



United States Department of the Interior

BUREAU OF INDIAN AFFAIRS
Great Plains Regional Office
115 Fourth Avenue S.E., Suite 400
Aberdeen, South Dakota 57401



IN REPLY REFER TO:
DESCRM
MC-208

JAN 05 2012

MEMORANDUM

TO: Superintendent, Fort Berthold Agency

FROM: ^{ACTING} Regional Director, Great Plains Region

SUBJECT: Environmental Assessment and Finding of No Significant Impact

In compliance with the regulations of the National Environmental Policy Act (NEPA) of 1969, as amended, an Environmental Assessment (EA) has been completed and a Finding of No Significant Impact (FONSI) has been issued. The EA authorizes land use to drill seven oil and gas wells from three well pad locations on the Fort Berthold Indian Reservation.

All the necessary requirements of the National Environmental Policy Act have been completed. Attached for your files is a copy of the EA Addendum, FONSI and Notice of Availability. The Council on Environmental Quality (CEQ) regulations require that there be a public notice of availability of the FONSI (40 C.F.R. Part 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: Tex Hall, Chairman, Three Affiliated Tribes (with attachment)
Elgin Crows Breast, Tribal Historic Preservation Officer (with attachment)
Derek Enderud, BLM, Bureau of Land Management (with attachment)
Jason Bivens, SWCA (with attachment)
Eric Wortman, EPA (with attachment)
Jonathon Shelman, Corps of Engineers
Jeff Hunt, Fort Berthold Agency

Finding of No Significant Impact

Petro-Hunt, LLC

Seven Bakken/Three Forks Exploratory Oil Wells and Gas Wells on Three Well Pads:

Fort Berthold #148-94-9D-04-2H

Fort Berthold #148-94-35D-26-2H/

Fort Berthold #147-94-2A-11-2H

Fort Berthold #148-95-27B-34-4H, -5H/

Fort Berthold #148-95-22C-15-4H, -5H

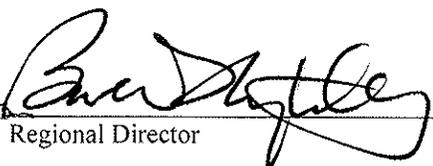
***Fort Berthold Indian Reservation
Dunn County, North Dakota***

The U.S. Bureau of Indian Affairs (BIA) has received a proposal to drill seven oil and gas wells on three well pad locations in Dunn County, North Dakota, on the Fort Berthold Reservation. Associated federal actions by BIA include determinations of impacts and effects regarding environmental resources for developments on tribal lands.

The potential of the proposed actions to impact the human environment is analyzed in the attached addendum to an existing EA, as required by the National Environmental Policy Act. Based on the recently completed addendum to the EA, I have determined that the proposed project will not significantly affect the quality of the human environment. No Environmental Impact Statement is required for any portion of the proposed activities.

This determination is based on the following factors:

1. Agency and public involvement 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.), the National Environmental Policy Act of 1969, as amended (42 U.S.C. 4321 et seq.), the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d, 54 Stat. 250), Executive Order 13186 "Responsibilities of Federal Agencies to Protect Migratory Birds", and the Endangered Species Act (16 U.S.C. 1531 et seq.).
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


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**



Petro-Hunt, LLC

Seven Bakken/Three Forks Exploratory Oil Wells and Gas Wells on Three Well Pads:

Fort Berthold #148-94-9D-04-2H

Fort Berthold #148-94-35D-26-2H/

Fort Berthold #147-94-2A-11-2H

Fort Berthold #148-95-27B-34-4H, -5H/

Fort Berthold #148-95-22C-15-4H, -5H

Fort Berthold Indian Reservation

January 2012

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

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- D MHA THPO Consultation Letters

1.0 PURPOSE AND NEED FOR THE PROPOSED ACTION

1.1 INTRODUCTION

Petro-Hunt, LLC (Petro-Hunt) has acquired the leases and is proposing to drill seven oil and gas wells on three well pad locations 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. Development has been proposed in a location that targets specific areas in the Three Forks and Middle Bakken member of the Bakken Formation, a known oil reserve. The following proposed well pads, illustrated in Figures 1-1 through 1-5, would be located within the Reservation:

- **Fort Berthold #148-94-9D-04-2H:** SE $\frac{1}{4}$ SE $\frac{1}{4}$ Section 9, Township (T) 148 North (N), Range (R) 94 West (W), Dunn County, North Dakota
- **Fort Berthold #148-94-35D-26-2H/Fort Berthold #147-94-2A-11-2H:** SE $\frac{1}{4}$ SE $\frac{1}{4}$ Section 35, T148N, R94W, and NENE Section 2, T147N, R94W, Dunn County, North Dakota
- **Fort Berthold #148-95-27B-34-4H, -5H/Fort Berthold #148-95-22C-15-4H, -5H:** NE $\frac{1}{4}$ NW $\frac{1}{4}$ Section 27 and SW $\frac{1}{4}$ SE $\frac{1}{4}$ Section 22, T148N, R95W, Dunn County, North Dakota

The well pads would be constructed to accommodate drilling activities and well operations. The proposed locations would also include support facilities and utility lines, if the wells are completed for long-term commercial production. Should the wells prove to be productive, oil, gas, and water pipelines may potentially be constructed on trust land and would follow approved access roads; however, no alignments are currently proposed in this document.

All components (e.g., roads, well pads, utility lines, and supporting facilities) would 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 would require additional National Environmental Policy Act of 1969 (NEPA) analysis and federal actions.

*Environmental Assessment: Petro-Hunt, LLC,
 Fort Berthold #148-94-9D-04-2H, Fort Berthold #148-94-35D-26-2H/Fort Berthold #147-94-2A-11-2H,
 and Fort Berthold #148-95-27B-34-4H, -5H/Fort Berthold #148-95-22C-15-4H, -5H*

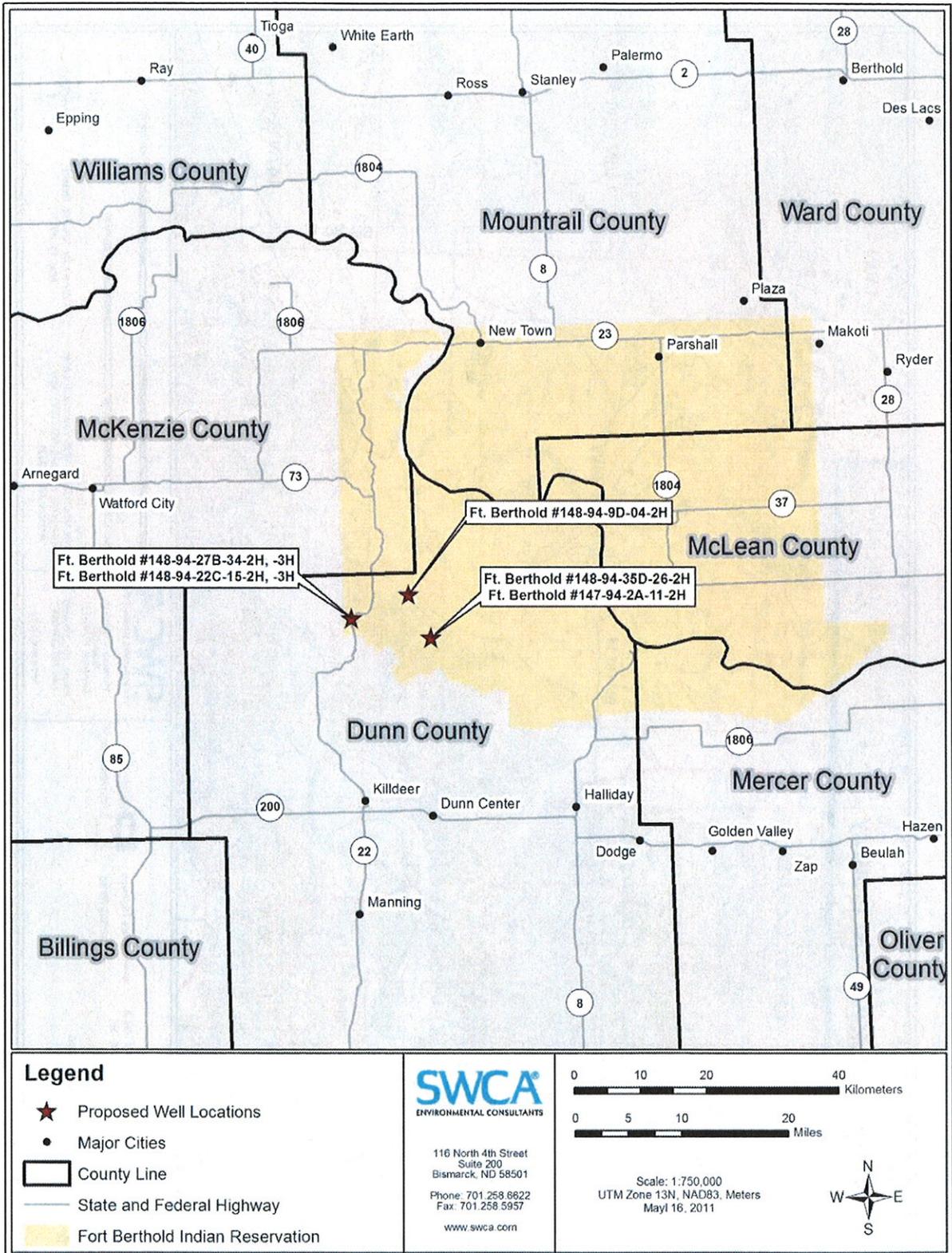


Figure 1-1. Project overview map.

Environmental Assessment: Petro-Hunt, LLC,
 Fort Berthold #148-94-9D-04-2H, Fort Berthold #148-94-35D-26-2H/Fort Berthold #147-94-2A-11-2H,
 and Fort Berthold #148-95-27B-34-2H, -3H/Fort Berthold #148-95-22C-15-2H, -3H

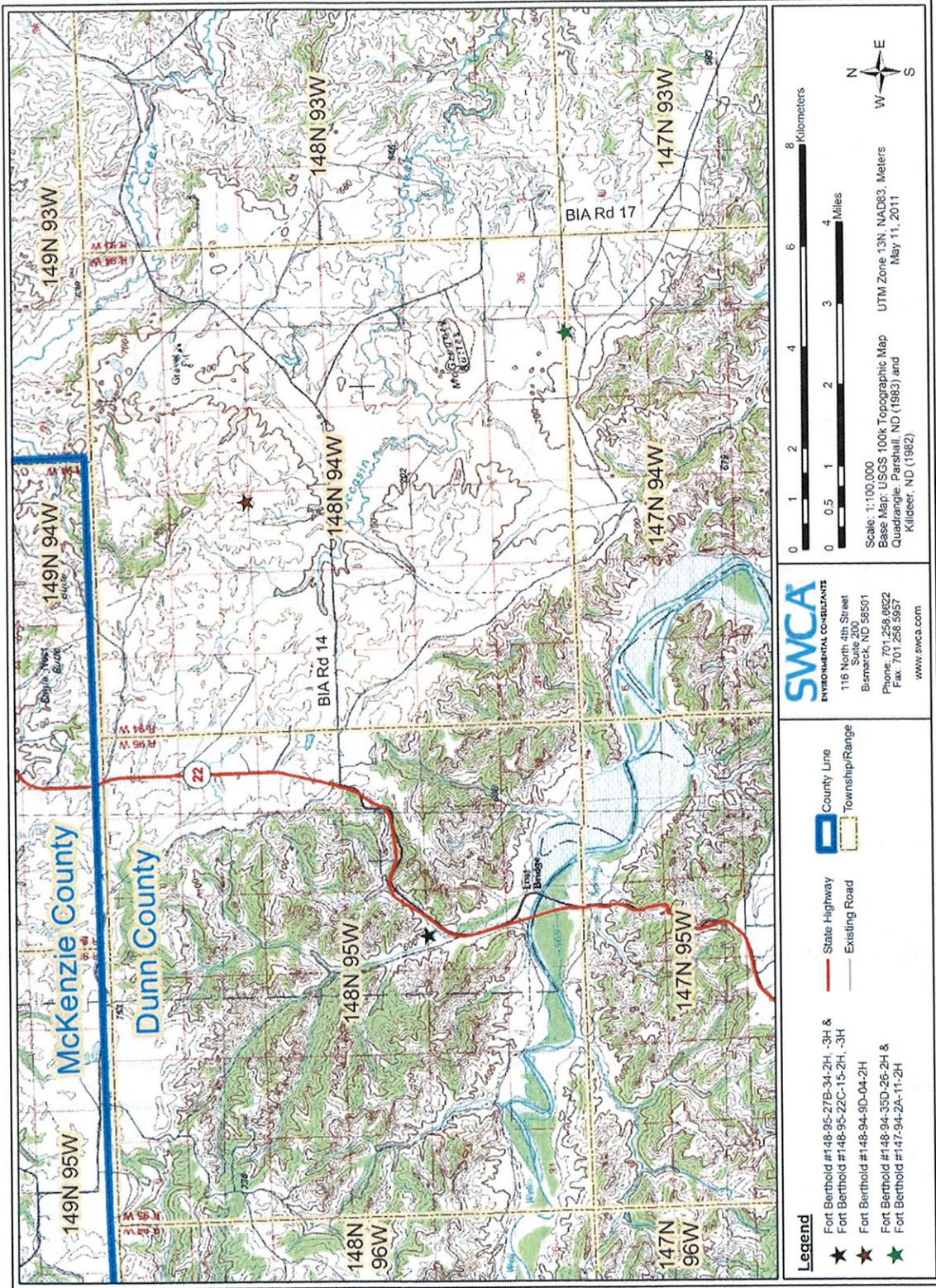


Figure 1-2. Project overview map.

