



United States Department of the Interior

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




IN REPLY REFER TO:

DESCRM
MC-208

AUG 30 2010

MEMORANDUM

TO: Superintendent, Fort Berthold Agency

FROM: 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 two proposed exploratory drilling wells by Zenergy on Dakota-3 John Elk #28-27H and Dakota-3 Helena Ruth Grant #33-34H 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 requires 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, THPO (with attachment)
Roy Swalling, BLM, Dickenson, ND (with attachment)
John Shelman, US Army Corps of Engineers
Dawn Charging, Virtual One Stop Shop
Jeffrey Towner, Field Supervisor, U.S. Fish and Wildlife Service

Finding of No Significant Impact

Zenergy Operating Company, LLC

Environmental Assessment for Drilling of Dakota-3 John Elk #28-27H and Dakota-3 Helena Ruth Grant #33-34H Exploratory Oil and Gas Wells

Fort Berthold Indian Reservation Dunn County, North Dakota

The U.S. Bureau of Indian Affairs (BIA) has received a proposal to drill two exploratory oil and gas wells located atop two well pads as follows:

- **Dakota-3 John Elk #28-27H:** NW¼ SW¼, Section 28, Township (T) 150 North (N), Range (R) 93 West (W), Dunn County, North Dakota
- **Dakota-3 Helena Ruth Grant #33-34H:** NW¼ NW¼, Section 33, T150N, R93W, Dunn County, North Dakota

Associated federal actions by BIA include determinations of effect regarding environmental resources and positive recommendations to the Bureau of Land Management regarding the Applications for Permit to Drill.

The potential of the proposed actions to impact the human environment is analyzed in the following Environmental Assessment (EA), as required by the National Environmental Policy Act. Based on the EA, I have determined that the proposed project will not significantly affect the quality of the human or natural 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 solicited for the preceding NEPA document was sufficient to ascertain potential environmental concerns associated with the currently proposed project.
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 actions and the No Action alternative.
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. This guidance includes 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", and the Endangered Species Act (16 U.S.C. 1531 et seq.) (ESA).
4. The proposed actions are designed to avoid adverse effects to historic, archaeological, cultural and traditional properties, sites and practices. Compliance with the procedures of the National Historic Preservation Act is complete.
5. Environmental justice was fully considered.
6. Cumulative effects to the environment are either mitigated or minimal.
7. No regulatory requirements have been waived or require compensatory mitigation measures.
8. The proposed projects will improve the socio-economic condition of the affected Indian community.


Regional Director

8-30-10
Date

ENVIRONMENTAL ASSESSMENT

**United States Department of the Interior
Bureau of Indian Affairs**

**Great Plains Regional Office
Aberdeen, South Dakota**

Cooperating Agency:

Bureau of Land Management

**North Dakota State Office
Dickinson, North Dakota**



Zenergy Operating Company, LLC

Two Bakken Exploratory Oil Well:

**Dakota-3 John Elk #28-27H
Dakota-3 Helena Ruth Grant #33-34H**

Fort Berthold Indian Reservation

August 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

TABLE OF CONTENTS

	<u>Page</u>
1.0 Purpose and Need for the Proposed Action	1
1.1 Introduction	1
1.2 Federal and Other Relevant Regulations and Authorities	4
2.0 Proposed Action and the no action Alternative.....	5
2.1 The No Action Alternative	5
2.2 The Proposed Action	5
2.2.1 Field Camp	6
2.2.2 Access Roads	6
2.2.3 Well Pads	6
2.2.4 Drilling	7
2.2.5 Casing and Cementing	8
2.2.6 Completion Activities	9
2.2.7 Commercial Production	9
2.2.8 Construction Details at the Well Sites	10
2.2.9 Reclamation.....	16
2.3 BIA-preferred Alternative	17
3.0 The Affected Environment and Potential Impacts	18
3.1 Air Quality.....	19
3.1.1 Introduction.....	19
3.1.2 Greenhouse Gas Emissions and Climate Change	19
3.1.3 Criteria Pollutants	19
3.1.4 Hazardous Air Pollutants	21
3.1.5 Air Monitoring	21
3.1.6 Response to the Threat of Climate Change.....	22
3.1.7 Typical Project Emissions.....	22
3.1.8 Air Quality Best Management Practices	23
3.2 Water Resources.....	24
3.2.1 Surface Water.....	24
3.2.2 Groundwater.....	24
3.3 Wetlands, Habitat, and Wildlife	32
3.3.1 Wetlands.....	32
3.3.2 Wildlife	32
3.4 Soils.....	34
3.4.1 Natural Resources Conservation Service Soil Data.....	35
3.4.2 Field-derived Soil Data	38
3.4.3 Conclusions Regarding Soil Erosion Potential	39
3.5 Vegetation and Invasive Species	40
3.5.1 Dakota-3 John Elk #28-27H.....	40
3.5.2 Dakota-3 Helena Ruth Grant #33-34H	41
3.6 Cultural Resources	42
3.7 Public Health and Safety	43
3.8 Socioeconomics.....	44
3.8.1 Employment.....	44
3.8.2 Income.....	45

3.8.3	Population	47
3.8.4	Housing	48
3.9	Environmental Justice	50
3.10	Mitigation and Monitoring	52
3.10.1	General BMPs	53
3.10.2	Mitigation and Safety Measures Committed to by Zenergy	54
3.11	Irreversible and Irrecoverable Commitment of Resources	55
3.12	Short-term Use versus Long-term Productivity	55
3.13	Cumulative Impacts.....	56
4.0	Consultation and Coordination	61
5.0	References	72
6.0	Acronyms	76

LIST OF TABLES

<u>Table</u>	<u>Page</u>
3-1. Air Quality Standards and Monitored Data.	20
3-2. Common Aquifers in the Proposed Project Area and Surrounding Region.....	28
3-3. Existing Water Wells Near the Project Area.....	29
3-4. Percentage of the Well Pad and Access Road Composed of Specific Soil Types.....	35
3-5. Soil Data Obtained through the Excavation of Soil Pits in the Proposed Project Area.	39
3-6. Occupied Area for Recognized Noxious Weeds in Dunn County, North Dakota.	41
3-7. Total Employment for the Analysis Area and State of North Dakota, 2001 and 2007.	44
3-8. Income and Unemployment, 2007.....	46
3-9. Population and Demographics.	47
3-10. Housing Development Data for the Reservation and Encompassing Counties.	48
3-11. Housing Development Data for the Encompassing Counties 2000–2008.....	48
3-12. Duration of Employment during Proposed Project Implementation.....	49
3-13. Population Breakdown by Region and Race, 2002–2008.....	50
3-14. Poverty Rates for the Analysis Area.	51
3-15. Confidential, Active, and Permitted Wells within a 1-mile Radius of the Project Area.....	56
3-16. Confidential, Active, and Permitted Wells within a 5-mile Radius of the Project Area.....	56
3-17. Confidential, Active, and Permitted Wells within a 10-mile Radius of the Project Area.....	57
3-18. Confidential, Active, and Permitted Wells within a 20-mile Radius of the Project Area.....	57
4-1. Scoping Comments.	62

LIST OF FIGURES

<u>Figure</u>	<u>Page</u>
1-1. Project location.....	2
1-2. Dakota-3 John Elk #28-27H and Dakota-3 Helena Ruth Grant #33-34H proposed locations.	3
2-1. Typical road cross sections.	7
2-2. Typical drilling rig.	8
2-3. Typical producing oil well pad.	10
2-4. Dakota-3 John Elk #28-27H well pad area, looking west.....	12
2-5. Dakota-3 John Elk #28-27H access road, looking northeast.	12
2-6. Dakota-3 John Elk #28-27H proposed location showing spacing unit and drilling target.	13
2-7. Dakota-3 Helena Ruth Grant #33-34H well pad area, looking south.	14
2-8. Dakota-3 Helena Ruth Grant #33-34H access road, looking north.	14
2-9. Dakota-3 Helena Ruth Grant #33-34H proposed location showing spacing unit and drilling target.	15
2-10. Example of reclamation from the BLM Gold Book.	17
3-1. Flow lines from the well pad location.....	26
3-2. Watersheds and aquifers.	27
3-3. Approximate spatial extent of soil types in and around Dakota-3 John Elk #28-27H.	36
3-4. Approximate spatial extent of soil types in and around Dakota-3 Helena Ruth Grant #33-34H.	37
3-5. Active, confidential, and permitted wells within a 1-, 5-, 10-, and 20-mile radius of the proposed project location.....	58

1.0 PURPOSE AND NEED FOR THE PROPOSED ACTION

1.1 INTRODUCTION

Zenergy Operating Company, LLC (Zenergy) has acquired the leases and is proposing to drill two horizontal oil and gas wells on the Fort Berthold Indian Reservation (Reservation) to evaluate and possibly develop the commercial potential of natural resources. Developments have been proposed on lands held in trust by the United States in Dunn County, North Dakota. The Bureau of Indian Affairs (BIA) is the surface management agency for potentially affected tribal lands and individual allotments. The BIA manages lands held in title by the tribe and tribal members to subsurface mineral rights. Developments have been proposed in locations that target specific areas in the Middle Bakken Dolomite member of the Bakken Formation, a known oil reserve. The following proposed well sites, shown in Figure 1-1 and Figure 1-2, will be located within the Reservation where the majority of the external boundaries are located above the Bakken Formation.

- **Dakota-3 John Elk #28-27H:** NW¼ SW¼, Section 28, Township (T) 150 North (N), Range (R) 93 West (W), Dunn County, North Dakota
- **Dakota-3 Helena Ruth Grant #33-34H:** NW¼ NW¼, Section 33, T150N, R93W, Dunn County, North Dakota

Existing access roads will be upgraded and new access roads will be constructed to facilitate the construction and operation of each proposed well. Well pads will be constructed to accommodate drilling activities and well operations. A closed loop system will be used for both well locations. Should any of the proposed well sites result in long-term commercial production, supporting facilities may be constructed on site. All components (e.g., roads, well pads, supporting facilities) will be reclaimed upon final abandonment unless formally transferred with federal approval to either the BIA or the landowner. The proposed wells are exploratory; should they prove productive, further exploration of surrounding areas is possible. This environmental assessment (EA) addresses the potential impacts associated with the construction and possible long-term operation of the above-listed wells and directly related infrastructure and facilities. Further oil and gas exploration and development will require additional National Environmental Policy Act (NEPA) analysis and federal actions.

Environmental Assessment: Zenergy Operating Company, LLC,
 Dakota-3 Wells John Elk #28-27H and Helena Ruth Grant #33-34H

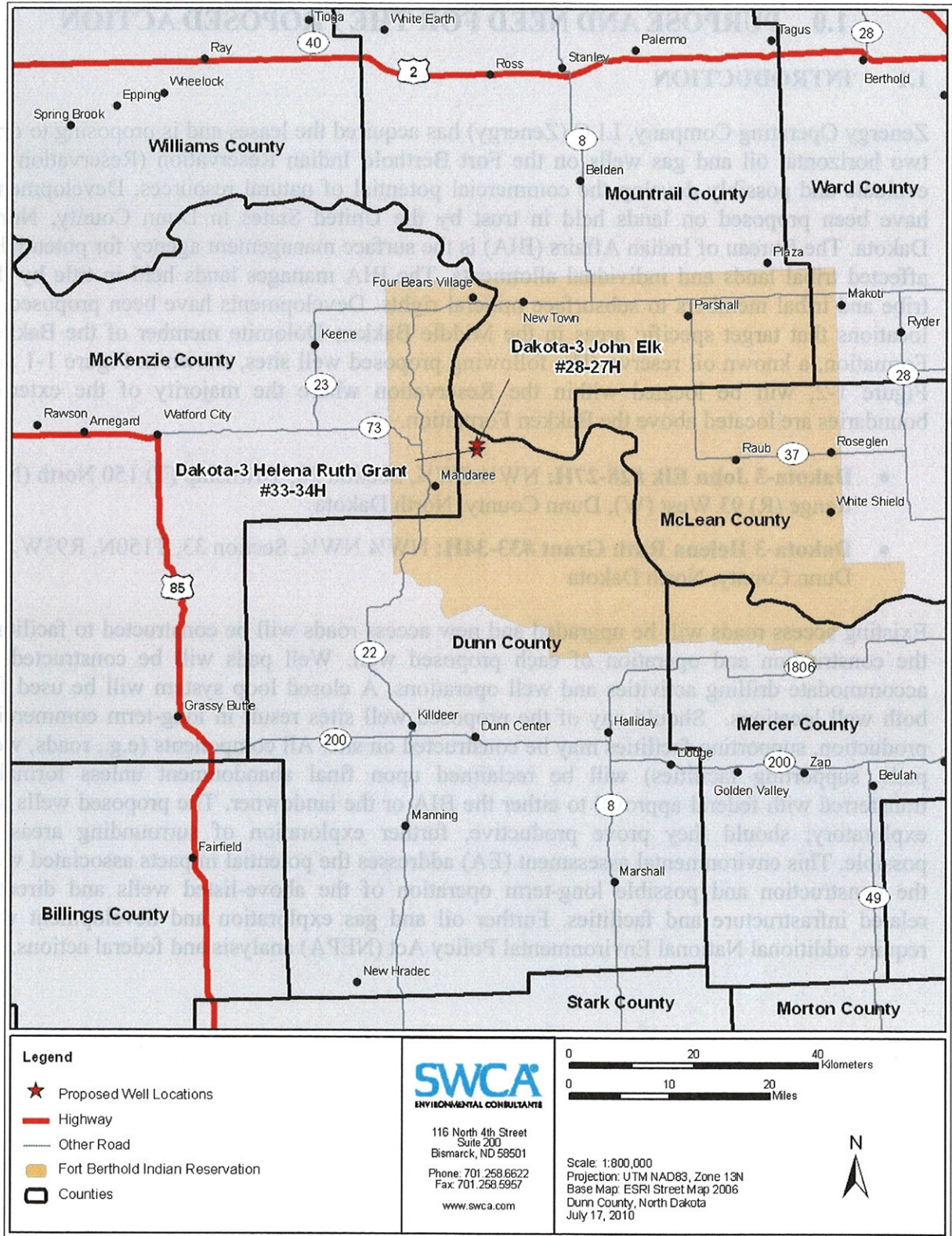


Figure 1-1. Project location.

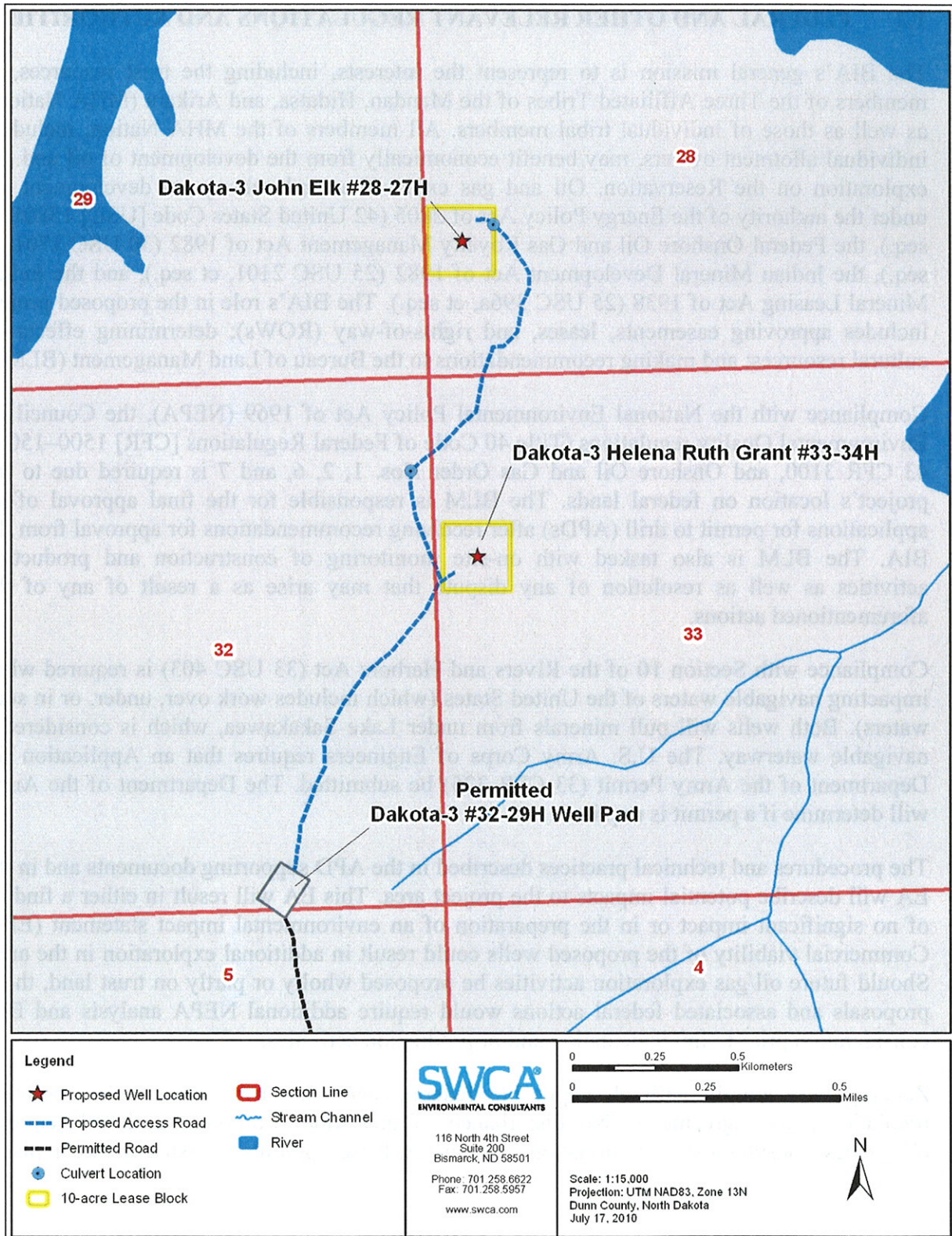


Figure 1-2. Dakota-3 John Elk #28-27H and Dakota-3 Helena Ruth Grant #33-34H proposed locations.

1.2 FEDERAL AND OTHER RELEVANT REGULATIONS AND AUTHORITIES

The BIA's general mission is to represent the interests, including the trust resources, of members of the Three Affiliated Tribes of the Mandan, Hidatsa, and Arikara (MHA Nation), as well as those of individual tribal members. All members of the MHA Nation, including individual allotment owners, may benefit economically from the development of oil and gas exploration on the Reservation. Oil and gas exploration and subsequent development are under the authority of the Energy Policy Act of 2005 (42 United States Code [USC] 15801, et seq.), the Federal Onshore Oil and Gas Royalty Management Act of 1982 (30 USC 1701, et seq.), the Indian Mineral Development Act of 1982 (25 USC 2101, et seq.), and the Indian Mineral Leasing Act of 1938 (25 USC 396a, et seq.). The BIA's role in the proposed project includes approving easements, leases, and rights-of-way (ROWs); determining effects on cultural resources; and making recommendations to the Bureau of Land Management (BLM).

Compliance with the National Environmental Policy Act of 1969 (NEPA), the Council on Environmental Quality regulations (Title 40 Code of Federal Regulations [CFR] 1500–1508), 43 CFR 3100, and Onshore Oil and Gas Order Nos. 1, 2, 6, and 7 is required due to the project's location on federal lands. The BLM is responsible for the final approval of all applications for permit to drill (APDs) after receiving recommendations for approval from the BIA. The BLM is also tasked with on-site monitoring of construction and production activities as well as resolution of any dispute that may arise as a result of any of the aforementioned actions.

Compliance with Section 10 of the Rivers and Harbors Act (33 USC 403) is required when impacting navigable waters of the United States (which includes work over, under, or in such waters). Both wells will pull minerals from under Lake Sakakawea, which is considered a navigable waterway. The U.S. Army Corps of Engineers requires that an Application for Department of the Army Permit (33 CFR 325) be submitted. The Department of the Army will determine if a permit is required.

The procedures and technical practices described in the APD supporting documents and in the EA will describe potential impacts to the project area. This EA will result in either a finding of no significant impact or in the preparation of an environmental impact statement (EIS). Commercial viability of the proposed wells could result in additional exploration in the area. Should future oil/gas exploration activities be proposed wholly or partly on trust land, those proposals and associated federal actions would require additional NEPA analysis and BIA consideration prior to implementation and/or production activities.

Zenergy will comply with all applicable federal, state, and tribal laws, rules, policies, regulations, and agreements. No disturbance of any kind can begin until all required clearances, consultations, determinations, easements, leases, permits, and surveys are in place.

2.0 PROPOSED ACTION AND THE NO ACTION ALTERNATIVE

The BIA, as directed by NEPA, must “study, develop, and describe appropriate alternatives to the recommended course of action in any proposal that involves unresolved conflicts concerning alternative uses of available resources...” (NEPA Sec 102[2][e]). Developing a range of alternatives allows for exploration of options designed to meet the purpose and need for the action. Along with the No Action Alternative, the BIA is considering the Proposed Action.

