United States Department of the Interior

BUREAU OF INDIAN AFFAIRS
Great Plains Regional Office
115 Fourth Avenue S.E.
Aberdeen, South Dakota 57401

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IN REPLY REFER TO:
DESCRM
MC-208

JUL 27 2010

MEMORANDUM

TO: Superintendent, Fort Berthold Agency

FROM: Acting Regional Director, Great Plains Region

SUBJECT: Environmental Assessment and Finding of No Significant Impact

In compliance with the regulations of the National Environmental Policy Act (NEPA) of 1969, as amended, for one proposed exploratory oil/gas well pad by XTO Energy, named Beaks/Huntsmedicine 24X-8 on the Fort Berthold Reservation, an Environmental Assessment (EA) has been completed and a Finding of No Significant Impact (FONSI) has been issued.

All the necessary requirements of the National Environmental Policy Act have been completed. Attached for your files is a copy of the EA, FONSI and Notice of Availability. The Council on Environmental Quality (CEQ) regulations require that there be a public notice of availability of the FONSI (1506.6(b)). Please post the attached notice of availability at the Agency and Tribal buildings for 30 days.

If you have any questions, please call Marilyn Bercier, Regional Environmental Scientist, Division of Environment, Safety and Cultural Resources Management, at (605) 226-7656.

Attachment

cc: Marcus Levings, Chairman, Three Affiliated Tribes (with attachment)
Perry "No Tears" Brady, Tribal Historic Preservation Officer (with attachment)
Roy Swalling, Bureau of Land Management (with attachment)
Jonathon Shelman, Corps of Engineers (with attachment)
Dawn Charging, One Stop Shop, Fort Berthold Agency

ENVIRONMENTAL ASSESSMENT

United States Bureau of Indian Affairs

Great Plains Regional Office
Aberdeen, South Dakota

XTO Energy, Inc.

Beaks/HuntsMedicine 24X-8 Exploratory Well Site

Fort Berthold Indian Reservation

July 2010

For information contact:
Bureau of Indian Affairs, Great Plains Regional Office
Division of Environment, Safety and Cultural Resources Management
115 4th Avenue SE
Aberdeen, South Dakota 57401
(605) 226-7656

Finding of No Significant Impact

Beaks/HuntsMedicine 24X-8 Exploratory Well Site

Fort Berthold Indian Reservation, Dunn County, North Dakota

The U.S. Bureau of Indian Affairs (BIA) received a proposal for one oil/gas well pad, an access road, and related infrastructure on the Fort Berthold Indian Reservation to be located in the SE¼SW¼ of Section 8 and the NW¼ of Section 17 in Township 149N and Range 91W within Dunn County, North Dakota. Associated federal actions by BIA include determinations of effect regarding cultural resources, approvals of leases, rights-of-way and easements, and a positive recommendation to the Bureau of Land Management regarding the Application for Permit to Drill.

Potential of the Proposed Action to impact the human environment was analyzed in the attached Environmental Assessment (EA), as required by the National Environmental Policy Act. Based on the recently completed EA, I have determined the proposed project will not significantly affect the quality of the human environment. No Environmental Impact Statement is required for any portion of the proposed activities.

This determination is based on the following factors:

1. Agency and public involvement was solicited and environmental issues related to the proposal were identified.
2. Protective and prudent measures were designed to minimize impacts to air, water, soil, vegetation, wetlands, wildlife, public safety, water resources, and cultural resources. The remaining potential for impacts was disclosed for both the Proposed Action and the No Action alternatives.
3. Guidance from the U.S. Fish and Wildlife Service has been fully considered regarding wildlife impacts, particularly in regard to threatened or endangered species.
4. The Proposed Action is designed to avoid adverse effects to historic, archaeological, cultural and traditional properties, sites, and practices. The Tribal Historic Preservation Officer has concurred with BIA's determination that no historic properties will be affected.
5. Environmental justice was fully considered.
6. Cumulative effects to the environment are either minimal or are mitigated.
7. No regulatory requirements have been waived or require compensatory mitigation measures.
8. The proposed project will improve the socio-economic condition of the affected Indian community.

Acting Regional Director

7/27/10
Date

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ACRONYMS AND ABBREVIATIONS

AAQM	Ambient Air Quality Monitoring
AIRFA	American Indian Religious Freedom Act
APD	Application for Permit to Drill
APE	Area of Potential Effect
BIA	U.S. Bureau of Indian Affairs
BLM	U.S. Bureau of Land Management
BMP	Best management practices
°C	Celsius degrees
CEQ	Council of Environmental Quality
CFR	Code of Federal Regulations
CO	Carbon Monoxide
E	East (Easting)
EA	Environmental Assessment
e.g.	For example
EIS	Environmental Impact Statement
EJ	Environmental Justice
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
°F	degree Fahrenheit
FBIR	Fort Berthold Indian Reservation
FEL	From East [section] Line
FNL	From North [section] Line
FONSI	Finding of No Significant Impact
FSL	From South [section] Line
FWL	From West [section] Line
GPS	Global Positioning System
H_2S	Hydrogen Sulfide
HPRCC	High Plains Regional Climate Center
HUC	Hydrologic Unit Code
in	Inches
i.e.	that is or such as
MHA Nation	Three Affiliated Tribes of the Mandan, Hidatsa, and Arikara Nation
MTNHP	Montana Natural Heritage Program
N	North (Northing)
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
ND	North Dakota
NDDA	North Dakota Department of Agriculture
NDDH	North Dakota Department of Health
NDIC	North Dakota Industrial Commission
NDPR	North Dakota Parks and Recreation
NE	Northeast
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxide
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NRO	Natural Resource Options, Inc.
NTL	Notice to Lessees
NWR	National Wildlife Refuge
O_3	Ozone
Pb	Lead

ACRONYMS AND ABBREVIATIONS

PBS&J	Post, Buckley, Schuh, and Jernigan
PM	Particulate Matter
PPB	Parts Per Billion
PPM	Parts Per Million
R	Range
Reservation	Fort Berthold Indian Reservation
ROW	Right-of-way
S	South
SAAQS	State Ambient Air Quality Standards
SARA	Superfund Amendments and Reauthorization Act
SHPO	State Historic Preservation Office
SMU	Soil Map Unit
SO_2	Sulfur Dioxide
SYN	Synonym
T	Township
TCP	Traditional and Cultural Property
TE	Threatened and Endangered Species
THPO	Tribal Historic Preservation Officer
$\mu g/m^3$	Micrograms per cubic meter
µmhos/cm	Microsiemens per centimeter
US	United States
USA	United States of America
USC	United States Code
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UTM	Universal Transverse Mercator coordinate system
VOC	Volatile Organic Compound
W	West
XTO	XTO Energy, Inc.

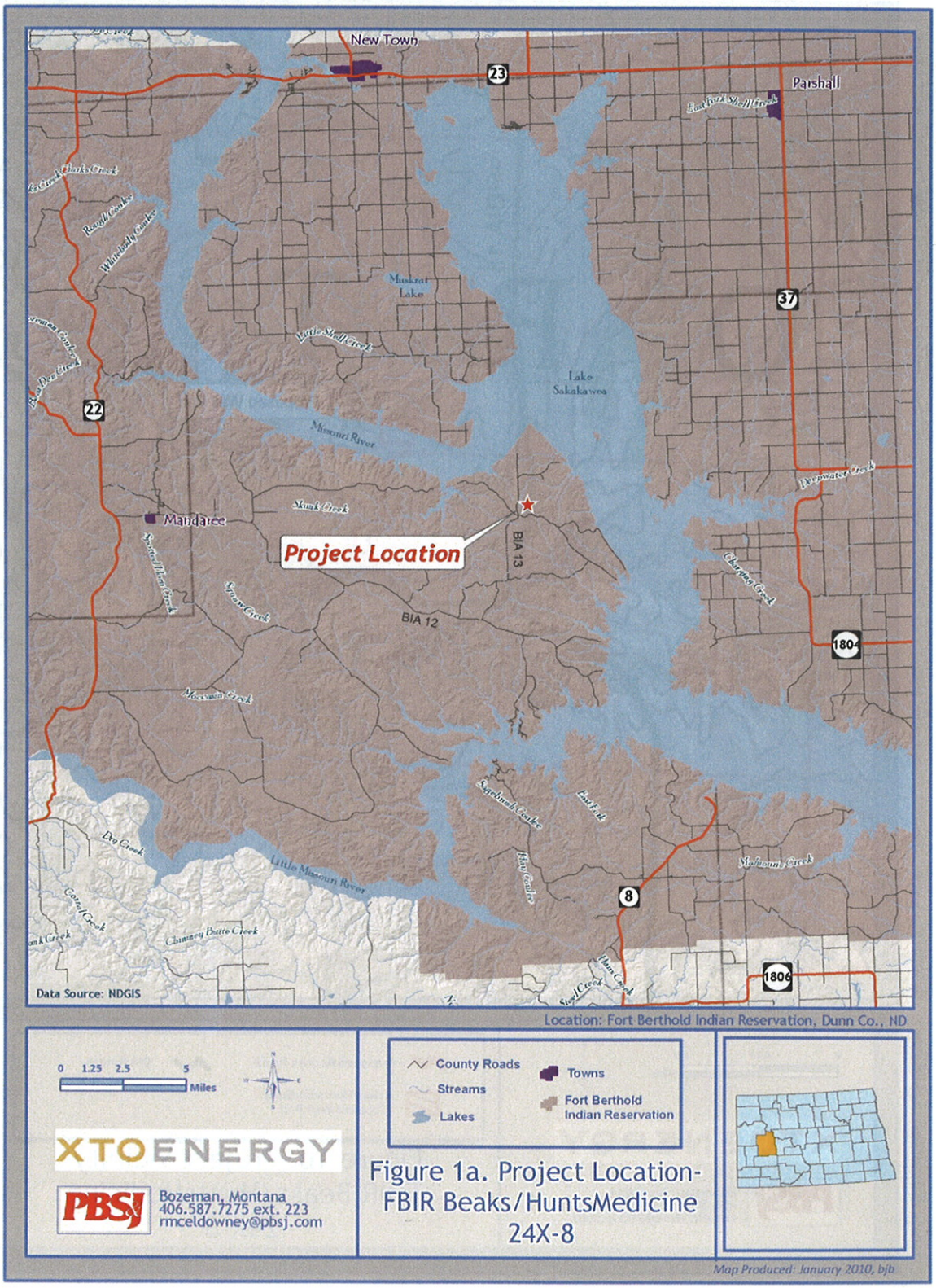
1.0 Purpose and Need for the Proposed Action

XTO Energy, Inc. (XTO) is proposing to drill up to twelve (12) oil wells at one well pad location on the Fort Berthold Indian Reservation (Reservation) to evaluate and potentially develop the commercial potential of mineral resources (Figures 1a and 1b). The proposed well pad location is on land held in trust by the United States in Dunn County, North Dakota. The U.S. Bureau of Indian Affairs (BIA) is the surface management agency for potentially affected tribal lands and individual allotments.

The proposed project is intended to explore the commercial potential on the Reservation of the Bakken oil pool (hereafter simply referred to as the "Bakken"), as defined by the North Dakota Industrial Commission, Oil & Gas Division. Because leasing and development of mineral resources offer substantial benefits to both the Three Affiliated Tribes of the Mandan, Hidatsa, and Arikara Nation (MHA Nation) and to individual tribal members, economic development of available resources is consistent with BIA's general mission. The proposed activities are consistent with efforts to improve self-governance and economic stability pursuant to the Indian Reorganization Act (Wheeler-Howard Act of 1934, as amended). Oil and gas exploration and development activities are conducted under the authority of the Indian Mineral Leasing Act of 1938 (25 United States Code [USC] 396a, *et seq.*), the Indian Mineral Development Act of 1982 (25 USC 2101, *et seq.*), the Federal Onshore Oil and Gas Royalty Management Act of 1982 (30 USC 1701, *et seq.*), and the Energy Policy Act of 2005 (Public Law 109-58, 119 Statute 594). BIA actions in connection with the proposed project are largely administrative and include 1) approval of leases, easements and rights-of-way; 2) determinations regarding cultural resource effects; and 3) a recommendation to the Bureau of Land Management (BLM) regarding approval of the Application for Permit to Drill (APD).

These proposed federal actions require compliance with the National Environmental Policy Act of 1969 (NEPA) (42 USC 4321, *et seq.*) and regulations of the Council on Environmental Quality (CEQ) (40 Code of Federal Regulations [CFR] 1500–1508). Additionally, the proposed project would be subject to agency review in accordance with Executive Order 13212 – *Actions to Expedite Energy-Related Projects.* Analysis of the proposed project's potential to impact the human environment is expected to both substantiate and explain federal decision-making. The APDs submitted to the BLM by XTO are included with this document; they describe developmental, operational, and reclamation procedures and practices that contribute to the technical basis of this Environmental Assessment (EA). The procedures and practices described in the application are critical elements in both the project proposal and the BIA's decision regarding environmental impacts. This EA will result in either a Finding of No Significant Impact (FONSI) or a decision to prepare an Environmental Impact Statement (EIS). The format and content of this EA complies with the guidance as per coordination with the BIA Great Plains Regional Office, Aberdeen, South Dakota.

There are several components to the proposed action. Both new and improved roads are needed to access the proposed well pad. The well pad would be constructed to accommodate drilling operations. A closed-loop system may be used for wells drilled on staggered time intervals; for wells drilled simultaneously a pit for drilling cuttings would be constructed, used, and reclaimed. Drilling and production information could result in long-term commercial production at the site, in which case supporting facilities would be installed. The working portion of the well pad and the access road would remain in place during commercial production. All project components would eventually be abandoned and reclaimed, as specified in this document and the APDs and according to any conditions imposed by the BIA or BLM, unless formally transferred with federal approval to either the BIA or the landowner. The proposed wells are exploratory, in that results could also support developmental decisions on other leases in the surrounding area, but this EA addresses only the installation and possible long-term


New Town
Parshall
Mandaree
Muskrat Lake
Lake Sakakawea
Missouri River
Little Missouri River
Project Location
BIA 13
BIA 12
23
37
22
8
Data Source: NDGIS
Location: Fort Berthold Indian Reservation, Dunn Co., ND
0 1.25 2.5 5 Miles
County Roads
Streams
Lakes
Towns
Fort Berthold Indian Reservation
XTOENERGY
PBSJ
Bozeman, Montana
406.587.7275 ext. 223
rmceldowney@pbsj.com
Figure 1a. Project Location-
FBIR Beaks/HuntsMedicine
24X-8
Map Produced: January 2010, bjb

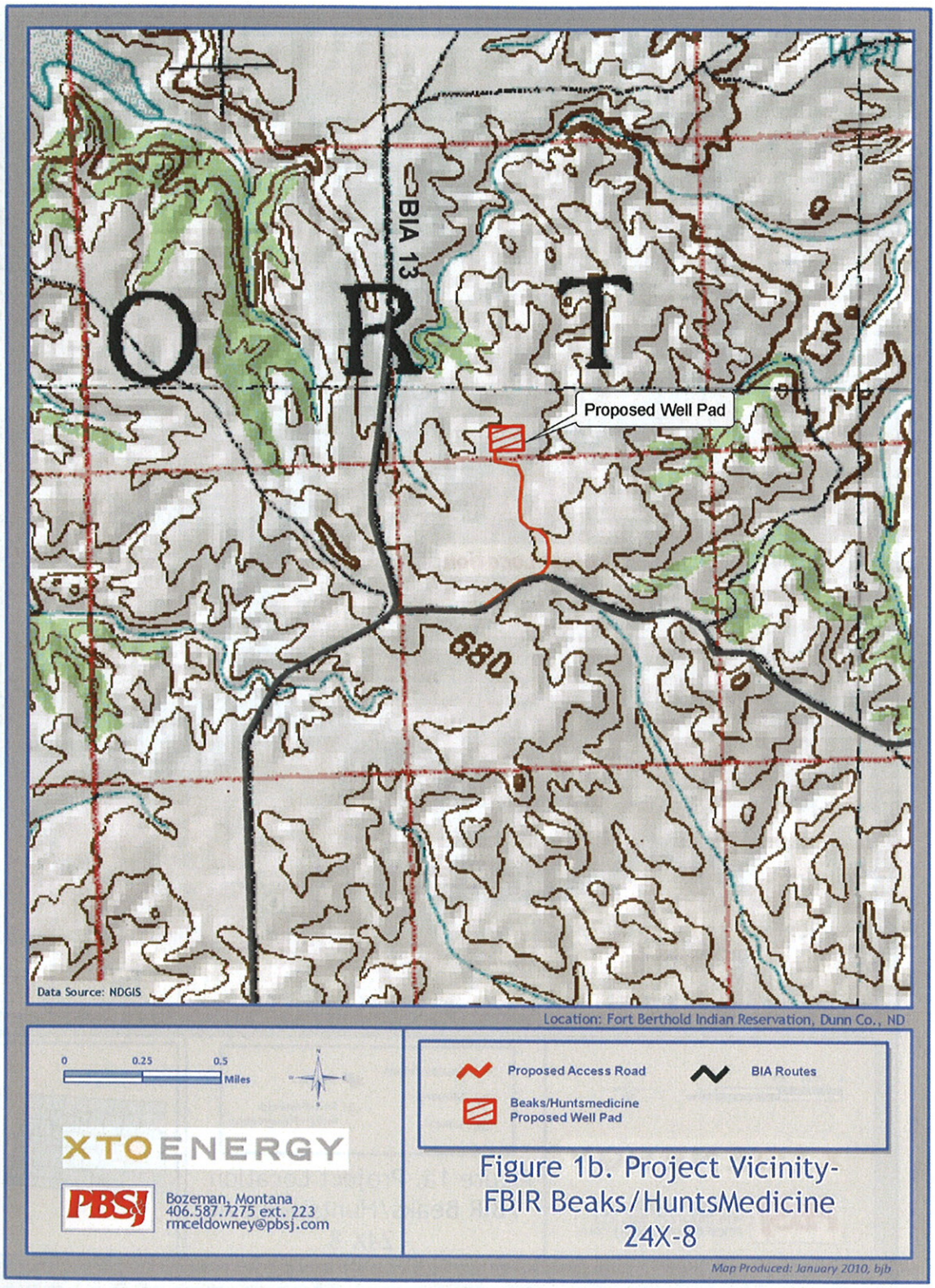


Figure 1b. Project Vicinity- FBIR Beaks/HuntsMedicine 24X-8

operation of twelve (12) wells and directly associated infrastructure and facilities. Additional NEPA analysis, decisions, and federal actions would be required prior to any other development. Any authorized project would comply with all applicable federal, state, and tribal laws, rules, policies, regulations, and agreements. No construction, drilling, or other ground-disturbing operations would begin until all necessary leases, easements, surveys, clearances, consultations, permissions, determinations, and permits are in place.

2.0 Proposed Action and Alternatives

The **No Action Alternative** must be considered within an Environmental Assessment. If this alternative is selected, the BIA would not approve leases, rights-of-way or other administrative proposals for one or more of the proposed projects. Applications for Permit to Drill for the listed well location would not be approved. Current land use practices would continue at the No Action site. Development under other oil and gas leases would remain a possibility. The No Action Alternative is the only available or reasonable alternative to the specific proposal considered in this document.

This document analyzes the impacts of the Proposed Action Alternative – exploratory oil wells on allotted surface and mineral estate within the boundaries of the Fort Berthold Indian Reservation in Dunn County, North Dakota. The proposed twelve wells would test the commercial potential of the Bakken. Site-specific actions would or might include several components, including construction of an access road, construction of a well pad, drilling operations, production facilities, tanker traffic, implementation of Best Management Practices (BMPs), and reclamation.

The specific pad location and access road route were determined during pre-on-site inspections by the proponent, the civil surveyor, the environmental consultant, the BIA Environmental Specialist, and the Tribal Historic Preservation Office (THPO) monitor on September 1, 2009. Preliminary resource surveys were conducted at the time of pre-on-site inspections to determine potential impacts to cultural and natural (i.e., biological and physical) resources. The locations were inspected in consideration of topography, location of topsoil/subsoil stockpiles, natural drainage and erosion control, flora, fauna, habitat, historical and cultural resources, and other surface issues. The final locations were determined in consideration of the previously identified issues. Avoidance measures and other protective measures were incorporated into the final project design to minimize impacts to evaluated resources, as appropriate (see Section 2.9). More in-depth cultural and natural resource surveys were also conducted later in September 2009. The proposed well pad and access road were surveyed on September 15, 2009. During the inspections, the BIA gathered information needed to develop site-specific mitigation measures that would be incorporated into the final APD.

All construction activities would follow lease stipulations, practices, and procedures outlined in the APD and in guidelines and standards from the book, *Surface Operating Standards for Oil and Gas Exploration and Development* (also known as the Gold Book; USDI-USDA 2007), conditions described in the EA, and any conditions added by either BIA or BLM. All lease operations would be conducted in full compliance with applicable laws and regulations, including 43 CFR 3100, *Onshore Oil and Gas Orders 1, 2, 6 and 7*, approved plans of operations and any applicable Notices to Lessees. **No pipeline or other gas collection and transport system is included in the Proposed Action.** If pipelines or other collection facilities are deemed necessary then additional NEPA documentation may be required. The remainder of this chapter describes the Proposed Action in detail.

2.1 Field Camp

Self-contained trailers may house a few key personnel during drilling operations, but any such arrangements would be very short-term. No longer-term residential camps are proposed. Construction and drilling personnel would commute to the project site, most likely from Dickinson and/or New Town, North Dakota. Human waste would be collected in standard portable chemical toilets or service trailers located on-site, then transported off-site to a state-approved wastewater treatment facility. Other solid waste would be collected in enclosed containers and disposed of at a state-approved facility.

2.2 Access Road

The proposed access road would be approximately 5,388 feet long, have a maximum disturbed right-of-way width of 66 feet (a maximum of 33 feet on each side of the centerline), and would contain

approximately 8.16 acres. From BIA 13, the proposed access road would follow an existing graveled road for approximately 2,662 feet, which would require road improvements. From the existing graveled road to the proposed well pad, the proposed access road would require roughly 2,727 feet of new road construction. A maximum disturbed right-of-way (ROW) width of 66 feet along the new road would result in approximately of 4.13 acres of new surface disturbance. Signed agreements to allow road construction in affected surface allotments would be part of a ROW agreement that would be procured after approval of the FONSI and APDs. The existing location for the proposed access road is shown in Figures 2.2a and 2.2b.

Figure 2.2a: From BIA County Road 13, the view is east towards the existing graveled road that would be used to access the proposed Beaks/HuntsMedicine 24X-8 well pad. Source: PBS&J, September 16, 2009.

Construction would follow road design standards outlined in the Gold Book (USDI-USDA 2007). A minimum of six inches of topsoil would be stripped from the access road corridor, with the stockpiled topsoil redistributed on the outslope areas of borrow ditches following road construction. These borrow ditch areas would be reseeded as soon as practical with a native seed mixture determined by the BIA. If commercial production is established from a proposed location, the access road would be graveled with a minimum of four inches of gravel and the roadway would remain in place for the life of the well. Details of the road construction are addressed in the Multi-Point Surface Use and Operations Plan in the APD (Appendix A).

Figure 2.2b: From the proposed well pad, the view is south towards the proposed access road. The flagged stake marks the proposed centerline of the road. Source: PBS&J, September 16, 2009.

2.3 Well Pad

The proposed well pad would consist mainly of an area leveled for the drilling rig and related equipment. If a closed-loop system is not used for drilling then the well pad would accommodate a pit excavated for drilling fluids, drilled cuttings, and fluids produced during drilling. The well pad area would be cleared of vegetation, stripped of topsoil, and graded to specifications in the approved APD (Appendix A). Topsoil would be stockpiled and stabilized until disturbed areas were reclaimed and re-vegetated. Excavated subsoils would be used in pad construction, with the finished well pad graded to ensure positive water drainage away from the drill site. Erosion control would be maintained through prompt re-vegetation and by constructing all necessary surface water drainage control, including berms, diversion ditches, and waterbars. Existing conditions of the proposed well pad site are shown in Figure 2.3.

The leveled area of the well pad that is required for drilling and completion operations (including reserve pits for drilled cuttings) would be approximately 400 feet by 550 feet (5.05 acres). Cut and fill slopes on the edge of the pad would result in approximately 0.60 acre of additional surface disturbance, resulting in a total surface disturbance of approximately 5.65 acres. Details of the pad construction and reclamation are diagrammed in the APD (Appendix A).

Figure 2.3: From the south side, the view is north-northwest towards the center of the proposed Beaks/HuntsMedicine 24X-8 well pad.

2.4 Drilling

After securing leases for mineral estates, XTO submitted APDs to BLM on May 6, 2010, proposing to drill from allotted surfaces in the listed locations. The BLM North Dakota Field Office forwarded copies of the APD to BIA's Fort Berthold Agency in New Town, North Dakota, for review and concurrence. BLM will not approve an APD until BIA completes its NEPA process and recommends APD approval. No drilling will begin until a permit has been obtained from the BLM.

Initial drilling would be vertical to an approximate depth ranging from 9,500 to 10,500 feet at the kickoff point where the drill bit will begin to be angled for horizontal drilling. Drilling would become roughly horizontal at an approximate depth of 10,000 to 11,500 feet below the land surface, followed by lateral reaches in the Bakken. Completed wellbores would range in length from 20,000 to 25,000 feet. The minimum setback of 500 feet from section borders would be maintained or achieved through directional drilling.

Rig transport and on-site assembly would take about five to 12 days for the initial well. Drilling operations would require approximately 15 to 40 days to reach the target depth, using a rotary drilling rig rated for drilling operations to a vertical depth of approximately 14,000 to 20,000 feet. For the first 1,500 to 2,500 feet drilled, a fresh water based mud system with non-hazardous additives such as bentonite would be used to minimize contaminant concerns. Water will be obtained from a commercial source for this drilling stage, using about 50,000 to 90,000 gallons of water. This water would be collected and reused as much as possible. A typical drill rig is shown in Figure 2.4.

Oil-based drilling fluids can reduce the potential for hole sloughing while drilling through water-sensitive formations (e.g., shales). After setting and cementing the near-surface casing, an oil-based mud system (approximately 80% diesel fuel and 20% salt water) would be used to drill the vertical and drill curve portions of the hole (9,000 to 10,000 feet long). About 10,000 to 18,000 gallons of salt water and 40,000 to

Figure 2.4: A typical drilling rig and well pad. Source: BIA.

72,000 gallons of diesel fuel would be used to complete drilling to final vertical depth. These fluids are captured and reused at other wells as much as possible. The horizontal portion of the hole would be drilled using a salt water based mud. Roughly 50,000 to 90,000 gallons of salt water would be needed for the horizontal portion of the hole. This water is also reused as much as possible and obtained from a commercial source. Whether a closed-loop system or a reserve pit is used, toxic fluids would be contained in steel tanks placed on plastic/vinyl liners or within the confines of the plastic/vinyl-lined reserve pit, then collected during drilling to separate the cuttings from fluids. Fluids would be recycled back into the steel tanks for re-use. Upon completion of drilling operations at each well, oil-based fluids would again be collected to the extent possible to be recycled and used elsewhere. If a reserve pit is used, any free fluids remaining in the pit would be removed and disposed of in accordance with North Dakota Industrial Commission (NDIC) rules and regulations.

For wells not drilled using a closed-loop system, the cuttings generated from drilling would be deposited in a reserve pit on the well pad. The reserve pit would be lined with an impervious (plastic/vinyl) liner to prevent drilling fluid seepage and contamination of the underlying soil. Liners would be installed with sufficient bedding (either straw or dirt) to cover any rocks, would overlap the pit walls, extend under the mud tanks, and would be covered with dirt and/or rocks to hold it in place. Pits would be fenced on all four sides to protect personnel as well as wildlife and livestock from accidentally falling into the pit. In addition, the entire well pad would be fenced. Fencing would be installed in accordance with guidelines from the Gold Book (USDI-USDA 2007) and maintained until the reserve pit, if used, is backfilled or the site is abandoned.

XTO intends to use a material that would render cuttings into an inert, solid mass. Controlled mixing of cuttings with a non-toxic reagent causes an irreversible reaction that quickly results in a solid granular material. Oily substances are dispersed throughout the material and locked in place; preventing coalescence and release to the environment at significant rates in the future. The alkaline nature of the stabilized material also chemically stabilizes various metals that may be present, primarily by transforming them into less soluble compounds. Treated material would then be buried in the reserve pit, overlain by at least four feet of overburden as required by NDIC regulations.

2.5 Casing and Cementing

Surface casing would be set at an approximate depth of 1,500 to 2,500 feet and cemented back to the surface, isolating all near -surface freshwater aquifers in the project area. Additional casing would be used after drilling into the target formation at a total measured depth ranging between 10,000 to 13,000 feet. Portions of the well from the target formation through the kickoff point up into the vertical section of the wellbore are planned to be cemented to isolate various formation as well as enhance wellbore integrity. The lateral portion of the hole would be lined with a liner, part of which contains pre-drilled holes.

2.6 Completion and Evaluation

After a well is drilled and cased, a completion (work-over) unit would be moved onto the site. For wells of the depth proposed, about 30 days are usually needed to clean out the well bore, pressure test the casing, perforate and fracture the horizontal portion of the hole, and run production tubing for commercial production. If the target formation is to be fractured to stimulate production, the typical procedure is to pump down-hole a mixture of sand and a transport medium (e.g., water, nitrogen) under extreme pressure. The resulting fractures are propped open with sand, increasing the capture zone of the well and maximizing efficient drainage of the field. After fracturing, the well is typically flowed back to the surface to recover fracture fluids and remove excess sand. Fluids used in the completion procedure would be captured either in reserve pits or in tanks for disposal in strict accordance with NDIC rules and regulations.

2.7 Commercial Production

If drilling, testing, and production support commercial production from the proposed location, additional equipment would be installed, including a pumping unit at the well head, a vertical heater/treater, tanks (usually four 400 barrel steel tanks), and a flare/production pit. An impervious dike would be constructed from compacted subsoil surrounding production tanks and the heater/treater and sized to hold 100% of the capacity of the largest tank plus one full day's production. Load out lines would be located inside the diked area, with a heavy screen-covered drip barrel installed under the outlet. A metal access staircase would protect the dike and support flexible hoses used by tanker trucks. More detail is included in the APD (Appendix A). The BIA will choose a color for all permanent aboveground production facilities from standard environmental colors recommended by BLM or the Rocky Mountain Five-State Interagency Committee. Aboveground or belowground electric power lines would be installed..

Oil would be collected in tanks and periodically trucked to an existing oil terminal for sales. Any produced water would be captured in tanks and periodically trucked to an approved disposal site. The frequency of trucking activities for both product and water would depend upon volumes and rates of production. The duration of production operations cannot be reliably predicted, but some oil wells have pumped for over one hundred years.

Large volumes of gas are not expected from this location. Small volumes of gas would be flared in accordance with Notice to Lessees (NTL) 4A and NDIC regulations, which prohibit flaring for more than the initial year of operation (NDIC 38-08-06.4). **No installations of gas-gathering or transport equipment are included in the current proposal.** Any proposal for gathering and marketing gas from this well may require additional analysis under NEPA and consideration of impacts by BIA.

Drilling and testing results would also help determine if additional exploration activities are warranted in the overall area. Should future oil/gas exploration activities be proposed by XTO on the FBIR, then that proposal and associated federal actions would require additional NEPA analysis and BIA consideration prior to implementation.

2.8 Reclamation

A closed-loop system may be used for wells drilled on staggered time intervals; however, a reserve pit would be used for wells drilled simultaneously. The reserve pit and drilled cuttings would be treated, solidified, backfilled, and buried as soon as possible after well completion. Other interim reclamation measures to be accomplished within the first year include reduction of the cut and fill slopes, redistribution of stockpiled topsoil, and reseeding of disturbed areas. Figures 2.8a and 2.8b show how a well pad and access road can be reclaimed. If commercial production equipment were installed, the pad would be reduced in size to roughly 320 feet x 530 feet, with the rest of the original pad reclaimed. Reclamation would include leveling, re-contouring, treating, backfilling, and reseeding. Erosion control measures would be installed. Stockpiled topsoil would be redistributed and reseeded as recommended by the BIA. The working part of the well pad and the running surface of the access road would be surfaced with scoria or crushed rock from a previously approved location and erosion control measures would be installed as necessary. The road's outslope portions would be covered with stockpiled topsoil and re-seeded with a seed mixture determined by the BIA, reducing the residual access-related disturbance to about 28 feet wide and about 3.47acres in size.

If there is no commercial production from the proposed twelve wells, or upon final abandonment of commercial operations, all disturbed areas would be promptly reclaimed. All facilities would be removed, well bores would be plugged with cement, and dry hole markers would be set. The new portion of the access road and work areas would be scarified and re-contoured. An exception to these reclamation measures might occur if the BIA approves assignment of an access road either to the BIA roads inventory or to concurring surface allottees.

Figure 2.8a: Construction of the well pad and access road are minimized to the size necessary to perform drilling and complete operations in a safe manner. Source: USDI-USDA 2007.

Figure 2.8b: The well pad and access road have been reclaimed by returning the land to its original contours, re-spreading the topsoil, and revegetating the site. Source: USDI-USDA 2007.

2.9 Preferred Alternative

The Preferred Alternative is to complete all of the administrative actions and approvals necessary to authorize or facilitate the proposed oil developments previously described. The Beaks/HuntsMedicine site is a dual pad that may service a maximum of 12 horizontal wells. For Beaks, six wells would be given the name of FBIR Beaks 24X-8A, 24X-8B, 24X-8C, 24X-8D, 24X-8E, and 24X-8F. For HuntsMedicine, six wells would be given the name of FBIR HuntsMedicine 24X-8A, 24X-8B, 24X-8C, 24X-8D, 24X-8E, and 24X-8F. The intent would be to drill these twelve wells over a period of several years.

The proposed twelve wells on the Beaks/HuntsMedicine well pad (site) would be located in the southwest quarter of Section 8, T149N, R91W to access two spacing units; one 1,280 acre unit consisting of Sections 5 and 8, T149N, R91W (Figure 2.9a) and one 1,280 acre unit consisting of Sections 17 and 20, T149N, R91W (Figure 2.9b). Site access from BIA Road 13 would require approximately 2,662 linear feet of road re-construction and approximately 2,727 linear feet of new road construction. Photographs of the proposed road alignment and well pad location and are shown in Figures 2.2a, 2.2b, and 2.3. Initial drilling would be vertical to an approximate depth of 9,500 to 10,500 feet. Directional drilling would maintain or achieve a minimum 500 feet setback from section lines. The completed wellbores will total about 20,000 to 25,000 feet at a depth of about 10,000 to 11,500 feet, including a 10,000 to 15,000 feet lateral reach in the Bakken.

The drilling target for the initial FBIR Beaks 24X-8 well is 550 feet from the north line (550 ft FNL) and 2,639 feet from the east line (2,639 ft FEL) in the NW¼NE¼ of Section 5, T149N, R91W, approximately 796 feet east and 9,804 feet north of the surface hole location (Figure 2.9a, Appendix A).

The drilling target for the FBIR HuntsMedicine 24X-8 is 550 feet from the south line (550' FSL) and 2,639 feet from the west line (2,639 ft FWL) in the SE¼SW¼ of Section 20, T149N, R91W, approximately 710 feet east and 10,183 feet south of the surface hole location (Figure 2.9b, Appendix A).

The bottom hole targets of the other ten additional wells that may be drilled from this well pad would be different from the first two wells, but would access the same spacing units already identified above and in Figures 2.9a and b. The bottom hole targets for these additional wells would be determined such that optimum reservoir development occurs within each spacing unit, however all applicable setbacks would be respected. Because the additional wells would be located on the same well pad, no additional surface disturbance would occur; the analysis conducted in this EA applies to the additional 10 potential wells on the same well pad.

If any additional infrastructure is required at the site, such as pipelines or utilities (i.e., electricity, water, phone), the infrastructure would be installed in previously disturbed right-of-way identified and accounted for in this EA. If the infrastructure would require disturbance outside of the approved right-of-way, additional NEPA documentation and environmental analysis may be required.

Figure 2.9a. Spacing unit (1,280 acres) and bottom hole location for FBIR Beaks 24X-8.

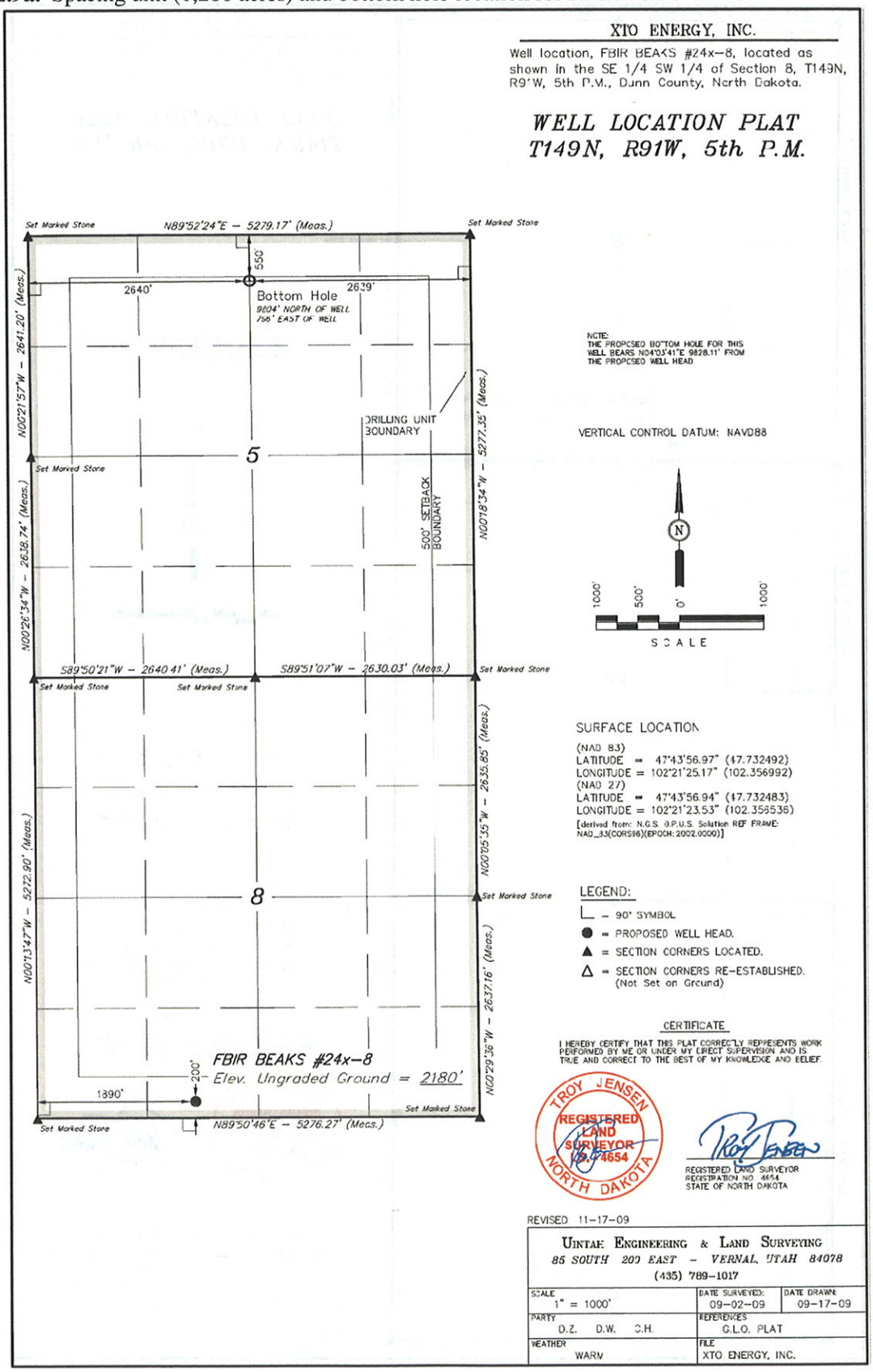
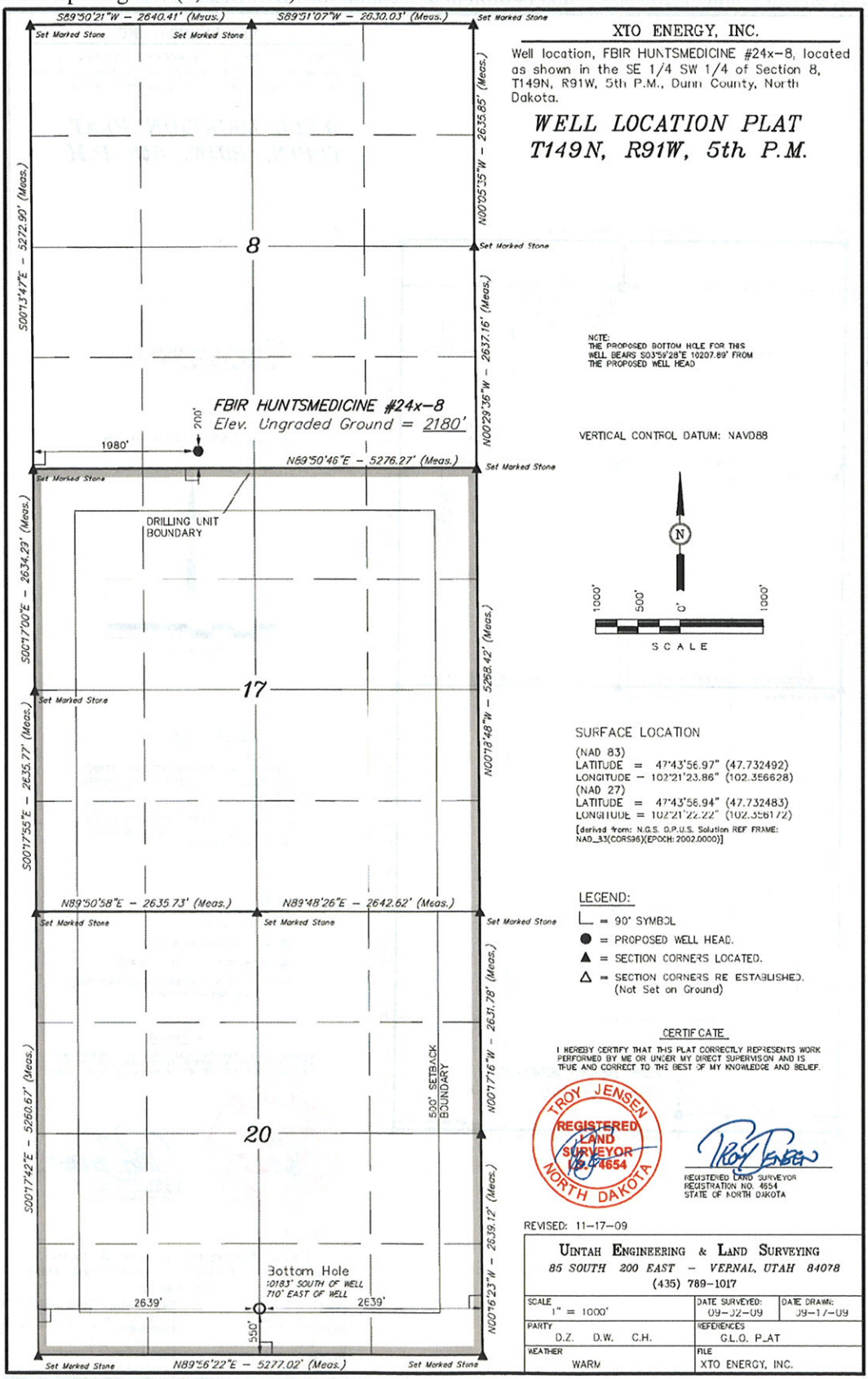


Figure 2.9b. Spacing unit (1,280 acres) and bottom hole location for BIR HuntsMedicine 24X-8.



3.0 The Affected Environment and Potential Impacts

The Fort Berthold Indian Reservation is the home of the Three Affiliated Tribes of the Mandan, Hidatsa and Arikara Nation (MHA Nation). Located in west-central North Dakota, the Reservation encompasses more than a million acres, of which almost half are held in trust by the United States for either the MHA Nation or individual allottees. The remainder of the land is owned in fee simple title, sometimes by the MHA Nation or tribal members, but usually by non-Indians. The reservation occupies portions of six counties: Dunn, McKenzie, McLean, Mercer, Mountrail and Ward. In 1953 much of the land was inundated and the rest divided into three sections by Lake Sakakawea, an impoundment of the Missouri River upstream of the Garrison Dam near Riverdale, North Dakota.

The proposed wells and access road are situated geologically within the Williston basin, where the shallow structure consists of sandstones, silts, and shales dating to the Tertiary Period (65 million to 2 million years ago), including the Sentinel Butte and Golden Valley formations. The underlying Bakken is a well-known source of hydrocarbons and would be targeted by the proposed project. Earlier oil/gas exploration activity within the Reservation, and near the project area in particular, was limited and commercially unproductive.

Much of the Reservation's land surface is included in the Northern Great Plains Level III ecoregion (Bryce et al. 1996). This unglaciated area extends south and west of the Missouri River and varies from undulating plains to the highly dissected, erosional landscape of the Little Missouri Badlands. Within this ecoregion mean annual precipitation ranges between 13 and 17 inches and mean temperatures fluctuate between -3° and 21° Fahrenheit (F) in January and between 60° and 91° F in July, with 80 to 140 frost-free days each year (Bryce et al. 1996). Land within the proposed spacing units occurs at an elevation of approximately 2,190 feet above mean sea level and is primarily grass- and shrublands dissected by woody riparian areas that are currently used to graze livestock. Other than barbwire fences and a graveled road, there is little evidence that the landscape in the project vicinity has been previously disturbed.

The broad definition of the human environment under NEPA leads to the consideration of the following elements: air quality, public health and safety, water resources, wetland/riparian habitat, threatened and endangered species, wildlife and fisheries, soils, vegetation and invasive species, cultural resources, socio-economic conditions, and environmental justice. Potential impacts to these elements are analyzed for both the No Action and Proposed Action Alternatives. Impacts may be beneficial or harmful, direct or indirect, and short- or long-term. The EA also analyses the potential for cumulative impacts and ultimately makes a determination as to the significance of any impacts. In the absence of significant negative consequences, it should be noted that a significant *benefit* from the project does *not* in itself require preparation of an Environmental Impact Statement.

3.1 The No Action Alternative

Under the No Action Alternative, the proposed project would not be constructed, drilled, installed, or operated. Existing conditions would not be impacted for the following critical elements: air quality, public health and safety, water resources, wetland and riparian habitat, threatened and endangered species, wildlife and fisheries, soils, vegetation and invasive species, and cultural resources. There would be no project-related ground disturbance, use of hazardous materials, or trucking of product to collection areas. Surface disturbance, deposition of potentially harmful biological material, trucking, and other traffic would not change from current levels. Economic benefits to both Tribe and many tribal members would remain at the currently depressed levels if exploration and commercial development of available resources are abandoned. Loss of employment and royalty income could impact tribal and individual economies and planning on a large scale.

3.2 Air Quality

This section describes existing conditions, potential impacts from the Proposed Action, and suggested mitigation measures for air quality resources in the project area.

The North Dakota Department of Health (NDDH) operates a network of ambient air quality monitoring stations. The closest stations that bracket the project area and monitor a full suite of air quality constituents are Dunn Center to the south, TRNP-NU to the west, Lostwood NWR to the north, and Beulah North to the southeast (NDDH 2009). Wind directions are predominantly from the northwest or southeast at Dunn Center and TRNHP-NU, from the south-southwest or northwest at Lostwood, and from northwest, southwest, or southeast at Beulah North (NDDH 2009). The Dunn Center monitoring station is the closest to the Beaks/HuntsMedicine project site, and is located roughly 28 miles south-southwest of the project area.

Criteria pollutants tracked under the National Ambient Air Quality Standards (NAAQS) of the Clean Air Act and the State Ambient Air Quality Standards of North Dakota (SAAQS) include sulfur dioxide (SO_2), nitrogen dioxide (NO_2), ozone (O_3), inhalable particulate matter (PM_{10}), and continuous fine inhalable particulate matter (PM_{fine}). Lead (Pb) and carbon monoxide (CO) are not monitored by any nearby monitoring stations. The SAAQS are generally equivalent to, or more stringent than, the NAAQS for most pollutants. The existing air quality at the four monitoring stations did not exceed SAAQS air quality standards in 2008 (Table 3.2). In fact, in 2008 North Dakota was one of thirteen states that met standards for all criteria pollutants. The state also met standards for fine particulates and the eight hour ozone standards established by the U.S. Environmental Protection Agency (EPA) (NDDH 2009).

Table 3.2: ***Comparison of North Dakota state ambient air quality standards at four monitoring stations.***[1]

Pollutant (unit[2])	Averaging Period	SAAQS Standard	Monitoring Station			
			Dunn Center	TRNP-NU	Lostwood NWR	Beulah North
SO_2 (ppb)	1-Hour	273	20.9	19.2	72.7	66
	24-Hour	99	4.0	5.0	13.0	9
	Annual Arithmetic Mean	23	0.4	0.5	1.1	1.6
NO_2 (ppb)	Annual Arithmetic Mean	53	1.8	1.1	1.5	2.7
O_3 (ppb)	One exceedance per year (1-Hour)	120	69	68	64	68
PM_{fine} ($\mu g/m^3$)	24-Hour	35 (NAAQS)	35.7	22.2	24.5	35.7
	Annual Mean	15 (NAAQS)	3.7	3.3	3.6	3.8
PM_{10} ($\mu g/m^3$)	24-Hour	150	94	108	32	58
	Annual Mean	50	14.2	10.2	9.8	15.7
CO (ppm)	1-Hour	9	--	--	--	--
	8-Hour	35	--	--	--	--
Pb ($\mu g/m^3$)	3-Month	1.5	--	--	--	--

[1] Source: NDDH 2009.
[2] ppb = Parts per billion; ppm = parts per million; $\mu g/m^3$ = micrograms per cubic meter

The Clean Air Act mandates prevention of significant deterioration in designated attainment areas. Class I areas are of special national significance and include national parks greater than 6,000 acres in size, national monuments, national seashores, and federally designated wilderness areas larger than 5,000 acres and designated prior to 1977. Both visibility impairment and increases in pollutant concentrations are capped. There is a Class I airshed at Theodore Roosevelt National Park, which covers approximately 110

square miles of land in three units within the Little Missouri National Grassland between Medora and Watford City. This Class I airshed is located approximately 43 miles west of the project area. The project area can be considered a Class II attainment airshed, which affords it a lower level of protection from significant deterioration.

The EPA has Title V permitting responsibilities on the Reservation. Construction would generate temporary and nearly undetectable gaseous emissions of PM_{10} and SO_2. Construction would generate levels of NO_x, CO, and volatile organic compounds (VOCs) that range from nearly undetectable to significant depending upon how much is vented or combusted. Impacts to air quality in the "near field" are not anticipated. No detectable or long-term impacts on air quality or visibility would be expected within the airsheds of the Reservation, Park, or State. The Title V permitting process is on-going. XTO would take the necessary steps to reduce and/or control air emissions and would obtain all necessary permits required by state or federal agencies.

3.3 Public Health and Safety

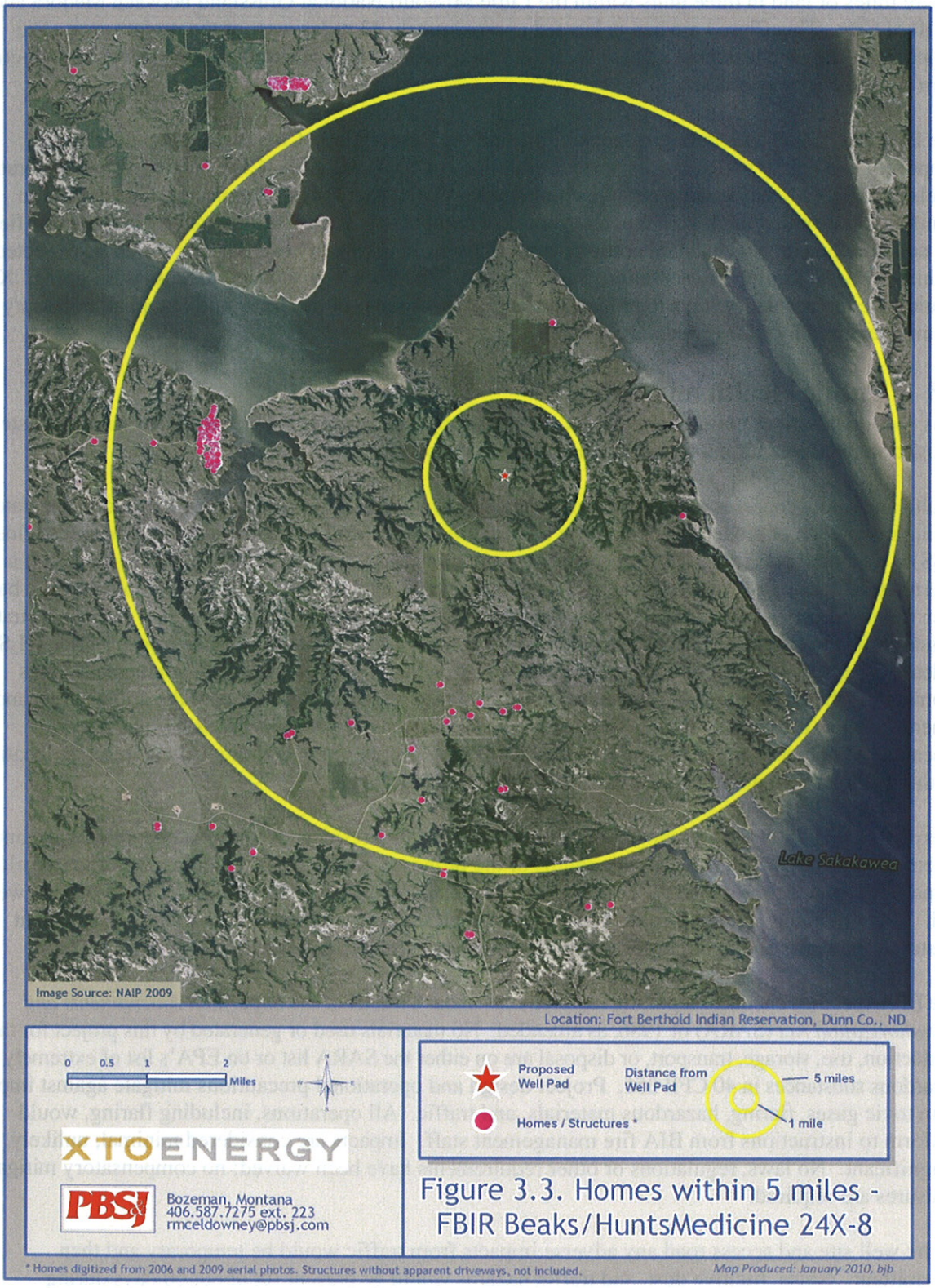
This section describes existing conditions, potential impacts from the Proposed Action, and suggested mitigation measures for public health and safety in the project area.

Health and safety concerns include naturally-occurring toxic gases, hazardous materials used or generated during installation or production, and traffic hazards from heavy drill rigs and tankers. Hydrogen sulfide (H_2S) is a naturally occurring gas that at low concentrations has a 'rotten egg odor'. For this reason it is referred to as "sour gas". It is extremely toxic in concentrations above 500 parts per million (ppm); it has not been found in measurable quantities in the Bakken. Before reaching the Bakken, drilling would penetrate the Mission Canyon Formation, which is known to contain varying concentrations of hydrogen sulfide (H_2S). Release of H_2S at dangerous concentrations is considered very unlikely, but H_2S Contingency Plans submitted to the BLM establish precautions and emergency response plans for both the drilling crew and the general public. These plans comply fully with relevant portions of *Onshore Oil and Gas Order 6.* Precautions include automated sampling and alarm systems operating continuously at multiple locations on the well pad. No direct impacts from H_2S would be anticipated.

Interpretation of 2009 aerial photography revealed no potential residences within a one mile radius and 124 potential residences within a five mile radius of the proposed well location (Figure 3.3). The two closest homes are located approximately 2.0 miles east and 2.3 miles north, respectively, of the proposed well pad. The remaining potential residences are located either in a scattered cluster to the south, a tight cluster to the west, or a tight cluster to the northwest from the proposed well pad (Figure 3.3).

The EPA specifies chemical reporting requirements under Title III of the *Superfund Amendments and Reauthorization Act* (SARA) of 1986, as amended. No materials used or generated by this project for the production, use, storage, transport, or disposal are on either the SARA list or on EPA's list of extremely hazardous substances in 40 CFR 355. Project design and operational precautions mitigate against impacts from toxic gases, flaring, hazardous materials, and traffic. All operations, including flaring, would conform to instructions from BIA fire management staff. Impacts are considered minimal, unlikely, and insignificant. No laws, regulations or other requirements have been waived; no compensatory mitigation measures are required.

At the well site and access road any adverse impacts from traffic would be temporary and then intermittent. Noise, fugitive dust, and traffic hazards would be present for about 60 days during construction, drilling and well completion, and would then diminish sharply during commercial operations. Initially, approximately 50 trips to and from the site over several days can be expected to


Lake Sakakawea
Image Source: NAIP 2009
Location: Fort Berthold Indian Reservation, Dunn Co., ND
0 0.5 1 2 Miles
XTOENERGY
PBSJ
Bozeman, Montana
406.587.7275 ext. 223
rmceldowney@pbsj.com
Proposed Well Pad
Homes / Structures *
Distance from Well Pad
5 miles
1 mile
Figure 3.3. Homes within 5 miles - FBIR Beaks/HuntsMedicine 24X-8
* Homes digitized from 2006 and 2009 aerial photos. Structures without apparent driveways, not included.
Map Produced: January 2010, bjb

transport the drill rig and associated equipment to the site. A similar number of trips would also be needed to remove the drill rig and other temporary facilities once the drill rig is removed from the site. Additionally, relatively more activity can be expected at the site during each successive drilling operation at the well pad than during on-going production. Actual potential production is unknown at this time, but other wells in the area have initially produced 500 to 1,000 barrels of oil per day, as well as roughly 200 barrels of water per day. Assuming that an oil tanker can typically haul 140 barrels of oil per load and a water tanker 110 barrels of water per load, production service may initially require three to seven oil tankers and two to three water tankers per day. Over time, as production decreases this may decline to two to three oil tankers and one water tanker per day. Dust would be suppressed as necessary or as required by the BIA to reduce impacts, both during construction and production. Given that there are at least two miles between the proposed well pad and nearest residences no negatives impacts from noise, dust, or traffic are anticipated for local residents.

3.4 Water Resources

This section describes existing conditions, potential impacts from the Proposed Action, and suggested mitigation measures for water resources in the project area.

3.4.1 Existing Conditions

Water resources in the Beaks/HuntsMedicine 24X-8 project area are comprised of surface water and groundwater resources. Precipitation is the ultimate source for all water in the project area.

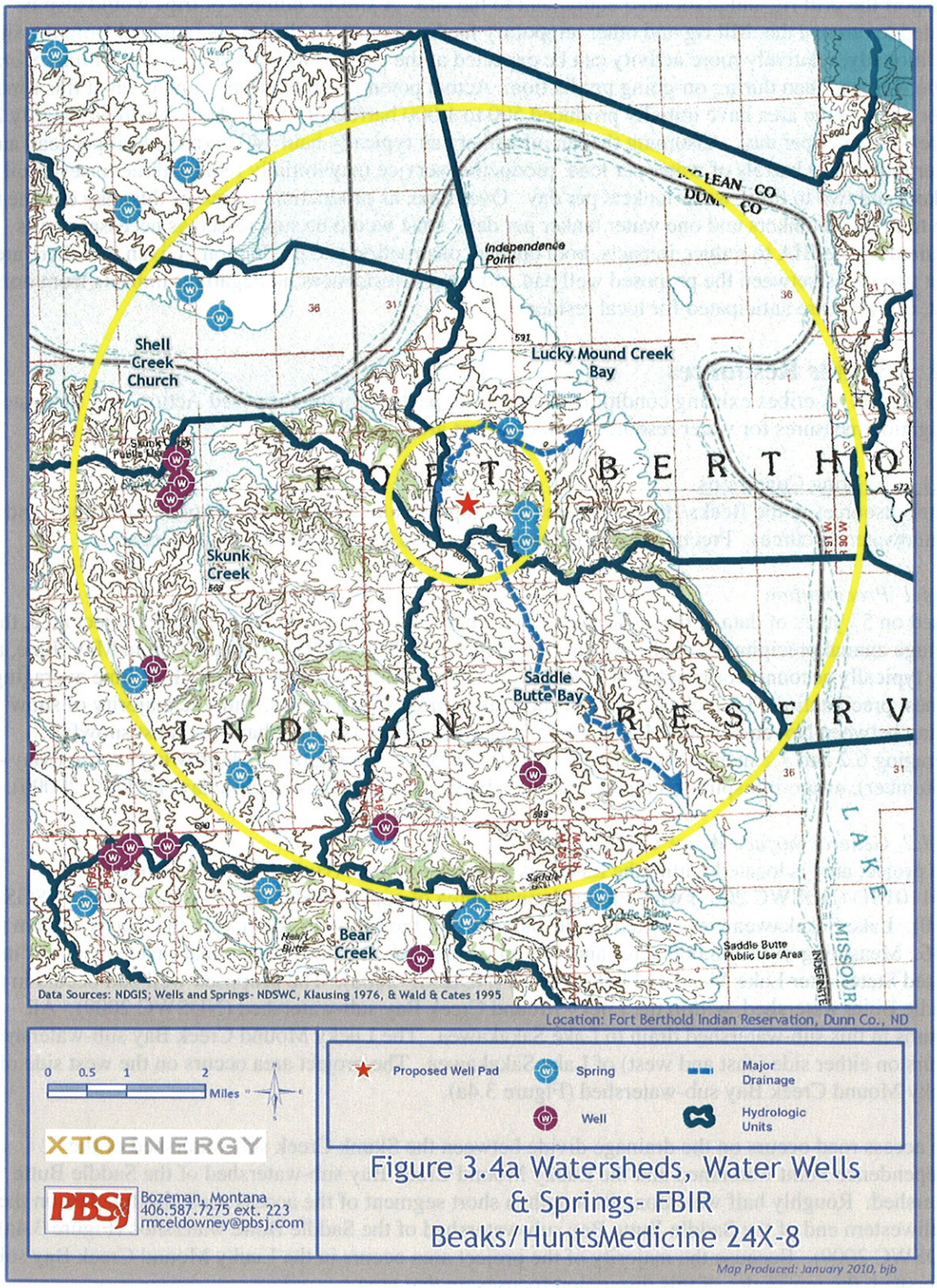
3.4.1.1 Precipitation

Based on 57 years of data at the closest active weather station (Keene 3 S, ND) to the project area, the average annual precipitation in the area is 15.6 inches (HPRCC 2009a). Precipitation in May, June, and July typically accounts for roughly 50% of the annual precipitation, with the month of June averaging the highest precipitation (3.3 inches). Annual snowfall averages 34.6 inches, with the majority of snow falling between November and March. December and January typically have the most snowfall, averaging 6.2 and 7.2 inches, respectively (HPRCC 2009a). During the 2009 growing season (May – September), evapo-transpiration typically ranged between 0.1 and 0.42 inches/day (HPRCC 2009b).

3.4.1.2 General Surface Water Considerations

The project area is located within the Lake Sakakawea sub-basin (Hydrologic Unit Code [HUC] #10110101) (NDSWC 2009) which has a drainage area of approximately 6,790 square miles (USGS 2010). Lake Sakakawea was created by the damming of the Missouri River with the Garrison Dam in 1956. Measuring over 368,000 acres and 178 miles long it is the third largest man-made reservoir in the United States after Lake Mead and Lake Powell (NDLSSP 2008). The proposed well pad occurs in the Saddle Butte watershed, within the Lucky Mound Creek Bay sub-watershed (NDSWC 2009). All streams in this sub-watershed drain to Lake Sakakawea. The Lucky Mound Creek Bay sub-watershed occurs on either side (east and west) of Lake Sakakawea. The project area occurs on the west side of the Lucky Mound Creek Bay sub-watershed (Figure 3.4a).

The access road occurs on the drainage divide between the Skunk Creek sub-watershed of the Independence Point watershed and the Lucky Mound Creek Bay sub-watershed of the Saddle Butte watershed. Roughly half way along its length, a short segment of the access road also touches on the northwestern end of the Saddle Butte Bay sub-watershed of the Saddle Butte watershed (Figure 3.4a) (NDSWC 2009). Because the majority of the project area occurs in the Lucky Mound Creek Bay sub-watershed, the remainder of this discussion focuses on that area.


Independence Point
Shell Creek Church
Lucky Mound Creek Bay
Skunk Creek
Saddle Butte Bay
Bear Creek
Saddle Butte Public Use Area
F O R T B E R T H O
I N D I A N R E S E R V
L A K E
MISSOURI
Data Sources: NDGIS; Wells and Springs- NDSWC, Klausing 1976, & Wald & Cates 1995
Location: Fort Berthold Indian Reservation, Dunn Co., ND
0 0.5 1 2 Miles
Proposed Well Pad
Spring
Major Drainage
Well
Hydrologic Units
XTOENERGY
PBSJ
Bozeman, Montana
406.587.7275 ext. 223
rmceldowney@pbsj.com
Figure 3.4a Watersheds, Water Wells & Springs- FBIR
Beaks/HuntsMedicine 24X-8
Map Produced: January 2010, bjb

All six streams within the west side of the Lucky Mound Creek Bay sub-watershed are unnamed and considered to be intermittent by the U.S. Geological Survey (USGS). Several drainages occur within the project area; however, none of these are mapped as intermittent streams by the USGS. The closest perennial waterbody *down gradient* of the proposed well pad is Lake Sakakawea, which is roughly 3.01 stream miles, or 1.69 air miles away.

The closest perennial waterbody to the site is a stock pond located 1,370 feet west of the southwest corner of the proposed well pad. A potential emergent wetland was noted during the site visit as a fringe around the pond as well as down gradient of the stock pond (Figure 3.4b). The well pad does not drain to either the stock pond or the potential emergent wetland.

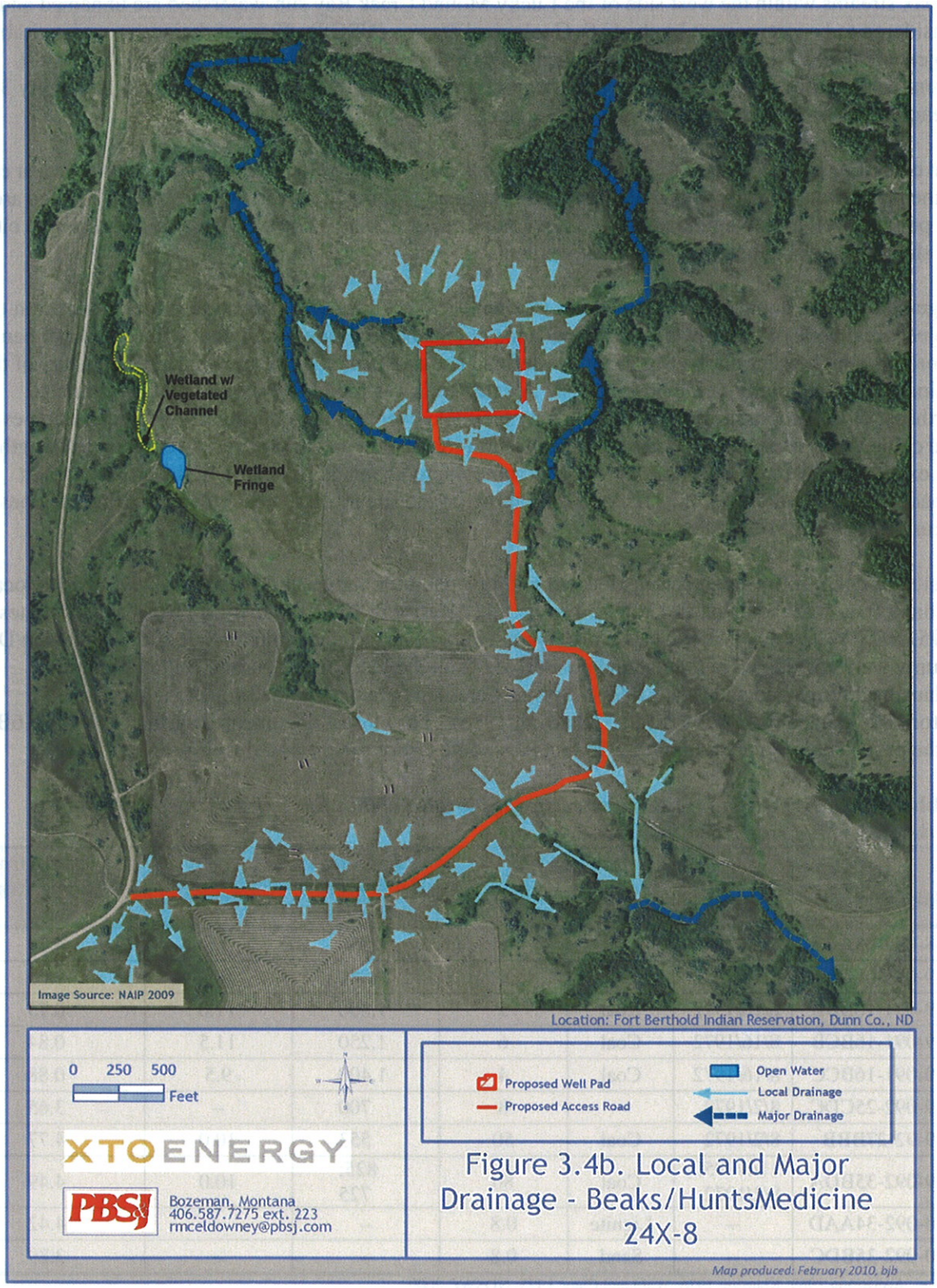
Vegetated swales dominated by snowberry (*Symphoricarpos* spp.) and mesic grass species occur in the project area; none of these swales show evidence of channelized flow, such as a defined bed and bank or an ordinary high water mark. Similarly, no defined bed and bank features were identified in any of the drainages in the vicinity of the project area. A cattle trail was found in the bottom of the drainage northeast of the proposed well pad, which may facilitate overland flow during heavy precipitation events. The cattle trail was not continuous, so the concentration of flow in the drainage over extended lengths is not expected. Due to the lack of rills or observable micro-channels anywhere in the project area, it appears that the majority of the precipitation falling on the site infiltrates into the soil. If runoff does occur, it is likely to be as sheet-flow.

There are three documented springs located within a one-mile radius and 10 documented springs located within a five-mile radius of the proposed well pad (Armstrong 1969, Klausing 1976, Wald and Cates 1995, NDSWC 2009) (Table 3.4a, Figure 3.4a). At the time of their sampling, all of the springs in Dunn County were considered perennial and are derived from the Paleocene Sentinel Butte Formation (Klausing 1976, Wald and Cates 1995). Spring water temperatures in the project vicinity have historically ranged from 49° to 52° F (Klausing 1976). The closest documented spring (149-091-16BBB) to the project area occurs roughly 3,950 feet east-southeast of the proposed well pad.

Table 3.4a. ***Information for documented springs located within five miles of the proposed Beaks/HuntsMedicine 24X-8 well site.***

Spring Identification	Date of Sample	Lithology	Flow Rate (gal/min)	Specific Conductance (µmhos/cm)	Temperature (° Celsius)	Distance from Well Pad Center (mile)
148-092-03ABA	8/3/1972	--	6	1,350	9.5	4.29
149-091-08AAA	8/16/1972	--	6	1,880	9.5	1.05
149-091-16BBB	8/16/1972	Coal	5	1,800	11.0	0.75
149-091-16BCB	8/16/1972	Coal	6	1,250	11.5	0.84
149-091-16BCC	8/16/1972	Coal	4	1,400	9.5	0.88
149-092-25CDC	8/2/1972	--	8	700	--	3.65
149-92-27BBB	8/2/1972	Coal	50	553	10.0	4.77
149-092-35BDA	11/8/1950; 8/2/1972	Coal	80	825; 725	10.0	4.49
150-092-34AAD	--	Lignite	0.8	--	--	4.42
150-092-35BDC	--	Sand	0.8	--	--	3.89

Source: Armstrong 1969; Klausing 1976; Wald and Cates 1995; NDSWC 2009.