*Environmental Assessment: Petro-Hunt, LLC,
 Fort Berthold #148-94-9D-04-2H, Fort Berthold #148-94-35D-26-2H/Fort Berthold #147-94-2A-11-2H,
 and Fort Berthold #148-95-27B-34-4H, -5H/Fort Berthold #148-95-22C-15-4H, -5H*

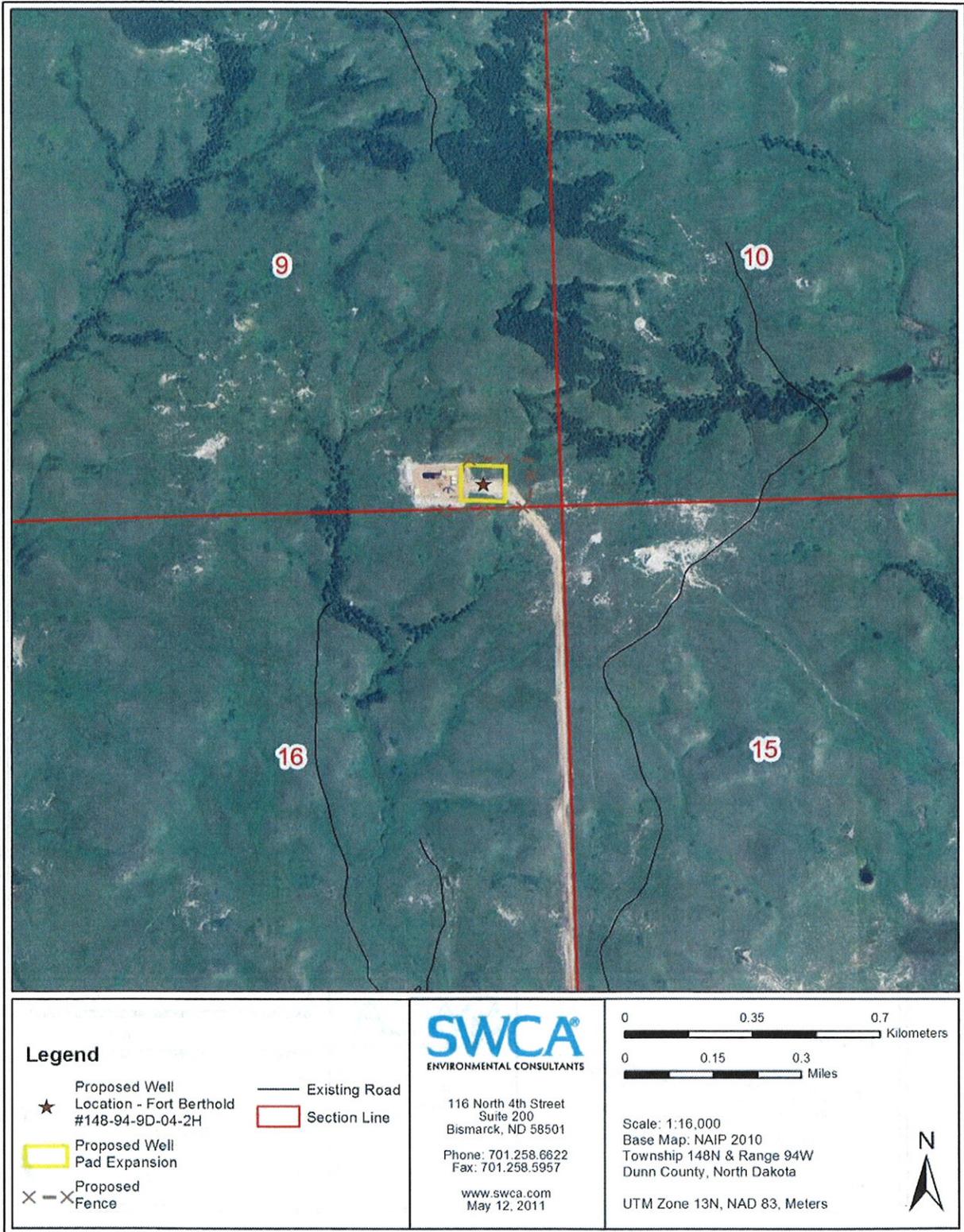


Figure 1-3. Proposed Fort Berthold #148-94-9D-04-2H well pad.

Environmental Assessment: Petro-Hunt, LLC,
 Fort Berthold #148-94-9D-04-2H, Fort Berthold #148-94-35D-26-2H/Fort Berthold #147-94-2A-11-2H,
 and Fort Berthold #148-95-27B-34-4H, -5H/Fort Berthold #148-95-22C-15-4H, -5H

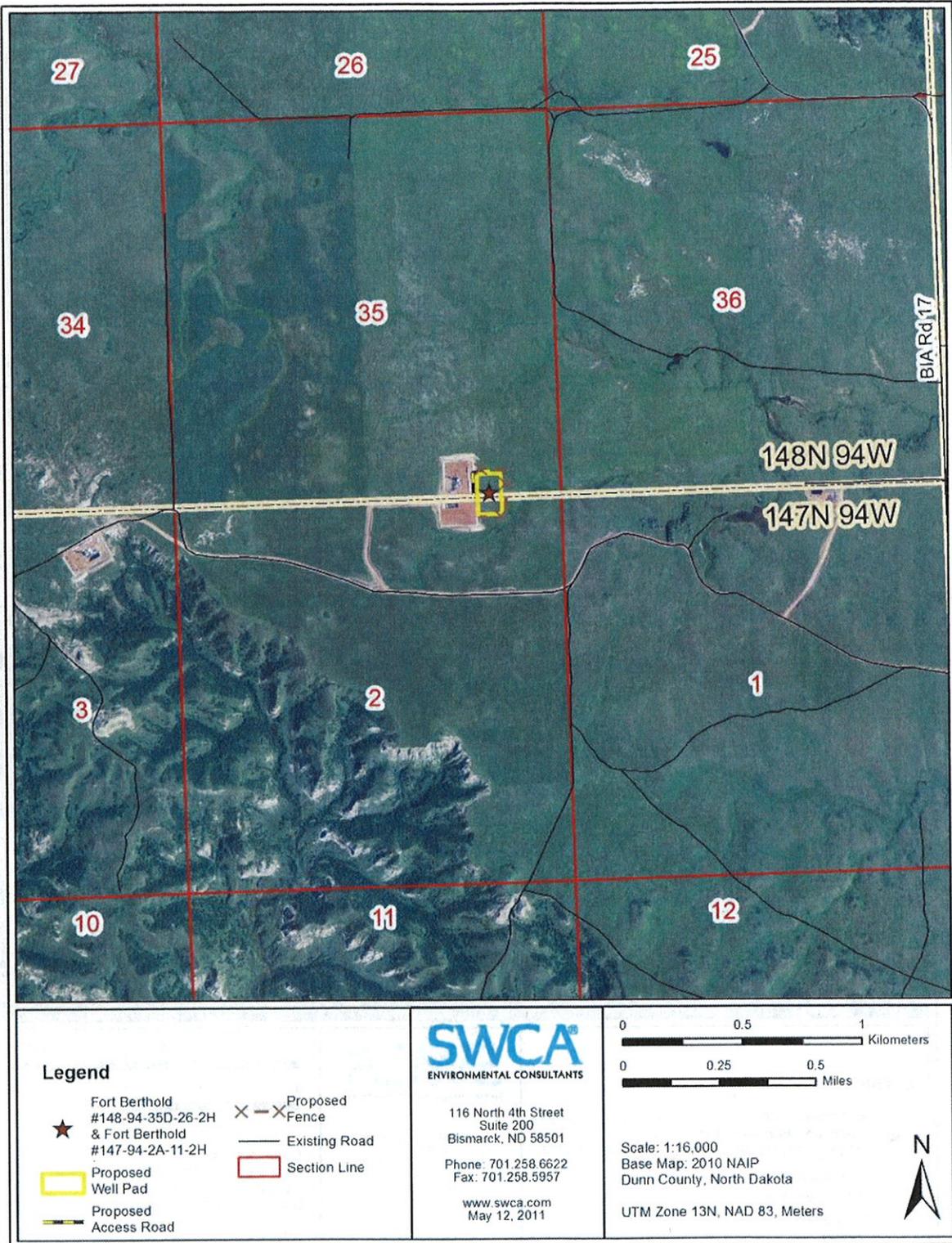


Figure 1-4. Proposed Fort Berthold #148-94-35D-26-2H and Fort Berthold #147-94-2A-11-2H well pad.

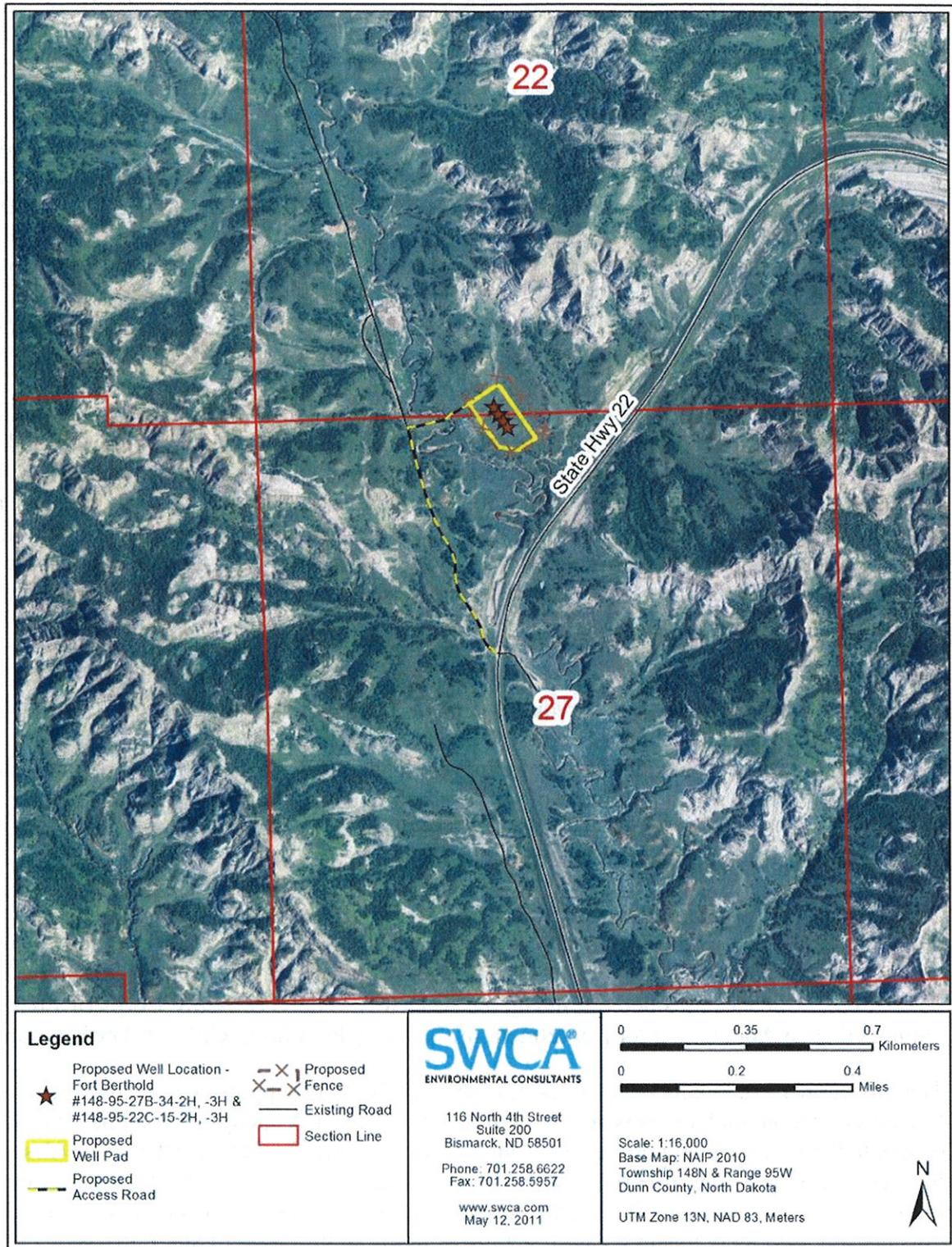


Figure 1-5. Proposed Fort Berthold #148-95-27B-34-4H, -5H and Fort Berthold #148-95-22C-15-4H, -5H well pad.

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, could benefit substantially 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 NEPA, the Council on Environmental Quality (CEQ) 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 the regional guidelines of Nationwide Permit 14 is required when linear transportation projects impact greater than 0.1 acre of the waters of the United States. The U.S. Army Corps of Engineers requires that a Pre-Construction Notification (PCN) be submitted when greater than 0.1 acre of waters of the U.S. is impacted or if there is a discharge in a special aquatic site, including wetlands. The PCN must be submitted to the Department of the Army a minimum of 45 days before construction is expected to begin. The access road for the Fort Berthold #148-95-27B-34-4H, -5H/Fort Berthold #148-95-22C-15-4H, -5H well pad would cross an intermittent stream.

Compliance with Section 10 of the Rivers and Harbors Act (33 USC 403) is required when impacting navigable waters of the U.S. (which includes work over, under, or in such waters). Fort Berthold #148-95-27B-34-4H, -5H wells would 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 procedures and technical practices described in the APD supporting documents and in the EA describe potential impacts to the project area. This EA analyzes potential impacts to elements in the natural and human environment 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. The 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, this EA would result in a Finding of No Significant Impact (FONSI). Should significant adverse impacts be identified as a result of the

direct, indirect, or cumulative effects of the Proposed Action, then NEPA requires the preparation of an environmental impact statement (EIS). It should be noted that a significant benefit from the project does not necessarily require preparation of an EIS. Commercial viability of the proposed wells could result in additional exploration in the area, and any future oil/gas exploration activities and associated federal actions that are proposed wholly or partly on trust land would require additional NEPA analysis and BIA consideration prior to implementation and/or production activities.

Petro-Hunt will comply with all applicable federal, state, and tribal laws, rules, policies, regulations, and agreements. Petro-Hunt also agrees to follow all best management practices (BMPs) and monitoring mitigations listed in this document. No disturbance of any kind will 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 required 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, utility lines, 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 this well location.

2.2 THE PROPOSED ACTION

In addition to the No Action Alternative, this document analyzes the potential impacts of seven new exploratory oil and gas wells and their associated infrastructure located in the western portion of the Reservation in Dunn County, North Dakota. The proposed wells would test the commercial potential of the Three Forks and Middle Bakken Dolomite member of the Bakken Formation in this vicinity. Well bottom hole locations were chosen by Petro-Hunt in consultation with tribal and BIA resource managers to provide information for potential future development.

2.2.1 Well Pad and Infrastructure Locations and Disturbance

Well pad and infrastructure locations, shown in Figures 1-3 through 1-5, were developed in consultation with tribal and BIA resource managers during a pre-clearance process that included surveys for cultural, archaeological, and natural (i.e., biological and physical) resources.

Interdisciplinary on-site meetings were conducted on September 1, 2, and 21, 2010, to review the well pad location and proposed access roads. The on-site meetings were attended by the surveyor, natural and cultural resource specialists, the Petro-Hunt representative, the BIA representative, and the Tribal Historic Preservation Office (THPO) monitor. Surveys were conducted at that time to determine potential impacts to resources; topography, potential

drainage issues, erosion control measures, and pad and related facility locations (access roads, topsoil/subsoil stockpiles, reserve pits, tanks, etc.) were also discussed at the on-site meeting in order to minimize effects to natural and cultural resources. The combined disturbance of the project is estimated to be approximately 26.5 acres, as shown in Table 2-1.