2.1 THE NO ACTION ALTERNATIVE

Under the No Action Alternative, the proposed project (including the well pads, wells, and access roads) would not be constructed, drilled, installed, or operated. The BIA would not approve easements, leases, or ROWs for the proposed locations and the BLM would not approve the APDs. No impacts would occur as a result of this project to the following critical elements: air quality, public health and safety, water resources, wetland/riparian habitat, threatened and endangered species, soils, vegetation and invasive species, cultural resources, socioeconomic conditions, and environmental justice. 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, and traffic levels would not change from present levels. Under the No Action Alternative, the MHA Nation, tribal members, and allottees would not have the opportunity to realize potential financial gains from the discovery and resulting development of resources at these well locations.

2.2 THE PROPOSED ACTION

This document analyzes the potential impacts of two exploratory oil and gas wells with varied surface and mineral estates located in the west-central portion of the Reservation in Dunn County. The proposed wells would test the commercial potential of the Middle Bakken Dolomite member of the Bakken Formation. These sites were chosen by Zenergy in consultation with tribal and BIA resource managers to provide information for future development. The EA on-site meeting for the Dakota-3 John Elk #28-27H well site location and proposed access road was conducted June 4, 2010, and for the Dakota-3 Helena Ruth Grant #33-34H on April 6, 2010. The on-site meetings were attended by the surveyor, natural and cultural resource specialists, the BIA representative, and the Tribal Historic Preservation Officer (THPO) monitor. Surveys were conducted to determine potential impacts to resources; topography, potential drainage issues, erosion control measures, pad and related facility locations (topsoil/subsoil stockpiles, reserve pits, tanks, etc.) were also discussed at the on-site where these locations were finalized. The Dakota-3 John Elk #28-27H well pad was shifted approximately 300 feet to the south to avoid drainages that flow into Lake Sakakawea. The revised location was approved at that time by the BIA. The northeast corner of the Dakota-3 Helena Ruth Grant #33-34H well pad was rounded to avoid drainage into Lake Sakakawea. The revised location was approved at that time by the BIA.

2.2.1 Field Camp

A few personnel would be housed in self-contained trailers for a very short period of time; long-term housing is not proposed. Most personnel, both construction and drilling, would commute to the site. Human waste would be collected on site in portable toilets and trailers and it would be transported off site to a state-approved wastewater treatment facility. All other solid waste would be contained in enclosed containers and transported to, and disposed of at state-approved facilities.

2.2.2 Access Roads

2.2.2.1 Access Roads

Approximately 8,647 feet (i.e., 1.5 miles) of new access roads would be constructed. A maximum disturbed ROW width of 66 feet for the access roads would result in up to 11.9 acres of new surface disturbance. Signed agreements would be in place allowing road construction across affected private and allotted land surfaces, and any applicable approach permits and/or easements would be obtained prior to any construction activity.

Construction would follow road design standards outlined in the BLM Gold Book (BLM and U.S. Forest Service [USFS] 2007). At a minimum, 6 inches of topsoil would be removed from the access road corridors. This stockpiled topsoil would then be placed on the outside slopes of the ditches following road construction. The ditches would be reseeded as quickly as possible using a seed mixture determined by the BIA. Care would be taken during road construction to avoid disturbing or disrupting any buried utilities that may exist along BIA 10. The access roads would be surfaced with a minimum of 4 inches of aggregate if the site were to be established as a commercial production site. Also, the roadway would remain in use for the life of the well. Details of road construction are addressed in the APD. A diagram of typical road cross sections is provided in Figure 2-1.

2.2.3 Well Pads

The proposed well pads would include a leveled area (pad) that would be used for the drilling rig and equipment. Both well locations would use a closed loop system. The pads would be stripped of topsoil and vegetation and then graded. The topsoil would be stockpiled and stabilized with a cover crop until it could be used to reclaim and revegetate the disturbed area. The subsoils would be used in the construction of the pads and the finished pads would be graded to ensure that water drains away from the pad. Erosion control best management practices (BMPs) would be implemented and could include surface drainage controls, soil surface protection methodologies, and sediment capture features.

The well pads average approximately 430 by 330 feet (3.3 acres per well pad). Cut-and-fill slopes and stockpiled topsoil placed on the edge of the pads would result in approximately 0.6 acre of additional surface disturbance per pad. Total surface disturbance would average approximately 3.9 acres per well pad and would total 7.8 acres. Details of pad construction and reclamation can be found in the APD.

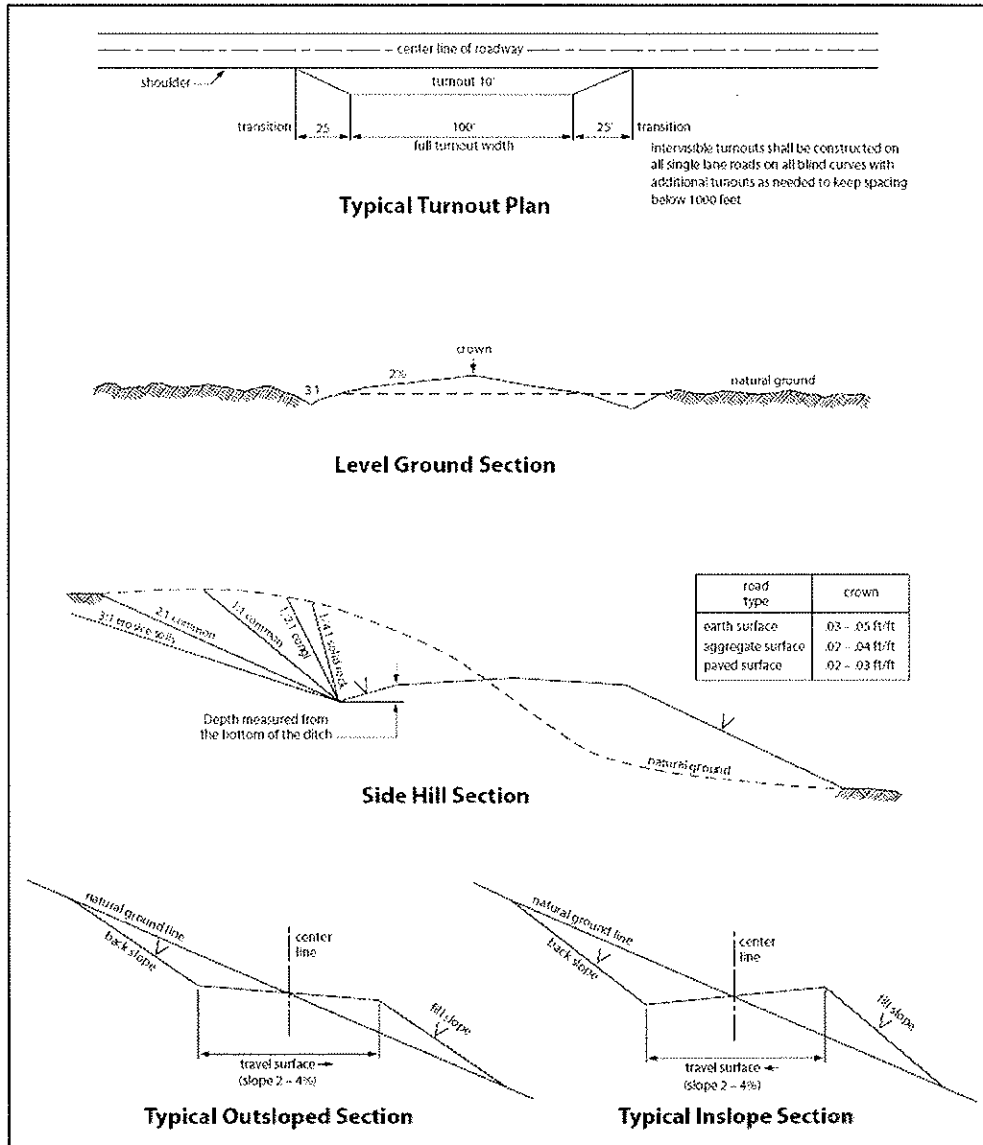


Figure 2-1. Typical road cross sections (BLM and USFS 2007).

2.2.4 Drilling

After securing mineral leases, Zenergy submitted the APDs to the BLM on the following dates:

- **Dakota-3 John Elk #28-27H:** August 1, 2010
- **Dakota-3 Helena Ruth Grant #33-34H:** July 21, 2010

The BIA's office in New Town, North Dakota, will receive a copy of the APD from the BLM North Dakota Field Office. Construction will begin when the BIA completes the NEPA process and the APD is then approved by the BLM. Additionally, a Section 10 application was submitted to the U.S. Army Corps of Engineers on the following dates:

- **Dakota-3 John Elk #28-27H:** August 5, 2010
- **Dakota-3 Helena Ruth Grant #33-34H:** August 5, 2010

Rig transport and on-site assembly would take roughly seven days for each well; a typical drill rig is shown in Figure 2-2. Drilling would require approximately 35 days to reach target depth, using a rotary drilling rig rated for drilling to approximately 15,000 feet. For the first 2,500 feet drilled, a freshwater-based mud system with non-hazardous additives would be used to minimize contaminant concerns. Water would be obtained from a commercial source for this drilling stage, using approximately 8.4 gallons of water per foot of hole drilled.

After setting and cementing the near-surface casing, an oil-based mud system (80% to 85% diesel fuel and 15% to 20% water) would be used to drill to a 7-inch casing point. Oil-based drilling fluids reduce the potential for hole sloughing while drilling through water-sensitive formations (shales). Approximately 4,720 gallons of water and 18,900 gallons of diesel fuel per well would be used to complete vertical drilling. The lateral reach of the borehole would be drilled using 33,600 gallons of fresh water as mud and adding polymer sweeps as necessary to clean the hole.

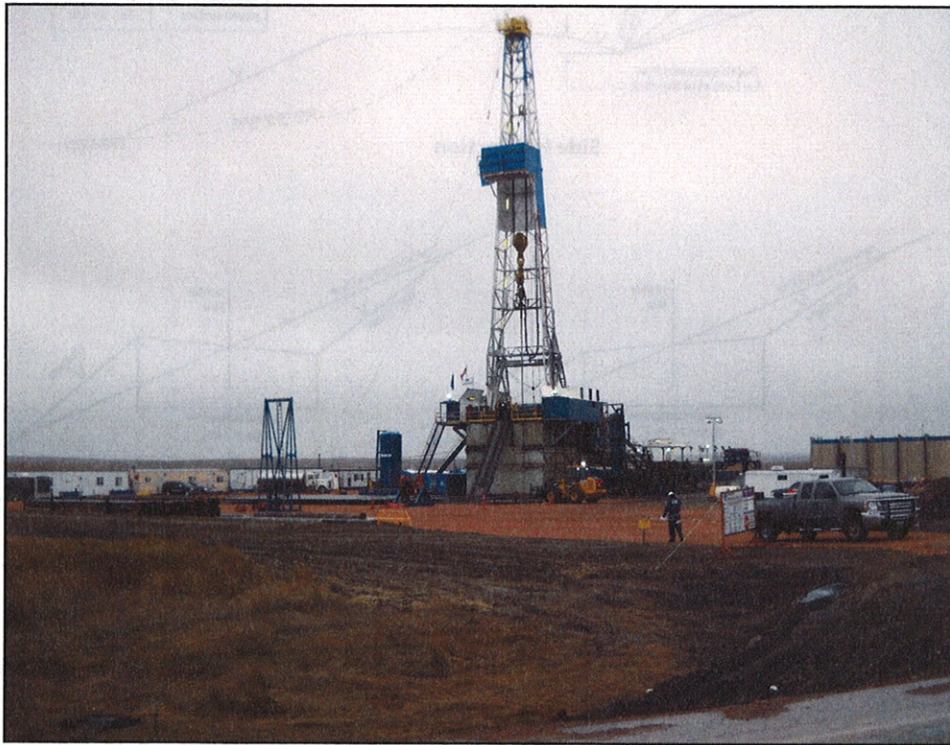


Figure 2-2. Typical drilling rig (Ruffo 2009).

2.2.5 Casing and Cementing

Surface casing would be set at an approximate depth of 2,500 feet and cemented back to the surface during drilling, isolating all near-surface freshwater aquifers in the project area. The Fox Hills Formation and Pierre Formation would be encountered at depths of approximately 1,700 and 1,800 feet, respectively. Production casing would be cemented from approximately

11,256 feet deep to a depth of about 4,000 feet in order to isolate the hydrocarbon zone present in the Dakota Formation below a depth of 4,500 feet. Casing and cementing operations would be conducted in full compliance with Onshore Oil and Gas Order No. 2 (43 CFR 3160).

2.2.6 Completion Activities

A completion rig unit would be moved on site following the conclusion of drilling and casing activities. Approximately 30 days is usually required, at the proposed well depth, 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. The typical procedure for fracturing a target formation to increase production includes pumping a mixture of sand and a carrier (e.g., water and/or nitrogen) downhole under extreme pressure. The resulting fractures are propped open by the sand, increasing the capture zone of the well and subsequently maximizing the efficient drainage of the field. After fracturing, the well is “flowed back” to the surface where fracture fluids are recovered and disposed of in accordance with North Dakota Industrial Commission (NDIC) rules and regulations.

2.2.7 Commercial Production

If drilling, testing, and production support commercial production from the proposed locations, additional equipment would be installed, including a pumping unit at the well head, a vertical heater/treater, tanks (usually 400-barrel steel tanks), and a flare pit (Figure 2-3). An impervious dike sized to hold 100% of the capacity of the largest tank plus one full day’s production would surround the tanks and the heater/treater. Load out lines would be located inside the diked area, and a heavy screen-covered drip barrel would be installed under the outlet. A metal access staircase would protect the dike and support flexible hoses used by tanker trucks. For all above-ground facilities not subject to safety requirements, the BIA would choose a paint color recommended by the BLM or the Rocky Mountain Five-State Interagency Committee, which would blend with the natural color of the landscape. Commercial production, if determined to be feasible based on the exploratory wells currently being analyzed, would be discussed more fully in subsequent NEPA analyses.

Initially, 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 oil and produced 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 more than 100 years. The operator estimates that each well would yield approximately 250 barrels of oil per day and 20 barrels of water during the first year of production. After the first year, the operator estimates production would decrease to approximately 150 barrels of oil per day and 20 barrels of water. Produced water is mostly recovered frac fluids and is expected to become minimal after two years. In the future, Zenergy would complete a ROW application for oil and water pipelines and for an electric line, all of which would be located within existing disturbance along access and arterial roads.



Figure 2-3. Typical producing oil well pad (Sobotka 2008).

Large volumes of gas are not expected from the locations. Small volumes would be flared in accordance with Notice to Lessees (NTL) 4A and adopted NDIC regulations, which prohibit unrestricted flaring for more than the initial year of operation (North Dakota Century Code [NDCC] 38-08-06.4).

2.2.8 Construction Details at the Well Sites

2.2.8.1 Dakota-3 John Elk #28-27H

The proposed Dakota-3 John Elk #28-27H well site, shown in Figure 2-4, is located approximately 3.5 miles northeast of Mandaree, North Dakota, in the NW $\frac{1}{4}$ SW $\frac{1}{4}$ of Section 28, T150N, R93W, Dunn County, North Dakota. A new access road approximately 4,374.70 feet long would be constructed from the proposed Dakota-3 Helena Ruth Grant #33-34H pad to the proposed Dakota-3 John Elk #28-27H pad (Figure 2-5). The new road would disturb approximately 6.6 acres and the proposed well pad would disturb approximately 3.9 acres; the total anticipated new disturbance would be 10.5 acres.

The spacing unit consists of 1,280 acres (+/-) with the bottom hole located in the NE $\frac{1}{4}$ SE $\frac{1}{4}$ of Section 27, T150N, R93W (Figure 2-6). Vertical drilling would be completed at approximately 10,274 feet, at which point drilling would turn roughly horizontal to an approximate total vertical depth (TVD) of 10,826 feet and total measured depth (TMD) of 14,300 feet. The complete drilling string would measure approximately 10,781 feet, including approximately 5,760 feet of lateral reach into the Middle Bakken Formation. The drilling target is located approximately 1,320 feet from the south line and 550 feet from the east line, approximately 9,666 feet east of the surface hole location. A setback of at least 500 feet would be maintained.

Zenergy has committed to implementing specific mitigation measures and BMPs in an effort to minimize disturbance to natural and cultural resources. Please see Section 3.10, Mitigation and Monitoring, for more information.

2.2.8.2 Dakota-3 Helena Ruth Grant #33-34H

The proposed Dakota-3 Helena Ruth Grant #33-34H well site, shown in Figure 2-7, is located approximately 3.5 miles northeast of Mandaree, North Dakota, in the SW $\frac{1}{4}$ NW $\frac{1}{4}$ of Section 33, T150N, R93W, Dunn County, North Dakota. A new access road approximately 3,489.39 feet long would be constructed from the permitted Dakota-3 Wells #32-29H pad to the proposed Dakota-3 Helena Ruth Grant #33-34H pad (Figure 2-8). The new road would disturb approximately 5.2 acres and the proposed well pad would disturb approximately 3.9 acres; the total anticipated new disturbance would be 9.1 acres.

The spacing unit consists of 1,280 acres (+/-) with the bottom hole located in the NE $\frac{1}{4}$ NE $\frac{1}{4}$ of Section 34, T150N, R93W (Figure 2-9). Vertical drilling would be completed at approximately 10,274 feet, at which point drilling would turn roughly horizontal to an approximate TVD of 10,826 feet and TMD of 14,300 feet. The complete drilling string would measure approximately 10,781 feet, including approximately 5,860 feet of lateral reach into the Middle Bakken Formation. The drilling target is located approximately 1,320 feet from the north line and 550 feet from the east line, approximately 9,613 feet east of the surface hole location. A setback of at least 500 feet would be maintained.

Zenergy has committed to implementing specific mitigation measures and BMPs in an effort to minimize disturbance to natural and cultural resources. Please see Section 3.10, Mitigation and Monitoring, for more information.



Figure 2-4. Dakota-3 John Elk #28-27H well pad area, looking west.



Figure 2-5. Dakota-3 John Elk #28-27H access road, looking northeast.

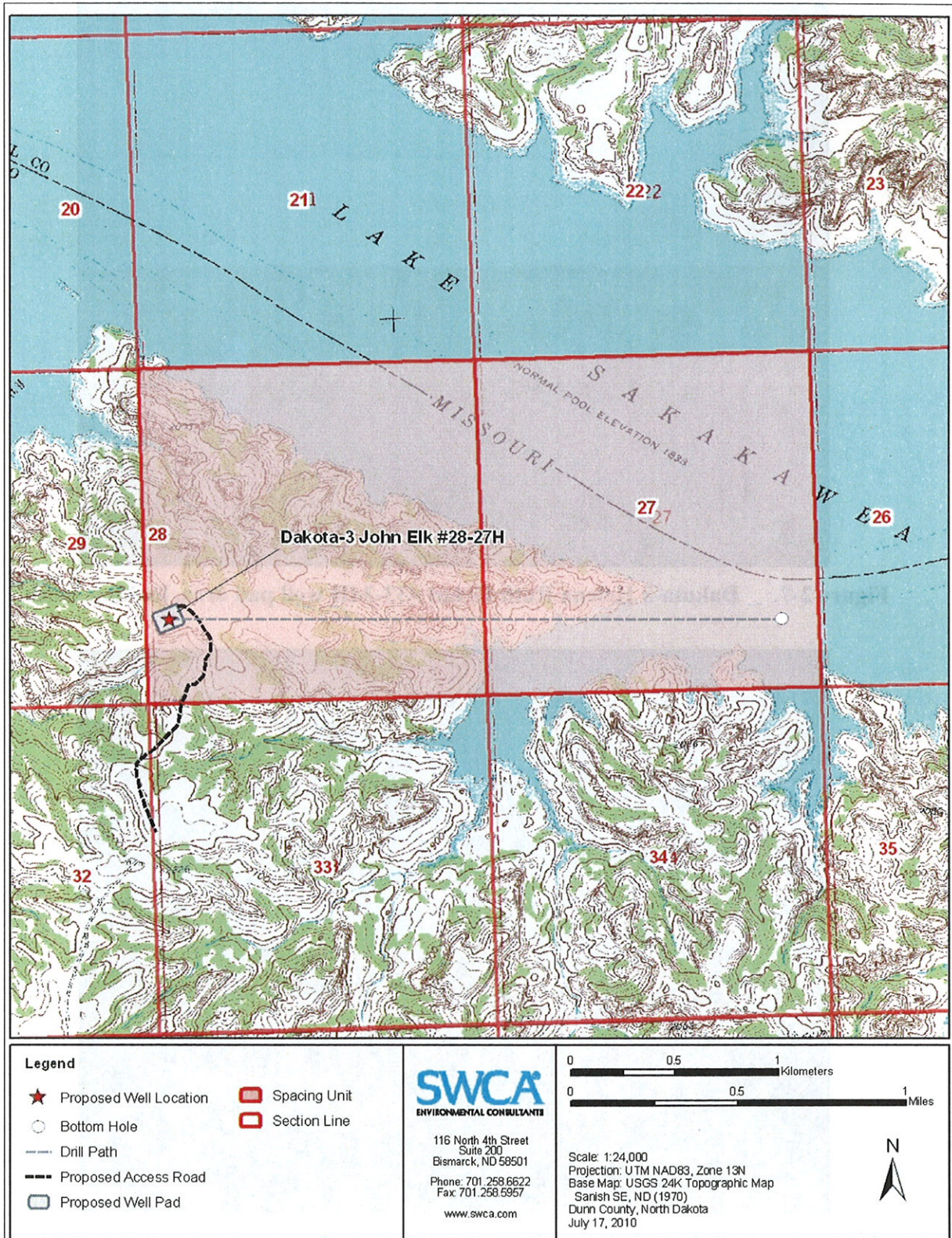


Figure 2-6. Dakota-3 John Elk #28-27H proposed location showing spacing unit and drilling target.