Wetland w/ Vegetated Channel
Wetland Fringe
Image Source: NAIP 2009
Location: Fort Berthold Indian Reservation, Dunn Co., ND
0 250 500
Feet
XTOENERGY
PBSJ
Bozeman, Montana
406.587.7275 ext. 223
rmceldowney@pbsj.com
Proposed Well Pad
Proposed Access Road
Open Water
Local Drainage
Major Drainage
Figure 3.4b. Local and Major Drainage - Beaks/HuntsMedicine 24X-8
Map produced: February 2010, bjb

3.4.1.3 Existing On-site Drainage

The proposed well site ultimately drains northward and then eastward into Lake Sakakawea. Due to its length, drainage from the proposed access road is variable, though the majority of drainage from the road would be expected to drain northward (Figure 3.4b). Locally, surface water from the majority of the proposed well pad currently drains in a northwesterly direction. The southwest corner of the proposed well pad currently drains to the southwest into a northwest-southeast oriented drainage located just southwest of the pad. Drainage from a small portion of the southeast and northeast corners of the proposed pad drain into the north-south oriented drainage on the east side of the proposed well pad (Figure 3.4b).

3.4.1.4 General Groundwater Considerations

Aquifers in Dunn County occur in five main pre-glacial formations, including the Upper Cretaceous Fox Hills and Hell Creek formations and the Tertiary Cannonball-Ludlow, Tongue River and Sentinel Butte formations (Table 3.4b). Aquifers in the Fox Hills and Hell Creek formations occur at the deepest depths, while aquifers in the Tongue River and Sentinel Butte formations occur at shallower depths. Glacial drift aquifers also occur in Dunn County and overlay the Sentinel Butte aquifer. While smaller glacial drift aquifers may occur in the project vicinity, the only large, mapped aquifer on the south side of the lake is located roughly 13.6 miles east of the project area (NDSWC 2009). The Goodman Creek Aquifer is located approximately 15.7 miles south of the project area (Klausing 1979). Two other mapped aquifers occur closer to the project area than the other two mentioned, but are on the far (north) side of the lake from the project area (NDSWC 2009).

Table 3.4b: ***Characteristics of pre-glacial aquifers occurring in Dunn County, North Dakota.***

Formation Name	Lithology	Maximum Thickness (ft)	Depth to Top of Formation (ft)	Water Yield (gpm)
Sentinel Butte	Clay, claystone, shale, sandstone, siltstone, and lignite.	670	0 - 700	5 – 100 (sandstone) 1 – 200 (lignite)
Tongue River	Clay, claystone, shale, sandstone, siltstone, and lignite.	490	230 - 750	<100
Undifferentiated Cannonball-Ludlow	Cannonball - marine sandstone, clay, shale, and siltstone. Ludlow - continental siltstone, sandstone, shale, clay, and lignite.	660	570 – 1,130	<50
Hell Creek	Siltstone, sandstone, shale, claystone, and lignite	300	1,150 – 1,730	5 - 100
Fox Hills	Sandstone, shale, and siltstone	300	1,330 – 1,960	<200 - 400

Source: Klausing 1979.

There are six documented, water-producing wells within a five-mile radius of the proposed well pad (Figure 3.4a, Table 3.4c). The closest documented water well (149-091-33BCC) is located approximately 18,615 feet south-southeast of the proposed well pad.

Table 3.4c: ***Locations of 6 documented water wells occurring within a 5-mile radius of the proposed Beaks/HuntsMedicine 24X-8 project area.***[1]

Water Well Identification	Distance Water Well to Well Pad Center (miles)	Distance Water Well to Well Pad Center (feet)
149-091-33BCC	3.53	18,615
149-092-10DABC	3.62	19,122
149-092-10ACAA	3.72	19,621
149-092-10DCBB	3.75	19,803
148-092-03ABA	4.23	22,322
149-092-22CDC	4.50	23,736

[1] Sources: Klausing 1976; Wald and Cates 1995; NDSWC 2009.

3.4.2 Water Resources Impacts

Construction and reclamation techniques included in the APD would minimize potential for impacts to both groundwater and surface water (Appendix A). The proposed project site has been located to avoid direct/indirect impacts to surface water and to minimize disruption of nearby drainages. Potential impacts to surface waters are unlikely because of the distance that would be traversed before a contaminant could enter the tributary system, the lack of defined channels, and the onsite containment measures and spill prevention/clean-up protocols that would be used. For similar reasons, impacts to the water quality of Lake Sakakawea are extremely unlikely. Roadway engineering and erosion control measures would mitigate migration of sediment down gradient. No measurable increase in runoff or impacts to surface waters would be expected.

The water quality of local aquifers would be protected by cementing the casing across aquifer zones. If a reserve pit is used, it would be lined with an impermeable barrier. For these reasons, the dewatering or contamination of local springs or groundwater resources is unlikely. No significant impacts to surface water or groundwater are expected as a result of the proposed actions.

3.4.3 Water Resources Mitigation

The well bore of each well would be drilled with fresh water to a point below the base of the Fox Hills Formation (between 2,000 and 3,000 feet) prior to setting casing to prevent contamination of the formation. Surface casing would be cemented in place to a depth of about 1,500 feet to 2,500 feet, isolating aquifers in the Fox Hills Formation and extending a minimum of 50 feet into the underlying Greenhorn Formation. Intermediate casing would extend from the surface and be cemented between about 4,000 feet to 13,000 feet in depth to isolate potentially productive water and hydrocarbon bearing zones. Any produced water would be captured in tanks on site and periodically trucked to an approved disposal site. The frequency of trucking of either oil or water would depend upon production rates. The BIA and BLM would monitor all operations and record keeping at their discretion. Evidence of groundwater contamination related to the project would result in a stop work order until all appropriate measures were identified and implemented. No applicable laws or regulations would be waived; no compensatory mitigation measures are required to protect surface water or groundwater.

3.5 Wetland and Riparian Habitats

This section describes existing conditions, potential impacts from the Proposed Action, and suggested mitigation measures for wetland and riparian habitats in the project area.

National Wetland Inventory maps are maintained by the U.S. Fish and Wildlife Service (USFWS). These maps did not show any jurisdictional wetlands within the project area (USFWS 2009a). Physical

inventories on September 16, 2009 confirmed that there are no riparian or wetland habitats within the proposed Beaks/HuntsMedicine 24X-8 well pad and access road project boundaries. No riparian or wetland habitats would be negatively impacted by the proposed Beaks/HuntsMedicine 24X-8 well pad or its access road. Wetlands are present in a drainage west of the proposed well pad (Figure 3.4b), but would not be indirectly or directly affected by the Proposed Action because the proposed well pad and access road do not drain to that area.

3.6 Threatened and Endangered Species

This section describes existing conditions, potential impacts from the Proposed Action, and suggested mitigation measures for threatened and endangered species in the project area.

3.6.1 Existing Conditions

Threatened and endangered (TE) plant and animal species are designated by the USFWS under the guidance of the *Endangered Species Act*. Based on the USFWS (2009b) list of *Threatened, Endangered, Proposed, and Candidate Species for North Dakota Counties*, range/habitat descriptions found in technical literature, North Dakota Natural Heritage Program database searches for Dunn County, and an interview with the Fort Berthold Fish & Game Director, seven species were considered for evaluation relative to the proposed project (Table 3.6).

Table 3.6. ***Threatened, Endangered, and Candidate species considered with respect to the proposed Beaks/HuntsMedicine 24X-8 project site.***

Common Name	Scientific Name	Federal Designation	Designated Critical Habitat for species?	Likelihood of Occurrence within Project Area
black-footed ferret	*Mustela nigripes*	Endangered	No	None
gray wolf	*Canis lupus*	Endangered	No	Unlikely
Interior Least Tern	*Sterna antillarum*	Endangered	No	None
Whooping Crane	*Grus americana*	Endangered	No	Unlikely
pallid sturgeon	*Scaphirhynchus albus*	Endangered	No	None
Piping Plover	*Charadrius melodus*	Threatened	Yes	None
Dakota skipper	*Hesperia dacotae*	Candidate	No	Unknown

The North Dakota Natural Heritage Program biological conservation database had no known historical or current occurrences of plant or animal species of concern within the project area (NDPR 2009). Based on this information, available reports, conversations with local biologists, and the absence of critical, essential, or designated habitat, the likelihood of listed species to occur in the project area range from unknown to unlikely to none.

Black-footed ferret

Black-footed ferrets primarily feed on prairie dogs (*Cynomys* spp.) and use prairie dog burrows for their shelter (MTNHP 2008). An inventory of the project area conducted on September 16, 2009 identified no prairie dog colonies. Black-footed ferrets have not been documented on the FBIR (Poitra 2010; NDPR 2009). Impacts to black-footed ferrets would not be expected, given the lack of occurrence, food source, and habitat.

Gray wolf

The project area does not contain preferred gray wolf habitat or a suitable prey base to sustain a permanent pack. Reported occurrences of gray wolves on the FBIR are infrequent; about 1-2 sightings occur each year near the Little Missouri River, which is west of the FBIR (Poitra 2010). No established packs have been documented or are suspected to occur on the FBIR (Poitra 2010; NDPR 2009). It is

highly unlikely that wolves would colonize the project area, given its poor wolf habitat, unreliable food supplies, and the long distance from known populations in Minnesota, Canada, Montana, and Wyoming. No impacts would expected.

Interior Least Tern

The Interior Least Tern is known to nest along midstream sandbars of the Missouri and Yellowstone Rivers (USFWS 2009d). Lake Sakakawea is not a major nesting area for the Least Tern; however, tern nesting generally occurs in Douglas Creek Bay, Elbowwoods Bay, Deepwater Bay, Van Hook Arm, Hofflund Bay, and Tobacco Garden Bay (USACE 2007). The closest and most recent known nest site occurred in 1995 on Independence Point, about 2.2 air-miles northeast of the project area (USACE 2010). There is no suitable nesting or foraging habitat within the project area (Poitra 2010). No impacts would be expected.

Whooping Crane

Whooping Cranes breed in Alberta and Northwest Territories, Canada, and overwinter on the Texas coast (USFWS 2009d). They annually migrate through North Dakota during the spring and fall, making numerous stops to feed and roost before resuming migration. The proposed project lies within the 90-mile migration corridor that accounts for approximately 75% of all North Dakota sightings (USFWS 2009d). From the 1960's to 2008 several Whooping Crane sightings have been confirmed about 28 to 37 air-miles south to southwest of the proposed project area (USFWS 2009e). The closest documented sighting to the project area occurred in 1981 in Deepwater Creek within McClean County, about 7 air-miles northeast of the proposed project site. Sightings of Whooping Cranes are infrequently reported on the FBIR (Poitra 2010). Within the project area, there are no croplands, emergent wetlands, or shallow, seasonally or semi-permanently flooded palustrine wetlands. No occurrences of Whooping Cranes have been documented in the vicinity of the project area (Poitra 2010; NDPR 2009). The lack of food sources and roosting/foraging habitat makes stopovers by migrating cranes unlikely. No impacts would be expected.

Pallid sturgeon

The project area is at least one air-mile from the Missouri River (Lake Sakakawea) and sturgeon habitat. Fishery habitat in vicinity of the project area is absent. Direct and indirect project-related activities would not be expected to negatively impact water quality or quantity within the river. No impacts would be expected.

Piping Plover

The Piping Plover nests on midstream sandbars of the Missouri and Yellowstone Rivers and along shorelines of saline wetlands (USFWS 2009d). Piping Plover critical habitat for the Northern Great Plains population has been designated by the USFWS (67 FR 57638; USACE 2007). Designated critical habitat includes prairie alkali wetlands and adjacent shoreline; river channels; sandbars; islands; reservoirs; inland lakes; and sparsely vegetated shorelines, peninsulas, and islands associated with reservoirs and inland lakes. Piping Plover critical habitat supports all life history requirements including courtship, nesting, foraging, sheltering, brood-rearing, and dispersal habitat. The closest reach of the Missouri River is Lake Sakakawea, about 1.4 air-miles northwest of the project area. Major nesting areas within Lake Sakakawea include: Douglas Creek Bay, Arikara Bay, Deepwater Bay, Van Hook Arm, Van Hook islands, Hofflund Bay, Little Egypt, Red Mike Bay, Renner Bay, and the northeast part of Mallard Island through DeTrobriand Bay (USACE 2007). Minor nesting areas include Elbowwoods Bay, Beacon Island, White Earth Bay, Tobacco Garden Bay, Beacon Point, Antelope Creek, Independence Point, and Beaver Creek Bay (USACE 2007). The project area is about 2.1 air-miles southwest of Independence Point where Piping Plovers nested in 2006 (USACE 2010). There are no suitable nesting/foraging habitats located within the project area (Poitra 2010). No impacts would be expected.

Dakota Skipper

The Dakota skipper is a small butterfly that once occurred throughout the north-central USA and south-central Canada (USFWS 2009c). Known occurrences of Dakota skippers now reside in western Minnesota, northeastern South Dakota, north-central North Dakota, and southeastern North Dakota. The Dakota skipper lives in high quality native prairies that contain a high diversity of wildflowers and grasses (USFWS 2009c). Exotic grasses and shrubs do not provide habitat for this insect (USFWS 2009c). Adult Dakota skippers live for three weeks in June and obtain nectar (which is critical to their reproduction) from woody lilies (*Lilium* spp.), harebells (*Campanula* spp.), smooth camas (*Camassia* spp.), coneflowers (*Echinacea* spp.), and blanketflowers (*Gaillardia* spp.). Larval Dakota skippers feed on grasses in the fall and over-winter in shelters at or just below ground level at the bases of native bunchgrasses. It is possible that some portions of the project area may provide potential habitat; however, no Dakota skipper caterpillars were observed during the fall site visit. Impacts to the Dakota skipper are unknown.

3.6.2 Threatened, Endangered, and Candidate Species Impacts

Physical inventories were conducted on September 16, 2009. No occurrence of candidate and listed TE plants or animals and their denning, roosting, or nesting sites are known to be present or were observed during the site visit. Therefore, no direct impacts to the six listed and one candidate for listing TE species would be expected. The project may disturb potential habitat for the Dakota skipper, though potential habitat has not been mapped by the USFWS.

Based on the above information and the proposed mitigation measures, a **no effect** determination is rendered for the black-footed ferret, gray wolf, Interior Least Tern, Piping Plover, Whooping Crane, and pallid sturgeon. Because potentially suitable habitat for the candidate species, Dakota skipper, might exist within the proposed project area, this project is expected to have no more than minor impacts on the species. However, these potential impacts to the Dakota skipper are unknown at this time. Candidate species receive no legal protection under the Endangered Species Act - that is, there are no legal prohibitions under the federal Endangered Species Act against taking candidate species. Nonetheless, the USFWS promotes conservation actions for candidate species that may eliminate the need to list the species as threatened or endangered.

3.6.3 Threatened and Endangered Species Mitigation

Impacts to potential habitat for the Dakota skipper can be minimized by reducing the area of ground disturbance, spot-treating (as opposed to broadcast spraying) noxious weeds with herbicides, and controlling exotic grasses and woody plants (USFWS 2009c and 2009d). The proposed project would minimize disturbance to potential habitat by placing multiple wells at a single well pad location, using the existing road network as much as possible, and proposes to spot treat noxious weeds as needed.

To further reduce the potential for negative impacts to a threatened or endangered species or its habitat the following mitigation is proposed for the Beaks/HuntsMedicine 24X-8 well pad and access road:

- Any sighting of a protected species within one-mile of the project area would be immediately reported to the USFWS, NDGFD, Tribe, and BIA.
- Biological monitors would be available between February 1st and July 15th to survey the project site for threatened or endangered species, and for avian nesting activity.
- To maintain some habitat integrity, disturbed ground would be reclaimed using native plants from the approved plant list as identified by the Tribe and BIA. As required by the NDIC, reclamation costs are guaranteed through the issuance of a bond.

3.7 General Wildlife and Fisheries

This section describes existing conditions, potential impacts from the Proposed Action, and suggested mitigation measures for wildlife and fishery resources in the project area.

3.7.1 Wildlife Habitat

Wildlife habitat in vicinity of the project area consists of grasslands, snowberry (*Symphoricarpos* spp.) patches/swales, riparian areas, and shrubby thickets (Figure 3.7a). Wildlife in the project area use all four habitat types, though to varying degrees based on their life histories and species specific requirements. Within the proposed Beaks/HuntsMedicine 24X-8 project area grasslands comprise approximately 26 acres (77%), snowberry patches/swales comprise approximately six acres (18%), and riparian areas and shrubby thickets comprise just over half of an acre (2%) each (Table 3.7a).

Figure 3.7a: Representative habitat types: grassland (foreground), shrubby thicket (photo left), snowberry patch (photo right), and riparian area (background).

Table 3.7a. ***Summary of wildlife habitat types and projected impacts for the proposed Beaks/HuntsMedicine 24X-8 project area.***

Habitat Type	Project Area[1] (acre)	Permanent Impact (acre)	Temporary Impact (acre)	Total Impact (acre)
Grassland	26.770	9.517	0.206	9.723
Snowberry patch/swale	6.170	3.566	0.064	3.630
Shrubby thicket	0.735	0.459	0.000	1.194
Riparian area	0.685	0.001	0.000	0.686
Total	**33.700**	**13.543**	**0.270**	**13.813**

[1] The project area is defined as a 200-foot corridor for the proposed new access road and a 10-acre circle around the proposed well pad.

Grasslands dominate the access road and are co-dominant with snowberry patches at the well pad. Grasslands are comprised of a variety of graminoids, and to a lesser degree forbs (see *Section 3.9 - Vegetation and Invasive Species*) (Table 3.7a; Figure 3.7b). Common plants found in project area grasslands include green needlegrass (*Nassella viridula*), Sandberg bluegrass (*Poa secunda*), prairie junegrass (*Koeleria cristata*), western wheatgrass (*Pascopyrum smithii*), and bearded wheatgrass (*Elymus caninus*). Grasslands provide forage and habitat for livestock and a variety of local animals, such as big game, mid-sized predators, rodents, reptiles, and resident and migratory birds.

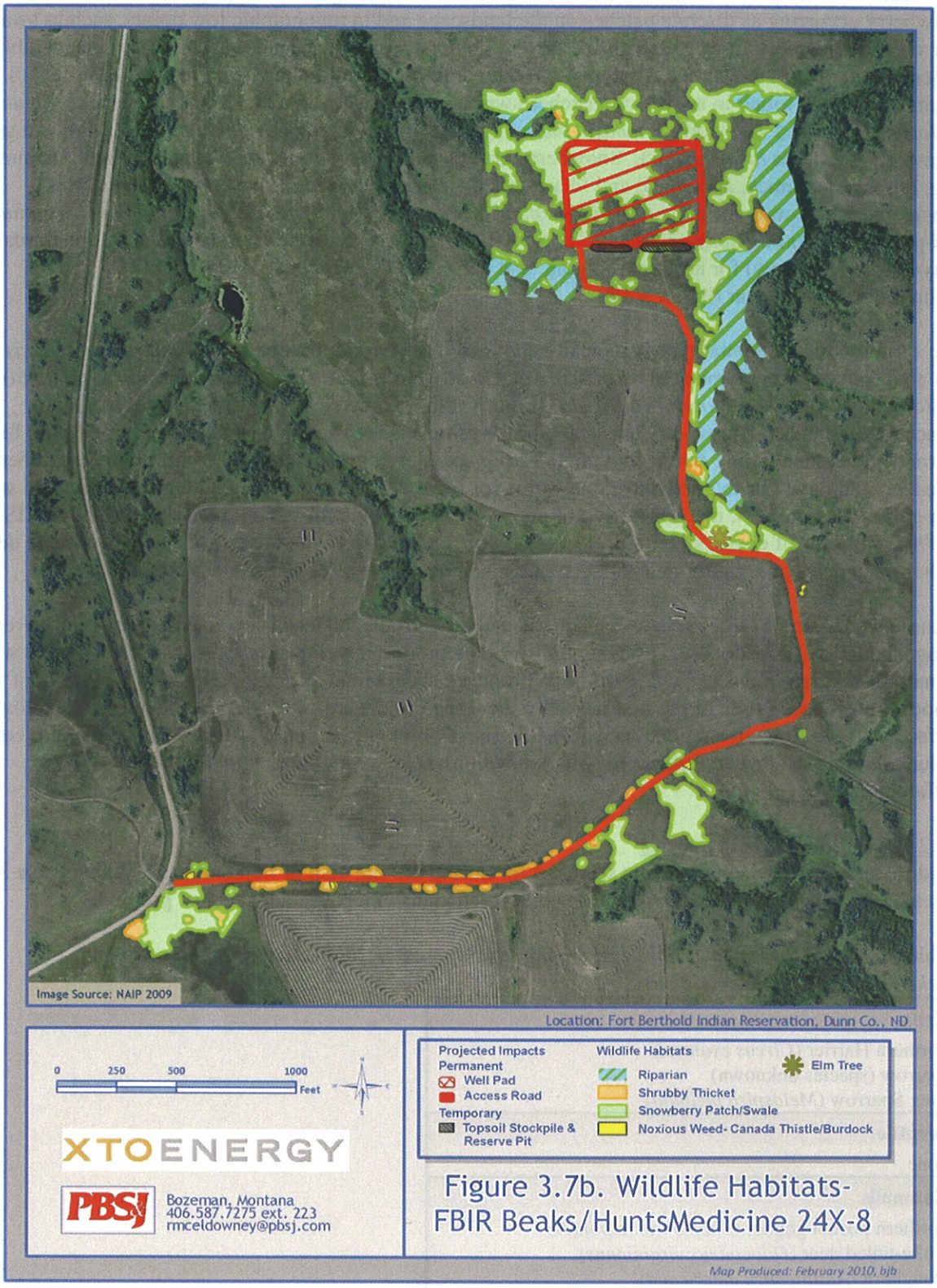


Image Source: NAIP 2009
Location: Fort Berthold Indian Reservation, Dunn Co., ND
0 250 500 1000 Feet
XTOENERGY
PBSJ
Bozeman, Montana
406.587.7275 ext. 223
rmceldowney@pbsj.com
Projected Impacts
Permanent
Well Pad
Access Road
Temporary
Topsoil Stockpile & Reserve Pit
Wildlife Habitats
Riparian
Shrubby Thicket
Snowberry Patch/Swale
Noxious Weed- Canada Thistle/Burdock
Elm Tree
Figure 3.7b. Wildlife Habitats-
FBIR Beaks/HuntsMedicine 24X-8
Map Produced: February 2010, bjb

Snowberry dominated patches and swales occur intermixed with grasslands (Figure 3.7b). The density of snowberry occurring as discrete patches on the landscape and in topographic low points, such as swales, can vary considerably from 10% to 100% cover. Understory plant species can also vary considerably, depending upon soil moisture availability and other environmental factors (e.g., exposure, soil type). Plants commonly found in snowberry patches/swales in the project area include prairie smoke (*Geum triflorum*), cudweed sagewort (*Artemisia ludoviciana*), stiff goldenrod (*Oligoneuron rigidum*), and green sagewort (*Artemisia dracunculus*). Snowberry provides important cover and forage for small mammals (e.g. rabbits, deer mice, and voles) and Sharp-tailed Grouse (*Tympanuchus phasianellus*), and is considered fair browse for mule deer (*Odocoileus hemionus*), white-tailed deer (*Odocoileus virginianus*), and pronghorn (*Antilocapra americana*) (USDA-FEIS 2009a). Snowberry is also used by songbirds (e.g. Clay-colored Sparrow) for nesting, foraging, and perching (Dechant et al. 2001 and 2002), and by hummingbirds for nectar (NPIN 2009).

The shrubby thicket habitat type is typically comprised of silver buffaloberry (*Shepherdia argentea*) but can also contain or be dominated by prairie rose (*Rosa arkansana*), chokecherry (*Prunus virginiana*), and/or fringed sagewort (*Artemisia frigida*) (Figure 3.7b). Understory plant species are similar to adjacent grasslands or snowberry patches. Shrubby thickets are used by a wide variety of wildlife for thermal and escape/hiding cover, foraging, nesting, and perching. In North Dakota, silver buffaloberry is considered to have fair to good nutritional value for mule deer, pronghorn, upland game birds, and small non-game birds; though, it is considered of poor nutritional value for white-tailed deer (USDA-FEIS 2009b). In terms of cover, silver buffaloberry is considered to provide fair to good cover for mule deer, white-tailed deer, pronghorn, upland game birds, and passerine birds (USDA-FEIS 2009b).

Riparian areas are transitional between aquatic and terrestrial habitats. They provide important cover, forage, and travel corridors for resident wildlife. The proposed well pad is flanked on the east and west by natural riparian draws (Figure 3.7b). The proposed access road clips a riparian area just south of the proposed well pad. None of the riparian draws near the project area have defined channels that allow surface water to flow on a regular or seasonal basis. Common riparian overstory plants in the project area include, green ash (*Fraxinus pennsylvanica*), hawthorn (*Crataegus* spp.), chokecherry, and silver buffaloberry.

3.7.2 Wildlife and Fish Species

Wildlife species and their sign were searched for during the site visit of September 16, 2009 (Table 3.7b). Tracks, scat, burrows, and skeletons were considered signs of a particular species' presence.

Table 3.7b. ***Wildlife species observed during the September 2009 site visit at the proposed Beaks/HuntsMedicine 24X-8 site.***

Birds
Northern Harrier (*Circus cyaneus*)
Sparrow (species unknown)
Song Sparrow (*Melospiza melodia*)
Herptile
None
Mammals
Northern pocket gopher (*Thomomys talpoides*)
White-tailed deer (*Odocoileus virginianus*)
Pronghorn (*Antilocapra americana*)
Domestic cattle (*Bos taurus*)

In addition to the bird species observed, the project area is also expected to provide breeding and foraging habitat to a variety of neotropical migrants, as well as foraging habitat for migrant and resident raptors such as Golden Eagle (*Aquila chrysaetos*), Red-Tailed Hawk (*Buteo jamaicensis*), Rough-legged Hawk (*Buteo lagopus*), and Swainson's Hawk (*Buteo swainsoni*).

Bald and Golden Eagles use a variety of habitat types and may occasionally occur in the vicinity of the Beaks/HuntsMedicine 24X-8 site. There are numerous records of Golden Eagle nests on the FBIR (USFWS 2009d; Poitra 2010). At the time of this writing, no nests are known to occur within a half-mile of the proposed project area (NDPR 2009; Poitra 2010).

In addition to the mammals observed, the project area is also expected to be used, at least occasionally, by bobcat (*Lynx rufus*), coyote (*Canis latrans*), deer mouse (*Peromyscus maniculatus*), long-tailed weasel (*Mustela frenata*), meadow vole (*Microtus pennsylvanicus*), mountain lion (*Puma concolor*), mule deer (*Odocoileus hemionus*), prairie vole (*Microtus ochrogaster*), raccoon (*Procyon lotor*), and striped skunk (*Mephitis mephitis*).

Based on known distributions and preferred habitat types, there are 24 wildlife species identified by the North Dakota Game and Fish Department as Species of Conservation Priority (SoCP) that could potentially occur in the project area (Table 3.7c). None of these species were observed during the site visit but could be present at other times during the year.

Table 3.7c. ***Species of Conservation Priority that potentially occur in the proposed Beaks/HuntsMedicine 24 X-8 project area.***

Common Name	Scientific Name	Conservation Priority[1]
Birds		
Baird's Sparrow	*Ammodramus bairdii*	I
Grasshopper Sparrow	*Ammodramus savannarum*	I
Sprague's Pipit	*Anthus spragueii*	I
Golden Eagle	*Aquila chrysaetos*	II
Short-eared Owl	*Asio flammeus*	II
Burrowing Owl	*Athene cunicularia*	II
Upland Sandpiper	*Bartramia longicauda*	I
Ferruginous Hawk	*Buteo regalis*	I
Swainson's Hawk	*Buteo swainsoni*	I
Lark Bunting	*Calamospiza melanocorys*	I
Chestnut-collared longspur	*Calcarius ornatus*	I
Northern Harrier	*Circus cyaneus*	II
Black-billed Cuckoo	*Coccyzus erythropthalmus*	I
Bobolink	*Dolichonyx oryzivorus*	II
Prairie Falcon	*Falco mexicanus*	II
Loggerhead Shrike	*Lanius ludovicianus*	II
Marbled Godwit	*Limosa fedoa*	I
Long-billed Curlew	*Numenius americanus*	I
Dickcissel	*Spiza americana*	I
Sharp-tailed Grouse	*Tympanuchus phasianellus*	II
Herptiles		
Western hognose snake	*Heterodon nasicus*	I
Smooth green snake	*Liochlorophis vernalis*	I
Plains spadefoot	*Spea bombifrons*	I

Common Name	Scientific Name	Conservation Priority[1]
Mammals		
Swift fox	*Vulpes velox*	II

Source: North Dakota Wildlife Conservation Strategy (Hagen et al. 2005).
[1] **Level I** = species that are in decline and presently receive little or no monetary support or conservation efforts;
Level II = species that have a moderate level of conservation priority *or* have a high level of conservation priority, but a substantial level of funding is available to them from other wildlife programs; and
Level III = species that have a moderate level of conservation priority but are believed to be peripheral or non-breeding in North Dakota.

No fisheries occur in the project area. The closest known fishery to the project area is Lake Sakakawea over one mile to the north and east. A small human-made pond is located approximately 1,350 ft west of the proposed project area along a riparian draw (Figure 3.7b). It is unknown if the pond supports fish. Any fish that might occur there would be the result of stocking, as there is no downstream connection to a known fisheries resource.

3.7.3 Wildlife and Fish Projected Impacts

An estimated 9.5 acres of grassland, 3.6 acres of snowberry patch/swale, 0.46 acre of shrubby thicket, and 0.001 acre of riparian habitat would be permanently impacted due to construction of the access road and well pad at the Beaks/HuntsMedicine 24X-8 site (Table 3.7a). An estimated additional 0.21 acre of grassland and 0.06 acre of snowberry patch/swale would be temporarily impacted from the stockpiling of topsoil and soil from the reserve pit. Construction of the project would result in direct wildlife mortality to those species with limited mobility (e.g., mice, voles, young birds/eggs, and pocket gophers) and/or to those who occupy burrows or nests at the time of construction. More mobile species, such as adult deer, coyotes, and most adult birds, would be able to avoid direct mortality by moving into adjacent habitat. Generally, these direct impacts to wildlife habitat and wildlife populations in the project area are considered minor due to the abundance of similar habitats in the vicinity.

During the early nesting season, eagles can be sensitive to human disturbance, which could potentially result in nest abandonment. Other migratory birds are afforded protection under the Migratory Bird Treaty Act (MBTA), and are also susceptible to nest abandonment during nesting.

According to the USFWS (2009d) wildlife mortality at oil facilities in North Dakota is most often associated with drilling reserve pits, flare pits, and/or drip buckets and barrels. For this reason a closed – loop system is recommended by the USFWS (2009d). If used, open pits that may contain oil would be cleaned up immediately to prevent accidental wildlife mortality in the immediate project area.

Habitat fragmentation can be either a direct or an indirect impact and is commonly associated with oil and gas projects. It can be defined as the separation of previously contiguous blocks of habitat into one or more disconnected pieces. Habitat fragmentation can occur in the physical sense of dividing up the landscape by a road or a development, or through an increase in the level of activity which could prevent or hinder wildlife movement. Either form of habitat fragmentation can result in impediments to wildlife dispersal and corresponding genetic exchange among populations.

The existing county road and agricultural practices all contribute to habitat fragmentation in the project vicinity. However, no substantial impediment to wildlife movement is apparent. The Beaks/HuntsMedicine 24X-8 well site and access road would contribute to temporary habitat fragmentation during the drilling process. If the well sites are developed into commercially viable wells the project would add to more permanent habitat fragmentation in the project area primarily by increasing the level of activity in the area.

Other forms (i.e., increased noise or odor) of indirect impacts may affect local distributions of wildlife in the vicinity of the proposed well pad and access road. These types of impacts may affect the local distribution of particular animal species by displacing them into adjacent habitats; however, they are not expected to negatively affect the local populations.

3.7.4 Wildlife Mitigation

Potential impacts to wildlife species and their habitats have been avoided and minimized through consultation with the BIA. This has resulted in locating the proposed well pad and access road outside of any riparian area, in using a relatively diffuse drilling density (up to 1,280 acres per drill site) in the area, using existing roads where possible, and by using directional drilling. Directional drilling has allowed the consolidation of well pads and access roads, thereby reducing habitat fragmentation in the area. Reclamation of habitat over the life of the project would further reduce long-term impacts to wildlife and their habitat. Additional mitigation measures are listed below.

- XTO intends to follow, to the greatest extent practicable, recommendations and guidance provided by the USFWS to minimize adverse impacts to migratory birds (USFWS 2009d).
- If initial site construction occurs within the nesting season, the project site would be surveyed by a qualified biologist to determine if and where active nests occur in relation to proposed construction activities. If active nests are found, construction would be suspended or buffers established to ensure no adverse impacts occur until nesting has been completed.
- The USFWS recommends that a buffer of at least one-half mile be placed around any known Bald or Golden Eagle nest (USFWS 2009d). If a Bald or Golden Eagle nest is observed within a half-mile of the proposed project, the USFWS would be notified.
- A closed-loop system (i.e., pitless) may be used by XTO for wells drilled at staggered time intervals; for wells drilled simultaneously a pit for drilling cuttings would be constructed, used, and reclaimed.
- The entire well pad would be fenced to prevent livestock and wildlife access to the site.
- If used, reserve pits would be fenced on all four sides to prevent wildlife, livestock, and personnel from accidentally falling into the pit if the entire site has not been protected within a fence.
- As recommended by the USFWS, drip buckets and barrels located under valves and spigots would be covered with wire mesh to prevent wildlife from entering and becoming entrapped.

3.8 Soils

This section describes existing conditions, potential impacts from the Proposed Action, and suggested mitigation measures for soil resources in the project area.

The proposed project area is situated on the Missouri Plateau near the center of the Williston Basin. The Sentinel Butte Formation, consisting of poorly lithified sandstone, siltstone and mudstone, is found at the surface to depths of several hundred feet. Remnant thin to moderately thick glacial till deposits cap the Sentinel Butte Formation as evidenced by scattered glacial erratics (stones and boulders). The proposed well pad and access road is located entirely on nearly level to gently sloping glaciated uplands. Pedogenic processes reveal fine textured (loamy) soils developed in residuum, and alluvium from glacial till with coarse-textured (sandy) soils developed in residuum and alluvium from sandstone bedrock on nearby steep hills and in major drainageways. Erosional processes by water reveal a well defined dendritic drainage pattern.

3.8.1 Soil Mapping

A total of 16 sites were sampled during an on-site soil inventory conducted on September 17 to 18, 2009 (Figure 3.8). Reference soil maps and soil data tables for the project area were obtained prior to conducting field work (Natural Resources Conservation Service [NRCS] 2009). Detailed soil pedon descriptions and site notes consistent with changes in landscape position and ecological sites were taken along the proposed access road and at the well pad (Figure 3.8; Table D1 and in Appendix D). Representative NRCS soil survey map units (SMUs) listed in Table 3.8a and described in *Section 3.8.2* are those that best fit the on-site inventory and do not necessarily match SMUs found in this area in the Dunn County soil survey.

Table 3.8a: ***Soils observed at the proposed Beaks/HuntsMedicine 24X-8 project site.***

Soil Series Component	Textural Family and Taxonomic Classification	Representative NRCS Soil Map Unit (assigned)	Percent Slope (observed)	Presence in Access Road	Presence in Well Pad
Williams loam	Fine loamy, mixed, superactive, frigid Typic Argiustolls	88B Williams loam, 3% to 6% slopes.	2 to 4	Yes	Yes
		88C Williams loam, 6% to 9% slopes	6 to 8	Yes	No[1]
Zahl loam	Fine-loamy, mixed, superactive, frigid Typic Calciustolls	88B Williams loam, 3% to 6% slopes; Zahl is an inclusion in this unit	3	Yes	No
Arnegard loam	Fine-loamy, mixed, superactive, frigid Pachic Haplustolls	88B Williams loam, 3% to 6% slopes; Arnegard is an inclusion in this unit	4 to 5	Yes	No

[1] SMU 88C is not found within the 5 acre field survey limit of the well pad site.

Soil map units are summarized below:

- **Soil Map Unit 88B- Williams loam, 3 to 6 percent slopes:** This map unit is found on till plains and glaciated uplands with component soils developed in residuum and alluvium from glacial till. Slopes are 3 to 6 percent. Williams loam (85%) is found on backslopes and rises, is well drained and has a high available water capacity. Topsoil depth ranges from 4 to 9 inches. Depth to a restrictive layer (bedrock) is greater than 60 inches. Zahl loam (2%) is found on knolls and rises, is well drained, and has a high available water capacity. Topsoil depth ranges from 4 to 8 inches. Depth to a restrictive layer (bedrock) is greater than 60 inches. Arnegard loam (2%) is found in swales and drainage ways, is well drained, and has a high available water capacity. Topsoil depth ranges from 5 to 20 inches. Depth to restrictive layer (bedrock) is greater than 60 inches. Other minor soils, which were not observed in the project area, are Bowbells soils (5%), Tonka soils (3%), and Noonan soils (3%). The ecological site for Williams loam is Loamy-R054XY031ND, Zahl loam is Thin Loamy-R054XY038ND and Arnegard loam is Loamy Overflow-R054XY023ND. The Williams soil was observed at sample site locations 1-10 and 12; the Zahl loam was observed at sample site location 13; and the Arnegard loam was observed at sample site locaitons 11 and 14 (Figure 3.8).

- **Soil Map Unit 88C- Williams loam, 6 to 9 percent slopes:** This map unit is similar to 88B in composition. This soil was observed at sample site locations 15 and 16 (Figure 3.8).

The proposed access road and well pad site consists of loamy soils developed in residuum and alluvium from glacial till. On the proposed access road observed slopes range from 2% to 8% with approximately 43% of the area occurring in SMU 88B, and the remaining 57% occurring in SMU 88C (Table 3.8b). These map units have moderate run-off potential, low to moderate hazard of sheet and rill erosion by water, and a moderate hazard of wind erosion (Table 3.8c). On the proposed well pad site observed

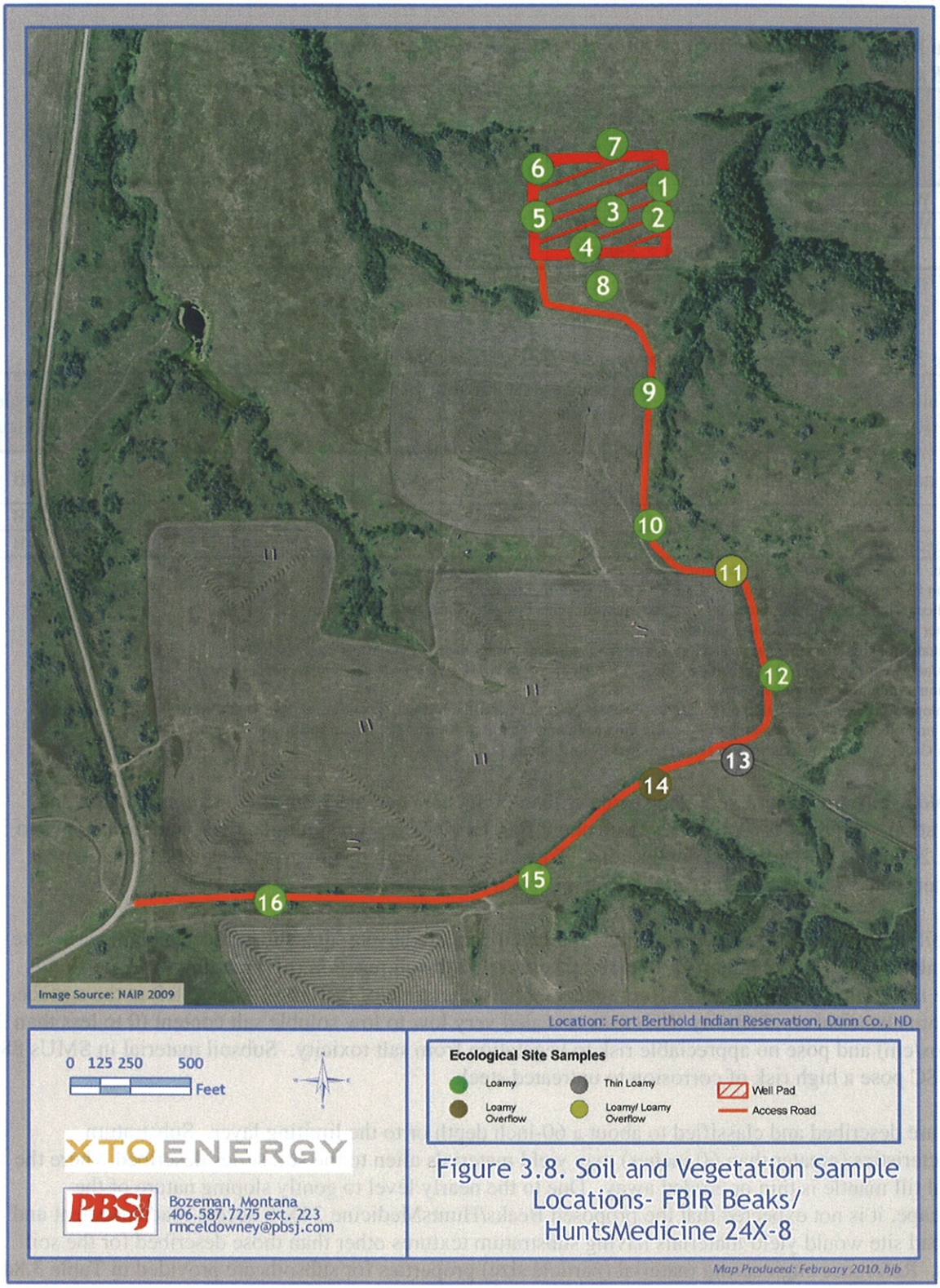


Figure 3.8. Soil and Vegetation Sample Locations- FBIR Beaks/ HuntsMedicine 24X-8

slopes range from 2% to 4% with almost all of the area occurring in SMU 88B and with less than 0.1% occurring in SMU 88C (Table 3.8b). These map units have moderate runoff potential, moderate hazard of sheet and rill erosion by water, and a moderate hazard of wind erosion (Table 3.8c).

Table 3.8b: ***Approximate area of soil map units found at the proposed Beaks/HuntsMedicine 24X-8 site.***

Soil Map Unit (SMU)	Access Road[1]		Well Pad Acreage	Total Acreage	Percent of Total Acreage
	Length (feet)	Area (acre)			
88B Williams loam 3% to 6%	2588.0	11.9	5.0	16.9	52.0
88C Williams loam 6% to 9%	3400.0	15.6	0.0	15.6	48.0
Total	**5988.0**	**27.5**	**5.0**	**32.5**	**100.0**

[1] Based on a 200 foot ROW width.

Table 3.8c: ***Soil attributes at the proposed Beaks/HuntsMedicine 24X-8 site.***[1]

Soil Series	Soil Map Unit(s)	Presence in Access Road	Presence in Well Pad	Surface Layer Composition			Erosion Factor[2]		Hydrologic Soil Group[5]
				% sand	% silt	% clay	Kf[3]	T[4]	
Williams	88B 88C	Yes Yes	Yes Perimeter	41.1	36.9	22.0	0.28	5	B
Zahl	88B	Yes	No	41.1	36.9	22.0	0.28	5	B
Arnegard	88B	Yes	No	41.1	36.9	22.0	0.24	5	B

[1] Source: http://soildatamart.nrcs.usda.gov/ (NRCS 2009).
[2] Erosion Factors indicate susceptibility of a soil to sheet and rill erosion by water.
[3] Kf indicates the erodibility of material less than two millimeters in size. Values of K range from 0.02 to 0.69. Higher values indicate greater susceptibility.
[4] T estimates maximum average annual rates of erosion by wind and water that will not affect crop productivity. Tons/acre/year range from 1 for shallow soils to 5 for very deep soils. Higher T soils can tolerate higher rates of erosion without loss of productivity.
[5] Hydrologic Soil Groups are based on estimates of runoff potential under the following conditions: thoroughly wet soils unprotected by vegetation receive precipitation from long-duration storms. The rate of infiltration decreases from Group A (high infiltration, low runoff) to D (low infiltration, high runoff).

Sampled soils are deep to very deep (greater than 60 inches) and are well suited to construction and restoration. Depth of topsoil varies from about four to 10 inches on summits, rises, and backslopes to about 20 inches in swales and depressions. Topsoil is very friable with good organic carbon content (greater than 3%) and a high available water capacity.

Subsoils on both the access road easement and well pad site have a high subsurface calcium carbonate equivalent (up to 20% calcium carbonate by volume) with soil reaction (pH) ranging from 7.8 to 8.8. These materials could adversely affect successful re-vegetation of disturbed areas if left at the surface. Random electrical conductivity (EC) tests revealed very low to low soluble salt content (0 to less than 2 mmhos/cm) and pose no appreciable risk to vegetation from salt toxicity. Subsoil material in SMUs 88B and 88C pose a high risk of corrosion to untreated steel.

Soils are described and classified to about a 60-inch depth or to the limiting layer. Substratum characteristics (greater than 60 inches) may yield materials alien to the soil series described where the glacial till mantle is thin or eroded away. Due to the nearly level to gently sloping nature of the landscape, it is not expected that the proposed Beaks/HuntsMedicine 24X-8 access road easement and well pad site would yield materials having substratum textures other than those described for the soil series. Reference engineering material (particle size) properties for subsoils are provided in Table 3.8d:

Table 3.8d: ***Unified Classification of subsoil materials at the proposed Beaks/HuntsMedicine 24X-8 site.***

Soil Series	Depth Range (inches)	Unified Classification Symbol[1]
Williams	36 to 60	CL
Zahl	20 to 60	CL
Arnegard	36 to 60	CL,SC

[1] See Figure D1 in Appendix D for definitions of the Unified Classification symbol.

3.8.2 Soil Impacts

An estimated 5.65 acres would be permanently impacted by the well pad and approximately 4.03 acres of soil would be permanently impacted by the proposed new access road. An additional, but relatively minor impact to soils would occur from the widening of the 2,727 feet proposed existing access road from compactions and disturbance of topsoil within the right of way. The total maximum disturbance to soils is estimated at 9.68 acres. Once the soil layer is disturbed, many soil functions are nearly impossible to regain. The greatest concerns with regard to soils are the loss of topsoil and the possibility of soil erosion during construction.

3.8.3 Soil Mitigation

Approximately six to twelve inches of topsoil would be stripped from areas of new construction and stockpiled for use during reclamation. Areas stripped of vegetation during initial construction would be reseeded once construction is complete. Implementation of proven BMPs for stabilization and reclamation would reduce soil erosion to negligible levels. The BMPs applicable to the proposed Beaks/HuntsMedicine 24X-8 project include, but are not limited to:

- Limit ground disturbance to the area that is necessary for the project.
- Minimize the area from which topsoil would be removed.
- Reduce the time that topsoil is stockpiled in order to retain viable soil nutrients.
- Minimize the time that barren areas are exposed (in order to reduce soil erosion and colonization by weeds).
- Employ dust control measures as needed.
- Apply soil stabilizers or soil binders as needed.

3.9 Vegetation and Invasive Species

This section describes existing conditions, potential impacts from the Proposed Action, and suggested mitigation measures for vegetative resources in the project area.

A field inventory of vegetative species was conducted on the proposed Beaks/HuntsMedicine 24X-8 site on September 17 and 18, 2009.

3.9.1 Ecological Sites

Sixteen ecological site inventories were conducted on the proposed FBIR Beaks/HuntsMedicine 24X-8 site (Figure 3.8). An ecological site is the product of all the environmental factors responsible for its development, and has a set of defining characteristics (NRCS 2003). Ecological sites have characteristic soils that have developed over time through the soil development process. The factors which affect soil development are parent material, climate, living organisms, topography or landscape position, and time. An ecological site has a characteristic hydrology, particularly infiltration and runoff, which has developed over time. The hydrologic development is influenced by the development of the soil and plant community. The opposite is also true. Ecological sites evolve into characteristic plant communities. The plant community on an ecological site is typified by an association of plant species that differs from that of other ecological sites in the kind and/or proportion of species, or in primary production (NRCS 2003).

A total of three types of ecological sites were identified within the project area: loamy, thin loamy, and loamy overflow (Table 3.9a). The most common ecological site type was loamy (13 locations), followed by loamy overflow (2 locations), and thin loamy (1 location). Commonly encountered plant species at these sample locations are green needlegrass (*Nassella viridula*), Sandberg bluegrass (*Poa secunda*), prairie junegrass (*Koeleria cristata*), western wheatgrass (*Pascopyrum smithii*), fringed sagewort (*Artemisia frigida*), and common snowberry (*Symphoricarpos albus*). A comprehensive plant list for the project area was compiled (Table 3.9b). No state sensitive plant species were found during the September 17 and 18, 2009 site visits (Table 3.9b). No formal surveys for State sensitive plant species were conducted during their identifiable periods.

Table 3.9a: ***Summary of vegetation sample sites at the proposed Beaks/HuntsMedicine 24X-8 well pad and access road.***[1]

Sample Site ID	Ecological Soil Type (reference ID)	Location	Approx. Elevation (feet)	Aspect	Percent Slope	Dominant Plant Species[1] Photo Numbers in App. B[3]
Site #1	Loamy (R054XY031ND)	Pad Site	2,191	N	4	Sandberg bluegrass, western wheatgrass, fringed sagewort Photos 1-3, page B-1.
Site #2	Loamy (R054XY031ND)	Pad Site	2,185	SW	3	Sandberg bluegrass, western wheatgrass, common snowberry. Photos 4-6, page B-1.
Site #3	Loamy (R054XY031ND)	Pad Site	2,180	NW	3	Sandberg bluegrass, western wheatgrass, common snowberry. Photos 7-9, page B-2.
Site #4	Loamy (R054XY031ND)	Pad Site	2,190	NW	3	Sandberg bluegrass, green needlegrass, fringed sagewort, common snowberry. Photos 10-12, page B-2.
Site #5	Loamy (R054XY031ND)	Pad Site	2,176	NW	2	Sandberg bluegrass, green needlegrass, stiff goldenrod, common snowberry. Photos 13-15, page B-3.
Site #6	Loamy (R054XY031ND)	Pad Site	2,169	NW	4	Sandberg bluegrass, green needlegrass, smooth brome, fringed sagewort, common snowberry. Photos 16-18, page B-3.
Site #7	Loamy (R054XY031ND)	North Perimeter	2,180	NW	4	Sandberg bluegrass, western wheatgrass, fringed sagewort, Common snowberry. Photos 19-21, page B-4.

[1] See Appendix C for more detailed information on species encountered at each site and for scientific names.
[2] Photographs at each ecological site can be found on pages B-1 through B-8 in Appendix B.

Table 3.9a (continued): ***Summary of vegetation sample sites at the proposed Beaks/HuntsMedicine 24X-8 well pad and access road.***[1]

Sample Site ID	Ecological Soil Type (reference ID)	Location	Approx. Elevation (feet)	Aspect	Percent Slope	Dominant Plant Species[1] Photo Numbers in App. B[3]
Site #8	Loamy (R054XY031ND)	Access Road and South Perimeter	2,191	W	3	Sandberg bluegrass, western wheatgrass, green needlegrass, green sagewort. Photos 22-24, page B-4.
Site #9	Loamy (R054XY031ND)	Access Road and Hayfield	2,191	N	2	Sandberg bluegrass, tall wheatgrass, smooth brome, intermediate wheatgrass. Photos 25-27, page B-5.
Site #10	Loamy (R054XY031ND)	Access Road	2,215	NE	6	Sandberg bluegrass, smooth brome, green sagewort. Photos 28-30, page B-5.
Site #11	Loamy Overflow (R054XY023ND)	Access Road	2,215	NE	4	Sandberg bluegrass, western wheatgrass, common snowberry. Photos 31-33, page B-6.
Site #12	Loamy (R054XY031ND)	Access Road	2,226	NW	4	Sandberg bluegrass, western wheatgrass, green needlegrass. Photos 34-36, page B-6.
Site #13	Thin Loamy (R054XY038ND)	Access Road	2,225	S	3	Sandberg bluegrass, green needlegrass, prairie junegrass. Photos 37-39, page B-7.
Site #14	Loamy Overflow (R054XY023ND)	Access Road	2,213	SE	5	Smooth brome, Kentucky bluegrass, prairie coneflower, common snowberry. Photos 40-42, page B-7.
Site #15	Loamy (R054XY031ND)	Access Road	2,234	NE	8	smooth brome, Sandberg bluegrass, western wheatgrass, common snowberry. Photos 43-45, page B-8.
Site #16	Loamy (R054XY031ND)	Access Road	2,249	SE	6	smooth brome, Sandberg bluegrass, crested wheatgrass, prairie junegrass. Photos 46-48, page B-8.

[1] See Appendix C for more detailed information on species encountered at each site and for scientific names.
[2] Photographs at each ecological site can be found on pages B-1 through B-8 in Appendix B.

Table 3.9b: ***Plant species observed in each ecological site at the proposed Beaks/HuntsMedicine 24X-8 project area.***[1]

SCIENTIFIC NAME	COMMON NAME	SITE #1	SITE #2	SITE #3	SITE #4	SITE #5	SITE #6	SITE #7	SITE #8	SITE #9	SITE #10	SITE #11	SITE #12	SITE #13	SITE #14	SITE #15	SITE #16
GRASSES/GRASS-LIKES																	
Aristida longiseta	red threeawn			X	X		X	X			X						
Bouteloua gracilis	blue grama													X		X	X
Bromus inermis	smooth brome									X							
Calamovilfa longifolia	prairie sandreed																X
Carex filifolia	threadleaf sedge	X			X	X	X	X									
Elymus caninus	bearded wheatgrass	X	X	X	X	X	X	X				X					
Hesperostipa comata	needleandthread grass	X	X	X							X				X	X	
Hesperostipa spartea	porcupine grass																X
Koeleria macrantha	prairie junegrass	X	X	X	X	X	X	X	X				X	X		X	X
Muhlenbergia cuspidata	plains muhly																X
Nassella viridula	green needlegrass	X	X	X	X	X	X	X	X		X	X	X	X		X	X
Pascopyrum smithii	western wheatgrass	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X
Poa secunda	Sandberg bluegrass	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Schizachyrium scoparium	little bluestem						X							X			X
Sporobolus heterolepis	prairie dropseed	X	X				X	X						X			
Thinopyrum intermedium	intermediate wheatgrass									X		X					
Thinopyrum ponticum	tall wheatgrass									X		X					
FORBS																	
Achillea millefolium	common yarrow	X	X	X	X	X	X	X	X		X			X		X	
Antennaria rosea	rose pussytoes				X												
Arabis spp.	rock cress	X	X		X	X		X						X			
Artemisia dracunculus	green sagewort	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X
Artemisia ludoviciana	cudweed sagewort	X	X	X		X	X	X	X	X	X	X	X	X		X	X
Astragalus crassicarpus	groundplum milkvetch	X	X	X					X								
Astragalus spp.	milkvetch		X							X							
Balsamorhiza macrophylla	cutleaf balsamroot															X	
Balsamorhiza spp.	balsamroot				X	X											
Dalea purpurea	purple prairie clover		X		X		X				X						
Echinacea angustifolia	black samson	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X
Geum triflorum	prairie smoke	X	X	X	X	X	X	X	X		X	X	X	X		X	X

[1] Presence is indicated by an "X". **Bolded species** are noxious in North Dakota.

Table 3.9b (continued): ***Plant species observed in each ecological site at the proposed Beaks/HuntsMedicine 24X-8 project area.***[1]

SCIENTIFIC NAME	COMMON NAME	SITE #1	SITE #2	SITE #3	SITE #4	SITE #5	SITE #6	SITE #7	SITE #8	SITE #9	SITE #10	SITE #11	SITE #12	SITE #13	SITE #14	SITE #15	SITE #16
FORBS (continued)																	
Glycyrrhiza lepidota	American licorice									X							
Grindelia squarrosa	curlycup gumweed			X										X			X
Heterotheca villosa	hairy goldenaster	X	X	X	X	X	X	X	X				X	X		X	X
Liatris punctata	dotted gayfeather	X	X			X	X	X									
Lygodesmia juncea	rush skeletonweed	X	X	X	X		X		X	X	X			X			
Mentha spp.	mint														X		
Oligoneuron rigidum	stiff goldenrod	X	X	X	X	X	X	X	X		X	X		X	X	X	X
Penstemon spp.	penstemon	X	X	X	X	X								X		X	X
Plantago patagonica	woolly indianwheat	X	X	X			X	X									
Psoralea argophylla	silverleaf scurfpea			X	X										X		
Ratibida columnifera	prairie coneflower	X	X		X	X		X	X			X			X	X	
Solidago missouriensis	Missouri goldenrod	X	X	X	X	X	X						X				X
Symphyotrichum ericoides	heath aster	X		X	X	X	X	X				X					X
Symphyotrichum falcatum	white prairie aster		X	X	X	X		X		X	X	X	X		X	X	
Trifolium spp.	clover										X						
FUNGI																	
Agaricus spp.	mushroom	X	X	X	X		X							X			
INVASIVES FORBS & GRASSES																	
Agropyron cristatum	crested wheatgrass	X	X				X						X	X		X	X
Bromus inermis	smooth brome			X	X		X				X	X	X	X	X	X	X
Camelina crantz	false flax	X	X		X	X	X		X					X		X	X
Chenopodium album	lambsquarter														X	X	
Cirsium arvense	**Canada thistle**	**X**	**X**		**X**								**X**	**X**		**X**	**X**
Cirsium flodmanii	Flodman's thistle		X			X											
Cirsium undulatum	wavyleaf thistle		X		X								X				X
Cirsium vulgare	bull thistle														X		
Descurainia sophia	flixweed		X					X									
Lappula occidentalis	western sticktight					X											
Lepidium spp.	pepperweed					X	X							X			
Melilotus officinalis	yellow sweetclover	X	X	X	X	X	X	X	X	X	X	X		X		X	X

[1] Presence is indicated by an "X". **Bolded species** are noxious in North Dakota.

Table 3.9b (continued): ***Plant species observed in each ecological site at the proposed Beaks/HuntsMedicine 24X-8 project area.***[1]

SCIENTIFIC NAME	COMMON NAME	SITE #1	SITE #2	SITE #3	SITE #4	SITE #5	SITE #6	SITE #7	SITE #8	SITE #9	SITE #10	SITE #11	SITE #12	SITE #13	SITE #14	SITE #15	SITE #16
INVASIVES FORBS & GRASSES																	
Phleum spp.	timothy														X	X	X
Taraxacum officinale	common dandelion	X				X			X								X
Thlaspi arvense	fanweed							X									
Poa pratensis	Kentucky bluegrass	X	X	X											X		
Sisymbrium altissimum	tall tumblemustard		X														
Tragopogon dubius	western salsify	X	X	X			X		X	X		X	X	X			
Urtica dioica	stinging nettle														X		
Xanthium spp.	cocklebur														X		
SHRUBS & TREES																	
Artemisia frigida	fringed sagewort	X	X	X	X	X	X	X	X			X	X	X		X	X
Crataegus spp.	hawthorn											X					
Fraxinus pennsylvanica	green ash									X		X					
Prunus virginiana	chokecherry			X	X	X		X		X		X	X		X		X
Symphoricarpos albus	common snowberry	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Shepherdia argentea	silver buffaloberry	X			X						X	X			X	X	X
Rosa arkansana	prairie rose			X	X	X	X	X		X	X	X	X	X	X	X	X
Toxicodendron rydbergii	poison ivy						X			X		X			X		
Gutierrezia sarothrae	broom snakeweed													X			

[1] Presence is indicated by an "X". **Bolded species** are noxious in North Dakota.

The following are brief descriptions of the different ecological sites found in the project area. Photographs for each ecological site can be found in Appendix B while worksheets for each ecological site are in Appendix C.

Loamy Ecological Site
The loamy ecological site is found on gently undulating to rolling sedimentary uplands, such as alluvial fans, alluvial flats, and on hillsides (NRCS 2004). These sites are well drained; in fact, water is the limiting factor to vegetative production. The historic climax plant community (HCPC) for this ecological site type is the western wheatgrass/green needlegrass community type. The potential vegetative composition for this community type is estimated at roughly 85% grasses/grass-likes, 10% forbs, and 5% shrubs. Although dependent upon site specific conditions, annual vegetative productivity can be expected to range from 1,400 lbs/acre to 3,400 lbs/acre, with the majority (79%) of plant growth occurring in May, June, and July (NRCS 2004). When compared to the HCPC, the loamy ecological sites found in the project area are in fair to good ecological condition. Previous livestock grazing and wildlife use has caused some departure from the HCPC. However, the departure poses no concern for oil and gas drilling activities or concerns for the immediate area (Photos 1-30, 34-36, and 43-48 in Appendix B).

Thin Loamy Ecological Site
Thin loamy ecological sites occur on moderately steep to steep sedimentary sites, such as hills, knolls, and ridges (NRCS 2004). These sites are well drained, and as with the other ecological sites described here, water is a limiting factor to vegetative production. The HCPC for the thin loamy ecological site is needlegrass/bluestem/western wheatgrass community type. The potential vegetative composition for this community type is estimated at roughly 85% grasses/grass-likes, 10% forbs, and 5% shrubs. Although dependent upon site specific conditions, annual vegetative production can be expected to range from 1,000 lbs/acre to 2,400 lbs/acre. The majority (81%) of vegetative production occurs in May, June, and July (NRCS 2004). When compared to the HCPC, the thin loamy ecological site found in the project area is in good ecological condition. Previous livestock grazing and wildlife use has caused some departure from the HCPC. However the departure poses no concern for oil and gas drilling activities or concerns for the immediate area (Photos 37-39 in Appendix B).

Loamy Overflow Ecological Site
Loamy overflow ecological sites frequently occur on flooded intermittent streams and their floodplains, including swales (NRCS 2004). These sites are moderately well to well drained and frequently experience brief periods of inundation, though water is still a limiting factor to vegetative production. The HCPC for this ecological site is the big bluestem/green needlegrass/switchgrass community type. The potential vegetative composition for this community type is estimated at roughly 83% grasses/grass-likes, 10% forbs, 5% shrubs, and 2% trees. Although dependent upon site specific conditions, annual vegetative productivity can be expected to range between 2,400 lbs/acre and 4,000 lbs/acre, with the majority (83%) of plant growth occurring in May, June, and July (NRCS 2004). When compared to the HCPC, the loamy overflow ecological sites found in the project area are in fair to good ecological condition. Previous livestock grazing and wildlife use has caused some departure from the HCPC. However the departure poses no concern for oil and gas drilling activities or concerns for the immediate area (Photos 31-33 and 40-42 in Appendix B).

3.9.2 Invasive Species
As defined by Executive Order 13112, an "invasive species" is that which is 1) a non-native (or alien) to the ecosystem under consideration and 2) whose introduction causes or is likely to cause economic or environmental harm or harm to human health (North Dakota Department of Agriculture [NDDA] 2009). Within the proposed Beaks/HuntsMedicine 24X-8 site, 17 exotic and invasive species are present: crested wheatgrass (*Agropyron cristatum*), common burdock (*Arctium minus*), smooth brome (*Bromus inermis*), false flax (*Camelina crantz*), lambsquarter (*Chenopodium album*), Canada thistle (*Cirsium*

arvense), bull thistle (*Cirsium vulgare*), flixweed (*Descurainia sophia*), pepperweed (*Lepidium* spp.), yellow sweetclover (*Melilotus officinalis*), Timothy (*Phleum pratense*), Kentucky bluegrass (*Poa pratensis*), Russian thistle (*Salsola iberica*), tall tumblemustard (*Sisymbrium altissimum*), common dandelion (*Taraxacum officinale*), fanweed (*Thlaspi arvense*), and western salsify (*Tragopogon dubius*). Under certain rangeland conditions, native plants may also become invasive to that environment. Within the project area, five species that are native to the area, but invasive in their nature are present: Flodman's thistle (*Cirsium flodmanii*), wavyleaf thistle (*Cirsium undulatum*), western sticktight (*Lappula occidentalis*), stinging nettle (*Urtica dioica*), and cocklebur (*Xanthium* spp.).

3.9.3 Noxious Weeds

The State of North Dakota defines a "noxious weed" as any plant propagated by either seed or vegetative parts which is determined by the commissioner (after consulting with the North Dakota State University Extension Service) or a county weed board (after consulting with the county extension agent) to be injurious to public health, crops, livestock, land, or other property (ND Century Code 63-01.1-02) (NDDA 2009). Noxious weeds can spread easily to the detriment of public health, indigenous plant communities, crops, livestock, recreational areas, and the management of natural or agricultural systems. In North Dakota, twelve species have been declared noxious under the North Dakota Century Code (Chapter 63-01.1) (Table 3.9c). However, only five are known to occur in Dunn County (Table 3.9c). Within the project boundary, one noxious weed is present. Although not shown on Figure 3.7b Canada thistle occurs in the well pad at Ecological Sites #1, #2, and #4. Canada thistle occurs on the access road in Ecological Sites #12, #13, #15, and #16. Canada thistle was observed as small patches within these areas.

Table 3.9c: ***North Dakota noxious weeds present in Dunn County and in vicinity of the project area.***

Scientific Name	Common Name	Present in Dunn County?	Present in vicinity of project site?
Artemisia absinthium	absinth wormwood	Yes	No
Carduus nutans	musk thistle	No	No
Centaurea diffusa	diffuse knapweed	No	No
Centaurea maculosa	spotted knapweed	No	No
Centaurea repens	Russian knapweed	No	No
Centaurea solstitialis	yellow starthistle	No	No
Cirsium arvense	**Canada thistle**	**Yes**	**Yes**
Convolvulus arvensis	field bindweed	Yes	No
Euphorbia esula	leafy spurge	Yes	No
Linaria dalmatica	Dalmation toadflax	Yes	No
Lythrum salicaria	purple loosestrife	No	No
Tamarix spp. [complex]	saltcedar	Yes	No

3.9.4 Vegetation Impacts

Construction of the access road would primarily impact the loamy ecological site type, and to a much lesser degree the loamy overflow and thin loamy ecological site types. Construction of the well pad would impact only the loamy ecological site type. The total disturbance area of about 5.65 acres for the proposed well pad and 4.13 acres for the proposed new access road could be expected to reduce available forage to livestock and wildlife in the area from 13,700 lbs to 33,250 lbs per year (NRCS 2004). Actual forage reductions would depend on the timing and amount of precipitation the site receives that year.

Soil compaction by heavy equipment hinders vegetation growth and revegetation efforts because it reduces the ability of water to percolate through the soil and reduces air spaces for water to occupy (Goodwin and Sheley 2003). Broadcast seeding on top of compacted soil could cause more seeds to blow away, be eaten by seed eaters, or be washed away by precipitation (Goodwin and Sheley 2003).

Invasive and noxious weeds often outcompete native plants because they grow in the absence of population controls; their population growth reduces the quality and quantity of forage and crop production, reduces bio-diversity, and often does not provide habitat for native fauna (NDDA 2009). Canada thistle patches occur in the proposed well pad and road corridor (Figure 3.7b; Table 3.9b). The potential disturbance of about 5.65 acres in the well pad area could provide the opportunity for Canada thistle to increase in distribution. Likewise, the potential disturbance of approximately 5,388 linear feet of access road would provide the opportunity for existing Canada thistle patches to spread along the road corridor. Disturbance along the road corridor could also provide an opportunity for other invasive species to spread, if not controlled.

3.9.5 Vegetative Mitigation

The following mitigation measures would be implemented to minimize or mitigate impacts to vegetative resources in the project area:

- To maintain plant biodiversity, ground disturbance would be minimized to the extent that is necessary for the project. Equipment would work within the confines of the approved rights-of-way and well pad area boundary.
- Topsoil that is removed would be stock-piled, and used in reclamation efforts.
- Severely compacted soil should be scarified or plowed to roughen the soil and increase germination rates (Goodwin and Sheley 2003). Soil should be scarified by raking soil with a ripper shank that is pulled behind a tractor, grader, or bulldozer.
- Areas stripped of topsoil would be re-seeded with desirable plant species and be reclaimed at the earliest practical opportunity.
- Certified weed-free straw and seed would be used for all construction, seeding, and reclamation efforts.
- The APDs would require the operator to control all noxious weeds through the project area (Appendix A). To reduce the spread of noxious weeds in the project area (particularly Canada thistle) control efforts should be implemented for a growing season prior to ground-disturbing activities and after ground-disturbing activities occur (see Figure 3.7b for locations of infestations). Control measures could include using herbicides, hand-pulling, applying bio-control, seeding, and/or planting of desirable vegetation. Herbicides would be applied at the appropriate time(s) of year, in the appropriate weather condition, with the appropriate chemical, and at the appropriate rate.

North Dakota Parks and Recreation recommends that impacted areas be revegetated with species native to the project area (NDPR 2009) (Appendix F). Further, the USFWS recommends that a diverse mixture of native cool and warm season grasses and forbs be planted (USFWS 2009d). Seed mixes containing a diversity of plant habits and species have a greater chance of resisting invasion by non-native plants and eventually become more ecologically beneficial (USFWS 2009d) (Appendix F). The appropriate seed mix should be designed to meet the objective of the revegetation effort. The objective for the proposed project would be to restore the plant community to its prior condition with minimal erosion and weed invasion. This would be accomplished by using a quick establishing cover crop of oats or barley at a rate of 10 lbs/acre combined with a native seed mixture at a rate of 5.4 lbs of pure live seed per acre. The recommended seed mix developed by Darryl Turcotte of the BIA is comprised of grasses native to the area (Table 3.9d). More details on the species in this seed mix are included in Table C1 of Appendix C. A native forb component is generally encouraged but can be difficult to achieve for reasons, such as commercial unavailability, difficulty in germination, and others. Dependent upon commercial availability, potential native forbs for inclusion in the seed mix could include black samson (*Echinacea angustifolia*), purple prairie clover (*Dalea purpurea*), dotted gayfeather (*Liatris punctata*), and candle

anemone (*Anemone cylindrica*). If forbs are included in the seed mix they should be in addition to the seeding rate of 5.4 pls/acre as specified in Table 3.9d.

Table 3.9d. ***Native grass seed mix recommended for reclamation of the proposed Beaks/HuntsMedicine 24-8X project site.***

Plant Species	Pounds[1]	Composition
western wheatgrass	2.4pls	30%
green needlegrass	1.2pls	20%
blue grama	0.2pls	10%
sideoats grama	0.6pls	10%
little bluestem	0.4pls	10%
slender wheatgrass	0.5pls	10%
prairie junegrass	0.1pls	10%
Total	**5.4pls**	**100%**

[1] pounds of pure live seed (pls)

3.10 Cultural Resources

This section describes existing conditions, potential impacts from the Proposed Action, and suggested mitigation measures for cultural resources in the project area.

Historic properties, or cultural resources, on federal or tribal lands are protected by many laws, regulations and agreements. The *National Historic Preservation Act of 1966* (16 USC 470 *et seq.*) at Section 106 requires, for any federal, federally assisted or federally licensed undertaking, that the federal agency take into account the effect of that undertaking on any district, site, building, structure or object that is included in the National Register of Historic Places (National Register) before the expenditure of any federal funds or the issuance of any federal license. Cultural resources is a broad term encompassing sites, objects, or practices of archaeological, historical, cultural and religious significance. Eligibility criteria (36 CFR 60.6) include association with important events or people in our history, distinctive construction or artistic characteristics, and either a record of yielding or a potential to yield information important in prehistory or history. In practice, properties are generally not eligible for listing on the National Register if they lack diagnostic artifacts, subsurface remains or structural features, but those considered eligible are treated as though they were listed on the National Register, even when no formal nomination has been filed. This process of taking into account an undertaking's effect on historic properties is known as "Section 106 review," or more commonly as a cultural resource inventory.

The area of potential effect (APE) of any federal undertaking must also be evaluated for significance to Native Americans from a cultural and religious standpoint. Sites and practices may be eligible for protection under the *American Indian Religious Freedom Act of 1978* (42 USC 1996). Sacred sites may be identified by a tribe or an authoritative individual (Executive Order 13007). Special protections are afforded to human remains, funerary objects, and objects of cultural patrimony under the *Native American Graves Protection and Repatriation Act* (NAGPRA, 25 USC 3001 *et seq.*).

Whatever the nature of the cultural resource addressed by a particular statute or tradition, implementing procedures invariably include consultation requirements at various stages of a federal undertaking. The MHA Nation has designated a Tribal Historic Preservation Officer (THPO) by Tribal Council resolution, whose office and functions are certified by the National Park Service. The THPO operates with the same authority exercised in most of the rest of North Dakota by the State Historic Preservation Officer (SHPO). Thus, BIA consults and corresponds with the THPO regarding cultural resources on all projects proposed within the exterior boundaries of the Fort Berthold Reservation.

A cultural resource inventory of this dual well pads and access road was conducted by personnel of Kadrmas, Lee & Jackson, Inc., using an intensive pedestrian methodology. Approximately 37.9 acres were inventoried on September 1, 2009 (Rabe 2009). No historic properties were located that appear to possess the quality of integrity and meet at least one of the criteria (36 CFR 60.6) for inclusion on the National Register. As the lead federal agency, and as provided for in 36 CFR 800.5, on the basis of the information provided, BIA reached a determination of **no historic properties affected** for this undertaking. This determination was communicated to the THPO on January 20, 2010; however, no response was received from the THPO within the allotted 30-day comment period.