Table 2-1. Proposed Well Pads and Infrastructure Disturbance.

Infrastructure Type	Detailed Disturbance	Approximate Total Disturbance (Acres)
Fort Berthold #148-94-9D-04-2H Well Pad	Well Pad Site: 6.1 acres	6.1
Fort Berthold #148-94-35D-26-2H/ Fort Berthold #147-94-2A-11-2H Well Pad and Access Road	Well Pad Site: 5.4 acres Access Road: 1.3 acres	6.7
Fort Berthold #148-95-27B-34-4H, -5H/ Fort Berthold #148-95-22C-4H, -5H Well Pad and Access Road	Well Pad Site: 7.2 acres Access Road: 6.5 acres	13.7
Total Disturbed Acreage		26.5

2.2.2 Well Pad

The proposed well pads would include a leveled area (pad) that would be used for the drilling rig and equipment. Petro-Hunt would use a semi-closed-loop drilling system on all three well pads. 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 pads. Erosion control BMPs would be implemented and could include surface drainage controls, soil surface protection methodologies, and sediment capture features.

2.2.3 Access Road and Utility Corridor

Approximately 3,430.1 feet (i.e., 0.7 mile) of new access road would be constructed. A maximum disturbed ROW width of 100 feet for the access roads would result in up to 7.8 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.

Petro-Hunt will likely in the future propose to construct and install oil, gas, and water gathering pipelines. Petro-Hunt contracts gathering pipeline construction to Arrow Pipeline, L.L.C (Arrow). Arrow's materials and procedures are listed in section 2.2.4. A buried electric line would be installed in the future, if production is warranted.

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 and pipeline 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.

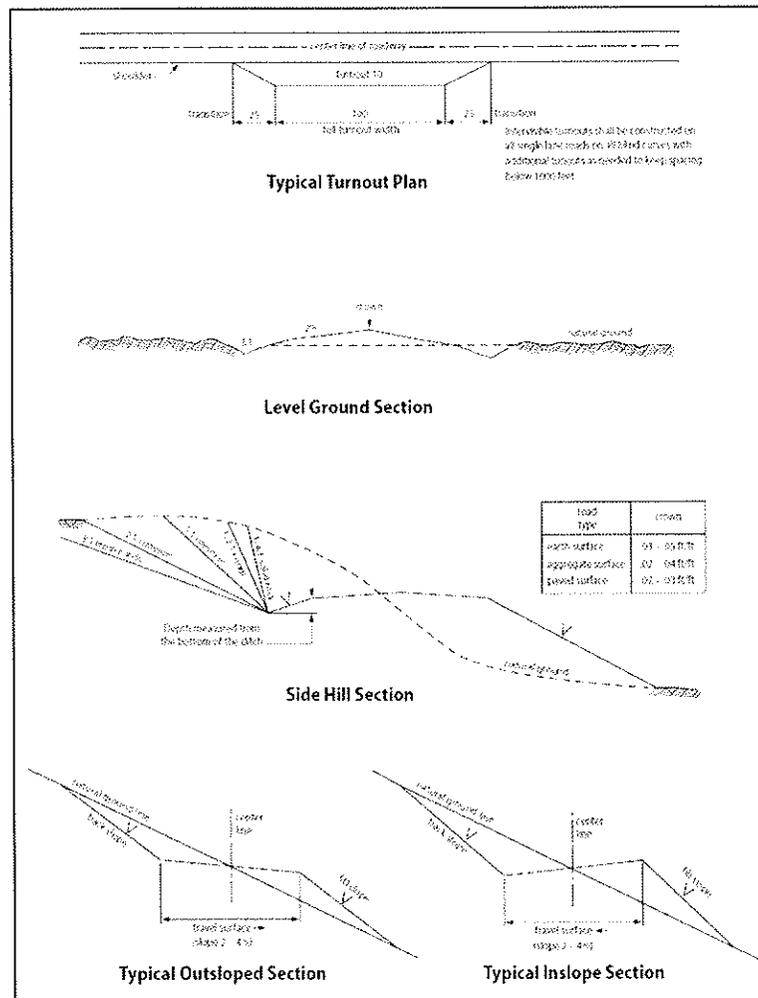


Figure 2-1. Typical road cross sections (BLM and USFS 2007).

2.2.4 Pipelines

2.2.4.1 Steel Pipe

Arrow proposes to construct the oil and gas pipelines using new steel pipe rated by the American Petroleum Institute (API) as 5L X52. Arrow would ensure that each steel pipe segment is coated with approximately 14 to 16 millimeters of fusion bonded epoxy coating. Further, Arrow would deploy an active cathodic protection system for all steel pipe, which further reduces the likelihood of external corrosion. Arrow would ensure that each steel pipe

segment is allotted a 1/16-inch corrosion allowance; however, because of the non-corrosive nature of Bakken crude and the low concentrations of hydrogen sulfide, Arrow does not anticipate any external or internal corrosion during the operating lifetime of the pipe, which, at a minimum, is estimated to be 50 years.

2.2.4.2 Fiberspar® or Similar Pipe

Arrow proposes to construct the produced water gathering pipeline using a material known as Fiberspar or one with the same corrosion-resistant characteristics as Fiberspar. This type of material is not subject to internal or external corrosion.

2.2.4.3 Spill Response Plan

Arrow has developed a Spill Response Plan (Plan) (Middick 2011) for the Phase 3SW pipeline. The spill preventative measures and monitoring protocols, notification procedures, spill detection and on-scene spill mitigation procedures, response activities, contacts, training and drill procedures, and response plan review and update procedures, as referenced in the Plan, apply to the proposed pipelines. A copy of the Plan has been filed with the BIA and Arrow has legally committed to adhering to the procedures and requirements as defined by federal law (Title 49 Code of Federal Regulations [CFR] 194). Arrow has committed to submitting a spill response plan, specific to this proposed project, to the BIA prior to the commencement of construction activities.

2.2.4.4 Pipeline Marking Procedures

Arrow adheres to the requirements of 49 CFR 192.707 with regard to the marking of buried pipelines. Specifically, Arrow would place pipeline markers within 1,000 feet of one another at all public road crossings, railroad crossings, creek crossings, fence crossings, and at all points of major direction change.

2.2.4.5 Quality Control/Quality Assurance Measures

Arrow purchases steel pipe that is rated as API 5L X52 and inspects all pipe while at the mill to ensure quality. Arrow is also present to ensure that external epoxy coating is applied to a minimum thickness of 14 millimeters. During construction, all welds are visually inspected for quality and completeness by qualified professionals. Once welds have passed visual inspection, they are subjected to 100 percent Non Destructive Testing. After passing these tests, the weld areas are covered for corrosion protection. After the weld areas have been covered, the external coating of the pipe is inspected using a jeepmeter to detect holes and cracks. The pipe is lowered into the trench and buried. Prior to being put into service, the steel pipe is hydrotested to approximately 1.5 times the minimum design pressure of 1,180 pounds per square inch gauge (psig). The produced water pipe is designed to sustain a minimum pressure of 750 psig and is hydrotested to approximately 900 psig prior to being approved for service.

2.2.4.6 Valve Locations

Two valves would be installed at each end of the proposed pipelines. One valve would be installed at the well location while the second valve would be installed at the proposed tie-in.

The installation of two valves would allow Arrow to isolate the proposed gathering pipelines if required.

2.2.4.7 Reclamation

2.2.4.7.1 *Interim Reclamation*

Reclamation would continue to occur over the life of the pipelines. Initial reclamation would be required after initial construction and then following any maintenance work or additions of infrastructure. Reclamation would be required before final abandonment of the decommissioned pipeline. A successful reclamation would at all times be the responsibility of the system's operator.

Trenches would be back-filled immediately after the pipe is installed and testing is complete, assuming frozen or saturated soils are not present. Back-fill piles would be stored opposite of the topsoil piles during construction. If construction occurs during winter, Arrow would partially fill the trench with useable, non-frozen, back-fill soil to the extent possible and cover the entire ROW including the trench with straw. The trench would be back-filled and topsoil distributed as soon as practicable after the soil has defrosted. Topsoil piles would be covered to eliminate the potential for rill erosion and subsequent loss of soil during spring snow melt and precipitation events.

Applicable short- and long-term BMPs would be used to minimize and control erosion in disturbed areas. To reduce compaction, the ROW would be plowed before the stockpiled topsoil is distributed.

The disturbed areas would be reclaimed and contoured as soon as possible after construction is complete (fall/spring). The ROW would be covered with stockpiled topsoil and seeded with a seed mixture determined by the BIA. Arrow would control noxious weeds within the ROW and other applicable facilities by approved chemical or mechanical methods. If seeding of the ROW does not occur due to growing season constraints, Arrow will deploy approved weed-free hay across the entire ROW. The presence of hay across the ROW will reduce the potential for excessive erosion as a result of spring snow melt and precipitation.

The entire ROW would be monitored for erosion, subsidence, or noxious weeds. In areas where problems are found to occur, reclamation efforts would continue until the BIA feels the ROW is successfully reclaimed. Reclamation is considered successful when:

- seeded areas are established;
- adjacent vegetative communities spread back into the disturbed areas; and
- noxious weeds are under control.

If after two growing seasons the new seeding is not successful, the BIA may require additional efforts to establish vegetation. For noxious weeds, a survey was conducted on the ROW prior to the construction commencing. The BIA has developed a weed management plan to treat known or likely to occur noxious weed species.

2.2.4.7.2 Final Reclamation

Final reclamation would occur when the pipeline is decommissioned. All disturbed areas would be reclaimed, reflecting the BIA's view of oil and gas exploration and production as temporary intrusions on the landscape. All facilities would be removed. Access roads and work areas would be leveled or backfilled as necessary, scarified, recontoured, and seeded. 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. It is economically and environmentally unfeasible to excavate and remove the decommissioned pipeline. Instead, it would be purged with water of any natural gas remaining in the lines and abandoned in place.

2.2.5 Drilling

Rig transport and on-site assembly would take roughly seven days; a typical drill rig is shown in Figure 2-2. Drilling would require approximately 35 days per well 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 (approximately 21,000 gallons total for this portion).

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 additional 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.

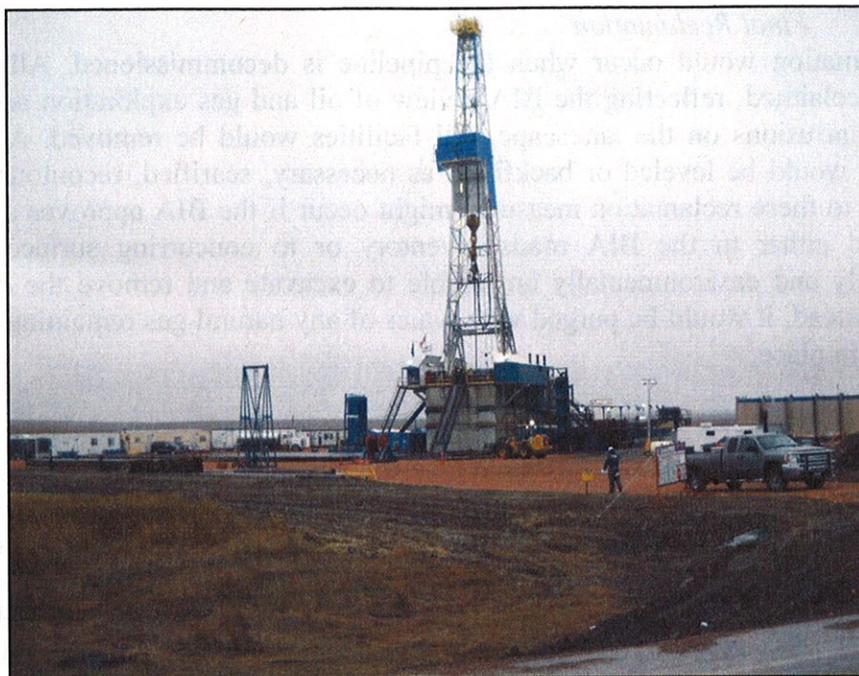


Figure 2-2. Typical drilling rig (Ruffo 2009).

2.2.6 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 a depth approximately 11,256 feet up to 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).

2.2.7 Completion and Evaluation

A completion rig unit would be moved on site following the conclusion of drilling and casing activities. Approximately 30 days are usually required, at the proposed well depths, 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 and in compliance with applicable U.S. Environmental Protection Agency (EPA) guidelines.

2.2.8 Commercial Production and Gathering Pipelines

If drilling, testing, and production support commercial production from any of the three 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 110% 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.

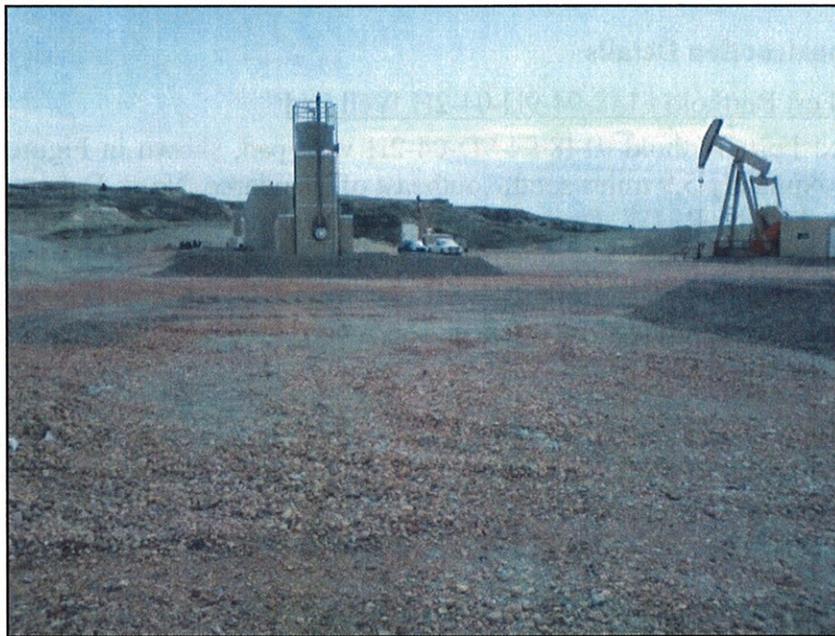


Figure 2-3. Typical producing oil well pad (Sobotka 2008).

Future disturbance for oil, gas, and water pipelines and utility lines construction would likely occur within a 100-foot temporary ROW. Pipeline disturbance would be reclaimed as soon as practical following construction, resulting in no long-term disturbance. 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 the wells would yield approximately 66,963 barrels of oil and 2,387 barrels of water during the first year of production. After the first year, the operator estimates production would decrease. Produced water is mostly recovered frac fluids and is expected to become minimal after two years.

Large volumes of gas are not expected from these 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).

2.2.9 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.