Figure 2-7. Dakota-3 Helena Ruth Grant #33-34H well pad area, looking south.



Figure 2-8. Dakota-3 Helena Ruth Grant #33-34H access road, looking north.

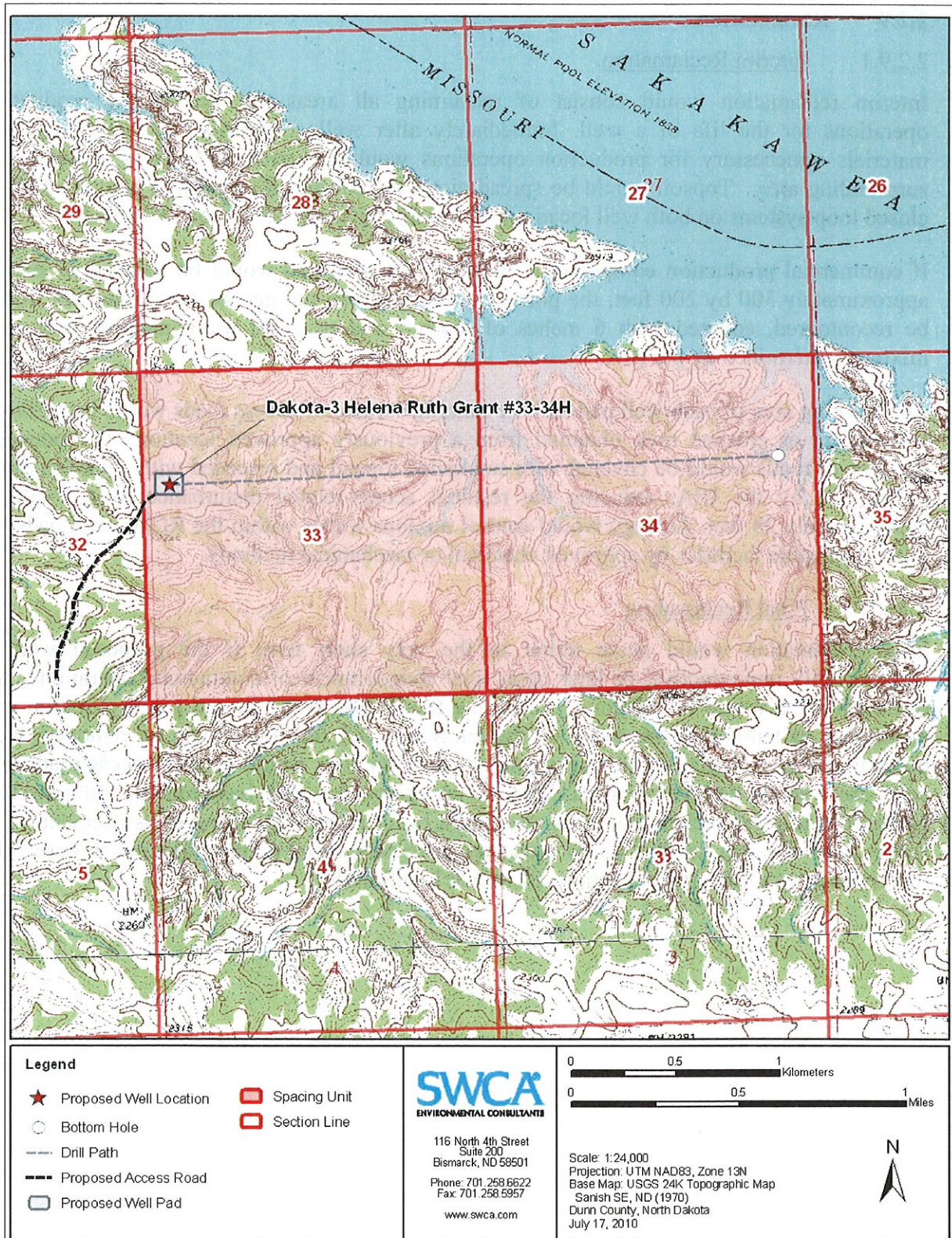


Figure 2-9. Dakota-3 Helena Ruth Grant #33-34H proposed location showing spacing unit and drilling target.

2.2.9 Reclamation

2.2.9.1 Interim Reclamation

Interim reclamation would consist of reclaiming all areas not needed for production operations for the life of a well. Immediately after well completion, all equipment and materials unnecessary for production operations would be removed from a location and surrounding area. Topsoil would be spread along the cut and fill slopes of a road. Due to closed loop systems on both well locations, no reserve pits will need to be reclaimed.

If commercial production equipment is installed, the well pad would be reduced in size to approximately 300 by 200 feet; the portion of the well pad not needed for production would be recontoured, covered with 6 inches of topsoil, and reseeded using methods and seed mixtures determined by the BIA.

The working area of each well pad and the running surface of access roads would be surfaced with scoria or crushed rock obtained from a previously approved location. The outslope portions of roads would be covered with stockpiled topsoil and reseeded with a seed mixture determined by the BIA, reducing the residual access-related disturbance to a width of approximately 28 feet. Zenergy would control noxious weeds within the ROW, well pads, or other applicable facilities by approved chemical or mechanical methods.

2.2.9.2 Final Reclamation

Final reclamation would occur either in the very short term if the proposed well is commercially unproductive, or later upon final abandonment of commercial operations. All disturbed areas would be reclaimed, reflecting the BIA view of oil and gas exploration and production as temporary intrusions on the landscape. All facilities would be removed, well bores would be plugged with cement, and dry hole markers would be set. Access roads and work areas would be leveled or backfilled as necessary, scarified, recontoured, and reseeded. Exceptions 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 2-10 illustrates an example of reclamation (BLM and USFS 2007).

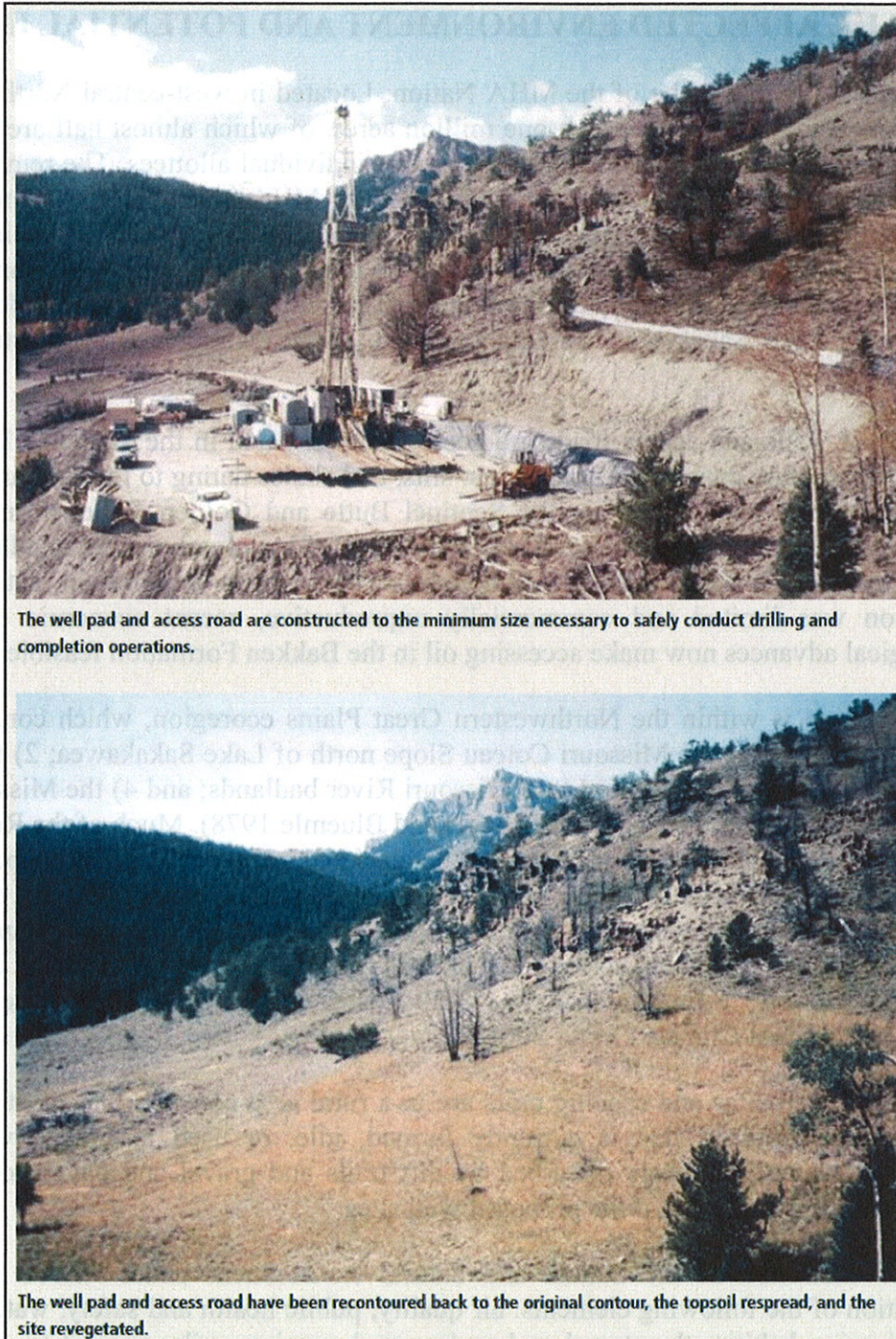


Figure 2-10. Example of reclamation from the BLM Gold Book (BLM and USFS 2007).

2.3 BIA-PREFERRED ALTERNATIVE

The BIA-preferred alternative is to complete all administrative actions and approvals necessary to authorize or facilitate oil and gas developments at the proposed well locations.

3.0 THE AFFECTED ENVIRONMENT AND POTENTIAL IMPACTS

The Reservation is the home of the MHA Nation. Located in west-central North Dakota, the Reservation encompasses more than one 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, including Dunn, McKenzie, McLean, Mercer, Mountrail, and Ward. In 1945, the Garrison Dam was completed, inundating much of the Reservation. The remaining land was divided into three sections near Lake Sakakawea, an impoundment of the Missouri River upstream of the Garrison Dam.

The proposed wells and access roads are geologically situated in the Williston Basin, where the shallow structure consists of sandstones, silts, and shales dating to the Tertiary period (65 to 2 million years ago), including the Sentinel Butte and Golden Valley formations. The underlying Bakken Formation is a well-known source of hydrocarbons; its middle member is targeted by the proposed project. Although earlier oil/gas exploration activity in the Reservation was limited and commercially unproductive, recent economic changes and technological advances now make accessing oil in the Bakken Formation feasible.

The Reservation is within the Northwestern Great Plains ecoregion, which consists of four physiographic units: 1) the Missouri Coteau Slope north of Lake Sakakawea; 2) the Missouri River trench (not flooded); 3) the Little Missouri River badlands; and 4) the Missouri Plateau south and west of Lake Sakakawea (Williams and Bluemle 1978). Much of the Reservation is on the Missouri Coteau Slope. Elevations of the glaciated, gently rolling landscape range from a normal pool elevation of 1,838 feet at Lake Sakakawea to more than 2,600 feet on Phaelan's Butte near Mandaree. Annual precipitation on the plateau averages between 15 and 17 inches. Mean temperatures fluctuate between -3 and 21 degrees Fahrenheit (°F) in January and between 55°F and 83°F in July, with 95 to 130 frost-free days each year (Bryce et al. 1998; High Plains Regional Climate Center 2008).

The proposed well sites and spacing units are in a rural area consisting of mostly grassland, shrubland, and cropland that is currently farmed, idle, or used to graze livestock. The landscape has been previously disturbed by dirt trails and gravel and paved roadways. No residences are within 1 mile of the proposed well sites.

The broad definition of the human and natural 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, soils, vegetation and invasive species, cultural resources, socioeconomic conditions, and environmental justice. Potential impacts to these elements are analyzed for both the No Action Alternative (described in Section 2.1) and the Proposed Action. Impacts may be beneficial or detrimental, direct or indirect, and short-term or long-term. This EA also analyzes 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 EIS.

3.1 AIR QUALITY

3.1.1 Introduction

The federal Clean Air Act (CAA), as amended in 1990, established national ambient air quality standards for criteria pollutants to protect public health and welfare. It also set standards for cancer-causing compounds, regulated emissions that cause acid rain, and required federal permits for large sources. National standards have been established for ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, particulate matter, and lead. These standards were set for pervasive compounds that are generally emitted by industry or motor vehicles. Standards for each pollutant meet specific public health and welfare criteria; thus they are called the “criteria pollutants.” Some states have adopted more stringent standards for criteria pollutants, or have chosen to adopt new standards for other pollutants. For instance, North Dakota has a standard for hydrogen sulfide that the Environmental Protection Agency (EPA) does not.

3.1.2 Greenhouse Gas Emissions and Climate Change

Carbon dioxide (CO₂) is the primary greenhouse gas (GHG), responsible for approximately 90% of radiative forcing (the rate of energy change as measured at the top of the atmosphere; this can be positive [warmer] or negative [cooler]). To simplify discussion of the various GHGs, the term “equivalent CO₂, or CO₂e” has been developed. CO₂e is the amount of CO₂ that would cause the same level of radiative forcing as a unit of one of the other GHGs. For example, 1 ton of methane (CH₄) has a CO₂e of 22 tons; therefore, 22 tons of CO₂ would cause the same level of radiative forcing as 1 ton of CH₄. Nitrogen dioxide has a CO₂e value of 310. Thus, control strategies often focus on the gases with the highest CO₂e value. CH₄ is a common fugitive gas emission in oil and gas fields and is emitted at many phases of exploration and production.

According to the Center for Integrative Environmental Research at the University of Maryland (2008), climate change will affect North Dakota’s climate significantly over time. North Dakota will experience an increase in the unpredictability of droughts, floods, and pests making it harder for farmers to remain economically viable in the agricultural industry. This damage to the agricultural community will subsequently be a detriment to the livestock industry. Additionally, due to reductions in the amount of available wildlife habitat, including receding water levels, North Dakota’s hunting, fishing, and tourism industries will be damaged.

3.1.3 Criteria Pollutants

Ozone is a colorless gas with a pungent, irritating odor, and creates a widespread air quality problem in most of the world’s industrialized areas. Ozone smog is not emitted directly into the atmosphere but is primarily formed through the reaction of hydrocarbons and nitrogen oxides in the presence of sunlight. Ozone’s health effects can include reduced lung function; aggravated respiratory illness; and irritated eyes, nose, and throat. Chronic exposure can cause permanent damage to the alveoli of the lungs. Ozone can persist for many days after formation, and travel several hundred miles.

Respirable particulate matter is a class of compounds that can lodge deep in the lungs causing health problems. Based on extensive health studies, particulate matter is regulated under two classes. PM₁₀ describes particles 10 microns or smaller, and PM_{2.5} is 2.5 microns or smaller. Respirable particulate matter can range from inorganic wind-blown soil to organic and toxic compounds found in diesel exhaust. Toxic compounds such as benzene often find a route into the body via inhalation of fine particulate matter.

Nitrogen dioxide (NO₂) is a reddish-brown gas with an irritating odor. Primary sources include motor vehicles, industrial facilities, and power plants. In the summer months, nitrogen dioxide is a major component of photochemical smog. Nitrogen dioxide is an irritating gas that may constrict airways, especially of asthmatics, and increase the susceptibility to infection in the general population. Nitrogen dioxide is also involved in ozone smog production.

Carbon monoxide (CO) is a colorless, odorless gas that is a byproduct of incomplete combustion. Carbon monoxide concentrations typically peak nearest a source such as roadways or areas with high fireplace use, and decrease rapidly as distance from the source increases. Ambient levels are typically found during periods of stagnant weather, such as on still winter evenings with a strong temperature inversion. Carbon monoxide is readily absorbed into the body from the air. It decreases the capacity of the blood to transport oxygen, leading to health risks for unborn children and people suffering from heart and lung disease. The symptoms of excessive exposure are headaches, fatigue, slow reflexes, and dizziness.

Sulfur dioxide (SO₂) is a colorless gas with a strong, suffocating odor. Sulfur dioxide is produced by burning coal, fuel oil, and diesel fuel. Sulfur dioxide can trigger constriction of the airways, causing particular difficulties for asthmatics. Long-term exposure is associated with increased risk of mortality from respiratory or cardiovascular disease. Sulfur dioxide emissions are also a primary cause of acid rain and plant damage.

The federal and state governments have set standards based on set criteria for various air pollutants caused by human activity. Table 3-1 summarizes the standards for these criteria pollutants.

Table 3-1. Air Quality Standards and Monitored Data.

Pollutant	Averaging Period	NAAQS ($\mu\text{g}/\text{m}^3$) or (ppm)	Year		
			2006	2007	2008
SO ₂ (in ppm)	24-hour	0.14	0.011	0.011	0.009
	Annual Mean	0.03	0.002	0.002	0.002
PM ₁₀ (in $\mu\text{g}/\text{m}^3$)	24-hour	150	50	57	108
PM _{2.5} (in $\mu\text{g}/\text{m}^3$)	24-hour	35	18.9	13.5	16.4
	Weighted Annual Mean	15	6.3	6.6	6.7
NO ₂ (in ppm)	Annual Mean	0.053	0.003	0.003	0.003
O ₃ (in ppm)	1-hour	0.12	0.076	0.076	0.069
	8-hour	0.08	0.067	0.065	0.063

Source: EPA 2009. $\mu\text{g}/\text{m}^3$ = micrograms per cubic meter; ppm = parts per million

Note: For PM_{2.5} the fourth-highest 24-hour value is reported per EPA attainment evaluation protocol.

3.1.4 Hazardous Air Pollutants

Hazardous air pollutants (HAPs) are a class of compounds known to cause cancer, mutation, or other serious health problems. HAPs are usually a localized problem near an emission source. HAPs are regulated separately from criteria air pollutants. Several hundred HAPs are recognized by the EPA and the State of North Dakota. Health effects of HAPs may occur at exceptionally low levels; for many HAPs, it is not possible to identify exposure levels that do *not* produce adverse health effects. Major sources of toxic air contaminants include industrial processes, commercial operations (e.g., gasoline stations and dry cleaners), wood smoke, and motor vehicle exhaust. Unlike regulations for criteria pollutants, there are no ambient air quality standards for HAPs. Examples of HAPs found in gases released by oil field development and operation include benzene, toluene, xylene, and formaldehyde (BLM 2009). HAP emissions receive evaluation based on the degree of exposure that can cause risk of premature mortality, usually from cancer.

Risk assessments express premature mortality in terms of the number of deaths expected per million persons. The North Dakota Department of Health (NDDH) typically reviews projects and either requires an applicant to prepare a risk assessment or assign the state engineers to do the work. The state requires that maximum individual cancer risk be calculated using its adopted protocol (the Determination of Compliance in the state's Air Toxics Policy). For new sources emitting HAPs with known negative health effects, an applicant must demonstrate that the combined impact of new HAP emission does not result in a maximum individual cancer risk greater than 1×10^{-5} (1 in 100,000).

3.1.5 Air Monitoring

Although the state of North Dakota does not have jurisdiction over air quality matters on the Reservation, it is helpful to note the monitoring efforts being made by the state and industry in the area. The NDDH operates a network of monitoring stations around the state that continuously measure pollution levels. Industry also operates monitoring stations as required by the state. The data from all these stations is subject to quality assurance, and when approved, it is published on the Internet (available from the EPA and other sources). Monitoring stations near the project site include Watford City in McKenzie County, Dunn Center in Dunn County, and Beulah in Mercer County. These stations are located west, south, and southeast of the proposed well sites, respectively. Criteria pollutants measured include SO₂, PM₁₀, NO₂, and ozone. Lead and carbon monoxide are not monitored by any of the three stations. Table 3-1 summarizes federal air quality standards and available air quality data from the three-county study area. The highest value at any of the three monitoring locations is shown for each year.