If cultural resources are discovered during construction or operation, XTO would immediately stop work, secure the affected site, and notify the BIA and THPO. Unexpected or inadvertent discoveries of cultural resources or human remains trigger mandatory federal procedures that include work stoppage and BIA consultation with all appropriate parties. Following any such discovery, XTO would not resume construction or operations until written authorization to proceed was received from the BIA. **Project personnel are prohibited from collecting any artifacts or disturbing cultural resources in the area under any circumstances.** No laws, regulations or other requirements have been waived; no compensatory mitigation measures are required.

3.11 Socio-Economics

This section describes existing conditions, potential impacts from the Proposed Action, and suggested mitigation measures for socio-economic conditions in the project area.

Socio-economic conditions can be analyzed and compared at various scales. All counties overlapping the FBIR have per capita incomes, median household incomes, and employment rates that are lower than North Dakota statewide averages (Table 3.11a). Conversely, the population of the Reservation has lower average incomes and higher unemployment rates than the encompassing counties. In addition, when the unemployment rate of MHA Nation members is compared to the reservation or the surrounding counties, it is dramatically higher (Table 3.11a).

Table 3.11a: ***Employment and income data.***

Unit of Analysis	1999 Per Capita Income	2004 Median Household Income	2000 Unemployment Rate	2004 Persons Below Poverty Level
MHA Nation members[1]	No Data	No Data	71 % (in 2005)	55 % (in 2005)
Fort Berthold Reservation[2]	$10,291 (in 2000)	$26,274 (in 2000)	11.1 %	11.3 % (in 2000)
Dunn County[2]	$14,624	$34,299	6.4 %	11.5 %
McKenzie County[2]	$14,732	$33,711	6.6%	13.7%
McLean County[2]	$16,220	$39,218	5.6 %	11.3 %
Mountrail County[2]	$13,422	$34,503	5.9 %	14.2 %
North Dakota State[2]	$17,769	$34,233	4.6%	10.8 %

[1] Source: BIA (2005).
[2] Source: USCB (2000).

The most recent census (held in 2000) and subsequent mathematical projections indicates that per capita income for residents of the FBIR is $10,291 or about 58% of the North Dakota per capita income of $17,769. Similarly, the median household income on the FBIR was $26,274 in 2000, or about 76% of the North Dakota median household income. In 2005 the unemployment rate for tribal members was approximately 71% (BIA 2005), compared to 11.1% for the reservation and 4.6% statewide.

Population trends and demographics are shown in Table 3.11b. The number of people in North Dakota decreased slightly during the last eight years. The four counties surrounding the project area exhibited greater estimated decreases in population than exhibited at the state level in 2008. Between the 1990 and 2000 censuses the population on the Fort Berthold Reservation increased by almost ten percent (Table 3.11b). American Indians are the dominant group on the reservation and the dominant minority in Dunn, McKenzie, McLean, and Mountrail Counties, and at the State level.

Table 3.11b: ***North Dakota population trends at the Reservation, County, and State levels.***

Reservation, County, & State	Estimated 2008 Population	% of 2008 State Population	% Change, April 2000 – July 2008	Predominant Ethnic Group (2008)	Predominant Minority (2008)
Fort Berthold Reservation[1]	5,915 (in 2000)	0.92 (in 2000)	+ 9.8 (1990 to 2000)	American Indian (in 2000)	White (26.9%) (in 2000)
Dunn[2]	3,318	0.52	- 7.8	White	American Indian (14.1%)
McKenzie[2]	5,674	0.88	- 1.1	White	American Indian (22%)
McLean[2]	8,337	1.29	- 10.5	White	American Indian (7.0%)
Mountrail[2]	6,511	1.01	-1.8	White	American Indian (34.9%)
Statewide[2]	641,481	100	-0.1	White	American Indian (5.5%)

[1] Source: USCB (2000).
[2] Source: USCB (2008).

The proposed project would not be expected to have measurable impacts on demographic distributions. The proposed project would likely have significant and widespread beneficial economic impacts by slightly easing unemployment and increasing income through short-term construction employment and

long-term commercial development. Consequently, no mitigation measures are proposed for socio-economic resources in the area.

3.12 Environmental Justice

This section describes existing conditions, potential impacts from the Proposed Action, and suggested mitigation measures for environmental justice in the project area.

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations*, requires agencies to advance environmental justice (EJ) by pursuing fair treatment and meaningful involvement of minority and low-income populations. Fair treatment means such groups should not bear a disproportionately high share of negative environmental consequences from federal programs, policies, decisions or operations. Meaningful involvement means federal officials actively promote opportunities for public participation and federal decisions can be materially affected by participating groups and individuals.

The EPA headed the interagency workgroup established by the 1994 Order and is responsible for related legal action. Working criteria for designation of targeted populations are provided in *Final Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analyses* (EPA 1998). This guidance uses a statistical approach to consider various geographic areas and scales of analysis to define a particular population's status under the Order. Environmental justice is an evolving concept with potential for disagreement over the scope of analysis and the implications for federal responsiveness.

It is nevertheless clear that tribal members on the Great Plains qualify for special EJ consideration as both a minority and a low-income population. The population of North Dakota is predominantly Caucasian. Tribal members comprise almost six percent of North Dakota residents and about 14% of the population of Dunn County (Table 3.11b). Even in a state with relatively low per capita and household income, Indian individuals and households are distinctly disadvantaged. There are, however, some unusual EJ considerations when proposed federal actions are meant to benefit tribal members. Determination of fair treatment necessarily addresses the existence and distribution of both benefits and negative impacts, due to variation in the interests of various tribal groups and individuals. There is also potential for major differences in impacts to resident tribal members and those enrolled or living elsewhere.

A general benefit to tribal government and infrastructure has already resulted from tribal leasing, fees and taxes. Oil and gas leasing has also already brought much-needed income to MHA Nation members who hold mineral interests, some of whom might eventually benefit further from royalties on commercial production. Profitable production rates at proposed locations might lead to exploration and development on additional tracts owned by currently non-benefitting allottees. The absence of lease and royalty income does not, moreover, necessarily preclude other benefits. Exploration and development would provide many relatively high-paying jobs, with oversight from the Tribal Employment Rights Office (TERO).

The owners of allotted surface within project areas may not hold mineral rights. In such cases, surface owners do not receive oil/gas lease or royalty income, and their only income from the proposed project would be compensatory for productive acreage lost to road and well pad construction. Tribal members without either surface or mineral rights within the project area would not receive any direct benefits whatsoever. In these cases, indirect benefits of employment and general tribal gains would be the only offset to negative impacts.

Potential impacts to tribes and tribal members include disturbance of cultural resources. There is potential for disproportionate impacts, especially if the impacted tribes and members do not reside within

the reservation and therefore do not share in direct or indirect benefits. This potential is significantly reduced following the survey of the proposed twelve well locations and access road routes and determination by the BIA that there would be no effect to historic properties or TCPs. Nothing is known to be present, furthermore, that qualifies as a traditional or cultural property or for protection under the American Indian Religious Freedom Act (AIRFA). The potential for disproportionate impacts is further mitigated by requirements for immediate work stoppage following an unexpected discovery of cultural resources of any type. Mandatory consultations would take place during any such work stoppage, affording an opportunity for all affected parties to assert their interests and contribute to an appropriate resolution, regardless of their home location or tribal affiliation.

The proposed project has not been found to pose significant impacts to any other critical element – air quality, public health and safety, water resources, wetland and riparian habitats, threatened and endangered species, wildlife and fisheries, soils or vegetation and invasive species – within the human environment. Avoiding or minimizing such impacts also makes unlikely disproportionate impacts to low-income or minority populations. The Proposed Action offers many positive consequences for tribal members, while recognizing Environmental Justice concerns. Procedures summarized in this document and in the APD are binding and sufficient. No laws, regulations or other requirements have been waived; no compensatory mitigation measures are required.

3.13 Mitigation and Monitoring

Many protective measures and procedures are described in this document and in the APD (Appendix A). These mitigation measures are summarized below. No laws, regulations, or other requirements have been waived; no compensatory mitigation measures are required.

- All construction activities would follow lease stipulations, practices, and procedures outlined in the APD and in the guidelines and standards in the book, *Surface Operating Standards for Oil and Gas Exploration and Development* (USDI-USDA 2007).
- North Dakota One Call will be contacted (call #811) so that all existing utilities will be located prior to earthmoving activities and avoided as much as practicable. In situations where they cannot be completely avoided, the owner of the utility will be consulted prior to construction.
- Fresh water would be used to drill the well bore to a depth of 1,500 – 2,500 feet.
- Surface casing would be cemented in place to a depth of about 1,500 – 2,500 feet.
- Water produced from drilling would be captured into tanks and periodically hauled to an approved disposal site.
- Evidence of groundwater contamination related to the project would result in a stop work order until all appropriate measures were identified and implemented.
- Dust control measures would be employed, as necessary or as required by the BIA during construction and production, to suppress road dust.
- XTO would take the necessary steps to reduce and control air emissions and would obtain all necessary permits required by the State or Federal agencies.
- If initial site construction occurs within the February 1st-July 15th migratory bird nesting period then the project area would be surveyed by a qualified biologist to determine if active nests were present. If nests are present then construction would be suspended or buffers established to ensure no adverse impacts to nesting migratory birds.
- Drip buckets and barrels placed under valves and spigots would be covered with wire mesh to prevent wildlife species from entering and becoming entrapped.
- If used, open pits that may contain oil would be cleaned up immediately to prevent wildlife mortality.
- Any sighting of a protected species within one-mile of the project area would be immediately reported to the USFWS, NDGFD, Tribe, and BIA.

- The well pad would be fenced to prevent access to the pad by livestock and wildlife.
- The reserve pit would be fenced on all four sides to prevent personnel, livestock, and wildlife from accidentally falling into the pit if the entire site has not been protected within a fence.
- If an active Bald Eagle or Golden Eagle nest is observed within one-half mile of the project area, a no disturbance buffer of one-half mile radius would be placed around the nest, and the USFWS would be notified.
- Biological monitors would be available between February 1st and July 15th to survey the project site for threatened or endangered species, and for avian nesting activity.
- Ground disturbance would be minimized to that which is necessary to implement the project.
- Ground disturbing activities and vehicular traffic would only occur within the approved right-of-way and well pad area boundary.
- All noxious weeds, particularly Canada thistle, should be controlled prior to and after ground-disturbing activities.
- If used, appropriate herbicides would be applied during the proper time(s) of the year, during the proper weather conditions, and at the appropriate rate. A spot-treatment herbicide application is recommended.
- An approved weed-free seed mix would be used, such as the seed mix and cover crop identified in *Section 3.9.5* and Table C1 of Appendix C.
- Certified weed-free mulch (e.g., straw) would be used as needed in reclamation efforts.
- To maintain some habitat integrity, disturbed ground would be reclaimed using native plants from approved plant lists as identified by the Tribe and BIA. As required by the NDIC, costs would be covered by issuance of a bond.
- Topsoil removal would be limited to areas necessary to implement the project. Topsoil that is removed would be stockpiled and used to reclaim disturbed ground in the project area. The time that topsoil is stockpiled would be minimized, as is practicable, in order to retain its viability.
- The time that barren areas are exposed would be minimized, as is practicable, in order to reduce soil erosion and decrease the chance that weeds colonize the site.
- BMPs would be applied to reduce soil erosion. Sediment controls would be emplaced around swales, topsoil stockpiles, and staging areas, to prevent or reduce soil erosion, especially during precipitation events. Erosion control measures would be needed along deep cuts and fills to prevent deposition into swales and drainages.
- Soil stabilizers or soil binders could be applied, as needed.
- Monitoring of any identified cultural resource impacts by qualified personnel is recommended during all ground-disturbing activities.
- Project personnel are prohibited from collecting any artifacts or disturbing cultural resources in the area under any circumstances.

3.14 Cumulative Impacts

Environmental impacts may accumulate slowly over time or hasten when in combination with similar activities in the area. Unrelated activities may also have negative impacts on critical elements, thereby contributing to cumulative degradation of the environment. Reasonably foreseeable future impacts must also be considered.

Earlier oil and gas exploration did not result in commercial production; for example, a well drilled in Section 22, T149N, R91W in the 1950's is listed by the NDIC as dry holes (NDIC 2010). Current land uses are expected to continue with little change since virtually all available acreage is already organized into range units to use surface resources for economic benefit. Undivided interests in the land surface, range permits, and agricultural leases are often held by different tribal members than those holding the

mineral rights; oil and gas development is not expected to have more than a minor effect on land use patterns.

Prairie habitat is increasingly being lost or fragmented in North Dakota. Structures (e.g., well pads, buildings, and houses), roadways, and vehicular traffic can fragment the landscape, alter movement patterns by wildlife species, and increase the ability for invasive/noxious plants to colonize. Many prairie species require large, contiguous blocks of grasslands for their biological needs and may avoid fragmented habitat or experience reduced reproduction. To prevent or slow habitat fragmentation XTO has proposed to drill multiple wells (up to twelve) at one well pad location that is accessed by one road. XTO has also positioned this proposed well pad such that it would use an existing road entrance off of BIA 13. These actions would reduce the number of well pad footprints and access roads required for the project; thereby, maintaining existing habitat and reducing fragmentation. To further reduce fragmentation, disturbed ground would be reclaimed with native prairie plants.

XTO has proposed that additional gas/oil well pad locations could eventually be drilled on other sections within the FBIR. Associated surface disturbance would be relatively minimal and other impacts, such as air quality, would mostly be temporary. Impacts to air quality by emissions from individual well pads have not been an issue in the 'far-field' as indicated, in part, by SO_2, NO_2, O_3, PM_x, CO, and Pb levels occurring within State and Federal standards (see *Section 3.2-Air Quality*). However, cumulative impacts to air quality in the 'near-field' of a Class II airshed have not been addressed by the EPA and remains unknown.

As of January 2010 a total of 226 active wells occur within a 20-mile radius of the proposed project site (Table 3.14; Figure 3.14) (NDIC 2010). As of January 2010 a total of 102 active, 136 confidential, two drilling, and 23 permitted exploratory wells have been proposed or approved within the FBIR (Table 3.14; Figure 3.14) (BIA 2009).

Table 3.14: ***Number of oil wells and their proximity to the proposed Beaks/HuntsMedicine 24X-8 project site.***[1]

Distance[2] (mile)	Type and Number of Oil Wells				
	Active	Confidential	Drilling	Permit Location to Drill	Total
0 to 1	0	0	0	0	0
1 to 5	0	0	0	0	0
5 to 10	9	17	0	0	26
10 to 20	87	88	3	22	200
Fort Berthold	102	136	2	23	263

[1] Source: NDIC 2010.
[2] Oil wells that occur 0 to 20 miles from the project site may occur on reservation and non-reservation lands. Fort Berthold well numbers only include oil wells occurring within the Reservation.

The proposed project would not share roads with any of the other listed installations. However, vehicular traffic would increase slightly on the rural road system. Visual changes would accumulate over the landscape from physical development of the well pad and access road and from possible increased lighting of the pad. Commercial success at any new well might result in additional oil/gas exploration proposals, but such developments are completely speculative at this time, as no other APDs have been submitted to the BLM or BIA.

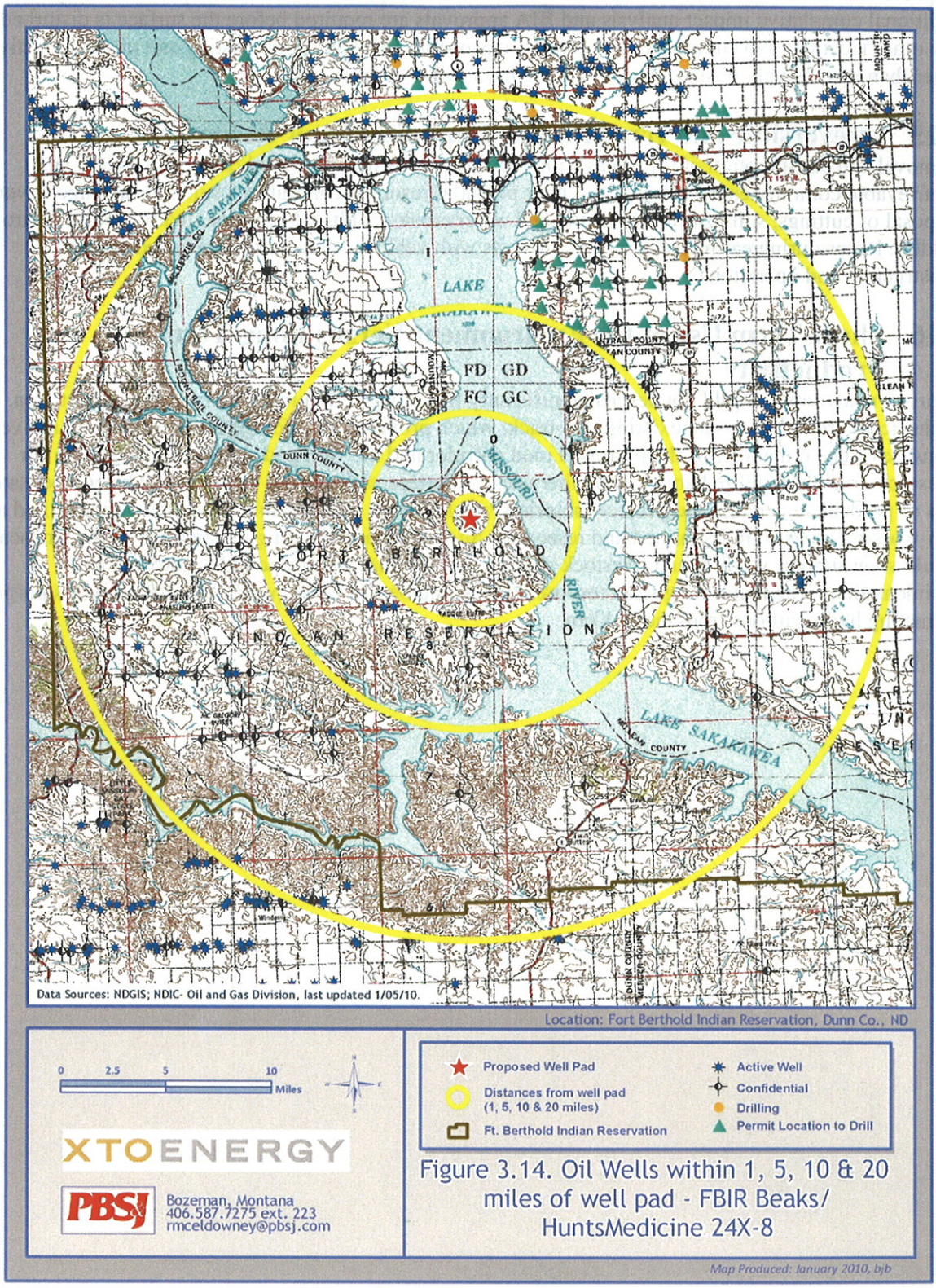


Figure 3.14. Oil Wells within 1, 5, 10 & 20 miles of well pad - FBIR Beaks/ HuntsMedicine 24X-8

Approved oil/gas leases carry an implied right to conduct exploration and development activity, but additional cumulative impact analysis and BIA approvals are required before the surface is disturbed at any other location. No cumulative impacts are reasonably foreseen from existing and proposed activities, other than increasingly positive impacts to the reservation economy.

3.15 Irreversible and Irretrievable Commitment of Resources

Removal and consumption of oil or gas from the Bakken Formation would be an irreversible and irretrievable commitment of resources. Other potential resource commitments include acreage devoted to disposal of cuttings, soil lost through wind and water erosion, cultural resources inadvertently destroyed, wildlife losses during earthmoving or in collisions with vehicles, and energy expended during construction and operation.

3.16 Short-Term Use of the Environment Versus Long-Term Productivity

Short-term activities would not detract significantly from long-term productivity of the project area. Most of the access road follows an existing two-track, which provides little forage for livestock and native ungulates. The remainder of the proposed road corridor and the well pad would be unavailable for livestock grazing, wildlife habitat, and other uses. Allottees with surface rights would be compensated for loss of productive acreage and project footprints would shrink considerably once wells were drilled and non-working areas were reclaimed and reseeded. Successful and ongoing reclamation of the landscape would soon support wildlife and livestock grazing and stabilize the soil to reduce erosion and sedimentation. The major long-term resource that would be lost corresponds with the project's purpose of extracting hydrocarbons from the Bakken.

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5.0 List of Preparers

An interdisciplinary team contributed to this document, following guidance in Part 1502.6 of CEQ regulations. Post, Buckley, Schuh, and Jernigan prepared this EA under contract to XTO Energy, Inc. and in cooperation with the Bureau of Indian Affairs, Great Plains Regional Office, Division of Environment, Safety and Cultural Resources. Preparers, reviewers, consultants, and federal officials include the following:

- Chris Miller — Project Manager, PBS&J
  Sections 1 and 2; document QA/QC.
- Richard McEldowney — Senior Scientist, PBS&J
  Affected Environment, Water Resources, and Cumulative Effects
- Andrea Pipp — Scientist, PBS&J
  Air Quality, Public Health and Safety, Water Resources, Cultural Resources, Environmental Justice, and Socio-Economics, and document preparation.
- Mark Traxler — Scientist, PBS&J
  General Wildlife and Fisheries
- Lynn Bacon — Scientist, PBS&J
  Threatened and Endangered Species
- Bridget Belliveau — GIS Specialist, PBS&J
  Maps
- Dennis Phillippi — Principal, Natural Resource Options, Inc.
  Document QA/QC
- Matt Phillippi — Range Scientist, Natural Resource Options, Inc.
  Vegetation and Invasive Species
- Doug Harrison — Soil Scientist, Natural Resource Options, Inc.
  Soils
- Jennifer Harty — Cultural Resources Specialist, Kadrmas, Lee & Jackson
  Cultural Investigation
- Donny Worthington — XTO Energy, Inc.
  Document QA/QC
- Marilyn Bercier — BIA - Regional Environmental Scientist. Division of Environmental, Safety and Cultural Resources. Review of draft EA and recommendation to BIA Regional Director regarding FONSI or EIS.

6.0 Consultation and Coordination

The project scoping letter reproduced below was mailed on March 26, 2010 and posted at the BIA Fort Berthold Agency. Direct mail recipients include those listed in Table 6.0. Eleven comment letters were received within the 30-day scoping period.

Dear Interested Party:

The Bureau of Indian Affairs (BIA) is preparing an Environmental Assessment (EA) under the National Environmental Policy Act (NEPA), in cooperation with the Bureau of Land Management (BLM). The proposed action includes approval by the BIA and BLM of the drilling and completion of up to twelve exploratory oil and gas wells using one well pad and one access road on the Fort Berthold Indian Reservation by XTO Energy, Inc. The well pad and access road are proposed in the following locations and shown on the enclosed project location map:

- Beaks/HuntsMedicine 24X-8 Site: SE ¼, SW ¼, Section 8, Township 149N, Range 91W
  NW ¼, Section 17, Township 149N, Range 91W

Development of the project would consist of the mechanical excavation and preparation of one well pad and construction of one access road. The proposed well pad and associated cut/fill slope and piles is roughly 5.65 acres in size. The proposed access road is roughly 5,388 feet long; of which 2,727 feet is proposed as new road and 2,662 feet would involve improvements to an existing two-track road. The twelve wells would be located within a 1,280-acre spacing unit and positioned to use the same access road. The drilling of these well sites is proposed to begin as early as spring/summer 2010.

To ensure that social, economic, and environmental effects are analyzed accurately, we solicit your views and comments on the Proposed Action, pursuant to Section 102(2) (D) (IV) of NEPA, as amended. We are interested in developments proposed or underway that should be considered in connection with the proposed project. We also ask your assistance in identifying any property or resources that you own, manage, oversee or otherwise value that might be adversely impacted. Please send your replies and requests for additional project information to:

Chris Miller, Project Manager
PBS&J
115 N. 28th Street, Suite 202
Billings, Montana 59101-2045
406-259-7979
lcmiller@pbsj.com

If we do not hear from you by **April 29, 2010** we will assume that you have no comment on this project. Questions can be directed to Chris Miller using the information provided, or Rich McEldowney at (406) 587-7275 (ext. 223).

Sincerely,

Chris Miller
Project Director

Table 6.0: ***Responses by direct mail by recipients of scoping letter sent on March 26, 2010.***

ENTITY	CONTACT	RESPONSE*
MHA Nation		
Chairman	Marcus Wells Jr.	No comments received.
Four Bears Representative	V. Judy Brugh	No comments received.
Mandaree Representative	Nathan Hale	No comments received.
New Town Representative	Malcom Wolf	No comments received.
Parshall/Lucky Mound Representative	Mervin Packineau	No comments received.
Twin Buttes Representative	Barry Benson	No comments received.
THPO	Perry Brady	No comments received.
	Fred Fox	No comments received.
Director of Game and Fish	Fred Poitra	No comments received.
	Damon Williams	No comments received.
	NAGPRA Office	No comments received.
Natural Resource Dept.	Barry Benson	No comments received.
Regional Native American Tribes		
Sisston-Wahpeton Sioux Tribe	Mike Selvage	No comments received.
Spirit Lake Sioux Tribe	Myra Pearson	No comments received.
Standing Rock Tribe	Charles W. Murphy	No comments received.
Turtle Mountain Band of Chippewa	Richard Marcellais	It is the determination of the Tribal Historic Preservation Office that the proposed project will have no effect on historic properties of importance to the Turtle Mountain Band of Chippewa Indians.
U.S. Department of Agriculture		
Natural Resource Conservation Service	Paul Sweeney State Conservationist	The proposed project is not supported by federal funding or action, therefore, the Farmland Protection Policy Act (FPPA) does not apply and no further action is needed.
Little Missouri National Grassland-McKenzie		No comments received.
U.S. Department of Defense		
Minot Air Force Base		No comments received.
U.S. Army Corps of Engineers	Garrison Project Office	No comments received.
U.S. Army Corps of Engineers	Omaha District	No comments received.
U.S. Army Corps of Engineers	Jason Renschler Project Manager Bismarck, ND	If construction activities involve the discharge of dredged or fill materials into waters of the U.S. or affect a navigable waterway, a Corps permit would be required. However, if the project(s) and associated work can be accomplished by avoiding discharge into waters of U.S. and not affect a

ENTITY	CONTACT	RESPONSE*
		navigable water, a Corps permit would not be required.
U.S. Army Corps of Engineers	Charles Sorensen Riverdale, ND Office	USACE requests the following conditions be considered in the construction of a well location: avoid potential for river and lake contamination by using a closed loop mud and drilling fluid system; establish a catch trench on the down slope side of the pad closest to the COE boundary; all fluids in trench will be pumped out and disposed of properly; all sewage collection systems are a closed system –no open or exposed tanks, catch basins; all fill/soil material be certified free of noxious weeds; equipment be pressure washed prior to arrival at the site; no surface occupancy within 0.5 miles of known T&E critical habitat.
U.S. Department of Energy		
Western Area Power Administration		No comments received.
U.S. Department of Homeland Security		
Federal Emergency Management Agency Region VIII	Dave Kyner Program Specialist	FEMA's concern is if the property is located within a mapped Special Flood Hazard Area. Recommended contacting Cliff Whitman to receive further guidelines regarding the potential impact the project may have relative to the regulations and policies of the National Flood Insurance Program.
U.S. Department of the Interior		
Bureau of Indian Affairs	Marilyn Bercier	No comments received.
Bureau of Indian Affairs Fort Berthold Agency	Darryl Turcotte	No comments received.
Bureau of Indian Affairs Fort Berthold Agency	Marietta Shortbull	No comments received.
Bureau of Indian Affairs Fort Berthold Agency	Jeff Desjarlais	No comments received.
Bureau of Land Management	Billings, MT Office	No comments received.
Bureau of Land Management	Dickinson, ND Office	No comments received.
Bureau of Reclamation	Kelly B. McPhillips Environmental Specialist Bismarck, ND	Proposed oil well site appears to be near rural water pipelines, access roads are not shown on map. A rural water system pipeline key is attached to assist in determining potential affects to rural water pipelines. Any work planned should be coordinated with Mr. Marvin Danks.

ENTITY	CONTACT	RESPONSE*
U.S. Fish and Wildlife Service	Jeffrey Towner	Numerous recommendations received – see Appendix F.
National Park Service	Midwest Regional Office	No comments received.
U.S. Environmental Protection Agency		
Region 8 NEPA Program	Larry Svoboda	No comments received.
Region 8 Water Quality Program	David Moon	No comments received.
U.S. Department of Transportation		
Federal Aviation Administration	Patricia L. Dressler Environmental Protection Specialist Bismarck, ND	No objection provided the FAA is notified of construction or alterations as required by Federal Aviation Regulations, Part 77, Objects Affecting Navigable Airspace.
North Dakota State Government		
Department of Health	L. David Glatt, Chief Environmental Health Section	Impacts from proposed construction are considered minor. Efforts should be make to control fugitive dust. Care should be taken during construction to minimize adverse impacts on water bodies. Caution must be taken to minimize spills of oil and grease that may reach the receiving water(s) from equipment maintenance and/or the handling of fuels. May need a permit to discharge storm water runoff from EPA. Guidelines to minimize erosion and control sediment to protect surface water quality are provided.
Department of Transportation	Ronald J. Henke Director Office of Project Development	Proposed project will have no adverse effect on the highways unless working in highway ROW's then appropriate permits and risk management documents need to be completed.
Game and Fish Department - Conservation and Communication Div.	Michael McKenna	Primary concern is the fragmentation and loss of wildlife habitat associated with well pads and access roads. Recommend avoiding, to the extent possible, native prairie, wooded draws, riparian corridors and wetlands. Suggest botanical surveys be completed during the appropriate season and aerial surveys be conducted for raptor nests prior to construction.
Indian Affairs Commission	Scott Davis	No comments received.
Parks and Recreation Planning and Natural Resources Div.	Jesse Hanson	Proposed project does not affect state park lands or Land and Water Conservation Fund recreation projects. There are no known occurrences of animal or plant species of concern within or adjacent to the proposed

ENTITY	CONTACT	RESPONSE*
		project. Recommend using native species for revegetation on impacted areas.
State Water Commission	Larry Knudtson	Site is not located in an identified floodplain nor is it expected to affect an identified floodplain. No sole source aquifers have been identified in ND. Waste materials should be disposed of properly and not placed in identified floodway areas.
State Historical Society of North Dakota/SHPO	Merlan E. Paaverud, Jr. Director	Request that a copy of cultural resource site forms and reports be sent to this office to keep records current.
North Dakota State Land Department	Energy Development Impact Office	No comments received.
North Dakota Industrial Commission	Oil & Gas Division	No comments received.
County Government		
Dunn County, Treasurer	Reinhard Hauck	No comments received.
Dunn County, Commissioner	Ray Kadrmas	No comments received.
Dunn County, Commissioner Chair	Cliff Ferebee	No comments received.
McKenzie County, Commissioner	Richard Cayko	No comments received.
McKenzie County, Auditor	Frances Olson	No comments received.
Municipal Government		
New Town Municipal Airport, Manager	Harley Johnson	No comments received.
Parshall-Hankins Field Airport, Manager	John Kuehn	No comments received.
Utility Companies		
McKenzie Electric Cooperative		No comments received.
McLean Electric Cooperative, Inc.		No comments received.
Mid-Continent Cable Company		No comments received.
Montana-Dakota Utilities		No comments received.
NoDak Electric Co-op, Inc.		No comments received.
Northern Border Pipeline Company		No comments received.
Reservation Telephone Cooperative		No comments received.
Southwest Water Authority		No comments received.
West Plains Electric Cooperative, Inc.		No comments received.

*See Appendix F for full comments from the agencies/organizations.

United States Department of the Interior

BUREAU OF INDIAN AFFAIRS
Great Plains Regional Office
115 Fourth Avenue S.E.
Aberdeen, South Dakota 57401

TAKE PRIDE IN AMERICA

IN REPLY REFER TO:
DESCRM
MC-208

JAN 20 2010

Perry 'No Tears' Brady, THPO
Mandan, Hidatsa and Arikara Nation
404 Frontage Road
New Town, North Dakota 58763

Dear Mr. Brady:

We have considered the potential effects on cultural resources of three oil well pads and access roads in Dunn County, North Dakota. Approximately 83.1 acres were intensively inventoried using a pedestrian methodology. Potential surface disturbances are not expected to exceed the area depicted in the enclosed report. No historic properties were located that appear to possess the quality of integrity and meet at least one of the criteria (36 CFR 60.4) for inclusion on the National Register of Historic Places. No properties were located that appear to qualify for protection under the American Indian Religious Freedom Act (42 USC 1996).

As the surface management agency, and as provided for in 36 CFR 800.5, we have therefore reached a determination of **no historic properties affected** for these undertakings. Catalogued as **BIA Case Number AAO-1669/FB/09**, the proposed undertakings, locations, and project dimensions are described in the following reports:

Herson, Chandler S.
(2009) FBIR Iron Woman 21x-10 and Yellow Wolf 21x-10: A Class III Cultural Resource Inventory, Dunn County, North Dakota. KLJ Cultural Resources for XTO Energy, Fort Worth, TX.

Ó Domhchadha, Brian
(2009) Darcie 34x-14 Well Pad and Access Road: Class III Cultural Resource Inventory, Dunn County, North Dakota. KLJ Cultural Resources for XTO Energy, Fort Worth, TX.

Rabe, Angie M.
(2009) Beaks 24x-8 and Hunts Medicine 24x-8 Well Pad and Access Road: A Class III Cultural Resource Inventory in Dunn County, North Dakota. KLJ Cultural Resources for XTO Energy, Fort Worth, TX.

If your office concurs with this determination, consultation will be completed under the National Historic Preservation Act and its implementing regulations. The Standard Conditions of Compliance will be adhered to.

If you have any questions, please contact Dr. Carson N. Murdy, Regional Archaeologist, at (605) 226-7656.

Sincerely,

ACTING Regional Director

Enclosures

cc: Chairman, Three Affiliated Tribes
Superintendent, Fort Berthold Agency

Appendix A

FBIR Beaks 24X-8 Application for Permit to Drill
FBIR HuntsMedicine 24X-8 Application for Permit to Drill

Beaks/HuntsMedicine 24X-8 Site Environmental Assessment
XTO Energy, Inc.

Appendix A

FBIR Beaks 24X-8 Application for Permit to Drill
FBIR HuntsMedicine 24X-8 Application for Permit to Drill

Beaks/HuntsMedicine 24X-8 Site Environmental Assessment
XTO Energy, Inc.

Form 3160-3
(August 2007)

FORM APPROVED
OMB No. 1004-0137
Expires July 31, 2010

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No. - 48500
7420A-41220;-41778;-49857;-49821;-41774

6. If Indian, Allotee or Tribe Name

7. If Unit or CA Agreement, Name and No.

1a. Type of work: ☑ DRILL ☐ REENTER

1b. Type of Well: ☑ Oil Well ☐ Gas Well ☐ Other ☑ Single Zone ☐ Multiple Zone

8. Lease Name and Well No.
FBIR Beaks 24X-8

2. Name of Operator XTO Energy, Inc.

9. API Well No.
Pending

3a. Address 7114 W. Jefferson Ave., Suite 305
Denver, CO 80235

3b. Phone No. (include area code)
303.969.8280

10. Field and Pool, or Exploratory
Heart Butte - Bakken

4. Location of Well (Report location clearly and in accordance with any State requirements.*)
At surface 200' FSL & 1890' FWL, SESW Sec. 8-T149N-R91W
At proposed prod. zone 616' FSL & 2084' FWL, SESW Sec. 8-T149N-R91W

11. Sec., T. R. M. or Blk. and Survey or Area
8-149N-91W

14. Distance in miles and direction from nearest town or post office*

12. County or Parish
Dunn

13. State
ND

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drlg. unit line, if any) 200'

16. No. of acres in lease
1280 Ac. Spacing Unit

17. Spacing Unit dedicated to this well
All of Sec. 5 & 8-149N-91W

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. n/a

19. Proposed Depth
20,011' MD
10,273' TVD

20. BLM/BIA Bond No. on file
104312789 (BIA Bond)

21. Elevations (Show whether DF, KDB, RT, GL, etc.)
2180' GL

22. Approximate date work will start*
09/01/2010

23. Estimated duration
45 days

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No.1, must be attached to this form:

1. Well plat certified by a registered surveyor.
2. A Drilling Plan.
3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office).
4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification
6. Such other site specific information and/or plans as may be required by the BLM.

25. Signature

Name (Printed/Typed)
J. Michael Warren

Date
04/16/2010

Title
Regulatory Supervisor

Approved by (Signature)

Name (Printed/Typed)

Date

Title

Office

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.
Conditions of approval, if any, are attached.

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Continued on page 2)

*(Instructions on page 2)

XTO ENERGY

PO Box 1589, Sidney, MT 59270

Drilling Plan - **Drill, Complete & Equip Single Lateral Wellbore in the Bakken**

Well Name and Location

FBIR Beaks 24X-8

Location: SE SW Sec 8, 149N-91W
Footage: 200 ft FSL, 1890 ft FWL
Elev: Graded Pad 2179', KB 2203'
Dunn County, ND

Latitude	**47.732492**	**North**
Longitude	**102.356992**	**West**

Driving Directions

From Mandaree, ND: 15.3 mi ESE on BIA 12, 1.7 mi NNE on BIA 13, 3.2 mi E x N x NE on 19th St. NW (BIA 13), 0.5 mi E on existing road, then 0.5 mi N into location

Drilling Rig Description

Rig	Patterson 311
Draw Works	Oilwell 860-E - 1400 HP
Mast	Pyramid 142' mast (750,000# on 12 lines)
Prime Movers	3 - Caterpillar 3512 w/ 1365 KW generators
Pumps	2 - NOV FD-1600 (independently driven)
BOPE	Shaffer 13-5/8" 5,000 psi double gate BOP
	Hydril 13-5/8" 5,000 psi Annular BOP
	4" x 10,000 psi manifold

Formation Tops	**TVD**	*Offset XTO Wells - none*
Base of Fox Hills	1,903	
Greenhorn	4,221	
Dakota Silt	4,941	Brackish Water
Dunham Salt	**6,111**	**(0 - 50+ ft)**
Spearfish	6,421	
Pine / Opeche Salts	**6,595**	**(+400 ft)**
Minnelusa	7,040	soft/hard formation
Tyler	7,526	laminations can wipe
Kibbey Lime	7,971	out bit if drilled too aggressively
Charles	**8,130**	
Base Last Salt	**8,627**	
Mission Canyon	8,805	Possible losses
Lodgepole	9,406	
Bakken Shale	10,243	
Middle Bakken	10,261	
Target - Bakken	**10,273**	

Logging, DST and Coring Program

1. A mud log will be run from Base of Last Salt to TD & on all laterals: Mudlog to include: total gas chromatograph and sample cuttings - 10' sample intervals in vertical hole & 30' intervals in laterals. A CBL/GR log will be run from deepest free-fall depth in 7 inch casing to surface. An MWD GR/ROP log will also be run from KOP (where the CBL will tie into) to TD of lateral.
2. *Open hole logs are anticipated for this well (if first well on this dual pad).*
3. No DST's are planned at this time.

H2S

A minor H2S show may be present from below Base Last Salt to KOP. If noticed, RU H2S safety trailer etc.

Maximum Formation Pressure and Temp

1. Normal formation pressure gradient is expected (up to 0.5 psi/ft or 9.6 ppg) from surface to the Bakken Shale. The Bakken Shale, Bakken Middle Member, and Three Forks may be over pressured up as much as 0.66 psi/ft (12.8 ppg).
2. The maximum anticipated BHT is **250** degrees F. or less.

BOP Equipment Requirements

See attached diagram detailing BOPE specifications.

1. Rig will be equipped with upper and lower kelly cocks with handles available.
2. Inside BOP and TIW valves will be available to use on all sizes and threads of DP used on well.
3. BOP accumulator will have enough capacity to close HCR valve, close all rams plus annular preventer & retain minimum of 200 psi above precharge on the closing manifold without the use of closing pumps. The fluid reservoir capacity shall be at least double the usable fluid volume of the accumulator system capacity & the fluid level shall be mainatained at manufacturer's recommendation. There will be 2 additional sources of power for the closing pumps (electric and air). Sufficient N2 bottles will be available and will be recharged when pressure falls below manufacturer's minimum
4. BOP ram preventers will be tested to 5,000 psi using a test plug when initially installed and after 7 inch casing is nippled up and at 30 day intervals. Test BOP & casing strings to 1,500 psi just prior to drilling out 9-5/8" and 7" casing shoes. Function test rams and hydraulically operated remote choke line valve daily (preferably at every crew change).
5. Remote valve for BOP rams, HCR & choke shall be placed in a location that is readily available to Driller. The remote BOP valve shall be capable of closing and opening the rams.
6. Hand wheels on BOP shall be equipped with locking devices. A locking device shall be placed on annular preventer line valve & must be locked in the open position. This lock shall only be removed when the closing unit is inoperative.

Drilling Fluid and Related Equipment

1. Pumps shall be equipped with stroke counters with displays located in dog house. Slow pump speed shall be recorded on drilling report daily after mudding up.
2. A Pit Volume Totalizer will be installed and the readout will be displayed in the dog house.
3. Gas detecting equipment (for a chromatagraph) will be installed at shaker. Readouts will be available in dog house and in geologist trailer.

4. In the event gas flow becomes an issue. A flare pit shall be constructed not less than 100' from wellhead & 50' from reserve pit area. Lines to the flare pit will be straight runs (staked down) and turns will utilize targeted tees. Flare pit will be located down wind as much as possible. An electronic ignitor will be used along with a propane line to provide for a continuous flare pilot.

Drilling Plan

Section 1 - Surface Casing>> **Surface to: 2,020** ***(Surface Casing Depth + 20')***

Conductor: 16' set at 45' - 80' (depending on gravel or coal depths)
Hole Size: 13-1/2"
Mud: Fresh Water
Bits: Type 1 mill tooth
Procedure: Set 16" conductor pipe into firm clay (45'-60').
Drill to casing setting depth (plus necessary rathole).
After reaching TD, run gyro or multi-shot directional survey (inclination and azimuth at 100' stations).
Run casing and cement. Weld on C22 5M psi casing head. NU 11" x 5M psi drilling spool.
NU 5M psi BOPE. Test to 5,000 psi
Casing: 9-5/8" 36# K-55 8rd ST&C R3 SMLS - New. **Set at: 2,000 ft**
Centralizers: 2 turbolizers per jt on 1st **2** jts (stop banded 10' from each collar) & 1 regular centralizer per **5** jts to surface.
Cement: Lead Slurry: **410 Sacks**
High Yield Class C w/ 3% CaCl2, water control & 1/8 #/sk polyflakes. Mixed at 19.3 gps wtr, 3.2 cf/sk yield & 11.2 ppg.
Tail Slurry: **200 Sacks**
Class G with 2% CaCl2 & 1/8 #/sk polyflakes. Mixed at 4.97 gps wtr, 1.15 cf/sk yield and 15.8 ppg.
Note: *Volumes calculated assuming 55% excess over 13-1/2" hole size.*

Section 2 - Surf Csg Shoe to KOP>> **2,000 to: 9,864**

Hole Size: 8-3/4"
Mud Invert - 80% Diesel / 20% Salt Water. Mud Weight 9.5 - 9.7 PPG. ES 500-600.
Bits PDC bits with mud motors and MWD.
Procedure: Drill w / PDC bit & mud motor. Steer as needed with MWD or SWD. Survey every 90'. Hold deviation to 2 deg max from surf csg shoe to ~6,000'; then ~3 deg max to ~8,000'; then ~4 deg max to KOP. Condition hole for logs (if needed). TOH

Logs: Mudlogger will start at Base of Last Salt.
if required by the State { **GR, Resistivity, BHC Sonic** **From TD To Surf Csg**
Density - Neutron Porosity **From TD To 50' above Tyler**

Section 3 - Drill Curve (14 Degree/100')>> **9,864 to: 10,577 7" Casing Point**

Hole Size: 8-3/4"
Mud: Invert - 80% Diesel / 20% Salt Water. Mud weight 9.5 - 9.7 PPG. ES 500-600.
Bits: Type 3 Insert Roller Cone.
Procedure: Drill Curve per directional plan (maximum survey interval is 30').
Casing: Set 7" 29# P-110 LT&C and 32# MS or P-110 (100' above and below salts) at **10,557 ft**

Anticipated Casing Design to facilitate fracture stimulating down casing

Top	Btm	Ftg			
0	6,011	6,011	7" 29# P-110 LT&C		Surf to 100' above Dunham salt
6,011	7,140	1,129	7" 32# P-110 LT&C		100' above Dunham to 100' below Base of **Pine/Opeche** salts
7,140	8,030	890	7" 29# P-110 LT&C		100' below base of **Pine/Opeche** to 100' above Charles salt
8,030	8,727	697	7" 32# P-110 LT&C		100' above Charles salt to 100' below Base of Last Salt
8,727	9,964	1,237	7" 29# **MS-110** LT&C		100' below Base of Last Salt 100' below KOP
9,964	10,557	593	7" 29# P-110 LT&C		100' below KOP to TD

Centralizers: 2 stand-off bands per jt on btm **3** jts (banded 10' from collars). 1 stand-off band on every other jt from curve landing depth through KOP. 1 turbolizer centralizer per jt from 100' above to 100' below each salt section. Then, 1 regular centralizer per **5** jts up to anticipated cement top.
Cement: **Lead Slurry:** **225 Sacks** ***(est. TOC ~ 300' above Mowry)***
LiteCRETE with defoamer, fluid loss additive, dispersant, retarder, 10% salt & 1/8 #/sk polyflakes. Mixed at 6.528 gps, 1.86 cf/sk, 11.5 ppg
1st Tail Slurry: **476 Sacks** ***(est. TOC 200' above Dunham Salt)***
Class G with 35% silica flour, 10% salt, dispersant, fluid loss additive, retarder, 1/8#/sk polyflakes. Mixed at 7.145 gal/sk, 1.65 cf/sk, 15.6 ppg.
2nd Tail Slurry: **271 Sacks** ***(est.TOC 100' below the Mission Canyon)***
Class G with 35% silica flour, 10% salt, expanding agent, dispersant, defoamer, fluid loss additive, retarder, 1/8 #/sk polyflakes. Mixed at 6.911 gal/sk, 1.62 cf/sk, 15.8 ppg.
NOTE: Slurry volumes are based on 9" hole + 50% excess (≈ 8.75" hole + 75% excess)
Logs: MWD GR/ROP. Mud log.

Section 4 - Lateral #1>> **10,557 to: 20,011** ***TD (MD)***

Hole Size: 6"
Mud: Salt Water Mud. Typically 9.5-9.7 ppg using NaCL. If conditions warrant use CaCl brine (up to 11.2 ppg).
Bits: PDC bits.
Procedure: TIH w/bit and directional tools. Drill open hole lateral per directional plan to TD target. Max survey interval in lateral is 90'.
TOH with DP & BHA. Run 4 1/2" 11.35# J-55 **FM-II** liner w/ pre-drilled, 0.5" holes per 2 ft below bottom-most external swell pkr, followed by 13.5# P-110 **FM-II blank** pipe with external swell packers (evenly spaced in open hole, unless natural fractures were encountered while drilling) from +/-TD to last swell packer in open hole. Run 4.5" 13.5# P-110 **Tenaris-Blue** casing above last swell packer in the open hole to +/- KOP, with a final swell packer located immediately below the liner hanger.
Once liner is run, circulate out oil & gas and spot FW in lateral to activate swell pkrs. Drop ball & wait +/- 1 hr for it to seat.
Set liner hanger & top pkr - test to +/- 5,000 psi.
Liner: **Top:** **Btm:**
9,864 ***- KOP*** **20,011** ***<-- spaced out as close to TD as possible***

Finalize Well >>>> Set wireline-set, tubing-retreivable packer with BHP gauges and top blanking plug installed at, or just above KOP. Circulate well with clean, brine water prior to TOH LD DP. ND BOP and NU tubing head. RDMO.

Prepared By: Ross H. Lubbers

XTO ENERGY

Well Construction Diagram

FBIR Beaks 24X-8
Location: SE SW Sec 8, 149N-91W
Footage: 200 ft FSL, 1890 ft FWL
Elev: Graded Pad 2179', KB 2203'
Dunn County, ND

From Mandaree, ND: 15.3 mi ESE on BIA 12, 1.7 mi NNE on BIA 13, 3.2 mi E x N x NE on 19th St. NW (BIA 13), 0.5 mi E on existing road, then 0.5 mi N into location

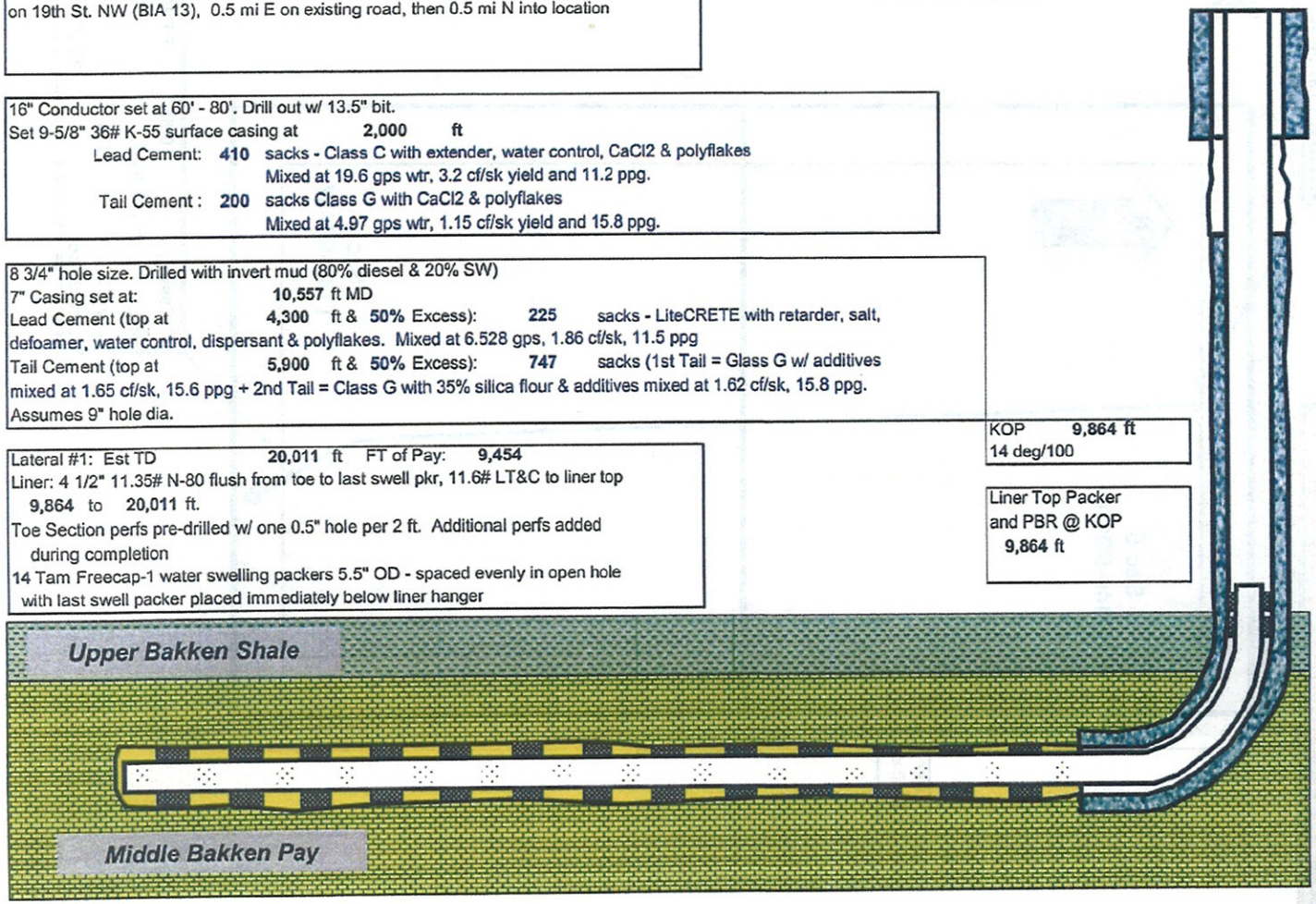
16" Conductor set at 60' - 80'. Drill out w/ 13.5" bit.
Set 9-5/8" 36# K-55 surface casing at **2,000** ft
Lead Cement: **410** sacks - Class C with extender, water control, CaCl2 & polyflakes
Mixed at 19.6 gps wtr, 3.2 cf/sk yield and 11.2 ppg.
Tail Cement : **200** sacks Class G with CaCl2 & polyflakes
Mixed at 4.97 gps wtr, 1.15 cf/sk yield and 15.8 ppg.

8 3/4" hole size. Drilled with invert mud (80% diesel & 20% SW)
7" Casing set at: **10,557** ft MD
Lead Cement (top at **4,300** ft & **50%** Excess): **225** sacks - LiteCRETE with retarder, salt, defoamer, water control, dispersant & polyflakes. Mixed at 6.528 gps, 1.86 cf/sk, 11.5 ppg
Tail Cement (top at **5,900** ft & **50%** Excess): **747** sacks (1st Tail = Glass G w/ additives mixed at 1.65 cf/sk, 15.6 ppg + 2nd Tail = Class G with 35% silica flour & additives mixed at 1.62 cf/sk, 15.8 ppg.
Assumes 9" hole dia.

Lateral #1: Est TD **20,011** ft FT of Pay: **9,454**
Liner: 4 1/2" 11.35# N-80 flush from toe to last swell pkr, 11.6# LT&C to liner top
9,864 to **20,011** ft.
Toe Section perfs pre-drilled w/ one 0.5" hole per 2 ft. Additional perfs added during completion
14 Tam Freecap-1 water swelling packers 5.5" OD - spaced evenly in open hole with last swell packer placed immediately below liner hanger

KOP **9,864 ft**
14 deg/100

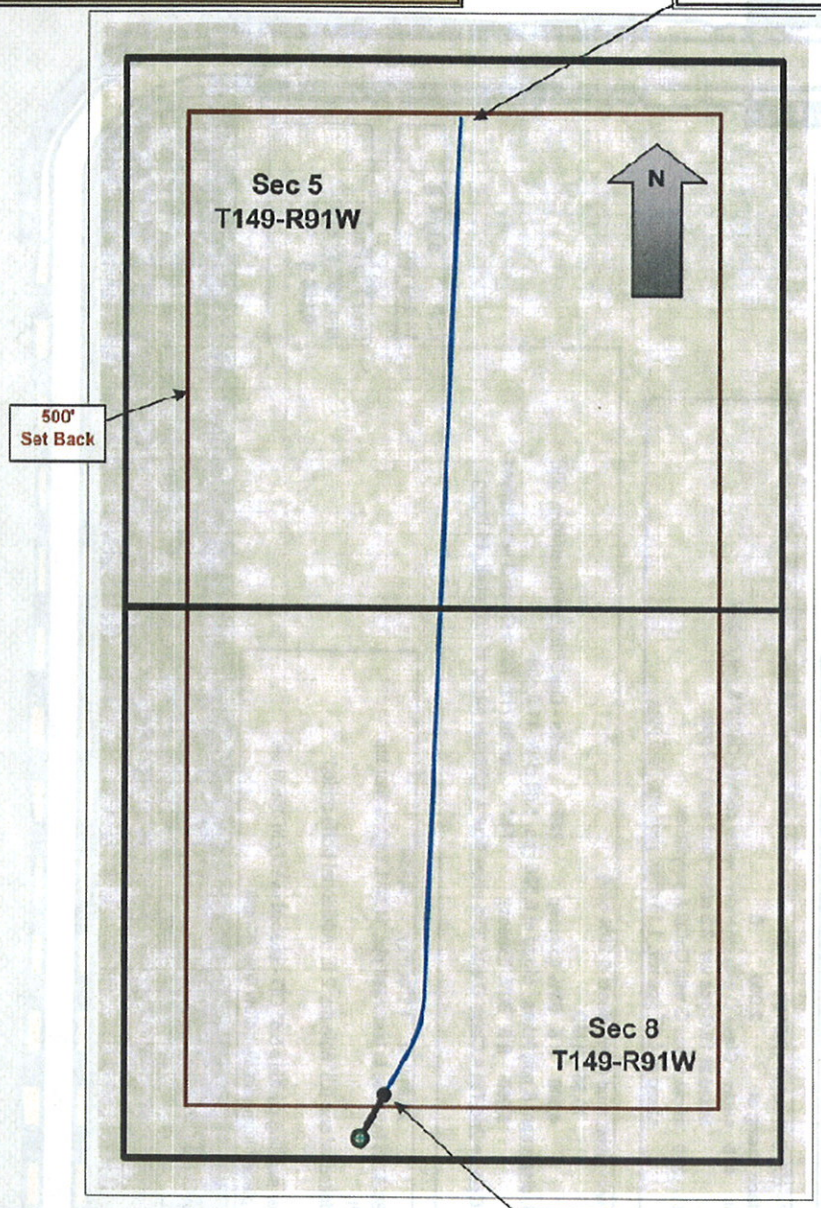
Liner Top Packer and PBR @ KOP
9,864 ft



DIRECTIONAL DRILLING PLAN
FBIR Beaks 24X-8

Location: SE SW Sec 8, 149N-91W
Footage: 200 ft FSL 1890 ft FWL
Elev: Graded Pad 2179', KB 2203'
Dunn County, ND
Scale: 1 sq = 100'

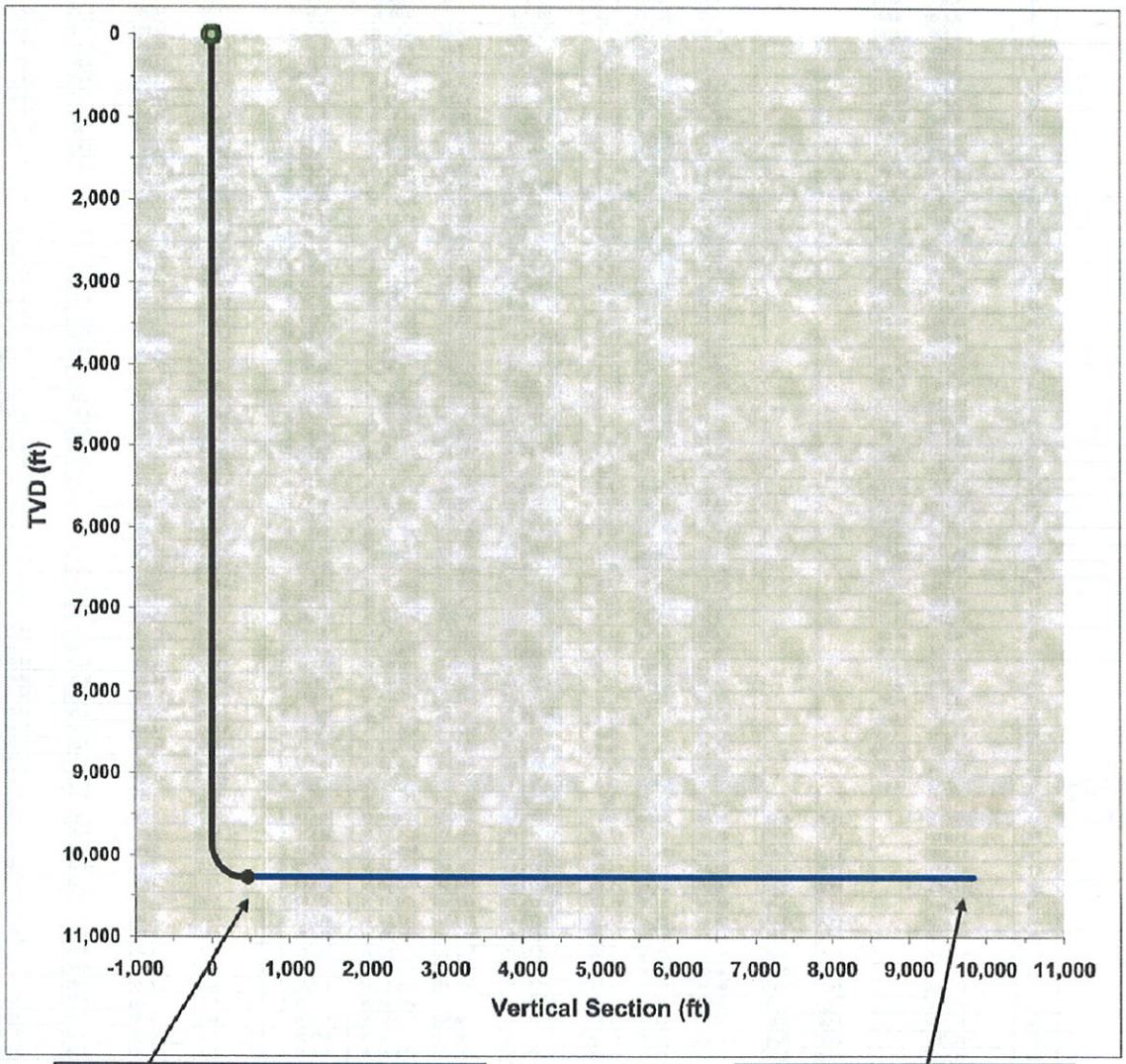
TARGET			
TMD:	20,011 ft		
TVD:	10,273 ft		
9,804	NOW	796	EOW
550	FNL	2,639	FEL
WH to BH Target Az			4.64



7" Casing:	10,557	FT MD	
BHL:	2,084 ft FWL		616 ft FSL
Coord:	194 E		416 N
Az to Shoe:		25.00	Deg

DIRECTIONAL DRILLING PLAN
FBIR Beaks 24X-8

Location:	SE SW Sec 8, 149N-91W	
Footage:	200 ft FSL	1890 ft FWL
Elev:	Graded Pad 2179', KB 2203'	
Dunn County, ND		
Scale: 1 sq = 500'		



7" Casing:	10,557	FT MD	
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Coord:	194 E	416 N	
Az to Shoe:	25.00	Deg	

TARGET			
TMD:	20,011 ft		
TVD:	10,273 ft		
9,804	NOW	796	EOW
550	FNL	2,639	FEL
WH to BH Target Az			4.64

HORIZONTAL DRILLING PLAN - LATERAL NO.1

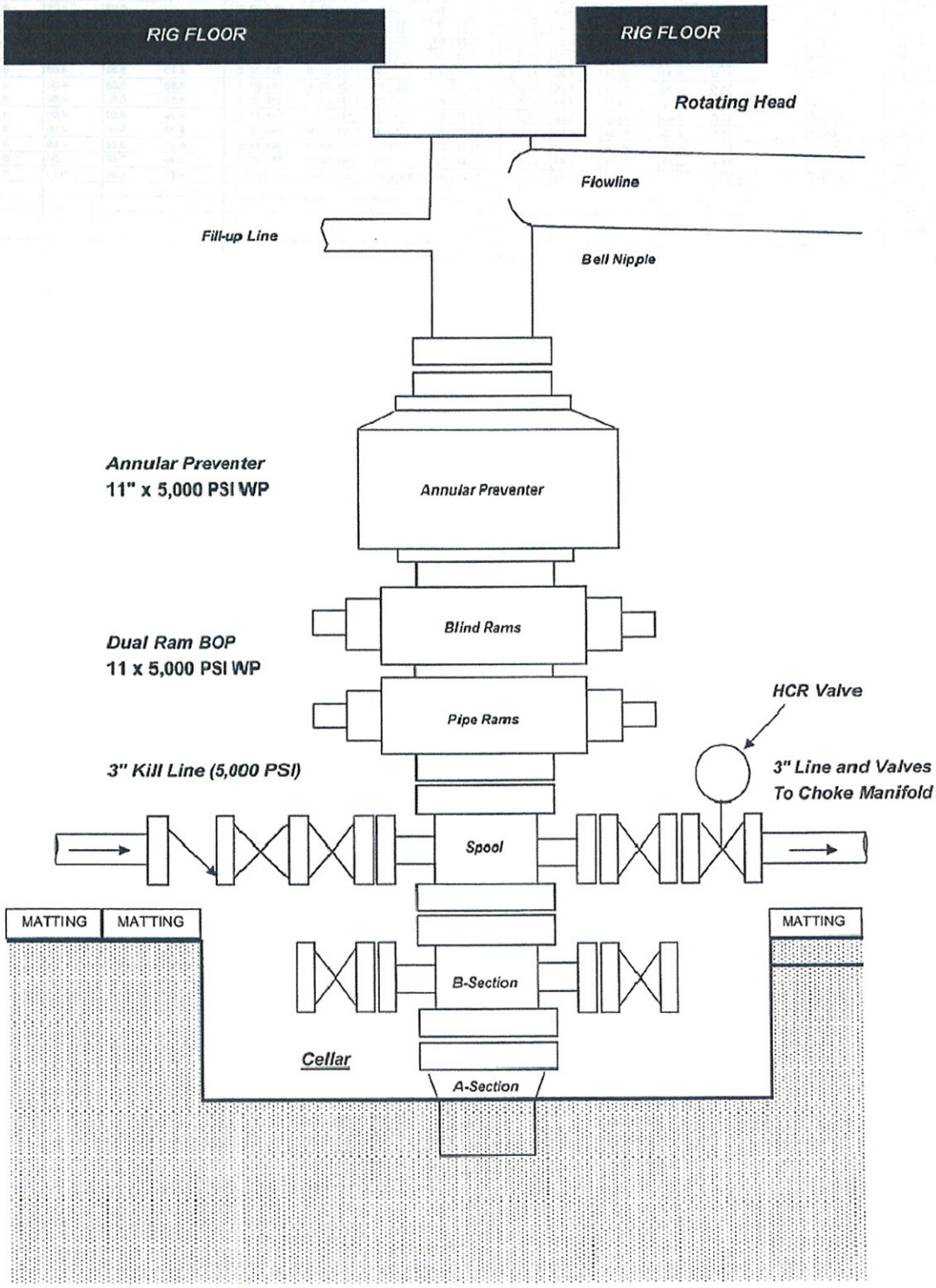
Company	XTO Energy, Inc		Target Inclination	90	
Well	FBIR Beaks 24X-3		Magnetic Declination		
Build Rate	14.00		Target TVD	10,273	
Relative Turn Direction	L		Target Azimuth	4.84	2500 Initial Azimuth
Turn Rate - Deg/100	4.00	23.11 Total Turn	Target Coordinates from Surf Loca	706 E	9904 N 9,936 VS

Date	No.	DEPTH	BR	DL	DA	INC.	AZM	C.L.	T.V.D.	V.S.	N/S	E/W	DLS	B.D.	Walk	BRN
	1	0	14.00						0.00	0.00	0.00 N	0.00 E	0.00			0.00
KOP1	2	9,864	14.00			0.00	0.00	3864	9863.74	0.00	0.00 N	0.00 E	0.00	0.00	0.00	14.00
	3	9,877	14.00			1.30	25.00	12.9	9876.60	0.20	0.13 N	0.09 E	14.00	14.00	194.44	14.00
	4	9,889	14.00			3.50	25.00	12.9	9889.44	0.81	0.73 N	0.34 E	14.00	14.00	0.00	14.00
	5	9,902	14.00			5.80	25.00	12.9	9902.26	1.82	1.65 N	0.77 E	14.00	14.00	0.00	14.00
	6	9,915	14.00			7.20	25.00	12.9	9915.04	3.23	2.92 N	1.36 E	14.00	14.00	0.00	14.00
	7	9,928	14.00			9.00	25.00	12.9	9927.77	5.04	4.57 N	2.13 E	14.00	14.00	0.00	14.00
	8	9,941	14.00			10.30	25.00	12.9	9940.43	7.25	6.57 N	3.06 E	14.00	14.00	0.00	14.00
	9	9,954	14.00			12.60	25.00	12.9	9953.02	9.86	8.93 N	4.17 E	14.00	14.00	0.00	14.00
	10	9,967	14.00			14.40	25.00	12.9	9965.52	12.86	11.65 N	5.43 E	14.00	14.00	0.00	14.00
	11	9,979	14.00			16.20	25.00	12.9	9977.92	16.25	14.73 N	6.87 E	14.00	14.00	0.00	14.00
	12	9,992	14.00			18.00	25.00	12.9	9990.21	20.03	18.15 N	8.46 E	14.00	14.00	0.00	14.00
	13	10,005	14.00			19.30	25.00	12.9	10002.37	24.10	21.83 N	10.22 E	14.00	14.00	0.00	14.00
	14	10,018	14.00			21.60	25.00	12.9	10014.40	28.74	26.05 N	12.15 E	14.00	14.00	0.00	14.00
	15	10,031	14.00			23.40	25.00	12.9	10026.28	33.66	30.51 N	14.22 E	14.00	14.00	0.00	14.00
	16	10,044	14.00			25.20	25.00	12.9	10038.00	38.95	35.30 N	16.46 E	14.00	14.00	0.00	14.00
	17	10,057	14.00			27.00	25.00	12.9	10049.54	44.61	40.43 N	18.85 E	14.00	14.00	0.00	14.00
	18	10,069	14.00			28.30	25.00	12.9	10060.90	50.62	45.88 N	21.39 E	14.00	14.00	0.00	14.00
	19	10,082	14.00			30.60	25.00	12.9	10072.07	56.99	51.65 N	24.08 E	14.00	14.00	0.00	14.00
	20	10,095	14.00			32.40	25.00	12.9	10083.03	63.71	57.74 N	26.92 E	14.00	14.00	0.00	14.00
	21	10,108	14.00			34.20	25.00	12.9	10093.78	70.77	64.14 N	29.91 E	14.00	14.00	0.00	14.00
	22	10,121	14.00			36.00	25.00	12.9	10104.30	78.16	70.84 N	33.03 E	14.00	14.00	0.00	14.00
	23	10,134	14.00			37.30	25.00	12.9	10114.58	85.88	77.83 N	36.29 E	14.00	14.00	0.00	14.00
	24	10,147	14.00			39.60	25.00	12.9	10124.61	93.92	85.12 N	39.68 E	14.00	14.00	0.00	14.00
	25	10,159	14.00			41.40	25.00	12.9	10134.39	102.27	92.69 N	43.22 E	14.00	14.00	0.00	14.00
	26	10,172	14.00			43.20	25.00	12.9	10143.90	110.92	100.53 N	46.88 E	14.00	14.00	0.00	14.00
	27	10,185	14.00			45.00	25.00	12.9	10153.13	119.87	108.84 N	50.66 E	14.00	14.00	0.00	14.00
	28	10,198	14.00			46.30	25.00	12.9	10162.08	129.10	117.31 N	54.56 E	14.00	14.00	0.00	14.00
	29	10,211	14.00			48.60	25.00	12.9	10170.73	138.61	125.92 N	58.58 E	14.00	14.00	0.00	14.00
	30	10,224	14.00			50.40	25.00	12.9	10179.08	148.39	134.48 N	62.71 E	14.00	14.00	0.00	14.00
	31	10,237	14.00			52.20	25.00	12.9	10187.12	158.42	143.58 N	66.95 E	14.00	14.00	0.00	14.00
	32	10,249	14.00			54.00	25.00	12.9	10194.84	168.70	152.90 N	71.29 E	14.00	14.00	0.00	14.00
	33	10,262	14.00			55.30	25.00	12.9	10202.23	179.22	162.43 N	75.74 E	14.00	14.00	0.00	14.00
	34	10,275	14.00			57.60	25.00	12.9	10209.29	189.96	172.17 N	80.28 E	14.00	14.00	0.00	14.00
	35	10,288	14.00			59.40	25.00	12.9	10216.01	200.93	182.10 N	84.91 E	14.00	14.00	0.00	14.00
	36	10,301	14.00			61.20	25.00	12.9	10222.38	212.09	192.22 N	89.63 E	14.00	14.00	0.00	14.00
	37	10,314	14.00			63.00	25.00	12.9	10228.39	223.46	202.52 N	94.43 E	14.00	14.00	0.00	14.00
	38	10,327	14.00			64.30	25.00	12.9	10234.05	235.00	212.99 N	99.31 E	14.00	14.00	0.00	14.00
	39	10,339	14.00			66.60	25.00	12.9	10239.34	246.72	223.60 N	104.26 E	14.00	14.00	0.00	14.00
	40	10,352	14.00			68.40	25.00	12.9	10244.26	258.60	234.37 N	109.28 E	14.00	14.00	0.00	14.00
	41	10,365	14.00			70.20	25.00	12.9	10248.81	270.62	245.27 N	114.37 E	14.00	14.00	0.00	14.00
	42	10,378	14.00			72.00	25.00	12.9	10252.97	282.79	256.29 N	119.51 E	14.00	14.00	0.00	14.00
	43	10,391	14.00			73.80	25.00	12.9	10256.75	295.07	267.43 N	124.70 E	14.00	14.00	0.00	14.00
	44	10,404	14.00			75.60	25.00	12.9	10260.14	307.48	278.67 N	129.94 E	14.00	14.00	0.00	14.00
	45	10,417	14.00			77.40	25.00	12.9	10263.14	319.98	290.00 N	135.22 E	14.00	14.00	0.00	14.00
	46	10,429	14.00			79.20	25.00	12.9	10265.75	332.57	301.41 N	140.54 E	14.00	14.00	0.00	14.00
	47	10,442	14.00			81.00	25.00	12.9	10267.96	345.23	312.89 N	145.90 E	14.00	14.00	0.00	14.00
	48	10,455	14.00			82.80	25.00	12.9	10269.77	357.96	324.42 N	151.28 E	14.00	14.00	0.00	14.00
	49	10,468	14.00			84.60	25.00	12.9	10271.18	370.74	335.01 N	156.68 E	14.00	14.00	0.00	14.00
	50	10,481	14.00			86.40	25.00	12.9	10272.19	383.56	347.62 N	162.09 E	14.00	14.00	0.00	14.00
	51	10,494	14.00			88.20	25.00	12.9	10272.80	396.40	359.26 N	167.52 E	14.00	14.00	0.00	14.00
END OF CURVE	52	10,507	14.00			90.00	25.00	12.9	10273.00	409.25	370.91 N	172.95 E	14.00	14.00	0.00	0.00
CASING SHOE	53	10,557				90.00	25.00	50	10273.00	459.25	416.23 N	194.38 E	0.00	0.00	0.00	0.00
START TURN	54	11,007		11.6	-0.46	90.00	25.00	450	10273.00	909.25	824.07 N	384.26 E	0.00	0.00	0.00	0.00
	55	11,019		11.6	-0.46	90.00	24.54	11.56	10273.00	863.31	834.55 N	389.10 E	4.00	0.00	-4.00	0.00
	56	11,030		11.6	-0.46	90.00	24.05	11.56	10273.00	874.19	845.03 N	393.86 E	4.00	0.00	-4.00	0.00
	57	11,041		11.6	-0.46	90.00	23.61	11.56	10273.00	885.10	855.65 N	398.53 E	4.00	0.00	-4.00	0.00
	58	11,053		11.6	-0.46	90.00	23.15	11.56	10273.00	896.04	866.25 N	403.11 E	4.00	0.00	-4.00	0.00
	59	11,064		11.6	-0.46	90.00	22.69	11.56	10273.00	907.02	876.91 N	407.62 E	4.00	0.00	-4.00	0.00
	60	11,076		11.6	-0.46	90.00	22.23	11.56	10273.00	918.02	887.58 N	412.03 E	4.00	0.00	-4.00	0.00
	61	11,087		11.6	-0.46	90.00	21.76	11.56	10273.00	929.05	898.30 N	416.36 E	4.00	0.00	-4.00	0.00
	62	11,099		11.6	-0.46	90.00	21.30	11.56	10273.00	940.10	909.05 N	420.60 E	4.00	0.00	-4.00	0.00
	63	11,111		11.6	-0.46	90.00	20.84	11.56	10273.00	951.19	919.83 N	424.75 E	4.00	0.00	-4.00	0.00
	64	11,122		11.6	-0.46	90.00	20.38	11.56	10273.00	962.29	930.64 N	428.82 E	4.00	0.00	-4.00	0.00
	65	11,134		11.6	-0.46	90.00	19.92	11.56	10273.00	973.43	941.49 N	432.80 E	4.00	0.00	-4.00	0.00
	66	11,145		11.6	-0.46	90.00	19.45	11.56	10273.00	984.59	952.37 N	436.69 E	4.00	0.00	-4.00	0.00
	67	11,157		11.6	-0.46	90.00	18.99	11.56	10273.00	995.77	963.28 N	440.50 E	4.00	0.00	-4.00	0.00
	68	11,168		11.6	-0.46	90.00	18.53	11.56	10273.00	1006.98	974.22 N	444.21 E	4.00	0.00	-4.00	0.00
	69	11,180		11.6	-0.46	90.00	18.07	11.56	10273.00	1018.20	985.19 N	447.84 E	4.00	0.00	-4.00	0.00
	70	11,191		11.6	-0.46	90.00	17.60	11.56	10273.00	1029.45	996.19 N	451.38 E	4.00	0.00	-4.00	0.00
	71	11,203		11.6	-0.46	90.00	17.14	11.56	10273.00	1040.73	1007.22 N	454.83 E	4.00	0.00	-4.00	0.00
	72	11,215		11.6	-0.46	90.00	16.68	11.56	10273.00	1052.02	1018.28 N	458.19 E	4.00	0.00	-4.00	0.00
	73	11,226		11.6	-0.46	90.00	16.22	11.56	10273.00	1063.33	1029.36 N	461.46 E	4.00	0.00	-4.00	0.00
	74	11,238		11.6	-0.46	90.00	15.76	11.56	10273.00	1074.66	1040.47 N	464.65 E	4.00	0.00	-4.00	0.00
	75	11,249		11.6	-0.46	90.00	15.29	11.56	10273.00	1086.00	1051.60 N	467.74 E	4.00	0.00	-4.00	0.00
	76	11,261		11.6	-0.46	90.00	14.83	11.56	10273.00	1097.37	1062.76 N	470.74 E	4.00	0.00	-4.00	0.00
	77	11,272		11.6	-0.46	90.00	14.37	11.56	10273.00	1108.75	1073.94 N	473.65 E	4.00	0.00	-4.00	0.00
	78	11,284		11.6	-0.46	90.00	13.91	11.56	10273.00	1120.15	1085.15 N	476.48 E	4.00	0.00	-4.00	0.00
	79	11,295		11.6	-0.46	90.00	13.45	11.56	10273.00	1131.56	1096.37 N	479.21 E	4.00	0.00	-4.00	0.00
	80	11,307		11.6	-0.46	90.00	12.98	11.56	10273.00	1142.98	1107.62 N	481.85 E	4.00	0.00	-4.00	0.00
	81	11,319		11.6	-0.46	90.00	12.52	11.56	10273.00	1154.42	1118.89 N	484.40 E	4.00	0.00	-4.00	0.00
	82	11,330		11.6	-0.46	90.00	12.06	11.56	10273.00	1165.87	1130.18 N	486.86 E	4.00	0.00	-4.00	0.00

