral resources by wells not located on land under jurisdiction of the state.

Affected Environment and Environmental Consequences

Fidelity Exploration & Production Company's Dry Creek Plan of Development cover lands in southern Big Horn County, Montana, immediately north of the Montana-Wyoming border. The area is in the northwestern portion of the Powder River Basin and lies in the upper Tongue River drainage basin. The project lies west of the Tongue River and includes the drilling of approximately 38 wells, about 35% of which will be located on state or private minerals. Surface use agreements and water well mitigation agreements have been accepted by, or offered to, all private landowners in the project area.

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 mine are north and east of the proposed project area

Air pollution is regulated under the federal Clean Air Act and under Montana laws implemented by the Montana Department of Environmental Quality (MDEQ). The Northern Cheyenne Reservation lies approximately 20+ miles north of the proposed expansion 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 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 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 CBM 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. This proposed POD however, does not include new compressor facilities as existing compression is adequate to meet the anticipated volume of new production.

Mitigation proposed by the operator includes implementation of speed limits on unpaved roads to reduce dust emissions, installation of equipment to minimize travel to individual well sites, and use of natural gas to fire compressor engines. Gas venting is minimized by a MBOGC regulatory requirement prohibiting venting of commercial quantities of gas. Because substantial infrastructure already exists in CX field extensive well testing prior to pipeline hookup is not anticipated. Some gas emission from boreholes drilled as

monitor wells, mineral exploration holes and other holes of unknown origin may occur. 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 CBM wells, although a temporarily intense activity is of relatively minor concern for air impacts because of the limited time drilling is actually occurring. The water well rigs employed are smaller than those commonly used to drill shallow gas wells in the state and do not have high horsepower engines. Typically no more than one day is 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 compressor engines.

Water Quality and Quantity

The Dry Creek Project is in the upper Tongue River watershed in an area that receives an average of about 12" of annual precipitation. The project area is approximately bisected by the Squirrel Creek drainage. As required in the MBOGC ROD, a water management plan for the project has been prepared by WWC Engineering and is incorporated by reference herein.

Fidelity expects the initial water production from the new wells proposed in this project will be about 10 gallons per minute (GPM) declining at about 20% per year based upon experience with existing production in the area. The proposed development will initially add a maximum of about 380 GPM of produced water to the current field water production. Most of the produced water from the proposed Dry Creek wells will be discharged to the Tongue River under MDEQ Permit MT 0030457. This permit is limited to 1600 GPM, although current discharge for existing wells is about one-half of the permitted maximum. About 190 GPM (yearly average) may be provided to the Spring Creek Mine for industrial use. Some produced water may be directed to existing storage and may be used in proposed irrigation projects. An existing off-channel impoundment may be enlarged to serve the Dry Creek project. A proposed dam or reservoir with an impounding capacity of 50 acre-feet or more measured at the maximum normal operating pool is subject to a DNRC (Water Resources Division) determination of whether the dam or reservoir is a high-hazard dam. If the dam is determined to be high-hazard, its construction must be permitted by DNRC. Any new or re-constructed off channel impoundments will be located in upland locations and sited to avoid interfering with natural runoff channels and to avoid capture of water that would otherwise travel to downstream water rights holders.

Water well mitigation agreements have been offered to all owners of registered wells/springs within one mile of the project boundaries; all such affected owners have signed the agreement. An inventory of springs and water wells is attached to the water management plan; 19 wells exist in the project area, all but four are registered to Consolidation or Decker Coal Company.

The Hydrology and Groundwater section of the CBM EIS discusses the Powder River Basin groundwater and stratigraphy in detail. The stratigraphic section in the project area includes the shallow alluvial aquifers under and near stream channels, the coal aquifers, and the impermeable aquitards that impede or eliminate vertical movement of water between coal aquifers. Monitoring of groundwater withdrawals and water level is required for the CX field and annual reports are submitted to the MBOGC as required. These annual reports show the effect of water withdrawal as well as the compartmentalized nature of the coal aquifers due to faulting in the area. Many faults are surface evident and have been mapped by geological researchers. These “down to the basin faults” retard or prevent the movement of water (and gas) across the fault boundary; as a result, draw down of water pressure in the aquifer is not uniform. Groundwater chemistry is described in the water management plan.