Note that North Dakota has separate state standards for several pollutants that are different from the federal criteria standards. These are:

- SO₂ (parts per million [ppm]) – 0.023 annual arithmetic mean, 0.099 24-hour concentration, and 0.273 one-hour concentration
- Hydrogen sulfide (H₂S) (ppm) – 10 instantaneous, 0.20 one-hour, 0.10 24-hour, and 0.02 three-month arithmetic mean

All other state criteria pollutant standards are the same as the federal standards (shown in Table 3-1). North Dakota was one of 13 states that met standards for all federal criteria pollutants in 2008.

The CAA mandates prevention of significant deterioration in the designated attainment areas. Class I attainment areas have national significance and include national parks greater than 6,000 acres, national monuments, national seashores, and federal wilderness areas larger than 5,000 acres that were designated prior to 1977. Theodore Roosevelt National Park, a Class I area that covers about 110 square miles in three units within the Little Missouri National Grassland, lies between Medora and Watford City and is roughly 30 to 40 miles west of the proposed well sites. All other parts of the state, including the Reservation, are classified as Class II, affording them a lower level of protection from significant deterioration.

3.1.6 Response to the Threat of Climate Change

The EPA has proposed an endangerment finding that would allow regulation of GHGs under the CAA. The first step is a regulation that requires sources emitting 25,000 tons or more CO₂e to report their emissions. The EPA and the National Highway Traffic Safety Administration have increased corporate fuel economy standards to promote national energy security and reduce GHGs. Standards will equal 35 miles per gallon by 2020, with an estimated savings to drivers of \$100 billion annually. Many U.S. states and foreign nations have adopted goals and actions to reduce GHGs to levels scientists forecast will allow the earth's climate to stabilize at 1 to 2 degrees Celsius above the current level. Additional regulation is currently being developed by Congress to roll back emissions to levels recommended by atmospheric scientists.

3.1.7 Typical Project Emissions

Oil field emissions encompass three primary areas: combustion, fugitive, and vented.

- Combustion emissions include SO₂, ozone precursors called volatile organic compounds (VOCs), GHGs, and HAPs. Sources include engine exhaust, dehydrators, and flaring.
- Fugitive emissions include criteria pollutants, H₂S, VOCs, HAPs, and GHGs. Sources include equipment leaks, evaporation ponds and pits, condensate tanks, storage tanks, and wind-blown dust (from truck and construction activity).
- Vented emissions include GHGs, VOCs, and HAPs. Primary sources are emergency pressure relief valves and dehydrator vents.

Pad and road construction, drilling activities, and tanker traffic would generate emissions of criteria pollutants and HAPs. Primary emissions sources during drilling are diesel exhaust, wind-blown dust from disturbed areas and travel on dirt roads, evaporation from pits and sumps, and gas venting. Diesel emissions are being progressively controlled by the EPA in a nationwide program. This program takes a two-pronged approach. First, fuels are improving to the ultra-low sulfur standard, and second, manufacturers must produce progressively lower engine emissions.

3.1.8 Air Quality Best Management Practices

Under the CAA, federal land management agencies have an affirmative responsibility to protect air quality. Tribes, federal land managers, and private entities can make emission controls part of a lease agreement. BMPs can be adopted for various portions of an oil/gas well's lifecycle. BMPs fall into six general categories:

- **Transportation BMPs to reduce the amount of fugitive dust and vehicle emissions**
 - Use directional drilling to drill multiple wells from a single well pad;
 - use centralized water storage and delivery, well fracturing, gathering systems;
 - use telemetry to remotely monitor and control production;
 - use water or dust suppressants to control fugitive dust on roads;
 - control road speeds; and
 - use van or carpooling.
- **Drilling BMPs to reduce rig emissions**
 - Use cleaner diesel (Tier 2, 3, and 4) engines;
 - use natural gas-powered engines; and
 - use “green” completions to recapture product that otherwise would have been vented or flared.
- **Unplanned or emergency releases**
 - Use high-temperature flaring if gas is not recoverable.
- **Vapor recovery**
 - Use enclosed tanks instead of open pits to reduce fugitive VOC emissions; and
 - use vapor recovery units on storage tanks.
- **Inspection and maintenance**
 - Use and maintain proper hatches, seals, and valves;
 - optimize glycol circulation and install a flash tank separator;
 - use selective catalytic reduction; and
 - replace high-bleed with low-bleed devices on pneumatic pumps.
- **Monitoring and repair**
 - Use directed inspection and maintenance methods to identify and cost-effectively fix fugitive gas leaks; and
 - install an air quality monitoring station.

3.2 WATER RESOURCES

3.2.1 Surface Water

As shown in Figure 3-1, the Dakota-3 John Elk #28-27H and Dakota-3 Helena Ruth Grant #33-34H sites are located near Lake Sakakawea, which is classified by the U.S. Geological Survey (USGS) as perennial. Given the topography of the individual sites over the project area, runoff occurs largely as sheet-flow.

The proposed Dakota-3 John Elk #28-27H is located in the Boggy Creek subwatershed (Hydrologic Unit Code [HUC] 101101012101) of the Independence Point Watershed (Figure 3-2). The Boggy Creek subwatershed is part of the Lake Sakakawea sub-basin, the Lake Sakakawea basin, the Little Missouri River and subregion, and Missouri region. Runoff from the well pad would flow to the north into an unnamed intermittent waterway (HUC 10110101001129), then into Boggy Creek (HUC 10110101001122) and travel approximately 0.86 mile until reaching Drags Wolf Bay, and the perennial waters in Lake Sakakawea (Figure 3-1).

The proposed Dakota-3 Helena Ruth Grant #33-34H is located in the Shell Creek Church subwatershed (HUC 101101012103) of the Independence Point Watershed (Figure 3-2). The Shell Creek Church subwatershed is part of the Lake Sakakawea sub-basin, the Lake Sakakawea basin, the Little Missouri River and subregion, and Missouri region. Runoff from the well pad would flow to the northeast into an unnamed intermittent waterway (HUC 10110101012176) and travel approximately 0.95 mile until reaching perennial waters in Lake Sakakawea (Figure 3-1).

3.2.2 Groundwater

Aquifers in the proposed Dakota-3 John Elk #28-27H and Dakota-3 Helena Ruth Grant #33-34H area include, from deepest to shallowest, the Cretaceous Fox Hills and Hell Creek formations and the Tertiary Ludlow, Tongue River, and Sentinel Butte formations (Table 3-2). Several shallow aquifers related to post-glacial outwash composed of till, silt, sand, and gravel are located in Dunn and McKenzie counties. The shallow Sentinel Butte Formation, commonly used for domestic supply in the area, outcrops in Dunn County and meets standards of the North Dakota Department of Health (Croft 1985). Detailed analyses are available from the North Dakota Geological Survey, Bulletin 68, Part III, 1976.

Review of electronic records of the North Dakota State Water Commission revealed 34 existing water wells within an approximate 5-mile boundary of the proposed Dakota-3 John Elk #28-27H and Dakota-3 Helena Ruth Grant #33-34H area (Table 3-3). One of these water wells is found within 1 mile of Dakota-3 Helena Ruth Grant #33-34H; however, no water wells are found within 1 mile of Dakota-3 John Elk #28-27H. Water quality would be protected by drilling with freshwater to a point below the base of the Fox Hills Formation, implementing proper hazardous materials management, and using appropriate casing and cementing. Drilling would proceed in compliance with Onshore Oil and Gas Order No. 2, Drilling Operations (43 CFR 3160).

Since neither of the proposed Dakota-3 John Elk #28-27H or Dakota-3 Helena Ruth Grant #33-34H lies within the boundaries of the post-glacial outwash aquifers, low porosity bedrock

near these wells would act as confining layers to prevent impacts to groundwater resources. Additionally, well completion methods would prevent cross contamination between aquifers or the introduction of hazardous materials into aquifers. The majority of the identified groundwater wells may have minimal hydrologic connections due to their respective distance from the proposed Dakota-3 John Elk #28-27H and Dakota-3 Helena Ruth Grant #33-34H wells.

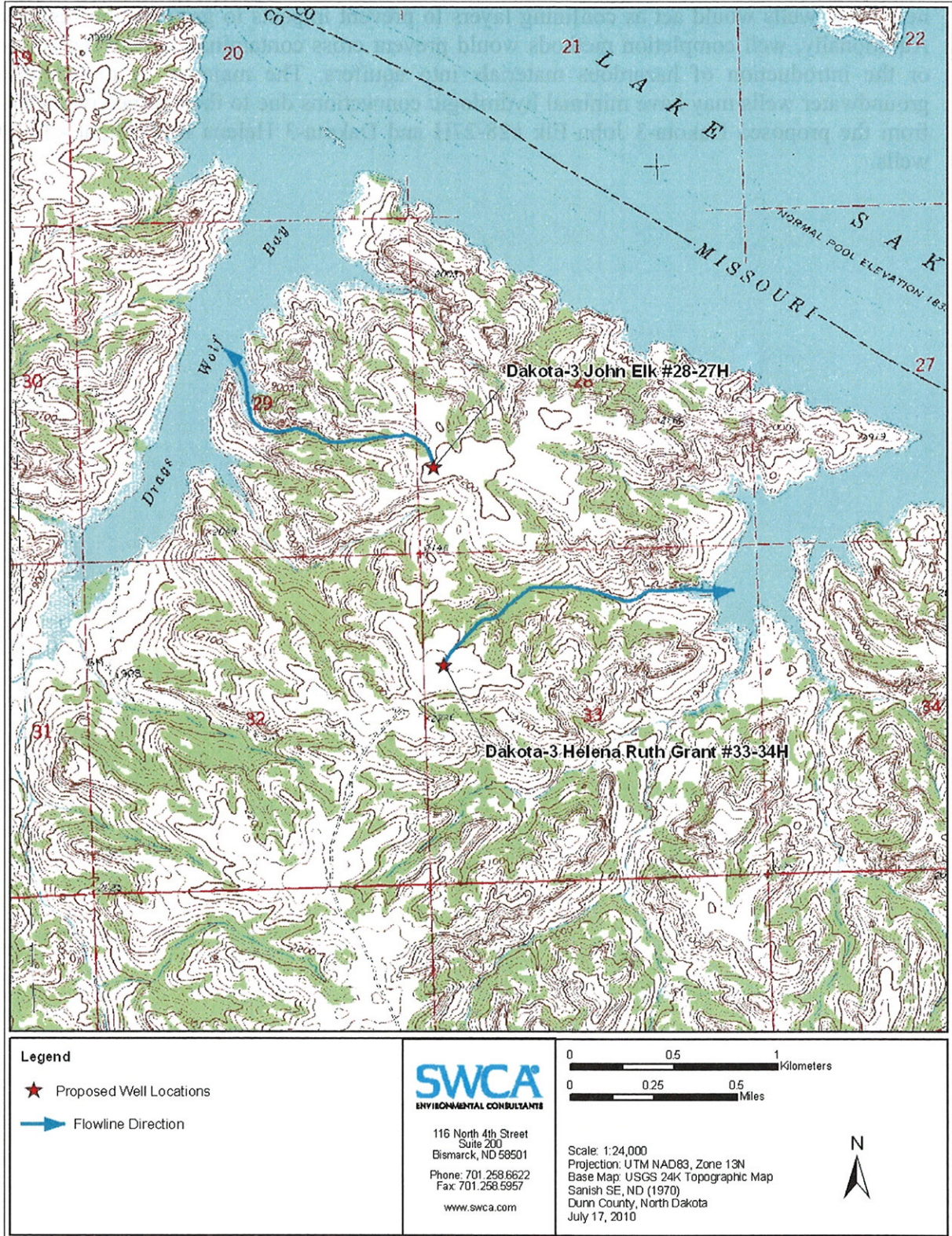


Figure 3-1. Flow lines from the well pad location.

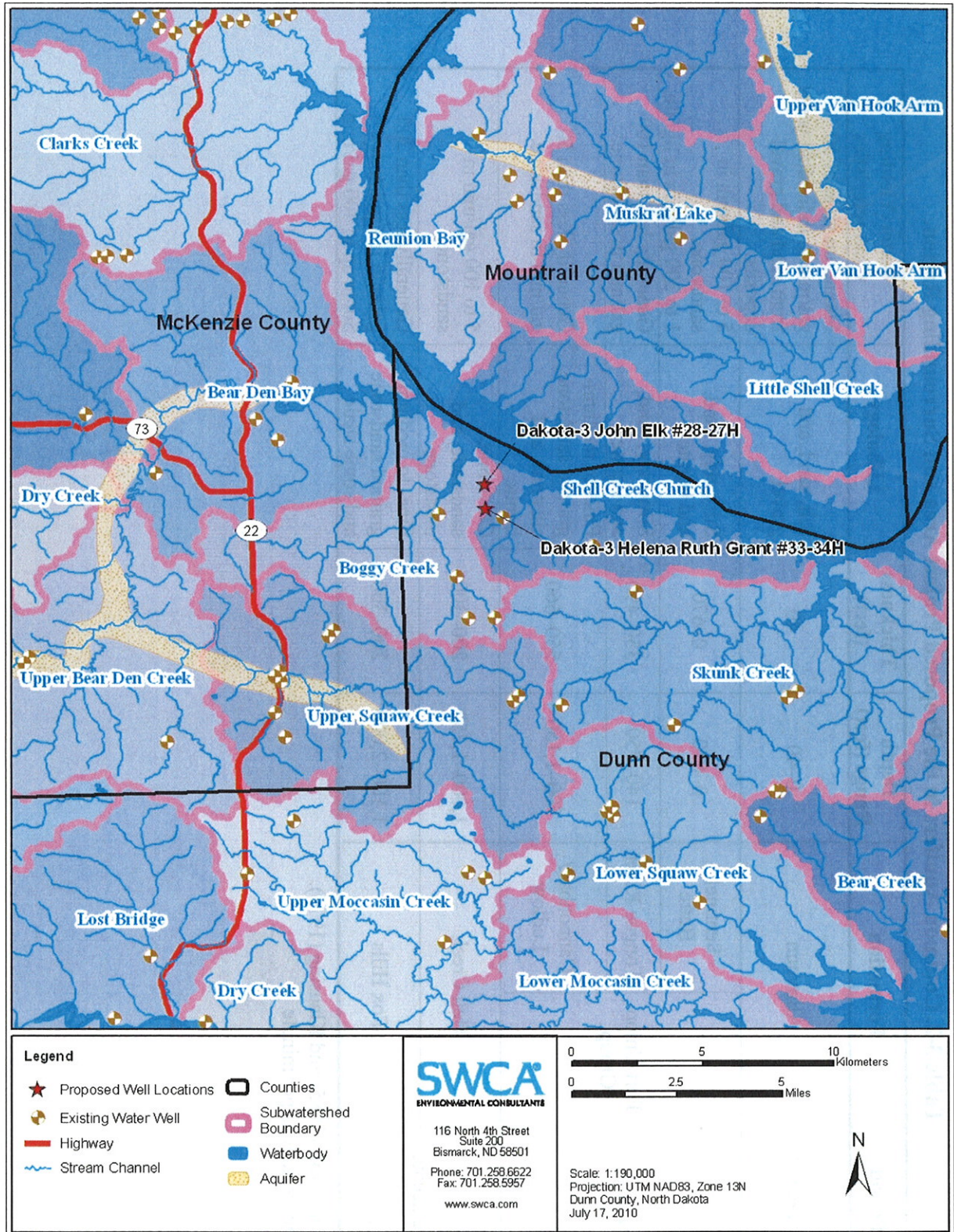


Figure 3-2. Watersheds and aquifers.

Table 3-2. Common Aquifers in the Proposed Project Area and Surrounding Region.

Period	Formation	Depth Range (feet)	Thickness (feet)	Lithology	Water-Yielding Characteristics
Quaternary	Alluvium	0-40	40	Silt, sand, and gravel	Maximum yield of 50 gal/min to individual wells from sand and gravel deposits.
	Tertiary	Sentinel Butte	0-670	0-670	Silty clay, sand, and lignite
Fort Union Group		140-750	350-490	Silty clay, sand, and lignite	Generally less than 100 gal/min in sandstone.
Cannonball/Ludlow		500-1,150	550-660	Fine- to medium-grained sandstone, siltstone, and lignite	Generally less than 50 gal/min in sandstone.
Cretaceous	Hell Creek	1,000-1,750	200-300	Claystone, sandstone, and mudstone	5 to 100 gal/min in sandstone.
	Fox Hills	1,100-2,000	200-300	Fine- to medium-grained sandstone and some shale	Generally less than 200 gal/min in sandstone. Some up to 400 gal/min.

Source: Croft (1985) and Klausung (1979).
 gal/min = gallons per minute

Table 3-3. Existing Water Wells Near the Project Area.

Well Number	Owner	Date Drilled	Section	Township/Range	Type/Use	Depth (feet)	Aquifer	Nearest Well	Miles to Proposed Well
149-093-02ACB	C. Perkins	1962	2	149N/ 93W	Stock	647	Sentinel Butte	Dakota-3 Helena Ruth Grant #33-34H	2.7
149-093-05CDC	Unknown	1961	5	149N/ 93W	Stock	84	Sentinel Butte	Dakota-3 Helena Ruth Grant #33-34H	1.72
149-093-08DCC	M. Fox	1960	8	149N/ 93W	Domestic	500	Sentinel Butte	Dakota-3 Helena Ruth Grant #33-34H	2.6
149-093-09ABD	Dale McGrady	1/1/1981	9	149N/ 93W	Stock	135	Unknown	Dakota-3 Helena Ruth Grant #33-34H	1.95
149-093-09CCC	St. Anthonys	10/3/1988	9	149N/ 93W	Domestic	440	Unknown	Dakota-3 Helena Ruth Grant #33-34H	2.58
149-093-09CCD	St. Anthonys	1952	9	149N/ 93W	Domestic	65	Sentinel Butte	Dakota-3 Helena Ruth Grant #33-34H	2.59
149-093-10AAA	Tribal	1950	10	149N/ 93W	Unused	450	Unknown	Dakota-3 Helena Ruth Grant #33-34H	2.53
149-093-12AB	Ivan Johnson	7/26/1976	12	149N/ 93W	Stock	348	Unknown	Dakota-3 Helena Ruth Grant #33-34H	3.97
149-093-14CC	Tribal	Unknown	14	149N/ 93W	Unused	432	Sentinel Butte	Dakota-3 Helena Ruth Grant #33-34H	4.11
149-093-14CDD2	USGS	10/18/1994	14	149N/ 93W	Monitoring	35	Unknown	Dakota-3 Helena Ruth Grant #33-34H	4.32
149-093-16BDD	Paul Rosario	8/15/1994	16	149N/ 93W	Domestic	450	Unknown	Dakota-3 Helena Ruth Grant #33-34H	3.11
149-093-18DDB	Tribal	Unknown	18	149N/ 93W	Unused	465	Sentinel Butte	Dakota-3 Helena Ruth Grant #33-34H	3.67
149-093-21AAD	Gerald Fox	12/14/2000	21	149N/ 93W	Domestic	5	Unknown	Dakota-3 Helena Ruth Grant #33-34H	3.94
149-093-21DCA	E. Wicker	Unknown	21	149N/ 93W	Unused	35	Unknown	Dakota-3 Helena Ruth Grant #33-34H	4.52

*Environmental Assessment: Zenergy Operating Company, LLC,
Dakota-3 Wells John Elk #28-27H and Helena Ruth Grant #33-34H*

Well Number	Owner	Date Drilled	Section	Township/Range	Type/Use	Depth (feet)	Aquifer	Nearest Well	Miles to Proposed Well
149-093-22CCD	Arla Muzzy	7/17/2002	22	149N/ 93W	Domestic	92	Unknown	Dakota-3 Helena Ruth Grant #33-34H	4.73
149-093-23ACD	Unknown	Unknown	23	149N/ 93W	Unused	34	Sentinel Butte	Dakota-3 Helena Ruth Grant #33-34H	4.90
149-093-27ABA	H. Youngbird	Unknown	27	149N/ 93W	Domestic	65	Sentinel Butte	Dakota-3 Helena Ruth Grant #33-34H	5.02
149-093-27ABA2	Patricia McKenzie	8/12/2004	27	149N/ 93W	Domestic	89	Unknown	Dakota-3 Helena Ruth Grant #33-34H	4.99
149-093-27BAA	USGS	10/24/1994	27	149N/ 93W	Monitoring	60	Unknown	Dakota-3 Helena Ruth Grant #33-34H	4.89
149-093-28AA	Ken Danks	10/16/2009	28	149N/ 93W	Industrial	1,680	Unknown	Dakota-3 Helena Ruth Grant #33-34H	4.80
149-094-14-1	Mandaree School	3/21/1988	14	149N/ 94W	Municipal	14	Unknown	Dakota-3 Helena Ruth Grant #33-34H	4.77
149-094-14-2	BIA	1/30/2002	14	149N/ 94W	Municipal	29	Unknown	Dakota-3 Helena Ruth Grant #33-34H	4.76
149-094-14-3	BIA	1/30/2002	14	149N/ 94W	Municipal	28	Unknown	Dakota-3 Helena Ruth Grant #33-34H	4.77
149-094-14-4	BIA	4/11/2000	14	149N/ 94W	Municipal	25	Unknown	Dakota-3 Helena Ruth Grant #33-34H	4.74
149-094-14ACD	Mike Mason	5/25/1973	14	149N/ 94W	Domestic	66	Unknown	Dakota-3 Helena Ruth Grant #33-34H	4.57
149-094-14BA	MANDAREE 3	7/21/1970	14	149N/ 94W	Public	1,745	Fox Hills	Dakota-3 Helena Ruth Grant #33-34H	4.61
149-094-15AAA	Sandy Youngbird	10/16/2006	15	149N/ 94W	Domestic	278	Unknown	Dakota-3 Helena Ruth Grant #33-34H	4.94
150-092-30ABC	L.L. Stout	1925	30	150N/ 92W	Domestic	26	Unknown	Dakota-3 John Elk #28-27H	4.49

*Environmental Assessment: Zenergy Operating Company, LLC,
Dakota-3 Wells John Elk #28-27H and Helena Ruth Grant #33-34H*

Well Number	Owner	Date Drilled	Section	Township/Range	Type/Use	Depth (feet)	Aquifer	Nearest Well	Miles to Proposed Well
150-093-19ACB	Waterford City	10/7/1988	19	150N/ 93W	Municipal	90	Unknown	Dakota-3 John Elk #28-27H	2.08
150-093-31ADD	Unknown	1/1/1961	31	150N/ 93W	Unknown	336	Sentinel Butte	Dakota-3 Helena Ruth Grant #33-34H	1.16
150-093-33CCA	Unknown	1/1/1960	33	150N/ 93W	Unknown	388	Sentinel Butte	Dakota-3 Helena Ruth Grant #33-34H	0.45
150-094-22CBA	Youngwolf	1964	22	150N/ 94W	Stock	327	Unknown	Dakota-3 John Elk #28-27H	5.05
151-092-31BDD	D.R. Manson	Unknown	31	150N/ 92W	Domestic and Stock	62	Unknown	Dakota-3 Helena Ruth Grant #33-34H	4.43
151-093-33DDC	Richard Pennington	1981	33	151N/ 93W	Stock	326	Unknown	Dakota-3 John Elk #28-27H	4.89

Source: North Dakota State Water Commission (2009).