	83	11,342		11.6	0.46	90.00	11.60	11.56	10273.00	1177.34	1141.49 N	489.23 E	4.00	0.00	-4.00	0.00
	84	11,353		11.6	-0.46	90.00	11.13	11.56	10273.00	1188.81	1152.62 N	491.50 E	4.00	0.00	-4.00	0.00
	85	11,366		11.6	-0.46	90.00	10.67	11.56	10273.00	1200.30	1164.17 N	493.69 E	4.00	0.00	-4.00	0.00
	86	11,376		11.6	-0.46	90.00	10.21	11.56	10273.00	1211.80	1175.53 N	495.78 E	4.00	0.00	-4.00	0.00
	87	11,388		11.6	-0.46	90.00	9.75	11.56	10273.00	1223.30	1186.91 N	497.79 E	4.00	0.00	-4.00	0.00
	88	11,399		11.6	-0.46	90.00	9.29	11.56	10273.00	1234.81	1198.31 N	499.70 E	4.00	0.00	-4.00	0.00
	89	11,411		11.6	-0.46	90.00	8.82	11.56	10273.00	1246.33	1209.72 N	501.51 E	4.00	0.00	-4.00	0.00
	90	11,423		11.6	-0.46	90.00	8.36	11.56	10273.00	1257.86	1221.14 N	503.24 E	4.00	0.00	-4.00	0.00
	91	11,434		11.6	-0.46	90.00	7.90	11.56	10273.00	1269.40	1232.58 N	504.88 E	4.00	0.00	-4.00	0.00
	92	11,446		11.6	-0.46	90.00	7.44	11.56	10273.00	1280.93	1244.03 N	506.42 E	4.00	0.00	-4.00	0.00
	93	11,457		11.6	-0.46	90.00	6.97	11.56	10273.00	1292.48	1255.50 N	507.87 E	4.00	0.00	-4.00	0.00
	94	11,469		11.6	-0.46	90.00	6.51	11.56	10273.00	1304.03	1266.97 N	509.22 E	4.00	0.00	4.00	0.00
	95	11,480		11.6	-0.46	90.00	6.05	11.56	10273.00	1315.58	1278.46 N	510.49 E	4.00	0.00	-4.00	0.00
	96	11,492		11.6	-0.46	90.00	5.59	11.56	10273.00	1327.13	1289.95 N	511.66 E	4.00	0.00	-4.00	0.00
	97	11,503		11.6	-0.46	90.00	5.13	11.56	10273.00	1338.68	1301.46 N	512.74 E	4.00	0.00	-4.00	0.00
	98	11,515		11.6	-0.46	90.00	4.66	11.56	10273.00	1350.24	1312.97 N	513.72 E	4.00	0.00	-4.00	0.00
	99	11,527		11.6	-0.46	90.00	4.20	11.56	10273.00	1361.79	1324.49 N	514.62 E	4.00	0.00	-4.00	0.00
	100	11,538		11.6	-0.46	90.00	3.74	11.56	10273.00	1373.35	1336.02 N	515.42 E	4.00	0.00	-4.00	0.00
	101	11,550		11.6	-0.46	90.00	3.28	11.56	10273.00	1384.90	1347.55 N	516.12 E	4.00	0.00	-4.00	0.00
	102	11,561		11.6	-0.46	90.00	2.81	11.56	10273.00	1396.45	1359.09 N	516.74 E	4.00	0.00	-4.00	0.00
	103	11,573		11.6	-0.46	90.00	2.35	11.56	10273.00	1408.00	1370.63 N	517.26 E	4.00	0.00	-4.00	0.00
END TURN	104	11,583		11.6	-0.46	90.00	1.89	11.56	10273.00	1419.54	1382.18 N	517.69 E	4.00	0.00	-4.00	0.00
TD	105	20,011		8,428.4		90.00	1.89	8426.42	10273.00	9836.24	9804 N	736 E	0.00	0.00	0.00	0.00
OPEN HOLE PAY 9454																

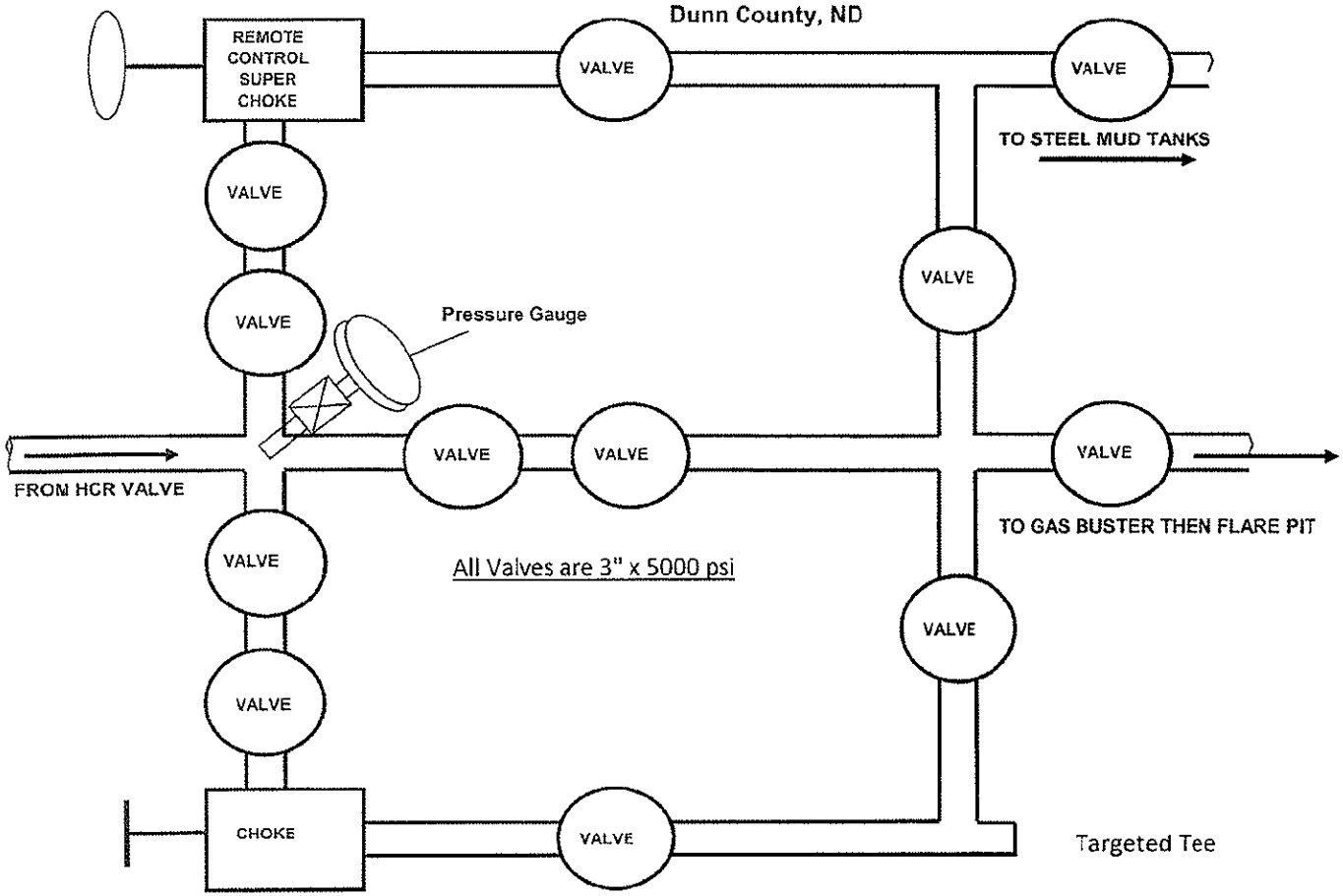
XTO Energy, Inc.
BOP STACK DIAGRAM

FBIR Beaks 24X-8
Location: SE SW Sec 8, 149N-91W
Footage: 200 ft FSL, 1890 ft FWL
Elev: Graded Pad 2179', KB 2203'
Dunn County, ND



XTO Energy, Inc.
CHOKE MANIFOLD DRAWING

FBIR Beaks 24X-8
Location: SE SW Sec 8, 149N-91W
Footage: 200 ft FSL, 1890 ft FWL
Elev: Graded Pad 2179', KB 2203'
Dunn County, ND



XTO ENERGY INC
H2S CONTINGENCY PLAN

FBIR Beaks 24X-8

Location: SE SW Sec 8, 149N-91W
Footage: 200 ft FSL, 1890 ft FWL
Elev: Graded Pad 2179', KB 2203'

Dunn County, ND

Latitude 47.732492N
Longitude 102.356992W

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I. INTRODUCTION

A. OPERATOR'S ADDRESS AND PHONE

XTO ENERGY, INC.
PO BOX 1589 or 35399 Highway 23 - 8 miles East
SIDNEY, MT 59270
406-482-4000 (24 HR #)

B. DIRECTIONS TO WELL SITE

From Mandaree, ND: 15.3 mi ESE on BIA 12, 1.7 mi NNE on BIA 13, 3.2 mi E x N x NE on 19th St. NW (BIA 13), 0.5 mi E on existing road, then 0.5 mi N into location

C. PURPOSE OF PLAN

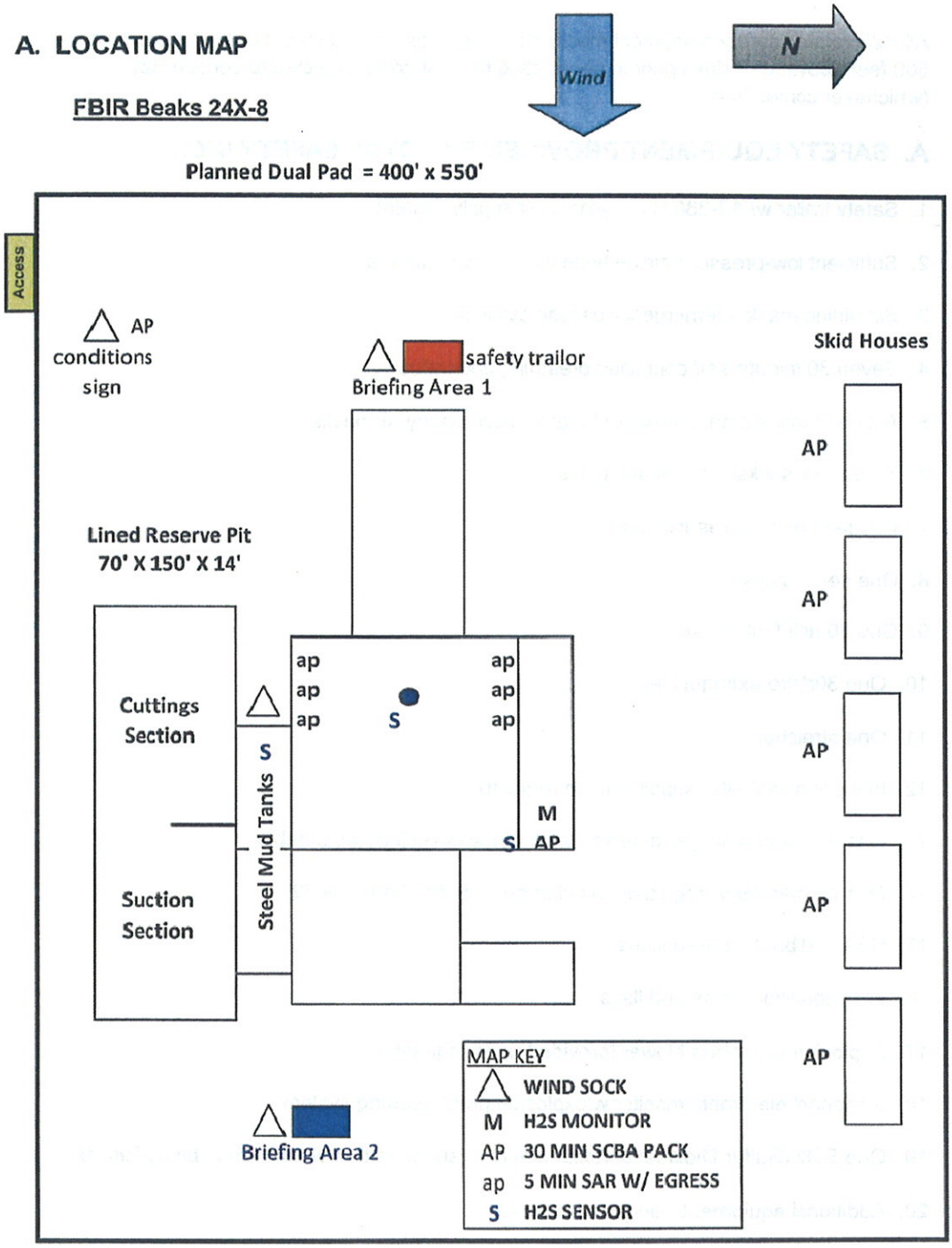
The purpose of this plan is to safeguard the lives of the public, contract personnel and company personnel in the event of equipment failure or disasters during drilling or completion operations in formations which may contain Hydrogen Sulfide Gas, H2S.

As a precautionary measure, this H2S Contingency Plan has been prepared to assure the safety of all concerned, should a disaster occur. However, the Operator's on-site representative may have specified materials and practices for the drilling or completion of this well, which supercede the minimum requirements as outlined in this plan.

II. LOCATION LAYOUT

A. LOCATION MAP

FBIR Beaks 24X-8



III. SAFETY EQUIPMENT

All H2S related safety equipment must be installed, tested and operational at a depth of 500 feet above, or 3 days prior to penetrating the first zone expected to contain H2S (whichever comes first).

A. SAFETY EQUIPMENT PROVIDED BY TOTAL SAFETY INC.

1. Safety trailer w/ 10-380 C.F. cylinder air supply system
2. Sufficient low-pressure airline hose with quick connects
3. Six-airline mask w/emergency escape cylinders
4. Seven 30 minute self contained breathing apparatus
5. Airline manifolds and air pack stands to accompany air packs
6. Three windsocks, frames and poles
7. Oxygen powered resuscitator
8. One set of signs
9. One 36 unit first aid kit
10. One 30# fire extinguisher
11. One stretcher
12. Flare gun w/shells (supplied upon request)
13. Gastec pump type gas detector w/full range of H2S detector tubes
14. One air cylinder w/regulator and filler hose for briefing area #2
15. H2S and briefing area signs
16. Well condition signs and flags
17. Explosion-proof bug blower (provided upon request)
18. 3 channel electronic monitor w/explosion proof warning system
19. One SO2 (Sulfur Dioxide) portable detector (supplied if or when H2S is being flared)
20. Additional equipment - added as needed.

B. TYPE OF EQUIPMENT AND STORAGE LOCATIONS

1. There will be six Scott airline masks on location. Five will be located on the rig floor with access to the shale shaker. One will be located in the derrick. Each mask will have an easily accessible air line hose.

2. There will be seven 30-minute self-contained breathing apparatus on location. They will be positioned as follows: one at Operator's representative's trailer, one at Tool Pusher's trailer, one at Briefing Area #1 one at Briefing Area #2, one at rig dog house stairway, one at mud logger's trailer and one at hopper area.

3. A Gastec, pump type, gas detector with low and high range detector tubes will be located in the doghouse

4. Two cleared, briefing areas will be designed as Safe Briefing Areas #1 and #2.

5. The Briefing Area most upwind is designated as Safety Briefing Area #1. In an emergency, personnel must assemble at this upwind area for instructions from their supervisor.

6. The H2S Safety Trailer will contain a cascade system of (10) 380 C.F. air cylinders that will provide a continuous air supply to air lines located on the rig. It will also contain one resuscitator, one 30 minute air pack and one stretcher, one 36 unit first aid kit, one 30# dry chemical fire extinguisher, and will have a windsock or streamer to indicate wind direction.

7. Two other windsocks will be installed so as to be visible from all parts of the location.

8. A well condition warning sign will be displayed at the location entrance to advise of current operating conditions.

9. A list of emergency telephone numbers will be kept on rig floor, tool pusher's trailer, the Operator's on-site representative's trailer and in the Safety Trailer.

10. A barricade will be available to block the entrance to location should an emergency occur. In most cases, a vehicle will be used to block the entrance.

11. A three-channel H2S monitor will be located in the doghouse. The three sensors will be installed: one on the shale shaker, one in the cellar and one near the bell nipple.

12. An undulating high and low pitch siren and light will be installed on the derrick "A" leg.

13. If H2S concentrations reach 10 ppm, an explosion-proof bug blower (fan) will be installed under the rig floor to disperse possible accumulations of H2S.

14. Any time it is necessary to flare gas containing H2S, a Sulfur Dioxide monitor will be used to determine SO2 concentrations

C. MAXIMUM NUMBER OF PEOPLE ON LOCATION AT ANY ONE TIME

1. There will be a maximum of 13 persons on location at any one time, unless additional respirators are provided during special operations where more than 13 persons will be on location.

IV. OPERATING PROCEDURES

A. BLOWOUT PREVENTION MEASURES DURING DRILLING

1. Blowout Prevention Requirements: All BOP equipment shall meet the American Petroleum Institute specifications as to materials acceptable for H2S service and tested accordingly (or to BLM specifications).

2. Drilling String Requirements: All drill string components are to be of material that meets the American Petroleum Institute's specifications for H2S service. All drill string components should be inspected to IADC critical service specifications prior to running in well.

B. GAS MONITORING EQUIPMENT

1. A continuous H2S detection system, consisting of three H2S detectors and an audible/visual warning system will be in operation during all phases of this H2S Contingency Plan. The detection system will be adjusted and calibrated such that an H2S exposure of 10 ppm or higher (at any sensor) will trigger the visual portion (blinking or rotating light), and an H2S exposure of 15 ppm or higher (at any sensor) will trigger the audible portion (wailing or yelping siren) of the warning system (i.e., H2S continually present at or above threshold levels). A trained operator or H2S supervisor will monitor the H2S detection system.

2. When approaching or completing H2S formations, crewmembers may attach 8-hour electronic H2S personnel monitors to their person.

3. Hand held H2S sampling gas detectors will be used to check areas not covered by automatic monitoring equipment.

C. CREW TRAINING AND PROTECTION

1. All personal working at the well site will be properly trained in accordance with the general training requirements outlined in the API Recommended Practices for Safe Drilling of Wells Containing H2S. The training will include, but not be limited to, the following:

a. General information about H2S and SO2 gases
b. Hazards associated with H2S and SO2 gases
c. Safety equipment on location
d. Proper use and care of personal protective equipment
e. Operational procedures in dealing with H2S gas
f. Evacuation procedures
g. First aid, reviving an H2S victim, toxicity, etc.
h. Designated Safe Briefing Areas
i. Buddy System
j. Regulations
k. Review of Drilling Operations Plan

2. Initial training shall be completed when drilling reaches a depth of 500' above or 3 days prior to penetrating (whichever comes first) the first zone containing or expected to contain H2S.

3. Weekly H2S and well control drills for all personnel on each working crew shall be conducted.

4. Safety Equipment: As outlined in the Safety Equipment index, H2S safety protection equipment will be available to/or assigned each person on location.

D. METALLURGICAL CONSIDERATONS

1. Steel drill pipe used in H2S environments should have yield strength of 95,000 psi or less due to potential embrittlement problems. Drill stem joints near the top of the drill string are normally under the highest stress levels during drilling and do not have the protection of elevated cown hole temperatures. These factors should be considered in design of the drill string.
Precautions should be taken to minimize drill string stress caused by conditions such as excessive dogleg severity, improper torque, whip, abrasive wear or tool joints and joint imbalance. American Petroleum Institute, Bulletin RR 7G, will be used as a guideline for drill string precautions.

2. Corrosion inhibitors may be applied to the drill pipe or to the mud system as an additional safeguard.

3. Blowout preventors should meet or exceed the recommendations for H2S service as set forth in the latest edition of API RI 53.

E. MUD PROGRAM AND TREATING

1. It is of utmost importance that the mud be closely monitored for detection of H2S and reliability of the H2S treating chemicals.

2. Identification and analysis of sulfides in the mud and mud filtrates will be carried out per operator's prescribed procedures.

3. The mud system will be pre-treated with Zinc Carbonate, Ironite Sponge or similar chemicals of H2S control prior to drilling into the H2S bearing formation. Sufficient quantities of corrosion inhibitor should be on location to treat the drill string during Drill Stem Test Operations. Additionally, Aqua Ammonia should be on hand to treat the drill string for crew protection, should H2S be encountered while tripping the drill string following drill stem testing

F. WELL CONTROL EQUIPMENT

1. Flare System
   a. A flare system shall be designed and installed to safely gather and burn H2S bearing gas.
   b. Flare lines shall be located as far from the operating site as feasible and in a manner to compensate for wind changes.
   c. The flare line mouth shall be located not less then 150' from wellbore.
   d. Flare lines shall be straight unless targeted with running tees.

2. Remote Controlled Choke: A remote controlled choke shall be installed for all H2S drilling and where feasible for completion operations. A remote controlled valve may be used in lieu of this requirement for completions operations.

3. Mud-gas separators and rotating heads shall be installed and operable for all exploratory wells.

V. OPERATING CONDITIONS

A Well Condition Sign and Flag will be posted on all access roads to the location. The sign shall be legible and large enough to be read by all persons entering the well site and be placed a minimum of 200', but no more than 500', from the well site to allow vehicles to turn around at a safe distance prior to reaching the site.

A. DEFINITION OF WARNING FLAGS

1. Condition Green: Normal operations. Any operation where the possibility of encountering H2S exists, but no H2S has been detected.

2. Condition Yellow: Potential Danger. Any operation where the possibility of encountering H2S exists and in all situations where concentrations of H2S are detected in the air below the threshold level (10 ppm).

a. Cause of condition:
*Circulating up drill breaks
*Trip gas after trip
*Circulating out gas on choke
*Poisonous gas present, but below threshold concentrations
*Drill stem test

b. Safety Action:
*Check safety equipment and keep it with you
*Be alert for a change in condition
*Follow instructions

3. Condition Red: Extreme Danger. Presence of H2S at or greater than 10 ppm. Breathing apparatus must be worn.

a. Safety action:
*MASK UP. All personal will have protective breathing equipment with them. All nonessential personnel will move to the Safe Briefing Area and stay there until instructed to do otherwise. All essential personnel (those necessary to maintain control of the well) shall wear breathing apparatus to perform operations related to well control.

b. Order evacuation of local people within the danger zone. Request help from local authorities, State Police, Sheriff's Dept. and Service Representative.

c. The decision to ignite the well is the responsibility of the Operator's on-site representative and should be made only as a last resort, when it is clear that:
*human life is endangered
*there is no hope of controlling the well under prevailing conditions

B. CIRCULATING OUT KICK (WAIT AND WEIGHT METHOD)

If it is suspected that H2S is present with the gas whenever a kick is taken, the wait and weight method of eliminating gas and raising the mud will be followed (below):

a. Increase density of mud in pits to 'kill' weight mud.

b. Open choke and bring pump to initial circulating pressure by holding casing pressure at original value until pump is up to predetermined speed.

c. When initial circulating pressure is obtained on drill pipe, zero pump stroke counter and record time.

d. Reduce drill pipe pressure from initial circulating pressure to final circulating pressure by using pump strokes and/or time according to graph

e. When 'kill' weight mud is at the bit, hold final circulating pressure until kill weight mud is to surface.

f. When the well has been put on the choke and circulation has been established, the following safety procedures must be initiated:
*determine when gas is anticipated to reach surface
*move all non-essential personnel to Safe Briefing Area
*check out protective breathing apparatus to all remaining personnel

(apparatus is to be kept with them until the kick has been completely circulated out)
*mud men will see that the proper amount of H2S scavenging chemical is in the mud and record times checked
*ensure ignition flare is burning and valves are open to designated flare stacks

C. CORING OPERATIONS IN H2S BEARING ZONES

1. Personal protective breathing apparatus will be worn from 10 to 15 stands in advance of retrieving the core barrel. Cores to be transported should be sealed and marked indicating the presence of H2S.
   a. Yellow Caution Flag will be flown at the well condition sign.
   b. The "NO SMOKING" rule will be enforced

D. DRILL STEM TESTING OF H2S ZONES

1. The DST subsurface equipment will be suitable for H2S service as recommended by the API.

2. Drill stem testing of H2S zone will be conducted in daylight hours.

3. All non-essential personnel will be moved to an established safe area or off location.

4. The "NO SMOKING" rule will be enforces.

5. DST fluids will be circulated through a remote controlled choke and a separator to permit flaring of gas. A continuous pilot light will be used.

6. A yellow or red flag will be flown at entrance to location depending on present gas condition.

7. If warranted, use Aqua Ammonia for neutralizing the toxicity of H2S from drill string. Aqua Ammonia should be on location even if not used for DST.

8. On completion of DST, if H2S contaminated formation fluids or gases are present in drill string, floor workers will be masked up before test valve is removed from drill string and continue "mask on" condition until such time that readings in work area do not exceed 15 ppm of H2S gas.

VI. EMERGENCY PROCEDURES

A. SOUNDING ALARM

1. The fact is to be instilled in the minds of all rig personnel that the sounding of the alarm means only one thing - H2S IS PRESENT and everyone is to proceed to his assigned station and the contingency plan is put into effect.

B. DRILLING CREW ACTIONS

1. All personnel will don their protective breathing apparatus. The driller will take necessary precautions as indicated in operating procedures.

2. The Buddy system will be implemented. All personnel will act upon directions from the Operator's on-site representative.

3. If there are non-essential personnel on location, they will move off location.

4. Entrance to the location will be patrolled, and the proper well condition flag will be displayed at the entrance to the location.

C. RESPONSIBILITIES OF PERSONNEL

1. In order to assure the proper execution of this plan, it is essential that one person be responsible for and in complete charge of implementing these procedures. The responsibe person will be as follows:
   a. The Operator's on-site representative (consultant) or his assistant.
   b. Contract Tool Pusher.

D. STEPS TO BE TAKEN

1. Contact the main office(s) of the Operator &/or the Rig Contractor as listed in this plan below (by the quickest means of communications):

2. An assigned crewmember will blockade the entrance to the location. No unauthorized personnel will be allowed entry into the location.

3. The Operator's on-site representative will remain on location and attempt to regain control of the well.

4. The Rig Contractor's rig superintendent will begin evacuation of those persons in immediate danger. He will begin by telephoning residents in the danger zone. In the event of no contact by telephone, the tool pusher will proceed at once to each dwelling for a person-to-person contact. In the event the tool pusher cannot leave the location, he will assign a responsible crewmember to proceed in the evacuation off local residents. Upon arrival, the Sheriff's Department and safty equipment contractor's personnel will aid in further evacuation.

E. COMPANY & CONTACT PERSONNEL

1. Operator's Drilling Supt	Office	406-482-6808
Kal Beckman	Home	701-572-6057
	Cell	701-570-2536
2. Operator's Drilling Engineer	Office	405-319-3285
Ross Lubbers	Home	405-513-5955
	Cell	405-659-8563
3. Ensign Drilling Supt	Office	701-572-0131
Perry Junt	Cell	701-570-3701
4. Nabors Drilling Supt	Office	701-572-6704
Scott Reid	Home	701-385-4697
	Cell	701-848-6227
5. Petroleum Experience – Drilling Consultants		
Pete Peterson	Office	701-774-8357

F. LEAK IGNITION

Leak Ignition Procedure: (used to ignite a leak in the event it becomes necessary to protect the public)

1. Two men, the Operator's on-site representative and the Contractor's Drlg Superintendent or safety equipment provider's representative, wearing self-contained pressure demand air masks must determine the perimeter of the flammable area. This should be done with one man using an H2S detector and the other one using a flammable gas detector. The flammable perimeter should be established at 30% to 40% of the lower flammable limits.

2. After the flammable perimeter has been established and all employees and citizens have been removed from the area, the ignition team should move to the up-wind area of the leak perimeter and fire a flare into the area. If the leak isn't ignited on the 1st attempt, move in 30 - 40 feet and fire again. Continue moving in and firing until the leak is ignited or the flammable gas detector indicates the ignition team is moving into the hazardous area. If trouble is incurred in igniting the leak by firing toward the leak, try firing 40 - 90 feet to each side of the area where you have been firing. If still no ignition is accomplished, ignite the copper line burner and push it into the leak area. This should accomplish ignition. If ignition is not possible due to the makeup of the gas, the toxic leak perimeter must be established and maintained to ensure evacuation is completed and continue until the emergency is secure.

3. The following equipment and man-power will be required to support the ignition team:

   a. One flare gun.
   b. Four pressure demand air packs.
   c. Two nylon ropes tied to the ignition team.
   d. Two men in a clear area equipped with air packs.
   e. Portable butane bottle with copper line.

4. The person with the final authority will then ignite the well.

G. GENERAL EQUIPMENT

1. Two areas on the location will be designated as briefing areas. The one that is upwind from the well will be designated as the "Safe Briefing Area" or "Briefing Area #1".

2. In the case of an emergency, personnel will assemble in the upwind area as per prior instructions from the operator's representative.

3. The H2S trailer provided by the safety contractor will contain 10 air cylinders, a resuscitator, one 30 minute air pack and will have a windsock.

4. Two other windsocks will be installed.

5. A condition warning sign will be displayed at the location entrance.

6. A list of emergency telephone numbers will be kept on the rig floor, tool pusher's trailer and the Operator's on-site representative's trailer.

7. Two barricades will be available to block the entrance to location.

8. An undulating high and low pitch siren will be installed.

9. A telephone line or mobile phone will be available at the well site for incoming and outgoing communications.

VII. APPENDIX

A. EMERGENCY & MEDICAL FACILITIES:

NORTH DAKOTA EMERGENCY ASSISTANCE:	800-472-2121
AMBULANCE SERVICE:	
BELFIELD, ND	911
DICKINSON, ND	911
SIDNEY, MT	406-488-2100
TIOGA, ND	701-664-2200
WILLISTON, ND	911
WATFORD CITY, ND	701-444-3516
KILLDEER, MANNING, ND	911
HOSPITALS:	
SIDNEY HEALTH CENTER - SIDNEY, MT	406-488-2100
MERCY MEDICAL CENTER - WILLISTON, ND	701-774-7400
McKENZIE COUNTY MEMORIAL HOSPITAL - WATFORD CITY	701-842-3000
ST. JOSEPH'S HOSPITAL - DICKINSON, ND	701-225-7200
TIOGA MEDICAL CENTER	701-568-3626

B. LAW ENFORCEMENT AND FIRE FIGHTING AGENCIES

POLICE or SHERIFF:			
BELFIELD, ND			911
DICKINSON, ND			911
SIDNEY, MT	911	OR	406-433-2809
MCKENZIE COUNTY			701-444-3654
TIOGA - WILLIAMS COUNTY	911	OR	701-664-2514
WATFORD CIY, ND	911	OR	701-842-2400
MANNING, ND SHERIFF	911	OR	701-573-4449
FIRE:			
ALEXANDER, ND			911
ARNEGARD, ND			701-586-3500
BELFIELD, ND			911
DICKINSON, ND			911
SIDNEY, MT			406-433-1122
TIOGA, ND			701-664-2200
WATFORD CITY, ND			701-842-3516
WILLISTON, ND			911

C. WELL CONTROL SPECIALISTS:

BOOTS AND COOTS	713-931-8884
RED ADAIR COMPANY INC	713-464-0230
WILD WELL CONTROL	701-353-5481

D: GOVERNMENTAL AGENCIES:

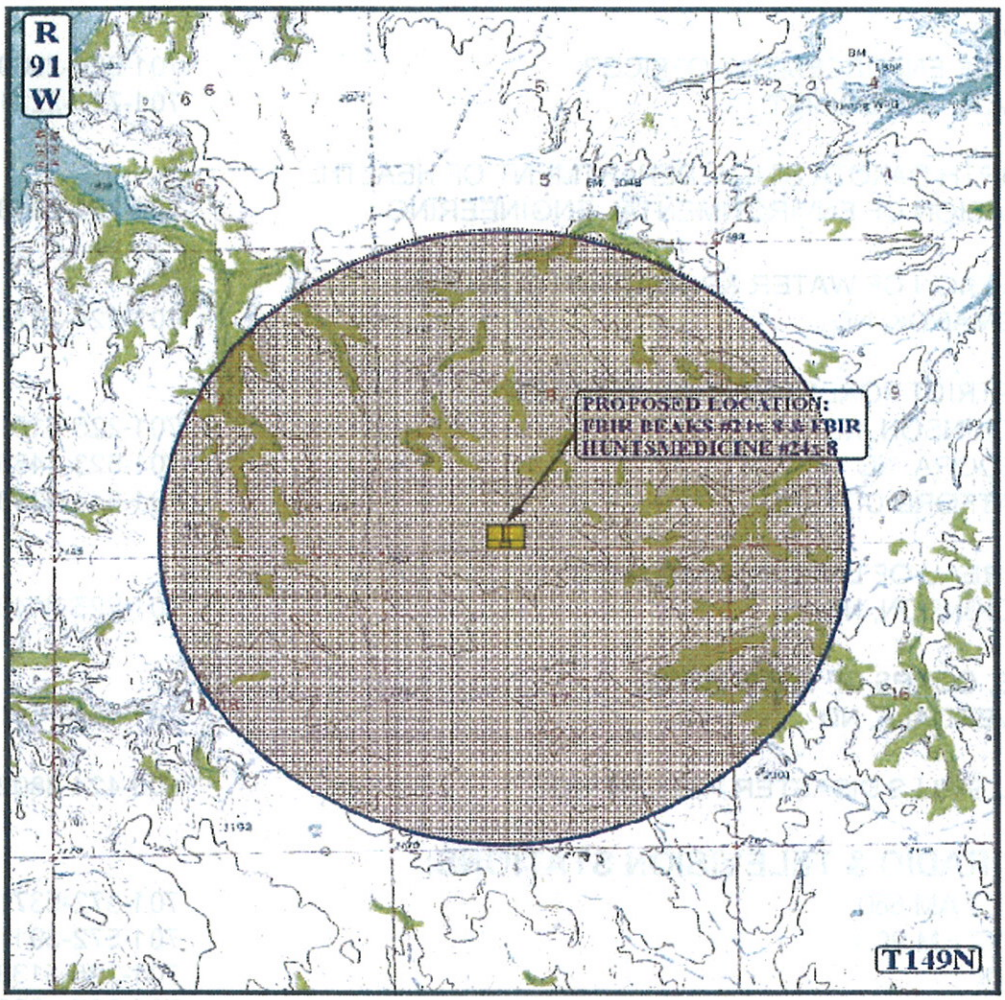
STATE WATER COMMISSION	701-224-4940
NDIC:	
CHIEF ENFORCEMENT OFFICER	701-224-2969
STATE GEOLOGIST	701-777-2231
NORTH DAKOTA STATE DEPARTMENT OF HEALTH:	
DIVISION OF ENVIRONMENTAL ENGINEERING	701-224-2348
DIVISION OF WATER &POLLUTION CONTROL:	
BISMARCK, ND	701-224-2375
DISTRICT FOREST SERVICE RANGER:	
DICKINSON, ND	701-225-5151
MEDORA, ND	701-623-4466
WATFORD CITY, ND	701-842-2393
BUREAU OF LAND MANAGEMENT:	
DICKINSON, ND	701-225-9148
U.S. CORPS OF ENGINEERS:	
RIVERDALE, ND	701-654-7411
OIL SPILLS DISASTER REPORTING:	800-424-8802

E. RADIO & TELEVISION STATIONS:

KEYZ AM 660	701-572-5371
KYYZ FM 96.1	701-572-3911
KDIX	701-225-5133
KRRB-FM	701-227-1222
KUMV TV	701-572-4676
KXMD TV	701-572-2345
KQCD TV	701-225-6843

VIII. RESIDENTS AND LANDOWNERS

A. 1 MILE RADIUS EXPOSURE MAP



B. RESIDENTS WITHIN 1 MILE AND PHONE NUMBERS

No permanent dwellings within 1 mile radius of well

XTO ENERGY, INC.
FBIR Beaks 24X-8
BIA Lease # 7420A41220
BIA Lease # 7420A41778
BIA Lease # 7420A49857
BIA Lease # 7420A49821
BIA Lease # 7420A41774
BIA Lease # 7420A48500
SE¼SW¼, Section 8, T149N, R91W
Dunn County, North Dakota

MULTI-POINT SURFACE USE & OPERATIONS PLAN

A. EXISTING ROADS -

1. The proposed well site is staked and four (4) 200-foot reference stakes are present.

2. From Mandaree, North Dakota proceed in an easterly direction along BIA 12 approximately 15.3 miles to the junction of this road and existing BIA 13 to the northeast; turn left and proceed in a northeasterly direction approximately 1.7 miles to the junction of this road and 19th Street NW to the east; turn right and proceed in an easterly, then northerly, then northeasterly direction approximately 3.2 miles to the junction of this road and an existing two-track road to the east; turn right and proceed in an easterly, then northeasterly direction approximately 0.5 miles to the beginning of the proposed access road to the north; follow road flags in a northerly direction approximately 0.5 miles to the proposed location

3. Access roads - All roads are labeled on Topo Maps A and B.

4. Approximately 2,640 feet (~0.5 miles) of existing, graveled, two-track road will require improvements. Improvements would follow road design standards outlined in the Gold Book (USDI-USDA 2007).

5. Existing roads will be maintained and kept in good repair during all drilling and completion operations associated with this well.

6. Total distance from Mandaree, ND to the proposed well location is approximately 21.2 miles.

B. PLANNED ACCESS ROADS - Refer to Topo Map "B"

Approximately 2.640 feet (~0.5 miles) of new road construction will be required for access to the proposed FBIR Beaks 24X-8 well location.

1. Width - fourteen (14) foot running surface with a sixteen (16) foot sub-grade, crowned and ditched.

2. Construction standard - the access road will be constructed in accordance with roading guidelines established for oil & gas exploration and development activities as referenced in the joint BLM/USFS publication: *Surface Operating Standards for Oil and Gas Exploration and Development*, Fourth Edition and/or BLM Gold Book.

All topsoil will be stripped from the access road route prior to performing any further construction activities thereon. The salvaged topsoil will be stockpiled apart from subsoil materials for future reclamation of the access road right-of-way.

If soils along the access road route are dry during construction, water will be applied to the road surface to facilitate soil compaction and minimize soil loss as a result of wind erosion.

3. Maximum grade - eight (8) percent or less.

4. Turnouts – as deemed necessary

5. Drainage design - the access road will be upgraded and maintained as necessary to prevent soil erosion and accommodate all-weather traffic. Road will be crowned and ditched with water turnouts installed as necessary to provide for proper drainage along the access road route.

6. Culverts, cuts and fills - culverts will be installed along the access road route as depicted on Topo Map B or required by the Authorized Officer, Bureau of Indian Affairs. These culverts will be installed in accordance with roading guidelines contained in the joint BLM/USFS publication: *Surface Operating Standards for Oil and Gas Exploration and Development*, Fourth Edition and/or BLM Gold Book.

7. Surfacing material - the access road will be surfaced with gravel or scoria purchased from a local contractor having a permitted source of materials within the general area, as required by the Authorized Officer, Bureau of Indian Affairs.

8. Gates, cattle guards or fence cuts - one (1) cattle guard will be required at the entrance of the location as the entire location will be fenced for drilling and completion operations.

    a. These cattle guards will be installed in accordance with roading guidelines contained in the joint BLM/USFS publication: *Surface Operating Standards for Oil and Gas Exploration and Development*, Fourth Edition and/or BLM Gold Book.
    b. One fence cut will be made in an existing fence at the point where the cattle guard is installed. Refer to Figure #1 for the location of the fence cut and cattle guard.

9. Road maintenance - the road surface and shoulders will be kept in a safe and useable condition and will be maintained in accordance with the original construction standards.

   All drainage ditches and culverts will be kept clear and free-flowing, and will also be maintained in accordance with the original construction standards.

   The access road right-of-way will be kept free of trash during all operations.

10. The proposed access road route has been centerline staked.

C. EXISTING WELLS WITHIN A ONE (1) MILE RADIUS -

1. Existing Wells – Refer to Topo Map C showing the location of the proposed well and the point of radius for the one mile area of review.

a. Water wells	- none known
b. Abandoned wells	- none known
c. Temporarily abandoned wells	- none known
d. Disposal wells	- none known
e. Drilling wells	- none known
f. Producing wells	- none known
g. Shut-in wells	- none known
h. Injection wells	- none known
i. Monitoring wells	- none known

D. LOCATION OF EXISTING AND/OR PROPOSED FACILITIES OWNED BY XTO ENERGY, INC. WITHIN A ONE (1) MILE RADIUS

1. Existing Facilities

a. Tank batteries	- none.
b. Production facilities	- none.
c. Oil gathering lines	- none.
d. Gas gathering lines	- none.

2. New Facilities Contemplated

   a. All production facilities will be located on the disturbed portion of the well pad and at a minimum of twenty (25) feet from the toe of the back slope or top of the fill slope. See Figure #1 and Figure #2 for plats depicting the original contours of the location and the proposed cuts and fills and the typical cross sections for the location.

   b. Production facilities will require a working area approximately 300' X 500' in size and will generally consist of a pumping unit at each well head, tank battery, heater-treater and emergency/flare pit.

      A berm will be constructed completely around those production facilities designed to hold fluids (i.e., production tanks, produced water tanks and/or heater-treater). These berms will be constructed to hold >110% of the capacity of the largest tank plus one full day's production, and is independent of the back cut. See Figure 3 for a diagram of the proposed facilities.

      Load out lines will be located within the tank battery berm and will have a drip barrel with steel mesh guard installed under the outlet.

3. Prior to the commencement of drilling operations, the FBIR Beaks 24X-8 well location will be fenced, having four (4) strands of barbed wire held in place by metal side posts and wooden corner "H" braces in order to protect both livestock and wildlife.

4. During drilling and subsequent operations, all equipment and vehicles will be confined to the access road and any additional areas which may be specified in the approved Application for Permit to Drill.

5. Reclamation of disturbed areas no longer needed for operations will be accomplished by grading, leveling and seeding as recommended.

E. LOCATION AND TYPE OF WATER SUPPLY

1. Fresh water for use in drilling operations will be obtained from the water supply close to the town of Killdeer, North Dakota.

F. SOURCE OF CONSTRUCTION MATERIALS

1. Any construction materials (gravel or scoria) which may be required for surfacing of the drill pad will be obtained from a private contractor having a previously approved source of materials within the general area.

G. METHODS OF HANDLING WASTE MATERIALS

1. Cuttings - the drilled cuttings will be deposited in the reserve pit as shown on Figure #5 and Figure #6. The reserve pit will be designed to prevent the collection of surface runoff and will be constructed entirely in cut section of the well location (see Figure #1).

   Reclaiming and backfilling will occur when completion operations are finished by solidifying with fly ash and burial in accordance with North Dakota rules and regulations.

2. Drilling fluids utilized in the mud systems will be contained in the reserve pit. Drilling fluids utilized in the oil-based mud system will be contained in steel tanks on location. All free fluid will be reclaimed from the reserve pit before solidification.

3. Produced fluids - liquid hydrocarbons produced during completion operations will be placed in test tanks on the location. Produced water will be placed in the reserve pit for a period not to exceed ninety (90) days after initial production.

   Any spills of oil, gas, salt water or any other potentially hazardous substance will be cleaned up and immediately removed to an approved disposal site.

4. Sewage - portable, self-contained chemical toilets will be provided for human waste disposal. As required, the toilet holding tanks will be pumped and the contents disposed of in an approved sewage disposal facility.

5. Garbage and other waste material - all garbage and non-flammable waste materials will be contained in a self contained, portable dumpster or trash cage. Upon completion of operations, or as needed, the accumulated trash will be hauled off-site to a state approved sanitary landfill.

   Used motor oil (change oil) will be placed in closed containers and disposed of at an authorized disposal site.

   No trash will be placed in the reserve pit.

6. Immediately after removal of the drilling rig, all debris and other waste materials not contained in the trash cage will be cleaned up and removed from the well location. No potentially adverse materials or substances will be left on the location.

7. Hazardous Materials – XTO Energy, Inc. maintains responsibility for recognizing and handling hazardous materials. All hazardous materials will be handled in an appropriate manner to minimize the potential for leaks or spills to the environment. All spills of reportable quantity will be contained, reported and cleaned up in accordance with State and Federal regulations.

H. ANCILLARY FACILITIES

None anticipated.

I. WELLSITE LAYOUT

1. Figure #1 shows the drill site layout as staked. Cross-sections have been drafted to visualize the planned cuts and fills across the proposed well location (refer to Figure #2). All topsoil will be stripped from the location (including areas of cut, fill, and/or subsoil storage) and stockpiled for future reclamation of the well site.

2. Figure #5 is a diagram showing a typical location layout. No permanent living facilities are planned on the FBIR Beaks 24X-8 well location.

3. All equipment and vehicles will be confined to the approved areas in this application for Permit to Drill (i.e., access road, well pad, spoil and topsoil storage areas).

4. The reserve pit will be lined with a minimum 12 mil liner and designed to maintain a two foot free board. See Figure #8 for a spec sheet on the proposed liner.

5. Prior to the commencement of drilling operations, the entire well location will be fenced with four (4) strands of barbed wire. The fencing will be maintained until such time as the well bore has been physically plugged and abandoned and the well location has been successfully reclaimed.

6. Any hydrocarbons on the pit will be removed as soon as possible after drilling operations are completed.

J. PLANS FOR SURFACE RECLAMATION

1. Rat and mouse holes will be backfilled immediately upon release of the drilling rig from the location.

2. If any oil is in the pits and is not immediately removed after operations cease, the pit containing the oil or other adverse substance(s) will be flagged overhead or covered with wire mesh to protect migrating waterfowl.

3. Producing Operations:

   a. Backfilling, leveling and re-contouring are planned as soon as possible after cessation of drilling and completion operations.

   b. All disturbed surfaces (including the access road and well pad areas) will be reseeded using a seed mixture to be recommended by the Authorized Officer, Bureau of Indian Affairs in consultation with the surface allottee as appropriate.

4. Abandoned Well Location:

   a. Upon final abandonment of the well location, both the access road and well location will be restored to approximately the original ground contour(s) by replacing the fill material into the cut and over the back slope.

K. SURFACE OWNERSHIP

The well site and part of the access road is situated on an allotted surface estate within the Fort Berthold Indian Reservation, Allotment Number 1750-A. The allottee's of these tribal lands are as follows:

Harvey Charging
P. O. Box 851
Ft. Washakie, WY 82514

Charlene Charging
Box 503
Mandaree, ND 58757

Reginald Charging, Sr.
Address Unknown

A portion of the access road is situated on an allotted surface estate within the Fort Berthold Indian Reservation, Allotment Number 1172-A. The allottee's of these tribal lands are as follows:

Opal D. Fox Bird
P. O. Box 585
New Town, ND 58763

Gerald T. Fox Estate
Address Unknown

Susan Fox Gates
Box 656
Wynona, OK 74084

Jody Gorman
Box 1391
New Town, ND 58763

Kenneth Odell Harrington
C/O Superintendent
Fort Berthold Agency
New Town, ND 58763
Thomas T. Hurkes
P. O. Box 261
New Town, ND 58763

Julia A. Hurkes
Parent/Gaurdian of Julia A. Hurkes
P. O. Box 261
New Town, ND 58763

Doris Johnson
P. O. Box 184
Trenton, ND 58853

Mildred Jordt
402 Caraway Pl.
Lansing, KS 66043

Monica K. Lyson
P. O. Box 86
New Town, ND 58763

Vivian Panky Estate
Address Unknown

Arnold Strahs
P. O. Box 1292
New Town, ND 58763

Charles Strahs
P. O. Box 1292
New Town, ND 58763

Three Affiliated Tribes
Attn: Treasurer
404 Frontage Road
New Town, ND 58763

Three Affiliated Tribes-FMHA
Three Affiliated Tribes
Attn: Treasurer
404 Frontage Road
New Town, ND 58763

Corstella Two Horses
Box 242
Cannon Ball, ND 58528

Valinda Two Horses
219 West Bowen Ave, Apt. C
Bismarck, ND 58504

Fawn F. Two Horses
C/O Thelma Bull Bear
1202 E. Rosser
Bismarck, ND 58501

Alberta A. Two Horses
P. O. Box 1274
Cannon Ball, ND 58528

John K. Two Horses
3230 E. Thayer Ave., #4
Bismarck, ND 58501

Taylen J. Two Horses
Address Unknown

Jennifer White Lightning
General Delivery
Cannonball, ND 58528

Eunice White Owl
P. O. Box 137
Watford City, ND 58854

Kathleen J. White Owl
Box 1274
New Town, ND 58763

Jacqueline White Owl
P. O. Box 1112
New Town, ND 58763

Zandra M. Ziebart
P. O. Box 428
New Town, ND 58763

A portion of the access road is situated on an allotted surface estate within the Fort Berthold Indian Reservation, Allotment Number 1173-A. The allottee's of these tribal lands are as follows:

Adam T. Mandan
546 2nd Avenue East
Dickinson, ND 58601

A portion of the access road is situated on an allotted surface estate within the Fort Berthold Indian Reservation, Allotment Number 1178-A. The allottee's of these tribal lands are as follows:

Adam T. Mandan
546 2nd Avenue East
Dickinson, ND 58601

XTO Energy, Inc. will send copies of the approved Surface Use Plan of Operations and the Conditions of Approval to each surface owner listed above.

L. OTHER INFORMATION

1. Surface Use Activities:

   a. The primary surface use is for livestock grazing.

2. Proximity of Water, Occupied Dwellings, Archaeological, Historical or Cultural Sites:

   a. The closest source of permanent water is Lake Sakakawea, which is located approximately one and a half (1.5) miles northwest of the proposed well location.

   b. There are no known occupied dwellings located within a 3,000 foot radius of the proposed well location.

   c. XTO Energy, Inc. will be responsible for informing all persons associated with this project that they will be subject to prosecution for damaging, altering, excavating or removing any archaeological, historical, or vertebrate fossil objects or site(s).

   d. If archaeological, historical or vertebrate fossil materials are discovered, XTO Energy, Inc. will suspend all operations that further disturb such materials and immediately contact the Authorized Officer. Operations will not resume until written authorization to proceed is issued by the Authorized Officer.

      Within five (5) working days the Authorized Officer will evaluate the discovery and inform XTO Energy, Inc. of actions that will be necessary to prevent loss of significant cultural or scientific values.

      XTO Energy, Inc. will be responsible for the cost of any mitigation required by the Authorized Officer. The Authorized Officer will provide technical and procedural guidelines for the conduct of mitigation. Upon verification from the Authorized Officer that the required mitigation has been completed, XTO Energy, Inc. will be allowed to resume operations.

3. Additional Requirements for Operations on Surface Estate Administered by the Bureau of Indian Affairs:

   a. XTO Energy, Inc. will be responsible for weed control on disturbed areas within the exterior limits of this permit and will consult with the Authorized Officer, Bureau of Indian Affairs and/or local authorities for acceptable weed control measures.

Lessee's or Operator's Representative and Certification

FBIR Beaks 24X-8
SESW, Sec. 8-T149N-R91W
Dunn County, North Dakota
BIA Lease Nos. 7420A41220; 7420A41778; 7420A49857; 7420A49821; 7420A41774; 7420A48500

OPERATOR

XTO Energy, Inc.
7114 W. Jefferson Ave., Suite 305
Denver, Colorado 80235
303.969.8280

OPERATOR'S REPRESENTATIVES

Permit Matters: J. Michael Warren (303.963.8243)
Drilling Matters: Ross Lubbers (405-319-3285)
Completion Matters: Doug McCrady (303.969.8280)
On-Site Meeting Representative: Kal Beckman (406.482.4000)

CERTIFICATION

I hereby certify that I, or someone under my direct supervision, have inspected the drill site and access route proposed herein; that I am familiar with the conditions which currently exist; that I have full knowledge of state and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or the company I represent, am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of false statements.

Executed this 5th day of May, 20 10.

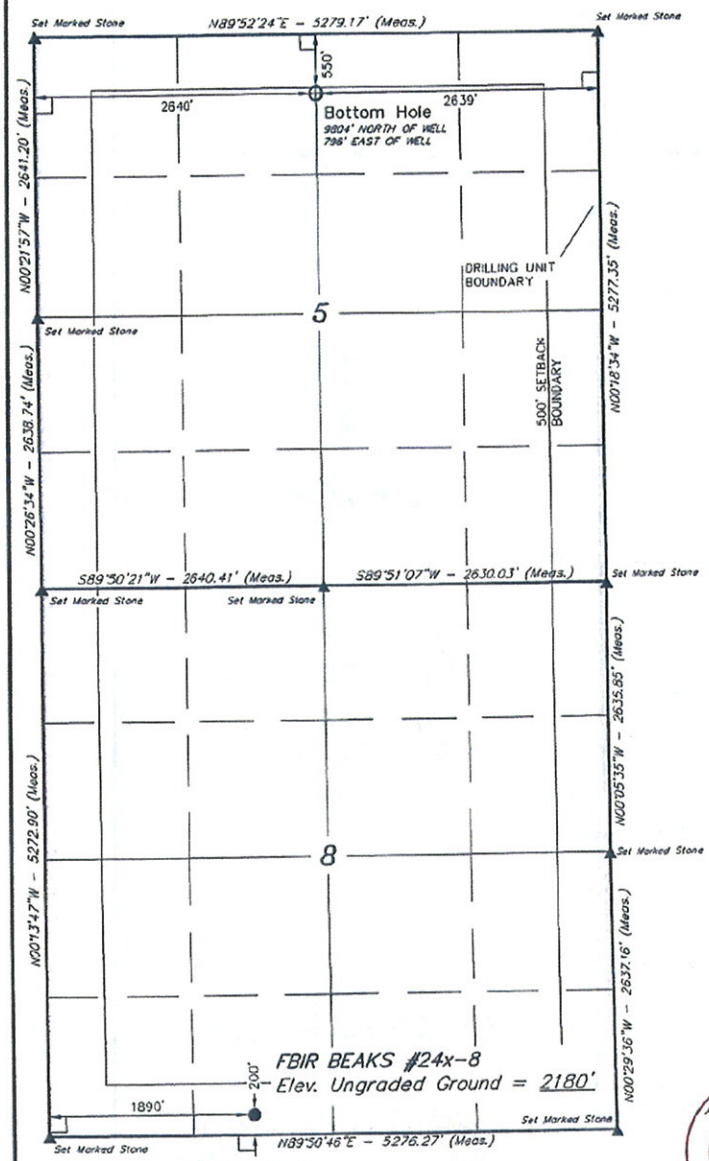
Name: J. Michael Warren
Position Title: Regulatory Coordinator
Telephone: 303-963-8243
mike_warren@xtoenergy.com

Field Representative: Kal Beckman
Address: P. O. Box 1589, Sidney, MT 59270
Phone: 406-482-4000 Ext. 107
kal_beckman@xtoenergy.com

XTO ENERGY, INC.

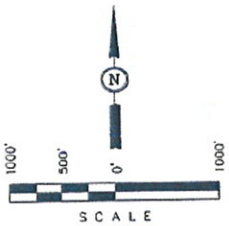
Well location, FBIR BEAKS #24x-8, located as shown in the SE 1/4 SW 1/4 of Section 8, T149N, R91W, 5th P.M., Dunn County, North Dakota.

WELL LOCATION PLAT
T149N, R91W, 5th P.M.



NOTE:
THE PROPOSED BOTTOM HOLE FOR THIS WELL BEARS N04°03'41"E 9828.11' FROM THE PROPOSED WELL HEAD

VERTICAL CONTROL DATUM: NAVD88



SURFACE LOCATION

(NAD 83)
LATITUDE = 47°43'56.97" (47.732492)
LONGITUDE = 102°21'25.17" (102.356992)
(NAD 27)
LATITUDE = 47°43'56.94" (47.732483)
LONGITUDE = 102°21'23.53" (102.356536)
[derived from N.G.S. O.P.U.S. Solution REF FRAME: NAD_83(CORS96)(EPOCH: 2002.0000)]

LEGEND:

- ∟ = 90° SYMBOL
- ● = PROPOSED WELL HEAD.
- ▲ = SECTION CORNERS LOCATED.
- △ = SECTION CORNERS RE-ESTABLISHED. (Not Set on Ground)

CERTIFICATE

I HEREBY CERTIFY THAT THIS PLAT CORRECTLY REPRESENTS WORK PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION AND IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

TROY JENSEN REGISTERED LAND SURVEYOR 4654 NORTH DAKOTA

REGISTERED LAND SURVEYOR
REGISTRATION NO 4654
STATE OF NORTH DAKOTA

REVISED: 11-17-09

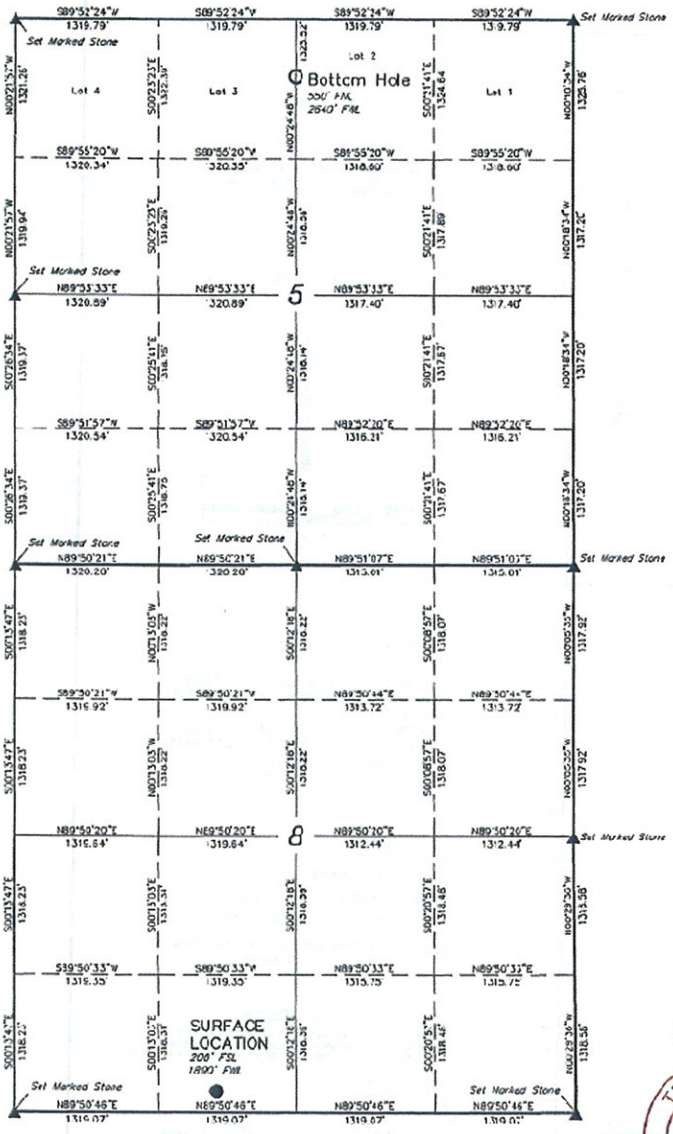
UINTAH ENGINEERING & LAND SURVEYING
85 SOUTH 200 EAST - VERNAL, UTAH 84078
(435) 789-1017

SCALE 1" = 1000'	DATE SURVEYED: 09-02-09	DATE DRAWN: 09-17-09
PARTY D.Z. D.W. C.H.	REFERENCES G.L.O. PLAT	
WEATHER WARM	FILE XTO ENERGY, INC.	

XTO ENERGY, INC.

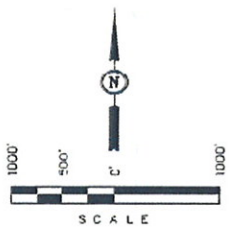
Well location, FBIR BEAKS #24x-8, located as shown in the SE 1/4 SW 1/4 of Section 8, T149N, R91W, 5th P.M., Dunn County, North Dakota.

SECTION BREAKDOWN
T149N, R91W, 5th P.M.



NOTE:
THE PROPOSED BOTTOM HOLE FOR THIS WELL BEARS N04°03'41"E 9828.11' FROM THE PROPOSED WELL HEAD

VERTICAL CONTROL DATUM: NAVD88



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LATITUDE = 47°43'56.97" (47.732492)
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[derived from: N.G.S. O.P.U.S. Solution REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000)]

CERTIFICATE

I HEREBY CERTIFY THAT THIS PLAT CORRECTLY REPRESENTS WORK PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION AND IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

TROY JENSEN
REGISTERED LAND SURVEYOR
NO. 4654
NORTH DAKOTA

REGISTERED LAND SURVEYOR
REGISTRATION NO. 4654
STATE OF NORTH DAKOTA

REVISED: 11-17-09

LEGEND:

- ⌊ = 90° SYMBOL
- ● = PROPOSED WELL HEAD.
- ▲ = SECTION CORNERS LOCATED.
- △ = SECTION CORNERS RE-ESTABLISHED. (Not Set on Ground)

UINTAH ENGINEERING & LAND SURVEYING
85 SOUTH 200 EAST – VERNAL, UTAH 84078
(435) 789-1017

SCALE 1" = 1000'	DATE SURVEYED: 09-02-09	DATE DRAWN: 09-22-09
PARTY D.Z. D.W. C.H.	REFERENCES G.L.O. PLAT	
WEATHER WARM	FILE XTO ENERGY, INC.	

LEGEND:

PROPOSED LOCATION

N

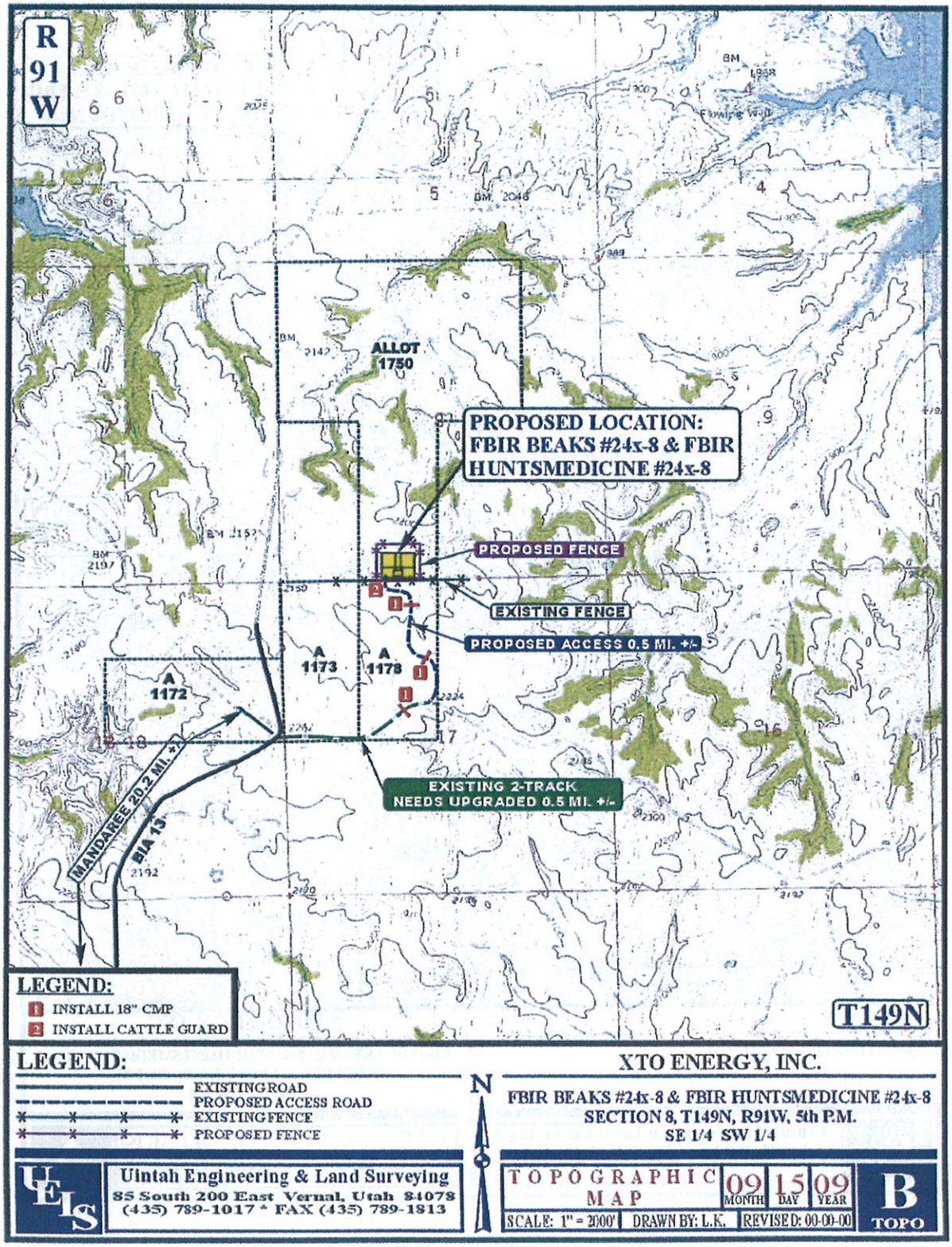
XTO ENERGY, INC.