The proposed water management plan relies on several methods of water management. The impacts of each are described in the CBM EIS. Water well mitigation agreements effectively guarantee replacement of water if the well owner is adversely impacted. The nature of the groundwater accumulation in the project area minimizes any impact water withdrawn from coal seams would have on users of shallow alluvial aquifers.

Water discharge is authorized by MDEQ, under the standards in place at the time the permit is issued; MBOGC’s authorization for approval of the Dry Creek Project does not constitute approval to discharge or to discharge in excess of the amount authorized by MDEQ. Overall impacts to water quality due to discharge of CBM water (using the CX Field as the water quality analog) to the Tongue River were thoroughly discussed in the CBM EIS. The Board of Environmental Review has adopted water quality standards for electrical conductivity and sodium absorption ratio. The CBM EIS analyzed a number of scenarios bracketing the current E.C. and SAR standards, and any future discharge permits would be required to meet the standards, therefore the approval of the proposed action will 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 project area; the Fort Union is the older of these two Tertiary Period formations and is composed of sandstone, siltstone, clay shale and localized impure limestone and lignite while the Wasatch Formation is composed of light colored massive sandstones, drab colored shale and lignite. Erosion by wind and water in the project area has created a rugged topography where the more resistant sandstone and scoria form hills and buttes. Increased precipitation during the period of glacial retreat increased surface water flows and accelerated erosion, helping to create high inactive alluvial terraces and gravel capped benches.

Soils in the project area are described in the Soils Appendix to the Final CBM EIS and consist primarily of silty clay loam with soil K-factors in the 0.43 to 0.49 range. Soil SAR (Sodium Absorption Ratio) ranges from 5 to 30 in the 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 sagebrush-grassland on the flatland areas, conifers on some of the north facing slopes, and cottonwood trees in the bottomland near the river. The operator proposed intensively managed irrigation on land owned by the surface owner, Consol, as part of its water management plan.

The proposed activity includes surface disturbance required to construct gas and water handling infrastructure, drill wells and construct access roads. Less than 2 miles of new 2-track road and no new all-weather road will be constructed as described in the POD. Applicant has located proposed activities to avoid steep slopes and significant construction that would require removal of trees. Specific final road locations, surfacing requirements and final or intermediate reclamation of disturbed areas and roads on private land is subject to consultation between the operator and the landowner. However, MBOGC rules require stockpiling of topsoil and prompt re-vegetation of disturbed areas. Reseeding of disturbed areas will be done with a seed mix acceptable to the owner; without specific instructions from the landowner, BLM or NRCS recommended seed mixtures would be acceptable. Much of the area include in the Dry Creek POD is managed by the Trust Land Management Division of the DNRC. Site specific stipulations and management requirements are discussed in TLMD's environmental assessment for this project. No important cumulative or irreversible impacts on land use or soils are expected from the proposed action. The operator is responsible for construction of erosion /sedimentation controls during construction and production operations.

Health Hazards/Noise

Coal Bed Natural Gas produced in this area of Montana contains no H₂S or other contaminant that could impact public safety and health. The almost pure methane produced from the CX Field CBM wells is lighter than air and does not accumulate in low areas; therefore there is little exposure hazard to the public. Closed buildings and frost boxes around wellheads may allow accumulations of gas, however these facilities are generally off-limits to non-operating personnel. CBM operators have strictly enforced no-smoking policies and other operating procedures to avoid fire or explosion hazards to their employees or authorized visitors. Battery site and compressor buildings are equipped with combustible gas detectors.

Noise due to drilling CBM wells is of a short term nature and of relatively low level as the water well type drilling rigs used are smaller and have fewer engines than conventional oil or gas drilling rigs (the 1989 Programmatic EIS describes typical drilling rigs used in Montana); CBM rigs commonly operate only during daylight hours. Field compressors are a source of noise and operate on a continuous basis; construction of new field compressor sites is not proposed in this action, however.