3.3 WETLANDS, HABITAT, AND WILDLIFE

3.3.1 Wetlands

National Wetland Inventory maps maintained by the U.S. Fish and Wildlife Service (USFWS) do not identify any jurisdictional wetlands in the area of the proposed well pads or access roads (USFWS 2009). No wetlands were observed along any access road ROWs or at the well site during surveys conducted in April and June 2010. No riparian or wetland habitats are anticipated to be directly or indirectly impacted by the proposed access roads or wells.

According to the USFWS National Wetland Inventory database, no palustrine emergent wetlands occur within 1 mile of the proposed project area. The Dakota-3 John Elk #28-27H location is approximately 0.7 mile southwest and the Dakota-3 Helena Ruth Grant #33-34H location is approximately 1.2 miles southwest of Lake Sakakawea.

3.3.2 Wildlife

Several wildlife species that may exist in Dunn County are listed as threatened or endangered under the Endangered Species Act (ESA). Listed species in Dunn County include the black-footed ferret, gray wolf, interior least tern, pallid sturgeon, piping plover, and whooping crane (USFWS 2010). Although delisted in 2007, the bald eagle remains a species of special concern to the BIA and the Department of the Interior, and is effectively treated the same as a listed species. Tribes and states may recognize additional species of concern; such lists are taken under advisement by federal agencies but are not legally binding in the manner of the ESA. Listed species are described below.

ENDANGERED SPECIES

Black-footed Ferret (*Mustela nigripes*)

Status: Endangered

Likelihood of impact: No Effect

Several isolated populations are known to exist in the United States. However, this species is presumed extirpated from North Dakota because it has not been observed in the wild for more than 20 years. Furthermore, no large prairie dog towns are located in the project area which would be suitable habitat for the species.

Gray Wolf (*Canis lupus*)

Status: Endangered

Likelihood of impact: No Effect

The proposed project area does not contain suitable habitat for occupation or colonization by gray wolves. Due to the distance of known gray wolf populations in Minnesota, Canada, Montana, and Wyoming, wolves are not expected to occur in the area.

Interior Least Tern (*Sterna antillarum*)

Status: Endangered

Likelihood of impact: May Affect, but is Not Likely to Adversely Affect

The proposed project area would be located in upland areas that would not provide suitable nesting habitat for the interior least tern. Key habitat includes sparsely vegetated sandbars along rivers, sand and gravel pits, or lake and reservoir shorelines. Interior least tern nests are usually found along the shoreline and islands of Lake Sakakawea. Migrating interior least terns may pass through the project area; however, no adverse impact is expected as a result of construction, production, or reclamation activities in upland areas without suitable nesting habitat.

Pallid Sturgeon (*Scaphirhynchus albus*)

Status: Endangered

Likelihood of impact: May Affect, but is Not Likely to Adversely Affect

Activities associated with the construction, production, or reclamation of the proposed project area are not anticipated to adversely affect water quality and subsequently the pallid sturgeon. Pallid sturgeons prefer turbid, main stem river channels.

Whooping Crane (*Grus americana*)

Status: Endangered

Likelihood of impact: May Affect, but is Not Likely to Adversely Affect

The lack of suitable foraging and nesting habitat makes the proposed project area unsuitable for whooping cranes. Whooping cranes could occur within the project area during migration; however, the absence of foraging habitat makes it unlikely.

THREATENED SPECIES

Piping Plover (*Charadrius melodus*) and its Designated Critical Habitat

Status: Threatened

Likelihood of impact: May Affect, but is Not Likely to Adversely Affect

The entire shoreline of Lake Sakakawea has been designated critical habitat for piping plover. These birds nest on sparsely vegetated shoreline beaches, peninsulas, and islands composed of sand, gravel, or shale. Designated critical habitat of the piping plover does not occur in the project area. Individual piping plovers may pass through the proposed project area during construction, drilling, production, or reclamation activities; however, no impacts are anticipated to the species or its habitat as a result of the project.

**MIGRATORY BIRD TREATY ACT / THE BALD AND GOLDEN EAGLE
PROTECTION ACT**

Bald Eagle (*Haliaeetus leucocephalus*)

Status: Delisted in 2007; protected under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act

Likelihood of impact: May Affect, but is Not Likely to Adversely Affect

The bald eagle may occur in the project area. Though delisted, the bald eagle is afforded some protection under the Migratory Bird Treaty Act (916 USC 703–711) and the Bald and Golden

Eagle Protection Act (16 USC 668–668c). Suitable habitat does occur within a half mile of the locations. However, surveys for eagle nests were conducted and no eagle nests were observed.

Golden Eagle (*Aquila chrysaetos*)

Status: Unlisted; protected under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act

Likelihood of impact: May Affect, but is Not Likely to Adversely Affect

The golden eagle prefers habitat characterized by open prairie, plains, and forested areas, and may occur within the project area. Usually, golden eagles can be found in proximity to badland cliffs that provide nesting habitat. Suitable habitat does occur within a half mile of the locations. However, surveys for eagle nests were conducted and no eagle nests were observed.

The primary impacts to wildlife species would come as a result of the construction of the well pad areas including construction of new access roads, increased vehicular traffic density, drilling activities, and potential commercial production. No impacts to listed species are anticipated because of the low likelihood of their occurrence in the proposed project area, confirmed by on-site assessments conducted by biologists from SWCA Environmental Consultants (SWCA). Ground clearing might impact habitat for unlisted species, including small birds, small mammals, and other wildlife species. Proposed projects may affect raptor and migratory bird species through direct mortality, habitat degradation, and/or displacement of individual birds. These impacts are regulated in part through the Migratory Bird Treaty Act of 1918 (916 USC 703–711). Fragmentation of native prairie habitat can detrimentally affect grouse species; however, due to the ratio of each project area to the total landscape area, the overall disturbance would be negligible.

Several precautions that may limit or reduce the possible impact to all wildlife species include:

- locating the well pads over an area with existing disturbance;
- netting the reserve pits between drilling and reclamation;
- removing any oil found in the pits;
- installing covers under drip buckets and spigots; and
- conducting interim reclamation of portions of the disturbed site not needed for production.

Reclamation would begin without delay if a well is determined to be unproductive, or upon completion of commercial production. Any wildlife species inhabiting the project area are likely to adapt to changing conditions, and continue to persist without adverse impact.

3.4 SOILS

The area of potential effect (APE) for the proposed project includes the well pads, access roads, and the surface area that could be affected by runoff from the well pads and access

roads. Essentially, this includes the area that is down slope from the well locations until it reaches Lake Sakakawea. The Greenhorn Formation, which consists of thin limestone and dark gray to black organic-rich shale, is found from the surface to a depth of approximately 4,000 feet. The Greenhorn is subdivided into lower and upper intervals of limestone and calcareous shale with a middle interval of shale. Near-surface sediment is of Recent, Pleistocene, or Tertiary age, and includes Sauk, Tippecanoe, Kaskaskia, Absaroka, Zuni, and Tejas Sequences.

3.4.1 Natural Resources Conservation Service Soil Data

The Natural Resources Conservation Service (NRCS 2009) soil series present on the well pad and access road areas, and the respective acreages, are summarized in Table 3-4. The acreage shown in Table 3-4 is based on the spatial extent of soil series combinations derived from NRCS data (Figure 3-3 and Figure 3-4); therefore, the acreage is approximate and used as a best estimate of soil series distribution at the proposed project area.

Table 3-4. Percentage of the Well Pad and Access Road Composed of Specific Soil Types.

Feature	Map Unit	Soil Series	Acres	% of Location
Dakota-3 John Elk #28-27H				
Access Road	211F	Badland-Cabba-Arikara complex, 25 to 70 percent slopes	2.4	35.8
	88B	Williams loam, 3 to 6 percent slopes	4.3	64.2
Well Pad	211F	Badland-Cabba-Arikara complex, 25 to 70 percent slopes	0.3	9.4
	88B	Williams loam, 3 to 6 percent slopes	2.9	90.6
Dakota-3 Helena Ruth Grant #33-34H				
Access Road	211F	Badland-Cabba-Arikara complex, 25 to 70 percent slopes	3.3	61.1
	88B	Williams loam, 3 to 6 percent slopes	1.2	22.2
	88C	Williams loam, 6 to 9 percent slopes	0.9	16.7
Well Pad	88B	Williams loam, 3 to 6 percent slopes	3.2	100.0

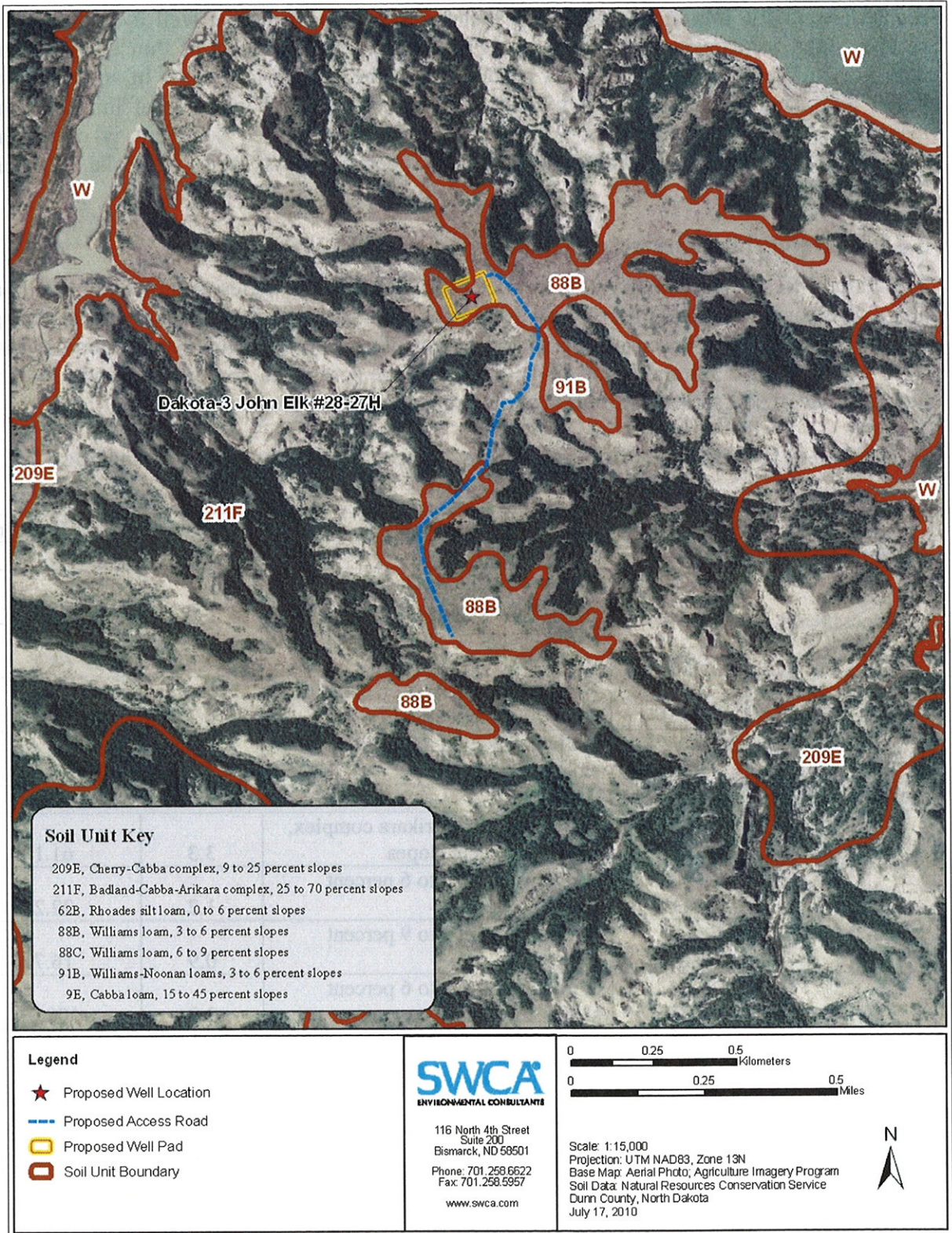


Figure 3-3. Approximate spatial extent of soil types in and around Dakota-3 John Elk #28-27H.

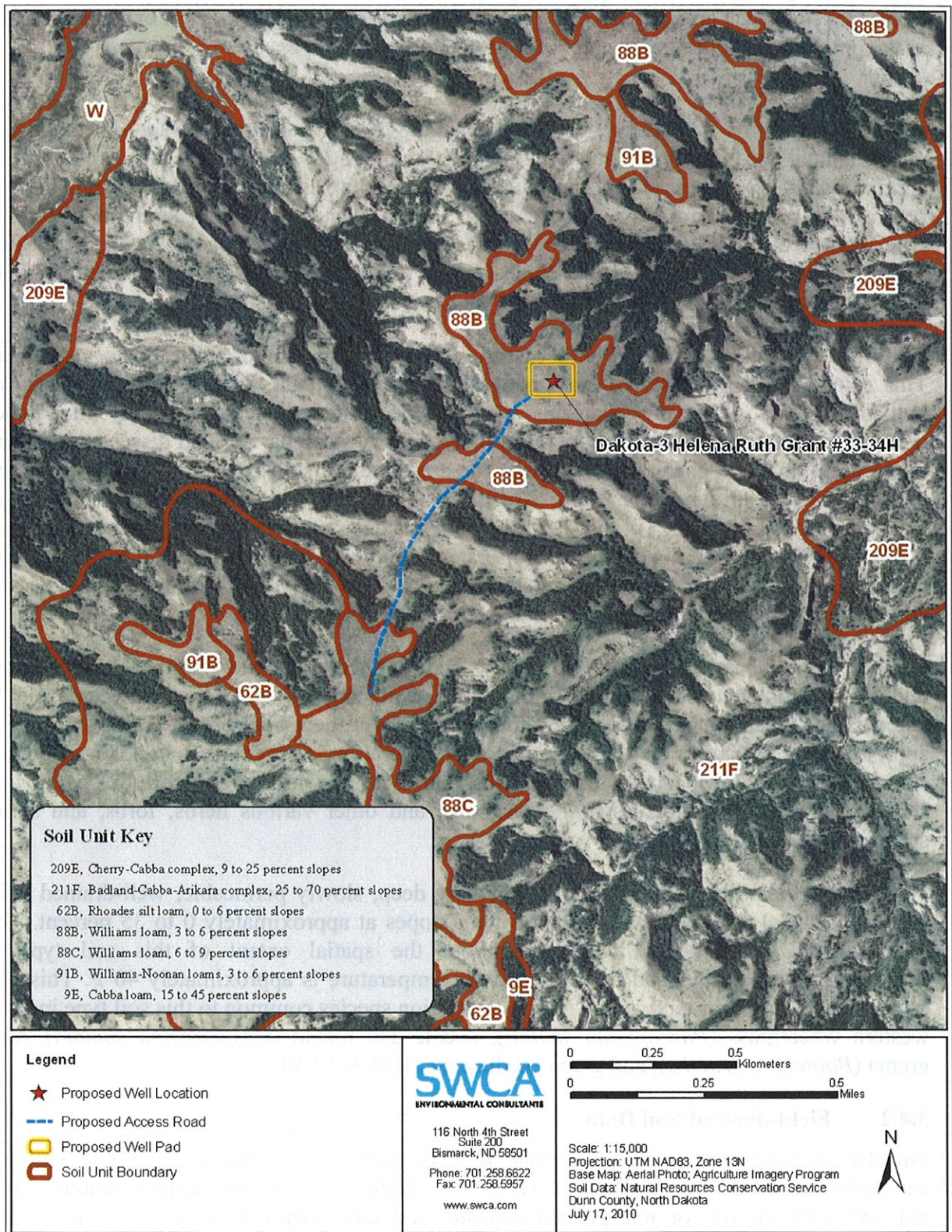


Figure 3-4. Approximate spatial extent of soil types in and around Dakota-3 Helena Ruth Grant #33-34H.

The following soil series descriptions represent individual soil series reported to exist within the proposed project area (NRCS 2009). Each individual soil series does not exist individually in the project area but rather in combination with other soil types.

Arikara: The Arikara series consists of very deep, well-drained soils found on wooded slopes. Permeability is moderate with slopes ranging from approximately 9 to 70 percent. The mean annual precipitation found throughout the spatial extent of this soil type is approximately 15 inches and mean annual air temperature is approximately 40°F. This soil type is used most often for woodland grazing. Native vegetation species common to this soil type include bur oak (*Quercus macrocarpa*), green ash (*Fraxinus pennsylvanica*), quaking aspen (*Populus tremuloides*), paper birch (*Betula papyrifera*), and Rocky Mountain juniper (*Juniperus scopulorum*) (NRCS 2009).

Badland: Miscellaneous areas have essentially no soil and support little or no vegetation. This can be a result of active erosion, washing by water, unfavorable soil conditions, or human activities. Some miscellaneous areas can be made productive but only after major reclamation efforts. Badland is moderately steep to very steep barren land dissected by many intermittent drainage channels. Ordinarily, the areas are not stony. Badland is most common in semiarid and arid regions where streams cut into soft geologic material. Local relief generally ranges between 10 and 200 meters. Potential runoff is very high, and erosion is active. The slope of the badland, outcrop-Patent complex, ranges between 6 to 25 percent. Badland occurs on the barren shoulders and backslopes of ridges. Parent soils occur on alluvial fans. This map unit occurs in badlands (NRCS 2009).

Cabba: The Cabba series consists of shallow, well-drained, moderately permeable soils found on hills, escarpments, and sedimentary plains. The soil slopes broadly range between 2 and 70 percent. The mean annual precipitation found throughout the spatial extent of this soil type is approximately 16 inches and mean annual air temperature is approximately 43°F. The most common vegetation species found on this soil type are little bluestem (*Schizachyrium scoparium*), green needlegrass (*Stipa viridula*), and other various herbs, forbs, and shrub species (NRCS 2009).

Williams: The Williams series consists of very deep, slowly permeable, well-drained soils found on glacial till plains and moraines with slopes at approximately 0 to 35 percent. The mean annual precipitation found throughout the spatial extent of this soil type is approximately 14 inches and mean annual air temperature is approximately 40°F. This soil type is largely used for cultivation. Native vegetation species common to this soil type include western wheatgrass (*Pascopyrum smithii*), needle and thread (*Hesperostipa comata*), blue grama (*Bouteloua gracilis*), and green needlegrass (NRCS 2009).

3.4.2 Field-derived Soil Data

Soil data derived from on-site excavated soil pits, including the matrix value, hue, chroma, and color name, are summarized in Table 3-5. Additionally, redoximorphic features (i.e., reduced/oxidized iron or manganese) deposits and soil texture were looked for at each location and noted where found. A Munsell soil color chart was used to determine the color of moist soil samples.