FBIR BEAKS #24x-8 & FBIR HUNTSMEDICINE #24x-8
SECTION 8, T149N, R91W, 5th P.M.
SE 1/4 SW 1/4

UEIS

Uintah Engineering & Land Surveying
85 South 200 East Vernal, Utah 84078
(435) 789-1017 * FAX (435) 789-1813

TOPOGRAPHIC MAP	09 MONTH	15 DAY	09 YEAR	A TOPO
SCALE: 1:100,000	DRAWN BY: L.K.	REVISED: 00-00-00		



LEGEND:

- EXISTING ROAD
- PROPOSED ACCESS ROAD
- EXISTING FENCE
- PROPOSED FENCE

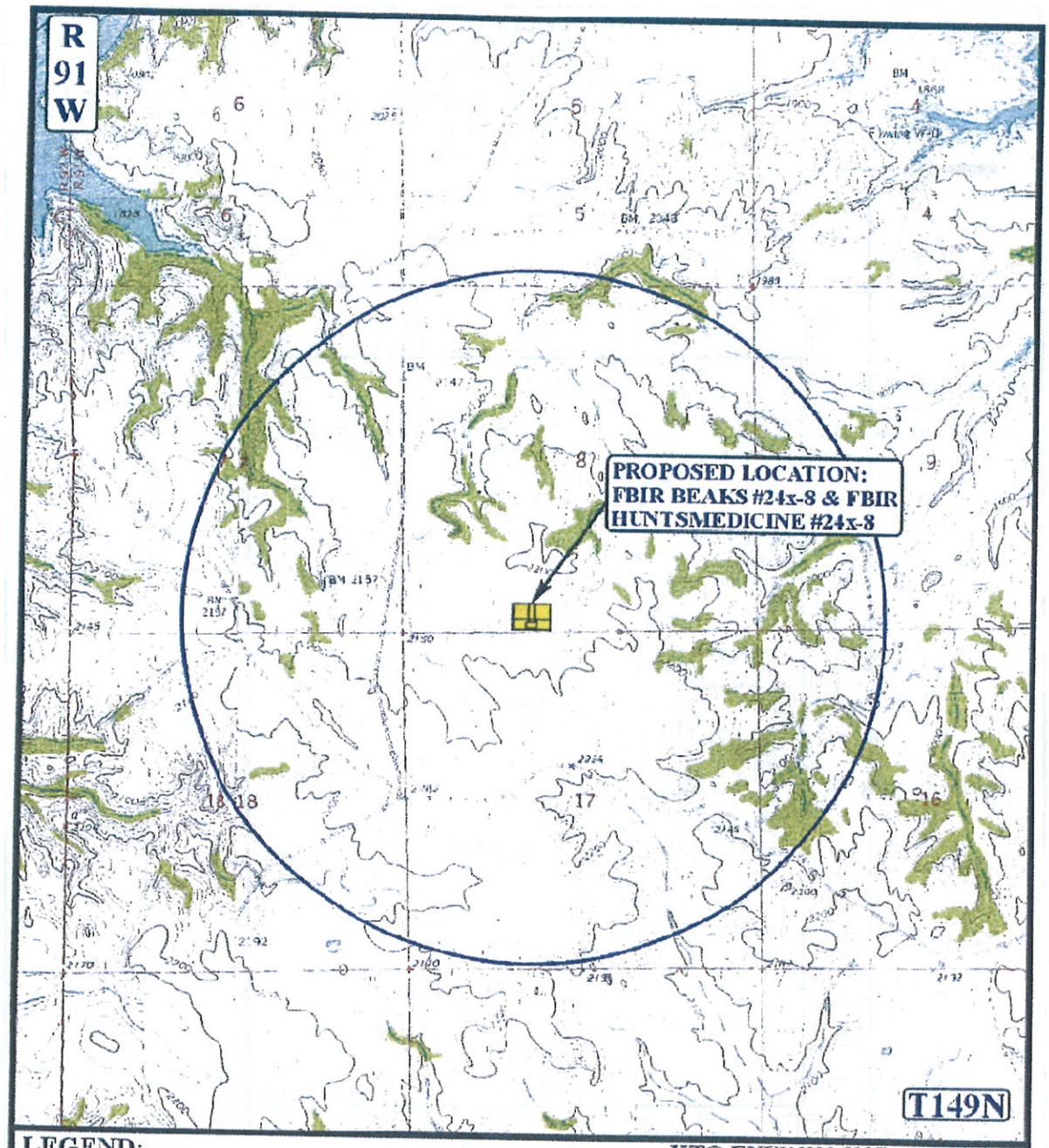
N

XTO ENERGY, INC.

FBIR BEAKS #24x-8 & FBIR HUNTSMEDICINE #24x-8
SECTION 8, T149N, R91W, 5th P.M.
SE 1/4 SW 1/4

UEIS
Uintah Engineering & Land Surveying
85 South 200 East Vernal, Utah 84078
(435) 789-1017 * FAX (435) 789-1813

TOPOGRAPHIC MAP	09 MONTH	15 DAY	09 YEAR	B TOPO
SCALE: 1" = 2000'	DRAWN BY: L.K.	REVISED: 00-00-00		



LEGEND:

- DISPOSAL WELLS
- PRODUCING WELLS
- SHUT IN WELLS
- WATER WELLS
- ABANDONED WELLS
- TEMPORARILY ABANDONED

N

XTO ENERGY, INC.

FBIR BEAKS #24x-8 & FBIR HUNTSMEDICINE #24x-8
SECTION 8, T149N, R91W, 5th P.M.
SE 1/4 SW 1/4

UEIS

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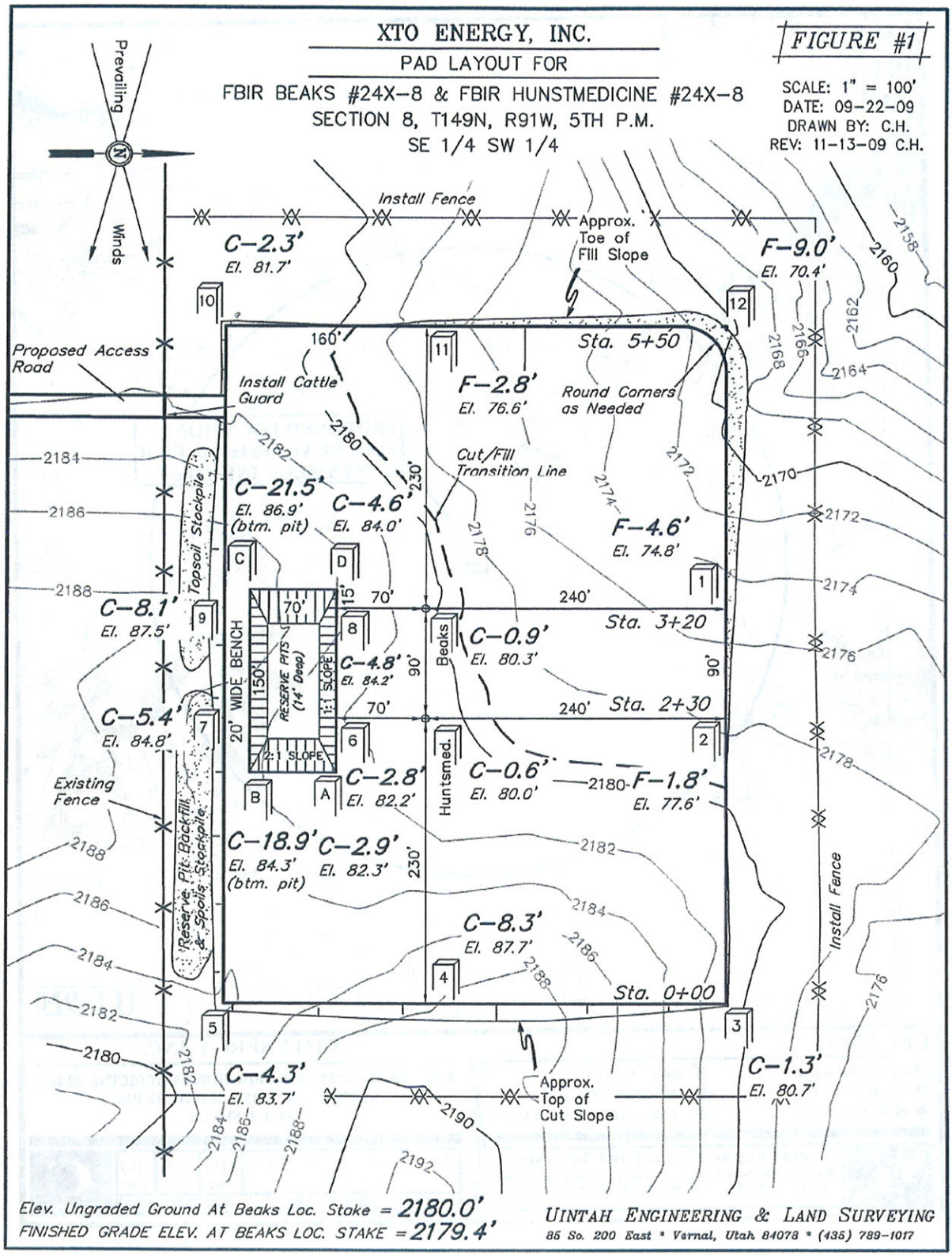
TOPOGRAPHIC MAP	09 MONTH	15 DAY	09 YEAR	C TOPO
SCALE: 1" = 2000'	DRAWN BY: L.K.	REVISED: 00-00-00		


XTO ENERGY, INC.
PAD LAYOUT FOR
FBIR BEAKS #24X-8 & FBIR HUNSTMEDICINE #24X-8
SECTION 8, T149N, R91W, 5TH P.M.
SE 1/4 SW 1/4
FIGURE #1
SCALE: 1" = 100'
DATE: 09-22-09
DRAWN BY: C.H.
REV: 11-13-09 C.H.
Prevailing Winds
Install Fence
Approx. Toe of Fill Slope
C-2.3' El. 81.7'
F-9.0' El. 70.4'
Proposed Access Road
Install Cattle Guard
Sta. 5+50
Round Corners as Needed
F-2.8' El. 76.6'
Cut/Fill Transition Line
C-21.5' El. 86.9' (btm. pit)
C-4.6' El. 84.0'
F-4.6' El. 74.8'
Topsoil Stockpile
C-8.1' El. 87.5'
20' WIDE BENCH
RESERVE PITS (14' Deep)
1:1 SLOPE
2:1 SLOPE
C-4.8' El. 84.2'
C-0.9' El. 80.3'
Beaks
Sta. 3+20
Sta. 2+30
C-5.4' El. 84.8'
Existing Fence
C-2.8' El. 82.2'
C-0.6' El. 80.0'
Huntsmed.
F-1.8' El. 77.6'
Reserve Pit Backfill & Spoils Stockpile
C-18.9' El. 84.3' (btm. pit)
C-2.9' El. 82.3'
C-8.3' El. 87.7'
Sta. 0+00
Install Fence
C-4.3' El. 83.7'
Approx. Top of Cut Slope
C-1.3' El. 80.7'
Elev. Ungraded Ground At Beaks Loc. Stake = 2180.0'
FINISHED GRADE ELEV. AT BEAKS LOC. STAKE = 2179.4'
UINTAH ENGINEERING & LAND SURVEYING
85 So. 200 East * Vernal, Utah 84078 * (435) 789-1017

1" = 40'
X-Section Scale
1" = 100'

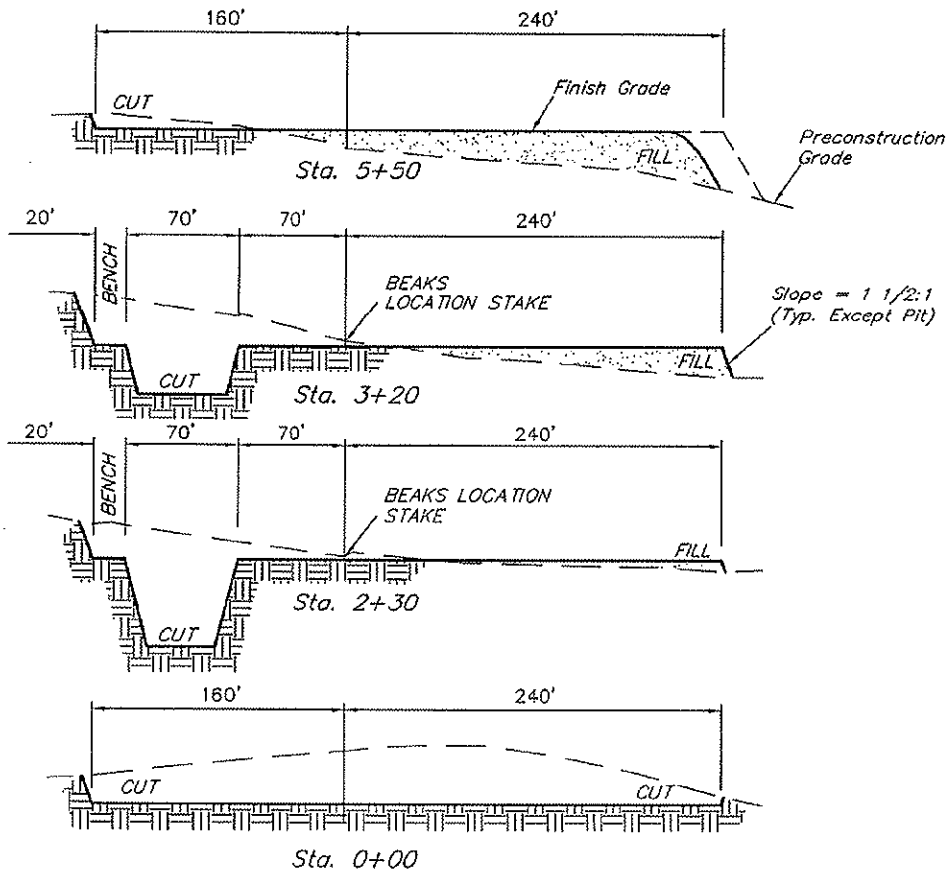
DATE: 09-22-09
DRAWN BY: C.H.
REV: 11-13-09 C.H.

XTO ENERGY, INC.

TYPICAL CROSS SECTION FOR

FBIR BEAKS #24X-8 & FBIR HUNSTMEDICINE #24X-8
SECTION 8, T149N, R91W, 5TH P.M.
SE 1/4 SW 1/4

FIGURE #2



NOTE:
Topsoil should not be Stripped Below Finished Grade on Substructure Area.

APPROXIMATE ACREAGES

WELL SITE DISTURBANCE = ± 5.384 ACRES
ACCESS ROAD DISTURBANCE = ± 3.652 ACRES
TOTAL = ± 9.036 ACRES

** NOTE:*
FILL QUANTITY INCLUDES 5% FOR COMPACTION

APPROXIMATE YARDAGES

(6") Topsoil Stripping	=	*4,420* Cu. Yds.
Location Cut	=	*17,050* Cu. Yds.
Reserve Pit Cut	=	*3,160* Cu. Yds.
TOTAL CUT	=	*24,630* CU.YDS.
FILL	=	*13,370* CU.YDS.

EXCESS MATERIAL	=	*11,260* Cu. Yds.
Topsoil	=	*4,420* Cu. Yds.
EXCESS UNBALANCE (After Interim Rehabilitation)	=	*6,840* Cu. Yds.

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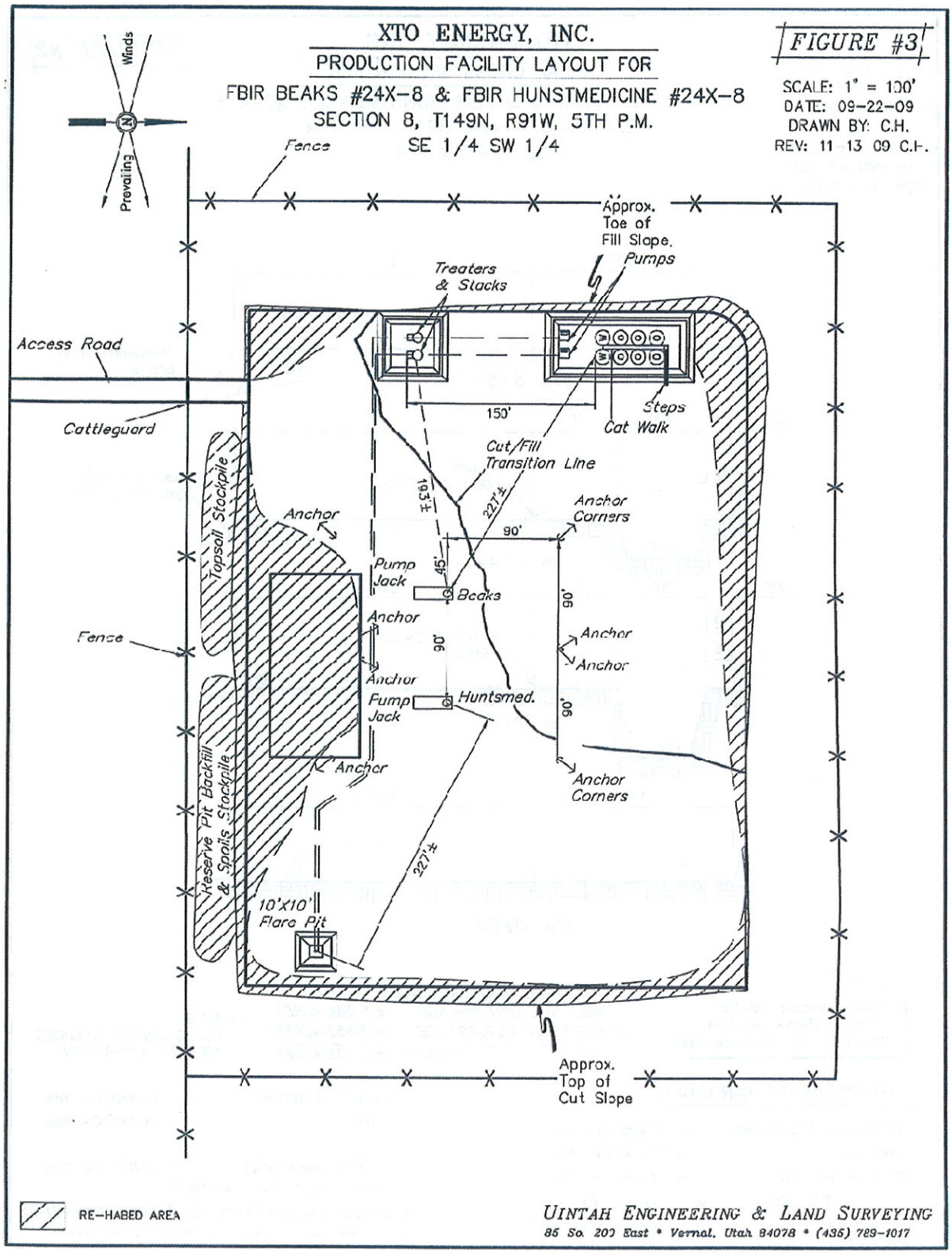

XTO ENERGY, INC.
PRODUCTION FACILITY LAYOUT FOR
FBIR BEAKS #24X-8 & FBIR HUNSTMEDICINE #24X-8
SECTION 8, T149N, R91W, 5TH P.M.
SE 1/4 SW 1/4
FIGURE #3
SCALE: 1" = 100'
DATE: 09-22-09
DRAWN BY: C.H.
REV: 11 13 09 C.H.
Winds
Prevailing
Fence
Approx. Toe of Fill Slope.
Pumps
Treaters & Stacks
Access Road
Cattleguard
150'
Steps
Cat Walk
Cut/Fill Transition Line
193'±
227'±
Anchor Corners
90'
Topsoil Stockpile
Anchor
Pump Jack
45'
Beaks
90'
Anchor
Anchor
Anchor
Fence
Anchor
Pump Jack
Huntsmed.
90'
Anchor
Anchor Corners
Reserve Pit Backfill & Spoils Stockpile
227'±
10'X10' Flare Pit
Approx. Top of Cut Slope
RE-HABED AREA
UINTAH ENGINEERING & LAND SURVEYING
85 So. 200 East • Vernal, Utah 84078 • (435) 789-1017

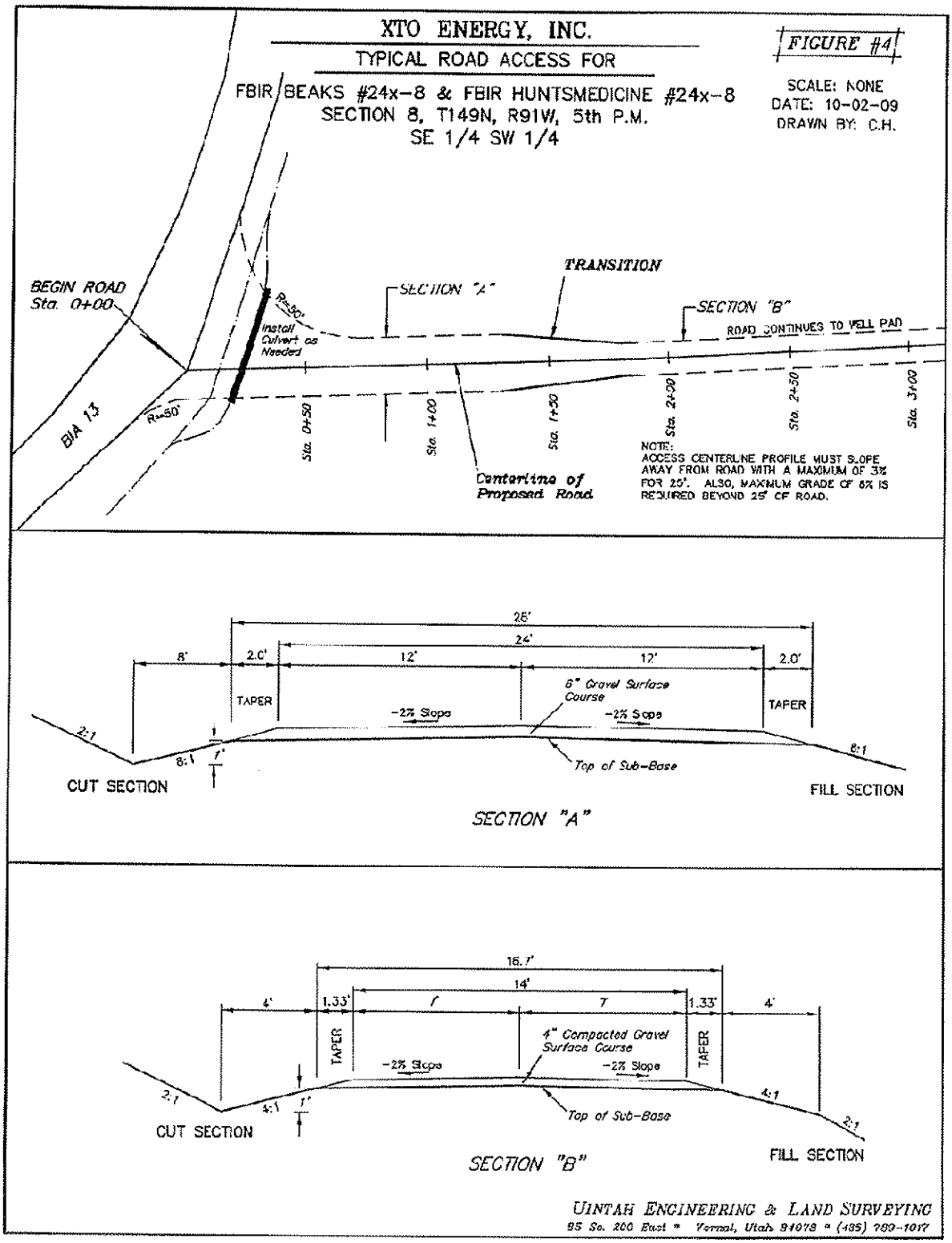

XTO ENERGY, INC.
TYPICAL ROAD ACCESS FOR
FBIR BEAKS #24x-8 & FBIR HUNTSMEDICINE #24x-8
SECTION 8, T149N, R91W, 5th P.M.
SE 1/4 SW 1/4
FIGURE #4
SCALE: NONE
DATE: 10-02-09
DRAWN BY: C.H.
BEGIN ROAD
Sta. 0+00
BIA 13
R=50'
R=50'
Install Culvert as Needed
SECTION "A"
TRANSITION
SECTION "B"
ROAD CONTINUES TO WELL PAD
Sta. 0+50
Sta. 1+00
Sta. 1+50
Sta. 2+00
Sta. 2+50
Sta. 3+00
Centerline of Proposed Road
NOTE:
ACCESS CENTERLINE PROFILE MUST SLOPE AWAY FROM ROAD WITH A MAXIMUM OF 3% FOR 25'. ALSO, MAXIMUM GRADE OF 8% IS REQUIRED BEYOND 25' OF ROAD.
28'
24'
8'
2.0'
12'
12'
2.0'
TAPER
TAPER
6" Gravel Surface Course
-2% Slope
-2% Slope
2:1
8:1
1'
8:1
Top of Sub-Base
CUT SECTION
FILL SECTION
SECTION "A"
16.7'
14'
4'
1.33'
7'
7'
1.33'
4'
TAPER
TAPER
4" Compacted Gravel Surface Course
-2% Slope
-2% Slope
2:1
4:1
1'
4:1
2:1
Top of Sub-Base
CUT SECTION
FILL SECTION
SECTION "B"
UINTAH ENGINEERING & LAND SURVEYING
85 So. 200 East * Vernal, Utah 84078 * (435) 789-1017

FIGURE #5

XTO ENERGY
Location Schematic

FBIR Beaks 24X-8
Location: SE SW Sec 8, 149N-91W
Footage: 200 ft FSL, 1890 ft FWL
Elev: Graded Pad 2179', KB 2203'
Dunn County, ND

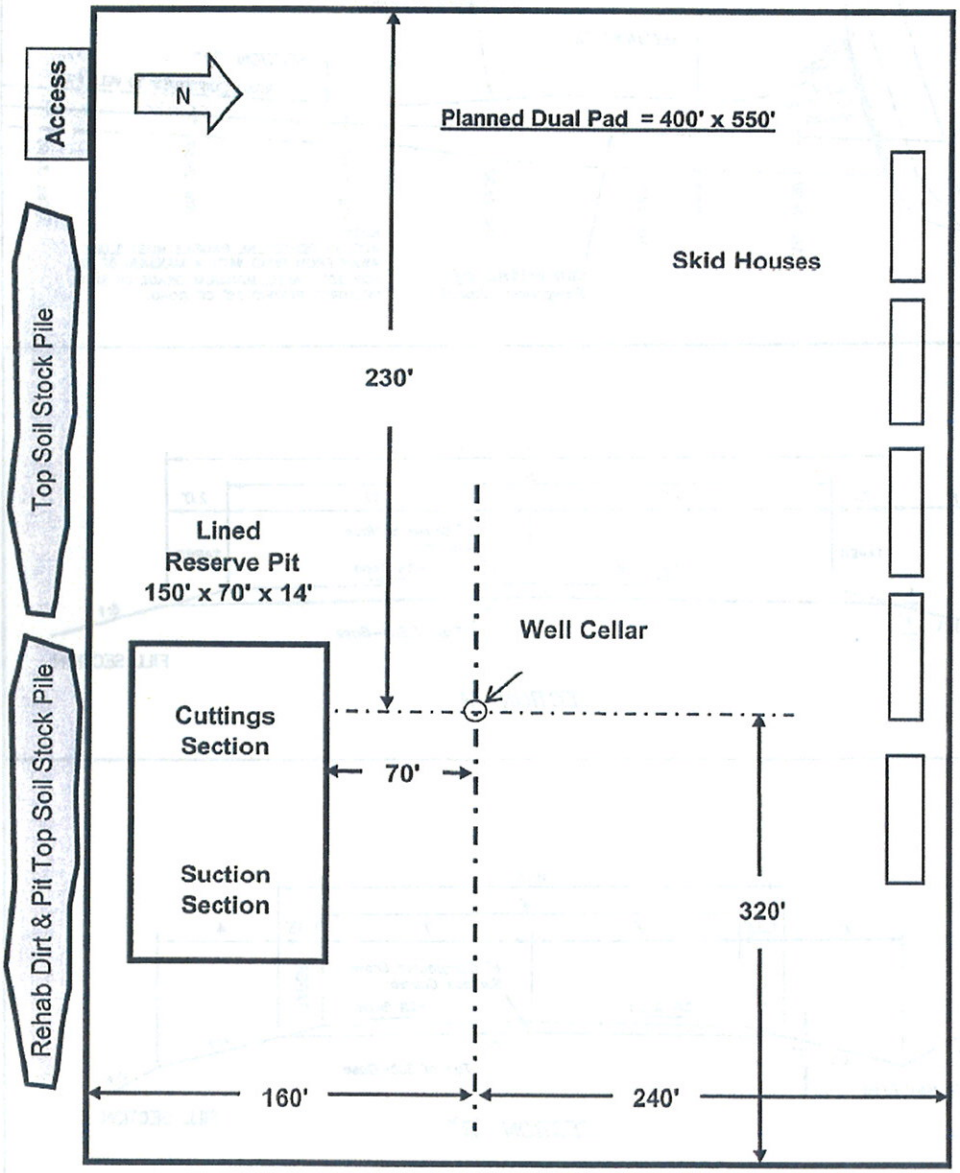


FIGURE #6

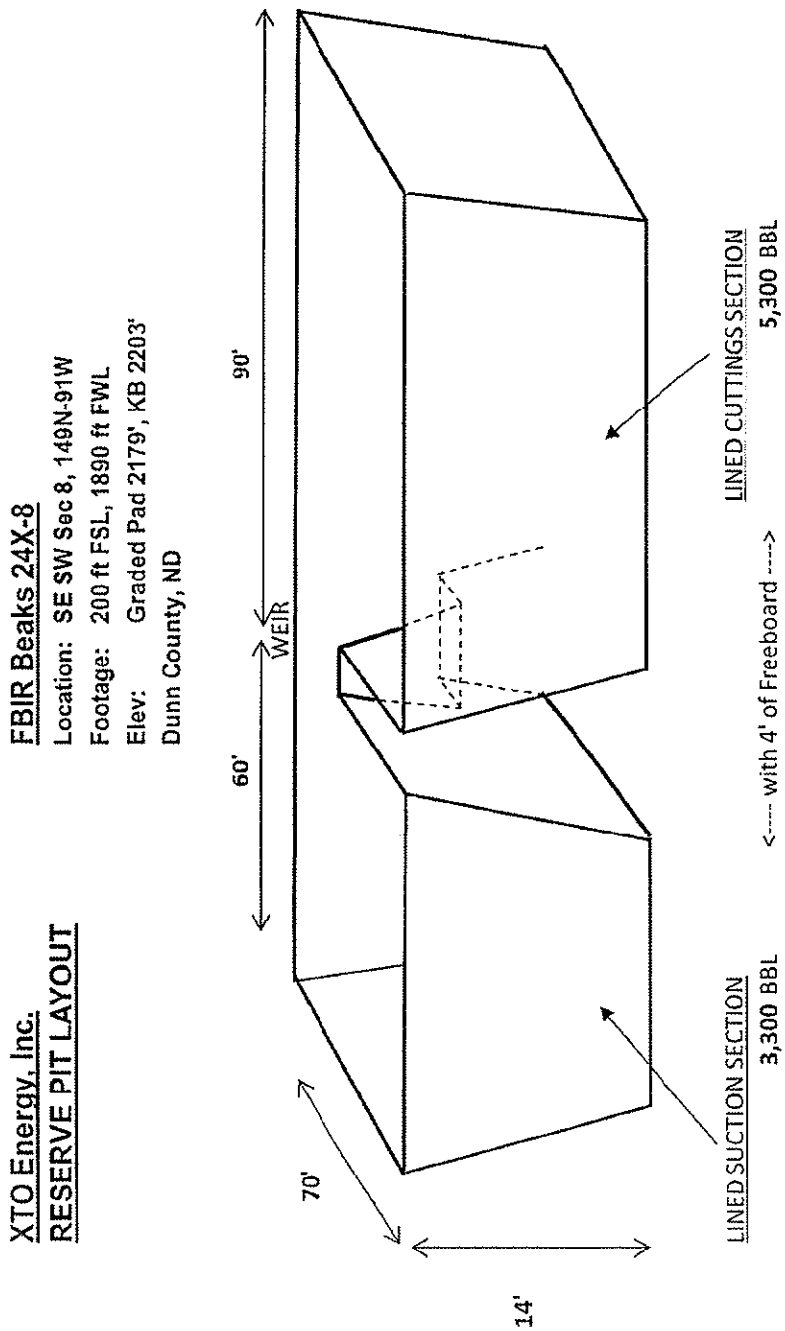

XTO Energy, Inc.
RESERVE PIT LAYOUT
FBIR Beaks 24X-8
Location: SE SW Sec 8, 149N-91W
Footage: 200 ft FSL, 1890 ft FWL
Elev: Graded Pad 2179', KB 2203'
Dunn County, ND
90'
WEIR
60'
70'
14'
LINED CUTTINGS SECTION
5,300 BBL
<---- with 4' of Freeboard ---->
LINED SUCTION SECTION
3,300 BBL

FIGURE #7

XTO ENERGY, INC.

FBIR BEAKS #24x-8 & FBIR HUNTSMEDICINE #24x-8

LOCATED IN DUNN COUNTY, NORTH DAKOTA
SECTION 8, T149N, R91W, 5th P.M.

PHOTO: VIEW FROM CORNER #2 TO LOCATION STAKE — CAMERA ANGLE: SOUTHERLY

PHOTO: VIEW FROM BEGINNING OF PROPOSED ACCESS — CAMERA ANGLE: EASTERLY

- Since 1954 -
Uintah Engineering & Land Surveying
85 South 200 East Vernal, Utah 84078
(435) 789-1017 * FAX (435) 789-1813

LOCATION PHOTOS	09 MONTH	15 DAY	09 YEAR	PHOTO
TAKEN BY: D.Z.	DRAWN BY: L.K.	REVISED: 00-00-00		

Figure #8

LORTEX 12 MIL LINER

Woven Reinforced High Density Polyethylene Fabric Coated With Low Density Polyethylene

PHYSICAL PROPERTIES AND SPECIFICATIONS

CONSTRUCTION:	12xD6 count per square inch Warp 950 Denier @ 50 Fill 1900 Denier @ 100
FABRIC GRADE:	Industrial, Carbon Black
STANDARD COATING COLORS:	Black
STANDARD COATING THICKNESS:	12 Mils +/- .15 mil each side LDRE
TOTAL THICKNESS:	12 Mils +/- .5 mil
NOMINAL WEIGHT:	5.3 oz/ square yard
NOMINAL TENSILE STRENGTH:	160 lbs W x 140 lbs Fill ASTM 1682-64 (Grab)
TEAR STRENGTH:	46 lbs W x 49 lbs Fill ASTM 2261-71 (Tongue)
MULLEN BURST STRENGTH:	325 psi ASTM D751-73
HYDROSTATIC RESISTANCE:	125 psi ASTM D1682-63
FLEX ABRASION:	5000+ cycles W 5000+ cycles Fill ASTM D1175-71
PUNCTURE RESISTANCE:	40 pounds FTMS 101B method 2065
IDENTIFICATION:	Printed in white ink "12 Mil" on 36 inch repeat

Form 3160-3
(August 2007)

FORM APPROVED
OMB No. 1004-0137
Expires July 31, 2010

48868
42096

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No. 49647, 42109, 42101
7420A-48811; 48812; 41774; 49780; 48871

6. If Indian, Allotee or Tribe Name

1a. Type of work: ☑ DRILL ☐ REENTER

7. If Unit or CA Agreement, Name and No.

1b. Type of Well: ☑ Oil Well ☐ Gas Well ☐ Other ☑ Single Zone ☐ Multiple Zone

8. Lease Name and Well No.
FBIR HuntsMedicine 24X-8

2. Name of Operator XTO Energy, Inc.

9. API Well No.
Pending

3a. Address 7114 W. Jefferson Ave., Suite 305
Denver, CO 80235

3b. Phone No. (include area code)
303.969.8280

10. Field and Pool, or Exploratory
Heart Butte - Bakken

4. Location of Well (Report location clearly and in accordance with any State requirements*)
At surface 200' FSL & 1980' FWL, SESW Sec. 8-149N-91W
At proposed prod. zone 550' FNL & 2181' FWL, Sec. 17-149N-91W

11. Sec., T. R. M. or Blk. and Survey or Area
8-149N-91W

14. Distance in miles and direction from nearest town or post office*

12. County or Parish
Dunn

13. State
ND

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drlg. unit line, if any) 200'

16. No. of acres in lease
1280 Ac. Spacing Unit

17. Spacing Unit dedicated to this well
All of Sec. 17 & 20-149N-91W

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. N/A

19. Proposed Depth
20,335' MD
10,278' TVD

20. BLM/BIA Bond No. on file
104312789 (BIA Bond)

21. Elevations (Show whether DF, KDB, RT, GL, etc.)
Graded pad 2179'; KB 2203'

22. Approximate date work will start*
09/01/2010

23. Estimated duration
45 days

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, must be attached to this form:

1. Well plat certified by a registered surveyor.
2. A Drilling Plan.
3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office).
4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification
6. Such other site specific information and/or plans as may be required by the BLM.

25. Signature

Name (Printed/Typed)
J. Michael Warren

Date
05/05/2010

Title
Regulatory Supervisor

Approved by (Signature)

Name (Printed/Typed)

Date

Title

Office

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.
Conditions of approval, if any, are attached.

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Continued on page 2)

*(Instructions on page 2)

PO Box 1589, Sidney, MT 59270

Drilling Plan - **Drill, Complete & Equip Single Lateral Wellbore in the Bakken**

Well Name and Location

FBIR HuntsMedicine 24X-8

Location: SE SW Sec 8, 149N-91W
Footage: 200 ft FSL, 1980 ft FWL
Elev: Graded Pad 2179', KB 2203'
Dunn County, ND

Latitude	**47.732492**	**North**
Longitude	**102.356628**	**West**

Driving Directions

From Mandaree, ND: 15.3 mi ESE on BIA 12, 1.7 mi NNE on BIA 13, 3.2 mi E x N x NE on 19th St. NW (BIA 13), 0.5 mi E on existing road, then 0.5 mi N into location

Drilling Rig Description

Rig	Patterson 311
Draw Works	Oilwell 860-E - 1400 HP
Mast	Pyramid 142' mast (750,000# on 12 lines)
Prime Movers	3 - Caterpillar 3512 w/ 1365 KW generators
Pumps	2 - NOV FD-1600 (independently driven)
BOPE	Shaffer 13-5/8" 5,000 psi double gate BOP Hydril 13-5/8" 5,000 psi Annular BOP 4" x 10,000 psi manifold

Formation Tops	TVD	
Base of Fox Hills	1,903	
Greenhorn	4,226	
Dakota Silt	4,946	Brackish Water
Dunham Salt	**6,116**	**(0 - 50+ ft)**
Spearfish	6,426	
Pine / Opeche Salts	**6,600**	**(+400 ft)**
Minnelusa	7,045	soft/hard formation
Tyler	7,531	laminations can wipe
Kibbey Lime	7,976	out bit if drilled too aggressively
Charles	**8,135**	
Base Last Salt	**8,632**	
Mission Canyon	8,810	Possible losses
Lodgepole	9,411	
Bakken Shale	10,248	
Middle Bakken	10,266	
Target - Bakken	**10,278**	

Offset XTO Wells - none

Logging, DST and Coring Program

1. A mud log will be run from Base of Last Salt to TD & on all laterals: Mudlog to include: total gas chromatograph and sample cuttings - 10' sample intervals in vertical hole & 30' intervals in laterals. A CBL/GR log will be run from deepest free-fall depth in 7 inch casing to surface. An MWD GR/ROP log will also be run from KOP (where the CBL will tie into) to TD of lateral.
2. *Open hole logs are anticipated for this well (if first well on this dual pad).*
3. No DST's are planned at this time.

H2S

A minor H2S show may be present from below Base Last Salt to KOP. If noticed, RU H2S safety trailer etc.

Maximum Formation Pressure and Temp

1. Normal formation pressure gradient is expected (up to 0.5 psi/ft or 9.6 ppg) from surface to the Bakken Shale. The Bakken Shale, Bakken Middle Member, and Three Forks may be over pressured up as much as 0.66 psi/ft (12.8 ppg).
2. The maximum anticipated BHT is **250** degrees F. or less

BOP Equipment Requirements

See attached diagram detailing BOPE specifications.

1. Rig will be equipped with upper and lower kelly cocks with handles available.
2. Inside BOP and TIW valves will be available to use on all sizes and threads of DP used on well.
3. BOP accumulator will have enough capacity to close HCR valve, close all rams plus annular preventer & retain minimum of 200 psi above precharge on the closing manifold without the use of closing pumps. The fluid reservoir capacity shall be at least double the usable fluid volume of the accumulator system capacity & the fluid level shall be mainatained at manufacturer's recommendation. There will be 2 additional sources of power for the closing pumps (electric and air). Sufficient N2 bottles will be available and will be recharged when pressure falls below manufacturer's minimum
4. BOP ram preventers will be tested to 5,000 psi using a test plug when initially installed and after 7 inch casing is nippled up and at 30 day intervals. Test BOP & casing strings to 1,500 psi just prior to drilling out 9-5/8" and 7" casing shoes. Function test rams and hydraulically operated remote choke line valve daily (preferably at every crew change).
5. Remote valve for BOP rams, HCR & choke shall be placed in a location that is readily available to Driller. The remote BOP valve shall be capable of closing and opening the rams.
6. Hand wheels on BOP shall be equipped with locking devices. A locking device shall be placed on annular preventer line valve & must be locked in the open position. This lock shall only be removed when the closing unit is inoperative.

Drilling Fluid and Related Equipment

1. Pumps shall be equipped with stroke counters with displays located in dog house. Slow pump speed shall be recorded on drilling report daily after mudding up.
2. A Pit Volume Totalizer will be installed and the readout will be displayed in the dog house.
3. Gas detecting equipment (for a chromatagraph) will be installed at shaker. Readouts will be available in dog house and in geologist trailer.
4. In the event gas flow becomes an issue. A flare pit shall be constructed not less than 100' from wellhead & 50' from reserve pit area.

Lines to the flare pit will be straight runs (staked down) and turns will utilize targeted tees. Flare pit will be located down wind as much as possible. An electronic ignitor will be used along with a propane line to provide for a continuous flare pilot.

Drilling Plan

Section 1 - Surface Casing>> **Surface to: 2,020** ***(Surface Casing Depth + 20')***

Conductor: 16" set at 45' - 80' (depending on gravel or coal depths)
Hole Size: 13-1/2"
Mud: Fresh Water
Bits: Type 1 mill tooth
Procedure: Set 16" conductor pipe into firm clay (45'-80').
Drill to casing setting depth (plus necessary rathole).
After reaching TD, run gyro or multi-shot directional survey (inclination and azimuth at 100' stations).
Run casing and cement. Weld on C22 5M psi casing head. NU 11" x 5M psi drilling spool.
NU 5M psi BOPE. Test to 5,000 psi.
Casing: 9-5/8" 36# K-55 8rd ST&C R3 SMLS - New. **Set at: 2,000 ft**
Centralizers: 2 turbolizers per jt on 1st 2 jts (stop banded 10' from each collar) & 1 regular centralizer per 5 jts to surface.
Cement: Lead Slurry: **410 Sacks**
High Yield Class C w/ 3% CaCl2, water control & 1/8 #/sk polyflakes. Mixed at 19.6 gps wtr, 3.2 cf/sk yield & 11.2 ppg.
Tail Slurry: **200 Sacks**
Class G with 2% CaCl2 & 1/8 #/sk polyflakes. Mixed at 4.97 gps wtr, 1.15 cf/sk yield and 15.8 ppg.
Note: Volumes calculated assuming 55% excess over 13-1/2" hole size.

Section 2 - Surf Csg Shoe to KOP>> **2,000 to: 9,869**

Hole Size: 8-3/4"
Mud Invert - 80% Diesel / 20% Salt Water. Mud Weight 9.5 - 9.7 PPG. ES 500-600.
Bits PDC bits with mud motors and MWD.
Procedure: Drill w / PDC bit & mud motor. Steer as needed with MWD or SWD. Survey every 90'. Hold deviation to 2 deg max from surf csg shoe to ~6,000'; then ~3 deg max to ~8,000'; then ~4 deg max to KOP. Condition hole for logs (if needed). TOH

NOTE: a +350 ft tangent section is currently planned after landing the curve to get casing point beyond the NDIC unit setback. If possible, allow wellbore to drift south while drilling the vertical hole to reduce the amount of tangent required to reach casing point.

Logs: Mudlogger will start at Base of Last Salt.
if 1st well drilled on pad { **GR, Resistivity, BHC Sonic From TD To Surf Csg**
Density - Neutron Porosity From TD To 50' above Tyler

Section 3 - Drill Curve (14 Degree/100')>> **9,869 to: 10,899 7" Casing Point**

Hole Size: 8-3/4"
Mud: Invert - 80% Diesel / 20% Salt Water. Mud weight 9.5 - 9.7 PPG. ES 500-600.
Bits: Type 3 Insert Roller Cone.
Procedure: Drill Curve per directional plan (maximum survey interval is 30').
Casing: Set 7" 29# P-110 LT&C and 32# MS or P-110 (100' above and below salts) at **10,879 ft**

Anticipated Casing Design to facilitate fracture stimulating down casing

Top	Btm	Ftg		
0	6,016	6,016	7" 29# P-110 LT&C	Surf to 100' above Dunham salt
6,016	7,145	1,129	7" 32# P-110 LT&C	100' above Dunham to 100' below base of Pine/Opeche salts
7,145	8,035	890	7" 29# P-110 LT&C	100' below base of Pine/Opeche to 100' above Charles salt
8,035	8,732	697	7" 32# P-110 LT&C	100' above Charles salt to 100' below Base of Last Salt
8,732	9,969	1,237	7" 29# MS-110 LT&C	100' below Base of Last Salt 100' below KOP
9,969	10,879	910	7" 29# P-110 LT&C	100' below KOP to TD

Centralizers: 2 stand-off bands per jt on btm **3** jts (banded 10' from collars). 1 stand-off band on every other jt from curve landing depth through KOP. 1 turbolizer centralizer per jt from 100' above to 100' below each salt section. Then, 1 regular centralizer per **6** jts up to anticipated cement top.
Cement: **Lead Slurry: 225 Sacks** *(est. TOC ~ 300' above Mowry)*
LiteCRETE with defoamer, fluid loss additive, dispersant, retarder, 10% salt & 1/8 #/sk polyflakes. Mixed at 6.528 gps, 1.86 cf/sk, 11.5 ppg
1st Tail Slurry: 476 Sacks *(est. TOC 200' above Dunham Salt)*
Class G with 35% silica flour, 10% salt, dispersant, fluid loss additive, retarder, 1/8#/sk polyflakes. Mixed at 7.145 gal/sk, 1.65 cf/sk, 15.6 ppg.
2nd Tail Slurry: 323 Sacks *(est. TOC 100' below the Mission Canyon)*
Class G with 35% silica flour, 10% salt, expanding agent, dispersant, defoamer, fluid loss additive, retarder, 1/8 #/sk polyfakes. Mixed at 6.911 gal/sk, 1.62 cf/sk, 15.8 ppg.
NOTE: Slurry volumes are based on 9" hole + 50% excess (≈ 8.75" hole + 75% excess)
Logs: MWD GR/ROP. Mud log.

Section 4 - Lateral #1>> **10,879 to: 20,335** ***TD (MD)***

Hole Size: 6"
Mud: Salt Water Mud. Typically 9.5-9.7 ppg using NaCL. If conditions warrant use CaCl brine (up to 11.2 ppg).
Bits: PDC bits.
Procedure: TIH w/bit and directional tools. Drill open hole lateral per directional plan to TD target. Max survey interval in lateral is 90'.
TOH with DP & BHA. Run 4 1/2" 11.35# J-55 FM-II liner w/ pre-drilled, 0.5" holes per 2 ft below bottom-most external swell pkr, followed by 13.5# P-110 FM-II blank pipe with external swell packers (evenly spaced in open hole, unless natural fractures were encountered while drilling) from +/-TD to last swell packer in open hole. Run 4.5" 13.5# P-110 Tenaris-Blue casing above last swell packer in the open hole to +/- KOP, with a final swell packer located immediately below the liner hanger.
Once liner is run, circulate out oil & gas and spot FW in lateral to activate swell pkrs. Drop ball & wait +/- 1 hr for it to seat.
Set liner hanger & top pkr - test to +/- 5,000 psi.
Liner: **Top: Btm:**
9,869 - *KOP* 20,335 *<-- spaced out as close to TD as possible*

Finalize Well >>>> Set wireline-set, tubing-retreivable packer with BHP gauges and top blanking plug installed at, or just above KOP. Circulate well with clean, brine water prior to TOH LD DP. ND BOP and NU tubing head. RDMO.

Prepared By: Ross H. Lubbers

XTO ENERGY

Well Construction Diagram

FBIR HuntsMedicine 24X-8
Location: SE SW Sec 8, 149N-91W
Footage: 200 ft FSL, 1980 ft FWL
Elev: Graded Pad 2179', KB 2203'
Dunn County, ND

From Mandaree, ND: 15.3 mi ESE on BIA 12, 1.7 mi NNE on BIA 13, 3.2 mi E x N x NE on 19th St. NW (BIA 13), 0.5 mi E on existing road, then 0.5 mi N into location

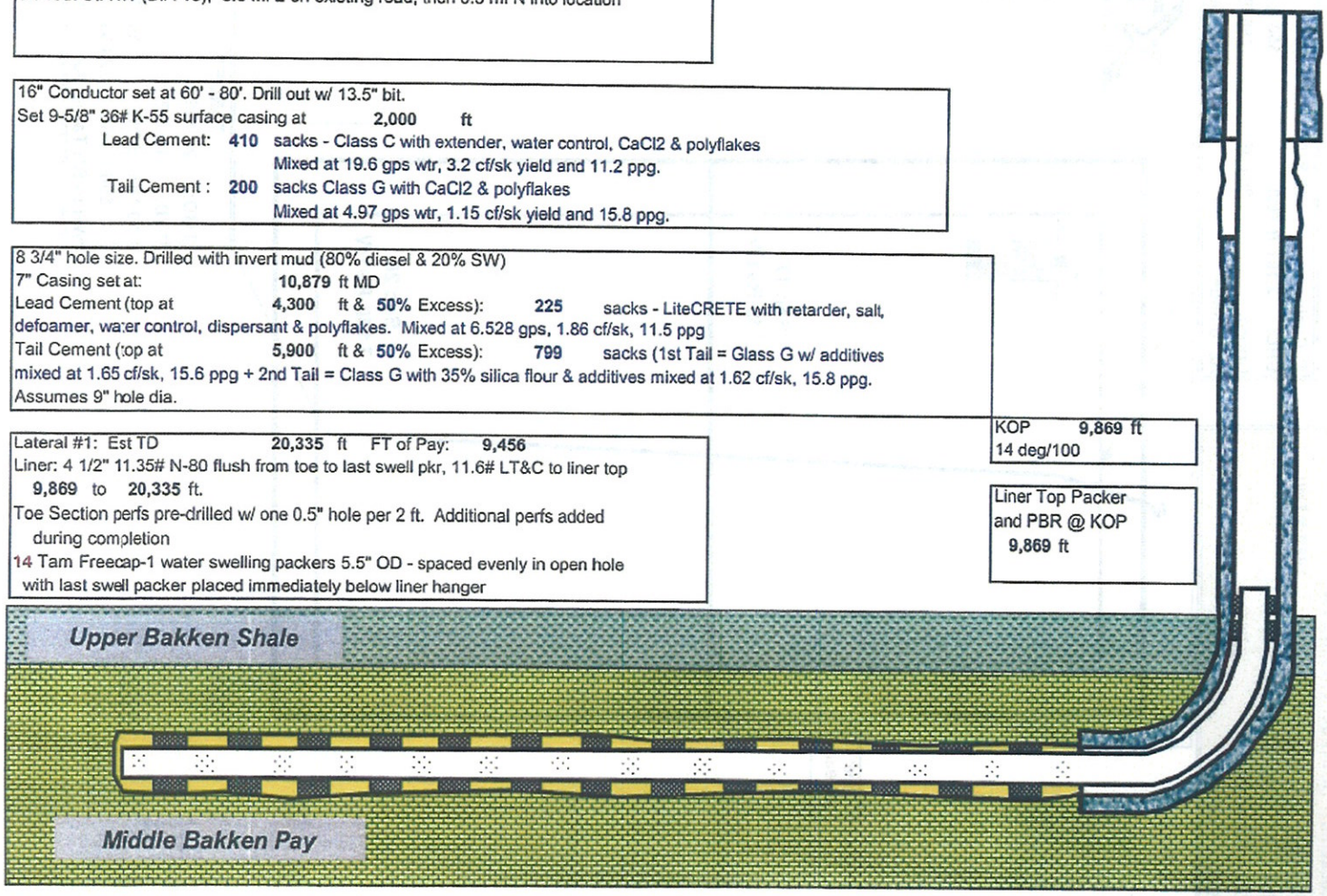
16" Conductor set at 60' - 80'. Drill out w/ 13.5" bit.
Set 9-5/8" 36# K-55 surface casing at **2,000** ft
Lead Cement: **410** sacks - Class C with extender, water control, CaCl2 & polyflakes
Mixed at 19.6 gps wtr, 3.2 cf/sk yield and 11.2 ppg.
Tail Cement : **200** sacks Class G with CaCl2 & polyflakes
Mixed at 4.97 gps wtr, 1.15 cf/sk yield and 15.8 ppg.

8 3/4" hole size. Drilled with invert mud (80% diesel & 20% SW)
7" Casing set at: **10,879** ft MD
Lead Cement (top at **4,300** ft & **50%** Excess): **225** sacks - LiteCRETE with retarder, salt, defoamer, water control, dispersant & polyflakes. Mixed at 6.528 gps, 1.86 cf/sk, 11.5 ppg
Tail Cement (top at **5,900** ft & **50%** Excess): **799** sacks (1st Tail = Glass G w/ additives mixed at 1.65 cf/sk, 15.6 ppg + 2nd Tail = Class G with 35% silica flour & additives mixed at 1.62 cf/sk, 15.8 ppg.
Assumes 9" hole dia.

Lateral #1: Est TD **20,335** ft FT of Pay: **9,456**
Liner: 4 1/2" 11.35# N-80 flush from toe to last swell pkr, 11.6# LT&C to liner top
9,869 to **20,335** ft.
Toe Section perfs pre-drilled w/ one 0.5" hole per 2 ft. Additional perfs added during completion
14 Tam Freecap-1 water swelling packers 5.5" OD - spaced evenly in open hole with last swell packer placed immediately below liner hanger

KOP **9,869** ft
14 deg/100

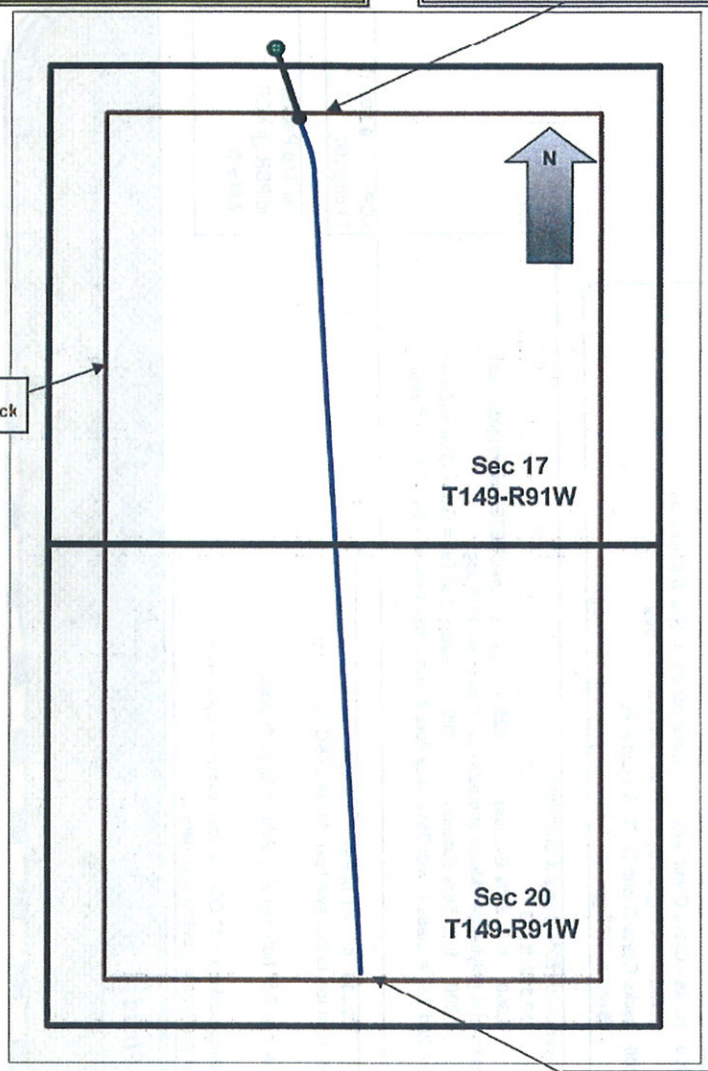
Liner Top Packer and PBR @ KOP
9,869 ft



DIRECTIONAL DRILLING PLAN
FBIR HuntsMedicine 24X-8

Location: SE SW Sec 8, 149N-91W
Footage: 200 ft FSL 1980 ft FWL
Elev: Graded Pad 2179', KB 2203'
Dunn County, ND
Scale: 1 sq = 100'

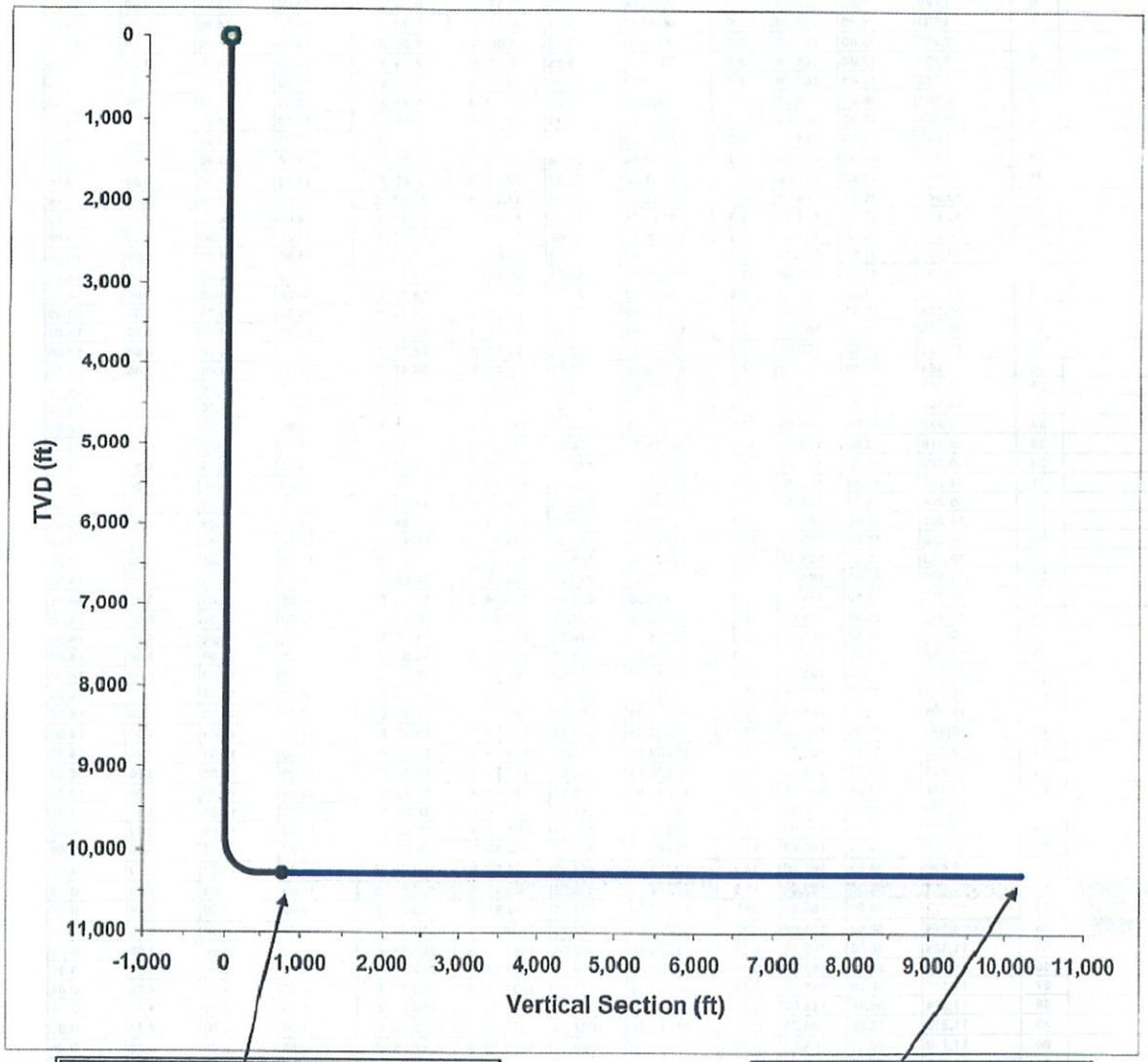
7" Casing:	10,879	FT MD	
BHL:	2,181 ft FWL	550 ft FNL	
Coord:	201 E	750 S	
Az to Shoe:	165.00	Deg	



TARGET			
TMD:	20,335 ft		
TVD:	10,278 ft		
10,183	SOW	710	EOW
550	FSL	2,639	FEL
WH to BH Target Az		176.01	

DIRECTIONAL DRILLING PLAN
FBIR HuntsMedicine 24X-8

Location:	SE SW Sec 8, 149N-91W
Footage:	200 ft FSL 1980 ft FWL
Elev:	Graded Pad 2179', KB 2203'
Dunn County, ND	
Scale: 1 sq = 500'	



7" Casing:	10,879	FT MD
BHL: 2,181 ft FWL		550 ft FNL
Coord:	201 E	750 S
Az to Shoe:	165.00	Deg

TARGET			
TMD:	20,335 ft		
TVD:	10,278 ft		
10,183	SOW	710	EOW
550	FSL	2,639	FEL
WH to BH Target Az			176.01

HORIZONTAL DRILLING PLAN - LATERAL NO.1

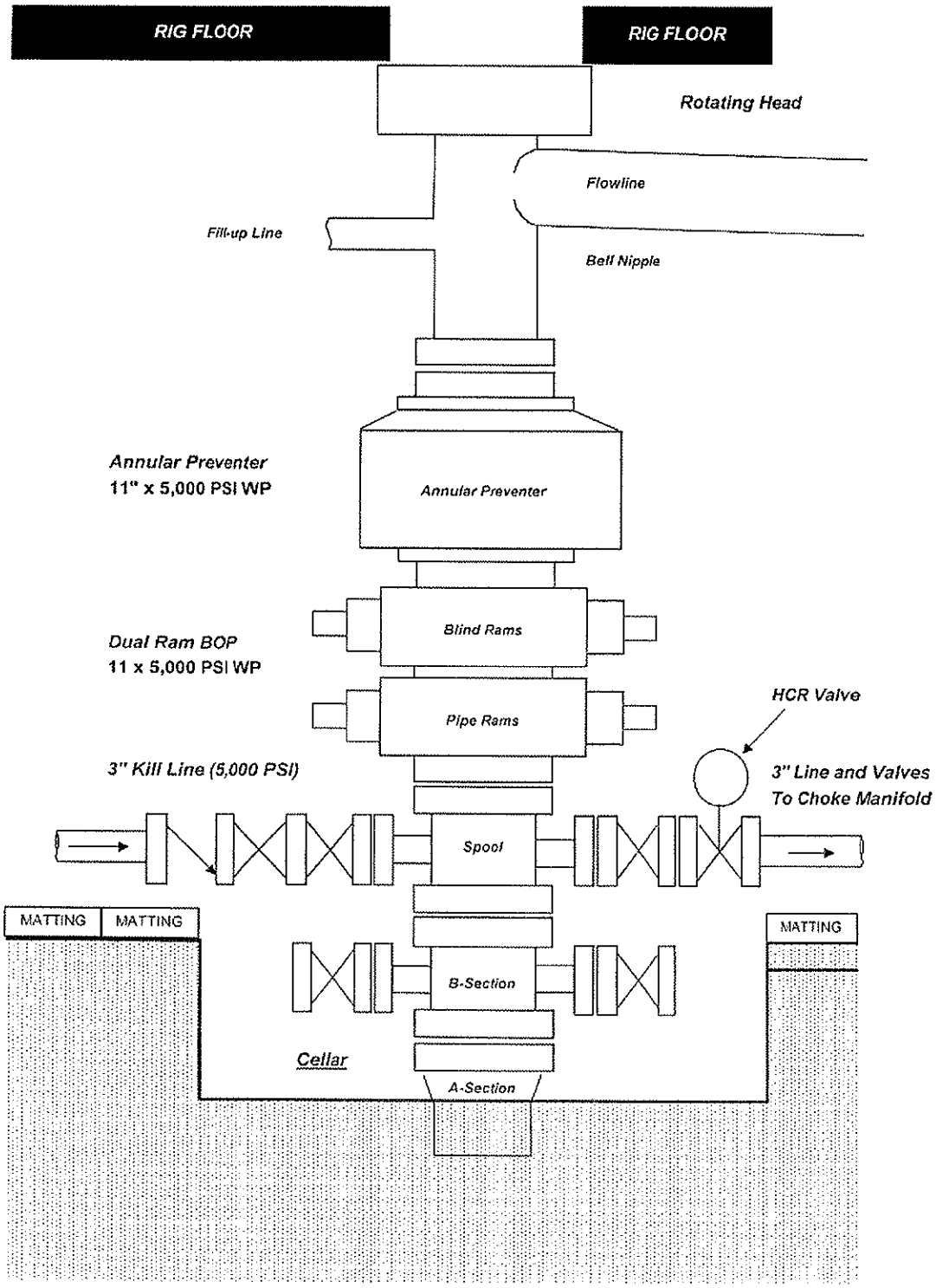
Company	XTO Energy, Inc	Target Inclination	90
Well	FBIR HuntsMedicine 24X-8	Magnetic Declination	
Build Rate	14.00	Target TVD	10,278
Relative Turn Direction	R	Target Azimuth	176.01 / 165.00 Initial Azimuth
Turn Rate - Deg/100	4.00 / 12.51 Total Turn	Target Coordinates from Surf Locn	710 E / 10183 S / 10,208 VS

Date	No.	DEPTH	INC.	AZM	C.L.	T.V.D.	V.S.	N/S	E/W	DLS	B./D.	Walk	BRN
	1	0				0.00	0.00	0.00 N	0.00 E	0.00			0.00
KOP1	2	9,869	0.00	0.00	9869	9868.74	0.00	0.00 N	0.00 E	0.00	0.00	0.00	14.00
	3	9,882	1.80	165.00	12.9	9881.60	0.20	0.20 S	0.05 E	14.00	14.00	1283.33	14.00
	4	9,894	3.60	165.00	12.9	9894.44	0.81	0.78 S	0.21 E	14.00	14.00	0.00	14.00
	5	9,907	5.40	165.00	12.9	9907.26	1.82	1.75 S	0.47 E	14.00	14.00	0.00	14.00
	6	9,920	7.20	165.00	12.9	9920.04	3.23	3.12 S	0.84 E	14.00	14.00	0.00	14.00
	7	9,933	9.00	165.00	12.9	9932.77	5.04	4.87 S	1.30 E	14.00	14.00	0.00	14.00
	8	9,946	10.80	165.00	12.9	9945.43	7.25	7.00 S	1.88 E	14.00	14.00	0.00	14.00
	9	9,959	12.60	165.00	12.9	9958.02	9.86	9.52 S	2.55 E	14.00	14.00	0.00	14.00
	10	9,972	14.40	165.00	12.9	9970.52	12.86	12.42 S	3.33 E	14.00	14.00	0.00	14.00
	11	9,984	16.20	165.00	12.9	9982.92	16.25	15.70 S	4.21 E	14.00	14.00	0.00	14.00
	12	9,997	18.00	165.00	12.9	9995.21	20.03	19.35 S	5.18 E	14.00	14.00	0.00	14.00
	13	10,010	19.80	165.00	12.9	10007.37	24.19	23.37 S	6.26 E	14.00	14.00	0.00	14.00
	14	10,023	21.60	165.00	12.9	10019.40	28.74	27.76 S	7.44 E	14.00	14.00	0.00	14.00
	15	10,036	23.40	165.00	12.9	10031.28	33.66	32.51 S	8.71 E	14.00	14.00	0.00	14.00
	16	10,049	25.20	165.00	12.9	10043.00	38.95	37.62 S	10.08 E	14.00	14.00	0.00	14.00
	17	10,062	27.00	165.00	12.9	10054.54	44.61	43.09 S	11.54 E	14.00	14.00	0.00	14.00
	18	10,074	28.80	165.00	12.9	10065.90	50.62	48.90 S	13.10 E	14.00	14.00	0.00	14.00
	19	10,087	30.60	165.00	12.9	10077.07	56.99	55.05 S	14.75 E	14.00	14.00	0.00	14.00
	20	10,100	32.40	165.00	12.9	10088.03	63.71	61.54 S	16.49 E	14.00	14.00	0.00	14.00
	21	10,113	34.20	165.00	12.9	10098.78	70.77	68.36 S	18.32 E	14.00	14.00	0.00	14.00
	22	10,126	36.00	165.00	12.9	10109.30	78.16	75.50 S	20.23 E	14.00	14.00	0.00	14.00
	23	10,139	37.80	165.00	12.9	10119.58	85.88	82.95 S	22.23 E	14.00	14.00	0.00	14.00
	24	10,152	39.60	165.00	12.9	10129.61	93.92	90.72 S	24.31 E	14.00	14.00	0.00	14.00
	25	10,164	41.40	165.00	12.9	10139.39	102.27	98.78 S	26.47 E	14.00	14.00	0.00	14.00
	26	10,177	43.20	165.00	12.9	10148.90	110.92	107.14 S	28.71 E	14.00	14.00	0.00	14.00
	27	10,190	45.00	165.00	12.9	10158.13	119.87	115.78 S	31.02 E	14.00	14.00	0.00	14.00
	28	10,203	46.80	165.00	12.9	10167.08	129.10	124.70 S	33.41 E	14.00	14.00	0.00	14.00
	29	10,216	48.60	165.00	12.9	10175.73	138.61	133.89 S	35.87 E	14.00	14.00	0.00	14.00
	30	10,229	50.40	165.00	12.9	10184.08	148.39	143.33 S	38.40 E	14.00	14.00	0.00	14.00
	31	10,242	52.20	165.00	12.9	10192.12	158.42	153.02 S	41.00 E	14.00	14.00	0.00	14.00
	32	10,254	54.00	165.00	12.9	10199.84	168.70	162.95 S	43.66 E	14.00	14.00	0.00	14.00
	33	10,267	55.80	165.00	12.9	10207.23	179.22	173.11 S	46.38 E	14.00	14.00	0.00	14.00
	34	10,280	57.60	165.00	12.9	10214.29	189.96	183.49 S	49.16 E	14.00	14.00	0.00	14.00
	35	10,293	59.40	165.00	12.9	10221.01	200.93	194.08 S	52.00 E	14.00	14.00	0.00	14.00
	36	10,306	61.20	165.00	12.9	10227.38	212.09	204.87 S	54.89 E	14.00	14.00	0.00	14.00
	37	10,319	63.00	165.00	12.9	10233.39	223.46	215.84 S	57.83 E	14.00	14.00	0.00	14.00
	38	10,332	64.80	165.00	12.9	10239.05	235.00	227.00 S	60.82 E	14.00	14.00	0.00	14.00
	39	10,344	66.60	165.00	12.9	10244.34	246.72	238.31 S	63.85 E	14.00	14.00	0.00	14.00
	40	10,357	68.40	165.00	12.9	10249.26	258.60	249.79 S	66.93 E	14.00	14.00	0.00	14.00
	41	10,370	70.20	165.00	12.9	10253.81	270.62	261.40 S	70.04 E	14.00	14.00	0.00	14.00
	42	10,383	72.00	165.00	12.9	10257.97	282.79	273.15 S	73.19 E	14.00	14.00	0.00	14.00
	43	10,396	73.80	165.00	12.9	10261.75	295.08	285.02 S	76.37 E	14.00	14.00	0.00	14.00
	44	10,409	75.60	165.00	12.9	10265.14	307.48	297.00 S	79.58 E	14.00	14.00	0.00	14.00
	45	10,422	77.40	165.00	12.9	10268.14	319.98	309.08 S	82.81 E	14.00	14.00	0.00	14.00
	46	10,434	79.20	165.00	12.9	10270.75	332.57	321.24 S	86.07 E	14.00	14.00	0.00	14.00
	47	10,447	81.00	165.00	12.9	10272.96	345.23	333.47 S	89.35 E	14.00	14.00	0.00	14.00
	48	10,460	82.80	165.00	12.9	10274.77	357.96	345.76 S	92.64 E	14.00	14.00	0.00	14.00
	49	10,473	84.60	165.00	12.9	10276.18	370.74	358.11 S	95.95 E	14.00	14.00	0.00	14.00
	50	10,486	86.40	165.00	12.9	10277.19	383.56	370.49 S	99.27 E	14.00	14.00	0.00	14.00
	51	10,499	88.20	165.00	12.9	10277.80	396.40	382.89 S	102.59 E	14.00	14.00	0.00	14.00
END OF CURVE	52	10,512	90.00	165.00	12.9	10278.00	409.25	395.31 S	105.92 E	14.00	14.00	0.00	0.00
CASING SHOE	53	10,879	90.00	165.00	367	10278.00	776.25	749.81 S	200.91 E	0.00	0.00	0.00	0.00
START TURN	54	11,179	90.00	165.00	300	10278.00	1076.25	1039.58 S	278.55 E	0.00	0.00	0.00	0.00
	55	11,185	90.00	165.25	6.25	10278.00	1062.58	1045.63 S	280.16 E	4.00	0.00	4.00	0.00
	56	11,191	90.00	165.50	6.25	10278.00	1068.73	1051.68 S	281.74 E	4.00	0.00	4.00	0.00
	57	11,197	90.00	165.75	6.25	10278.00	1074.88	1057.74 S	283.29 E	4.00	0.00	4.00	0.00
	58	11,204	90.00	166.00	6.25	10278.00	1081.04	1063.81 S	284.82 E	4.00	0.00	4.00	0.00
	59	11,210	90.00	166.25	6.25	10278.00	1087.20	1069.88 S	286.32 E	4.00	0.00	4.00	0.00
	60	11,216	90.00	166.50	6.25	10278.00	1093.37	1075.96 S	287.79 E	4.00	0.00	4.00	0.00
	61	11,222	90.00	166.75	6.25	10278.00	1099.54	1082.04 S	289.24 E	4.00	0.00	4.00	0.00
	62	11,229	90.00	167.00	6.25	10278.00	1105.72	1088.13 S	290.66 E	4.00	0.00	4.00	0.00
	63	11,235	90.00	167.25	6.25	10278.00	1111.90	1094.23 S	292.05 E	4.00	0.00	4.00	0.00
	64	11,241	90.00	167.50	6.25	10278.00	1118.08	1100.34 S	293.42 E	4.00	0.00	4.00	0.00
	65	11,247	90.00	167.75	6.25	10278.00	1124.27	1106.45 S	294.76 E	4.00	0.00	4.00	0.00
	66	11,254	90.00	168.00	6.25	10278.00	1130.46	1112.56 S	296.07 E	4.00	0.00	4.00	0.00
	67	11,260	90.00	168.25	6.25	10278.00	1136.66	1118.68 S	297.36 E	4.00	0.00	4.00	0.00