In addition to human residents, noise could affect wildlife. The Final CBM EIS and especially the Biological Opinion Appendix discuss impacts to Threatened and Endangered Species (T&E Species) from noise disturbance. The relatively short duration drilling operation and construction activities may have noise levels that could impact

noise sensitive locations; however ongoing well production activity and associated maintenance activities would have little noise impact. The operator has located battery facilities and field and main compressors to avoid identified habitat. The operator has also agreed to avoid construction or drilling activities within a quarter mile of sage grouse or sharp tail grouse leks during the period March 1st to June 15th to protect these species from noise disturbance during this critical period.

Wildlife/Recreation

Hayden-Wing Associates of Laramie, WY prepared the 2002-2003 Baseline Wildlife Inventory for the CX Ranch including the area proposed for development. The BOGC does not have authority to require private landowners to implement any special wildlife stipulations, acquiesce to third party surveys, or provide habitat for wildlife, however the operator has done a baseline survey that includes the entire project area and TLMD personnel; have performed site review and analysis of the state managed area. Bald Eagles have been observed along the Tongue River bottomland, using the large cottonwood trees for nesting/roosting; however, only one active Eagle nest is located in the Montana portion of the project area. None of the wells proposed are near this nest.

There are no known sage grouse leks that would be impacted by development activities in the project area. Well and battery sites as proposed avoid disturbing prairie dog towns and any associated potential mountain plover habitat area in the project.

There are no established recreation sites in the project area. Dispersed recreation may occur, especially during hunting season, for a portion of the area. Private surface owners control access to much of the area; although federally controlled minerals underlie about half of the area, most of the surface is privately owned. State section 36 is managed by TLMD of DNRC.

Historical/Cultural/ Paleontological Resources

The Ethnographic Overview of Southeast Montana prepared by Peterson and Deaver for the Final CBM EIS provides a current inventory of historical and cultural sites of the project area obtained from the Montana Historical Preservation Office database. There do not appear to be any sites on or eligible for the National Register of Historic Places that would be impacted by the proposed action. The MBOGC cannot require archeological/cultural surveys on private property, as the underlying laws generally do not apply to private property. However, TLMD has reviewed the POD and identified one site which will be mitigated by avoidance. No other sites were identified which could be impacted by the proposed action. Although there are few sites listed in the Ethnographic Overview and the possibility of encountering cultural resources is rare, the operator agrees that if cultural or paleontological resources are discovered during construction, construction will be halted and the surface owner will be consulted as to the disposition of any resources found. A similar stipulation applies to the state owned lands.

Social/Economic

Social and economic impacts of CBM development are discussed in the 2003 CBM EIS and in the Socioeconomic Appendix to the EIS. The proposed action involves expansion of an existing project, additional demands on governmental services, impacts on county facilities and significant relocation or population increases are not expected to result from approval of the proposed action. Increase in natural gas production from the project area is likely, resulting 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 gas as both a space heating fuel and as a fuel for generation of electricity. Approval of the proposed action will increase gas reserves and production in Big Horn County.

Remarks/Special Concerns

The proposed action involves drilling of a total of 38 wells, of which 3 are fee (on privately owned minerals) wells and 11 are state (on state owned minerals) wells. An environmental assessment is being prepared by the Bureau of Land Management, Miles City Field Office to cover the remaining 24 project wells on federal minerals. The Proposed action includes construction of infrastructure needed to produce the proposed wells.

Monitoring of water withdrawals and reporting of production is required as part of the MBOGC's regulatory program. Additionally, key wells in the Dry Creek POD area will be added to the monitoring requirements established for the original CX project. The area will be included in the annual groundwater monitoring report and the data for the new wells added as it is obtained. The Technical Advisory Committee established by DNRC's Controlled Groundwater Area for the Powder River Basin reviews the monitoring plan and report(s). The applicant has obtained surface use agreements and water well mitigation agreements for the project area, as required.