Soil erodibility (or K Factor) indicates the vulnerability of material less than 2 millimeters in size to sheet and rill erosion by water. Values can range from 0.02 (i.e., lowest erosion potential) to 0.69 (i.e., greatest erosion potential). T represents the maximum volume of soil loss, measured in tons/acre/year, which could occur and still allow for maintenance of high levels of crop production.

Table 3-5. Soil Data Obtained through the Excavation of Soil Pits in the Proposed Project Area.

Feature	Depth (inches)	Soil Matrix Color (color name)	Redoximorphic Feature Color	Texture	Slope (°)	K Factor
Dakota-3 John Elk #28-27H						
Access Road	0-20	2.5 YR 4/3	N/A	Clay Loam	5-10	0.28 – 0.32
Well Pad	0-14	10 YR 2/2	N/A	Clay Loam	1-3	0.28 – 0.32
	14-20	10 YR 2/1	N/A	Clay Loam		
Dakota-3 Helena Ruth Grant #33-34H						
Access Road	0-7	10 YR 3/2	N/A	Silty Clay	3-5	0.28 – 0.32
	7-20	10 YR 4/3	N/A	Silty Clay		
Well Pad	0-7	10 YR 3/2	N/A	Silty Clay	1-3	0.28
	7-20	10 YR 4/3	N/A	Silty Clay		0.28

3.4.3 Conclusions Regarding Soil Erosion Potential

3.4.3.1 Dakota-3 John Elk #28-27H

- The Dakota-3 John Elk #28-27H well pad and proposed new access road are dominated by well-drained, moderately to very slowly permeable soils (Table 3-5). The topography in the project area does not exceed approximately 10%, so the potential for runoff in an event is low.
- Reclamation of vegetative communities should be easily obtainable due to the affinity of native grassland species to this soil type (NRCS 2009).
- The well pad location has a K Factor of 0.28 to 0.32; the access road K Factor ranges from 0.28 to 0.32. Using the Revised Universal Soil Loss Equation, there could be 2.86 tons/acre/year of soil loss from the site if it is not properly managed to prevent such loss. The site would be monitored during and after construction, and BMPs would be used to prevent erosion, minimize runoff and loss of sediment, and ensure soil stabilization.
- Most of the soils are known to support native grassland vegetation, which may substantially increase the probability for successful and permanent reclamation, provided care is taken in areas where the soils are less than ideal for vegetative growth (NRCS 2009).

3.4.3.2 Dakota-3 Helena Ruth Grant #33-34H

- The Dakota-3 Helena Ruth Grant #33-34H well pad and proposed new access road are dominated by well-drained, moderately to very slowly permeable soils (Table 3-5). The topography in the project area does not exceed approximately 5%, so the potential for runoff in an event is low.
- Reclamation of vegetative communities should be easily obtainable due to the affinity of native grassland species to this soil type (NRCS 2009).
- The well pad location has a K Factor of 0.28 to 0.32; the access road K Factor is 0.28. Using the Revised Universal Soil Loss Equation, there could be 2.55 tons/acre/year of soil loss from the site if it is not properly managed to prevent such loss. The site would be monitored during and after construction, and BMPs would be used to prevent erosion, minimize runoff and loss of sediment, and ensure soil stabilization.
- Most of the soils are known to support native grassland vegetation, which may substantially increase the probability for successful and permanent reclamation, provided care is taken in areas where the soils are less than ideal for vegetative growth (NRCS 2009).

3.4.3.3 General

Due to the presence of clay and loamy soils and minimal slopes in the proposed project area, no limitations on construction activities in the project area are anticipated. The soil types are not expected to create unmanageable erosion issues or interfere with reclamation of the area. Proven BMPs are known to significantly reduce erosion of various types of soil, including those in the project area (BLM Instruction Memorandum 2004-124, www.blm.gov/bmp; BLM and USFS 2007; Grah 1997). Topsoil stripped from areas of new construction would be retained for use during reclamation. Any areas stripped of vegetation during construction would be reseeded once construction activities have ceased. The implementation of BMPs by the operator is projected to reduce and maintain negligible levels of erosion.

3.5 VEGETATION AND INVASIVE SPECIES

The proposed project area occurs in the Northwestern Great Plains ecoregion (River Breaks) (USGS 2010), which is a western mixed-grass and short-grass prairie ecosystem (Bryce et al. 1998). Native grasses include big bluestem (*Andropogon gerardii*), little bluestem (*Schizachyrium scoparium*), blue grama (*Bouteloua gracilis*), and western wheatgrass (*Pascopyrum smithii*). Common wetland vegetation includes various sedge species (*Carex* spp.), bulrush (*Scirpus* spp.), and cattails (*Typha* spp.). Common plant species found in woody draws, coulees, and drainages include Juniper (*Juniperus* spp.), silver buffaloberry (*Shepherdia argentea*), and western snowberry (*Symphoricarpos occidentalis*).

3.5.1 Dakota-3 John Elk #28-27H

Vegetation noted at the Dakota-3 John Elk #28-27H project area includes western buffaloberry, green ash (*Fraxinus pennsylvanica*), white sagebrush (*Artemisia ludoviciana*), prairie sagebrush (*Artemisia frigida*), smooth brome (*Bromus inermis*), green needlegrass (*Nassella viridula*), field sagewort (*Artemisia campestris*), and little bluestem.

3.5.2 Dakota-3 Helena Ruth Grant #33-34H

Vegetation noted at the Dakota-3 Helena Ruth Grant #33-34H project area includes green needlegrass, western snowberry, silver sagebrush (*Artemisia cana*), needle and thread (*Hesperostipa comata*), and green ash.

Noxious weeds have the potential to detrimentally affect public health, ecological stability, and agricultural practices. The NDCC (Chapter 63-01.1) recognizes 12 species as noxious; three species are known to exist in Dunn County. Table 3-6 indicates total acreage for each noxious weed species. Additional information is available from the NRCS Plants Database for North Dakota at <http://www.plants.usda.gov>.

Table 3-6. Occupied Area for Recognized Noxious Weeds in Dunn County, North Dakota.

Common Name	Scientific Name	County
		Dunn (acres)
absinth wormwood	<i>Artemisia absinthium</i>	39,300
Canada thistle	<i>Cirsium arvense</i>	28,500
Dalmatian toadflax	<i>Linaria dalmatica</i>	--
diffuse knapweed	<i>Centaurea diffusa</i>	--
field bindweed	<i>Convolvulus arvensis</i>	--
leafy spurge	<i>Euphorbia esula</i>	18,300
musk thistle	<i>Carduus nutans</i>	--
purple loosestrife	<i>Lythrum salicaria</i>	--
Russian knapweed	<i>Acroptilon repens</i>	--
salt cedar	<i>Tamarix ramosissima</i>	--
spotted knapweed	<i>Centaurea stoebe</i>	--
yellow starthistle	<i>Centaurea solstitialis</i>	--

Source: North Dakota Department of Agriculture 2009.

“Invasive” is a general term used to describe plant species that are not native to a given area, spread rapidly, and have adverse ecological and economic impacts. These species may exhibit high reproductive rates and are usually adapted to occupy a diverse range of habitats otherwise occupied by native species. These species may subsequently out-compete native plant species for resources, causing a reduction in native plant populations and an increase in noxious weed populations.

Evaluation of the existing vegetation during on-site assessments conducted in April and June 2010 indicated no invasive species were present at the proposed sites. Removal of existing vegetation may facilitate the spread of invasive species. The APD and this EA require the operator to control noxious weeds throughout the project area. Surface disturbance and vehicular traffic is prohibited outside the approved ROW or the well pad. Areas that are stripped of topsoil must be reseeded and reclaimed at the earliest opportunity. Additionally, certified weed-free straw and seed must be used for all construction, seeding, and reclamation efforts. Construction, operation, and reclamation activities are expected to be conducted in a

timely and efficient manner, minimizing adverse impacts and reducing the potential establishment of invasive vegetation species.

3.6 CULTURAL RESOURCES

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.

Cultural resource inventories of these well pads and access roads were conducted by personnel of SWCA Environmental Consultants, using an intensive pedestrian methodology. For the Dakota-3 John Elk 28-27H project approximately 32.59 acres were inventoried between June 4 and July 15, 2010 (Hutchinson *et al.* 2010). For the Helena Ruth Grant 33-34H project approximately 36.53 acres were inventoried between April 6 and July 15, 2010 (Lechert *et al.* 2010). Five archaeological sites were located that may possess the quality of integrity and meet at least one of the criteria (36 CFR 60.6) for inclusion on the National Register. One of these sites, a historic homestead, was evaluated through shovel testing but only one feature was found that contributed to its eligibility for 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 determinations of **no historic properties affected** and **no adverse effect** respectively for these undertakings, as the archaeological sites and/or their contributing features will be avoided. The former determination for the Dakota-3 John Elk 28-27H project was communicated to the THPO on August 12, 2010 and the THPO concurred on August 16, 2010. The

latter determination for the Helena Ruth Grant 33-34H project was communicated to the THPO on August 18, 2010 and the THPO concurred on August 25, 2010.

3.7 PUBLIC HEALTH AND SAFETY

Health and safety concerns include sour gas that could be released as a result of drilling activities, hazards introduced by heavy truck traffic, and hazardous materials used or generated during construction, drilling, and/or production activities.

H₂S is extremely toxic in concentrations above 500 ppm, but it has not been found in measurable quantities in the Bakken Formation. Before reaching the Bakken, however, drilling would penetrate the Mission Canyon Formation, which is known to contain varying concentrations of H₂S. Contingency plans submitted to the BLM comply fully with relevant portions of Onshore Oil and Gas Order No. 6 to minimize potential for gas leaks during drilling. Emergency response plans protect both the drilling crew and the general public within 1 mile of a well; precautions include automated sampling and monitoring by drilling personnel stationed at each well site.

Because there are no residences within 1 mile of the project area, standard mitigation measures would be applied, and release of H₂S at dangerous concentration levels is very unlikely, no direct impacts from H₂S are anticipated with implementation of the project.

Other potential adverse impacts from construction would be largely temporary. Noise, fugitive dust, and traffic hazards would be present for about 60 days during construction, drilling, and well completion as equipment and vehicles move on and off the site, and then diminish sharply during production operations. If a well proves productive, one small pumper truck would visit the well once a day to check the pump. Bakken wells typically produce both oil and water at a high rate initially. Gas would be flared initially and intermittently, while oil and produced water would be stored on the well pad in tanks and then hauled out by tankers until the well could be connected to gathering pipelines. Up to four 400-barrel oil tanks and one 400-barrel water tank would be located on the pad inside a berm of impervious compacted subsoil. The berm would be designed to hold 110% of the capacity of the largest tank.

Tanker trips would depend on production, but Zenergy estimates approximately two trucks per day during the initial production period. Trucks for normal production operations would use the existing and proposed access roads. Produced water would be transported to an approved disposal site. All traffic would be confined to approved routes and conform to established load restrictions and speed limits for state and BIA roadways and haul permits would be acquired as appropriate.

The EPA specifies chemical reporting requirements under Title III of the Superfund Amendments and Reauthorization Act (SARA), as amended. No chemicals subject to reporting under SARA Title III (hazardous materials) in an amount greater than 10,000 pounds would be used, produced, stored, transported, or disposed of annually in association with the Proposed Action. Furthermore, no extremely hazardous substances, as defined in 40

CFR 355, in threshold planning quantities would be used, produced, stored, transported, or disposed of in association with the Proposed Action. All operations, including flaring, would conform to instructions from BIA fire management staff.

A temporary, lined reserve pit would be constructed within the disturbed area of the well pad and constructed so as not to leak, break, or allow discharge and in a way that minimizes the accumulation of precipitation runoff into the pit.

Spills of oil, produced water, or other produced fluids would be cleaned up and disposed of in accordance with appropriate regulations. Sewage would be contained in a portable chemical toilet during drilling. All trash would be stored in a trash cage and hauled to an appropriate landfill during and after drilling and completion operations.

3.8 SOCIOECONOMICS

The scope of analysis for social and economic resources includes a discussion of current social and economic data relevant to the Analysis Area and surrounding communities of the Reservation and McKenzie, Dunn, McLean, and Mountrail counties, North Dakota. These counties were chosen for analysis because potential socioeconomic impacts would most likely be realized due to their proximity to the proposed well locations and overlap of the Reservation. These communities are collectively referred to as the Analysis Area.

This section discusses community characteristics such as population, housing, demographics, employment, and economic trends within the Analysis Area. Also included are data relating to the State of North Dakota and the United States, which provide a comparative discussion when compared to the Analysis Area. Information in this section was obtained from various sources including, but not limited to, the U.S. Census Bureau, the U.S. Bureau of Economics, and the North Dakota State government.

3.8.1 Employment

The economy in the state of North Dakota, including the Reservation and four counties in the Analysis Area, has historically depended on agriculture, including grazing and farming. However, energy development and extraction, power generation, and services related to these activities have increased over the last several years. Consequently, service and trade sectors have also become increasingly important; many of the service sector jobs are directly and indirectly associated with oil and gas development. In 2007, total employment in the state of North Dakota was approximately 487,337 (U.S. Bureau of Economic Analysis 2009a). Of this, the largest employers include government and government enterprises employing 16.6% of the labor force (81,218 jobs); health care and social assistance at 11.7% of the labor force (56,990 jobs); and retail trade at 11.3% of the labor force (55,478 jobs) (U.S. Bureau of Economic Analysis 2009a). Table 3-7 provides total employment opportunities for the Analysis Area between 2001 and 2007.

Table 3-7. Total Employment for the Analysis Area and State of North Dakota, 2001 and 2007.

Location	Total Employment (2001)	Total Employment (2007)	Percent Change (+)	Unemployment Rate (2007)
Dunn County	1,941	1,961	1.0	3.8%
McKenzie County	4,164	4,600	10.4	3.1%
McLean County	5,173	5,448	5.3	4.6%
Mountrail County	3,691	3,711	0.5	5.7%
On or Near Fort Berthold Indian Reservation	1,211	1,287*	6.2	71%
North Dakota	448,897	487,337	8.5	3.1%

Source: U.S. Bureau of Economic Analysis 2009a.

* Bureau of Indian Affairs 2005. Represents 2005 data.

Although detailed employment information for the Reservation is not provided by the U.S. Bureau of Economics or the State of North Dakota, residents of the Reservation are employed in similar ventures as those outside the Reservation. Typical employment includes ranching, farming, tribal government, tribal enterprises, schools, federal agencies, and recently, employment related to conventional energy development. The MHA Nation's Four Bears Casino and Lodge, located 4 miles west of New Town, employs approximately 320 people, of which 90% are tribal members (Fort Berthold Housing Authority 2008).

The Fort Berthold Community College, which is tribally chartered to meet the higher education needs of the people of the MHA Nation, had 11 full-time members and 25 adjunct members in academic year 2006–2007. Approximately 73% of the full-time faculty members are of American Indian/Alaska Native descent, approximately 88% of which are enrolled members of the MHA Nation. Additionally, 65% of the part-time faculty members are of American Indian/Alaska Native descent and all (100%) are tribal members.

The BIA publishes biannual reports documenting the Indian service and labor market for the nation. According to the 2005 American Indian Population and Labor Force Report, of the 8,773 tribal members that were eligible for BIA-funded services, 4,381 constituted the total available workforce. Approximately 29%, or 1,287 members, were employed in 2005, indicating a 71% unemployment rate (as a percent of the labor force) for members living on or near the Reservation; 55% of the employed members were living below poverty guidelines. Compared to the 2001 report, 2005 statistics reflect a 6.2% increase in the number of tribal members employed living on or near the Reservation, but unemployment (as a percent of the labor force) has stayed steady at 71% and the percentage of employed people living below the poverty guidelines has increased to 55% (BIA 2005).

3.8.2 Income

Per capita income is often used as a measure of economic performance, but it should be used with changes in earnings for a realistic picture of economic health. Since total personal income includes income from 401(k) plans as well as other non-labor income sources like transfer payments, dividends, and rent, it is possible for per capita income to rise even if the average wage per job declines over time.

The North American Industry Classification System (NAICS) is the standard used by federal statistical agencies in classifying business establishments for the purpose of collecting, analyzing, and publishing statistical data related to the U.S. business economy. According to NAICS standards, per capita personal income for Dunn County was \$20,634 in 2000 and \$26,440 in 2007, an increase of approximately 28.1%; per capita personal income for McKenzie County was \$21,637 in 2000 and \$32,927 in 2007, an increase of approximately 52.1%; per capita personal income for McLean County was \$23,001 in 2000 and \$38,108 in 2007, an increase of approximately 65.6%; per capita personal income for Mountrail County was \$23,363 in 2000 and \$32,324 in 2007, an increase of approximately 38.3%. These figures compare with a State of North Dakota per capital personal income of \$25,105 in 2000 and \$36,082 in 2007, an increase of approximately 43.7% from 2000 (U.S. Bureau of Economic Analysis 2009b) (Table 3-8).

Table 3-8. Income and Unemployment, 2007.

Unit of Analysis	Per Capita Income ¹	Median Household Income	Percent of all People in Poverty ²
Dunn County	26,440	\$37,632	13.5%
McKenzie County	32,927	\$41,333	13.8%
McLean County	38,108	\$44,421	10.4%
Mountrail County	32,324	\$35,981	15.9%
Fort Berthold Reservation ³	10,291	\$26,274	N/A
North Dakota	36,082	\$43,936	11.8%

¹ U.S. Bureau of Economic Analysis 2009b

² United States Department of Agriculture (USDA) 2009

³ North Dakota State Data Center 2009

N/A = Data not available.

According to a 2008 report published by the Fort Berthold Housing Authority, the average per capita income for the Reservation was \$8,855 in 1999, compared to \$17,769 for the State and the U.S. average of \$21,587 at that time (Fort Berthold Housing Authority 2008).

With the exception of McLean County, counties that overlap the Reservation tend to have per capita incomes and median household incomes below North Dakota statewide averages. As presented in Table 3-8, unemployment rates in all counties, including the Reservation, were equal to or above the state average of 3.1%. Subsequently, Reservation residents and MHA Nation members tend to have per capita incomes and median household incomes below the averages of the encompassing counties, as well as statewide and higher unemployment. Per capita income for residents on or near the Reservation is approximately 28% lower than the statewide average. The median household income reported for the Reservation (i.e., \$26,274) is approximately 40% lower than the state median of \$43,936. According to the BIA,

approximately 55% of tribal members living on or near the Reservation were employed, but living below federal poverty levels (BIA 2005).

3.8.3 Population

Historic and current population counts for the Analysis Area, compared to the state, are provided below in Table 3-9. The state population showed little change between the last two census counts (1990–2000), but there were notable changes at the local level. Populations in all four counties have steadily declined in the past. McLean and Dunn counties had a higher rate of population decline among the four counties at 10.5% and 7.8%, respectively. These declines can be attributed to more people moving to metropolitan areas, which are perceived as offering more opportunities for growth. However, population on or near the Reservation has increased approximately 13.3% since 2000. While Native Americans are the predominant group on the Reservation, they are considered the minority in all other areas of North Dakota.

As presented in Table 3-9, population growth on the Reservation (13.3%) exceeds the overall growth in the state of North Dakota (-0.1%) and four counties in the Analysis Area. This trend in population growth for the Reservation is expected to continue in the next few years (Fort Berthold Housing Authority 2008).

Table 3-9. Population and Demographics.

County or Reservation	Population in 2008	% of State Population	% Change Between 1990–2000	% Change Between 2000–2008	Predominant Group (%)	Predominant Minority (Percent of Total Minority Population)
Dunn	3,318	0.5	-10.1	-7.8	Caucasian (84.9%)	American Indian (15.1%)
McKenzie	5,674	0.8	-10.1	-1.1	Caucasian (76.3%)	American Indian (23.7%)
McLean	8,337	1.3	-11.0	-10.5	Caucasian (91.3%)	American Indian (8.7%)
Mountrail	6,511	1.0	-5.6	-1.8	Caucasian (62.8%)	American Indian (37.2%)
On or Near Fort Berthold Reservation ¹	11,897	1.8	178.0 ²	13.3 ³	American Indian	Caucasian (~27%)
Statewide	641,481	100	0.005	-0.1	Caucasian	American Indian (8.6%)

Source: U.S. Census Bureau 2009a.

¹ Bureau of Indian Affairs 2005. Population shown reflects the Total enrollment in the Tribe in 2005. 2008 data unavailable. All information related to the Fort Berthold Reservation reflects 2005 data, including state population. 11,897 reflects tribal enrollment on or near the Reservation. According to the BIA, near the Reservation includes those areas or communities adjacent or contiguous to the Reservation.

² Bureau of Indian Affairs 2001. Reflects percent change between 1991 and 2001.

³ Reflects percent change between 2001 and 2005.