2.2.10 Construction Details

2.2.10.1 Fort Berthold #148-94-9D-04-2H Well Pad

The proposed Fort Berthold #148-94-9D-04-2H well pad, shown in Figures 1-1 and 1-2, is located approximately 5.9 miles south-southeast of Mandaree, North Dakota, in the SE $\frac{1}{4}$ SE $\frac{1}{4}$ of Section 9, T148N, R94W, Dunn County, North Dakota. The proposed well pad would be an expansion to a previously approved and constructed well pad (Figure 1-3). No new access road would be required. The proposed well pad would disturb approximately 6.1 acres. The well pad would be surrounded by a fence. The fenced area occupies approximately 6.8 acres according to the engineer's plats.

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 4, T148N, R94W (Figure 2-4). The drilling target is located approximately 250 feet from the north line (FNL) and 660 feet from the east line (FEL), approximately 9,689 feet north of the surface hole location. A setback of at least 200 feet would be maintained.

2.2.10.2 Fort Berthold #148-94-35D-26-2H/ Fort Berthold #147-94-2A-11-2H Well Pad and Access Road

The proposed Fort Berthold #148-94-35D-26-2H/ Fort Berthold #147-94-2A-11-2H well pad, shown in Figures 1-1 and 1-2, is located approximately 10.2 miles southeast of Mandaree, North Dakota. This location straddles the Township line (SE $\frac{1}{4}$ SE $\frac{1}{4}$ of Section 35, T148N, R94W and NE $\frac{1}{4}$ NE $\frac{1}{4}$ of Section 2, T147N, R94W, Dunn County, North Dakota). A new access road approximately 580.1 feet long would be constructed from the dual pad to a previously approved and constructed well pad (Figure 1-4). The new road would disturb approximately 1.3 acres and the proposed well pad would disturb approximately 5.4 acres; the total anticipated new disturbance would be approximately 6.7 acres. The well pad would be surrounded by a fence. The fenced area occupies approximately 5.5 acres according to the engineer's plats.

The spacing unit for Fort Berthold #148-94-35D-26-2H consists of 1,280 acres (+/-) with the bottom hole located in the NE $\frac{1}{4}$ NE $\frac{1}{4}$ of Section 26, T148N, R94W (Figure 2-5). The drilling target is located approximately 250 feet FNL and 660 feet FEL, approximately 10,245 feet

north-northeast of the surface hole location. A setback of at least 200 feet would be maintained.

The spacing unit for Fort Berthold #147-94-2A-11-2H consists of 1,280 acres (+/-) with the bottom hole located in the SE $\frac{1}{4}$ SE $\frac{1}{4}$ of Section 11, T147N, R94W (Figure 2-5). The drilling target is located approximately 250 feet from the south line (FSL) and 550 feet FEL, approximately 10,274 feet southeast of the surface hole location. A setback of at least 200 feet would be maintained.

*Environmental Assessment: Petro-Hunt, LLC,
 Fort Berthold #148-94-9D-04-2H, Fort Berthold #148-94-35D-26-2H/Fort Berthold #147-94-2A-11-2H,
 and Fort Berthold #148-95-27B-34-4H, -5H/Fort Berthold #148-95-22C-15-4H, -5H*

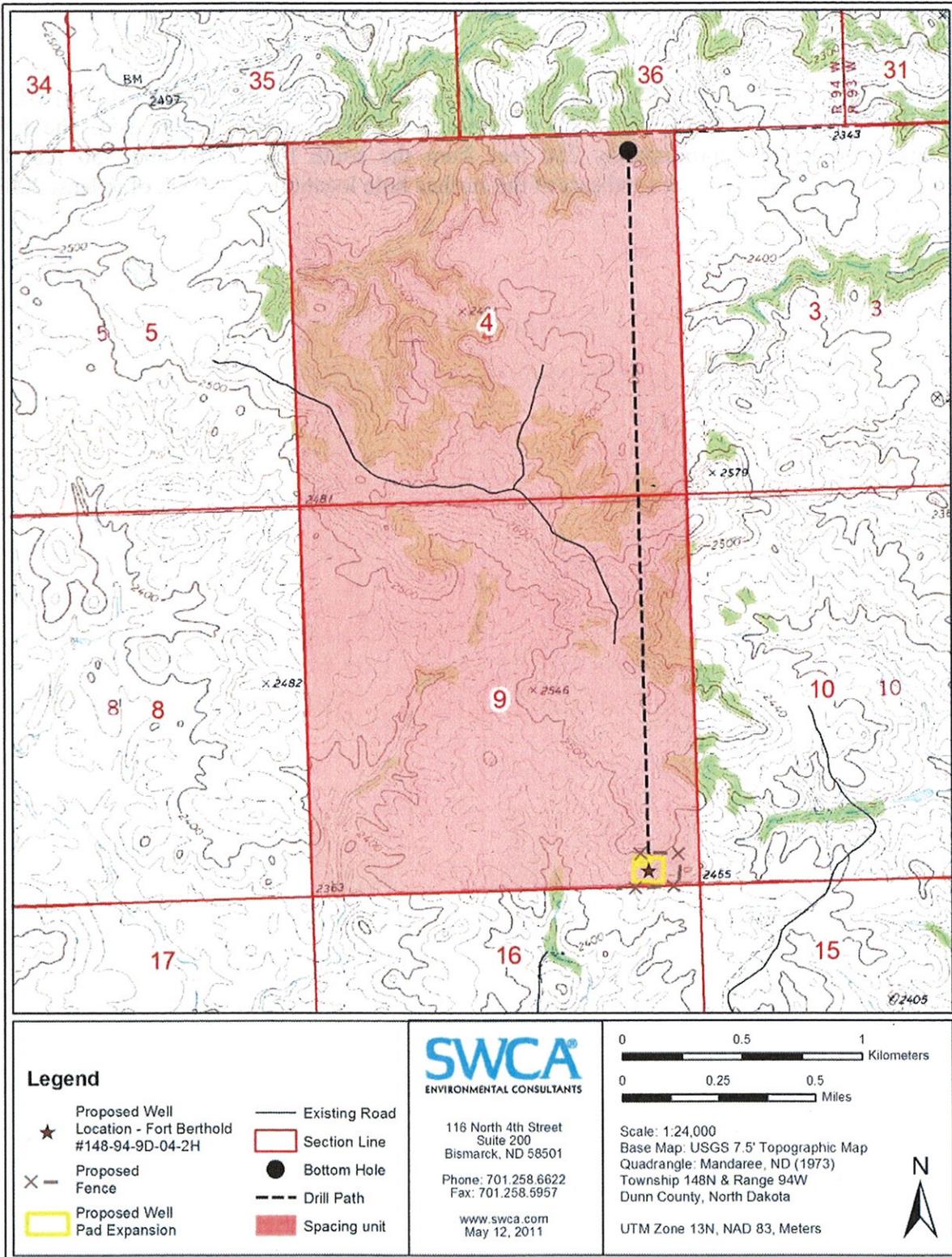


Figure 2-4. Proposed Fort Berthold #148-94-9D-04-2H infrastructure location and spacing unit boundary.

*Environmental Assessment: Petro-Hunt, LLC,
 Fort Berthold #148-94-9D-04-2H, Fort Berthold #148-94-35D-26-2H/Fort Berthold #147-94-2A-11-2H,
 and Fort Berthold #148-95-27B-34-4H, -5H/Fort Berthold #148-95-22C-15-4H, -5H*

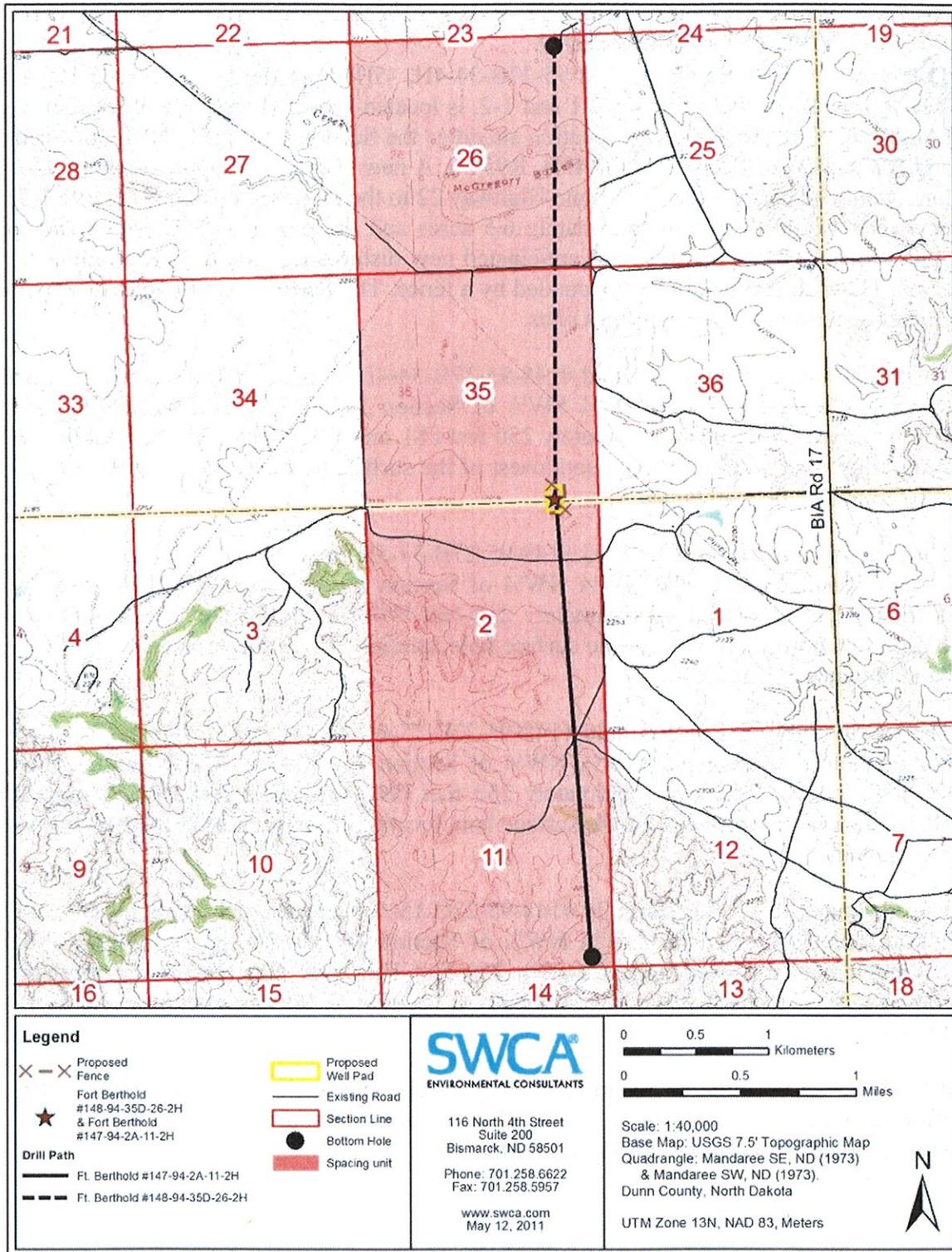


Figure 2-5. Proposed Fort Berthold #148-94-35D-26-2H/ Fort Berthold #147-94-2A-11-2H infrastructure location and spacing unit boundary.

2.2.10.3 Fort Berthold #148-95-27B-34-4H, -5H/Fort Berthold #148-95-22C-15-4H, -5H Well Pad and Access Road

The proposed Fort Berthold #148-95-27B-34-4H, -5H/ Fort Berthold #148-95-22C-15-4H, -5H well pad, shown in Figures 1-1 and 1-2, is located approximately 8.5 miles southwest of Mandaree, North Dakota. This location straddles the Section line (NE $\frac{1}{4}$ NW $\frac{1}{4}$ of Section 27 and SW $\frac{1}{4}$ SE $\frac{1}{4}$ of Section 22, T148N, R95W). A new access road approximately 2,849 feet long would be constructed from State Highway 22 to the proposed quad pad (Figure 1-5). The new road would disturb approximately 6.5 acres and the proposed well pad would disturb approximately 7.2 acres; the total anticipated new disturbance would be approximately 13.7 acres. The well pad would be surrounded by a fence. The fenced area occupies approximately 7 acres according to the engineer's plats.

The spacing unit for Fort Berthold #148-95-27B-34-4H consists of 1,280 acres (+/-) with the bottom hole located in the SW $\frac{1}{4}$ SW $\frac{1}{4}$ of Section 34, T148N, R95W (Figure 2-6). The drilling target is located approximately 250 feet FSL and 1,320 feet from the west line (FWL), approximately 10,084 feet south-southwest of the surface hole location. A setback of at least 200 feet would be maintained.

The spacing unit for Fort Berthold #148-95-27B-34-5H consists of 1,280 acres (+/-) with the bottom hole located in the NW $\frac{1}{4}$ NW $\frac{1}{4}$ of Section 15, T148N, R95W (Figure 2-6). The drilling target is located approximately 250 feet FNL and 1,320 feet FWL, approximately 10,465 feet north-northwest of the surface hole location. A setback of at least 200 feet would be maintained.

The spacing unit for Fort Berthold #148-95-22C-15-4H consists of 1,280 acres (+/-) with the bottom hole located in the NW $\frac{1}{4}$ NW $\frac{1}{4}$ of Section 15, T148N, R95W (Figure 2-6). The drilling target is located approximately 250 feet FNL and 1,320 feet FWL, approximately 10,487 feet north-northwest of the surface hole location. A setback of at least 200 feet would be maintained.

The spacing unit for Fort Berthold #148-95-22C-15-5H consists of 1,280 acres (+/-) with the bottom hole located in the NW $\frac{1}{4}$ NW $\frac{1}{4}$ of Section 15, T148N, R95W (Figure 2-6). The drilling target is located approximately 250 feet FNL and 600 feet FWL, approximately 10,351 feet north-northwest of the surface hole location. A setback of at least 200 feet would be maintained.

Petro-Hunt has committed to implementing specific mitigation measures and BMPs in an effort to minimize disturbance to natural and cultural resources. Please see Section 3.12, Mitigation and Monitoring, for more information.