	68	11,266	90.00	168.50	6.25	10278.00	1142.86	1124.81 S	298.62 E	4.00	0.00	4.00	0.00
	69	11,272	90.00	168.75	6.25	10278.00	1149.06	1130.94 S	299.85 E	4.00	0.00	4.00	0.00
	70	11,279	90.00	169.00	6.25	10278.00	1155.26	1137.08 S	301.06 E	4.00	0.00	4.00	0.00
	71	11,285	90.00	169.25	6.25	10278.00	1161.47	1143.22 S	302.24 E	4.00	0.00	4.00	0.00
	72	11,291	90.00	169.50	6.25	10278.00	1167.69	1149.37 S	303.39 E	4.00	0.00	4.00	0.00
	73	11,297	90.00	169.75	6.25	10278.00	1173.90	1155.52 S	304.52 E	4.00	0.00	4.00	0.00
	74	11,304	90.00	170.00	6.25	10278.00	1180.12	1161.68 S	305.61 E	4.00	0.00	4.00	0.00
	75	11,310	90.00	170.25	6.25	10278.00	1186.35	1167.84 S	306.69 E	4.00	0.00	4.00	0.00
	76	11,316	90.00	170.50	6.25	10278.00	1192.57	1174.01 S	307.73 E	4.00	0.00	4.00	0.00
	77	11,322	90.00	170.75	6.25	10278.00	1198.80	1180.18 S	308.75 E	4.00	0.00	4.00	0.00
	78	11,329	90.00	171.00	6.25	10278.00	1205.03	1186.36 S	309.74 E	4.00	0.00	4.00	0.00
	79	11,335	90.00	171.26	6.25	10278.00	1211.26	1192.54 S	310.71 E	4.00	0.00	4.00	0.00
	80	11,341	90.00	171.51	6.25	10278.00	1217.49	1198.72 S	311.64 E	4.00	0.00	4.00	0.00
	81	11,347	90.00	171.76	6.25	10278.00	1223.73	1204.91 S	312.55 E	4.00	0.00	4.00	0.00
	82	11,354	90.00	172.01	6.25	10278.00	1229.97	1211.10 S	313.44 E	4.00	0.00	4.00	0.00
	83	11,360	90.00	172.26	6.25	10278.00	1236.21	1217.30 S	314.29 E	4.00	0.00	4.00	0.00
	84	11,366	90.00	172.51	6.25	10278.00	1242.45	1223.50 S	315.12 E	4.00	0.00	4.00	0.00
	85	11,373	90.00	172.76	6.25	10278.00	1248.70	1229.70 S	315.93 E	4.00	0.00	4.00	0.00
	86	11,379	90.00	173.01	6.25	10278.00	1254.94	1235.91 S	316.70 E	4.00	0.00	4.00	0.00
	87	11,385	90.00	173.26	6.25	10278.00	1261.19	1242.12 S	317.45 E	4.00	0.00	4.00	0.00
	88	11,391	90.00	173.51	6.25	10278.00	1267.44	1248.33 S	318.17 E	4.00	0.00	4.00	0.00
	89	11,398	90.00	173.76	6.25	10278.00	1273.69	1254.55 S	318.86 E	4.00	0.00	4.00	0.00
	90	11,404	90.00	174.01	6.25	10278.00	1279.94	1260.77 S	319.53 E	4.00	0.00	4.00	0.00
	91	11,410	90.00	174.26	6.25	10278.00	1286.19	1266.99 S	320.17 E	4.00	0.00	4.00	0.00
	92	11,416	90.00	174.51	6.25	10278.00	1292.44	1273.21 S	320.78 E	4.00	0.00	4.00	0.00
	93	11,423	90.00	174.76	6.25	10278.00	1298.70	1279.44 S	321.37 E	4.00	0.00	4.00	0.00
	94	11,429	90.00	175.01	6.25	10278.00	1304.95	1285.67 S	321.93 E	4.00	0.00	4.00	0.00
	95	11,435	90.00	175.26	6.25	10278.00	1311.20	1291.90 S	322.46 E	4.00	0.00	4.00	0.00
	96	11,441	90.00	175.51	6.25	10278.00	1317.46	1298.14 S	322.96 E	4.00	0.00	4.00	0.00
	97	11,448	90.00	175.76	6.25	10278.00	1323.71	1304.38 S	323.44 E	4.00	0.00	4.00	0.00
	98	11,454	90.00	176.01	6.25	10278.00	1329.97	1310.61 S	323.88 E	4.00	0.00	4.00	0.00
	99	11,460	90.00	176.26	6.25	10278.00	1336.22	1316.86 S	324.31 E	4.00	0.00	4.00	0.00
	100	11,466	90.00	176.51	6.25	10278.00	1342.48	1323.10 S	324.70 E	4.00	0.00	4.00	0.00
	101	11,473	90.00	176.76	6.25	10278.00	1348.73	1329.34 S	325.07 E	4.00	0.00	4.00	0.00
	102	11,479	90.00	177.01	6.25	10278.00	1354.99	1335.59 S	325.41 E	4.00	0.00	4.00	0.00
	103	11,485	90.00	177.26	6.25	10278.00	1361.24	1341.84 S	325.72 E	4.00	0.00	4.00	0.00
END TURN	104	11,491	90.00	177.51	6.25	10278.00	1367.49	1348.08 S	326.01 E	4.00	0.00	4.00	0.00
TD	105	20,335	90.00	177.51	8843.26	10278.00	10207.73	10183 S	710 E	0.00	0.00	0.00	0.00
OPEN HOLE PAY													
9,458													

XTO Energy, Inc.
BOP STACK DIAGRAM

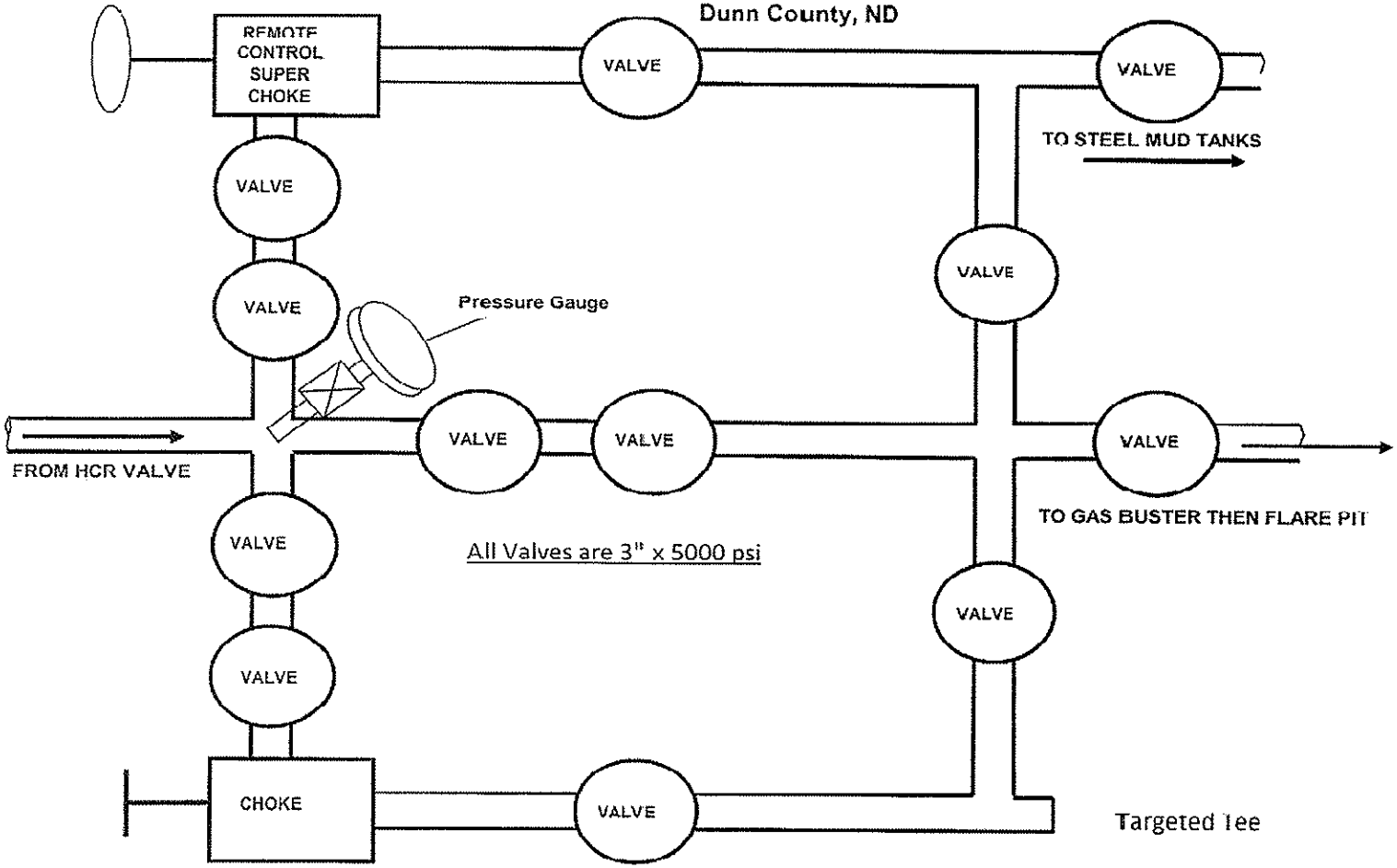
FBIR HuntsMedicine 24X-8
Location: SE SW Sec 8, 149N-91W
Footage: 200 ft FSL, 1980 ft FWL
Elev: Graded Pad 2179', KB 2203'
Dunn County, ND



PD

XTO Energy, Inc.
CHOKE MANIFOLD DRAWING

FBIR HuntsMedicine 24X-8
Location: SE SW Sec 8, 149N-91W
Footage: 200 ft FSL, 1980 ft FWL
Elev: Graded Pad 2179', KB 2203'
Dunn County, ND



XTO ENERGY INC
H2S CONTINGENCY PLAN

FBIR HuntsMedicine 24X-8

Location: SE SW Sec 8, 149N-91W
Footage: 200 ft FSL, 1980 ft FWL
Elev: Graded Pad 2179', KB 2203'

Dunn County, ND

Latitude 47.732492N
Longitude 102.356628W

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I. INTRODUCTION

A. OPERATOR'S ADDRESS AND PHONE

XTO ENERGY, INC.
PO BOX 1589 or 35399 Highway 23 - 8 miles East
SIDNEY, MT 59270
406-482-4000 (24 HR #)

B. DIRECTIONS TO WELL SITE

From Mandaree, ND: 15.3 mi ESE on BIA 12, 1.7 mi NNE on BIA 13, 3.2 mi E x N x NE on 19th St. NW (BIA 13), 0.5 mi E on existing road, then 0.5 mi N into location

C. PURPOSE OF PLAN

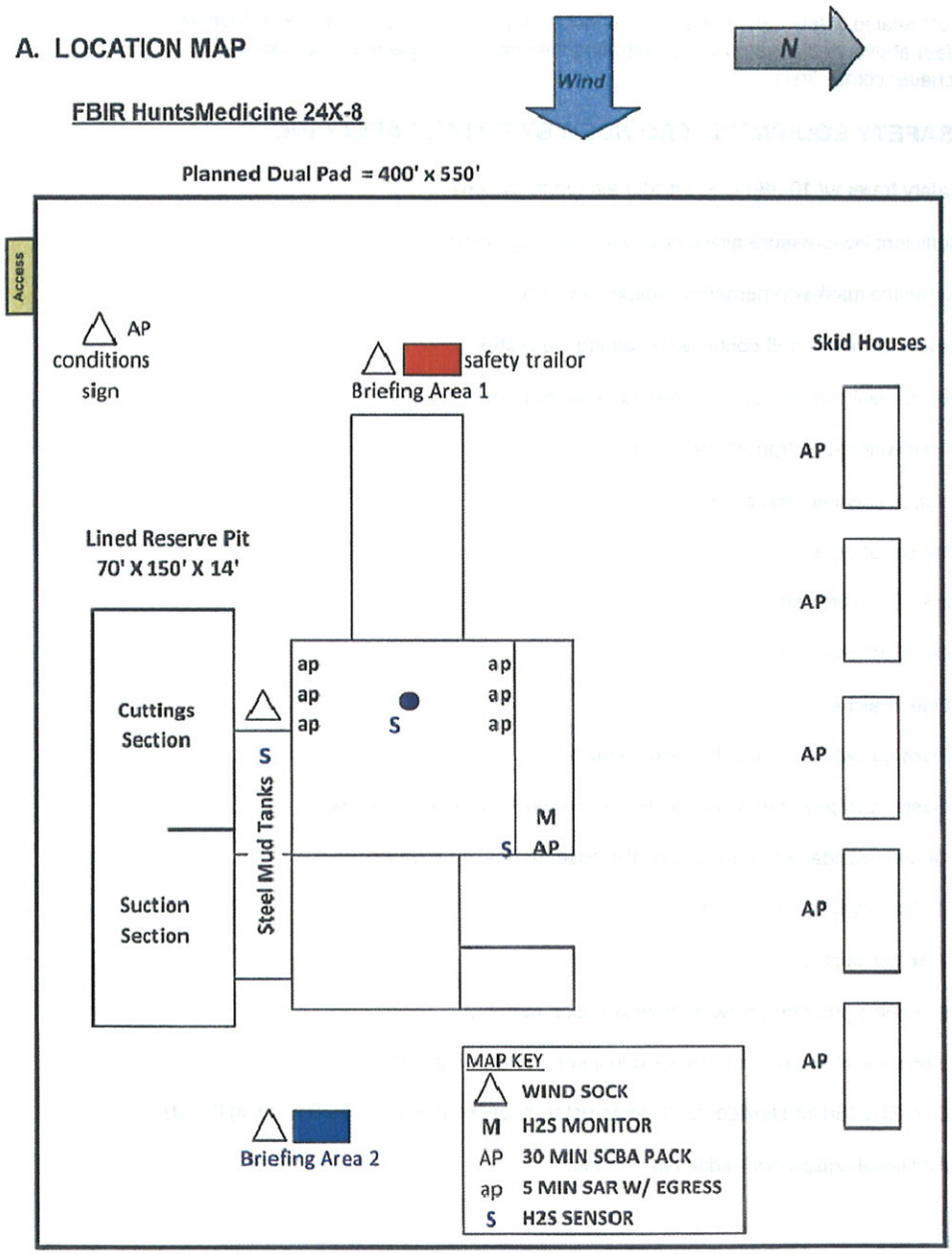
The purpose of this plan is to safeguard the lives of the public, contract personnel and company personnel in the event of equipment failure or disasters during drilling or completion operations in formations which may contain Hydrogen Sulfide Gas, H2S.

As a precautionary measure, this H2S Contingency Plan has been prepared to assure the safety of all concerned, should a disaster occur. However, the Operator's on-site representative may have specified materials and practices for the drilling or completion of this well, which supercede the minimum requirements as outlined in this plan.

II. LOCATION LAYOUT

A. LOCATION MAP

FBIR HuntsMedicine 24X-8



III. SAFETY EQUIPMENT

All H2S related safety equipment must be installed, tested and operational at a depth of 500 feet above, or 3 days prior to penetrating the first zone expected to contain H2S (whichever comes first).

A. SAFETY EQUIPMENT PROVIDED BY TOTAL SAFETY INC.

1. Safety trailer w/ 10-380 C.F. cylinder air supply system
2. Sufficient low-pressure airline hose with quick connects
3. Six-airline mask w/emergency escape cylinders
4. Seven 30 minute self contained breathing apparatus
5. Airline manifolds and air pack stands to accompany air packs
6. Three windsocks, frames and poles
7. Oxygen powered resuscitator
8. One set of signs
9. One 36 unit first aid kit
10. One 30# fire extinguisher
11. One stretcher
12. Flare gun w/shells (supplied upon request)
13. Gastec pump type gas detector w/full range of H2S detector tubes
14. One air cylinder w/regulator and filler hose for briefing area #2
15. H2S and briefing area signs
16. Well condition signs and flags
17. Explosion-proof bug blower (provided upon request)
18. 3 channel electronic monitor w/explosion proof warning system
19. One SO2 (Sulfur Dioxide) portable detector (supplied if or when H2S is being flared)
20. Additional equipment - added as needed.

B. TYPE OF EQUIPMENT AND STORAGE LOCATIONS

1. There will be six Scott airline masks on location. Five will be located on the rig floor with access to the shale shaker. One will be located in the derrick. Each mask will have an easily accessible air line hose.

2. There will be seven 30-minute self-contained breathing apparatus on location. They will be positioned as follows: one at Operator's representative's trailer, one at Tool Pusher's trailer, one at Briefing Area #1 one at Briefing Area #2, one at rig dog house stairway, one at mud logger's trailer and one at hopper area.

3. A Gastec, pump type, gas detector with low and high range detector tubes will be located in the doghouse

4. Two cleared, briefing areas will be designed as Safe Briefing Areas #1 and #2.

5. The Briefing Area most upwind is designated as Safety Briefing Area #1. In an emergency, personnel must assemble at this upwind area for instructions from their supervisor.

6. The H2S Safety Trailer will contain a cascade system of (10) 380 C.F. air cylinders that will provide a continuous air supply to air lines located on the rig. It will also contain one resuscitator, one 30 minute air pack and one stretcher, one 36 unit first aid kit, one 30# dry chemical fire extinguisher, and will have a windsock or streamer to indicate wind direction.

7. Two other windsocks will be installed so as to be visible from all parts of the location.

8. A well condition warning sign will be displayed at the location entrance to advise of current operating conditions.

9. A list of emergency telephone numbers will be kept on rig floor, tool pusher's trailer, the Operator's on-site representative's trailer and in the Safety Trailer.

10. A barricade will be available to block the entrance to location should an emergency occur. In most cases, a vehicle will be used to block the entrance.

11. A three-channel H2S monitor will be located in the doghouse. The three sensors will be installed: one on the shale shaker, one in the cellar and one near the bell nipple.

12. An undulating high and low pitch siren and light will be installed on the derrick "A" leg.

13. If H2S concentrations reach 10 ppm, an explosion-proof bug blower (fan) will be installed under the rig floor to disperse possible accumulations of H2S.

14. Any time it is necessary to flare gas containing H2S, a Sulfur Dioxide monitor will be used to determine SO2 concentrations

C. MAXIMUM NUMBER OF PEOPLE ON LOCATION AT ANY ONE TIME

1. There will be a maximum of 13 persons on location at any one time, unless additional respirators are provided during special operations where more than 13 persons will be on location.

IV. OPERATING PROCEDURES

A. BLOWOUT PREVENTION MEASURES DURING DRILLING

1. Blowout Prevention Requirements: All BOP equipment shall meet the American Petroleum Institute specifications as to materials acceptable for H2S service and tested accordingly (or to BLM specifications).

2. Drilling String Requirements: All drill string components are to be of material that meets the American Petroleum Institute's specifications for H2S service. All drill string components should be inspected to IADC critical service specifications prior to running in well.

B. GAS MONITORING EQUIPMENT

1. A continuous H2S detection system, consisting of three H2S detectors and an audible/visual warning system will be in operation during all phases of this H2S Contingency Plan. The detection system will be adjusted and calibrated such that an H2S exposure of 10 ppm or higher (at any sensor) will trigger the visual portion (blinking or rotating light), and an H2S exposure of 15 ppm or higher (at any sensor) will trigger the audible portion (wailing or yelping siren) of the warning system (i.e., H2S continually present at or above threshold levels). A trained operator or H2S supervisor will monitor the H2S detection system.

2. When approaching or completing H2S formations, crewmembers may attach 8-hour electronic H2S personnel monitors to their person.

3. Hand held H2S sampling gas detectors will be used to check areas not covered by automatic monitoring equipment.

C. CREW TRAINING AND PROTECTION

1. All personal working at the well site will be properly trained in accordance with the general training requirements outlined in the API Recommended Practices for Safe Drilling of Wells Containing H2S. The training will include, but not be limited to, the following:

a. General information about H2S and SO2 gases
b. Hazards associated with H2S and SO2 gases
c. Safety equipment on location
d. Proper use and care of personal protective equipment
e. Operational procedures in dealing with H2S gas
f. Evacuation procedures
g. First aid, reviving an H2S victim, toxicity, etc.
h. Designated Safe Briefing Areas
i. Buddy System
j. Regulations
k. Review of Drilling Operations Plan

2. Initial training shall be completed when drilling reaches a depth of 500' above or 3 days prior to penetrating (whichever comes first) the first zone containing or expected to contain H2S.

3. Weekly H2S and well control drills for all personnel on each working crew shall be conducted.

4. Safety Equipment: As outlined in the Safety Equipment index, H2S safety protection equipment will be available to/or assigned each person on location.

D. METALLURGICAL CONSIDERATONS

1. Steel drill pipe used in H2S environments should have yield strength of 95,000 psi or less due to potential embrittlement problems. Drill stem joints near the top of the drill string are normally under the highest stress levels during drilling and do not have the protection of elevated down hole temperatures. These factors should be considered in design of the drill string.
Precautions should be taken to minimize drill string stress caused by conditions such as excessive dogleg severity, improper torque, whip, abrasive wear or tool joints and joint imbalance. American Petroleum Institute, Bulletin RR 7G, will be used as a guideline for drill string precautions.

2. Corrosion inhibitors may be applied to the drill pipe or to the mud system as an additional safeguard.

3. Blowout preventors should meet or exceed the recommendations for H2S service as set forth in the latest edition of API RI 53.

E. MUD PROGRAM AND TREATING

1. It is of utmost importance that the mud be closely monitored for detection of H2S and reliability of the H2S treating chemicals.

2. Identification and analysis of sulfides in the mud and mud filtrates will be carried out per operator's prescribed procedures.

3. The mud system will be pre-treated with Zinc Carbonate, Ironite Sponge or similar chemicals of H2S control prior to drilling into the H2S bearing formation. Sufficient quantities of corrosion inhibitor should be on location to treat the drill string during Drill Stem Test Operations. Additionally, Aqua Ammonia should be on hand to treat the drill string for crew protection, should H2S be encountered while tripping the drill string following drill stem testing

F. WELL CONTROL EQUIPMENT

1. Flare System
   a. A flare system shall be designed and installed to safely gather and burn H2S bearing gas.
   b. Flare lines shall be located as far from the operating site as feasible and in a manner to compensate for wind changes.
   c. The flare line mouth shall be located not less then 150' from wellbore.
   d. Flare lines shall be straight unless targeted with running tees

2. Remote Controlled Choke: A remote controlled choke shall be installed for all H2S drilling and where feasible for completion operations. A remote controlled valve may be used in lieu of this requirement for completions operations.

3. Mud-gas separators and rotating heads shall be installed and operable for all exploratory wells.

V. OPERATING CONDITIONS

A Well Condition Sign and Flag will be posted on all access roads to the location. The sign shall be legible and large enough to be read by all persons entering the well site and be placed a minimum of 200', but no more than 500', from the well site to allow vehicles to turn around at a safe distance prior to reaching the site.

A. DEFINITION OF WARNING FLAGS

1. Condition Green: Normal operations. Any operation where the possibility of encountering H2S exists, but no H2S has been detected.

2. Condition Yellow: Potential Danger. Any operation where the possibility of encountering H2S exists and in all situations where concentrations of H2S are detected in the air below the threshold level (10 ppm).

a. Cause of condition:
- *Circulating up drill breaks
- *Trip gas after trip
- *Circulating out gas on choke
- *Poisonous gas present, but below threshold concentrations
- *Drill stem test

b. Safety Action:
- *Check safety equipment and keep it with you
- *Be alert for a change in condition
- *Follow instructions

3. Condition Red: Extreme Danger. Presence of H2S at or greater than 10 ppm. Breathing apparatus must be worn.

a. Safety action:
- *MASK UP. All personal will have protective breathing equipment with them. All nonessential personnel will move to the Safe Briefing Area and stay there until instructed to do otherwise. All essential personnel (those necessary to maintain control of the well) shall wear breathing apparatus to perform operations related to well control.

b. Order evacuation of local people within the danger zone. Request help from local authorities, State Police, Sheriff's Dept. and Service Representative.

c. The decision to ignite the well is the responsibility of the Operator's on-site representative and should be made only as a last resort, when it is clear that:
- *human life is endangered
- *there is no hope of controlling the well under prevailing conditions

B. CIRCULATING OUT KICK (WAIT AND WEIGHT METHOD)

If it is suspected that H2S is present with the gas whenever a kick is taken, the wait and weight method of eliminating gas and raising the mud will be followed (below):

a. Increase density of mud in pits to 'kill' weight mud.

b. Open choke and bring pump to initial circulating pressure by holding casing pressure at original value until pump is up to predetermined speed.

c. When initial circulating pressure is obtained on drill pipe, zero pump stroke counter and record time.

d. Reduce drill pipe pressure from initial circulating pressure to final circulating pressure by using pump strokes and/or time according to graph

e. When 'kill' weight mud is at the bit, hold final circulating pressure until kill weight mud is to surface.

f. When the well has been put on the choke and circulation has been established, the following safety procedures must be initiated:
- *determine when gas is anticipated to reach surface
- *move all non-essential personnel to Safe Briefing Area
- *check out protective breathing apparatus to all remaining personnel

(apparatus is to be kept with them until the kick has been completely circulated out)
*mud men will see that the proper amount of H2S scavenging chemical is in the mud and record times checked
*ensure ignition flare is burning and valves are open to designated flare stacks

C. CORING OPERATIONS IN H2S BEARING ZONES

1. Personal protective breathing apparatus will be worn from 10 to 15 stands in advance of retrieving the core barrel. Cores to be transported should be sealed and marked indicating the presence of H2S.
   a. Yellow Caution Flag will be flown at the well condition sign.
   b. The "NO SMOKING" rule will be enforced

D. DRILL STEM TESTING OF H2S ZONES

1. The DST subsurface equipment will be suitable for H2S service as recommended by the API.

2. Drill stem testing of H2S zone will be conducted in daylight hours.

3. All non-essential personnel will be moved to an established safe area or off location.

4. The "NO SMOKING" rule will be enforces.

5. DST fluids will be circulated through a remote controlled choke and a separator to permit flaring of gas. A continuous pilot light will be used.

6. A yellow or red flag will be flown at entrance to location depending on present gas condition.

7. If warranted, use Aqua Ammonia for neutralizing the toxicity of H2S from drill string. Aqua Ammonia should be on location even if not used for DST.

8. On completion of DST, if H2S contaminated formation fluids or gases are present in drill string, floor workers will be masked up before test valve is removed from drill string and continue "mask on" condition until such time that readings in work area do not exceed 15 ppm of H2S gas.

VI. EMERGENCY PROCEDURES

A. SOUNDING ALARM

1. The fact is to be instilled in the minds of all rig personnel that the sounding of the alarm means only one thing - H2S IS PRESENT and everyone is to proceed to his assigned station and the contingency plan is put into effect.

B. DRILLING CREW ACTIONS

1. All personnel will don their protective breathing apparatus. The driller will take necessary precautions as indicated in operating procedures.

2. The Buddy system will be implemented. All personnel will act upon directions from the Operator's on-site representative.

3. If there are non-essential personnel on location, they will move off location.

4. Entrance to the location will be patrolled, and the proper well condition flag will be displayed at the entrance to the location.

C. RESPONSIBILITIES OF PERSONNEL

1. In order to assure the proper execution of this plan, it is essential that one person be responsible for and in complete charge of implementing these procedures. The responsibe person will be as follows:
   a. The Operator's on-site representative (consultant) or his assistant.
   b. Contract Tool Pusher.

D. STEPS TO BE TAKEN

1. Contact the main office(s) of the Operator &/or the Rig Contractor as listed in this plan below (by the quickest means of communications):

2. An assigned crewmember will blockade the entrance to the location. No unauthorized personnel will be allowed entry into the location.

3. The Operator's on-site representative will remain on location and attempt to regain control of the well.

4. The Rig Contractor's rig superintendent will begin evacuation of those persons in immediate danger. He will begin by telephoning residents in the danger zone. In the event of no contact by telephone, the tool pusher will proceed at once to each dwelling for a person-to-person contact. In the event the tool pusher cannot leave the location, he will assign a responsible crewmember to proceed in the evacuation off local residents. Upon arrival, the Sheriff's Department and safty equipment contractor's personnel will aid in further evacuation.

E. COMPANY & CONTACT PERSONNEL

1. Operator's Drilling Supt	Office	406-482-6808
Kal Beckman	Home	701-572-6057
	Cell	701-570-2536
2. Operator's Drilling Engineer	Office	405-319-3285
Ross Lubbers	Home	405-513-5955
	Cell	405-659-8563
3. Ensign Drilling Supt	Office	701-572-0131
Perry Junt	Cell	701-570-3701
4. Nabors Drilling Supt	Office	701-572-6704
Scott Reid	Home	701-385-4697
	Cell	701-848-6227
5. Petroleum Experience – Drilling Consultants		
Pete Peterson	Office	701-774-8357

F. LEAK IGNITION

Leak Ignition Procedure: (used to ignite a leak in the event it becomes necessary to protect the public)

1. Two men, the Operator's on-site representative and the Contractor's Drlg Superintendent or safety equipment provider's representative, wearing self-contained pressure demand air masks must determine the perimeter of the flammable area. This should be done with one man using an H2S detector and the other one using a flammable gas detector. The flammable perimeter should be established at 30% to 40% of the lower flammable limits.

2. After the flammable perimeter has been established and all employees and citizens have been removed from the area, the ignition team should move to the up-wind area of the leak perimeter and fire a flare into the area. If the leak isn't ignited on the 1st attempt, move in 30 - 40 feet and fire again. Continue moving in and firing until the leak is ignited or the flammable gas detector indicates the ignition team is moving into the hazardous area. If trouble is incurred in igniting the leak by firing toward the leak, try firing 40 - 90 feet to each side of the area where you have been firing. If still no ignition is accomplished, ignite the copper line burner and push it into the leak area. This should accomplish ignition. If ignition is not possible due to the makeup of the gas, the toxic leak perimeter must be established and maintained to ensure evacuation is completed and continue until the emergency is secure.

3. The following equipment and man-power will be required to support the ignition team:

   a. One flare gun.
   b. Four pressure demand air packs.
   c. Two nylon ropes tied to the ignition team.
   d. Two men in a clear area equipped with air packs.
   e. Portable butane bottle with copper line.

4. The person with the final authority will then ignite the well.

G. GENERAL EQUIPMENT

1. Two areas on the location will be designated as briefing areas. The one that is upwind from the well will be designated as the "Safe Briefing Area" or "Briefing Area #1".

2. In the case of an emergency, personnel will assemble in the upwind area as per prior instructions from the operator's representative.

3. The H2S trailer provided by the safety contractor will contain 10 air cylinders, a resuscitator, one 30 minute air pack and will have a windsock.

4. Two other windsocks will be installed.

5. A condition warning sign will be displayed at the location entrance.

6. A list of emergency telephone numbers will be kept on the rig floor, tool pusher's trailer and the Operator's on-site representative's trailer.

7. Two barricades will be available to block the entrance to location.

8. An undulating high and low pitch siren will be installed.

9. A telephone line or mobile phone will be available at the well site for incoming and outgoing communications.

VII. APPENDIX

A. EMERGENCY & MEDICAL FACILITIES:

NORTH DAKOTA EMERGENCY ASSISTANCE:	800-472-2121
AMBULANCE SERVICE:	
BELFIELD, ND	911
DICKINSON, ND	911
SIDNEY, MT	406-488-2100
TIOGA, ND	701-664-2200
WILLISTON, ND	911
WATFORD CITY, ND	701-444-3516
KILLDEER, MANNING, ND	911
HOSPITALS:	
SIDNEY HEALTH CENTER - SIDNEY, MT	406-488-2100
MERCY MEDICAL CENTER - WILLISTON, ND	701-774-7400
McKENZIE COUNTY MEMORIAL HOSPITAL - WATFORD CITY	701-842-3000
ST. JOSEPH'S HOSPITAL - DICKINSON, ND	701-225-7200
TIOGA MEDICAL CENTER	701-568-3626

B. LAW ENFORCEMENT AND FIRE FIGHTING AGENCIES

POLICE or SHERIFF:			
BELFIELD, ND			911
DICKINSON, ND			911
SIDNEY, MT	911	OR	406-433-2809
MCKENZIE COUNTY			701-444-3654
TIOGA - WILLIAMS COUNTY	911	OR	701-664-2514
WATFORD CIY, ND	911	OR	701-842-2400
MANNING, ND SHERIFF	911	OR	701-573-4449
FIRE:			
ALEXANDER, ND			911
ARNEGARD, ND			701-586-3500
BELFIELD, ND			911
DICKINSON, ND			911
SIDNEY, MT			406-433-1122
TIOGA, ND			701-664-2200
WATFORD CITY, ND			701-842-3516
WILLISTON, ND			911

C. WELL CONTROL SPECIALISTS:

BOOTS AND COOTS	713-931-8884
RED ADAIR COMPANY INC	713-464-0230
WILD WELL CONTROL	701-353-5481

D: GOVERNMENTAL AGENCIES:

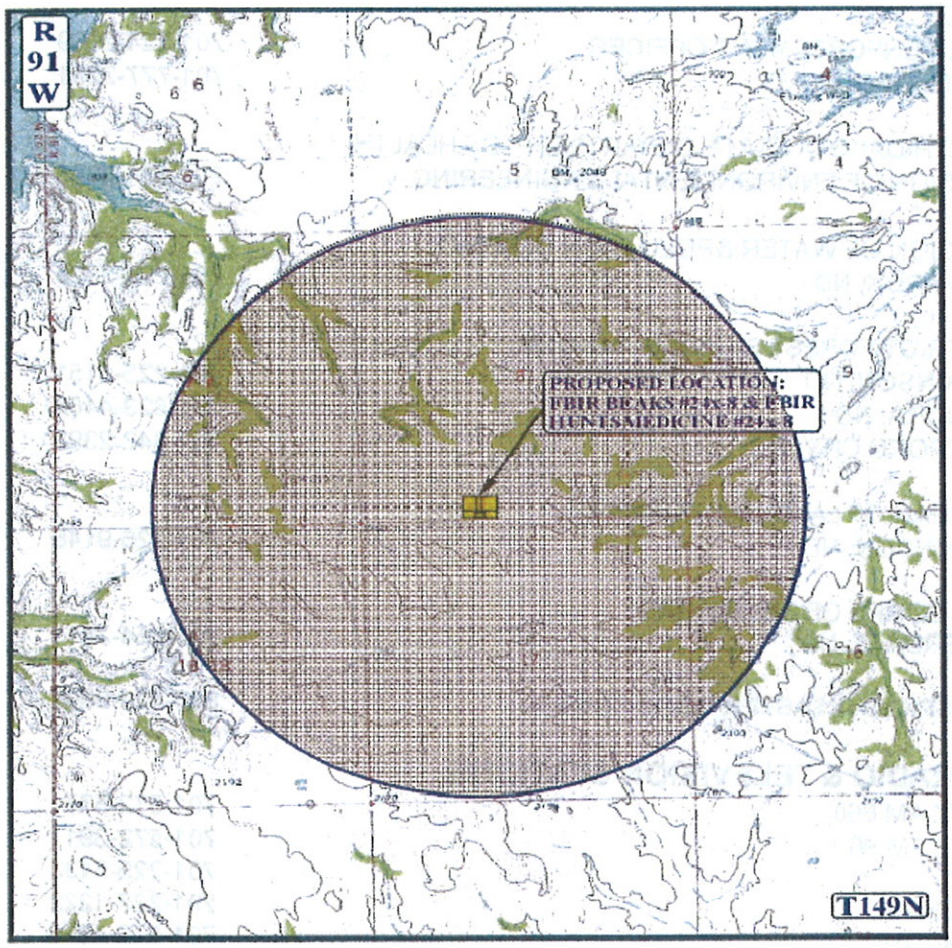
STATE WATER COMMISSION	701-224-4940
NDIC:	
CHIEF ENFORCEMENT OFFICER	701-224-2969
STATE GEOLOGIST	701-777-2231
NORTH DAKOTA STATE DEPARTMENT OF HEALTH:	
DIVISION OF ENVIRONMENTAL ENGINEERING	701-224-2348
DIVISION OF WATER &POLLUTION CONTROL:	
BISMARCK, ND	701-224-2375
DISTRICT FOREST SERVICE RANGER:	
DICKINSON, ND	701-225-5151
MEDORA, ND	701-623-4466
WATFORD CITY, ND	701-842-2393
BUREAU OF LAND MANAGEMENT:	
DICKINSON, ND	701-225-9148
U.S. CORPS OF ENGINEERS:	
RIVERDALE, ND	701-654-7411
OIL SPILLS DISASTER REPORTING:	800-424-8802

E. RADIO & TELEVISION STATIONS:

KEYZ AM 660	701-572-5371
KYYZ FM 96.1	701-572-3911
KDIX	701-225-5133
KRRB-FM	701-227-1222
KUMV TV	701-572-4676
KXMD TV	701-572-2345
KQCD TV	701-225-6843

VIII. RESIDENTS AND LANDOWNERS

A. 1 MILE RADIUS EXPOSURE MAP



B. RESIDENTS WITHIN 1 MILE AND PHONE NUMBERS

No permanent dwellings within 1 mile radius of well

XTO ENERGY, INC.
FBIR HuntsMedicine 24X-8
BIA Lease # 7420A48811
BIA Lease # 7420A48812
BIA Lease # 7420A41774
BIA Lease # 7420A49780
BIA Lease # 7420A48871
BIA Lease # 7420A49047
BIA Lease # 7420A42109
BIA Lease # 7420A42101
BIA Lease # 7420A42096
BIA Lease # 7420A48868
SE¼SW¼, Section 8, T149N, R91W
Dunn County, North Dakota

MULTI-POINT SURFACE USE & OPERATIONS PLAN

A. EXISTING ROADS -

1. The proposed well site is staked and four (4) 200-foot reference stakes are present.

2. From Mandaree, North Dakota proceed in an easterly direction along BIA 12 approximately 15.3 miles to the junction of this road and existing BIA 13 to the northeast; turn left and proceed in a northeasterly direction approximately 1.7 miles to the junction of this road and 19th Street NW to the east; turn right and proceed in an easterly, then northerly, then northeasterly direction approximately 3.2 miles to the junction of this road and an existing two-track road to the east; turn right and proceed in an easterly, then northeasterly direction approximately 0.5 miles to the beginning of the proposed access road to the north; follow road flags in a northerly direction approximately 0.5 miles to the proposed location

3. Access roads - All roads are labeled on Topo Maps A and B.

4. Approximately 2,640 feet (~0.5 miles) of existing, graveled, two-track road will require improvements. Improvements would follow road design standards outlined in the Gold Book (USDI-USDA 2007).

5. Existing roads will be maintained and kept in good repair during all drilling and completion operations associated with this well.

6. Total distance from Mandaree, ND to the proposed well location is approximately 21.2 miles.

B. PLANNED ACCESS ROADS - Refer to Topo Map "B"

Approximately 2.640 feet (~0.5 miles) of new road construction will be required for access to the proposed FBIR HuntsMedicine 24X-8 well location.

1. Width - fourteen (14) foot running surface with a sixteen (16) foot sub-grade, crowned and ditched.

2. Construction standard - the access road will be constructed in accordance with roading guidelines established for oil & gas exploration and development activities as referenced in the joint BLM/USFS publication: *Surface Operating Standards for Oil and Gas Exploration and Development*, Fourth Edition and/or BLM Gold Book.

   All topsoil will be stripped from the access road route prior to performing any further construction activities thereon. The salvaged topsoil will be stockpiled apart from subsoil materials for future reclamation of the access road right-of-way.

   If soils along the access road route are dry during construction, water will be applied to the road surface to facilitate soil compaction and minimize soil loss as a result of wind erosion.

3. Maximum grade - eight (8) percent or less.

4. Turnouts – as deemed necessary

5. Drainage design - the access road will be upgraded and maintained as necessary to prevent soil erosion and accommodate all-weather traffic. Road will be crowned and ditched with water turnouts installed as necessary to provide for proper drainage along the access road route.

6. Culverts, cuts and fills - culverts will be installed along the access road route as depicted on Topo Map B or required by the Authorized Officer, Bureau of Indian Affairs. These culverts will be installed in accordance with roading guidelines contained in the joint BLM/USFS publication: *Surface Operating Standards for Oil and Gas Exploration and Development*, Fourth Edition and/or BLM Gold Book.

7. Surfacing material - the access road will be surfaced with gravel or scoria purchased from a local contractor having a permitted source of materials within the general area, as required by the Authorized Officer, Bureau of Indian Affairs.

8. Gates, cattle guards or fence cuts - one (1) cattle guard will be required at the entrance of the location as the entire location will be fenced for drilling and completion operations.

   a. These cattle guards will be installed in accordance with roading guidelines contained in the joint BLM/USFS publication: *Surface Operating Standards for Oil and Gas Exploration and Development*, Fourth Edition and/or BLM Gold Book.
   b. One fence cut will be made in an existing fence at the point where the cattle guard is installed. Refer to Figure #1 for the location of the fence cut and cattle guard.

9. Road maintenance - the road surface and shoulders will be kept in a safe and useable condition and will be maintained in accordance with the original construction standards.

   All drainage ditches and culverts will be kept clear and free-flowing, and will also be maintained in accordance with the original construction standards.

   The access road right-of-way will be kept free of trash during all operations.

10. The proposed access road route has been centerline staked.

C. EXISTING WELLS WITHIN A ONE (1) MILE RADIUS -

1. Existing Wells – Refer to Topo Map C showing the location of the proposed well and the point of radius for the one mile area of review.

a. Water wells	- none known
b. Abandoned wells	- none known
c. Temporarily abandoned wells	- none known
d. Disposal wells	- none known
e. Drilling wells	- none known
f. Producing wells	- none known
g. Shut-in wells	- none known
h. Injection wells	- none known
i. Monitoring wells	- none known

D. LOCATION OF EXISTING AND/OR PROPOSED FACILITIES OWNED BY XTO ENERGY, INC. WITHIN A ONE (1) MILE RADIUS

1. Existing Facilities

   a. Tank batteries - none.
   b. Production facilities - none.
   c. Oil gathering lines - none.
   d. Gas gathering lines - none.

2. New Facilities Contemplated

   a. All production facilities will be located on the disturbed portion of the well pad and at a minimum of twenty (25) feet from the toe of the back slope or top of the fill slope. See Figure #1 and Figure #2 for plats depicting the original contours of the location and the proposed cuts and fills and the typical cross sections for the location.

   b. Production facilities will require a working area approximately 300' X 500' in size and will generally consist of a pumping unit at each well head, tank battery, heater-treater and emergency/flare pit.

      A berm will be constructed completely around those production facilities designed to hold fluids (i.e., production tanks, produced water tanks and/or heater-treater). These berms will be constructed to hold >110% of the capacity of the largest tank plus one full day's production, and is independent of the back cut. See Figure 3 for a diagram of the proposed facilities.

      Load out lines will be located within the tank battery berm and will have a drip barrel with steel mesh guard installed under the outlet.

3. Prior to the commencement of drilling operations, the FBIR HuntsMedicine 24X-8 well location will be fenced, having four (4) strands of barbed wire held in place by metal side posts and wooden corner "H" braces in order to protect both livestock and wildlife.

4. During drilling and subsequent operations, all equipment and vehicles will be confined to the access road and any additional areas which may be specified in the approved Application for Permit to Drill.

5. Reclamation of disturbed areas no longer needed for operations will be accomplished by grading, leveling and seeding as recommended.

E. LOCATION AND TYPE OF WATER SUPPLY

1. Fresh water for use in drilling operations will be obtained from the water supply close to the town of Killdeer, North Dakota.

F. SOURCE OF CONSTRUCTION MATERIALS

1. Any construction materials (gravel or scoria) which may be required for surfacing of the drill pad will be obtained from a private contractor having a previously approved source of materials within the general area.

G. METHODS OF HANDLING WASTE MATERIALS

1. Cuttings - the drilled cuttings will be deposited in the reserve pit as shown on Figure #5 and Figure #6. The reserve pit will be designed to prevent the collection of surface runoff and will be constructed entirely in cut section of the well location (see Figure #1).

   Reclaiming and backfilling will occur when completion operations are finished by solidifying with fly ash and burial in accordance with North Dakota rules and regulations.

2. Drilling fluids utilized in the mud systems will be contained in the reserve pit. Drilling fluids utilized in the oil-based mud system will be contained in steel tanks on location. All free fluid will be reclaimed from the reserve pit before solidification.

3. Produced fluids - liquid hydrocarbons produced during completion operations will be placed in test tanks on the location. Produced water will be placed in the reserve pit for a period not to exceed ninety (90) days after initial production.

   Any spills of oil, gas, salt water or any other potentially hazardous substance will be cleaned up and immediately removed to an approved disposal site.

4. Sewage - portable, self-contained chemical toilets will be provided for human waste disposal. As required, the toilet holding tanks will be pumped and the contents disposed of in an approved sewage disposal facility.

5. Garbage and other waste material - all garbage and non-flammable waste materials will be contained in a self contained, portable dumpster or trash cage. Upon completion of operations, or as needed, the accumulated trash will be hauled off-site to a state approved sanitary landfill.

   Used motor oil (change oil) will be placed in closed containers and disposed of at an authorized disposal site.

   No trash will be placed in the reserve pit.

6. Immediately after removal of the drilling rig, all debris and other waste materials not contained in the trash cage will be cleaned up and removed from the well location. No potentially adverse materials or substances will be left on the location.

7. Hazardous Materials – XTO Energy, Inc. maintains responsibility for recognizing and handling hazardous materials. All hazardous materials will be handled in an appropriate manner to minimize the potential for leaks or spills to the environment. All spills of reportable quantity will be contained, reported and cleaned up in accordance with State and Federal regulations.

H. ANCILLARY FACILITIES

None anticipated.

I. WELLSITE LAYOUT

1. Figure #1 shows the drill site layout as staked. Cross-sections have been drafted to visualize the planned cuts and fills across the proposed well location (refer to Figure #2). All topsoil will be stripped from the location (including areas of cut, fill, and/or subsoil storage) and stockpiled for future reclamation of the well site.

2. Figure #5 is a diagram showing a typical location layout. No permanent living facilities are planned on the FBIR HuntsMedicine 24X-8 well location.

3. All equipment and vehicles will be confined to the approved areas in this application for Permit to Drill (i.e., access road, well pad, spoil and topsoil storage areas).

4. The reserve pit will be lined with a minimum 12 mil liner and designed to maintain a two foot free board. See Figure #8 for a spec sheet on the proposed liner.

5. Prior to the commencement of drilling operations, the entire well location will be fenced with four (4) strands of barbed wire. The fencing will be maintained until such time as the well bore has been physically plugged and abandoned and the well location has been successfully reclaimed.

6. Any hydrocarbons on the pit will be removed as soon as possible after drilling operations are completed.

J. PLANS FOR SURFACE RECLAMATION

1. Rat and mouse holes will be backfilled immediately upon release of the drilling rig from the location.

2. If any oil is in the pits and is not immediately removed after operations cease, the pit containing the oil or other adverse substance(s) will be flagged overhead or covered with wire mesh to protect migrating waterfowl.

3. Producing Operations:

   a. Backfilling, leveling and re-contouring are planned as soon as possible after cessation of drilling and completion operations.

b. All disturbed surfaces (including the access road and well pad areas) will be reseeded using a seed mixture to be recommended by the Authorized Officer, Bureau of Indian Affairs in consultation with the surface allottee as appropriate.

4. Abandoned Well Location:

a. Upon final abandonment of the well location, both the access road and well location will be restored to approximately the original ground contour(s) by replacing the fill material into the cut and over the back slope.

K. SURFACE OWNERSHIP

The well site and part of the access road is situated on an allotted surface estate within the Fort Berthold Indian Reservation, Allotment Number 1750-A. The allottee's of these tribal lands are as follows:

Harvey Charging
P. O. Box 851
Ft. Washakie, WY 82514

Charlene Charging
Box 503
Mandaree, ND 58757

Reginald Charging, Sr.
Address Unknown

A portion of the access road is situated on an allotted surface estate within the Fort Berthold Indian Reservation, Allotment Number 1172-A. The allottee's of these tribal lands are as follows:

Opal D. Fox Bird
P. O. Box 585
New Town, ND 58763

Gerald T. Fox Estate
Address Unknown

Susan Fox Gates
Box 656
Wynona, OK 74084

Jody Gorman
Box 1391
New Town, ND 58763

Kenneth Odell Harrington
C/O Superintendent
Fort Berthold Agency
New Town, ND 58763

Thomas T. Hurkes
P. O. Box 261
New Town, ND 58763

Julia A. Hurkes
Parent/Gaurdian of Julia A. Hurkes
P. O. Box 261
New Town, ND 58763

Doris Johnson
P. O. Box 184
Trenton, ND 58853

Mildred Jordt
402 Caraway Pl.
Lansing, KS 66043

Monica K. Lyson
P. O. Box 86
New Town, ND 58763

Vivian Panky Estate
Address Unknown

Arnold Strahs
P. O. Box 1292
New Town, ND 58763

Charles Strahs
P. O. Box 1292
New Town, ND 58763

Three Affiliated Tribes
Attn: Treasurer
404 Frontage Road
New Town, ND 58763

Three Affiliated Tribes-FMHA
Three Affiliated Tribes
Attn: Treasurer
404 Frontage Road
New Town, ND 58763

Corstella Two Horses
Box 242
Cannon Ball, ND 58528

Valinda Two Horses
219 West Bowen Ave, Apt. C
Bismarck, ND 58504

Fawn F. Two Horses
C/O Thelma Bull Bear
1202 E. Rosser
Bismarck, ND 58501

Alberta A. Two Horses
P. O. Box 1274
Cannon Ball, ND 58528

John K. Two Horses
3230 E. Thayer Ave., #4
Bismarck, ND 58501

Taylen J. Two Horses
Address Unknown

Jennifer White Lightning
General Delivery
Cannonball, ND 58528

Eunice White Owl
P. O. Box 137
Watford City, ND 58854

Kathleen J. White Owl
Box 1274
New Town, ND 58763

Jacqueline White Owl
P. O. Box 1112
New Town, ND 58763

Zandra M. Ziebart
P. O. Box 428
New Town, ND 58763

A portion of the access road is situated on an allotted surface estate within the Fort Berthold Indian Reservation, Allotment Number 1173-A. The allottee's of these tribal lands are as follows:

Adam T. Mandan
546 2nd Avenue East
Dickinson, ND 58601

A portion of the access road is situated on an allotted surface estate within the Fort Berthold Indian Reservation, Allotment Number 1178-A. The allottee's of these tribal lands are as follows:

Adam T. Mandan
546 2nd Avenue East
Dickinson, ND 58601

XTO Energy, Inc. will send copies of the approved Surface Use Plan of Operations and the Conditions of Approval to each surface owner listed above.

L. OTHER INFORMATION

1. Surface Use Activities:

   a. The primary surface use is for livestock grazing.

2. Proximity of Water, Occupied Dwellings, Archaeological, Historical or Cultural Sites:

   a. The closest source of permanent water is Lake Sakakawea, which is located approximately one and a half (1.5) miles northwest of the proposed well location.

   b. There are no known occupied dwellings located within a 3,000 foot radius of the proposed well location.

   c. XTO Energy, Inc. will be responsible for informing all persons associated with this project that they will be subject to prosecution for damaging, altering, excavating or removing any archaeological, historical, or vertebrate fossil objects or site(s).

   d. If archaeological, historical or vertebrate fossil materials are discovered, XTO Energy, Inc. will suspend all operations that further disturb such materials and immediately contact the Authorized Officer. Operations will not resume until written authorization to proceed is issued by the Authorized Officer.

      Within five (5) working days the Authorized Officer will evaluate the discovery and inform XTO Energy, Inc. of actions that will be necessary to prevent loss of significant cultural or scientific values.

      XTO Energy, Inc. will be responsible for the cost of any mitigation required by the Authorized Officer. The Authorized Officer will provide technical and procedural guidelines for the conduct of mitigation. Upon verification from the Authorized Officer that the required mitigation has been completed, XTO Energy, Inc. will be allowed to resume operations.

3. Additional Requirements for Operations on Surface Estate Administered by the Bureau of Indian Affairs:

   a. XTO Energy, Inc. will be responsible for weed control on disturbed areas within the exterior limits of this permit and will consult with the Authorized Officer, Bureau of Indian Affairs and/or local authorities for acceptable weed control measures.

Lessee's or Operator's Representative and Certification

FBIR HuntsMedicine 24X-8
SESW, Sec. 8-T149N-R91W
Dunn County, North Dakota
BIA Lease Nos. 7420A48811; 7420A48812; 7420A41774; 7420A49780; 7420A48871; 7420A49047; 7420A42109; 7420A42101; 7420A42096; 7420A48868

OPERATOR

XTO Energy, Inc.
7114 W. Jefferson Ave., Suite 305
Denver, Colorado 80235
303.969.8280

OPERATOR'S REPRESENTATIVES

Permit Matters: J. Michael Warren (303.963.8243)
Drilling Matters: Ross Lubbers (405-319-3285)
Completion Matters: Doug McCrady (303.969.8280)
On-Site Meeting Representative: Kal Beckman (406.482.4000)

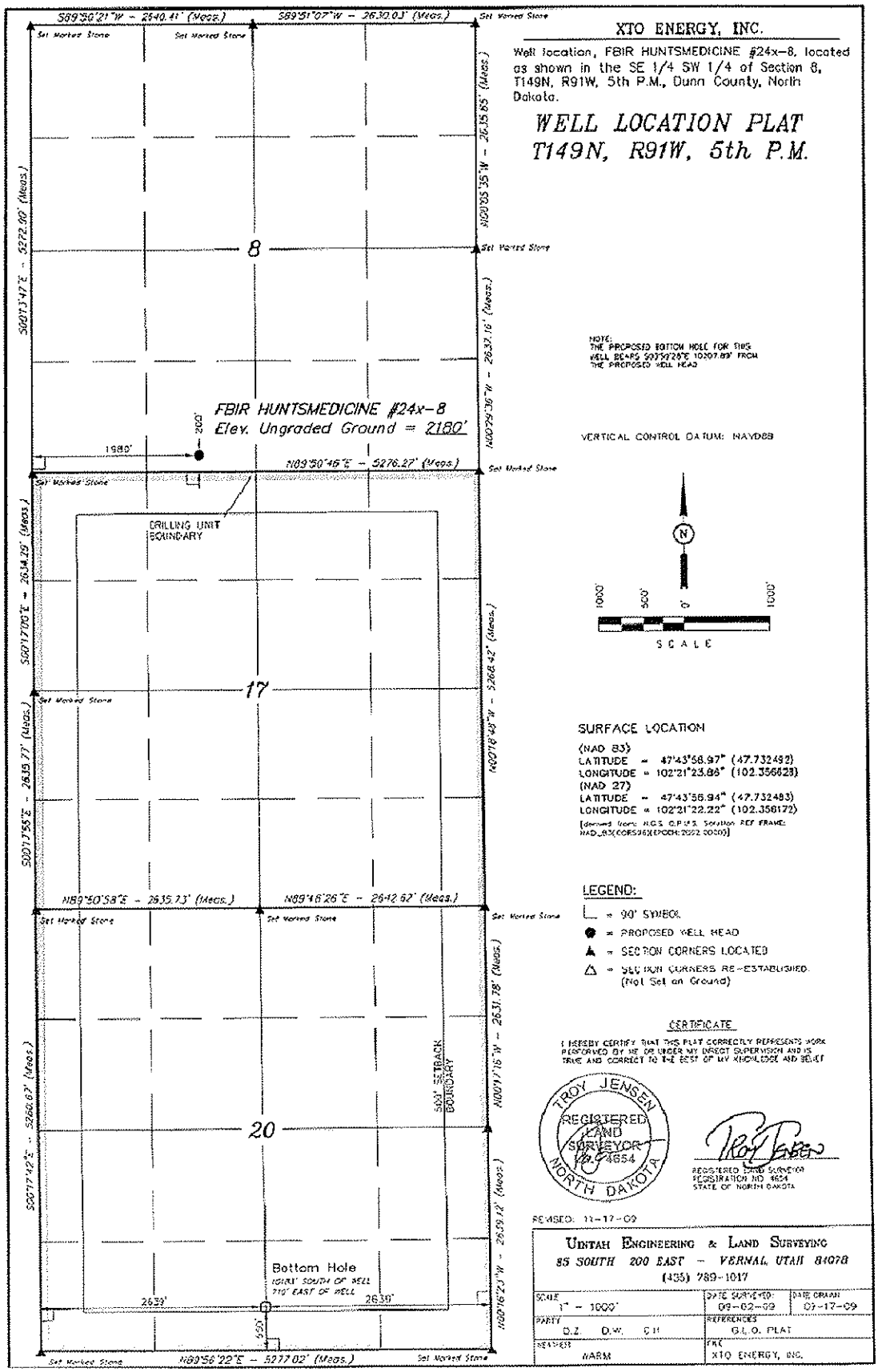
CERTIFICATION

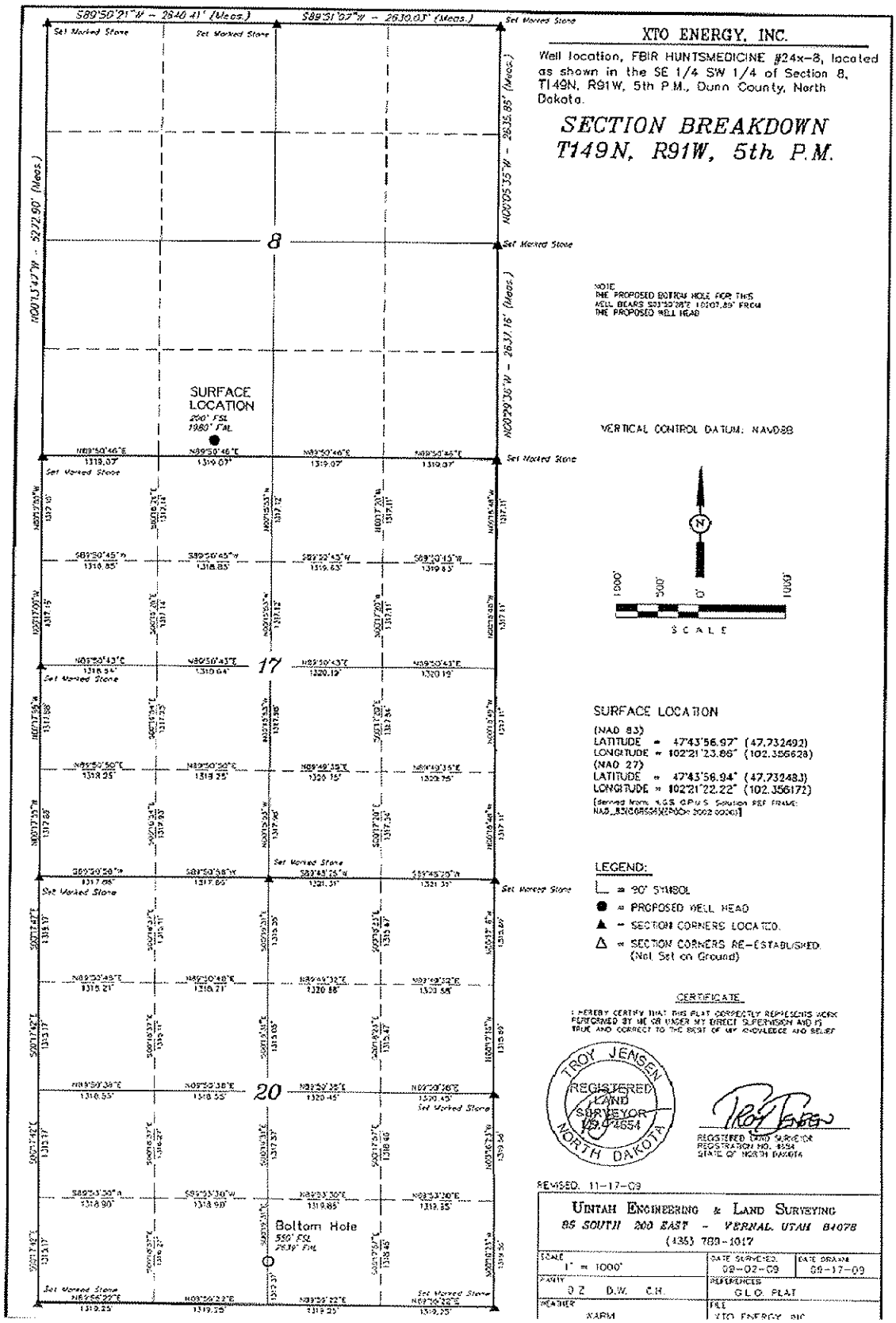
I hereby certify that I, or someone under my direct supervision, have inspected the drill site and access route proposed herein; that I am familiar with the conditions which currently exist; that I have full knowledge of state and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or the company I represent, am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of false statements.

Executed this 4th day of May, 20 10.

Name: J. Michael Warren
Position Title: Regulatory Coordinator
Telephone: 303-963-8243
mike_warren@xtoenergy.com

Field Representative: Kal Beckman
Address: P. O. Box 1589, Sidney, MT 59270
Phone: 406-482-4000 Ext. 107
kal_beckman@xtoenergy.com


XTO ENERGY, INC.
Well location, FBIR HUNTSMEDICINE #24x-8, located as shown in the SE 1/4 SW 1/4 of Section 8, T149N, R91W, 5th P.M., Dunn County, North Dakota.
WELL LOCATION PLAT
T149N, R91W, 5th P.M.
FBIR HUNTSMEDICINE #24x-8
Elev. Ungraded Ground = 2180'
8
17
20
DRILLING UNIT BOUNDARY
500' SETBACK BOUNDARY
Bottom Hole
VERTICAL CONTROL DATUM: NAVD88
SCALE
SURFACE LOCATION
(NAD 83)
LATITUDE = 47°43'56.97" (47.732492)
LONGITUDE = 102°21'23.86" (102.356628)
(NAD 27)
LATITUDE = 47°43'56.94" (47.732483)
LONGITUDE = 102°21'22.22" (102.356172)
LEGEND:
= 90° SYMBOL
= PROPOSED WELL HEAD
= SECTION CORNERS LOCATED
= SECTION CORNERS RE-ESTABLISHED. (Not Set on Ground)
CERTIFICATE
I HEREBY CERTIFY THAT THIS PLAT CORRECTLY REPRESENTS WORK PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION AND IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF
TROY JENSEN REGISTERED LAND SURVEYOR NO. 4654 NORTH DAKOTA
REGISTERED LAND SURVEYOR
REGISTRATION NO. 4654
STATE OF NORTH DAKOTA
REVISED: 11-17-09
UINTAH ENGINEERING & LAND SURVEYING
85 SOUTH 200 EAST - VERNAL, UTAH 84078
(435) 789-1017
SCALE 1" = 1000'
DATE SURVEYED: 09-02-09
DATE DRAWN: 09-17-09
PARTY D.Z. D.W. C.H.
REFERENCES G.L.O. PLAT
WEATHER WARM
FILE XTO ENERGY, INC.


XTO ENERGY, INC.
Well location, FBIR HUNTSMEDICINE #24x-8, located as shown in the SE 1/4 SW 1/4 of Section 8, T149N, R91W, 5th P.M., Dunn County, North Dakota.
SECTION BREAKDOWN
T149N, R91W, 5th P.M.
SURFACE LOCATION
VERTICAL CONTROL DATUM: NAVD88
SCALE
SURFACE LOCATION
(NAD 83)
LATITUDE = 47°43'56.97" (47.732492)
LONGITUDE = 102°21'23.86" (102.356628)
(NAD 27)
LATITUDE = 47°43'56.94" (47.732483)
LONGITUDE = 102°21'22.22" (102.356172)
LEGEND:
= 90° SYMBOL
= PROPOSED WELL HEAD
= SECTION CORNERS LOCATED
= SECTION CORNERS RE-ESTABLISHED (Not Set on Ground)
CERTIFICATE
TROY JENSEN
REGISTERED LAND SURVEYOR
NORTH DAKOTA
REVISED: 11-17-09
UINTAH ENGINEERING & LAND SURVEYING
85 SOUTH 200 EAST - VERNAL, UTAH 84078
(435) 789-1017
SCALE 1" = 1000'
DATE SURVEYED 08-02-09
DATE DRAWN 08-17-09
PARTY D.Z. D.W. C.H.
REFERENCES G.L.O. PLAT
WEATHER WARM
FILE XTO ENERGY, INC.
Bottom Hole
550' FSL
2630' FWL
SURFACE LOCATION
290' FSL
1980' FWL

LEGEND:

PROPOSED LOCATION

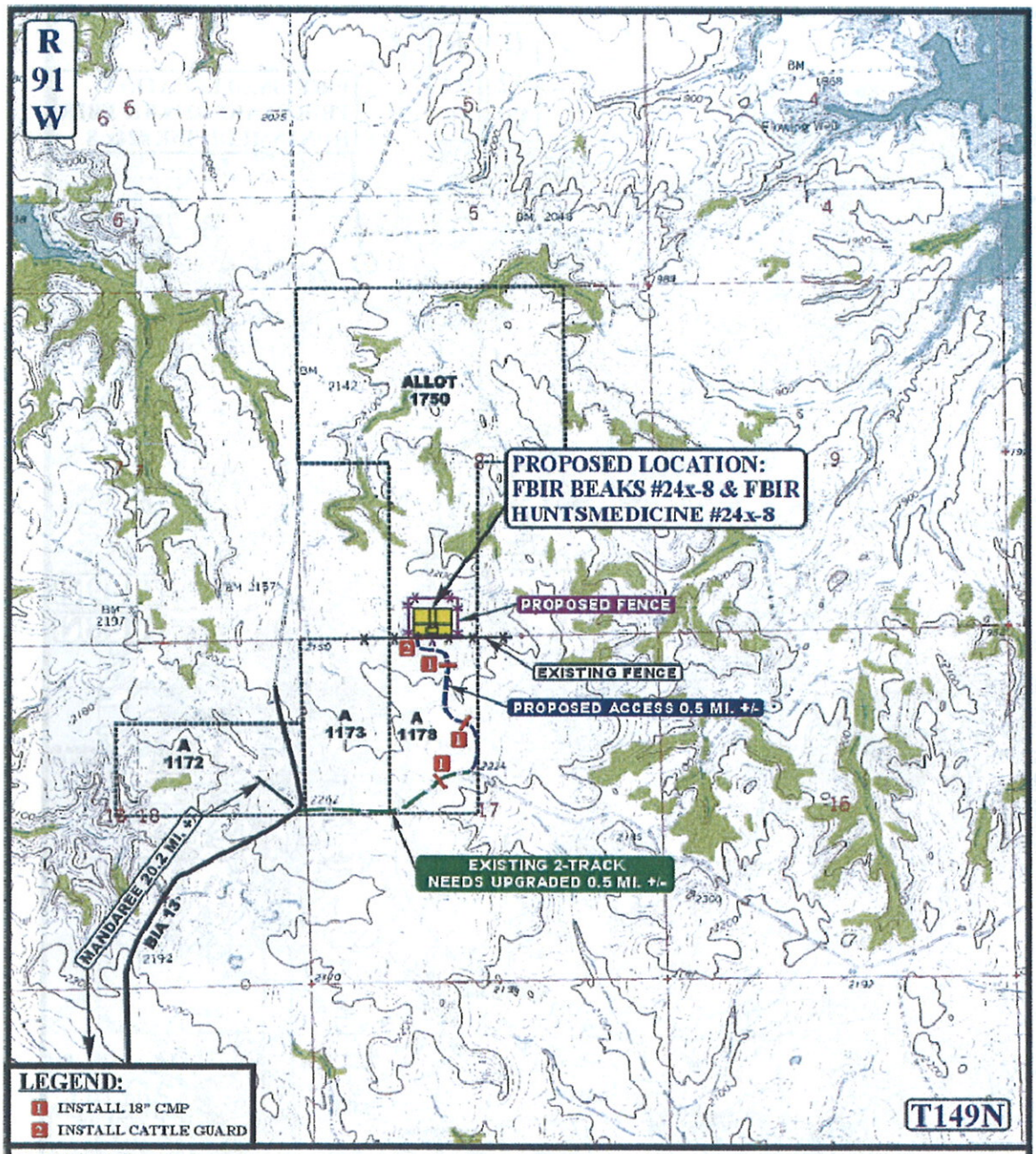
N

XTO ENERGY, INC.