3.8.4 Housing

Workforce-related housing can be a key issue associated with development. Historical information on housing in the four counties in the Analysis Area was obtained from the U.S. Census Bureau, 2000 census. Because the status of the housing market and housing availability changes often, current housing situations can be difficult to characterize quantitatively. Therefore, this section discusses the historical housing market. Table 3-10 provides housing unit supply estimates in the Analysis Area, including the Reservation and four overlapping counties.

Table 3-10. Housing Development Data for the Reservation and Encompassing Counties.

Region	Total Housing Units						% Change 2000–2008
	Occupied	Owner Occupied	Renter Occupied	Vacant	Total	Total	
	2000	2000	2000	2000	2000	2008	
Dunn	1,378	1,102	276	587	1,965	1,968	0.1
McKenzie	2,151	1,589	562	568	2,719	2,781	2.2
McLean	3,815	3,135	680	1,449	5,264	5,420	2.9
Mountrail	2,560	1,859	701	878	3,438	3,528	2.6
Reservation	1,908	1,122	786	973	2,881	N/A	N/A
North Dakota	257,152	171,299	85,853	32,525	289,677	313,332	8.2

Source: U.S. Census Bureau n.d.

The Fort Berthold Housing Authority manages a majority of the housing units within the Reservation. Housing typically consists of mutual-help homes built through various government programs, low-rent housing units, and scattered-site homes. Housing for government employees is limited, with a few quarters in Mandaree and White Shield available to Indian Health Service employees in the Four Bears Community and to BIA employees. Private purchase and rental housing are available in New Town. New housing construction has recently increased within much of the Analysis Area, but availability remains low.

Availability and affordability of housing could impact oil and gas development and operations. The number of owner-occupied housing units (1,122) within the Reservation is approximately 58% lower than the average number of owner-occupied housing units found in the four overlapping counties (1,921).

In addition to the relatively low percent change of the total housing units compared to the state average, these four counties are ranked extremely low for both the state and national housing starts and have minimal new housing building permits, as presented in Table 3-11.

Table 3-11. Housing Development Data for the Encompassing Counties 2000–2008.

Housing Development	North Dakota County			
	Dunn	McKenzie	McLean	Mountrail

New Private Housing Building Permits 2003–2008	14	14	182	110
Housing Starts-State Rank	51 / 53	15 / 53	21 / 53	17 / 53
Housing Starts-National Rank	3,112 / 3,141	2,498 / 3,141	2,691 / 3,141	2,559 / 3,141

Source: U.S. Census Bureau 2009b, 2009c.

Impacts to socioeconomic resources of the Analysis Area would be minimal and therefore would not adversely impact the local area. Short-term impacts to socioeconomic resources would generally occur during the construction/drilling and completion phase of the proposed well. Long-term effects would occur during the production phase, should the wells prove successful. Impacts would be significant if the affected communities and local government experienced an inability to cope with changes including substantial housing shortages, fiscal problems, or breakdown in social structures and quality of life.

As presented in Table 3-12, implementation of the proposed wells is anticipated to require between 14 and 28 workers per well in the short term. If the wells prove successful, Zenergy would install production facilities and begin long-term production. To ensure successful operations, production activities require between one and four full-time employees to staff operations. It is anticipated that a combination of local and Zenergy employees would work in the Analysis Areas. Therefore, any increase in workers would constitute a minor increase in population in the Analysis Area required for short-term operations and therefore would not create a noticeable increase in demand for services or infrastructure on the Reservation or the communities near the Analysis Area, including McKenzie and Dunn counties. Because the communities likely impacted by the proposed project have experienced a recent decline in population between 2000 and 2008 (as shown in Table 3-9), with the exception of the Reservation itself, and the historic housing vacancy rate (Table 3-10) indicates housing availability despite the growth of the population on the Reservation, these communities are able to absorb the projected slight increase in population related to this proposed project. As such, the proposed project would not have measurable impacts on housing availability or community infrastructure in the area. The proposed project also would not result in any identifiable impacts to social conditions and structures within the communities in the Analysis Area.

Table 3-12. Duration of Employment during Proposed Project Implementation.

Activity	Duration of Activity (Average Days per Well)	Daily Personnel (Average Number per Well)
Construction (access road and well pad)	5–8 days	3–5
Drilling	30–35 days	8–15
Completion/Installation of Facilities	Approx. 10 days	3–8
Production	Ongoing – life of well	1–4

Implementation of the proposed project would likely result in direct and indirect economic benefits associated with industrial and commercial activities in the area, including the Reservation, State of North Dakota, and potentially local communities near the Reservation.

Direct impacts would include increased spending by contractors and workers for materials, supplies, food, and lodging in McKenzie and Dunn counties and the surrounding areas, which would be subject to sales and lodging taxes. Other state, local, and Reservation tax payments and fees would be incurred as a result of the implementation of the proposed project, with a small percentage of these revenues distributed back to the local economies. Wages due to employment would also impact per capita income for those that were previously unemployed or underemployed. Indirect benefits would include increased spending from increased oil and gas production, as well as a slight increase in generated taxes from the short-term operations. Mineral severance and royalty taxes, as well as other relevant county and Reservation taxes on production would also grow directly and indirectly as a result of increased industrial activity in the oil and gas industry.

3.9 ENVIRONMENTAL JUSTICE

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations*, signed in 1994 by President Clinton, requires agencies 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 Executive 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 Executive Order 12898.

EJ is an evolving concept with potential for disagreement over the scope of analysis and the implications for federal responsiveness. Nevertheless, due to the population numbers, tribal members on the Great Plains qualify for EJ consideration as both a minority and low-income population. Table 3-13 summarizes relevant data regarding minority and low-income populations for the Analysis Area.

Table 3-13. Population Breakdown by Region and Race, 2002–2008.

Race	Dunn		McKenzie		McLean		Mountrail		North Dakota	
	2002	2008	2002	2008	2002	2008	2002	2008	2002	2008
Caucasian	3,067	2,818	4,493	4,329	8,313	7,610	4,480	4,086	587,085	586,272
African American	1	2	4	30	1	9	8	27	4,931	6,956
American Indians and Alaska Natives	469	467	1,175	1,230	558	587	1,949	2,277	31,104	35,666
Asian /	4	3	4	10	17	19	17	20	4,679	5,095

Pacific Islanders										
Two or More Races	1	28	32	75	118	112	68	101	6,311	7,492
All Minorities	475	500	1,215	1,345	694	727	2,042	2,425	47,025	55,209

Source: Northwest Area Foundation 2009.

In 2008, North Dakota's total minority population comprised approximately 55,209, or 8.6% of the state's total population. This is an increase of approximately 17.4% over the 2002 minority population numbers, compared with the 1.2% overall increase for the state's total population during the same time. Although 91.3% of the population in North Dakota is classified as Caucasian, this is a decrease of 1.3% from 2002. Conversely, as presented in Table 3-13, the minority population of the state has increased steadily since 2002. For example, the American Indian and Alaska Native population increased 0.6%, from 4.9% of the 2002 state population to 5.5% of the 2008 state population. Approximately 70% of Reservation residents are tribal members and 14% of the Dunn County population and 21.6% of the McKenzie County population comprises American Indians and Alaska Natives.

Poverty rate data for the counties in the Analysis Area are summarized in Table 3-14. The data show that poverty rates for Dunn County, Mountrail County, and the State of North Dakota increased from 2000 to 2007. Poverty rates have decreased for McKenzie and McLean counties.

Table 3-14. Poverty Rates for the Analysis Area.

Location	2000	2007
Dunn County	13.3%	13.5%
McKenzie County	15.7%	13.8%
McLean County	12.3%	10.4%
Mountrail County	15.7%	15.9%
Fort Berthold Reservation	N/A	N/A
North Dakota	10.4%	11.8%

Source: U.S. Census Bureau 2009d.

Generally, existing oil and gas leasing has already benefited the MHA Nation government and infrastructure from tribal leasing, fees, and taxes. Current oil and gas leasing on the Reservation has also already generated revenue to MHA Nation members who hold surface and/or mineral interests. However, owners of allotted surface within the Analysis Area may not necessarily hold mineral rights. In such cases, surface owners do not receive oil and gas lease or royalty income, and their only related income would be compensation for productive acreage lost to road and well pad construction. Those with mineral interests also may benefit from royalties on commercial production if the wells prove successful. Profitable production rates at proposed locations might lead to exploration and development of additional tracts owned by currently non-benefitting allottees. In addition to increased revenue for land and mineral holders, exploration and development would increase employment on the Reservation with oversight from the Tribal Employment Rights Office, which would help alleviate some

of the poverty prevalent on or near the Reservation. Tribal members without either surface or mineral rights would not receive any direct benefits, except through potential employment, should they be hired. Indirect benefits of employment and general tribal gains would be the only potential offsets to negative impacts.

Additional 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 reduced following the surveys of proposed well locations and access road routes and determination by the BIA that there would be no effect to historic properties. Furthermore, nothing is known to be present that qualifies as a TCP or for protection under the American Indian Religious Freedom Act. Potential for disproportionate impacts is further reduced by requirements for immediate work stoppage following an unexpected discovery of cultural resources of any type. Mandatory consultation 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 a threat for significant impact to any other critical element, including air quality, public health and safety, water quality, wetlands, wildlife, soils, or vegetation within the human environment. Through the avoidance of such impacts, no disproportionate impact is expected to low-income or minority populations. The Proposed Action offers many positive consequences for tribal members, while recognizing EJ 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.

3.10 MITIGATION AND MONITORING

Many protective measures and procedures are described in this document and in the APD. No laws, regulations, or other requirements have been waived; no compensatory mitigation measures are required. Monitoring of cultural resource impacts by qualified personnel is recommended during all ground-disturbing activities. Each phase of construction and development through production will be monitored by the BLM, BIA, and representatives of the MHA Nation to ensure the protection of cultural, archaeological, and natural resources. In conjunction with 43 CFR 46.30, 46.145, 46.310, and 46.415, a report will be developed by the BLM and BIA that documents the results of monitoring in order to adapt the projects to eliminate any adverse impact on the environment.

Mitigation opportunities can be found in general and operator-committed BMPs and mitigation measures. BMPs are loosely defined as techniques used to lessen the visual and physical impacts of development. The BLM has created a catalog of BMPs that, when properly implemented, can assist industry in a project's design, scheduling, and construction techniques. Zenergy would implement, to the extent possible, the use of BMPs in an effort to mitigate environmental concerns in the planning phase allowing for smoother analysis, and possibly faster project approval. Many of these are required by the BLM when drilling federal or tribal leaseholds and can be found in the surface use plan in the APD.

3.10.1 General BMPs

Although largely project-specific, there are a number of BMPs that can, and should, be considered on development projects in general. The following are examples of general BMPs.

- Planning roads and facility sites to minimize visual impacts.
- Using existing roads to the extent possible, upgrading as needed.
- Reducing the size of facility sites and types of roads to minimize surface disturbance.
- Minimizing topsoil removal.
- Stockpiling stripped topsoil and protecting it from erosion until reclamation activities commence. At that time, the soil would be redistributed and reseeded on the disturbed areas. The reclaimed areas would be protected and maintained until the sites are fully stabilized.
- Avoiding removal of, and damage to, trees, shrubs, and groundcover where possible. Trees near construction areas would be marked clearly to ensure that they are not removed.
- Mowing, instead of clearing, a facility or well site to accommodate vehicles or equipment.
- Maintaining buffer strips or using other sediment control measures to avoid sediment migration to stream channels as a result of construction activities.
- Planning for erosion control.
- Proper storage of chemicals (including secondary containment).
- Keeping sites clean, including containing trash in a portable trash cage. The trash cage would be emptied at a state-approved sanitary landfill.
- Conducting snow removal activities in a manner that does not adversely impact reclaimed areas and areas adjacent to reclaimed areas.
- Avoiding or minimizing topographic alterations, activities on steep slopes, and disturbances within stream channels and floodplains to the extent possible.
- Maintaining buffers around work areas where there is a risk of fire as a result of construction activities.
- Keeping fire extinguishers in all vehicles.
- Planning transportation to reduce vehicle density.
- Posting speed limits on roads.
- Avoiding traveling during wet conditions that could result in excessive rutting.
- Painting facilities a color that would blend with the environment.
- Practicing dust abatement on roads.
- Recontouring disturbed areas to approximate the original contours of the landscape.

- Developing a final reclamation plan that allows disturbed areas to be quickly absorbed into the natural landscape.

Zenergy recognizes that there are several BMPs that can be used to mitigate environmental concerns specific to projects associated with below-ground linear alignments, such as those included in the proposed utility corridor. These include:

- following the contour (form and line) of the landscape;
- avoiding locating ROWs on steep slopes;
- sharing common ROWs;
- co-locating multiple lines in the same trench; and
- using natural (topography, vegetation) or artificial (berms) features to help screen facilities such as valves and metering stations;

Zenergy would implement these and/or other BMPs to the extent that they are technically feasible and would add strategic and measurable protection to the project area.

3.10.2 Mitigation and Safety Measures Committed to by Zenergy

3.10.2.1 Dust Control

During construction, a watering truck may be kept on site and the access roads would be watered as necessary, especially during periods of high winds and/or low precipitation.

3.10.2.2 Fire Control

Zenergy would implement fire prevention and control measures including, but not limited to:

- requiring construction crews to carry fire extinguishers in their vehicles and/or equipment;
- training construction crews in the proper use of fire extinguishers; and
- contracting with the local fire district to provide fire protection.

3.10.2.3 Traffic

Construction personnel will stay primarily within the ROW or will follow designated access roads.

3.10.2.4 Closed Loop System

Zenergy commits to using a closed loop system for both wells locations.

3.10.2.5 Wildlife

During an informal Section 7 consultation with the U.S. Fish and Wildlife Service, the following mitigation measures were agreed upon to reduce the potential impact to protected species.

- Piping Plover, Interior Least Tern, and Pallid Sturgeon: A four foot berm will be placed around each location.
- Whooping Cranes: If a whooping crane is sighted within one mile of the proposed project area, work will be stopped and the Fish and Wildlife Service will be notified.
- Migratory Birds and Bald and Golden Eagles: Zenergy will have a biologist survey the project area five days before construction begins or the grass will be maintained by mowing within the project location (access road and well pad) prior to the breeding season to deter migratory birds from nesting in the project area.

3.10.2.6 Cultural Resources

Zenergy recognizes the need to protect cultural resources on the project locations and has committed to the following:

- Avoiding, as recommended, all identified NRHP eligible or unevaluated cultural resources. Buffers would be placed between eligible or unevaluated cultural resources and the proposed infrastructure (5-acre well pad or 66-foot-wide access road construction corridor). When avoidance buffers of 50 feet or greater cannot be achieved due to project design constraints, temporary fencing is recommended along the edge of the construction corridor and monitoring by a qualified archaeologist is recommended during all ground-disturbing activities to ensure that inadvertent impacts to cultural resources are avoided.
- Prohibiting all project workers from collecting artifacts or disturbing cultural resources in any area under any circumstances.
- Avoiding impacts to NRHP eligible or unevaluated cultural resources on well sites and access roads. If cultural resources are discovered during construction or operation, work shall immediately be stopped, the affected site be secured, and BIA and THPO notified. In the event of a discovery, work shall not resume until written authorization to proceed has been received from the BIA.

3.11 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Removal and consumption of oil and/or gas from the Bakken Formation would be an irreversible and irretrievable commitment of resources. Other potential resource commitments include land area devoted to the disposal of cutting, soil lost to erosion (i.e., wind and water), unintentionally destroyed or damage cultural resources, wildlife killed as a result of collision with vehicles (e.g., construction machinery and work trucks), and energy expended during construction and operation.

3.12 SHORT-TERM USE VERSUS LONG-TERM PRODUCTIVITY

Short-term development activities would not detract significantly from long-term productivity and use of the project areas. The construction of access roads and well pad areas would eliminate any forage or habitat use by wildlife and/or livestock. Any allottees to which compensation for land disturbance is owed will be properly compensated for the loss of land use. The initial disturbance area would decrease considerably once the wells were drilled and non-necessary areas had been reclaimed. Rapid reclamation of the project area would facilitate revived wildlife and livestock usage, stabilize soil, and reduce the potential for erosion and sedimentation.

3.13 CUMULATIVE IMPACTS

Environmental impacts may accumulate either over time or in combination with similar events in the area. Unrelated and dissimilar activities may also have negative impacts on critical elements, thereby contributing to the cumulative degradation of the environment. Past and current disturbances near the project area include farming, grazing, roads, and other oil and gas wells. Reasonably foreseeable future impacts must also be considered. Should development of these wells prove productive, it is likely that Zenergy and possibly other operators would pursue additional development in the area. Current farming and ranching activities are expected to continue with little change because 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 mineral rights. Over the past several years, exploration has accelerated over the Bakken Formation. Most of this exploration has taken place outside the Reservation boundary on fee land, but for purposes of cumulative impact analyses, land ownership and the Reservation boundary are immaterial. Although it is the dominant activity currently taking place in the area, oil and gas development is not expected to have more than a minor cumulative effect on land use patterns.

There is one well within 1 mile of the project location. There are 29, 133, and 640 oil and gas wells (active, confidential, and permitted) within 5, 10, and 20 miles, respectively, of the proposed project area (Table 3-15 through Table 3-18; Figure 3-5).

Table 3-15. Confidential, Active, and Permitted Wells within a 1-mile Radius of the Project Area.

Reservation (on/off)	John Elk #28-27H		Helena Ruth Grant #33-34H	
	on	off	on	off
Confidential Wells	0	-	1	-
Active Wells	0	-	0	-
Permitted Wells	0	-	0	-

Table 3-16. Confidential, Active, and Permitted Wells within a 5-mile Radius of the Project Area.

Reservation (on/off)	John Elk #28-27H		Helena Ruth Grant #33-34H	
	on	off	on	off
Confidential Wells	13	-	13	-
Active Wells	15	-	14	-
Permitted Wells	0	-	0	-

Table 3-17. Confidential, Active, and Permitted Wells within a 10-mile Radius of the Project Area.

Reservation (on/off)	John Elk #28-27H		Helena Ruth Grant #33-34H	
	on	off	on	off
Confidential Wells	67	6	66	6
Active Wells	46	8	45	8
Permitted Wells	2	0	2	0

Table 3-18. Confidential, Active, and Permitted Wells within a 20-mile Radius of the Project Area.

Reservation (on/off)	John Elk #28-27H		Helena Ruth Grant #33-34H	
	on	off	on	off
Confidential Wells	134	71	135	71
Active Wells	137	258	132	262
Permitted Wells	9	10	9	8

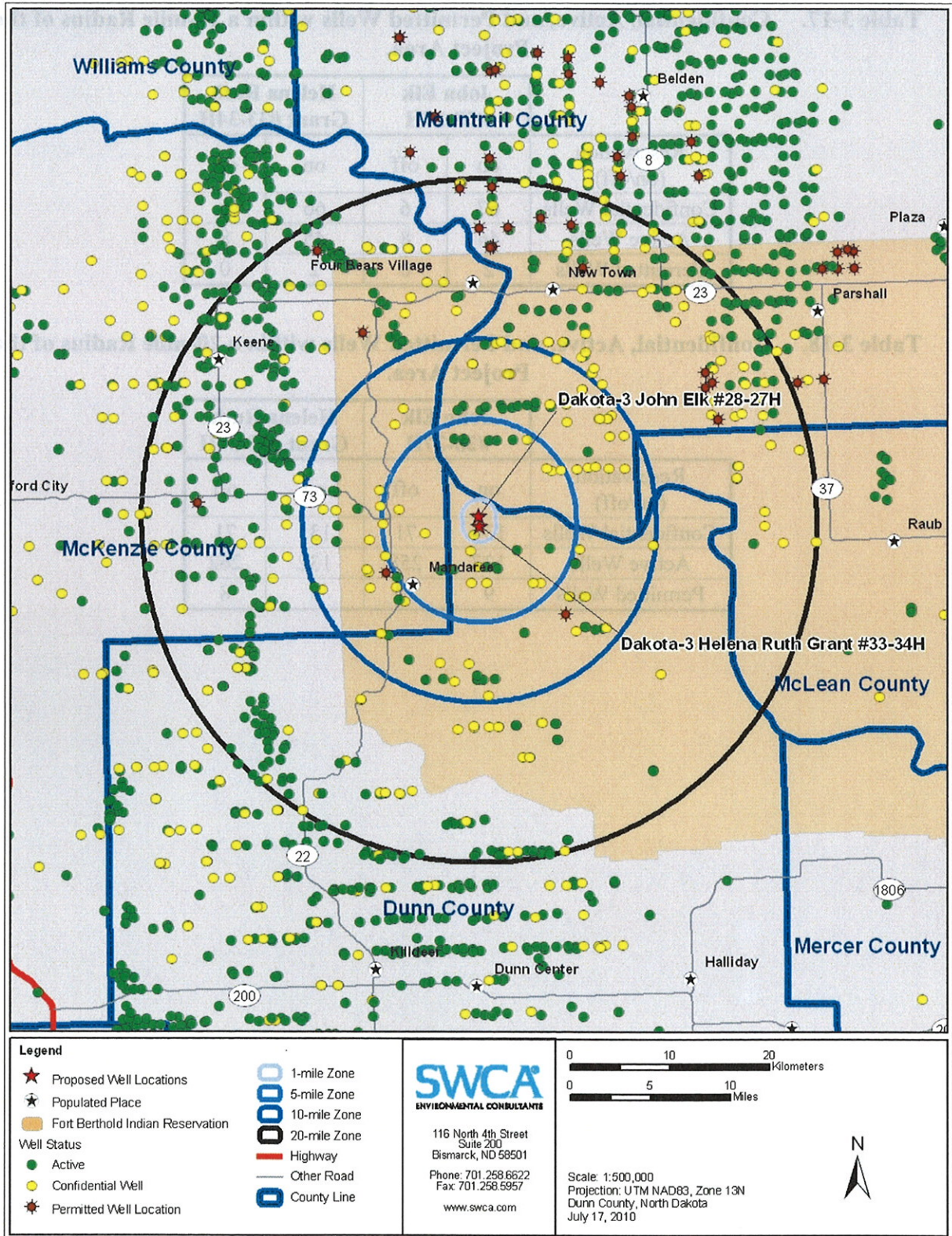


Figure 3-5. Active, confidential, and permitted wells within a 1-, 5-, 10-, and 20-mile radius of the proposed project location.