*Environmental Assessment: Petro-Hunt, LLC,
 Fort Berthold #148-94-9D-04-2H, Fort Berthold #148-94-35D-26-2H/Fort Berthold #147-94-2A-11-2H,
 and Fort Berthold #148-95-27B-34-4H, -5H/Fort Berthold #148-95-22C-15-4H, -5H*

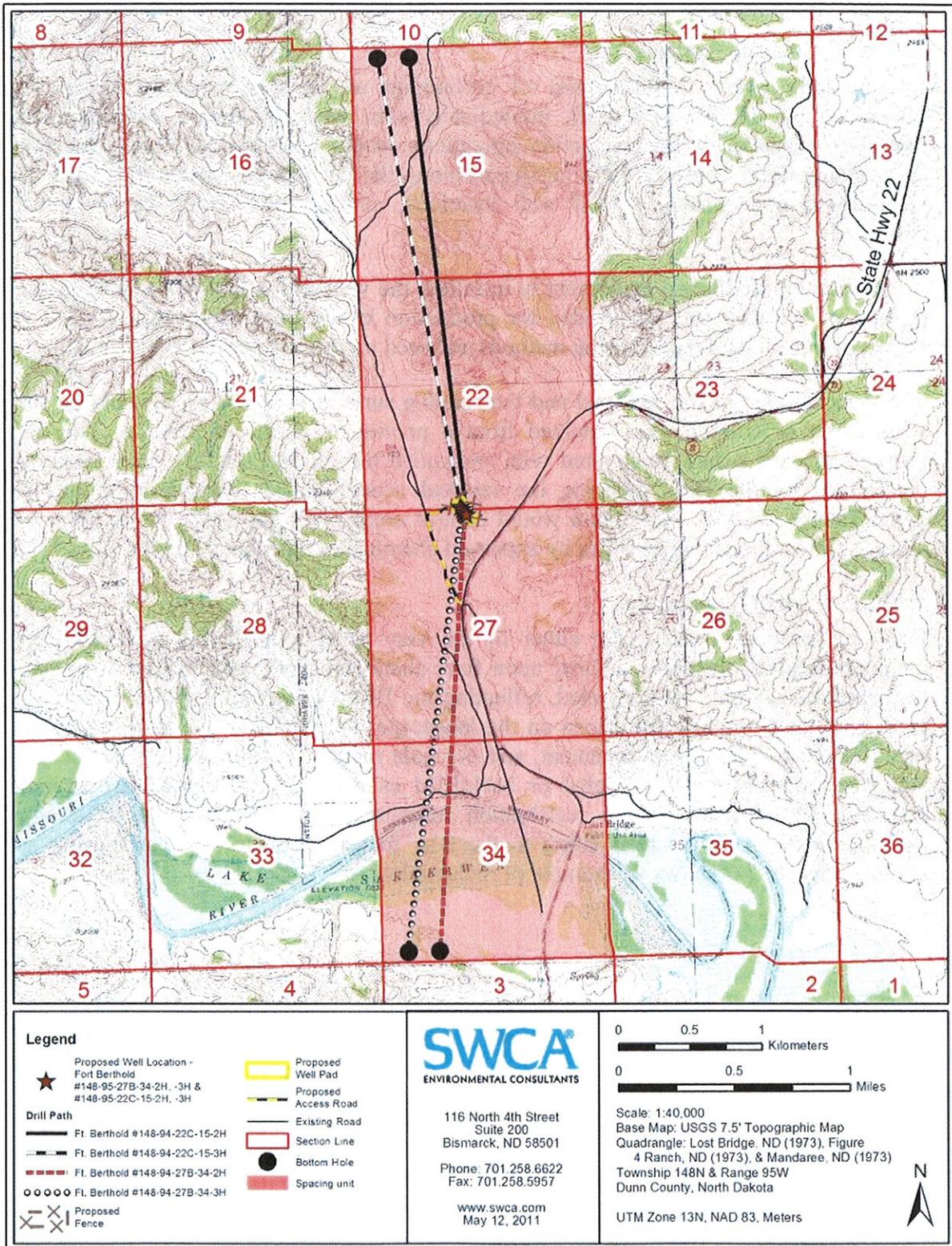


Figure 2-6. Proposed Fort Berthold #148-95-27B-34-4H, -5H/ Fort Berthold #148-95-22C-15-4H, -5H infrastructure location and spacing unit boundary.

2.2.11 Reclamation

2.2.11.1 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 semi-closed-loop systems on all well locations, cuttings pits would be reclaimed and solidified.

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

The working area of the well pad and the running surface of access road would be surfaced with scoria or crushed rock obtained from a previously approved location. The outslope portions of road would be covered with stockpiled topsoil and seeded with a seed mixture determined by the BIA, reducing the residual access-related disturbance to a width of approximately 66 feet. Petro-Hunt would control noxious weeds within the ROW, well pad areas, or other applicable facilities by approved chemical or mechanical methods.

2.2.11.2 Final Reclamation

Final reclamation would occur either in the very short term if the proposed wells are 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. The 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 2-7 shows an example of reclamation.

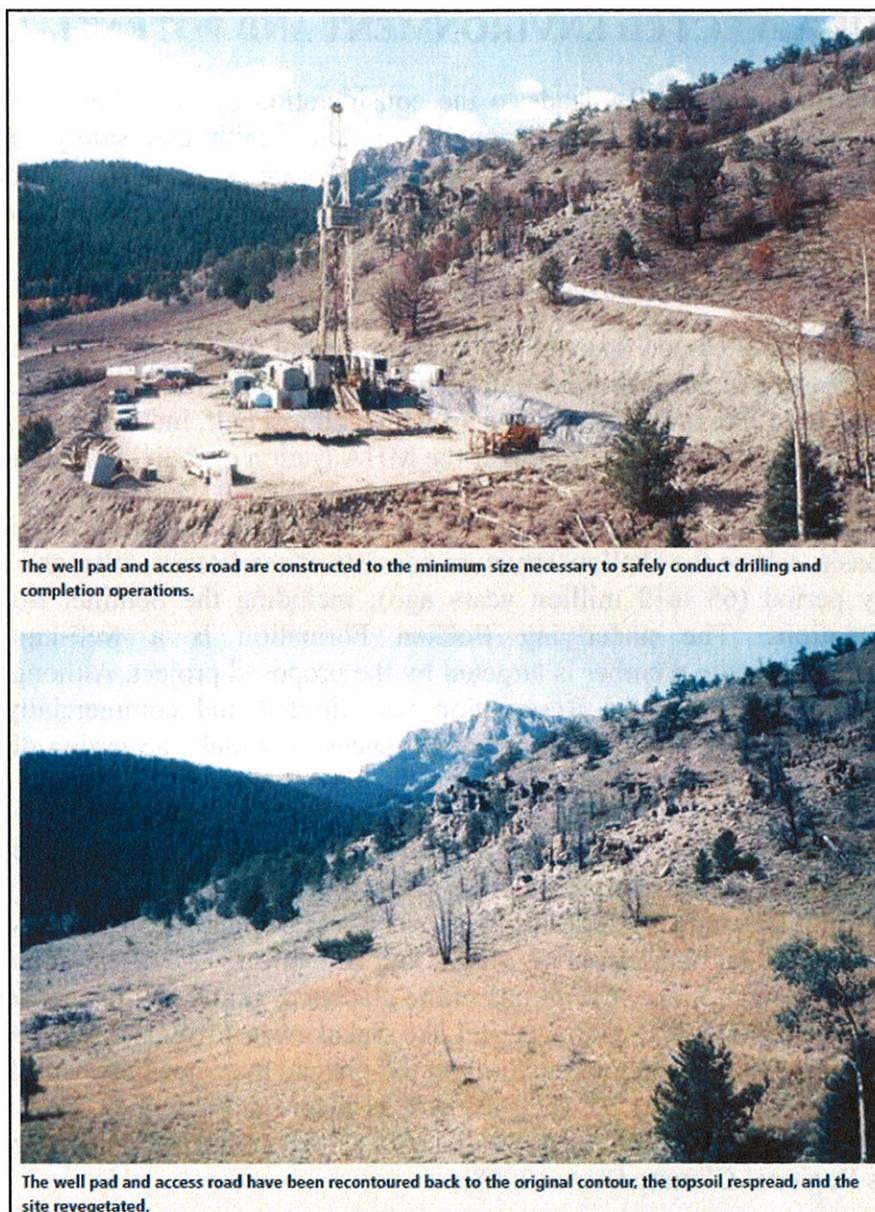


Figure 2-7. Example of reclamation from the BLM Gold Book (BLM and USFS 2007).

2.3 BIA-PREFERRED ALTERNATIVE

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

3.0 THE AFFECTED ENVIRONMENT AND POTENTIAL IMPACTS

The broad definition of NEPA leads to the consideration of the following elements of the human and natural environment: 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.

3.1 PHYSICAL SETTING

The proposed well sites and spacing units are in a rural area located on the Reservation in west-central North Dakota. The Reservation is the home of the MHA Nation. The Reservation encompasses more than one million acres, of which almost half, including the project area, are held in trust by the United States for either the MHA Nation or individual allottees.

The proposed well pads, access roads, and utility corridors are situated geologically within 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 within 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 northern 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 over 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).

3.2 AIR QUALITY

3.2.1 Air Quality Standards for Criteria Pollutants

The federal Clean Air Act (CAA) (USC § 7401–7671, as amended in 1990) established national ambient air quality standards (NAAQS) for criteria pollutants to protect public health and welfare. It also set standards for other compounds that can cause cancer, regulated emissions that cause acid rain, and required federal permits for large sources. NAAQS have been established for ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, particulate matter, and lead (EPA 2010a). The primary NAAQS have been 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.'

The CAA mandates prevention of significant air quality deterioration in certain designated attainment areas and has designated more stringent air quality standards, known as Secondary Standards, for these 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 (Ross 1990). The Class I regulations (40 CFR 51.307) attempt to protect visibility through a review of major new and modified sources of pollutants, and requiring strict air quality emission standards if they will have an adverse impact on visibility within the Class I area (National Park Service 2010).

The nearest designated attainment area to the project area is the Theodore Roosevelt National Park (TRNP), a Class I area that covers about 110 square miles in three units within the Little Missouri National Grassland. The TRNP is located approximately 16 miles south of Watford City, North Dakota, and approximately 50 miles west of the proposed well sites. Two air quality monitoring stations are located there, with the North Unit monitoring most criteria pollutants (National Park Service 2010; North Dakota Department of Health [NDDH] 2010). All other parts of the state, including the Reservation, are classified as Class II attainment areas, affording them protections through the Primary NAAQS (NDDH 2010).

Some states have adopted more stringent standards for criteria pollutants, or have chosen to adopt new standards for other pollutants. For instance, the NDDH has established a standard for hydrogen sulfide (NDDH 2010).

Criteria pollutants and their health effects include the following.

- **Sulfur dioxide (SO₂):** SO₂ is a colorless gas with a strong, suffocating odor. SO₂ is produced by burning coal, fuel oil, and diesel fuel, and 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. SO₂ emissions are also a primary cause of acid rain and plant damage (EPA 2010a).
- **Inhalable Particulate Matter (PM₁₀ and PM_{2.5}):** PM₁₀ and PM_{2.5} are classes of compounds that can lodge deep in the lungs, causing adverse health problems, depending on their size, concentration, and content. Based on extensive health studies, particulate matter is regulated under two classes: PM₁₀ is the fraction of total particulate matter 10 microns or smaller, and PM_{2.5} is two and one-half microns or smaller. Inhalable 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 (EPA 2010a).
- **Nitrogen dioxide (NO₂):** NO₂ is a reddish-brown gas with an irritating odor. Primary sources include motor vehicles, industrial facilities, and power plants. In the summer months, NO₂ is a major component of photochemical smog. NO₂ is an irritating gas that may constrict airways, especially of asthmatics, and increase the

susceptibility to infection in the general population. NO₂ is also involved in ozone smog production (EPA 2010a).

- **Ozone (O₃):** O₃ 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 (NO_x) in the presence of sunlight. Health effects associated with O₃ 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. O₃ can persist for many days after formation and travel several hundred miles (EPA 2010a).
- **Carbon monoxide (CO):** CO is a colorless, odorless gas that is a byproduct of incomplete combustion. CO 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. CO 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 (EPA 2010a).

The Primary and Secondary NAAQS for criteria pollutants are summarized in Table 3-1. NEPA assessments require analysis of both near-field and far-field as part of the cumulative effects of proposals on air quality. Therefore, the North Dakota Ambient Air Quality Standards (AAQS) are shown as well as federal standards.

Table 3-1. NAAQS and Other Air Quality Standards.

Pollutant	Averaging Period	Primary Standard (NAAQS)	Secondary Standard (National Parks)	North Dakota AAQS
SO ₂ in parts per million of air (ppm)	3-hour	-	0.5	0.273 (1-hour)
	24-hour	0.14	-	0.099
	Annual Mean	0.03	-	0.023
PM ₁₀ in micrograms per cubic meter of air (µg/m ³)	24-hour	150	-	150
	Expected Annual Mean	50	-	50
PM _{2.5} (µg/m ³)	24-hour	35	35	-
	Weighted Annual Mean	15	15	-
NO ₂ (ppm)	Annual Mean	0.053	0.053	0.053
CO (ppm)	8-hour	9	-	9
	1-hour	35	-	35

Pollutant	Averaging Period	Primary Standard (NAAQS)	Secondary Standard (National Parks)	North Dakota AAQS
O ₃ (ppm)	8-hour	0.075	0.075	-
	1-hour	-	-	0.12
Lead (µg/m ³)	Quarterly Mean	1.5	1.5	1.5
Hydrogen Sulfide (H ₂ S) (ppm)	Instantaneous	-	-	10
	1-hour	-	-	0.20
	24-hour	-	-	0.10
	3-month	-	-	0.02

Sources: EPA 2010a; NDDH 2010.

North Dakota has separate state standards for several pollutants that are different from the federal criteria standards. These are the standards for SO₂ and hydrogen sulfide (H₂S). All other state criteria pollutant standards are the same as federal. North Dakota was one of 13 states that met standards for all federal criteria pollutants in 2008.

In addition, the EPA averages data from monitoring stations within each county to determine the Air Quality Index (AQI), a general measure of air quality for residents of the county. An AQI greater than 100 is indicative of unhealthy air quality conditions for the county residents, although residents may experience greater or lesser risks depending on their proximity to the sources of pollutants (EPA 2010b).

3.2.2 Greenhouse Gas Emissions and Responses to the Threat of Climate Change

Gases that trap heat in the atmosphere are often called greenhouse gases (GHGs). Some GHGs such as carbon dioxide occur naturally and are emitted to the atmosphere through natural processes and human activities. Other GHGs (e.g., fluorinated gases) are created and emitted solely through human activities. The EPA (2010c) identifies the principal GHGs that enter the atmosphere because of human activities as the following.

- **Carbon Dioxide (CO₂):** CO₂ enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), solid waste, trees and wood products, and also as a result of other chemical reactions (e.g., manufacture of cement). CO₂ is also removed from the atmosphere (or “sequestered”) when it is absorbed by plants as part of the biological carbon cycle.
- **Methane (CH₄):** CH₄ is emitted during the production and transport of coal, natural gas, and oil. CH₄ emissions also result from livestock and other agricultural practices and by the decay of organic waste in municipal solid waste landfills.
- **Nitrous Oxide (N₂O):** N₂O is emitted during agricultural and industrial activities, as well as during combustion of fossil fuels and solid waste.