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 lands under its jurisdiction from drainage by wells permitted by agencies/lands not under its jurisdiction. This project area includes lands not under MBOGC jurisdiction (federal lands) and wells in Wyoming that may cause drainage from Montana State and private landowners unless the offsetting protective wells are promptly permitted and drilled.

Summary: Evaluation of Impacts and Cumulative effects

The 2003 CBM EIS identified and analyzed the cumulative effects of CBM development in the Powder River Basin region. The CX field and environs formed the analogue for analysis used in the EIS, as it is the only source of CBM project level data available in Montana. The EIS is directly applicable to the proposed action and accurately identifies

impacts and mitigation appropriate to this analysis. The following table summarizes impacts and mitigation applicable to this project:

Resource	Summary of Impacts and Mitigation
Air Quality	Minimal impact from well drilling operations due to short duration; air permit requirements mitigate impacts from significant point sources: voluntary speed limits, minimization of traffic to individual wells mitigates fugitive dust impacts. This proposed action does not significantly increase air quality impacts.
Water Quality and Quantity	Project does not increase surface discharge beyond that currently permitted. MDEQ has adopted numeric standards for discharge to protect downstream uses should any additional discharge be proposed in the future. No new off channel impoundments are proposed although enlargement of existing impoundments may be required in the future. MBOGC inspectors will periodically monitor sites. Cumulative effects on water quantity is limited to the coal zones being produced; water well mitigation agreements protect groundwater appropriators; DNRC Controlled Ground Water Area order outlines jurisdiction and procedure for the area. Overall impacts to water quantity and quality are mitigated below the level of significance for the proposed action.
Soils, Vegetation, Land Use	Short-term damage to vegetation and some disruption of existing land use is expected. The operator has proposed a minimum number of surfaced roads; MBOGC requirements for prompt re-vegetation of disturbed areas minimize overall and cumulative effects. Operator has negotiated surface use agreements that cover land uses proposed in the project area. Surface impacts on State land are subject to review and approval of DNRC. No significant impact to these resources is expected.
Health Hazards/Noise	No significant impacts are expected due to operator's selection of sites to minimize

	impacts. Operator has substantive programs intended to protect safety of workers and public.
Wildlife/Recreation	Operator has moved well sites and infrastructure to avoid wildlife nesting/mating grounds. No wells are proposed within ½ mile of active eagle nests, and sage and sharptail grouse leks are not impacted. 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. With the voluntary mitigation, wildlife impacts due to approval of the proposed action are not considered significant or long term.
Historical/Cultural/ Paleontological Resources	Cultural and historical resource surveys have been conducted on much of the project area including state-owned land. 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. Ethnographic survey prepared for the EIS indicates paucity of sites eligible for National Register status in this area; with the voluntary mitigation, no significant impact on these resources is expected from the proposed action.
Social/Economic	Some short-term impacts to private landowner/residents of the area are expected; some increase in economic activities for area business and jobs for area residents is likely. Positive impact to local tax base is likely. 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 project approval.

The operator (Fidelity) has proposed voluntary mitigation efforts that are intended to reduce overall impacts of the proposed project. Much of the project area is under the management by Trust Land Management Division of DNRC which has developed specific mitigation and lease stipulations to protect state resources. This combination of 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 Dry Creek Plan of Development (2003) 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):

_____/s/_____
David Ballard, Chairman

Date: 5-19-04

Prepared by (MBOGC):

_____/s/_____
Thomas P. Richmond, Administrator

Date: 5-19-04

Contacts and References:

- Final Statewide Oil and Gas EIS, adopted March 2003 (MBOGC, MDEQ, BLM)
- Final Programmatic EIS, Adopted December 1989 (MBOGC)
- Plan of Development – Tongue River Dry Creek Project , 2003 (Fidelity Exploration and Production)
- Montana 2002 and 2003 Baseline Wildlife Inventory (Hayden-Wing Associates)
- Environmental Assessment Tongue River – Dry Creek Project, Trust Land Management Division, DNRC, Draft - January 2004, Final - March 2004