FBIR BEAKS #24x-8 & FBIR HUNTSMEDICINE #24x-8
SECTION 8, T149N, R91W, 5th P.M.
SE 1/4 SW 1/4

Uintah Engineering & Land Surveying
85 South 200 East Vernal, Utah 84078
(435) 789-1017 * FAX (435) 789-1813

TOPOGRAPHIC MAP	09 MONTH	15 DAY	09 YEAR	A TOPO
SCALE: 1:100,000	DRAWN BY: L.K.	REVISED: 00-00-00		



LEGEND:

EXISTING ROAD
PROPOSED ACCESS ROAD
EXISTING FENCE
PROPOSED FENCE

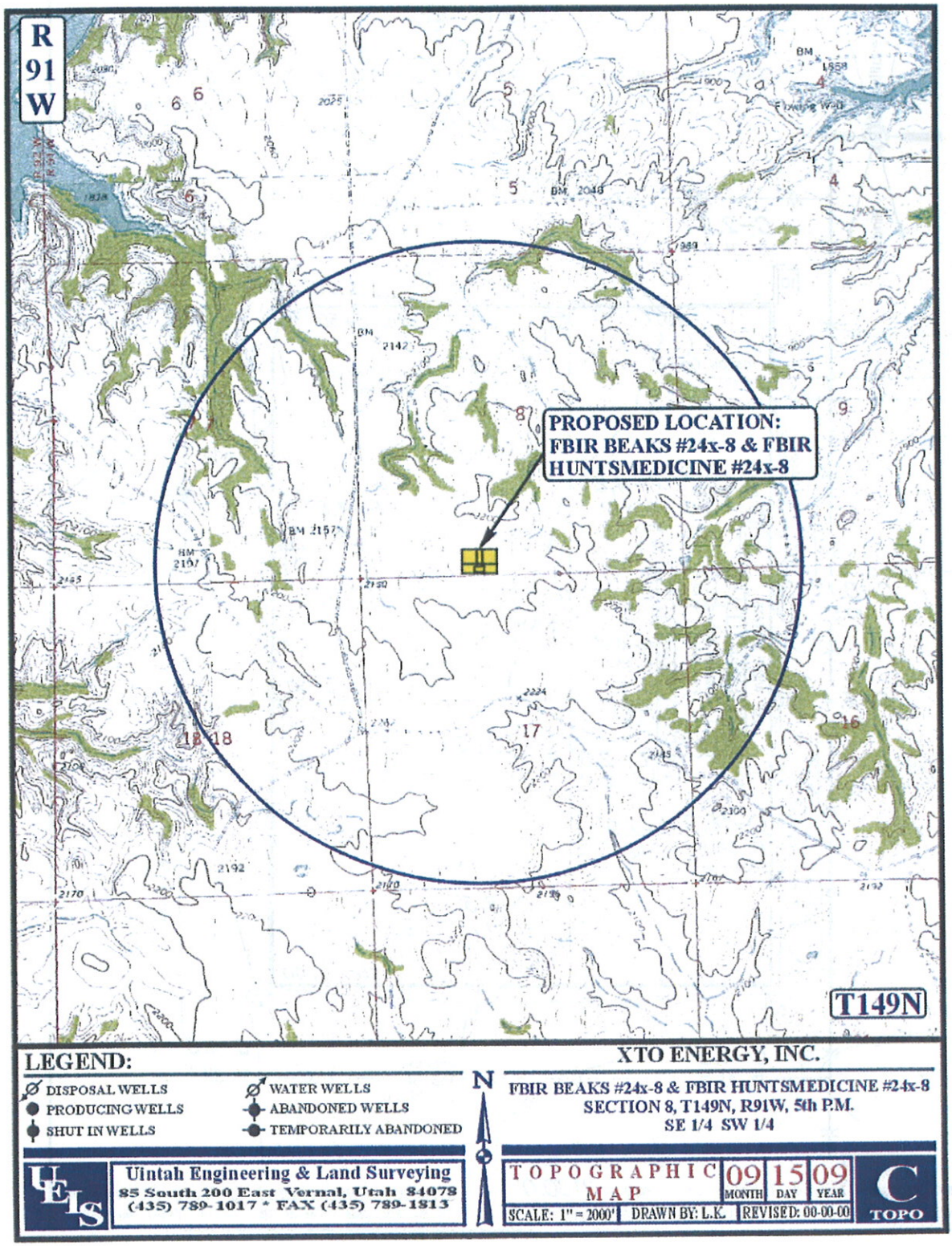
N

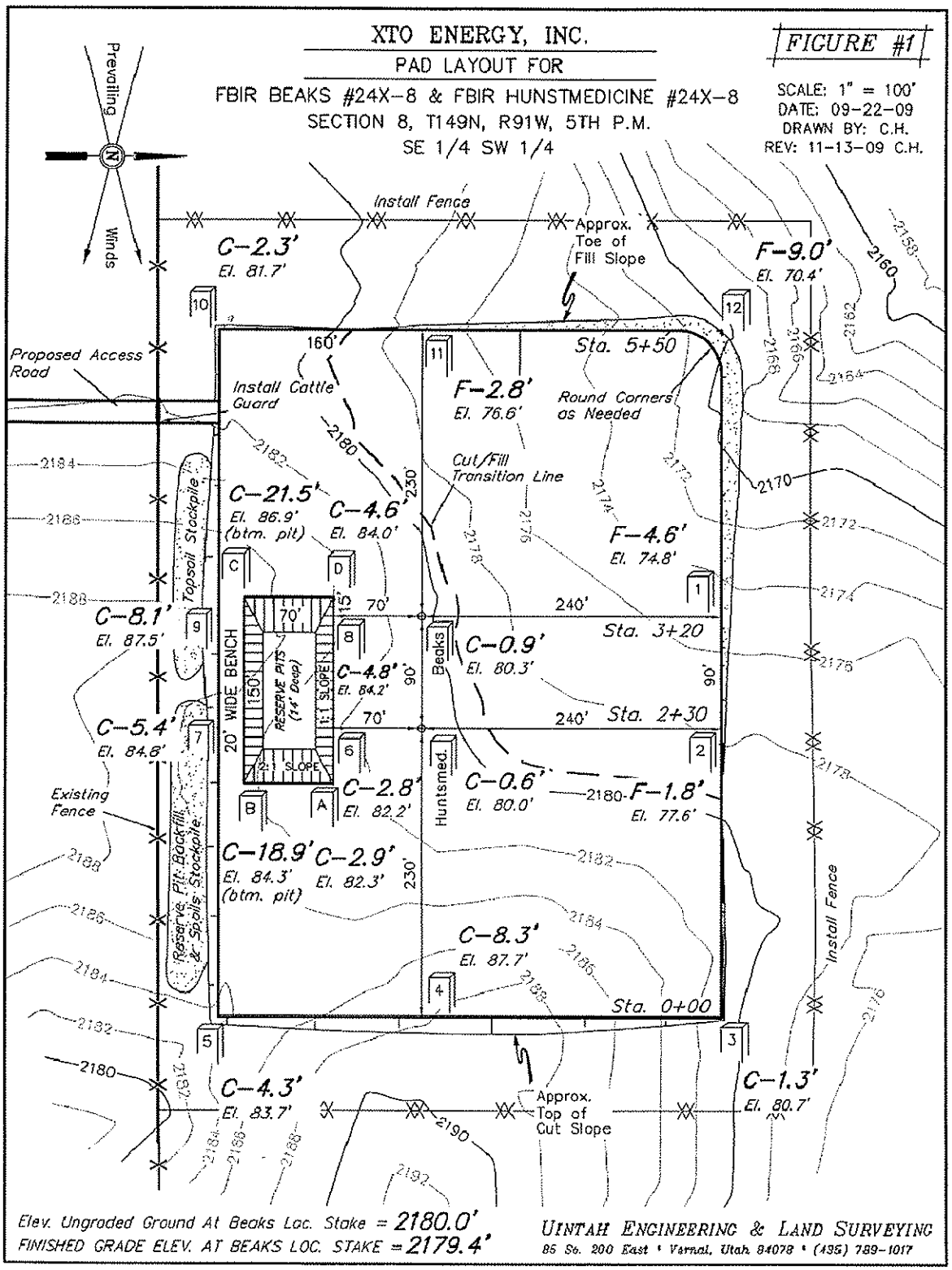
XTO ENERGY, INC.

FBIR BEAKS #24x-8 & FBIR HUNTSMEDICINE #24x-8
SECTION 8, T149N, R91W, 5th P.M.
SE 1/4 SW 1/4

Uintah Engineering & Land Surveying
85 South 200 East Vernal, Utah 84078
(435) 789-1017 * FAX (435) 789-1813

TOPOGRAPHIC MAP	09 MONTH	15 DAY	09 YEAR	B TOPO
SCALE: 1" = 2000'	DRAWN BY: L.K.	REVISED: 00-00-00		


R
91
W
PROPOSED LOCATION:
FBIR BEAKS #24x-8 & FBIR
HUNTSMEDICINE #24x-8
T149N
LEGEND:
DISPOSAL WELLS
PRODUCING WELLS
SHUT IN WELLS
WATER WELLS
ABANDONED WELLS
TEMPORARILY ABANDONED
N
XTO ENERGY, INC.
FBIR BEAKS #24x-8 & FBIR HUNTSMEDICINE #24x-8
SECTION 8, T149N, R91W, 5th P.M.
SE 1/4 SW 1/4
Uintah Engineering & Land Surveying
85 South 200 East Vernal, Utah 84078
(435) 789-1017 * FAX (435) 789-1813
TOPOGRAPHIC MAP
09 MONTH
15 DAY
09 YEAR
SCALE: 1" = 2000'
DRAWN BY: L.K.
REVISED: 00-00-00
C
TOPO


XTO ENERGY, INC.
PAD LAYOUT FOR
FBIR BEAKS #24X-8 & FBIR HUNSTMEDICINE #24X-8
SECTION 8, T149N, R91W, 5TH P.M.
SE 1/4 SW 1/4
FIGURE #1
SCALE: 1" = 100'
DATE: 09-22-09
DRAWN BY: C.H.
REV: 11-13-09 C.H.
Prevailing Winds
Install Fence
Approx. Toe of Fill Slope
C-2.3'
El. 81.7'
F-9.0'
El. 70.4'
Proposed Access Road
Install Cattle Guard
Sta. 5+50
F-2.8'
El. 76.6'
Round Corners as Needed
Cut/Fill Transition Line
C-21.5'
El. 86.9'
(btm. pit)
C-4.6'
El. 84.0'
F-4.6'
El. 74.8'
Topsoil Stockpile
C-8.1'
El. 87.5'
20' WIDE BENCH
RESERVE PITS (14' Deep)
1:1 SLOPE
2:1 SLOPE
C-4.8'
El. 84.2'
Beaks
C-0.9'
El. 80.3'
Sta. 3+20
Sta. 2+30
C-5.4'
El. 84.8'
Existing Fence
C-2.8'
El. 82.2'
Huntsmed.
C-0.6'
El. 80.0'
F-1.8'
El. 77.6'
C-18.9'
El. 84.3'
(btm. pit)
C-2.9'
El. 82.3'
Reserve Pit Backfill & Spoils Stockpile
C-8.3'
El. 87.7'
Sta. 0+00
Install Fence
C-4.3'
El. 83.7'
Approx. Top of Cut Slope
C-1.3'
El. 80.7'
Elev. Ungraded Ground At Beaks Loc. Stake = 2180.0'
FINISHED GRADE ELEV. AT BEAKS LOC. STAKE = 2179.4'
UINTAH ENGINEERING & LAND SURVEYING
85 So. 200 East • Vernal, Utah 84078 • (435) 789-1017

1" = 40'
X-Section Scale
1" = 100'

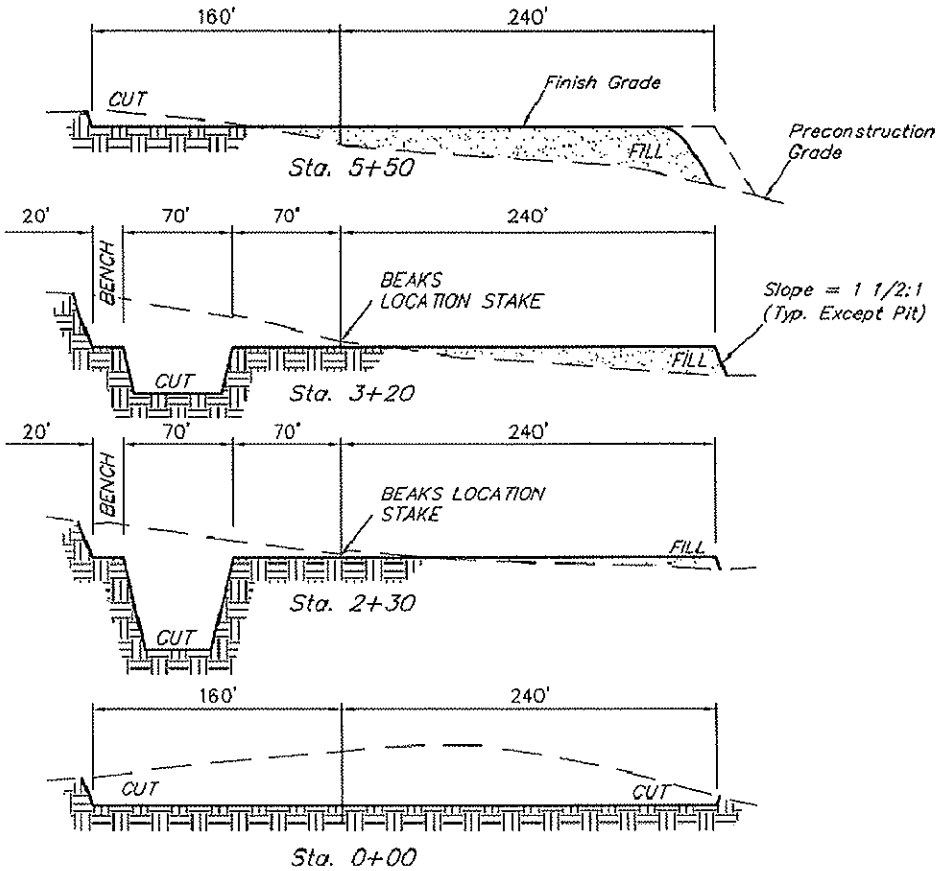
DATE: 09-22-09
DRAWN BY: C.H.
REV: 11-13-09 C.H.

XTO ENERGY, INC.

TYPICAL CROSS SECTION FOR

FBIR BEAKS #24X-8 & FBIR HUNSTMEDICINE #24X-8
SECTION 8, T149N, R91W, 5TH P.M.
SE 1/4 SW 1/4

FIGURE #2



NOTE:
Topsoil should not be Stripped Below Finished Grade on Substructure Area.

APPROXIMATE ACREAGES
WELL SITE DISTURBANCE = ± 5.384 ACRES
ACCESS ROAD DISTURBANCE = ± 3.652 ACRES
TOTAL = ± 9.036 ACRES

* NOTE:
FILL QUANTITY INCLUDES 5% FOR COMPACTION

APPROXIMATE YARDAGES

(6") Topsoil Stripping	=	4,420 Cu. Yds.
Location Cut	=	17,050 Cu. Yds.
Reserve Pit Cut	=	3,160 Cu. Yds.
TOTAL CUT	=	24,630 CU.YDS.
FILL	=	13,370 CU.YDS.

EXCESS MATERIAL	=	11,260 Cu. Yds.
Topsoil	=	4,420 Cu. Yds.
EXCESS UNBALANCE (After Interim Rehabilitation)	=	6,840 Cu. Yds.

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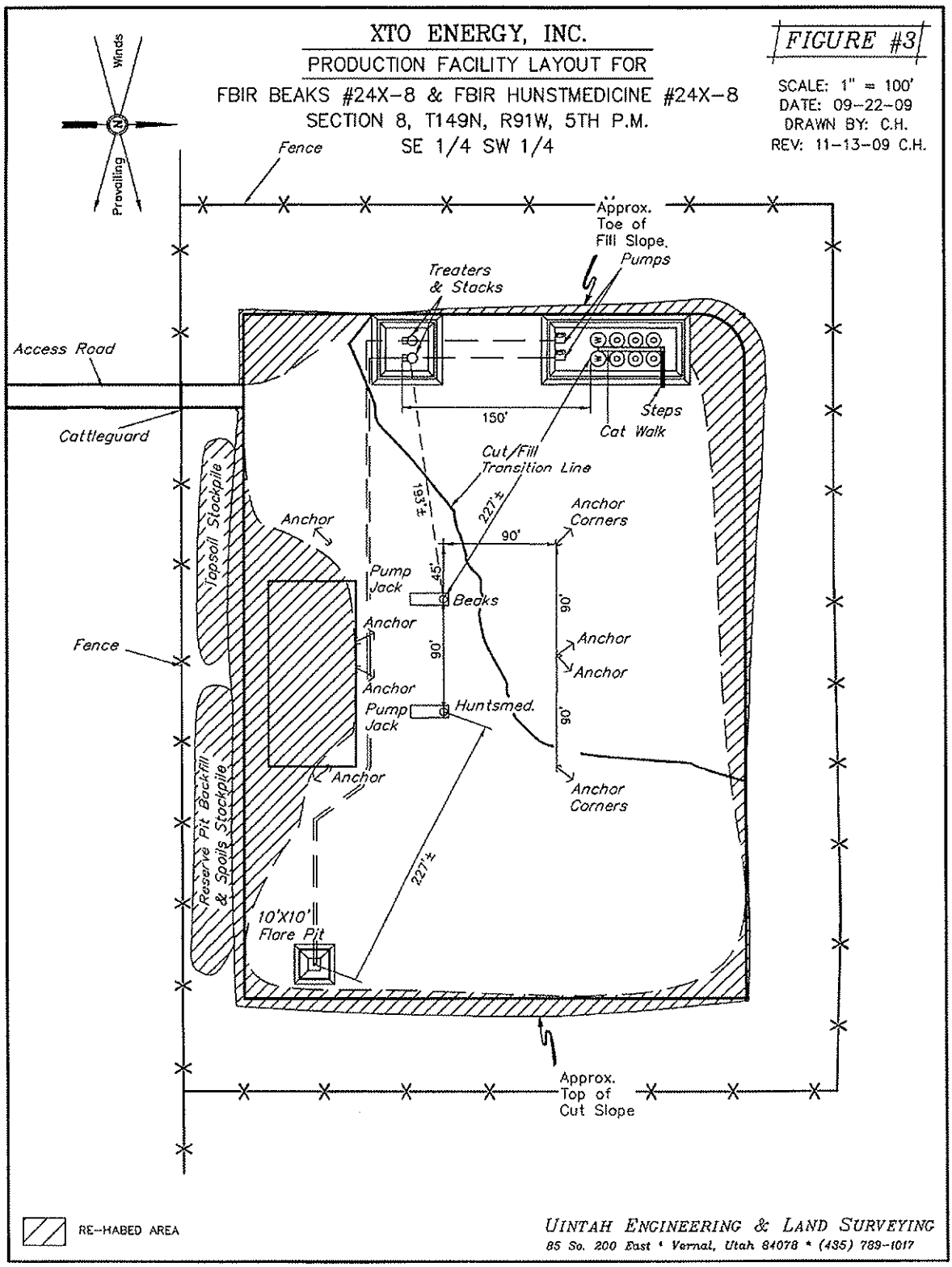
XTO ENERGY, INC.
PRODUCTION FACILITY LAYOUT FOR
FBIR BEAKS #24X-8 & FBIR HUNSTMEDICINE #24X-8
SECTION 8, T149N, R91W, 5TH P.M.
SE 1/4 SW 1/4
FIGURE #3
SCALE: 1" = 100'
DATE: 09-22-09
DRAWN BY: C.H.
REV: 11-13-09 C.H.
Winds
Prevailing
Fence
Approx. Toe of Fill Slope.
Pumps
Treaters & Stacks
Access Road
Cattleguard
150'
Steps
Cat Walk
Cut/Fill Transition Line
193'±
227'±
Anchor Corners
90'
Topsoil Stockpile
Anchor
Pump Jack
45'
Beaks
90'
Anchor
Anchor
Anchor
Fence
Anchor
Pump Jack
Huntsmed.
90'
Anchor
Anchor Corners
Reserve Pit Backfill & Spoils Stockpile
227'±
10'X10' Flare Pit
Approx. Top of Cut Slope
RE-HABED AREA
UINTAH ENGINEERING & LAND SURVEYING
85 So. 200 East • Vernal, Utah 84078 • (435) 789-1017

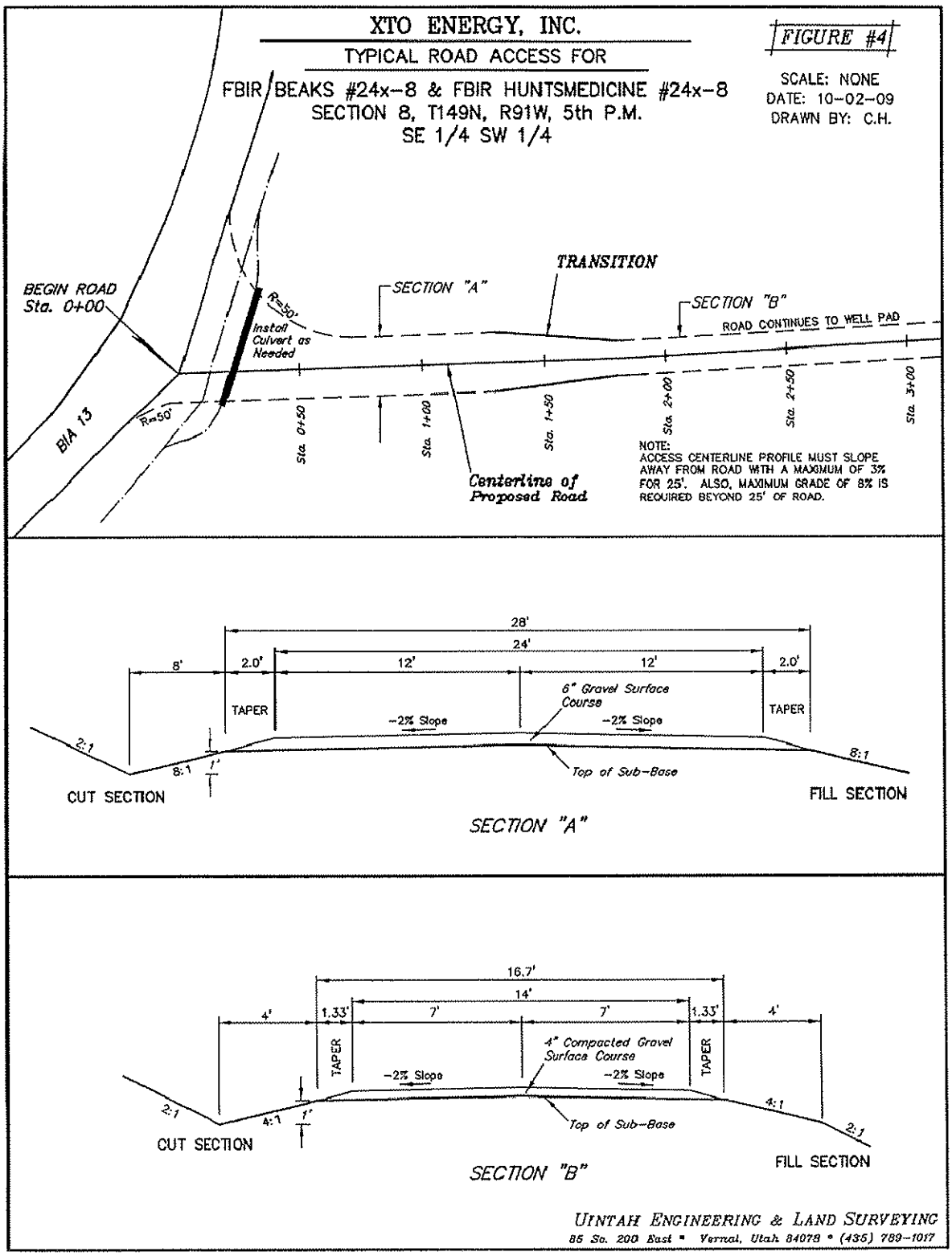
XTO ENERGY, INC.
TYPICAL ROAD ACCESS FOR
FBIR BEAKS #24x-8 & FBIR HUNTSMEDICINE #24x-8
SECTION 8, T149N, R91W, 5th P.M.
SE 1/4 SW 1/4
FIGURE #4
SCALE: NONE
DATE: 10-02-09
DRAWN BY: C.H.
BEGIN ROAD
Sta. 0+00
BIA 13
R=50'
Install Culvert as Needed
SECTION "A"
TRANSITION
SECTION "B"
ROAD CONTINUES TO WELL PAD
Sta. 0+50
Sta. 1+00
Sta. 1+50
Sta. 2+00
Sta. 2+50
Sta. 3+00
Centerline of Proposed Road
NOTE:
ACCESS CENTERLINE PROFILE MUST SLOPE AWAY FROM ROAD WITH A MAXIMUM OF 3% FOR 25'. ALSO, MAXIMUM GRADE OF 8% IS REQUIRED BEYOND 25' OF ROAD.
28'
24'
8'
2.0'
12'
12'
2.0'
TAPER
TAPER
6" Gravel Surface Course
-2% Slope
-2% Slope
2:1
8:1
1'
8:1
Top of Sub-Base
CUT SECTION
FILL SECTION
SECTION "A"
16.7'
14'
4'
1.33'
7'
7'
1.33'
4'
TAPER
TAPER
4" Compacted Gravel Surface Course
-2% Slope
-2% Slope
2:1
4:1
1'
4:1
2:1
Top of Sub-Base
CUT SECTION
FILL SECTION
SECTION "B"
UINTAH ENGINEERING & LAND SURVEYING
85 So. 200 East • Vernal, Utah 84078 • (435) 789-1017

FIGURE #5

XTO ENERGY
Location Schematic

FBIR HuntsMedicine 24X-8
Location: SE SW Sec 8, 149N-91W
Footage: 200 ft FSL, 1980 ft FWL
Elev: Graded Pad 2179', KB 2203'
Dunn County, ND

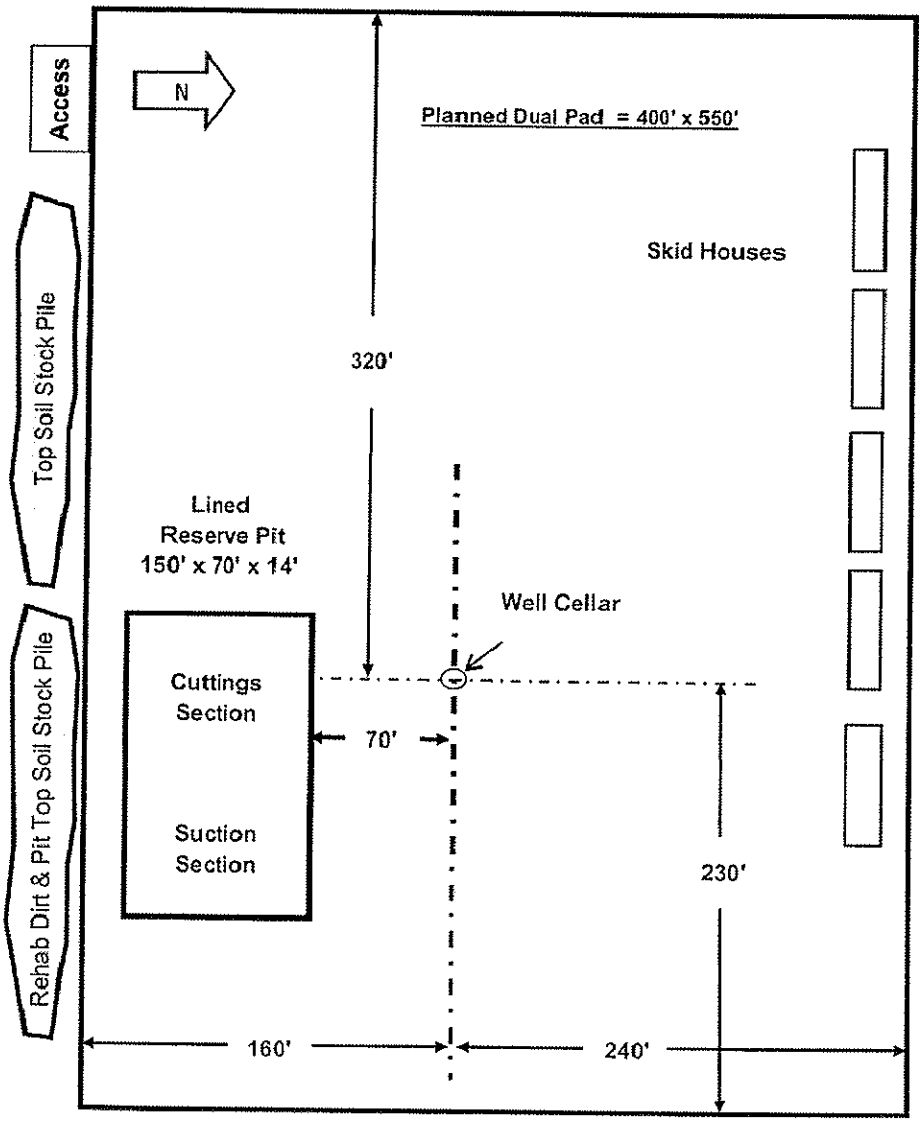

FIGURE #6

XTO Energy, Inc.
RESERVE PIT LAYOUT

FBIR HuntsMedicine 24X-8
Location: SE SW Sec 8, 149N-91W
Footage: 200 ft FSL, 1980 ft FWL
Elev: Graded Pad 2179', KB 2203'
Dunn County, ND

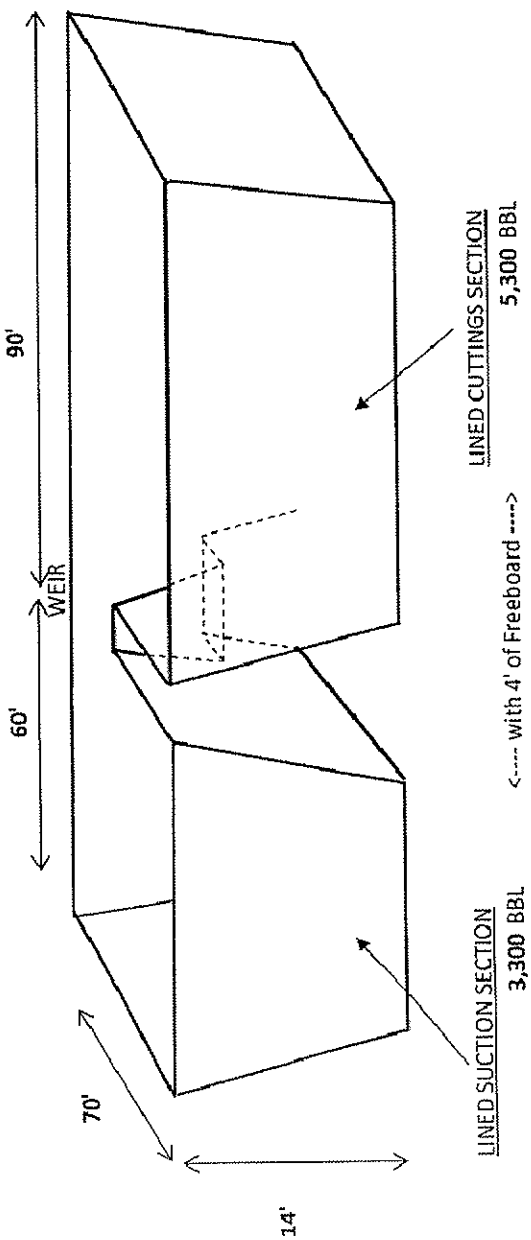

FIGURE #7

XTO ENERGY, INC.

FBIR BEAKS #24x-8 & FBIR HUNTSMEDICINE #24x-8

LOCATED IN DUNN COUNTY, NORTH DAKOTA
SECTION 8, T149N, R91W, 5th P.M.

PHOTO: VIEW FROM CORNER #2 TO LOCATION STAKE — CAMERA ANGLE: SOUTHERLY

PHOTO: VIEW FROM BEGINNING OF PROPOSED ACCESS — CAMERA ANGLE: EASTERLY

- Since 1964 -
Uintah Engineering & Land Surveying
85 South 200 East Vernal, Utah 84078
(435) 789-1017 * FAX (435) 789-1813

LOCATION PHOTOS	09 MONTH	15 DAY	09 YEAR	PHOTO
TAKEN BY: D.Z.	DRAWN BY: L.K.	REVISED: 00-00-00		

Figure #8

LORTEX 12 MIL LINER

Woven Reinforced High Density Polyethylene Fabric Coated With Low Density Polyethylene

PHYSICAL PROPERTIES AND SPECIFICATIONS

CONSTRUCTION:	12xD6 count per square inch Warp 950 Denier @ 50 Fill 1900 Denier @ 100
FABRIC GRADE:	Industrial, Carbon Black
STANDARD COATING COLORS:	Black
STANDARD COATING THICKNESS:	12 Mils +/- .15 mil each side LDRE
TOTAL THICKNESS:	12 Mils +/- .5 mil
NOMINAL WEIGHT:	5.3 oz/ square yard
NOMINAL TENSILE STRENGTH:	160 lbs W x 140 lbs Fill ASTM 1682-64 (Grab)
TEAR STRENGTH:	46 lbs W x 49 lbs Fill ASTM 2261-71 (Tongue)
MULLEN BURST STRENGTH:	325 psi ASTM D751-73
HYDROSTATIC RESISTANCE:	125 psi ASTM D1682-63
FLEX ABRASION:	5000+ cycles W 5000+ cycles Fill ASTM D1175-71
PUNCTURE RESISTANCE:	40 pounds FTMS 101B method 2065
IDENTIFICATION:	Printed in white ink "12 Mil" on 36 inch repeat

INSERT Appendix A

Appendix B

Ecological Site Photographs

Beaks/HuntsMedicine 24X-8 Site Environmental Assessment
XTO Energy, Inc.

2009 FBIR BEAKS/HUNTSMEDICINE 24X-8 SITE PHOTOGRAPHS

Photo 1: Ecological Site #1 – Loamy. Pad site looking north. SW1/4SE1/4SW1/4 Section 8, T149N, R91W.

Photo 2: Ecological Site #1 – Loamy. Pad site looking east. UTM Coordinates: N5289777.490, E698309.332.

Photo 3: Ecological Site #1 – Loamy. Soil pit on pad site.

Photo 4: Ecological Site #2 – Loamy. Pad site looking north. SW1/4SE1/4SW1/4 Section 8, T149N, R91W.

Photo 5: Ecological Site #2 – Loamy. Pad site looking south. UTM Coordinates: N5289738.678 E698302.777

Photo 6: Ecological Site #2 – Loamy. Soil pit on pad site.

2009 FBIR BEAKS/HUNTSMEDICINE 24X-8 SITE PHOTOGRAPHS

Photo 7: Ecological Site #3 – Loamy. Pad site looking north. SW1/4SE1/4SW1/4 Section 8, T149N, R91W.

Photo 8: Ecological Site #3 – Loamy. Pad site looking west. UTM Coordinates: N5289745.059, E698244.177.

Photo 9: Ecological Site #3 – Loamy. Soil pit on pad site.

Photo 10: Ecological Site #4 – Loamy. Looking south. SW1/4SE1/4SW1/4 Section 8, T149N, R91W.

Photo 11: Ecological Site #4 – Loamy. Pad site looking west. UTM Coordinates: N5289698.827, E698209.979.

Photo 12: Ecological Site #4 – Loamy. Soil pit on pad site.

2009 FBIR BEAKS/HUNTSMEDICINE 24X-8 SITE PHOTOGRAPHS

Photo 13: Ecological Site #5 – Loamy. Pad site looking east. SW1/4SE1/4SW1/4 Section 8, T149N, R91W.

Photo 14: Ecological Site #5 – Loamy. Pad site looking south. UTM Coordinates: 5289738.607, E698148.373.

Photo 15: Ecological Site #5 – Loamy. Soil pit on pad site.

Photo 16: Ecological Site #6 – Loamy. Looking east. SW1/4SE1/4SW1/4 Section 8, T149N, R91W.

Photo 17: Ecological Site #6 – Loamy. Pad site looking west. UTM Coordinates: N5289799.735, E698149.249.

Photo 18: Ecological Site #6 – Loamy. Soil pit on pad site.

2009 FBIR BEAKS/HUNTSMEDICINE 24X-8 SITE PHOTOGRAPHS

Photo 19: Ecological Site #7 – Loamy. North perimeter of pad looking north. SW1/4SE1/4SW1/4 Section 8, T149N, R91W.

Photo 20: Ecological Site #7 – Loamy. North Perimeter of Pad looking west. UTM Coordinates: N5289830.614, E698244.940.

Photo 21: Ecological Site #7 – Loamy. Soil pit on north perimeter.

Photo 22: Ecological Site #8 – Loamy. Looking north. NW1/4NE1/4NW1/4 Section 17, T149N, R91W.

Photo 23: Ecological Site #8 – Loamy. Access Road looking west. UTM Coordinates: N5289650.901, E698231.236.

Photo 24: Ecological Site #8 – Loamy. Soil pit on access road.

2009 FBIR BEAKS/HUNTSMEDICINE 24X-8 SITE PHOTOGRAPHS

Photo 25: Ecological Site #9 – Loamy. Access road looking east. SW1/4NE1/4NW1/4 Section 17, T149N, R91W.

Photo 26: Ecological Site #9 – Loamy Hayfield. Access Road looking south. UTM Coordinates: N5289514.445, E698291.275.

Photo 27: Ecological Site #9 – Loamy. Soil Pit on access road.

Photo 28: Ecological Site #10 – Loamy. Access road. NW1/4SE1/4NW1/4 Section 17, T149N, R91W.

Photo 29: Ecological Site #10 – Loamy. Access road looking south. UTM Coordinates: N5289347.124, E698291.482.

Photo 30: Ecological Site #10 – Loamy. Soil pit on access road.

2009 FBIR BEAKS/HUNTSMEDICINE 24X-8 SITE PHOTOGRAPHS

Photo 31: Ecological Site #11 – Loamy Overflow. Access road looking north. NW1/4SE1/4NW1/4 Section 17, T149N, R91W.

Photo 32: Ecological Site #11 – Loamy Overflow. Access road looking south. UTM Coordinates: N5289298.253, E698395.252.

Photo 33: Ecological Site #11 – Loamy Overflow. Soil pit on access road.

Photo 34: Ecological Site #12 – Loamy. Looking east. NE1/4SE1/4SE1/4NW1/4 Section 17, T149N, R91W.

Photo 35: Ecological Site #12 – Loamy. Access road looking west. UTM Coordinates: N5289156.193, E698451.051.

Photo 36: Ecological Site #12 – Loamy. Soil pit on access road.

2009 FBIR BEAKS/HUNTSMEDICINE 24X-8 SITE PHOTOGRAPHS

Photo 37: Ecological Site #13 – Thin Loamy. Access road looking east. NW1/4SE1/4SE1/4NW1/4 Section 17, T149N, R91W.

Photo 38: Ecological Site #13 – Thin Loamy. Access road looking west. UTM Coordinates: N5289049.096, E696402.555.

Photo 39: Ecological Site #13 – Thin Loamy. Soil pit on access road.

Photo 40: Ecological Site #14 – Loamy Overflow. Access road looking northwest.

Photo 41: Ecological Site #14 – Loamy Overflow. Access road looking southeast.
UTM Coordinates: N5289018.115, E698297.456.
NW1/4SE1/4SE1/4NW1/4 Section 17, T149N, R91W.

Photo 42: Ecological Site #14 – Loamy Overflow. Bore pit on access road.

2009 FBIR BEAKS/HUNTSMEDICINE 24X-8 SITE PHOTOGRAPHS

Photo 43: Ecological Site #15 – Loamy. Access road looking east. NW1/4NE1/4SW1/4 Section 17, T149N, R91W.

Photo 44: Ecological Site #15 – Loamy. Access road looking south. UTM Coordinates: N5288898.496, E698143.058.

Photo 45: Ecological Site #15 – Loamy. Soil pit on access road.

Photo 46: Ecological Site #16 – Loamy. Looking south. NW1/4NW1/4SW1/4 Sect. 17, T149N, R91W.

Photo 47: Ecological Site #16 – Loamy. Access road looking west. UTM Coordinates: N5288870.999, E697808.723.

Photo 48: Ecological Site #16 – Loamy. Soil Pit on access road.

Appendix C

Ecological Site Plant Worksheets and
Characteristics of Native Grass Seed Mix

Beaks/HuntsMedicine 24X-8 Site Environmental Assessment
XTO Energy, Inc.

Plant Species Worksheet

Date: 9-17-09 **Slope: 4 Percent** **Aspect: North**
Resource Area: Beaks/HuntsMedicine 24x-8
Legal Description: SW1/4SE1/4SW1/4 Section 8, T149N, R91W
UTM Coordinates: N5289777.490 E698309.332
Ecological Site: Loamy
Site #1 - Pad Site
Community Type: Sandberg bluegrass/Western wheatgrass/Fringed sagewort

Plant Composition **Common Name**		**Scientific Name**
GRASSES:		
Bearded wheatgrass		*Elymus caninus*
Green needlegrass		*Nassella viridula*
Needleandthread grass		*Hesperostipa comata*
Prairie dropseed		*Sporobolus heterolepis*
Prairie junegrass		*Koeleria macrantha*
Sandberg bluegrass		*Poa secunda*
Threadleaf sedge		*Carex filifolia*
Western wheatgrass		*Pascopyrum smithii*
FORBS:		
Black samson		*Echinacea angustifolia*
Common yarrow		*Achillea millefolium*
Cudweed sagewort		*Artemisia ludoviciana*
Dotted gayfeather		*Liatris punctata*
Green sagewort		*Artemisia dracunculus*
Groundplum milkvetch		*Astragalus crassicarpus*
Hairy goldenaster		*Heterotheca villosa*
Heath aster		*Symphyotrichum ericoides*
Missouri goldenrod		*Solidago missouriensis*
Penstemon		*Penstemon spp.*
Prairie coneflower		*Ratibida columnifera*
Prairie smoke		*Geum triflorum*
Rock cress		*Arabis spp.*
Rush skeletonweed		*Lygodesmia juncea*
Stiff goldenrod		*Oligoneuron rigidum*
Woolly indianwheat		*Plantago patagonica*
FUNGI:		
Mushroom		*Agaricus spp.*

Plant Species Worksheet (continued)

Date: 9-17-09 **Slope: 4 Percent** **Aspect: North**
Resource Area: Beaks/HuntsMedicine 24x-8
Legal Description: SW1/4SE1/4SW1/4 Section 8, T149N, R91W
UTM Coordinates: N5289777.490 E698309.332
Ecological Site: Loamy
Site #1 - Pad Site (continued)
Community Type: Sandberg bluegrass/Western wheatgrass/Fringed sagewort

INVASIVES/WEEDS:		
Canadian thistle		*Cirsium arvense*
Common dandelion		*Taraxacum officinale*
Crested wheatgrass		*Agropyron cristatum*
False flax		*Camelina crantz*
Kentucky bluegrass		*Poa pratensis*
Western salsify		*Tragopogon dubius*
Yellow sweetclover		*Melilotus officinalis*
SHRUBS:		
Common snowberry		*Symphoricarpos albus*
Fringed sagewort		*Artemisia frigida*
Silver buffaloberry		*Shepherdia argentea*

Plant Species Worksheet

Date: 9-17-09 **Slope: 3 Percent** **Aspect: Southwest**
Resource Area: Beaks/HuntsMedicine 24x-8
Legal Description: SW1/4SE1/4SW1/4 Section 8, T149N, R91W
UTM Coordinates: N5289738.678 E698302.777
Ecological Site: Loamy
Site #2 - Pad Site
Community Type: Sandberg bluegrass/Western wheatgrass/Common snowberry

Plant Composition **Common Name**		**Scientific Name**
GRASSES:		
Bearded wheatgrass		*Elymus caninus*
Green needlegrass		*Nassella viridula*
Needleandthread grass		*Hesperostipa comata*
Prairie dropseed		*Sporobolus heterolepis*
Prairie junegrass		*Koeleria macrantha*
Sandberg bluegrass		*Poa secunda*
Western wheatgrass		*Pascopyrum smithii*
FORBS:		
Black samson		*Echinacea angustifolia*
Common yarrow		*Achillea millefolium*
Cudweed sagewort		*Artemisia ludoviciana*
Dotted gayfeather		*Liatris punctata*
Green sagewort		*Artemisia dracunculus*
Groundplum milkvetch		*Astragalus crassicarpus*
Hairy goldenaster		*Heterotheca villosa*
Milkvetch		*Astragalus spp.*
Missouri goldenrod		*Solidago missouriensis*
Penstemon		*Penstemon spp.*
Prairie coneflower		*Ratibida columnifera*
Prairie smoke		*Geum triflorum*
Purple prairie clover		*Dalea purpurea*
Rock cress		*Arabis spp.*
Rush skeletonweed		*Lygodesmia juncea*
Stiff goldenrod		*Oligoneuron rigidum*
White prairie aster		*Symphyotrichum falcatum*
Woolly indianwheat		*Plantago patagonica*
FUNGI:		
Mushroom		*Agaricus spp.*

Plant Species Worksheet (continued)

Date: 9-17-09 **Slope: 3 Percent** **Aspect: Southwest**
Resource Area: Beaks/HuntsMedicine 24x-8
Legal Description: SW1/4SE1/4SW1/4 Section 8, T149N, R91W
UTM Coordinates: N5289738.678 E698302.777
Ecological Site: Loamy
Site #2 - Pad Site (continued)
Community Type: Sandberg bluegrass/Western wheatgrass/Common snowberry

INVASIVES/WEEDS:		
Canadian thistle		*Cirsium arvense*
Crested wheatgrass		*Agropyron cristatum*
False flax		*Camelina crantz*
Flixweed		*Descurainia sophia*
Flodman's thistle		*Cirsium flodmanii*
Kentucky bluegrass		*Poa pratensis*
Tall tumblemustard		*Sisymbrium altissimum*
Wavyleaf thistle		*Cirsium undulatum*
Western salsify		*Tragopogon dubius*
Yellow sweetclover		*Melilotus officinalis*
SHRUBS:		
Common snowberry		*Symphoricarpos albus*
Fringed sagewort		*Artemisia frigida*

Plant Species Worksheet

Date: 9-17-09 **Slope: 3 Percent** **Aspect: Northwest facing**
Resource Area: Beaks/HuntsMedicine 24x-8
Legal Description: SW1/4SE1/4SW1/4 Section 8, T149N, R91W
UTM Coordinates: N5289745.059 E698244.177
Ecological Site: Loamy
Site #3 - Pad Site
Community Type: Sandberg bluegrass/Western wheatgrass/Common snowberry

Plant Composition **Common Name**		**Scientific Name**
GRASSES:		
Bearded wheatgrass		*Elymus caninus*
Green needlegrass		*Nassella viridula*
Needleandthread grass		*Hesperostipa comata*
Prairie junegrass		*Koeleria macrantha*
Red threeawn		*Aristida longiseta*
Sandberg bluegrass		*Poa secunda*
Western wheatgrass		*Pascopyrum smithii*
FORBS:		
Black samson		*Echinacea angustifolia*
Common yarrow		*Achillea millefolium*
Cudweed sagewort		*Artemisia ludoviciana*
Curlycup gumweed		*Grindelia squarrosa*
Green sagewort		*Artemisia dracunculus*
Groundplum milkvetch		*Astragalus crassicarpus*
Hairy goldenaster		*Heterotheca villosa*
Heath aster		*Symphyotrichum ericoides*
Missouri goldenrod		*Solidago missouriensis*
Penstemon		*Penstemon spp.*
Prairie smoke		*Geum triflorum*
Silverleaf scurfpea		*Psoralea argophylla*
Rush skeletonweed		*Lygodesmia juncea*
Stiff goldenrod		*Oligoneuron rigidum*
White prairie aster		*Symphyotrichum falcatum*
Woolly indianwheat		*Plantago patagonica*
FUNGI:		
Mushroom		*Agaricus spp.*

Plant Species Worksheet (continued)

Date: 9-17-09 **Slope: 3 Percent** **Aspect: Northwest facing**
Resource Area: Beaks/HuntsMedicine 24x-8
Legal Description: SW1/4SE1/4SW1/4 Section 8, T149N, R91W
UTM Coordinates: N5289745.059 E698244.177
Ecological Site: Loamy
Site #3 - Pad Site (continued)
Community Type: Sandberg bluegrass/Western wheatgrass/Common snowberry

INVASIVES/WEEDS:		
Kentucky bluegrass		*Poa pratensis*
Smooth brome		*Bromus inermis*
Western salsify		*Tragopogon dubius*
Yellow sweetclover		*Melilotus officinalis*
SHRUBS:		
Chokecherry		*Prunus virginiana*
Common snowberry		*Symphoricarpos albus*
Fringed sagewort		*Artemisia frigida*
Prairie rose		*Rosa arkansana*

Plant Species Worksheet

Date: 9-17-09 **Slope: 3 Percent** **Aspect: Northwest**
Resource Area: Beaks/HuntsMedicine 24x-8
Legal Description: SW1/4SE1/4SW1/4 Section 8, T149N, R91W
UTM Coordinates: N5289698.827 E698209.979
Ecological Site: Loamy
Site #4 - Pad Site
Community Type: Sandberg bluegrass/Green needlegrass/ Fringed sagewort/Common snowberry

Plant Composition **Common Name**		**Scientific Name**
GRASSES:		
Bearded wheatgrass		*Elymus caninus*
Green needlegrass		*Nassella viridula*
Prairie junegrass		*Koeleria macrantha*
Red threeawn		*Aristida longiseta*
Sandberg bluegrass		*Poa secunda*
Threadleaf sedge		*Carex filifolia*
Western wheatgrass		*Pascopyrum smithii*
FORBS:		
Balsamroot		*Balsamorhiza spp.*
Black samson		*Echinacea angustifolia*
Common yarrow		*Achillea millefolium*
Green sagewort		*Artemisia dracunculus*
Hairy goldenaster		*Heterotheca villosa*
Heath aster		*Symphyotrichum ericoides*
Missouri goldenrod		*Solidago missouriensis*
Penstemon		*Penstemon spp.*
Prairie coneflower		*Ratibida columnifera*
Prairie smoke		*Geum triflorum*
Purple prairie clover		*Dalea purpurea*
Rock cress		*Arabis spp.*
Rose pussytoes		*Antennaria rosea*
Silverleaf scurfpea		*Psoralea argophylla*
Rush skeletonweed		*Lygodesmia juncea*
Stiff goldenrod		*Oligoneuron rigidum*
White prairie aster		*Symphyotrichum falcatum*
FUNGI:		
Mushroom		*Agaricus spp.*

Plant Species Worksheet (continued)

Date: 9-17-09 **Slope: 3 Percent** **Aspect: Northwest**
Resource Area: Beaks/HuntsMedicine 24x-8
Legal Description: SW1/4SE1/4SW1/4 Section 8, T149N, R91W
UTM Coordinates: N5289698.827 E698209.979
Ecological Site: Loamy
Site #4 - Pad Site (continued)
Community Type: Sandberg bluegrass/Green needlegrass/ Fringed sagewort/Common snowberry

INVASIVES/WEEDS:		
Canadian thistle		*Cirsium arvense*
False flax		*Camelina crantz*
Smooth brome		*Bromus inermis*
Wavyleaf thistle		*Cirsium undulatum*
Yellow sweetclover		*Melilotus officinalis*
SHRUBS:		
Chokecherry		*Prunus virginiana*
Common snowberry		*Symphoricarpos albus*
Fringed sagewort		*Artemisia frigida*
Prairie rose		*Rosa arkansana*
Silver buffaloberry		*Shepherdia argentea*

Plant Species Worksheet

Date: 9-17-09 **Slope: 2 Percent** **Aspect: Northwest**
Resource Area: Beaks/HuntsMedicine 24x-8
Legal Description: SW1/4SE1/4SW1/4 Section 8, T149N, R91W
UTM Coordinates: N5289738.607 E698148.373
Ecological Site: Loamy
Site #5 - Pad Site
Community Type: Sandberg bluegrass/Green needlegrass/ Stiff goldenrod/Common snowberry

Plant Composition Common Name		Scientific Name
GRASSES:		
Bearded wheatgrass		*Elymus caninus*
Green needlegrass		*Nassella viridula*
Prairie junegrass		*Koeleria macrantha*
Sandberg bluegrass		*Poa secunda*
Threadleaf sedge		*Carex filifolia*
Western wheatgrass		*Pascopyrum smithii*
FORBS:		
Balsamroot		*Balsamorhiza spp.*
Black samson		*Echinacea angustifolia*
Common yarrow		*Achillea millefolium*
Cudweed sagewort		*Artemisia ludoviciana*
Dotted gayfeather		*Liatris punctata*
Green sagewort		*Artemisia dracunculus*
Hairy goldenaster		*Heterotheca villosa*
Heath aster		*Symphyotrichum ericoides*
Missouri goldenrod		*Solidago missouriensis*
Penstemon		*Penstemon spp.*
Prairie coneflower		*Ratibida columnifera*
Prairie smoke		*Geum triflorum*
Rock cress		*Arabis spp.*
Stiff goldenrod		*Oligoneuron rigidum*
White prairie aster		*Symphyotrichum falcatum*
INVASIVES/WEEDS:		
Common dandelion		*Taraxacum officinale*
False flax		*Camelina crantz*
Flodman's thistle		*Cirsium flodmanii*
Pepperweed		*Lepidium spp.*
Western sticktight		*Lappula occidentalis*
Yellow sweetclover		*Melilotus officinalis*

Plant Species Worksheet (continued)

Date: 9-17-09 **Slope: 2 Percent** **Aspect: Northwest**
Resource Area: Beaks/HuntsMedicine 24x-8
Legal Description: SW1/4SE1/4SW1/4 Section 8, T149N, R91W
UTM Coordinates: N5289738.607 E698148.373
Ecological Site: Loamy
Site #5 - Pad Site (continued)
Community Type: Sandberg bluegrass/Green needlegrass/ Stiff goldenrod/Common snowberry

SHRUBS:		
Chokecherry		*Prunus virginiana*
Common snowberry		*Symphoricarpos albus*
Fringed sagewort		*Artemisia frigida*
Prairie rose		*Rosa arkansana*

Plant Species Worksheet

Date: 9-17-09 **Slope: 4 Percent** **Aspect: Northwest**
Resource Area: Beaks/HuntsMedicine 24x-8
Legal Description: SW1/4SE1/4SW1/4 Section 8, T149N, R91W
UTM Coordinates: N5289799.735 E698149.249
Ecological Site: Loamy
Site #6 - Pad Site
Community Type: Sandberg bluegrass/Green needlegrass/Smooth brome
Fringed sagewort/Common snowberry

Plant Composition **Common Name**		**Scientific Name**
GRASSES:		
Bearded wheatgrass		*Elymus caninus*
Green needlegrass		*Nassella viridula*
Little bluestem		*Schizachyrium scoparium*
Prairie dropseed		*Sporobolus heterolepis*
Prairie junegrass		*Koeleria macrantha*
Red threeawn		*Aristida longiseta*
Sandberg bluegrass		*Poa secunda*
Threadleaf sedge		*Carex filifolia*
Western wheatgrass		*Pascopyrum smithii*
FORBS:		
Black samson		*Echinacea angustifolia*
Common yarrow		*Achillea millefolium*
Cudweed sagewort		*Artemisia ludoviciana*
Dotted gayfeather		*Liatris punctata*
Green sagewort		*Artemisia dracunculus*
Hairy goldenaster		*Heterotheca villosa*
Heath aster		*Symphyotrichum ericoides*
Missouri goldenrod		*Solidago missouriensis*
Prairie smoke		*Geum triflorum*
Purple prairie clover		*Dalea purpurea*
Rush skeletonweed		*Lygodesmia juncea*
Stiff goldenrod		*Oligoneuron rigidum*
Woolly indianwheat		*Plantago patagonica*
FUNGI:		
Mushroom		*Agaricus spp.*

Plant Species Worksheet (continued)

Date: 9-17-09 **Slope: 4 Percent** **Aspect: Northwest**
Resource Area: Beaks/HuntsMedicine 24x-8
Legal Description: SW1/4SE1/4SW1/4 Section 8, T149N, R91W
UTM Coordinates: N5289799.735 E698149.249
Ecological Site: Loamy
Site #6 - Pad Site (continued)
Community Type: Sandberg bluegrass/Green needlegrass/Smooth brome
Fringed sagewort/Common snowberry

INVASIVES/WEEDS		
Crested wheatgrass		*Agropyron cristatum*
False flax		*Camelina crantz*
Pepperweed		*Lepidium spp.*
Smooth brome		*Bromus inermis*
Western salsify		*Tragopogon dubius*
Yellow sweetclover		*Melilotus officinalis*
SHRUBS:		
Common snowberry		*Symphoricarpos albus*
Fringed sagewort		*Artemisia frigida*
Poison ivy		*Toxicodendron rydbergii*
Prairie rose		*Rosa arkansana*

Plant Species Worksheet

Date: 9-17-09 **Slope: 4 Percent** **Aspect: Northwest**
Resource Area: Beaks/HuntsMedicine 24x-8
Legal Description: SW1/4SE1/4SW1/4 Section 8, T149N, R91W
UTM Coordinates: N5289830.614 E698244.940
Ecological Site: Loamy
Site #7 - Perimeter of Pad
Community Type: Sandberg bluegrass/Western wheatgrass/ Fringed sagewort/Common snowberry

Plant Composition **Common Name**		**Scientific Name**
GRASSES:		
Bearded wheatgrass		*Elymus caninus*
Green needlegrass		*Nassella viridula*
Prairie dropseed		*Sporobolus heterolepis*
Prairie junegrass		*Koeleria macrantha*
Red threeawn		*Aristida longiseta*
Sandberg bluegrass		*Poa secunda*
Threadleaf sedge		*Carex filifolia*
Western wheatgrass		*Pascopyrum smithii*
FORBS:		
Black samson		*Echinacea angustifolia*
Common yarrow		*Achillea millefolium*
Cudweed sagewort		*Artemisia ludoviciana*
Dotted gayfeather		*Liatris punctata*
Green sagewort		*Artemisia dracunculus*
Hairy goldenaster		*Heterotheca villosa*
Heath aster		*Symphyotrichum ericoides*
Prairie coneflower		*Ratibida columnifera*
Prairie smoke		*Geum triflorum*
Rock cress		*Arabis spp.*
Stiff goldenrod		*Oligoneuron rigidum*
White prairie aster		*Symphyotrichum falcatum*
Woolly indianwheat		*Plantago patagonica*
INVASIVES/WEEDS:		
Fanweed		*Thlaspi arvense*
Flixweed		*Descurainia sophia*
Yellow sweetclover		*Melilotus officinalis*
SHRUBS:		
Chokecherry		*Prunus virginiana*
Common snowberry		*Symphoricarpos albus*
Fringed sagewort		*Artemisia frigida*
Prairie rose		*Rosa arkansana*

Plant Species Worksheet

Date: 9-18-09 **Slope: 3 Percent** **Aspect: West**
Resource Area: Beaks/HuntsMedicine 24x-8
Legal Description: NW1/4NE1/4NW1/4 Section 17, T149N, R91W
UTM Coordinates: N5289650.901 E698231.236
Ecological Site: Loamy
Site #8 - Access Road and South Perimeter of Pad
Community Type: Sandberg bluegrass/Western wheatgrass/ Green needlegrass/Green sagewort

Plant Composition **Common Name**		**Scientific Name**
GRASSES:		
Green needlegrass		*Nassella viridula*
Prairie junegrass		*Koeleria macrantha*
Sandberg bluegrass		*Poa secunda*
Western wheatgrass		*Pascopyrum smithii*
FORBS:		
Black samson		*Echinacea angustifolia*
Common yarrow		*Achillea millefolium*
Cudweed sagewort		*Artemisia ludoviciana*
Green sagewort		*Artemisia dracunculus*
Groundplum milkvetch		*Astragalus crassicarpus*
Hairy goldenaster		*Heterotheca villosa*
Prairie coneflower		*Ratibida columnifera*
Prairie smoke		*Geum triflorum*
Rush skeletonweed		*Lygodesmia juncea*
Stiff goldenrod		*Oligoneuron rigidum*
INVASIVES/WEEDS:		
Common dandelion		*Taraxacum officinale*
False flax		*Camelina crantz*
Western salsify		*Tragopogon dubius*
Yellow sweetclover		*Melilotus officinalis*
SHRUBS:		
Common snowberry		*Symphoricarpos albus*
Fringed sagewort		*Artemisia frigida*

Plant Species Worksheet

Date: 9-18-09 **Slope: 2 Percent** **Aspect: North**
Resource Area: Beaks/HuntsMedicine 24x-8
Legal Description: SW1/4NE1/4NW1/4 Section 17, T149N, R91W
UTM Coordinates: N5289514.445 E698291.275
Ecological Site: Loamy
Site #9 - Access Road--Hayfield and Draw
Community Type: Sandberg bluegrass/Tall wheatgrass
Smooth brome/Intermediate wheatgrass

Plant Composition **Common Name**		**Scientific Name**
GRASSES:		
Intermediate wheatgrass		*Thinopyrum intermedium*
Sandberg bluegrass		*Poa secunda*
Smooth brome		*Bromus inermis*
Tall wheatgrass		*Thinopyrum ponticum*
Western wheatgrass		*Pascopyrum smithii*
FORBS:		
American licorice		*Glycyrrhiza lepidota*
Black samson		*Echinacea angustifolia*
Cudweed sagewort		*Artemisia ludoviciana*
Green sagewort		*Artemisia dracunculus*
Milkvetch		*Astragalus spp.*
Rush skeletonweed		*Lygodesmia juncea*
White prairie aster		*Symphyotrichum falcatum*
INVASIVES/WEEDS:		
Western salsify		*Tragopogon dubius*
Yellow sweetclover		*Melilotus officinalis*
SHRUBS/TREES:		
Chokecherry		*Prunus virginiana*
Common snowberry		*Symphoricarpos albus*
Green ash		*Fraxinus pennsylvanica*
Poison ivy		*Toxicodendron rydbergii*
Prairie rose		*Rosa arkansana*

Plant Species Worksheet

Date: 9-18-09 **Slope: 6 Percent** **Aspect: Northeast**
Resource Area: Beaks/HuntsMedicine 24x-8
Legal Description: NW1/4SE1/4NW1/4 Section 17, T149N, R91W
UTM Coordinates: N5289347.124 E698291.482
Ecological Site: Loamy
Site #10 - Access Road
Community Type: Sandberg bluegrass/Smooth brome/Green sagewort

Plant Composition **Common Name**		**Scientific Name**
GRASSES:		
Green needlegrass		*Nassella viridula*
Needleandthread grass		*Hesperostipa comata*
Red threeawn		*Aristida longiseta*
Sandberg bluegrass		*Poa secunda*
FORBS:		
Black samson		*Echinacea angustifolia*
Clover		*Trifolium spp.*
Common yarrow		*Achillea millefolium*
Cudweed sagewort		*Artemisia ludoviciana*
Green sagewort		*Artemisia dracunculus*
Prairie smoke		*Geum triflorum*
Purple prairie clover		*Dalea purpurea*
Rush skeletonweed		*Lygodesmia juncea*
Stiff goldenrod		*Oligoneuron rigidum*
White prairie aster		*Symphyotrichum falcatum*
INVASIVES/WEEDS:		
Smooth brome		*Bromus inermis*
Yellow sweetclover		*Melilotus officinalis*
SHRUBS:		
Common snowberry		*Symphoricarpos albus*
Prairie rose		*Rosa arkansana*
Silver buffaloberry		*Shepherdia argentea*

Plant Species Worksheet

Date: 9-18-09 **Slope: 4 Percent** **Aspect: Northeast**
Resource Area: Beaks/HuntsMedicine 24x-8
Legal Description: NW1/4SE1/4NW1/4 Section 17, T149N, R91W
UTM Coordinates: N5289298.253 E698395.252
Ecological Site: Loamy Overflow
Site #11 - Access Road
Community Type: Sandberg bluegrass/Western wheatgrass/Common snowberry

Plant Composition **Common Name**		**Scientific Name**
GRASSES:		
Bearded wheatgrass		*Elymus caninus*
Green needlegrass		*Nassella viridula*
Intermediate wheatgrass		*Thinopyrum intermedium*
Sandberg bluegrass		*Poa secunda*
Tall wheatgrass		*Thinopyrum ponticum*
Western wheatgrass		*Pascopyrum smithii*
FORBS:		
Black samson		*Echinacea angustifolia*
Cudweed sagewort		*Artemisia ludoviciana*
Green sagewort		*Artemisia dracunculus*
Heath aster		*Symphyotrichum ericoides*
Prairie smoke		*Geum triflorum*
Prairie coneflower		*Ratibida columnifera*
Stiff goldenrod		*Oligoneuron rigidum*
White prairie aster		*Symphyotrichum falcatum*
INVASIVES/WEEDS:		
Smooth brome		*Bromus inermis*
Western salsify		*Tragopogon dubius*
Yellow sweetclover		*Melilotus officinalis*
SHRUBS/TREES:		
Chokecherry		*Prunus virginiana*
Common snowberry		*Symphoricarpos albus*
Fringed sagewort		*Artemisia frigida*
Green ash		*Fraxinus pennsylvanica*
Hawthorn		*Crataegus spp.*
Poison ivy		*Toxicodendron rydbergii*
Prairie rose		*Rosa arkansana*
Silver buffaloberry		*Shepherdia argentea*

Plant Species Worksheet

Date: 9-18-09 **Slope: 4 Percent** **Aspect: Northwest**
Resource Area: Beaks/HuntsMedicine 24x-8
Legal Description: NE1/4SE1/4SE1/4NW1/4 Section 17, T149N, R91W
UTM Coordinates: N5289156.193 E698451.051
Ecological Site: Loamy
Site #12 - Access Road
Community Type: Sandberg bluegrass/Western wheatgrass/Green needlegrass

Plant Composition **Common Name**		**Scientific Name**
GRASSES:		
Green needlegrass		*Nassella viridula*
Prairie junegrass		*Koeleria macrantha*
Sandberg bluegrass		*Poa secunda*
Western wheatgrass		*Pascopyrum smithii*
FORBS:		
Black samson		*Echinacea angustifolia*
Cudweed sagewort		*Artemisia ludoviciana*
Green sagewort		*Artemisia dracunculus*
Hairy goldenaster		*Heterotheca villosa*
Missouri goldenrod		*Solidago missouriensis*
Prairie smoke		*Geum triflorum*
White prairie aster		*Symphyotrichum falcatum*
INVASIVES/WEEDS:		
Canadian thistle		*Cirsium arvense*
Crested wheatgrass		*Agropyron cristatum*
Smooth brome		*Bromus inermis*
Wavyleaf thistle		*Cirsium undulatum*
Western salsify		*Tragopogon dubius*
SHRUBS:		
Chokecherry		*Prunus virginiana*
Common snowberry		*Symphoricarpos albus*
Fringed sagewort		*Artemisia frigida*
Prairie rose		*Rosa arkansana*

Plant Species Worksheet

Date: 9-18-09 **Slope: 3 Percent** **Aspect: South**
Resource Area: Beaks/HuntsMedicine 24x-8
Legal Description: NW1/4SE1/4SE1/4NW1/4 Section 17, T149N, R91W
UTM Coordinates: N5289049.096 E696402.555
Ecological Site: Thin Loamy
Site #13 - Access Road
Community Type: Sandberg bluegrass/Green needlegrass/Prairie junegrass

Plant Composition **Common Name**		**Scientific Name**
GRASSES:		
Blue grama		*Bouteloua gracilis*
Green needlegrass		*Nassella viridula*
Little bluestem		*Schizachyrium scoparium*
Prairie dropseed		*Sporobolus heterolepis*
Prairie junegrass		*Koeleria macrantha*
Sandberg bluegrass		*Poa secunda*
Western wheatgrass		*Pascopyrum smithii*
FORBS:		
Black samson		*Echinacea angustifolia*
Common yarrow		*Achillea millefolium*
Cudweed sagewort		*Artemisia ludoviciana*
Curlycup gumweed		*Grindelia squarrosa*
Green sagewort		*Artemisia dracunculus*
Hairy goldenaster		*Heterotheca villosa*
Penstemon		*Penstemon spp.*
Prairie smoke		*Geum triflorum*
Rock cress		*Arabis spp.*
Rush skeletonweed		*Lygodesmia juncea*
Stiff goldenrod		*Oligoneuron rigidum*
FUNGI:		
Mushroom		*Agaricus spp.*
INVASIVES/WEEDS:		
Canadian thistle		*Cirsium arvense*
Crested wheatgrass		*Agropyron cristatum*
False flax		*Camelina crantz*
Pepperweed		*Lepidium spp.*
Smooth brome		*Bromus inermis*
Western salsify		*Tragopogon dubius*
Yellow sweetclover		*Melilotus officinalis*

Plant Species Worksheet (continued)

Date: 9-18-09 **Slope: 3 Percent** **Aspect: South**
Resource Area: Beaks/HuntsMedicine 24x-8
Legal Description: NW1/4SE1/4SE1/4NW1/4 Section 17, T149N, R91W
UTM Coordinates: N5289049.096 E696402.555
Ecological Site: Thin Loamy
Site #13 - Access Road (continued)
Community Type: Sandberg bluegrass/Green needlegrass/Prairie junegrass

SHRUBS:		
Broom snakeweed		*Gutierrezia sarothrae*
Common snowberry		*Symphoricarpos albus*
Fringed sagewort		*Artemisia frigida*
Prairie rose		*Rosa arkansana*

Plant Species Worksheet

Date: 9-18-09 **Slope: 5 Percent** **Aspect: Southeast**
Resource Area: Beaks/HuntsMedicine 24x-8
Legal Description: NW1/4SE1/4SE1/4NW1/4 Section 17, T149N, R91W
UTM Coordinates: N5289018.115 E698297.456
Ecological Site: Loamy Overflow
Site #14 - Access Road
Community Type: Smooth brome/Kentucky bluegrass
Prairie coneflower/ Common snowberry

Plant Composition **Common Name**		**Scientific Name**
GRASSES:		
Needleandthread grass		*Hesperostipa comata*
Sandberg bluegrass		*Poa secunda*
Western wheatgrass		*Pascopyrum smithii*
FORBS:		
Mint		*Mentha spp.*
Prairie coneflower		*Ratibida columnifera*
Silverleaf scurfpea		*Psoralea argophylla*
Stiff goldenrod		*Oligoneuron rigidum*
White prairie aster		*Symphyotrichum falcatum*
INVASIVES/WEEDS:		
Bull thistle		*Cirsium vulgare*
Cocklebur		*Xanthium spp.*
Kentucky bluegrass		*Poa pratensis*
Lambsquarter		*Chenopodium album*
Smooth brome		*Bromus inermis*
Stinging nettle		*Urtica dioica*
Timothy		*Phleum spp.*
SHRUBS:		
Chokecherry		*Prunus virginiana*
Common snowberry		*Symphoricarpos albus*
Poison ivy		*Toxicodendron rydbergii*
Prairie rose		*Rosa arkansana*
Silver buffaloberry		*Shepherdia argentea*

Plant Species Worksheet

Date: 9-18-09 **Slope: 8 Percent** **Aspect: Northeast**
Resource Area: Beaks/HuntsMedicine 24x-8
Legal Description: NW1/4NE1/4SW1/4 Section 17, T149N, R91W
UTM Coordinates: N5288898.496 E698143.058
Ecological Site: Loamy
Site #15 - Access Road
Community Type: Smooth brome/Sandberg bluegrass
Western wheatgrass/ Common snowberry

Plant Composition **Common Name**		**Scientific Name**
GRASSES:		
Blue grama		*Bouteloua gracilis*
Green needlegrass		*Nassella viridula*
Needleandthread grass		*Hesperostipa comata*
Prairie junegrass		*Koeleria macrantha*
Sandberg bluegrass		*Poa secunda*
Western wheatgrass		*Pascopyrum smithii*
FORBS:		
Black samson		*Echinacea angustifolia*
Common yarrow		*Achillea millefolium*
Cudweed sagewort		*Artemisia ludoviciana*
Cutleaf balsamroot		*Balsamorhiza macrophylla*
Green sagewort		*Artemisia dracunculus*
Hairy goldenaster		*Heterotheca villosa*
Penstemon		*Penstemon spp.*
Prairie coneflower		*Ratibida columnifera*
Prairie smoke		*Geum triflorum*
Stiff goldenrod		*Oligoneuron rigidum*
White prairie aster		*Symphyotrichum falcatum*
INVASIVES/WEEDS:		
Canadian thistle		*Cirsium arvense*
Crested wheatgrass		*Agropyron cristatum*
False flax		*Camelina crantz*
Lambsquarter		*Chenopodium album*
Smooth brome		*Bromus inermis*
Timothy		*Phleum spp.*
Yellow sweetclover		*Melilotus officinalis*
SHRUBS:		
Common snowberry		*Symphoricarpos albus*
Fringed sagewort		*Artemisia frigida*
Prairie rose		*Rosa arkansana*
Silver buffaloberry		*Shepherdia argentea*

Plant Species Worksheet

Date: 9-18-09 **Slope: 6 Percent** **Aspect: Southeast**
Resource Area: Beaks/HuntsMedicine 24x-8
Legal Description: NW1/4NW1/4SW1/4 Section 17, T149N, R91W
UTM Coordinates: N5288870.999 E697808.723
Ecological Site: Loamy
Site #16 - Access Road
Community Type: Smooth brome/Sandberg bluegrass
Crested wheatgrass/Prairie junegrass

Plant Composition **Common Name**		**Scientific Name**
GRASSES:		
Blue grama		*Bouteloua gracilis*
Green needlegrass		*Nassella viridula*
Little bluestem		*Schizachyrium scoparium*
Plains muhly		*Muhlenbergia cuspidata*
Porcupine grass		*Hesperostipa spartea*
Prairie junegrass		*Koeleria macrantha*
Prairie sandreed		*Calamovilfa longifolia*
Sandberg bluegrass		*Poa secunda*
Western wheatgrass		*Pascopyrum smithii*
FORBS:		
Black samson		*Echinacea angustifolia*
Cudweed sagewort		*Artemisia ludoviciana*
Curlycup gumweed		*Grindelia squarrosa*
Green sagewort		*Artemisia dracunculus*
Hairy goldenaster		*Heterotheca villosa*
Heath aster		*Symphyotrichum ericoides*
Missouri goldenrod		*Solidago missouriensis*
Penstemon		*Penstemon spp.*
Prairie smoke		*Geum triflorum*
Stiff goldenrod		*Oligoneuron rigidum*
INVASIVES/WEEDS:		
Canadian thistle		*Cirsium arvense*
Common dandelion		*Taraxacum officinale*
Crested wheatgrass		*Agropyron cristatum*
False flax		*Camelina crantz*
Smooth brome		*Bromus inermis*
Timothy		*Phleum spp.*
Wavyleaf thistle		*Cirsium undulatum*
Yellow sweetclover		*Melilotus officinalis*

Plant Species Worksheet (continued)

Date: 9-18-09 **Slope: 6 Percent** **Aspect: Southeast**
Resource Area: Beaks/HuntsMedicine 24x-8
Legal Description: NW1/4NW1/4SW1/4 Section 17, T149N, R91W
UTM Coordinates: N5288870.999 E697808.723
Ecological Site: Loamy
Site #16 - Access Road (continued)
Community Type: Smooth brome/Sandberg bluegrass
Crested wheatgrass/Prairie junegrass

SHRUBS:		
Chokecherry		*Prunus virginiana*
Common snowberry		*Symphoricarpos albus*
Fringed sagewort		*Artemisia frigida*
Prairie rose		*Rosa arkansana*
Silver buffaloberry		*Shepherdia argentea*

Table C1. *Seed and soil characteristics of native grass species recommended for reclamation at the proposed project site.*

Common Name	Plant Species	Suggested Variety[1]	Pounds (PLS)[2]	Seeds per Pound	Composition	Preferred soil type	Notes[1, 3]
Cool Season Grasses							
Slender wheatgrass	*Elymus trachycaulus* ssp. *trachycaulus*	Primer	0.5	135,000	10%	sandy to clayey	Moderate drought tolerance. Rapid establishment and short-lived. Saline-tolerant and adapted to a wide range of sites. Useful where quick, native, non-aggressive perennial cover is desired.
Western wheatgrass	*Pascopyrum smithii*	Mandan 456	2.4	115,000	30%	silty-loamy to clay	Drought tolerant. Fairly easy to moderate establishment and long-lived. Useful for slightly saline, erosive soils where long-lived hardy vegetation is desired and rapid establishment is not.
Prairie junegrass	*Koeleria macrantha*	---	0.1	2,315,000	10%	sandy	Drought tolerant. Easy establishment. Useful where early season forage is desired and erosion is not a severe problem. Not tolerant of heavy early season grazing.
Green needlegrass	*Nassella viridula*	Lodorm	1.2	167,840	20%	wide range	Drought tolerant. Establishes on a wide variety of sites, long-lived, fibrous deep root system. Moderately palatable to livestock and wildlife year-round.
Warm season grasses							
Blue grama	*Bouteloua gracilis*	Bad River	0.2	724,400	10%	fine-textured rolling uplands	Drought resistant. Easy establishment. Saline tolerant. Sod-forming with seedling vigor and leafiness.
Sideoats grama	*Bouteloua curtipendula*	Killdeer	0.6	159,200	10%	fine to coarse textured	Moderately drought tolerant. Excellent winter hardiness. Saline tolerant. High palatability during spring and summer.
Little bluestem	*Andropogon scoparius*	Aldous, Blaze, Camper	0.4	240,670	10%	wide range	Moderately drought tolerant. Long-lived bunchgrass with deep fibrous root system. Intolerant of saline or wetland conditions.
		Total	**5.4**		**100%**		

[1] Source: USGS 2006.
[2] pounds of pure live seed.
[3] Source: Goodwin and Sheley 2003.