- **Fluorinated Gases:** Hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride are synthetic, powerful GHGs that are emitted from a variety of industrial processes. Fluorinated gases are typically emitted in small quantities, but are potent GHGs thought to contribute significantly to global warming processes (EPA 2010c).

CO₂ is the primary GHG, responsible for approximately 90 percent of radiative forcing, which is the rate of energy change as measured at the top of the atmosphere. Radiative forcing can be positive (warmer) or negative (cooler) (EPA 2010c). 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, one ton of CH₄ has a CO₂e of 22 tons; therefore, 22 tons of CO₂ would cause the same level of radiative forcing as one ton of CH₄. N₂O has a CO₂e value of 310 (EPA 2010c). These GHGs are all positive radiative forcing GHGs. Thus, control strategies often focus on the gases with the highest positive CO₂e values (EPA 2010c). This document incorporates by reference cited studies and reports from the Pew Center (2009) and the Intergovernmental Panel on Climate Change (IPCC) (2007) concerning GHGs and their impacts.

On May 13, 2010, EPA issued a final rule that establishes thresholds for GHG emissions that define when permits under the New Source Review Prevention of Significant Deterioration (PSD) and title V Operating Permit programs are required for new and existing industrial facilities (EPA 2010d). This final rule "tailors" the requirements of these CAA permitting programs to limit which facilities will be required to obtain PSD and title V permits. Facilities responsible for nearly 70 percent of the national GHG emissions from stationary sources will be subject to permitting requirements under this rule. This includes the nation's largest GHG emitters—power plants, refineries, and cement production facilities. Emissions from small farms, restaurants, and all but the very largest commercial facilities will not be covered by these programs at this time; however, the EPA recently initiated additional hearings to help determine the types of industries to be held to new standards under these federal permits (EPA 2010d).

Energy production and supply was estimated to emit up to 25.9% of GHGs world-wide in 2004 (Pew Center 2009). Methane gas (CH₄), with a high radiative forcing CO₂e ratio, is a common fugitive gas emission in oil and gas fields (EPA 2010d). Oil and gas production, however, is highly variable in potential GHG emissions. Oil and gas producers in the United States are not considered large GHG emitters by the EPA, and are not the subject of any current federal proposals that would regulate GHG emissions.

3.2.3 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 the emission source. HAPs are regulated separately from criteria air pollutants. There are several hundred HAPs recognized by the EPA and 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 one million persons. The NDDH typically reviews projects and either requires an applicant to prepare a risk assessment or assign the state engineers to do the work. 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 one in one hundred thousand.

3.2.4 Existing Air Quality in the Project Area

Federal air quality standards apply in the project area, which is designated as a Class II attainment area. Although the state of North Dakota does not have jurisdiction over air quality matters on the Reservation and no air quality monitoring stations occur within the boundaries of the Reservation, monitoring efforts are 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 are subject to quality assurance, and when approved, it is published on the World Wide Web and available from EPA and NDDH (NDDH 2010).

Monitoring stations providing complete data near the project area include Theodore Roosevelt National Park North Unit (TRNP-NU) (Air Quality Station #380530002) in McKenzie County, and Dunn Center (Air Quality Station #38025003) in Dunn County (NDDH 2010). These stations are located west and southeast of the proposed well sites, respectively. Bear Paw Energy and Amerada Hess operate site-specific monitoring stations in the region. However, these stations do not provide coverage that is applicable to this analysis (NDDH 2010).

Criteria pollutants measured at the two monitoring stations include SO₂, PM₁₀, NO₂, and O₃. Lead and CO are not monitored by the two stations. Table 3-2 summarizes the NAAQS and the maximum levels of criteria pollutants. The highest value at either of the two monitoring locations is shown for each year from 2007 through 2009.

Table 3-2. Maximum Levels of Monitored Pollutants, 2007–2009, as Measured at Dunn Center and Theodore Roosevelt National Park North Unit Monitoring Stations.

Criteria Pollutant	Averaging Period	Primary Standard (NAAQS)	Maximum Reported Level from Dunn Center and TRNP-NU Monitoring Stations		
			2009	2008	2007
SO ₂ (parts per million [ppm])	24-hour	0.14	0.006	0.004	0.004
	Annual Mean	0.03	0.0005	0.0004	0.0011
PM ₁₀ (micrograms per cubic meter [µg/m ³])	24-hour	150	54	108	57.4
	Expected Annual Mean	50	11.3	14.2	13.2
PM _{2.5} (µg/m ³)	24-hour	35	15	35.7	22.2
	Weighted Annual Mean	15	3.4	3.7	3.6
NO ₂ (ppm)	Annual Mean	0.053	0.0015	0.0018	0.0015
O ₃ (ppm)	8-hour	0.08	0.057	0.0063	0.0071

Source: NDDH 2010.

All monitored criteria pollutants are well below federal and state standards in the project area for all years in the study period from 2007 through 2009. In addition to the low levels of monitored criteria pollutants, the EPA reports that Dunn County and McKenzie County had zero days in which the AQI exceeded 100 in 2007 and 2008, indicating that general air quality does not pose an unhealthy condition for residents of these counties (EPA 2010b). The AQI was not available for 2009, but is also likely to be zero for these counties.

3.2.5 Typical Air Emissions from Oil Field Development

According to EPA Emission Inventory Improvement documents (EPA 1999), oil field emissions encompass three primary areas: combustion, fugitive, and vented. Typical processes that occur during exploration and production include the following.

- Combustion emissions include SO₂, ozone precursors called volatile organic compounds (VOCs), GHGs, and HAPs. Sources include engine exhaust, dehydrators, and flaring (EPA 1999).
- Fugitive emissions include criteria pollutants, H₂S, VOCs, HAPs, and GHGs. Sources of fugitive emissions include mechanical leaks from well field equipment such as valves, flanges, and connectors that may occur in heater/treaters, separators, pipelines, wellheads, and pump stations. Pneumatic devices such as gas actuated pumps and pressure/level controllers also result in fugitive emissions. Other sources of fugitive emissions include evaporation ponds and pits, condensate tanks, storage tanks, and wind-blown dust (from truck and construction activity) (EPA 1999).
- Vented emissions include GHGs, VOCs, and HAPs. Primary sources are emergency pressure relief valves and dehydrator vents (EPA 1999).

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 (EPA 2010d). This program takes a two-pronged approach. First, fuels are improving to the ultra-low sulfur standard, and secondly manufacturers must produce progressively lower engine emissions.

3.2.6 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 the following 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.

3.2.7 Potential Air Quality Impacts

Based on the existing air quality of the region, typical air levels and types of emissions from similar oil field projects, and Petro-Hunt's commitment to implementation of BMPs identified in Section 3.2.6, the Proposed Action would not produce significant increases in criteria pollutants, GHGs, or HAPs.

3.3 WATER RESOURCES

This section identifies the existing water resources within the project area and potential effects of the project. Specific subjects discussed in this section include surface water and surface water quality, groundwater resources, and the potential short-term and long-term impacts of the proposed project on these water resources.

3.3.1 Surface Water

The surface water resources in the project area would be managed and protected according to existing federal law and policies regarding the use, storage, and disposal of the resource during the construction and operation of the project. Surface water resource use and protection is administered under the following federal laws:

- Clean Water Act of 1972, as amended (33 USC 1251 et seq.)
- Federal Land Policy and Management Act of 1976 (43 USC 1711–1712)
- National Environmental Policy Act of 1972 (42 USC 4321)
- Safe Drinking Water Act of 1974, as amended (42 USC 300 et seq.)

Water quality is protected under the Federal Water Pollution Control Act (as amended), otherwise known as the Clean Water Act (CWA). The CWA has developed rules for regulating discharges of pollutants into waters of the U.S. and also regulates water quality standards for surface waters. The CWA has also made it unlawful to discharge any pollutant from a point source into any navigable waters of the U.S., unless a permit has been obtained from the National Pollution Discharge Elimination System (NPDES) program.

The Environmental Division of the MHA Nation has had an application pending with the EPA since 1996 for delegation of authority to set federally approved water quality standards on the Reservation. In the absence of tribal surface water quality authorities, enforcement of federal environmental laws regarding surface water on the Reservation is accomplished through permitting, inspection, and monitoring activities of the NPDES, as administered by the EPA.

The project area is located within the Lost Bridge (Hydrologic Unit Code [HUC] 101102050505), Upper Moccasin Creek (HUC 101102050604), and Lower Moccasin Creek (HUC 101102050605) sub-watersheds and the Little Missouri River drainage basin (HUC 10110205) (Figure 3-1). Table 3-3 provides the nearest perennial stream and the surface water runoff distance to Lake Sakakawea for each well pad. The distance from Lake Sakakawea to the project area ranges from 1.87 to 16.82 river miles. One intermittent stream would be crossed by the Fort Berthold #148-95-27B-34-4H, -5H & Fort Berthold #148-95-22C-15-4H, -5H access road. This crossing would be under 0.1 acre of total impact which would comply with the U.S. Army Corps of Engineers Nationwide Permit 14 requirements. A culvert would be placed within the stream to avoid disruption of normal stream flow.

Table 3-3. Well Pad Distances to Perennial Streams and River Miles to Lake Sakakawea.

Well Pad Name	Nearest Wetland (NWI) (Miles)	Nearest Perennial Stream (River Miles)	River Miles to Lake Sakakawea
Fort Berthold #148-94-9D-04-2H	0.46	Moccasin Creek, 5.91 river miles from well	16.82
Fort Berthold #148-94-35D-26-2H & Fort Berthold #147-94-2A-11-2H	0.06	Moccasin Creek, 4.02 river miles from well	10.65
Fort Berthold #148-95-27B-34-4H, -5H & Fort Berthold #148-95-22C-15-4H, -5H	0.36	No perennial stream intersects path to Lake Sakakawea. The access road would cross an intermittent stream. This intermittent stream is 2.5 river miles from the Little Missouri River.	1.87

As part of the NPDES Construction Permit, the proposed project would be engineered and constructed to minimize the suspended sediment (i.e., turbidity) concentration of surface runoff, avoid disruption of drainages, and avoid direct impacts to surface water. No surface water would be used for well drilling operations. Any chemicals or potentially hazardous materials would be handled in accordance with the operator's spill prevention, control, and countermeasure plan. Provisions established under this plan would minimize potential impacts to any surface waters associated with an accidental spill.

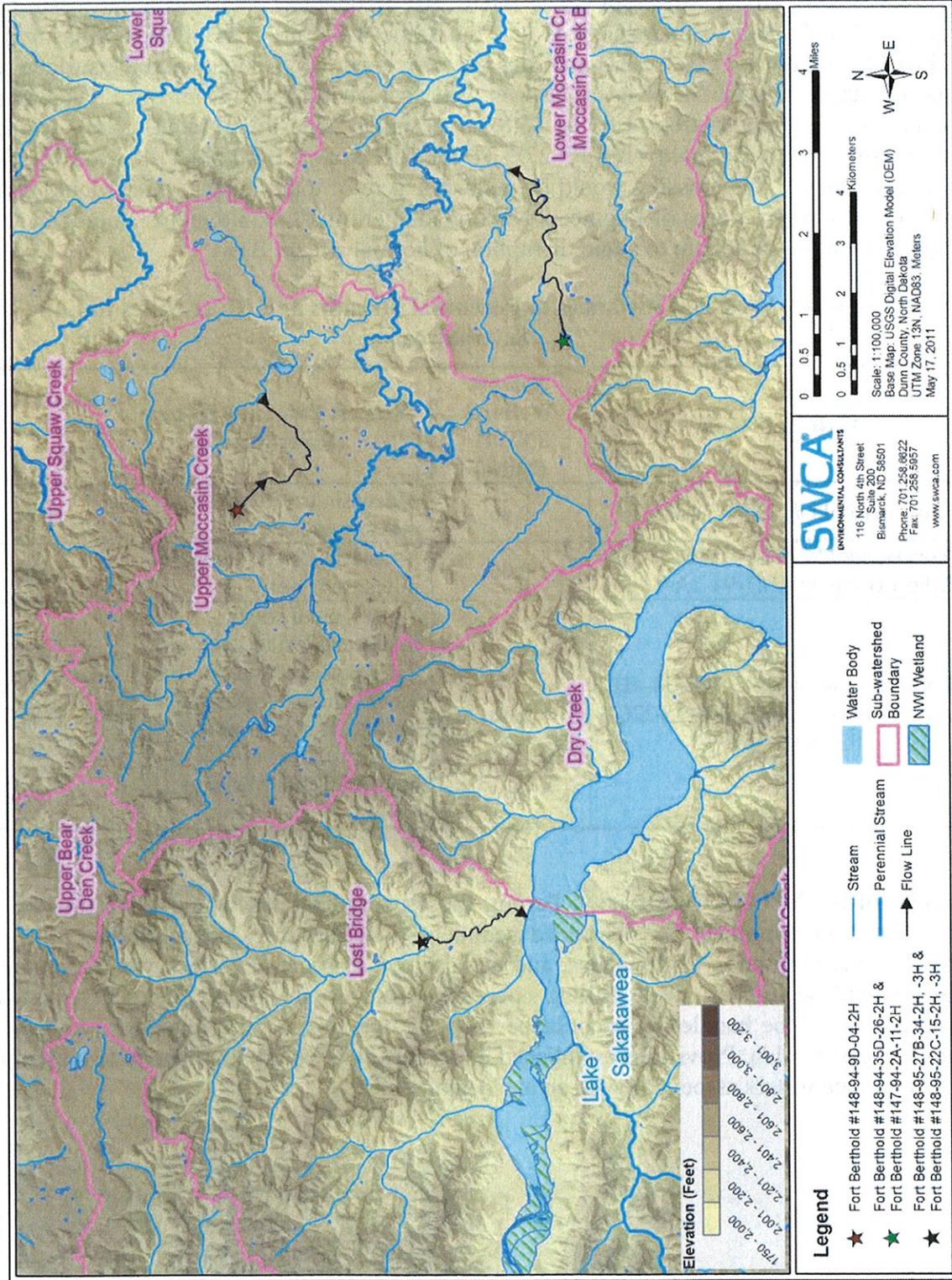


Figure 3-1. Watersheds, surface runoff direction, and aquifers near the project area.

3.3.2 Groundwater

Aquifers in the project 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 3-4). Several shallow aquifers related to post-glacial outwash composed of till, silt, sand, and gravel are located in Dunn County. However, none are within the proposed project areas.