Within the Reservation and near the proposed project area, development projects remain few and widely dispersed. The project area proposed in this EA would not share access roads with any other proposed wells, but this may change in the future. If successful commercial production is achieved, new exploratory wells may be proposed, though such developments are merely speculation until APDs are submitted to the BLM and BIA for approval. Zenergy has suggested but not yet formally proposed that potentially six more wells may eventually be drilled in the same general area as the proposed project, using many of the same main access roads and minimizing the disturbance as much as possible.

It is anticipated that the pace and level of natural gas development in this region of the state will continue at the current rate over the next few years and contribute to cumulative air quality impacts. The Proposed Action would incrementally contribute to emissions occurring in the region. In general, however, the increase in emissions associated with the Proposed Action—most of which would occur during well construction—would be localized, largely temporary, and limited in comparison with regional emissions.

No surface discharge of water would occur under the Proposed Action, nor would any surface water or groundwater be used during project development. The Proposed Action, when combined with other actions (cattle grazing, other oil and gas development, and agriculture) that are likely to occur in and near the project area in the future, would increase sedimentation and runoff rates. Sediment yield from active roadways could occur at higher rates than background rates and continue indefinitely. Thus, the Proposed Action could incrementally add to existing and future sources of water quality degradation in the Independence Point Watershed, but increases in degradation would be reduced by Zenergy's commitment to minimizing disturbance, using erosion control measures as necessary, and implementing BMPs designed to reduce impacts.

Unlike well pads, active roadways are not typically reclaimed, thus sediment yield from roads can continue indefinitely at rates two to three times the background rate. The Proposed Action would create additional lengths of unpaved roadway in the project area. Thus, the Proposed Action would incrementally add to existing and future impacts to soil resources in the general area. However, Zenergy is committed to using BMPs to mitigate these effects. BMPs would include implementing erosion and sedimentation control measures such as installing culverts with energy-dissipating devices at culvert outlets to avoid sedimentation in ditches, constructing water bars alongside slopes, and planting cover crops to stabilize soil following construction and before permanent seeding takes place.

Vegetation resources across the project area could be affected by various activities, including additional energy development and surface disturbance of quality native prairie areas that have been largely undisturbed by development activities, grazing, and agriculture. Indirect impacts to native vegetation may be possible due to soil loss, compaction, and increased encroachment of unmanaged invasive weed species. Continued oil and gas development within the Reservation could result in the loss and further fragmentation of native mixed-grass prairie habitat. Past, present, and reasonably foreseeable future activities in the general area have reduced and would likely continue to reduce the amount of available habitat for listed species.

Significant archaeological resources are irreplaceable and often unique; any destruction or damage of such resources can be expected to diminish the archaeological record as a whole. However, no such damage or destruction of significant archaeological resources is anticipated as a result of the Proposed Action because these resources would be avoided, negating the cumulative impacts to the archaeological record.

The Proposed Action would incrementally add to existing and future socioeconomic impacts in the general area. The Proposed Action includes two wells, which would be an additional source of revenue for some residents of the Reservation. Increases in employment would be temporary during the construction, drilling, and completion phases of the proposed project. Therefore, little change in employment would be expected over the long term.

Current impacts from oil and gas-related activities are still fairly dispersed, and the required BMPs would limit potential impacts. No significant negative impacts are expected to affect any critical element of the human environment; impacts would generally be low and mostly temporary. Zenergy has committed to implementing interim reclamation of the roads and well pads immediately following construction and completion. Implementation of both interim and permanent reclamation measures would decrease the magnitude of cumulative impacts.

4.0 CONSULTATION AND COORDINATION

The BIA must continue to make efforts to solicit the opinions and concerns of all stakeholders (Table 4-1). For the purpose of this EA, a stakeholder is considered any agency, municipality, or individual person that the proposed action may affect either directly or indirectly in the form of public health, environmental, or socioeconomic issues. A scoping letter declaring the location of the proposed project area and explaining the actions proposed at the site was sent in advance of this EA to allow stakeholders ample time to submit comments or requests for additional information. Additionally, a copy of this EA should be submitted to all federal agencies with interests either in, near, or potentially affected by the proposed actions.

Table 4-1. Scoping Comments.

Name	Organization	Comment	Response to Comment
Bagley, Lonny	BLM	No Comment	
Benson, Barry	MHA Nation	No Comment	
Bercier, Marilyn	BIA	No Comment	
Berg, George	NoDak Electric Cooperative, Inc.	No Comment	
Black, Mike	BIA	No Comment	
Boyd, Bill	Midcontinent Cable Company	No Comment	
Brady, Perry	THPO, Three Affiliated Tribes	No Comment	
Brugh, V. Judy	MHA Nation	No Comment	
Cayko, Richard	McKenzie County	No Comment	
Chevance, Nick	National Parks Service	No Comment	
Christenson, Ray	Southwest Water Authority	No Comment	
Cimarosti, Dan	USACE	Enclosed Section 10 Application incase a permit is required.	Both locations have had Section 10 Applications submitted.
Crooke, Patsy	USACE	No Comment	
Danks, Marvin	Fort Berthold Rural Water Director	No Comment	
Dhieux, Joyce	EPA	No Comment	
Dixon, Doug	Montana Dakota Utilities	No Comment	
Erickson, Carroll	Ward County Board of Commissioners	No Comment	
Ferris, Kade	Turtle Mountain Band of Chippewa	No Comment	
Fitzpatrick, Barbara	FEMA	No Comment	
Flores, J.R.	U.S. Department of Agriculture	No Comment	
Fox, Fred	MHA Nation	No Comment	
Glatt, David	North Dakota Department of Health	Impacts will be minor and can be controlled by proper construction methods.	BMPs discussed in APD and will be covered in Conditions of Approval.
Guzman, Frank	USFS	No Comment	

*Environmental Assessment: Zenergy Operating Company, LLC,
Dakota-3 Wells John Elk #28-27H and Helena Ruth Grant #33-34H*

Name	Organization	Comment	Response to Comment
Hanson, Jesse	North Dakota Parks and Recreation	No Comment	
Hauck, Reinhard	Dunn County	No Comment	
Hefferman, Dan	EPA	No Comment	
His Horse Is Thunder, Ron	Chairman, Standing Rock Sioux Tribe	No Comment	
Hoffman, Warren	Killdeer, Weydahl Field	No Comment	
Hovda, Roger	Reservation Telephone Cooperative	No Comment	
Hudson-Schenfisch, Julie	McLean County Board of Commissioners	No Comment	
Hynek, David	Chair, Mountrail Board of County Commissioners	No Comment	
Johnson, Harley	New Town Municipal Airport	No Comment	
Kadmas, Ray	Dunn County	No Comment	
Kuehn, John	Parshall-Hankins Field Airport	No Comment	
Kulas, Cheryl	Indian Affairs Commission	No Comment	
Kyner, Dave	FEMA	No Comment	
Latimer, Tom	Red Willow Great Plains, LLC	No Comment	
Laux, Eric	USACE	No Comment	
Lindemann, Larry	Airport Manager, Barnes County Municipal Airport	No Comment	
McKenna, Mike	North Dakota Game and Fish Department	Recommend construction be avoided where possible in native prairie, wooded draws, riparian areas, and wetlands. Botanical and raptor surveys suggested.	See Wildlife, Wetlands, and Vegetation sections in the EA. BMPs discussed in APD and will be covered in Conditions of Approval.
McPhillips, Kelly	Bureau of Reclamation	Map provided showing the location of rural water lines relative to proposed well site.	No waterlines are near proposed well location.
Melhouse, Ronald	Bureau of Reclamation	No Comment	
Nash, Mike	BLM	No Comment	
Nelson, Richard	U.S. Bureau of Reclamation	No Comment	

*Environmental Assessment: Zenergy Operating Company, LLC,
Dakota-3 Wells John Elk #28-27H and Helena Ruth Grant #33-34H*

Name	Organization	Comment	Response to Comment
Nordquist, Don	Petro-Hunt, LLC	No Comment	
Obenauer, Steve	FAA	No Comment	
Olson, Frances	McKenzie County	No Comment	
Paaverud, Merl	State Historical Society	Request a copy of site forms and reports.	See Cultural Resources section.
Packineau, Mervin	MHA Nation	No Comment	
Paulson, Gerald	Western Area Power Administration	No Comment	
Pearson, Myra	Spirit Lake Sioux Tribe	No Comment	
Peterson, Walter	North Dakota Department of Transportation	No Comment	
Poitra, Fred	MHA Nation	No Comment	
Prchal, Doug	North Dakota Parks and Recreation Department	No Comment	
Renschler, Jason	USACE	No Comment.	
Rudolph, Reginald	McLean Electric Cooperative, Inc.	No Comment	
Schelkoph, David	West Plains Electric Cooperative, Inc.	No Comment	
Selvage, Michael	Chairman, Sisseton-Wahpeton Sioux Tribe	No Comment	
Shorthull, Marietta	Fort Berthold Agency	No Comment	
Smith, Heather	EOG Resources, Inc.	No Comment	
Sorensen, Charles	USACE	Well pad locations in T150N, R93W are in close proximity to the Lake. USACE recommends: Closed-loop system, a catch trench be established, sewage collection be a closed system, additional fill should be weed-free.	Both locations will utilize a closed-loop system.
Svoboda, Larry	EPA	No Comment	

Environmental Assessment: Zenergy Operating Company, LLC,
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Name	Organization	Comment	Response to Comment
Sweeney, Paul	Natural Resources Conservation Service	Confirms receipt of letter requesting a determination of the project affecting farmland according to FPPA [Farmland Protection Policy Act]. Recommends impacts to wetlands be avoided.	FPPA does not apply to the project. See Wetlands section in EA.
Thompson, Brad	USACE	No Comment	
Thorson, Gary	McKenzie Electric Cooperative	No Comment	
Towner, Jeffrey	USFWS	Enclosed fact sheet explaining threatened and endangered species, migratory birds, high value habitat to avoid, habitat fragmentation, recommended construction and survey schedules, and reclamation. USFWS issued a concurrence letter on August 20, 2010 stating that they either agreed with our findings. They also stated commitments that Zenergy will need to follow to stay in compliance.	Please see sections 3.3.2 and 3.10.2
Wells, Marcus	Chairman, MHA Nation	No Comment	
Whitcalf, Frank	MHA Nation	No Comment	
Williams, Damon	MHA Nation	No Comment	
Wolf, Malcolm	MHA Nation	No Comment	
Chief Missile Engineer	Minot Air Force Base	No Comment	
Garrison Project Office	USACE	No Comment	
Insurance & Hazard Director	FEMA	No Comment	
Land Department	Northern Border Pipeline Company	No Comment	

*Environmental Assessment: Zenergy Operating Company, LLC,
Dakota-3 Wells John Elk #28-27H and Helena Ruth Grant #33-34H*

Name	Organization	Comment	Response to Comment
Manager	Xcel Energy	No Comment	
NAGRPA Office	Three Affiliated Tribes	No Comment	
Natural Resources Department	Three Affiliated Tribes	No Comment	

*Environmental Assessment: Zenergy Operating Company, LLC,
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United States Department of the Interior

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



IN REPLY REFER TO:
DESCRM
MC-208

AUG 12 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 an oil well pad in Dunn County, North Dakota. Approximately 32.59 acres were intensively inventoried using a pedestrian methodology. Potential surface disturbances are not expected to exceed the area depicted in the enclosed report. Two archaeological sites (32DU1514, 32DU1516) were located which may 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).

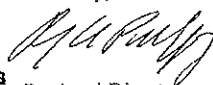
As the surface management agency, and as provided for in 36 CFR 800.5, we have therefore reached a determination of **no historic properties affected** for this undertaking, as the two archaeological sites will be avoided by rerouting the access road. Catalogued as **BIA Case Number AAO-1823/FB/10**, the proposed undertaking, location, and project dimensions are described in the following report:

Hutchinson, Alan, Judith R. Cooper and Stephanie Lechert
(2010) A Class I and Class III Cultural Resource Inventory of the Zenergy Dakota-3 John Elk #28-27H Well Pad and Access Road, Fort Berthold Indian Reservation, Dunn County, North Dakota.
SWCA Environmental Consultants for Zenergy Operating Company, LLC, Tulsa, OK.

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

Enclosure

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

*Environmental Assessment: Zenergy Operating Company, LLC,
Dakota-3 Wells John Elk #28-27H and Helena Ruth Grant #33-34H*



United States Department of the Interior

BUREAU OF INDIAN AFFAIRS
Great Plains Regional Office
115 Fourth Avenue S.E.
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IN REPLY REFER TO:
DESCRM
MC-208

AUG 18 2010

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

Dear Mr. Brady:

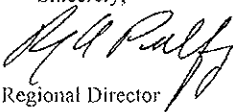
We have considered the potential effects on cultural resources of an oil well pad and access road project in Dunn County, North Dakota. Approximately 36.53 acres were intensively inventoried using a pedestrian methodology. Potential surface disturbances are not expected to exceed the area depicted in the enclosed report. Three archaeological sites (32DU1397, 32DU1515 and 32DU1517) were located which may 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. Previously known site 32DU1397, a historic homestead, was further evaluated through shovel test excavations. These tests revealed one feature which contributes to the site being eligible for 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 adverse effect** for this undertaking, as the archaeological sites and/or contributing features will be avoided. Catalogued as **BIA Case Number AAO-1793/FB/10**, the proposed undertaking, location, and project dimensions are described in the following report:

Lechert, Stephanie, Nelson Klitzka and Judith Cooper
(2010) A Class I and Class III Cultural Resource Inventory and Evaluative Shovel Testing of the Zenergy Dakota-3 Helena Ruth Grant #33-34H Well Pad, Access Road and Gathering Pipeline, Fort Berthold Indian Reservation, Dunn County, North Dakota. SWCA Environmental Consultants for Zenergy Operating Company, LLC, Tulsa, OK.

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

Enclosure

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



TRIBAL HISTORIC PRESERVATION

Mandan Hidatsa Arikara
Perry 'No Tears' Brady, Director
404 Frontage Road,
New Town, North Dakota 58763
Ph/701-862-2474 fax/701-862-2490
pbrady@mhanation.com



August 16, 2010

Bureau of Indian Affairs
Great Plains Regional Office
315 Fourth Avenue S.E.
Aberdeen, South Dakota 57401

RE: Recommendation and Concurrence:

As Director of the Tribal Historic Preservation Office and the Tribal Historical Preservation Officer representing the Mandan Hidatsa Arikara Nation I Concur with, BIA Case Number AO-1823/FB/10

Hutchinson, Alan, Judith R. Cooper, and Stephanie Lechert
(2010) A Class I and Class III Cultural Resource Inventory of the Zenergy Dakota-3 John Elk 28-27H
Well Pad and Access Road, Fort Berthold Indian Reservation, Dunn County, North Dakota
SWCA Environmental Consultants for Zenergy Operating Company. LLC, Tulsa, OK

We respectfully request to be notified should any NAGPRA issues arise as the Project progresses also we advise all company to at least **stay 75 ft.** from avoidance sites.

If you have any questions or need additional information, you can contact me at (701) 421-2474

Sincerely,

Perry "No Tears" Brady
Director

Cc.file

Route	Initial	Date
Regional Director		
✓ Deputy Regional Director	102	8/16/10
✓ Deputy Regional Director	208	



TRIBAL HISTORIC PRESERVATION

Mandan Hidatsa Arikara
Perry "No Tears" Brady, Director
404 Frontage Road,
New Town, North Dakota 58763
Ph/701-862-2474 fax/701-862-2490

August 25, 2010

Dr. Carson Murdy
Great Plains Regional Office
115 Fourth Avenue S.E.
Aberdeen, South Dakota 57401

RE: Recommendation and Concurrence

As Director of the Tribal Historic Preservation Office and the Tribal Historical Preservation Officer, representing the Mandan Hidatsa Arikara Nation I Concur with **BIA Case Number AAO-1793/FB/10**

Lechert, Stephanie, Nelson Klitzka and Judith Cooper
(2010) A Class I and Class III Cultural Resource Inventory and Evaluative Shovel Testing of the Zenergy Dakota-3 Helena Ruth Grant #33-34H Well Pad, Access Road and Gathering Pipeline, Fort Berthold Indian Reservation, Dunn County, North Dakota SWCA Environmental Consultants for Zenergy Operating Company, LLC, Tulsa, OK.

If you have any questions or need additional information, you can contact me at Office # (701) 862-2474 or Cell # (701) 421-0547

Sincerely:

Perry "No Tears" Brady
THPO Director

Cc. file

List of Preparers

An interdisciplinary team contributed to this document, following guidance in Part 1502.6 of Council on Environmental Quality regulations. This document was drafted by SWCA under the direction of the BIA. Information was compiled from various sources within SWCA.

Zenergy Operating Company, LLC

- Kelley Bryan, Williston Basin Land Manager

SWCA Environmental Consultants

- Sarah Ruffo, Wildlife Biologist
Prepared the Environmental Assessment.
- Josh Ruffo, Project Manager and Biologist
Conducted natural resource surveys for well pads and access roads.
- Judy Cooper, Ph D Principal Investigator/Archaeologist
Prepared cultural resource reports and cultural resource section of EA.
- Stephanie Lechert, Archaeologist
Conducted cultural resource surveys for well pads and access roads.
- Nelson Klitzka, Archaeologist
Conducted cultural resource surveys for well pads and access roads.
- Jon Markman, Archaeologist/Field Coordinator
Conducted cultural resource surveys for well pads and access roads.
- Chris McLaughlin, Biologist
Conducted natural resource surveys for well pads and access roads.
- Michael Andres, GIS Specialist
Created maps and spatially-derived data.
- Matt Spann, Environmental Specialist
Completed water resources section.
- Rick Wadleigh, NEPA Specialist
Reviewed document for content and adequacy.
- Joey Sheeley, Planning Specialist
Completed soils section.

5.0 REFERENCES

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6.0 ACRONYMS

°F	degrees Fahrenheit
APD	application for permit to drill
APE	area of potential effect
ARPA	Archaeological Resources Protection Act of 1979
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
BMP	best management practice
CAA	Clean Air Act
CFR	Code of Federal Regulations
EA	environmental assessment
EIS	environmental impact statement
EJ	environmental justice
EPA	Environmental Protection Agency
ESA	Endangered Species Act
GHG	greenhouse gas
HAP	hazardous air pollutant
HUC	hydrologic unit code
MHA Nation	Three Affiliated Tribes of the Mandan, Hidatsa, and Arikara Nation
NAGPRA	Native American Graves Protection and Repatriation Act
NDCC	North Dakota Century Code
NDDH	North Dakota Department of Health
NDIC	North Dakota Industrial Commission
NEPA	National Environmental Policy Act
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NTL	notice to lessees
ppm	parts per million
ROW	right-of-way
SHPO	State Historic Preservation Officer
SWCA	SWCA Environmental Consultants
THPO	Tribal Historic Preservation Officer
TMD	total measured depth
TVD	total vertical depth
USC	United States Code
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VOC	volatile organic compound

Notice of Availability and Appeal Rights

Zenergy: Environmental Assessment for Drilling of Dakota-3 John Elk #28-27H and Dakota-3 Helena Ruth Grant #33-34H Exploratory Oil and Gas Wells

The Bureau of Indian Affairs (BIA) is planning to issue administrative approvals for the drilling of two oil and gas wells and related infrastructure on Dakota-3 John Elk #28-27H and Dakota-3 Helena Ruth Grant #33-34H, as shown on the attached map. Construction by Zenergy is expected to begin in the Summer/Fall 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 September 30, 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 locations