Appendix D

Soil Data Summary

Beaks/HuntsMedicine 24X-8 Site Environmental Assessment
XTO Energy, Inc.

Table D1: *A summary of soil attributes for ecological sites at the proposed Beaks/HuntsMedicine 24X-8 project site.*

Site ID	Soil Pit Location[1]	SMU	Soil Series Component	Text. Family/Taxonomic Class	Slope %	Aspect	Landform	Depth (inch)	Parent Material	Ecological Site
Well Pad										
001	E698309 N5289777	88B	Williams loam	Fn-lo,m,SA,f,Typic Argiustolls	4	N	Hills/Backslope	>60	Alluvium/till	Loamy
002	E698303 N5289739	88B	Williams loam	Fn-lo,m,SA,f,Typic Argiustolls	3	SW	Hills/Backslope	>60	Alluvium/till	Loamy
003	E698244 N5289745	88B	Williams loam	Fn-lo,m,SA,f,Typic Argiustolls	3	NW	Hills/Backslope	>60	Alluvium/till	Loamy
004	E698210 N5289699	88B	Williams loam	Fn-lo,m,SA,f,Typic Argiustolls	3	NW	Hills/Backslope	>60	Alluvium/till	Loamy
005	E698148 N5289739	88B	Williams loam	Fn-lo,m,SA,f,Typic Argiustolls	2	NW	Hills/Backslope	>60	Alluvium/till	Loamy
006	E698149 N5289799	88B	Williams loam	Fn-lo,m,SA,f,Typic Argiustolls	4	NW	Hills/Backslope	>60	Alluvium/till	Loamy
007	E698245 N5289831	88B	Williams loam	Fn-lo,m,SA,f,Typic Argiustolls	4	NW	Hills/Backslope	>60	Alluvium/till	Loamy
Access Road										
008	E698231 N5289651	88B	Williams loam	Fn-lo,m,SA,f,Typic Argiustolls	3	W	Hills/Backslope	>60	Alluvium/till	Loamy
009	E698291 N5289514	88B	Williams loam	Fn-lo,m,SA,f,Typic Argiustolls	2	N	Hills/Backslope	>60	Alluvium/till	Loamy
010	E698290 N5289347	88C	Williams loam	Fn-lo,m,SA,f,Typic Argiustolls	6	NE	Hills/Backslope	>60	Alluvium/till	Loamy
011	E698395 N5289298	88B	Arnegard loam	Fn-lo,m,SA,f,Pachic Argiustolls	4	NE	Hills/Swale	>60	Alluvium/till	Loamy Overflow
012	E698451 N5289156	88B	Williams loam	Fn-lo,m,SA,f,Typic Argiustolls	4	NW	Hills/Backslope	>60	Alluvium/till	Loamy
013	E698403 N5289049	88B	Zahl loam	Fn-lo,m,SA,f,Typic Calciustolls	3	S	Hills/Rise	>60	Alluvium/till	Loamy
014	E698297 N5289018	88B	Arnegard loam	Fn-lo,m,SA,f,Pachic Argiustolls	5	SE	Hills/Backslope	>60	Alluvium/till	Loamy
015	E698143 N5288898	88C	Williams loam	Fn-lo,m,SA,f,Typic Argiustolls	8	NE	Hills/Backslope	>60	Alluvium/till	Loamy
016	E697809 N5288871	88C	Williams loam	Fn-lo,m,SA,f,Typic Argiustolls	6	SE	Hills/Backslope	>60	Alluvium/till	Loamy

[1] UTM Zone is 13T.

Figure D1: *Definitions of the Unified Soil Classification System.*

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			GROUP SYMBOLS	TYPICAL NAMES
COARSE GRAINED SOILS (More than 50% of material is LARGER than No. 200 sieve size)	GRAVELS (More than 50% of coarse fraction is LARGER than the No. 4 sieve size)	CLEAN GRAVELS (Little or no fines)	GW	Well-graded gravels or gravel-sand mixtures, little or no fines.
			GP	Poorly-graded gravels or gravel-sand mixtures, little or no fines.
		GRAVELS WITH FINES (Appreciable amt. of fines)	GM	Silty gravels, gravel-sand-silt mixtures.
			GC	Clayey gravels, gravel-sand-clay mixtures.
	SANDS (More than 50% of coarse fraction is SMALLER than the No. 4 sieve size)	CLEAN SANDS (Little or no fines)	SW	Well-graded sands or gravelly sands, little or no fines.
			SP	Poorly-graded sands or gravelly sands, little or no fines.
		SANDS WITH FINES (Appreciable amt. of fines)	SM	Silty sands, sand-silt mixtures.
			SC	Clayey sands, sand-clay mixtures.
FINE GRAINED SOILS (More than 50% of material is SMALLER than No. 200 sieve size)	SILTS AND CLAYS (Liquid limit LESS than 50)		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity.
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.
			OL	Organic silts and organic silt-clays of low plasticity.
	SILTS AND CLAYS (Liquid limit GREATER than 50)		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts.
			CH	Inorganic clays of high plasticity, fat clays.
			OH	Organic clays of medium to high plasticity, organic silts.
HIGHLY ORGANIC SOILS			Pt	Peat and other highly organic soils.

BOUNDARY CLASSIFICATIONS: Soils possessing characteristics of two groups are designated by combinations of group symbols.

PARTICLE SIZE LIMITS

SILT OR CLAY	SAND			GRAVEL		COBBLES	BOULDERS
	Fine	Medium	Coarse	Fine	Coarse		

No. 200 No. 40 No. 10 No. 4 ¾ in. 3 in. 12 in.

U. S. STANDARD SIEVE SIZE

Reference: The Unified Soil Classification System, Corps of Engineers, U.S. Army Technical Memorandum No. 3-357, Vol. 1, March, 1953 (Revised April, 1960)

1969 R.W.F

Figure G 160

Appendix E

Cultural Resources Documentation

Beaks/HuntsMedicine 24X-8 Site Environmental Assessment
XTO Energy, Inc.

INSERT Concurrence letters, etc.

Appendix F

Agency Correspondence

Beaks/HuntsMedicine 24X-8 Site Environmental Assessment
XTO Energy, Inc.

Appendix F

Agency Correspondence

Beaks/HuntsMedicine 24X-8 Site Environmental Assessment
XTO Energy, Inc.

October 27, 2009

Christine Dirk
Natural Resource Division
North Dakota Parks & Recreation Department
1600 East Century Ave., Suite 3
Bismarck, ND 58503

Dear Ms. Dirk:

We are requesting known location information and any associated data for threatened, endangered, and rare animals and plants within a one-mile distance of our project area boundary (**Project Vicinity Map**). Our project is located on the Fort Berthold Indian Reservation, east of Mandaree, in Dunn County, North Dakota. The project area occurs within:

* Township 149N, Range 92W, Sections 10-12, 13-15, 22-24, 25-27, and 34-36;
* Township 149N, Range 91W, Sections 7-8, 17-18, 19-20, 29-30, and 31-32;
* Township 148N, Range 92W, Sections 3 & 10.

I understand there is a fee for out-of-state information requests. I will gladly pay this fee. Please let me know the amount, types of payment you accept (e.g. check, money order, etc.), and any other details. I can be contacted by phone at (406) 439-0284 or through e-mail at apipp@pbsj.com. Information can be mailed to me at the address on this letterhead or to my e-mail address.

Thank you very much for providing plant and animal information.

Sincerely,

Andrea Pipp

Andrea K. Pipp
Botanist

John Hoeven, Governor
Douglass A. Prchal, Director

1600 East Century Avenue, Suite 3
Bismarck, ND 58503-0649
Phone 701-328-5357
Fax 701-328-5363
E-mail parkrec@nd.gov
www.parkrec.nd.gov

November 17, 2009

Andrea K. Pipp
PBS & J
801 N. Last Chance Gulch, Suite 101
Helena, MT 59601-3360

Re: Project on the Fort Berthold Indian Reservation

Dear Ms. Pipp:

The North Dakota Parks and Recreation Department has reviewed the above referenced project proposal located in Sections 10-12, 13-15, 22-27, and 34-36, T149N, R92W; Sections 7-8, 17-20, and 29-32, T149N, R91W; and Sections 3 and 10, T148N, R92W, Dunn County.

Our agency scope of authority and expertise covers recreation and biological resources (in particular rare species and ecological communities). The project as defined does not affect state park lands that we manage or Land and Water Conservation Fund recreation projects that we coordinate.

The North Dakota Natural Heritage biological conservation database has been reviewed to determine if any current or historic plant or animal species of concern or other significant ecological communities are known to occur within an approximate one-mile radius of the project area. Based on this review, there are no known occurrences within or adjacent to the project area.

Because this information is not based on a comprehensive inventory, there may be species of concern or otherwise significant ecological communities in the area that are not represented in the database. The lack of data for any project area cannot be construed to mean that no significant features are present. The absence of data may indicate that the project area has not been surveyed, rather than confirm that the area lacks natural heritage resources.

Regarding any reclamation efforts, we recommend that any impacted areas be revegetated with species native to the project area.

Thank you for the opportunity to comment on this project. Please contact Kathy Duttenhefner (701-328-5370 or kgduttenhefner@nd.gov) of our staff if additional information is needed.

Sincerely,

Jesse Hanson, Coordinator
Planning and Natural Resources Division

R.USNDNHI*2009-332

Play in our backyard!

John Hoeven, Governor
Douglass A. Prchal, Director

1600 East Century Avenue, Suite 3
Bismarck, ND 58503-0649
Phone 701-328-5357
Fax 701-328-5363
E-mail parkrec@nd.gov
www.parkrec.nd.gov

April 16, 2010

Chris Miller
PBS&J
115 N. 28th Street, Suite 202
Billings, MT 59101-2045

RE: XTO Energy Exploratory Oil Well Pad and Access Road

Dear Mr. Miller:

The North Dakota Parks and Recreation Department has reviewed the above referenced project proposal from XTO Energy to construct a well pad and an access road located in Sections 8 and 17, T149N, R91W, Dunn County.

Our agency scope of authority and expertise covers recreation and biological resources (in particular rare plants and ecological communities). The project as defined does not affect state park lands that we manage or Land and Water Conservation Fund recreation projects that we coordinate.

The North Dakota Natural Heritage biological conservation database has been reviewed to determine if any current or historic plant or animal species of concern or other significant ecological communities are known to occur within an approximate one-mile radius of the project area. Based on this review, there are no known occurrences within or adjacent to the project area.

Because this information is not based on a comprehensive inventory, there may be species of concern or otherwise significant ecological communities in the area that are not represented in the database. The lack of data for any project area cannot be construed to mean that no significant features are present. The absence of data may indicate that the project area has not been surveyed, rather than confirm that the area lacks natural heritage resources. We would appreciate receiving a hard copy or digital copy of the wildlife and botanical surveys and evaluations for the project area.

Regarding any reclamation efforts, we recommend that any impacted areas be revegetated with species native to the project area.

We appreciate your commitment to rare plant, animal and ecological community conservation, management and inter-agency cooperation to date. For additional information please contact Kathy Duttenhefner (701-328-5370 or kgduttenhefner@nd.gov) of our staff. Thank you for the opportunity to comment on this proposed project.

Sincerely,

Jesse Hanson

Jesse Hanson, Manager
Planning and Natural Resources Division

R.USNDNHI*2010-105

Play in our backyard!

October 27, 2009

Jeffery Towner
U.S. Fish and Wildlife Service
North Dakota Field Office
3425 Miriam Avenue
Bismarck, North Dakota 58501-7926

Subject: XTO Energy Oil Exploration on the Fort Berthold Indian Reservation

Dear Mr. Towner:

XTO Energy, Inc. (XTO) is proposing to conduct oil exploration activities at several sites in Dunn County, east of Mandaree, North Dakota on the Fort Berthold Indian Reservation (FBIR). The well sites fall under the jurisdiction of the U.S. Department of Interior's Bureau of Indian Affairs (BIA), necessitating the preparation of an environmental assessment (EA). XTO is preparing a draft EA on behalf of the BIA. As outlined under Section 7 of the Endangered Species Act of 1973, as amended, XTO and their consultants, as the designated agent for the BIA for XTO projects, requests that the U.S. Fish and Wildlife Service provide a list of and any ancillary information for known occurrences of proposed, candidate, threatened, and endangered species, as well as, designated critical habitat areas that occur or potentially occur in the project area (**Project Vicinity Map**). We would also appreciate any additional guidance regarding migratory birds, wetlands, other related biological issues that your office regulates or has a specific interest in, and concerns related to proposed activities.

The proposed action includes approvals by the BIA and BLM of the drilling and completion of multiple exploratory oil wells at six sites on the FBIR (**Approximate Well Pad & Access Road Location Map**). The general legal descriptions of the well pads and access roads are provided in **Table 1**. The development of these sites would require mechanical excavation and construction for the well pads and access roads. Well pads will range in size from four to five acres. Access roads vary in length, but will generally be a maximum of 40 feet wide and will be placed to maximize the use of the existing road system to the greatest extent possible.

Table 1. *Proposed XTO Energy oil well sites on the Fort Berthold Indian Reservation.*

Site Name	Township	Range	Section(s)	Notes
FBIR Iron Woman 21X-10, FBIR Yellow Wolf 21X-10	148N	92W	3, 10	Well pad and access road occur on native prairie with existing cattle use.
FBIR Stephen 31X-19, FBIR Bird 31X-19	149N	91W	19	The well pad and access road occur in a hayfield.
FBIR Beaks 24X-8, FBIR Medicine 24X-8	149N	91W	8, 17	Well pad occurs on native prairie with a substantial amount of snowberry on it. Site has some use by cattle. Access road follows an existing two-track road for the majority of its length. It also crosses along one edge of a hayfield and some native prairie to reach the well pad.
FBIR Smith 11X-10	149N	92W	9, 10	The well pad and access road occur on native prairie.
FBIR Walter Packs Wolf 31X-12	149N 149N	92W 91W	12 7, 18	Well pad occurs on native prairie with existing cattle use and a substantial amount of snowberry. Access road follows an existing two-track road for almost its entire length.
FBIR Baker 34X-25	149N	92W	25, 36	Well pad occurs on native prairie with existing horse and cattle use. Access road follows an existing driveway from BIA Road 13 before heading north across native prairie to the well pad.

If at all possible, we would greatly appreciate a response by November 15, 2009. Please contact me with questions by e-mail at apipp@pbsj.com or by phone at (406) 439-0284.

Thank you very much for your attention and I look forward to discussing this project with you.

Sincerely,

Andrea Pipp

Andrea K. Pipp
Botanist

Cc: C. Miller, PBS&J
R. McEldowney, PBS&J
D. Phillippi, NRO
D. Worthington, XTO Energy

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
3425 Miriam Avenue
Bismarck, North Dakota 58501

DEC 17 2009

DEC 17 2009

Ms. Andrea K. Pipp, Botanist
PBS&J
801 N. Last Chance Gulch, Suite 101
Helena, Montana 59601-3360

Re: Nine exploratory oil and gas wells on the Fort Berthold Reservation

Dear Ms. Pipp:

This is in response to your October 27, 2009, letter regarding proposed exploratory oil and gas wells on the Fort Berthold Reservation. XTO Energy Inc. has proposed nine exploratory oil and gas well on six well pad sites on the Fort Berthold Reservation, Dunn County, North Dakota.

Specific locations are:

FBIR Iron Woman 21X-10 and FBIR Yellow Wolf 21 X-10: T. 148. N., R. 92 W., Sections 3, 10
FBIR Stephen 31 X-19 and FBIR Bird 31X-19: T. 149 N., R. 91 W., Section 19
FBIR Beaks 24X-8 and FBIR Medicine 24X-8: T. 149 N., R. 91 W., Sections 8, 17
FBIR Smith 11X-10: T. 149 N., R. 92 W., Sections 9, 10
FBIR Walter Packs: T. 149 N., R. 92 W., Section 12
Wolf 31X-12: T. 149., R. 91 W., Sections 7, 18
FBIR Baker 34X-25: T. 149 N., R. 92 W., Sections 25, 36

We offer the following comments under the authority of and in accordance with the Migratory Bird Treaty Act (16 U.S.C. 703 et seq.) (MBTA), the National Environmental Policy Act of 1969, as amended (42 U.S.C. 4321 et seq.) (NEPA), the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d, 54 Stat. 250) (BGEPA), Executive Order 13186 "Responsibilities of Federal Agencies to Protect Migratory Birds", the Endangered Species Act (16 U.S.C. 1531 et seq.) (ESA), and the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57).

In an e-mail dated October 13, 2009, the Bureau of Indian Affairs (BIA) designated PBS&J, as a consultant to XTO Energy, to represent the BIA for informal Section 7 consultation under the ESA. Therefore, the U.S. Fish and Wildlife Service (Service) is responding to you as the designated non-Federal representative.

Threatened and Endangered Species

A list of federally endangered and threatened species that may be present within the proposed project's area of influence is enclosed. This list fulfills requirements of the Service under Section 7 of the ESA. This list remains valid for 90 days. The BIA or designated non-Federal agent should make a determination of the proposed projects' effects on listed species, including whether there is anticipated destruction or adverse modification of designated critical habitat. This determination may be included in the EA. It should state whether or not the BIA plans to incorporate the Service's recommendations to avoid and minimize any adverse effects. If the BIA does not plan to take the recommended measures, the document should explain why not.

There is designated critical habitat for the piping plover in Dunn County. We recommend that a buffer of at least one-half mile be maintained from piping plover critical habitat. Critical habitat can be viewed on the Service website (http://www.fws.gov/northdakotafieldoffice/endspecies/species/piping_plover.htm). GIS layers of critical habitat can be obtained by contacting our office at the letterhead address.

The Aransas Wood Buffalo Population (AWBP) of endangered whooping cranes is the only self-sustaining migratory population of whooping cranes remaining in the wild. These birds breed in the wetlands of Wood Buffalo National Park in Alberta and the Northwest Territories of northern Canada, and overwinter on the Texas coast. Whooping cranes in the AWBP annually migrate through North Dakota during their spring and fall migrations. They make numerous stops along their migration route to feed and roost before moving on.

Whooping cranes in the AWBP annually migrate through North Dakota during their spring and fall migrations. The proposed project lies within a 90 mile corridor that includes approximately 75 percent of all reported whooping crane sightings in the State (enclosure).

Whooping cranes are unlikely to spend more than a few days in any one spot during migration. The Service suggests that the Environmental Assessment (EA) include a requirement that if a whooping crane is sighted within one mile of a well site or associated facilities while it is under construction, that all work cease within one mile of that part of the project and the Service be contacted immediately. In coordination with the Service, work may resume after the bird(s) leave the area.

Potential habitat for the Dakota skipper exists on the Fort Berthold Reservation in Dunn and McKenzie Counties. In 1995, the Dakota skipper was determined to be a candidate species under the ESA. No legal requirement exists to protect candidate species; however, it is within the spirit of the ESA to consider these species as having significant value and worth protecting.

The Dakota skipper is a small to medium-sized hesperiine butterfly associated with high quality prairie ranging from wet-mesic tallgrass prairie to dry-mesic mixed grass prairie. The first type of habitat is relatively flat and moist native bluestem prairie. Three species of wildflowers are usually present: wood lily (*Lilium philadelphicum*), harebell (*Campanula rotundifolia*), and smooth camas (*Zygadenus elegans*). The second habitat type is upland (dry) prairie that is often on ridges and hillsides. Bluestem grasses and needlegrasses dominate these habitats. On this habitat type, three wildflowers are typically present in high quality sites that are suitable for Dakota skipper: pale purple (*Echinacea pallida*) and upright (*E. angustifolia*) coneflowers and blanketflower (*Gaillardia sp.*). Because of the difficulty of surveying for Dakota skippers and a short survey window, we recommend that the project avoid any impacts to potential Dakota skipper habitat. If Dakota skipper habitat is present near the proposed project, and you intend to take precautions to avoid impacts to skipper habitat, please notify the Service for further direction.

Migratory Birds

The MBTA has no provisions for incidental take. Regardless, it is understood that some birds may be killed even if all reasonable conservation measures are implemented. The Service's Office of Law Enforcement carries out its mission to protect migratory birds through investigations and enforcement, and through fostering relationships with individuals and industries seeking to eliminate their impacts to migratory birds. While it is not possible under the MBTA and BGEPA to absolve individuals or companies from liability by following these guidelines, enforcement will be focused on those individuals or companies that take migratory birds with disregard for the law, and where no legitimate conservation measures have been applied. Please inform us as to whether you intend to follow the following recommendations to minimize impacts to migratory birds, including bald and golden eagles.

Schedule construction for late summer or fall/early winter so as not to disrupt migratory birds or other wildlife during the breeding season (February 1 to July 15). If work is proposed to take place during the breeding season or at any other time which may result in the take of migratory birds, their eggs, or active nests, the Service recommends that the project proponent arrange to have a qualified biologist conduct a field survey of the affected habitats to determine the presence of nesting migratory birds. If nesting migratory birds, their eggs, or active nests are found, we request you contact this office, suspend construction, or take other measures, such as maintaining adequate buffers, to protect the birds until the young have fledged. The Service further recommends that field surveys for nesting birds, along with information regarding the qualifications of the biologist(s) performing the surveys, and any avoidance measures implemented at the project site be thoroughly documented and that such documentation be shared with the Service and maintained on file by the project proponent.

The Service estimates that 500,000 to 1 million birds are killed nationwide every year from exposed oil at oil drilling and/or production sites. The unauthorized take of migratory birds at oil production facilities can be prevented with a minimum of expense

and effort. Wildlife mortalities in North Dakota are most often observed in association with drilling reserve pits, flare pits, and/or drip buckets and barrels. The Service strongly recommends that the pads be constructed as closed-loop systems, without a reserve pit. Regardless of whether the pads are built with reserve pits, we recommend that the BIA include the following measures in the EA so as to ensure compliance with the MBTA.

- **Keep Oil Off Open Pits or Ponds.** Immediate clean up of oil in open pits is critical to prevent wildlife mortalities.

- **Place Covers on Drip Buckets/Barrels Located Under Valves and Spigots.** Bird entrapments are common within the small (55 gallon or less) barrels placed under valves and spigots to collect dripped oil. Placing a wire mesh or grate over the top of these barrels is a very practical way of preventing access for wildlife.

- **Use Effective and Proven Exclusionary Devices.** Netting is the most effective method of keeping birds from entering open pits (reserve and flare pits). Flagging, reflectors, and strobe lights are not effective. Published scientific studies as well as field inspections by Service personnel have documented bird mortalities at oil pits with flagging, reflectors, and strobe lights (e.g. Esmoil 1995). The effectiveness of netting pits to exclude birds and other wildlife depends on its installation. Effective installation requires a design allowing for snow-loading and one that also prevents ground entry by small mammals and birds. A maximum mesh size of 1.5 inches will allow for snow-loading and will exclude most birds. Nets or wire mesh over flare pits can be implemented if the flare tube is high enough to keep flame away from the net. Some examples of both effective and ineffective netting techniques can be found on the Service's website at http://www.fws.gov/mountain%2Dprairie/contaminants/contaminants1c.html.

Bald and/or golden eagles may use the project area where the proposed wells will be located. Golden eagles inhabit a wide variety of habitat types, including open grassland areas. They are known to nest on cliffs, in trees, manmade structures, and on the ground (Kochert et al. 2002). There are numerous records of golden eagle nests on the Fort Berthold reservation (Pers. Comm. Anne Marguerite Coyle, Dickinson State University). While the bald eagle tends to be more closely associated with forested areas near water (Buehler 2000), they have been found nesting in single trees several miles from the nearest water body. Therefore, there may also be potential habitat for the bald eagle at the proposed project sites. Especially early in the nesting season, eagles can be very sensitive to disturbance near the nest site and may abandon their nest as a result of low disturbance levels, even from foot traffic. A buffer of at least 1/2 mile should be maintained for golden and bald eagle nests. A permit is required for any take of bald or golden eagles or their nests. Permits to take golden eagles or their nests are available only for legitimate emergencies and as part of a program to protect golden eagles.

The Service recommends that aerial raptor surveys be conducted prior to any on-the-ground activities. The Service recommends that an aerial nest survey (preferably by

helicopter) be conducted within 1.0-mile of any proposed ground disturbances to identify active and inactive nest sites near the proposed well pad and associated facilities, including proposed new roads. Aerial surveys should be conducted between March 1 and May 15, before leaf-out so that nests are visible.

Aerial surveys should include the following:

1. Due to the ability to hover and facilitate observations of the ground, helicopters are preferred over fixed wing aircraft, although small aircraft may also be used for the raptor surveys. Whenever possible, two observers should be used to conduct the surveys. Even experienced observers only find approximately 50 percent of nests on a flight (Pers. Comm. Anne Marguerite Coyle, Dickinson State University), so we recommend that two flights be performed prior to any on-the-ground work, including other biological surveys or other work.

2. Observations of raptors and nest sites should be recorded using GPS. The date, location, nest condition, activity status, raptor species, and habitat should be recorded for each sighting.

3. We request that you share the qualifications of the biologist(s) conducting the survey, method of survey, and results of the survey with the Service.

High Value Habitat Avoidance

To minimize disturbance to fish and wildlife habitat in the project area, the Service provides the following recommendations:

- Make no stream channel alterations or changes in drainage patterns.

- Install and maintain appropriate erosion control measures to reduce sediment transport to adjacent wetlands and stream channels.

- Reseed disturbed areas with a mixture of native grass and forb species immediately after construction to reduce erosion.

Cumulative Effects Analysis

A large number of wells and appurtenant facilities are being constructed in the western portion of North Dakota. The Service is concerned that the wells, and especially the associated roads, are being put in piecemeal without an overarching plan to ensure that the facilities are being constructed to access all new pads most efficiently, while disturbing the least amount of habitat. While we understand that there is still some level of uncertainty regarding the extent of the oil formations, there has been enough drilling in this area that the Service believes that the uncertainty is relatively small and decreasing. It would be appropriate for the EA to include some cumulative effects analysis of the

existing and proposed pads, roads, electrical transmission lines, and preferably pipelines to transport the products.

Habitat Fragmentation

Prairie habitat is increasingly being lost or fragmented because of the large number of wells and associated roads that are being constructed in areas of the state that were formerly relatively undeveloped. Only about 30% of native prairie in North Dakota remains from pre-settlement times (Strong et al. 2005), with nearly all native tallgrass prairie converted nationwide (Ricketts et al. 1999). Oil pads, associated roadways and vehicle traffic can cause fragmentation of the landscape, disrupting wildlife patterns, and making it more likely that non-native plant species may invade an area. The Service recommends placing as few well pads as possible on the landscape and locating pads so as to avoid or minimize the construction of new roads. Many prairie species require large, contiguous blocks of grasslands for their biological needs and may either avoid patchy habitat or experience reduced reproductive success.

- The Service recommends that impacts to native prairie be avoided or minimized. If native prairie cannot be avoided, the Service recommends outlining stringent reclamation requirements, including a bond sufficient to cover the cost of reclamation, as described in the "Post-production Phase – Reclamation" section below.

- The Service recommends that oil wells use existing roads and trails to the greatest extent possible, minimizing all new road construction.

- If a new road is necessary, the Service recommends avoiding native prairie to the greatest extent possible.

- If new roads are constructed, the Service recommends that the disturbed areas along the road be reseeded immediately with a native prairie mix to reduce erosion and prevent invasion by non-native species. Disturbed areas should be monitored regularly throughout the life of the project, and treated with herbicide as necessary to ensure that exotic species are not infesting disturbed areas.

- If multiple companies are developing well pads in the same general area, roads should be shared to the greatest extent possible to minimize disturbance.

- Install and maintain appropriate erosion control measures to reduce sedimentation and water quality degradation of wetlands and streams near the project area.

The Service recommends that the BIA incorporate the relevant requirements described in the Dakota Prairie Grasslands Land and Resource Management Plan (USDA 2001). This document includes a number of requirements to avoid sensitive resources. In particular, the Service suggests that the BIA incorporate the relevant portions of Appendix D, Oil and Gas Stipulations.

Post-production Phase – Reclamation

Each project should include a plan to restore the landscape following project completion, including a bond sufficient to reclaim the area in full. Within one year of a well's closure, the well pads, roads, and associated facilities should be completely removed from the landscape, the land recontoured back to its original profile, and the area reseeded with a native prairie mix. Since native prairie species take some time to establish, and intensive management may be required for several years to ensure that weeds do not infest the area, the Service recommends that the BIA follow the timeline requirements set out in the 2003 *North Dakota Public Service Commission, Standards for evaluation of revegetation success and recommended procedures for pre-and postmining vegetation assessments* (available on-line at http://www.psc.state.nd.us/jurisdiction/reclamation/files/revegdocjuly2003final.pdf). This document requires that reclaimed areas be managed for a minimum of ten years, starting in the year when first seeded. Starting in the sixth year, for at least two consecutive years, or three out of the last five, including the last year, the reclaimed area must meet the approved standard as described in the document.

For prairie areas, the Service recommends planting a diverse mixture of native cool and warm season grasses and forbs. While the North Dakota Public Service Commission document requires only five native grass species, recent research has suggested that a more diverse mix, including numerous forb species, is not only ecologically beneficial, but is also more weed resistant, allowing for less intensive management and chemical use. In essence, the more species included in a mixture, the higher the probability of providing competition to resist invasion by non-native plants. The seed source should be as local as possible, preferably collected from the nearby native prairie.

Thank you for the opportunity to comment on this project. If you require further information or the project plans change, please contact me or Carol Aron of my staff at (701) 250-4481 or at the letterhead address.

Sincerely,

Jeffrey K. Towner

Jeffrey K. Towner
Field Supervisor
North Dakota Field Office

Enclosures

cc: Bureau of Indian Affairs, Aberdeen
(Attn: Marilyn Bercier)
Bureau of Land Management, Dickinson
ND Game & Fish Department, Bismarck

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USDA. 2001. Land and resource management plan for the Dakota Prairie Grasslands Northern Region. Accessed October 13, 2009. Available at http://www.fs.fed.us/ngp/plan/feis_plan_dakota_prairie.htm.

FEDERAL THREATENED, ENDANGERED, AND CANDIDATE SPECIES
AND DESIGNATED CRITICAL HABITAT FOUND IN
DUNN COUNTY, NORTH DAKOTA
December 2009

ENDANGERED SPECIES

Birds

Interior least tern (Sterna antillarum): Nests along midstream sandbars of the Missouri and Yellowstone Rivers.

Whooping crane (Grus Americana): Migrates through west and central counties during spring and fall. Prefers to roost on wetlands and stockdams with good visibility. Young adult summered in North Dakota in 1989, 1990, and 1993. Total population 140-150 birds.

Fish

Pallid sturgeon (Scaphirhynchus albus): Known only from the Missouri and Yellowstone Rivers. No reproduction has been documented in 15 years.

Mammals

Black-footed ferret (Mustela nigripes): Exclusively associated with prairie dog towns. No records of occurrence in recent years, although there is potential for reintroduction in the future.

Gray wolf (Canis lupus): Occasional visitor in North Dakota. Most frequently observed in the Turtle Mountains area.

THREATENED SPECIES

Birds

Piping plover (Charadrius melodus): Nests on midstream sandbars of the Missouri and Yellowstone Rivers and along shorelines of saline wetlands. More nest in North Dakota than any other state.

CANDIDATE SPECIES

Invertebrates

Dakota skipper (Hesperia dacotae): Found in native prairie containing a high diversity of wildflowers and grasses. Habitat includes two prairie types: 1) low (wet) prairie dominated by bluestem grasses, wood lily, harebell, and smooth camas; 2) upland (dry) prairie on ridges and hillsides dominated by bluestem grasses, needlegrass, pale purple and upright coneflowers and blanketflower.

DESIGNATED CRITICAL HABITAT

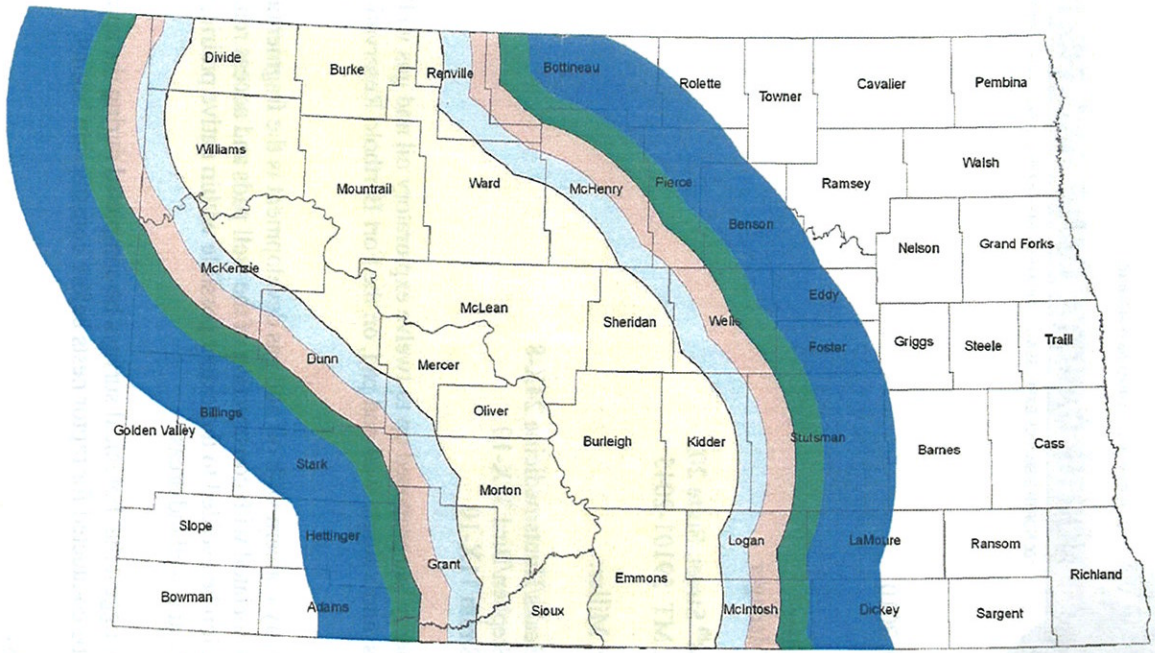
Birds

Piping Plover - Lake Sakakawea - Critical habitat includes sparsely vegetated shoreline beaches, peninsulas, islands composed of sand, gravel, or shale, and their interface with the water bodies.

U.S. Fish and Wildlife Service

North Dakota and Montana Whooping Crane Migration Corridor

Central Flyway of the United States



Legend
Percent of Central Flyway Confirmed Sightings

- 75%
- 80%
- 85%
- 90%
- 95%

Miles
0 10 20 40 60 80

N
W E
S

Produced for Ecological Services
Grand Island, NE
Current to: 2007

"VARIETY IN HUNTING AND FISHING"

NORTH DAKOTA GAME AND FISH DEPARTMENT

100 NORTH BISMARCK EXPRESSWAY BISMARCK, NORTH DAKOTA 58501-5095 PHONE 701-328-6300 FAX 701-328-6352

April 29, 2010

Chris Miller
Project Manager
PBS&J
115 N 28th Street, Suite 202
Billings, MT 59101-2045

Dear Mr. Miller:

RE: Beaks/Huntsmedicine 24X-8
Stephen/Bird 31X-10
Smith 11X-10

XTO Energy has proposed up to twelve exploratory oil and gas wells using one well pad at two locations, and a single well and pad, on the Fort Berthold Reservation in Dunn County, North Dakota.

Our primary concern with oil and gas development is the fragmentation and loss of wildlife habitat associated with construction of the well pads and access roads. We recommend that construction be avoided to the extent possible within native prairie, wooded draws, riparian corridors, and wetland areas.

We also suggest that botanical surveys be completed during the appropriate season and aerial surveys be conducted for raptor nests before construction begins.

Sincerely,

Steve Dyke

(for) Michael G. McKenna
Chief
Conservation & Communication Division

js

Class III Monitoring Form

On this date of SEPTEMBER 1ST, 20 09, representatives from the Fort Berthold THPO office and Kadrmas, Lee & Jackson performed a Class III Inventory and TCP Evaluation at the BEARS 29X-8 AND HUNTS MEDICINE 29X-8 site for the proposed WELL PAD AND ACCESS RD. It was concluded that there are 0 areas of significance or concern that need to be avoided by construction. Areas that need to be avoided were recorded by KL&J personnel.

Ft. Berthold THPO Representative — Date: 9/1/09

Kadrmas, Lee & Jackson Representative — Date: 9/1/09

United States Department of the Interior
BUREAU OF RECLAMATION
Dakotas Area Office
P.O. Box 1017
Bismarck, North Dakota 58502

TAKE PRIDE IN AMERICA

DK-5000
ENV-6.00

MAR 30 2010

Chris Miller
Project Manager
PBS&J
115 N 28th Street, Suite 202
Billings, MT 59101-2045

Subject: Solicitation for Environmental Assessment for Construction, Drilling, Completion, and Production of up to Twelve Exploratory Oil and Gas Wells on the Fort Berthold Reservation in Dunn County, North Dakota

Dear Mr. Miller:

This letter is written to inform you that your letter was received on March 29, 2010, and the information and map have been reviewed by Bureau of Reclamation staff.

The proposed oil well site located in Dunn County appears to be near Fort Berthold Rural Water System lines. Access roads are not depicted on your map therefore I have enclosed a copy of the rural water system pipeline key in the general proximity so your plans may account for potential affects to Reclamation facilities.

Dunn County

Beaks/Huntsmedicine 24X-8 Site: SE¼SW¼ Section 8 and NW¼ Section 17, T149N, R91W, Dunn County, North Dakota

Should you require more detailed maps for more specific locations, please do not hesitate to notify us. Since Reclamation is the lead Federal agency for the Fort Berthold Rural Water System, we request that any work planned on the reservation be coordinated with Mr. Marvin Danks, Fort Berthold Rural Water Director, Three Affiliated Tribes, 308 4 Bears Complex, New Town, North Dakota 58763.

Thank you for providing the information and the opportunity to comment. If you have any further questions, please contact me at 701-221-1287 or Ron Melhouse at 701-221-1288.

Sincerely,

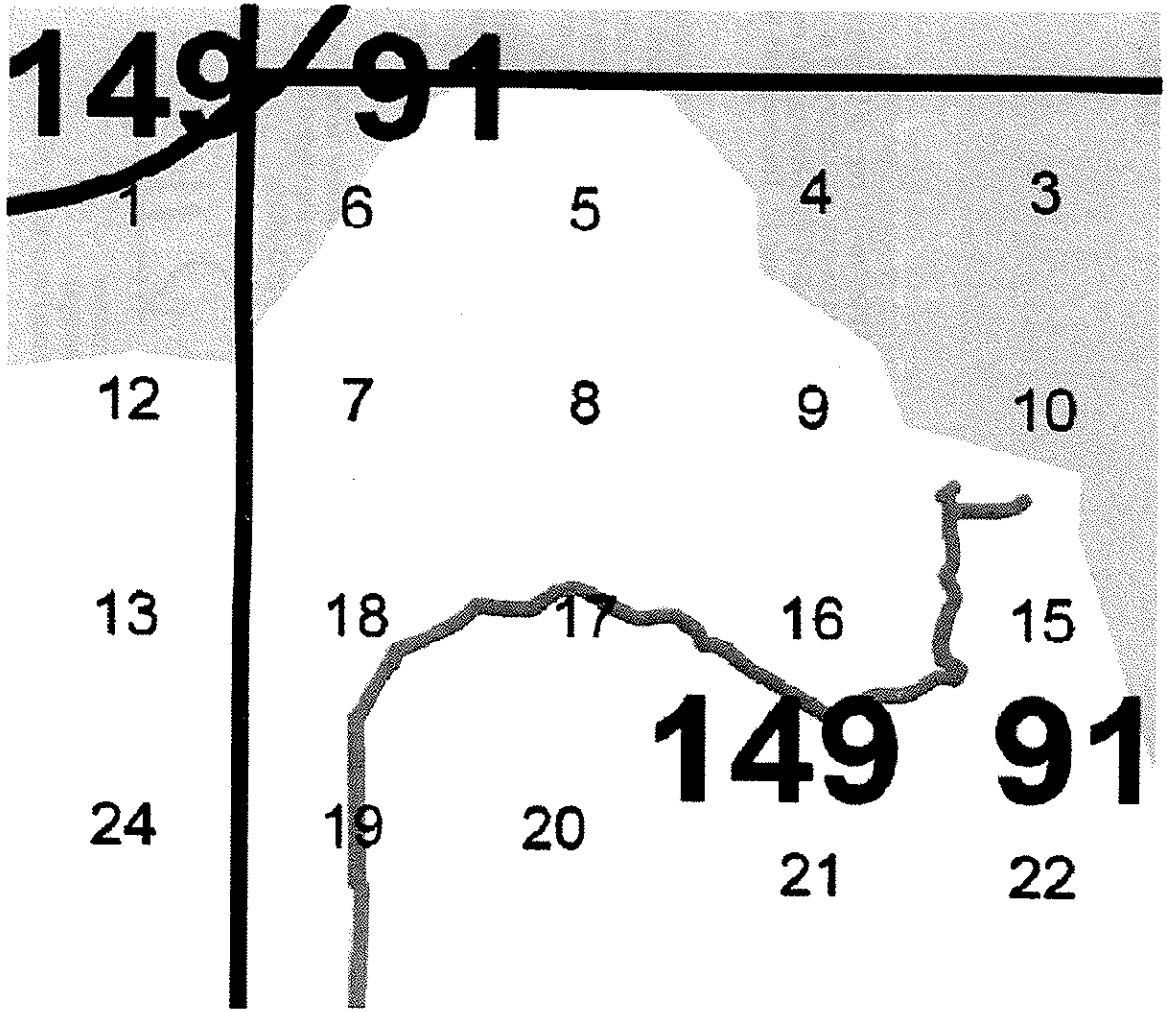
Kelly B. McPhillips
Environmental Specialist

Enclosure

cc: Bureau of Indian Affairs
Great Plains Regional Office
Attention: Ms. Marilyn Bercier
Regional Environmental Scientist
115 Fourth Avenue S.E.
Aberdeen, SD 57401
(w/encl)

Mr. Marvin Danks
Fort Berthold Rural Water Director
Three Affiliated Tribes
308 4 Bears Complex
New Town, ND 58763

Pipeline Overview Key – **Blue and Orange Lines** Represent Fort Berthold Rural Water System Waterlines. General Vicinity of Sections 8 and 17 Township 149N Range 91W, Fort Berthold Indian Reservation, ND



DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
NORTH DAKOTA REGULATORY OFFICE
1513 SOUTH 12TH STREET
BISMARCK ND 58504-6640
April 6, 2010

[NWO-2010-602-BIS]

PBS&J
Attn: Chris Miller
115 N. 28th Street, Suite 202
Billings, Montana 59101-2045

Dear Mr. Miller:

This is in response to your request for Department of the Army, Corps of Engineers comments on the proposed drilling and completion of up to twelve exploratory oil and gas wells, including access road(s). The project(s) would be completed by XTO Energy, Inc and would be located on the Ft. Berthold Indian Reservation in Sections 8 and 17, Township 149 North, Range 91 West, Dunn County, North Dakota.

The Corps of Engineers regulates work affecting navigable waterways, such as the Missouri River, including all of Lake Sakakawea, under Section 10 of the Rivers and Harbors Act (RHA). Through Section 404 of the Clean Water Act (CWA) the Corps of Engineers regulates the discharge of dredged or fill material into waters of the United States. Waters of the United States may include, but are not limited to, rivers, streams, ditches, coulees, lakes, and their adjacent wetlands. Fill material includes, but is not limited to earth, clay, rock, etc.... Should the proposed oil and gas wells or the associated access roads result in the discharge of dredged or fill material into waters of the United States or affect a navigable waterway, a Corps permit would be required. If however, the project(s) and associated work can be accomplished by avoiding a discharge of fill into waters of United States and not affect a navigable waterway, a Corps permit would not be required.

If you have RHA or CWA questions, permitting questions, are unsure as to what constitutes a discharge of fill, and/or are unsure of what constitutes waters of the United States, please do not hesitate to contact this office by letter or phone at (701)-255-0015.

Sincerely,

Jason Renschler
Project Manager
North Dakota Regulatory Office

Enclosure
- application

Printed on Recycled Paper

Instructions for Preparing a
Department of the Army Permit Application

Blocks 1 through 4. To be completed by Corps of Engineers.

Block 5. Applicant's Name. Enter the name and the E-mail address of the responsible party or parties. If the responsible party is an agency, company, corporation, or other organization, indicate the name of the organization and responsible officer and title. If more than one party is associated with the application, please attach a sheet with the necessary information marked Block 5.

Block 6. Address of Applicant. Please provide the full address of the party or parties responsible for the application. If more space is needed, attach an extra sheet of paper marked Block 6.

Block 7. Applicant Telephone Number(s). Please provide the number where you can usually be reached during normal business hours.

Blocks 8 through 11. To be completed, if you choose to have an agent.

Block 8. Authorized Agent's Name and Title. Indicate name of individual or agency, designated by you, to represent you in this process. An agent can be an attorney, builder, contractor, engineer, or any other person or organization. Note: An agent is not required.

Blocks 9 and 10. Agent's Address and Telephone Number. Please provide the complete mailing address of the agent, along with the telephone number where he / she can be reached during normal business hours.

Block 11. Statement of Authorization. To be completed by applicant, if an agent is to be employed.

Block 12. Proposed Project Name or Title. Please provide name identifying the proposed project, e.g., Landmark Plaza, Burned Hills Subdivision, or Edsal Commercial Center.

Block 13. Name of Waterbody. Please provide the name of any stream, lake, marsh, or other waterway to be directly impacted by the activity. If it is a minor (no name) stream, identify the waterbody the minor stream enters.

Block 14. Proposed Project Street Address. If the proposed project is located at a site having a street address (not a box number), please enter it here.

Block 15. Location of Proposed Project. Enter the latitude and longitude of where the proposed project is located. If more space is required, please attach a sheet with the necessary information marked Block 15.

Block 16. Other Location Descriptions. If available, provide the Tax Parcel Identification number of the site, Section, Township, and Range of the site (if known), and / or local Municipality that the site is located in.

Block 17. Directions to the Site. Provide directions to the site from a known location or landmark, include highway and street numbers as well as names. Also provide distances from known locations and any other information that would assist in locating the site. You may also provide description of the proposed project location, such as lot numbers, tract numbers, or you may choose to locate the proposed project site from a known point (such as the right descending bank of Smith Creek, one mile downstream from the Highway 14 bridge). If a large river or stream include the river mile of the proposed project site if known.

Block 18. Nature of Activity. Describe the overall activity or project. Give appropriate dimensions of structures such as wing walls, dikes (identify the materials to be used in construction, as well as the methods by which the work is to be done), or excavations (length, width, and height). Indicate whether discharge of dredged or fill material is involved. Also, identify any structure to be constructed on a fill, piles, or float-supported platforms.

The written descriptions and illustrations are an important part of the application. Please describe, in detail, what you wish to do. If more space is needed, attach an extra sheet of paper marked Block 18.

Block 19. Proposed Project Purpose. Describe the purpose and need for the proposed project. What will it be used for and why? Also include a brief description of any related activities to be developed as the result of the proposed project. Give the approximate dates you plan to both begin and complete all work.

Block 20. Reasons for Discharge. If the activity involves the discharge of dredged and/or fill material into a wetland or other waterbody, including the temporary placement of material, explain the specific purpose of the placement of the material (such as erosion control).

Block 21. Types of Material Being Discharged and the Amount of Each Type in Cubic Yards. Describe the material to be discharged and amount of each material to be discharged within Corps jurisdiction. Please be sure this description will agree with your illustrations. Discharge material includes: rock, sand, clay, concrete, etc.

Block 22. Surface Areas of Wetlands or Other Waters Filled. Describe the area to be filled at each location. Specifically identify the surface areas, or part thereof, to be filled. Also include the means by which the discharge is to be done (backhoe, dragline, etc.). If dredged material is to be discharged on an upland site, identify the site and the steps to be taken (if necessary) to prevent runoff from the dredged material back into a waterbody. If more space is needed, attach an extra sheet of paper marked Block 22.

Block 23. Description of Avoidance, Minimization, and Compensation. Provide a brief explanation describing how impacts to waters of the United States are being avoided and minimized on the project site. Also provide a brief description of how impacts to waters of the United States will be compensated for, or a brief statement explaining why compensatory mitigation should not be required for those impacts.

Block 24. Is Any Portion of the Work Already Complete? Provide any background on any part of the proposed project already completed. Describe the area already developed, structures completed, any dredged or fill material already discharged, the type of material, volume in cubic yards, acres filled, if a wetland or other waterbody (in acres or square feet). If the work was done under an existing Corps permit, identify the authorization, if possible.

Block 25. Names and Addresses of Adjoining Property Owners, Lessees, etc., Whose Property Adjoins the Project Site. List complete names and full mailing addresses of the adjacent property owners (public and private) lessees, etc., whose property adjoins the waterbody or aquatic site where the work is being proposed so that they may be notified of the proposed activity (usually by public notice). If more space is needed, attach an extra sheet of paper marked Block 24

Information regarding adjacent landowners is usually available through the office of the tax assessor in the county or counties where the project is to be developed.

Block 26. Information about Approvals or Denials by Other Agencies. You may need the approval of other federal, state, or local agencies for your project. Identify any applications you have submitted and the status, if any (approved or denied) of each application. You need not have obtained all other permits before applying for a Corps permit.

Block 27. Signature of Applicant or Agent. The application must be signed by the owner or other authorized party (agent). This signature shall be an affirmation that the party applying for the permit possesses the requisite property rights to undertake the activity applied for (including compliance with special conditions, mitigation, etc.).

DRAWINGS AND ILLUSTRATIONS

General Information.

Three types of illustrations are needed to properly depict the work to be undertaken. These illustrations or drawings are identified as a Vicinity Map, a Plan View or a Typical Cross Section Map. Identify each illustration with a figure or attachment number.

Please submit one original, or good quality copy, of all drawings on 8½ x11 inch plain white paper (electronic media may be substituted). Use the fewest number of sheets necessary for your drawings or illustrations.

Each illustration should identify the project, the applicant, and the type of illustration (vicinity map, plan view, or cross-section). **While illustrations need not be professional (many small, private project illustrations are prepared by hand), they should be clear, accurate, and contain all necessary information.**

APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT *(33 CFR 325)*	OMB APPROVAL NO. 0710-0003 EXPIRES: 31 August 2012

Public reporting burden for this collection of information is estimated to average 11 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters, Executive Services and Communications Directorate, Information Management Division and to the Office of Management and Budget, Paperwork Reduction Project (0710-0003). Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. Please DO NOT RETURN your form to either of those addresses. Completed applications must be submitted to the District Engineer having jurisdiction over the location of the proposed activity.

PRIVACY ACT STATEMENT

Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Programs of the Corps of Engineers; Final Rule 33 CFR 320-332. Principal Purpose: Information provided on this form will be used in evaluating the application for a permit. Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public and may be made available as part of a public notice as required by Federal law. Submission of requested information is voluntary, however, if information is not provided the permit application cannot be evaluated nor can a permit be issued. One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned.

(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETE

(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME: First - Middle - Last - Company - E-mail Address -	8. AUTHORIZED AGENT'S NAME AND TITLE (an agent is not required) First - Middle - Last - Company - E-mail Address -
6. APPLICANT'S ADDRESS. Address - City - State - Zip - Country -	9. AGENT'S ADDRESS Address - City - State - Zip - Country -
7. APPLICANT'S PHONE NOs. W/AREA CODE a. Residence b. Business c. Fax	10. AGENT'S PHONE NOs. W/AREA CODE a. Residence b. Business c. Fax

STATEMENT OF AUTHORIZATION

11. I hereby authorize, _____ to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

APPLICANT'S SIGNATURE DATE

NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE (see instructions)

13. NAME OF WATERBODY, IF KNOWN (if applicable)	14. PROJECT STREET ADDRESS (if applicable) Address City - State - Zip -
15. LOCATION OF PROJECT Latitude: °N Longitude: °W	

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions)
State Tax Parcel ID Municipality
Section - Township - Range -

17. DIRECTIONS TO THE SITE

ENG FORM 4345, SEPT 2009 EDITION OF OCT 2004 IS OBSOLETE Proponent: CECW-OR

NORTH DAKOTA
DEPARTMENT of HEALTH

ENVIRONMENTAL HEALTH SECTION
Gold Seal Center, 918 E. Divide Ave.
Bismarck, ND 58501-1947
701.328.5200 (fax)
www.ndhealth.gov

March 31, 2010

Chris Miller, Project Manager
PBS&J
115 N. 28th Street, Suite 202
Billings, MT 59101-2045

Re: Up to 12 Proposed Exploratory Oil and Gas Wells by XTO Energy, Inc.
At the Beaks/Huntsmedicine 24X-8 Site on the Fort Berthold Reservation
Dunn County, North Dakota

Dear Mr. Miller:

This department has reviewed the information concerning the above-referenced project submitted under date of March 26, 2010, with respect to possible environmental impacts.

This department believes that environmental impacts from the proposed construction will be minor and can be controlled by proper construction methods. With respect to construction, we have the following comments:

1. Development of the production facilities and any access roads or well pads should have a minimal effect on air quality provided measures are taken to minimize fugitive dust. However, operation of the wells has the potential to release air contaminants capable of causing or contributing to air pollution. We encourage the development and operation of the wells in a manner that is consistent with good air pollution control practices for minimizing emissions.

2. Care is to be taken during construction activity near any water of the state to minimize adverse effects on a water body. This includes minimal disturbance of stream beds and banks to prevent excess siltation, and the replacement and revegetation of any disturbed area as soon as possible after work has been completed. Caution must also be taken to prevent spills of oil and grease that may reach the receiving water from equipment maintenance, and/or the handling of fuels on the site. Guidelines for minimizing degradation to waterways during construction are attached.

3. Oil and gas related construction activities located within tribal boundaries within North Dakota may be required to obtain a permit to discharge storm water runoff from the U.S. Environmental Protection Agency. Further information may be obtained from the U.S. EPA's website or by calling the U.S. EPA – Region 8 at (303) 312-6312. Also, cities or counties may impose additional requirements and/or specific best management practices for

construction affecting their storm drainage system. Check with the local officials to be sure any local storm water management considerations are addressed.

The department owns no land in or adjacent to the proposed improvements, nor does it have any projects scheduled in the area. In addition, we believe the proposed activities are consistent with the State Implementation Plan for the Control of Air Pollution for the State of North Dakota.

These comments are based on the information provided about the project in the above-referenced submittal. The U.S. Army Corps of Engineers may require a water quality certification from this department for the project if the project is subject to their Section 404 permitting process. Any additional information which may be required by the U.S. Army Corps of Engineers under the process will be considered by this department in our determination regarding the issuance of such a certification.

If you have any questions regarding our comments, please feel free to contact this office.

Sincerely,

L. David Glatt, P.E., Chief
Environmental Health Section

LDG:cc
Attach.

NORTH DAKOTA
DEPARTMENT of HEALTH

ENVIRONMENTAL HEALTH SECTION
Gold Seal Center, 918 E. Divide Ave.
Bismarck, ND 58501-1947
701.328.5200 (fax)
www.ndhealth.gov

Construction and Environmental Disturbance Requirements

These represent the minimum requirements of the North Dakota Department of Health. They ensure that minimal environmental degradation occurs as a result of construction or related work which has the potential to affect the waters of the State of North Dakota. All projects will be designed and implemented to restrict the losses or disturbances of soil, vegetative cover, and pollutants (chemical or biological) from a site.

Soils

Prevent the erosion of exposed soil surfaces and trapping sediments being transported. Examples include, but are not restricted to, sediment dams or berms, diversion dikes, hay bales as erosion checks, riprap, mesh or burlap blankets to hold soil during construction, and immediately establishing vegetative cover on disturbed areas after construction is completed. Fragile and sensitive areas such as wetlands, riparian zones, delicate flora, or land resources will be protected against compaction, vegetation loss, and unnecessary damage.

Surface Waters

All construction which directly or indirectly impacts aquatic systems will be managed to minimize impacts. All attempts will be made to prevent the contamination of water at construction sites from fuel spillage, lubricants, and chemicals, by following safe storage and handling procedures. Stream bank and stream bed disturbances will be controlled to minimize and/or prevent silt movement, nutrient upsurges, plant dislocation, and any physical, chemical, or biological disruption. The use of pesticides or herbicides in or near these systems is forbidden without approval from this Department.

Fill Material

Any fill material placed below the high water mark must be free of top soils, decomposable materials, and persistent synthetic organic compounds (in toxic concentrations). This includes, but is not limited to, asphalt, tires, treated lumber, and construction debris. The Department may require testing of fill materials. All temporary fills must be removed. Debris and solid wastes will be removed from the site and the impacted areas restored as nearly as possible to the original condition.

North Dakota Department of Transportation

Francis G. Ziegler, P.E.
Director

John Hoeven
Governor

April 19, 2010

Chris Miller
Project Director
PBSJ
3810 Valley Commons Dr. – Suite 4
Bozeman, MT 59718

EA PROPOSED ACTION INCLUDES APPROVAL BY BIA AND BLM OF DRILLING AND COMPLETION OF UP TO TWELVE EXPLORATORY WELLS, BEAKS/HUNTSMEDICINE, FORT BERTHOLD RESERVATION, NORTH DAKOTA

We have reviewed your March 26, 2010, letter.

The project referenced above will have no adverse effect on the North Dakota Department of Transportation highways.

However, if any work needs to be done on highway right-of-way, appropriate permits and risk management documents will need to be obtained from the Department of Transportation District Engineer, Walter Peterson at 701-774-2700.

RONALD J. HENKE, P.E., DIRECTOR - OFFICE OF PROJECT DEVELOPMENT

57:rjh:js

c: Walter A. Peterson, Williston District

608 East Boulevard Avenue • Bismarck, North Dakota 58505-0700
Information: (701) 328-2500 • FAX: (701) 328-0310 • TTY: (701) 328-4156 • www.dot.nd.gov

United States Department of Agriculture

NRCS

Natural Resources Conservation Service
P.O. Box 1458
Bismarck, ND 58502-1458

April 8, 2010

Chris Miller
PBS&J
115 N. 28th Street, Suite 202
Billings, Montana 59101-2045

RE: Drilling and completion of up to twelve exploratory oil and gas wells using one well pad and one access road on the Fort Berthold Indian Reservation by XTO Energy, Inc.

- Beaks/Huntsmedicine 24X8 Sites:
  SE1/4, SW ¼, Section 8, Township 149N, Range 91W
  NW ¼, Section 17, Township 149N, Range 91W
  Dunn County, ND.

Dear Mr. Miller:

The Natural Resources Conservation Service (NRCS) has reviewed your letter dated March 26, 2010, concerning drilling and completion of up to twelve exploratory oil and gas wells by constructing one well pad and one access road on the Fort Berthold Indian Reservation by XTO Energy, Inc., located in Dunn County, North Dakota.

NRCS has a major responsibility with the Farmland Protection Policy Act (FPPA) in documenting conversion of farmland (i.e., prime, statewide, and local importance) to non-agricultural use. It appears your proposed project is not supported by federal funding or actions; therefore, FPPA does not apply and no further action is needed.

If you have additional questions pertaining to FPPA, please contact Steve Sieler, State Soil Liaison, at (701) 530-2019.

Sincerely,

PAUL J. SWEENEY
State Conservationist

cc:
Susan Tuhy, DC, NRCS, Killdeer, ND
Terrance Gisvold, ASTC (FO), NRCS, Dickinson, ND

Helping People Help the Land

An Equal Opportunity Provider and Employer

PBS&J

An employee-owned company

March 26, 2010

Dear Interested Party:

The Bureau of Indian Affairs (BIA) is preparing an Environmental Assessment (EA) under the National Environmental Policy Act (NEPA), in cooperation with the Bureau of Land Management (BLM). The proposed action includes approval by the BIA and BLM of the drilling and completion of up to twelve exploratory oil and gas wells using one well pad and one access road on the Fort Berthold Indian Reservation by XTO Energy, Inc. The well pad and access road are proposed in the following locations and shown on the enclosed project location map:

- **Beaks/Huntsmedicine** 24X-8 Site: SE ¼, SW ¼, Section 8, Township 149N, Range 91W
  NW ¼, Section 17, Township 149N, Range 91W

Development of the project would consist of the mechanical excavation and preparation of one well pad and construction of one access road. The proposed well pad is roughly 5.05 acres in size. The proposed access road is roughly 5,388 feet long; of which 2,727 feet is proposed as new road and 2,662 feet would involve improvements to an existing two-track road. The twelve wells would be located within a 1,280-acre spacing unit and positioned to use the same access road. The drilling of these well sites is proposed to begin as early as spring/summer 2010.

To ensure that social, economic, and environmental effects are analyzed accurately, we solicit your views and comments on the Proposed Action, pursuant to Section 102(2) (D) (IV) of NEPA, as amended. We are interested in developments proposed or underway that should be considered in connection with the proposed project. We also ask your assistance in identifying any property or resources that you own, manage, oversee or otherwise value that might be adversely impacted. Please send your replies and requests for additional project information to:

Chris Miller, Project Manager
PBS&J
115 N. 28th Street, Suite 202
Billings, Montana 59101-2045
406-259-7979
lcmiller@pbsj.com

If we do not hear from you by **April 29, 2010** we will assume that you have no comment on this project. Questions can be directed to Chris Miller using the information provided, or Rich McEldowney at (406) 587-7275 (ext. 223).

Sincerely,

Chris Miller
Project Director

U.S. Department of Transportation
Federal Aviation Administration
Date 4/13/10

No objection provided the Federal Aviation Administration is notified of construction or alterations as required by Federal Aviation Regulations, Part 77, Objects Affecting Navigable Airspace, Paragraph 77.13. Notice may be filed on-line at https://oeaaa.faa.gov.

Pamela L. Dressler, Environmental Protection Specialist
Federal Aviation Administration, Bismarck Airports District Office
2301 University Drive, Building 23B, Bismarck, ND 58504

3810 Valley Commons Drive • Suite 4 • Bozeman, Montana 59718 • Telephone: 406.587.7275 • Fax: 406.587.7278 • www.pbsj.com

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It is the determination of the Turtle Mountain Tribal Historic Preservation Office that this project will have no effect on historic properties of importance to the Turtle Mountain Band of Chippewa Indians. A determination of No Historic Properties Affected is granted for the project to proceed.

4-7-10

March 26, 2010

Dear Interested Party:

The Bureau of Indian Affairs (BIA) is preparing an Environmental Assessment (EA) under the National Environmental Policy Act (NEPA), in cooperation with the Bureau of Land Management (BLM). The proposed action includes approval by the BIA and BLM of the drilling and completion of up to twelve exploratory oil and gas wells using one well pad and one access road on the Fort Berthold Indian Reservation by XTO Energy, Inc. The well pad and access road are proposed in the following locations and shown on the enclosed project location map:

- **Beaks/Huntsmedicine** 24X-8 Site: SE ¼, SW ¼, Section 8, Township 149N, Range 91W
  NW ¼, Section 17, Township 149N, Range 91W

Development of the project would consist of the mechanical excavation and preparation of one well pad and construction of one access road. The proposed well pad is roughly 5.05 acres in size. The proposed access road is roughly 5,388 feet long; of which 2,727 feet is proposed as new road and 2,662 feet would involve improvements to an existing two-track road. The twelve wells would be located within a 1,280-acre spacing unit and positioned to use the same access road. The drilling of these well sites is proposed to begin as early as spring/summer 2010.

To ensure that social, economic, and environmental effects are analyzed accurately, we solicit your views and comments on the Proposed Action, pursuant to Section 102(2) (D) (IV) of NEPA, as amended. We are interested in developments proposed or underway that should be considered in connection with the proposed project. We also ask your assistance in identifying any property or resources that you own, manage, oversee or otherwise value that might be adversely impacted. Please send your replies and requests for additional project information to:

Chris Miller, Project Manager
PBS&J
115 N. 28th Street, Suite 202
Billings, Montana 59101-2045
496-259-7979
lcmiller@pbsj.com

If we do not hear from you by **April 29, 2010** we will assume that you have no comment on this project. Questions can be directed to Chris Miller using the information provided, or Rich McEldowney at (406) 587-7275 (ext. 223).

Sincerely,

Chris Miller
Project Director

U.S. Department of Homeland Security
Region VIII
Denver Federal Center, Building 710
P.O. Box 25267
Denver, CO 80225-0267

FEMA

R8-Mitigation

April 12, 2010

PBS&J
Attn: Chris Miller, Project Director
115 N. 28th St., Suite 202
Billings, MT 59101-2045

Dear Mr. Miller:

Thank you for your inquiry regarding the proposed project, Beaks/Huntsmedicine 24X-8 Site. FEMA's major concern is if the property is located within a mapped Special Flood Hazard Area, as development in these areas requires further consideration.

We recommend that you contact Cliff Whitman at (701) 627-4805 to receive further guidelines regarding the impact that this project might have relative to the regulations and policies of the National Flood Insurance Program. Considering that floods are the most devastating of all natural disasters in this country, any efforts to reduce the impacts of that hazard is worthwhile.

Let me know if I can be of assistance and please feel free to contact me at 303-235-4721. Thank you for giving us the opportunity to assist you in the impending pipelines on the Fort Berthold Reservation.

Sincerely,

Dave Kyner
Program Specialist
Mitigation Division, FM & I Branch

www.fema.gov

North Dakota State Water Commission

900 EAST BOULEVARD AVENUE, DEPT 770 • BISMARCK, NORTH DAKOTA 58505-0850
701-328-2750 • TDD 701-328-2750 • FAX 701-328-3696 • INTERNET: http://swc.nd.gov

May 12, 2010

Chris Miller
PBS&J
115 N 28th Street STE 202
Billings, MT 59101-2045

Dear Mr. Miller:

This is in response to your request for review of environmental impacts associated with the drilling and completion of up to twelve exploratory oil and gas wells using one well pad and one access road on the Fort Berthold Indian Reservation by XTO Energy, Inc – Beaks/Huntsmedicine.

The proposed project has been reviewed by State Water Commission staff and the following comments are provided:

- The property is not located in an identified floodplain and it is believed the project will not affect an identified floodplain.

- All waste material associated with the project must be disposed of properly and not placed in identified floodway areas.

- No sole-source aquifers have been designated in ND.

There are no other concerns associated with this project that affect State Water Commission or State Engineer regulatory responsibilities.

Thank you for the opportunity to provide review comments. If you have any questions, please call me at 328-4969.

Sincerely,

Larry Knudtson
Research Analyst

LJK:dp/1570

JOHN HOEVEN, GOVERNOR
CHAIRMAN

DALE L. FRINK
SECRETARY AND STATE ENGINEER

Notice of Availability and Appeal Rights

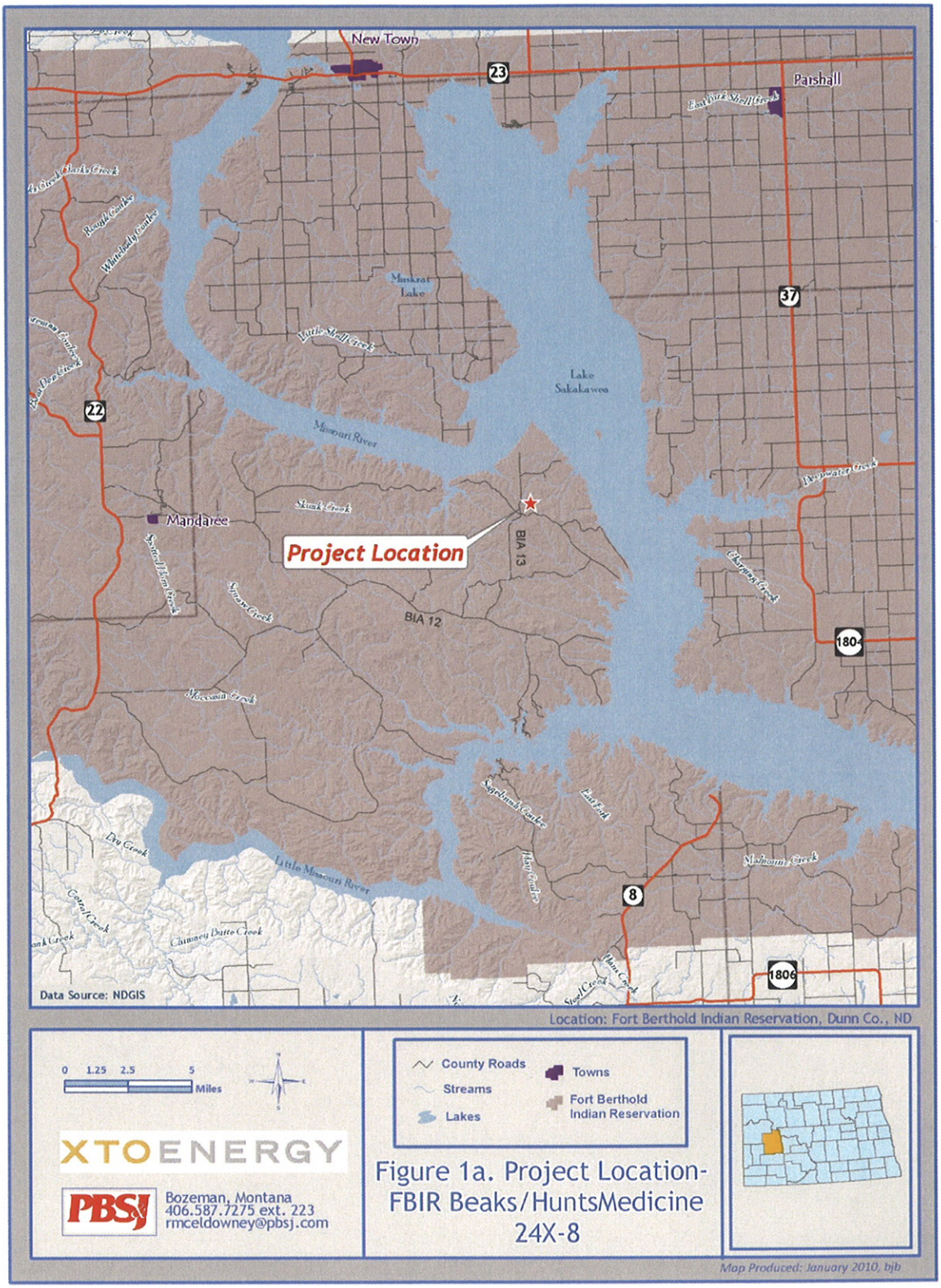
XTO Energy: Beaks/HuntsMedicine 24X-8

The Bureau of Indian Affairs (BIA) is planning to issue administrative approvals related to installation of one oil/gas well pad, Beaks/HuntsMedicine 24X-8 and related infrastructure as shown on the attached map. Construction by XTO Energy is expected to begin in the Summer of 2010.

An environmental assessment (EA) determined that proposed activities will not cause significant impacts to the human environment. An environmental impact statement is not required. Contact Howard Bemer, Superintendent at 701-627-4707 for more information and/or copies of the EA and the Finding of No Significant Impact (FONSI).

The FONSI is only a finding on environmental impacts – it is not a decision to proceed with an action and *cannot* be appealed. BIA's decision to proceed with administrative actions *can* be appealed until August 28, 2010 by contacting:

United States Department of the Interior
Office of Hearings and Appeals
Interior Board of Indian Appeals
801 N. Quincy Street, Suite 300, Arlington, Va 22203.

Procedural details are available from the BIA Fort Berthold Agency at 701-627-4707.

Project location.