Table 3-4. 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	Fort Union Group	Sentinel Butte	0-670	0-670	Silty, clay, sand and lignite	5 to 100 gal/min in sandstone. 1 to 200 gal/min in lignite.
		Tongue River	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.

Sources: Croft 1985; Klausning 1979.
gal/min = gallons per minute

The shallow Sentinel Butte Formation, commonly used for domestic supply in the area, outcrops in Dunn and McKenzie counties. This aquifer meets standards of the NDDH (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 (2010) revealed two existing water wells within 1 mile of any proposed oil wells (Table 3-5). Of the existing water wells within 1 mile of the proposed wells, one is a surface water monitoring site and the other is unknown.

Table 3-5. Existing Water Wells within 1 Mile of Proposed Wells.

Water Well Number	Section	Township / Range	Type	Depth (feet)	Aquifer	Miles to Proposed Well Pad
14809415CAD	15	148N/94W	Surface Water Monitoring Site	0	Surface Water	0.93
14809522CCA	22	148N/95W	Unknown	1,455	Fox Hills	0.28

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 to permanently seal the well shaft from any surrounding aquifers. Drilling would proceed in compliance with Onshore Oil and Gas Order No. 2, Drilling Operations (43 CFR 3160).

Since none of the proposed project area lies within the boundaries of the post-glacial outwash aquifers, low porosity bedrock near the project 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.

3.3.2.1 Potential Impacts to Surface Water and Groundwater Resources

The majority of the identified groundwater wells may have minimal hydrologic connections due to their respective distances greater than 1 mile from the nearest project well and shallow depths. However, the well within 1 mile of a proposed well pad could be affected by any cross contamination of aquifers during drilling. 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 to permanently seal the well shaft from any surrounding aquifers. Surface casing would be employed to a depth of 2,500 feet below ground surface to isolate and protect all near surface aquifers from contamination during drilling, as described in Section 2.2.5 of this document, to protect the potable water aquifers from any potential contamination during the drilling and operations phases.

Since the introduction of technological advances in hydraulic fracturing (HF), some environmental concerns have been published related to the use of chemical additives and their potential effect on groundwater resources. These concerns, reviewed in Arthur et al. (2008), include:

1. Fractures produced in the well might extend directly into shallow rock units that are used for drinking water supplies. Or, fractures produced in the well might

- communicate with natural fractures that extend into shallow rock units that are used for drinking water supplies.
2. The casing of a well might fail and allow fluids to escape into shallow rock units used for drinking water supplies.
 3. Accidental spills of hydraulic fracturing fluids or fluids expelled during a fracturing job might seep into the ground or contaminate surface water.

The EPA recently studied the effects of coalbed methane well fracing, publishing the results in a report entitled *Evaluation of Impacts to Underground Sources of Drinking Water by Hydraulic Fracturing of Coalbed Methane Reservoirs* (EPA 816-R-04-003) in 2004 (EPA 2010e). The report has received both internal and external peer review, and public comment on its research design and incident information. Based on their research, EPA concluded that there was negligible risk of fracturing fluid contaminating underground sources of drinking water during hydraulic fracturing of coalbed methane production wells, which are significantly more shallow than the Bakken and Three Forks formations. However, the EPA continues to monitor the effects of fracing in coalbed methane well completion (EPA 2010e). The EPA is currently undertaking a study to evaluate of the effect of oilfield HF technology, processes, and fluids on potable water aquifers. The EPA study is not expected to be completed until 2012 (EPA 2010f).

Oil-bearing formations typically occur much deeper than potable water aquifers; approximately 8,700 feet of intervening rock formations occur between the Bakken Formation and the deepest groundwater wells within 1 mile of the proposed wells. In addition, the unique geological position of the Bakken Formation places it immediately beneath the Madison Group. The Madison group of Mississippian age includes three geological formations that have properties that greatly limit the possibility of HF fractures extending vertically into shallower geological formations containing potable water. The following characteristics of the three members of the Madison Group show extremely high resistance to fracturing or vertical transmission of fluids.

3.3.2.1.1 Lodgepole Limestone Sequence

This is a sequence of primarily Mississippian limestones, with scattered interbedded shales approximately 900 feet thick. It lies immediately above the Bakken Formation. This sequence of rocks is characterized as hard and very dense, requiring significant pressure to initiate fractures (Energy Information Administration 2006).

3.3.2.1.2 Mission Canyon Limestone

Like the Lodgepole Limestone, the Mission Canyon is a dense limestone formation with very low porosity that ranges from 500 to 800 feet thick. Any HF pressures within the Bakken Formation that might be sufficient to initiate fracturing of the Lodgepole Limestone are assumed to be greatly reduced before reaching the Mission Canyon Limestone Formation, and very unlikely to cause any fracturing or transmission of fluids.

3.3.2.1.3 Charles Salt

The Charles Salt is ubiquitous through a great portion of the Williston Basin in both Montana and North Dakota and lies immediately above the limestones described above. This salt formation is approximately 600 feet thick. At the depth below the surface and the associated pressures, this salt is ductile, and would flow slowly to fill any void created by drilling or other pressure. This “flow characteristic,” although very challenging to well drilling, would serve to seal any potential fracture that might be propagated artificially through HF. The salt flows completely around the HF fluids or proppant, thereby eliminating any opportunity for the artificially induced fracture to stay open. Further, the water from the Bakken is almost fully salt-saturated; even with water flow from the Bakken to the Charles Salt Formation, there could be almost no dissolution to enhance any fracture, and the formation would form a barrier, or cap, for any potential HR fracture.

Above the Charles Salt lie greater than 6,000 feet of limestones, siltstones, interbedded salts, sandstones, and shales, many of which tend to be soft and incompetent, providing a serious impediment to any fracture height growth and redirecting and attenuating any fracture that is started. The multiple layers encountered would also serve to dissipate any energy from a fracture stimulation resulting in very limited fracture competency.

Potable water aquifers lie approximately 4,000 feet above the Bakken Formation. In general, almost any of the intervening rock packages appear to be able to independently act as an effective impediment to fracture growth in a vertical direction. Although large volumes of sand (proppant) are used in the modern, multi-stage fracture stimulations, relatively small amounts of proppant are used per stage and are specifically designed to limit fracture growth. This technology is highly unlikely to result in fractures that could expand through the Madison Group limestones or reach the Charles Salt Formation.

No direct or indirect impacts to surface water or groundwater resources would be anticipated from drilling of the proposed wells, HF completions, or operation of the proposed wells due to the following:

- The geological setting of the Bakken and Three Forks formations with extremely tight capping formations of the Madison Unit forming an impermeable barrier to upward fracturing or fluid movement.
- The use of semi-closed-loop drilling, construction BMPs, and spill prevention planning during the construction phase of the project.
- Implementation of site-specific measures (Table 3-3) to reduce long-term erosion and runoff into nearby streams and Lake Sakakawea.
- The use of protective casings on the well shafts to protect shallow water-bearing rock formations during drilling and operation of the oil wells.

3.4 SOILS

3.4.1 Natural Resources Conservation Service Soil Data

The project area is located toward the center of the Williston Basin. 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.

The Natural Resources Conservation Service (NRCS 2011) soil series present within the well pads and access road areas, and their respective acreages, are shown in Figures 3-2 through 3-4. The acreage is based on the spatial extent of soil series combinations derived from NRCS data; therefore, the acreage is approximate and used as a best estimate of soil series distribution at each of the proposed project areas.

The following soil series descriptions represent individual soil series reported to exist within the proposed project area (NRCS 2011). Each individual soil series does not exist individually within the project area, but rather in combination with other soil types.

3.4.1.1 Arnegard

The Arnegard series consists of very deep, well- or moderately well-drained soils that formed in calcareous loamy alluvium on upland swales, terraces, fans, and foot slopes. Permeability is moderate. Slopes range from 0 to 25 percent. The mean annual precipitation found throughout the spatial extent of this soil type is 14 inches and mean annual air temperature is 42°F. Most areas are cropped to spring wheat, oats, barley, and hay. Native vegetation is mid, tall, and short grasses such as western wheatgrass (*Pascopyrum smithii*), green needlegrass (*Nasella viridula*), big bluestem (*Andropogon gerardii*), and blue grama (*Bouteloua gracilis*) (NRCS 2011).

3.4.1.2 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, and other various herbs, forbs, and shrub species (NRCS 2011).

*Environmental Assessment: Petro-Hunt, LLC,
 Fort Berthold #148-94-9D-04-2H, Fort Berthold #148-94-35D-26-2H/Fort Berthold #147-94-2A-11-2H,
 and Fort Berthold #148-95-27B-34-4H, -5H/Fort Berthold #148-95-22C-15-4H, -5H*

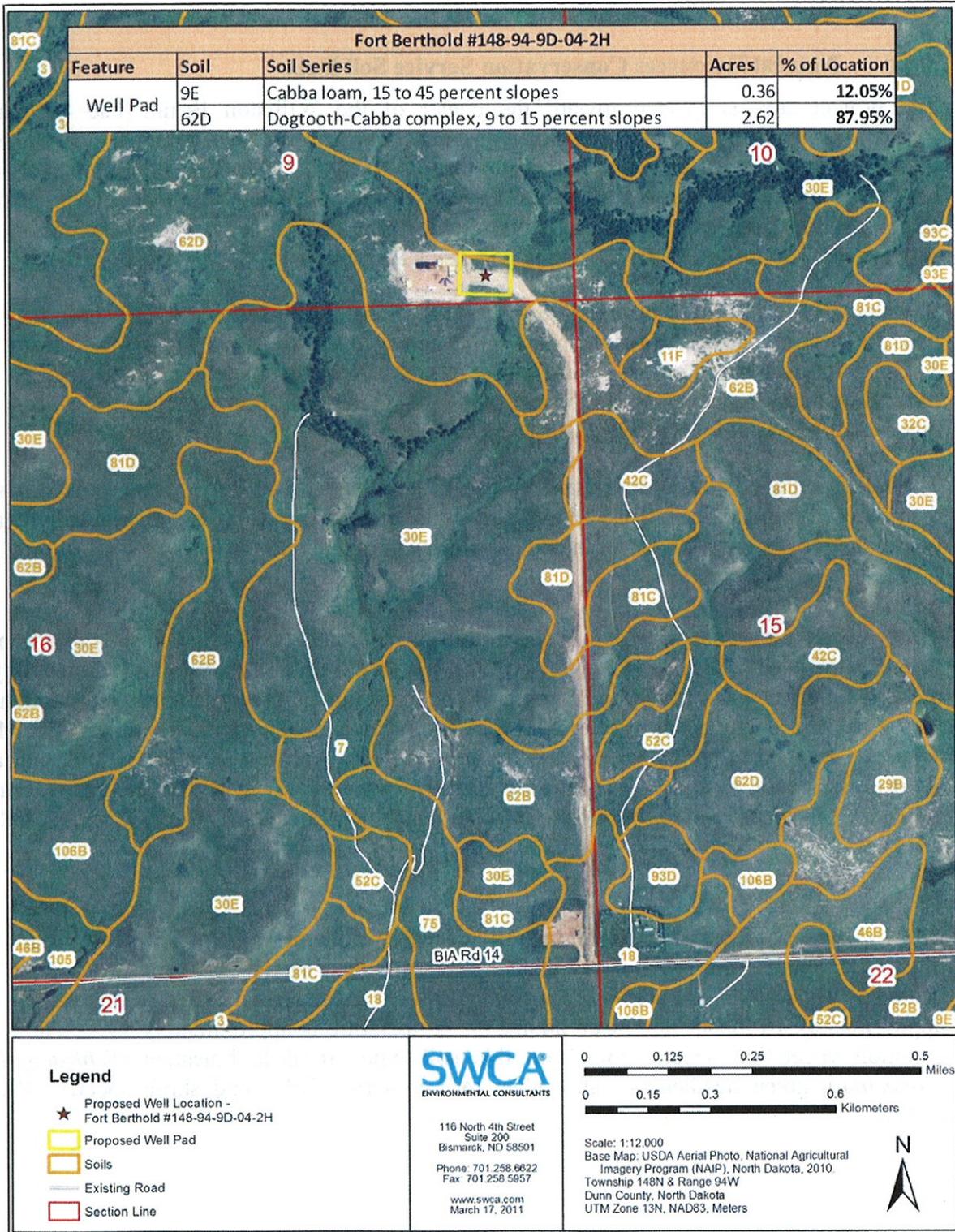


Figure 3-2. Approximate spatial extent of soil types within and around the Fort Berthold #148-94-9D-04-2H well pad.

*Environmental Assessment: Petro-Hunt, LLC,
 Fort Berthold #148-94-9D-04-2H, Fort Berthold #148-94-35D-26-2H/Fort Berthold #147-94-2A-11-2H,
 and Fort Berthold #148-95-27B-34-4H, -5H/Fort Berthold #148-95-22C-15-4H, -5H*

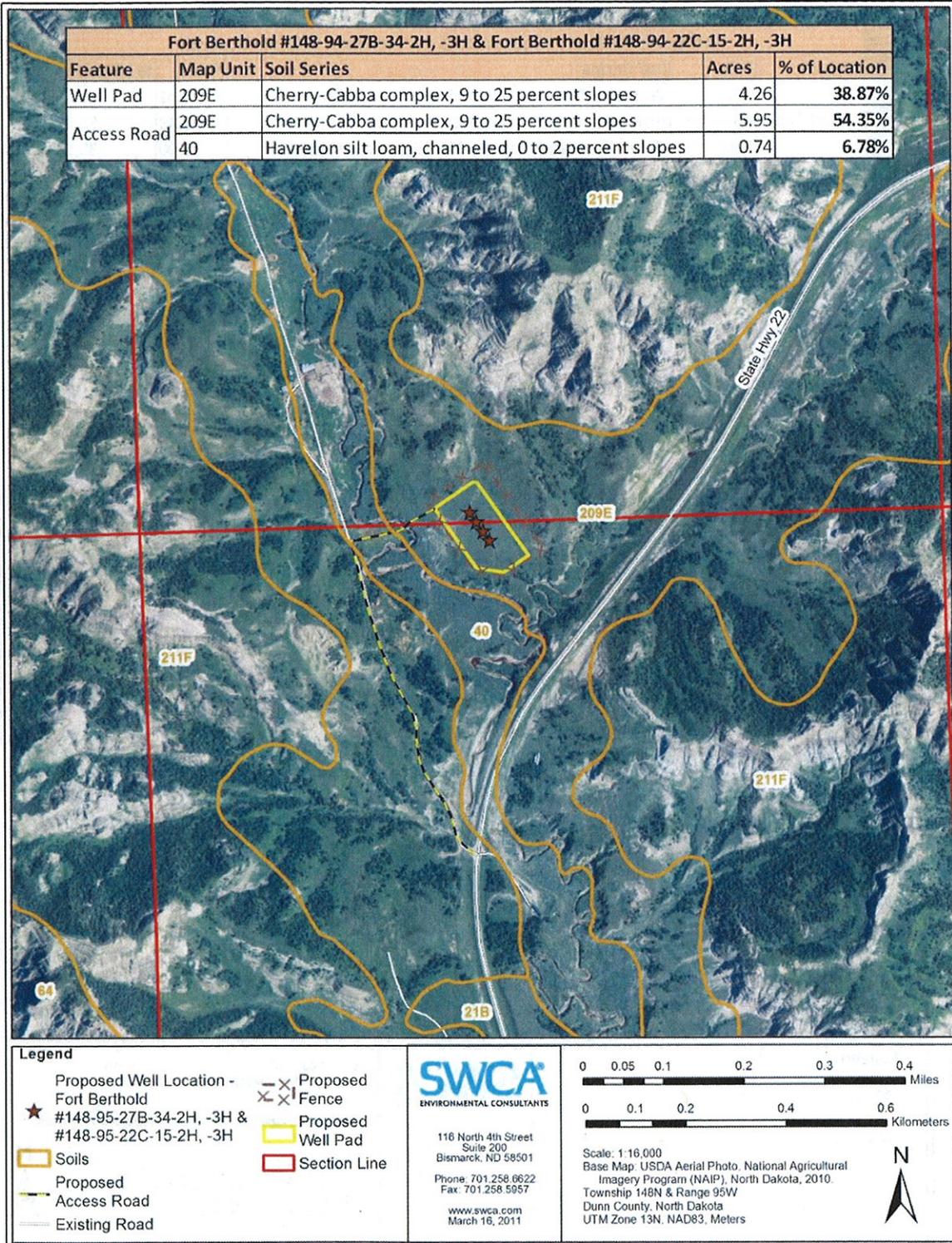


Figure 3-4. Approximate spatial extent of soil types within and around the Fort Berthold #148-95-27B-34-4H, -5H/ Fort Berthold #148-95-22C-15-4H, -5H well pad and access road.

3.4.1.3 Cherry

The Cherry series consists of very deep, well-drained, moderately slowly or slowly permeable soils formed in alluvium. These soils are on fans, foot slopes, dissected uplands, and terraces and have slopes of 0 to 25 percent. Mean annual air temperature is 42°F, and mean annual precipitation is 14 inches. Most areas are cropped to small grains, hay, and pasture and are used for grazing. Native vegetation is western wheatgrass, blue grama, green needlegrass, and a variety of forbs and shrubs (NRCS 2011).

3.4.1.4 Dogtooth

The Dogtooth series consists of moderately deep, well-drained, very slowly permeable soils found in uplands where the predominant slope is between 0 and 25 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 42°F. The most common vegetation species found on this soil type are range and pasture grasses including western wheatgrass and blue grama (NRCS 2011).

3.4.1.5 Havrelon

The Havrelon series consists of very deep, well- and moderately well-drained, moderately permeable soils formed in loamy alluvium in floodplains of streams and major tributaries and have a slope between 0 and 6 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 42°F. The most common vegetation species found on this soil type are native grasses including big bluestem, green needlegrass, and western wheatgrass (NRCS 2011).

3.4.1.6 Vebar

The Vebar series consists of moderately deep, moderately rapidly permeable, well-drained soils found on uplands with slopes ranging from approximately 0 to 65 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 42°F. This soil type is largely used for cultivation of corn and small grains. Native vegetation species common to this soil type include needle and thread (*Stipa comata*) and prairie sandreed (*Calamovilfa longifolia*) (NRCS 2011).

3.4.1.14 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, needle and thread, blue grama, and green needlegrass (NRCS 2011).

3.4.1.14 Zahl

The Zahl series consists of very deep, slowly permeable, well-drained soils found on glacial till plains, moraines, and valley side slopes at approximately 1 to 60 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 rangeland foraging. Native vegetation species common to this soil type include western wheatgrass, little bluestem, and needle and thread (NRCS 2011).

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 3-6. Additionally, redoximorphic features (i.e., reduced/oxidized iron or manganese deposits), and soil texture were noted at each soil pit. A Munsell Soil Color Chart was used to determine the color of moist soil samples.

Table 3-6. Soil Data Obtained through the Excavation of Soil Pits within the Proposed Fort Berthold #148-95-27B-34-4H, -5H/Fort Berthold #148-95-22C-15-4H, -5H location.

Pit Depth (inches)	Soil Matrix Color (color name)	Redoximorphic Feature Color	Texture
0-2	10YR 3/2	Very dark grayish-grown	Silty clay
2-20	10YR 7/2	Light gray	Silty clay loam

Note: Both the Fort Berthold #148-9D-04-2H and Fort Berthold #148-94-35D-26-2H/Fort Berthold #147-94-2A-11-2H locations were previously disturbed by other well pads.

3.4.3 Potential Impacts from Soil Erosion

3.4.3.1 Fort Berthold #148-94-9D-04-2H Well Pad

The well pad is dominated by the Dogtooth-Cabba complex (87.95%) (Figure 3-2).

- This soil type may have variable run-off depending on the slope, which ranges between 9 and 15 percent (NRCS 2011).
- Reclamation of vegetative communities should be easily obtainable due to the affinity of native grassland species to this soil type (NRCS 2011).
- 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.

3.4.3.2 Fort Berthold #148-94-35D-26-2H/Fort Berthold #147-94-2A-11-2H Well Pad and Access Road

The well pad and the proposed new access road are both dominated by the Arnegard loam (55.27% and 24.22%, respectively) (Figure 3-3).

- This soil type may have variable run-off depending on the slope, which ranges between 2 and 6 percent (NRCS 2011).
- Reclamation of vegetative communities should be easily obtainable due to the affinity of native grassland species to this soil type (NRCS 2011).

- The sites 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.

3.4.3.3 Fort Berthold #148-95-27B-34-4H, -5H/Fort Berthold #148-95-22C-15-4H, -5H Well Pad and Access Road

The well pad and the proposed new access road are both dominated by the Cherry-Cabba complex (38.87% and 54.35%, respectively) (Figure 3-4).

- This soil type may have variable run-off depending on the slope, which ranges between 9 and 25 percent (NRCS 2011).
- Reclamation of vegetative communities should be easily obtainable due to the affinity of native grassland species to this soil type (NRCS 2011).
- The sites 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.

3.4.3.4 General

Precautions should be taken during construction activities to prevent erosion. 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).

The soil types are not expected to create unmanageable erosion issues or interfere with reclamation of the area. 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 would reduce project effects and maintain negligible levels of erosion; therefore, no significant adverse impacts to soil resources are anticipated.

3.5 WETLANDS

National Wetland Inventory maps maintained by the U.S. Fish and Wildlife Service (USFWS) do not identify any jurisdictional wetlands within the proposed well pad or access road areas (USFWS 2009). The Fort Berthold #148-95-27B-34-4H, -5H/Fort Berthold #147-94-2A-11-4H, -5H access road wetland crossing has been minimized to impact less than 0.1 acre of wetlands. No additional wetlands were observed along any access road ROWs or at any of the well sites during surveys conducted between March and July 2010.

According to the USFWS National Wetland Inventory database, the proposed well locations are between 0.6 and 0.46 mile from the nearest wetland (Table 3-3). Due to the location of these wetlands, no additional impacts would be expected as a result of construction, drilling, or production activities associated with the proposed well pad and associated access roads. In order to prevent any downstream impact to Lake Sakakawea, Petro-Hunt would employ standard BMPs to reduce the potential for adverse impact.

3.6 VEGETATION AND NOXIOUS WEEDS

3.6.1 Vegetation Data

The proposed project area occurs in the northwestern Great Plains ecoregion (River Breaks) (U.S. Geological Survey 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*).

3.6.1.1 Fort Berthold #148-94-9D-04-2H Well Pad

Herbaceous and woody vegetation noted at the project area includes prairie sandreed (*Calamovilfa longifolia*), little bluestem, and western snowberry (*Symphoricarpos occidentalis*) (Figure 3-5).



Figure 3-5. Vegetation at the Fort Berthold #148-94-35D-26-2H project area, facing north. Photo taken September 21, 2010.

3.6.1.2 Fort Berthold #148-94-35D-26-2H/Fort Berthold #147-94-2A-11-2H Well Pad and Access Road

Herbaceous vegetation noted at the project area includes smooth brome (*Bromus inermis*), Canada thistle (*Cirsium arvense*), narrow leaved purple coneflower (*Echinacea angustifolia*), and native sunflower (*Helianthus* sp.) (Figure 3-6).



Figure 3-6. Vegetation at the Fort Berthold #148-94-35D-26-2H/Fort Berthold #147-94-2A-11-2H project area, facing west. Photo taken September 21, 2010.

3.6.1.3 Fort Berthold #148-95-27B-34-4H, -5H/Fort Berthold #148-95-22C-15-4H, -5H Well Pad and Access Road

Herbaceous and woody vegetation noted at the project area includes silver sage (*Artemisia cana*), blue grama (*Bouteloua gracilis*), green needlegrass (*Nassella viridula*), prickly pear cactus (*Opuntia polycantha*), cottonwood (*Populus deltoides*), and prairie coneflower (*Ratibida columnifera*) (Figures 3-7 through 3-9).



Figure 3-7. Vegetation at the Fort Berthold #148-95-27B-34-4H, -5H/Fort Berthold #148-95-22C-15-4H, -5H project area, facing south. Photo taken September 2, 2010.



Figure 3-8. Intermittent stream that would be crossed by the Fort Berthold #148-95-27B-34-4H, -5H/Fort Berthold #148-95-22C-15-4H, -5H access road (culvert required). Photo taken September 2, 2010.



Figure 3-9. Vegetation at the Fort Berthold #148-95-27B-34-4H, -5H/Fort Berthold #148-95-22C-15-4H, -5H access road, facing northwest. Photo taken September 2, 2010.

3.6.2 Noxious Weeds

“Noxious weeds” 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 have high reproduction 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.

Noxious weeds have the potential to detrimentally affect public health, ecological stability, and agricultural practices. NDCC (Chapter 63-01.1) and the North Dakota Department of Agriculture (NDDA) recognize 11 species as noxious, as shown in Table 3-7 (NDDA 2009). Each county has the authority to add additional species to their list of noxious weeds. McKenzie County has five additional species listed as county noxious weeds. In 2009, three state noxious weed species were found on 86,100 acres in Dunn County. In 2009, seven state noxious weed species were found on 62,222 acres in McKenzie County. In 2009, no county listed species were found in McKenzie County. Dunn County does not maintain a list of other noxious species. However, 3,000 acres of black henbane were shown to occur in Dunn County in 2009 (NDDA 2009).

Table 3-7. Recognized Noxious Weed Occupied Area in Dunn and McKenzie Counties, North Dakota.

Common Name	Scientific Name	Dunn County (acres)	McKenzie County (acres)
State Noxious Weeds			
absinth wormwood	<i>Artemisia absinthium</i>	39,300	15
Canada thistle	<i>Cirsium arvense</i>	28,500	33,600
diffuse knapweed	<i>Centaurea diffusa</i>	0	1
leafy spurge	<i>Euphorbia esula</i>	18,300	26,200
musk thistle	<i>Carduus nutans</i>	0	0
purple loosestrife	<i>Lythrum salicaria</i>	0	0
Russian knapweed	<i>Acroptilon repens</i>	0	0
spotted knapweed	<i>Centaurea stoebe</i>	0	5
yellow toadflax	<i>Linaria vulgaris</i>	0	0
dalmatian toadflax	<i>Linaria dalmatica</i>	0	1
salt cedar	<i>Tamarix ramosissima</i>	0	2,400
Other Noxious Weeds			
black henbane	<i>Hyoscyamus niger</i>	3,000	0
common burdock	<i>Arctium minus</i>	0	0
houndstongue	<i>Cynoglossum officinale</i>	0	0
halogeton	<i>Halogeton glomeratus</i>	0	0
baby's breath	<i>Gypsophila muralis</i>	0	0

Source: NDDA 2009

Efforts to reduce the spread of noxious weeds would be made during the project construction and maintenance processes. The following guidelines would be followed during construction, reclamation, and maintenance stages of the project to control the spread of noxious weeds.

- Construction equipment, materials, and vehicles would be stored at construction sites or at specified construction yards.
- All personal vehicles, sanitary facilities, and staging areas would be confined to a limited number of specified locations to decrease chances of incidental disturbance and spread of weeds.
- In areas with existing noxious weed infestations, vegetation, soils, and trench spoil material would be stockpiled adjacent to the removal point and, following construction, would be returned to its original locations to prevent spreading.
- Prompt re-establishment of the desired vegetation in disturbed areas is required. Seeding would occur during the frost-free periods after construction. Certified “noxious weed-free” seed would be used on all areas to be seeded.

3.6.3 Potential Impacts on Vegetation and Noxious Weeds

The Proposed Action would result in minor loss of native grassland vegetation and some improved livestock pasture vegetation. The potential disturbance associated with each project component would total approximately 7 acres overall.

In addition to the removal of typical native grasslands, removal of existing vegetation may facilitate the spread of noxious weeds. The APD and this EA require the operator to control noxious weeds throughout project areas. If a noxious weed community is found, it would be eradicated unless the community is too large, in which case it would be controlled or contained to prevent further growth. The services of a qualified weed control contractor would be utilized.

Surface disturbance and vehicular traffic must not take place outside approved ROWs for the well pad, access road, and gathering pipelines. 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. Prompt and appropriate construction, operation, and reclamation are expected to maintain minimal levels of adverse impacts to vegetation and would reduce the potential establishment of invasive vegetation species.

Construction of the proposed well pads and the associated access roads would result in long-term disturbance of approximately 26.5 acres of vegetation, since these facilities would only be partially reclaimed, and would be in continuous use for the life of the project. The loss of acres, with implementation of BMPs and noxious weed management guidelines, would result in negligible levels of vegetation disturbance and would not result in significant adverse impacts to vegetation resources.

3.7 WILDLIFE

3.7.1 Threatened and Endangered Species Occurrence and Habitat

Several wildlife species that may exist in Dunn and McKenzie counties (USFWS 2010) are listed as threatened or endangered under the Endangered Species Act (ESA) (16 USC 1531 et seq.) (Appendix A). According to the USFWS, listed species in Dunn and McKenzie counties, North Dakota, include the gray wolf, black-footed ferret, whooping crane, piping plover and its Designated Critical Habitat, interior least tern, and pallid sturgeon, as well as two federal candidate species, the Dakota skipper and the Sprague's pipit. In addition to the ESA, the Bald and Golden Eagle Protection Act (BGEPA) (16 USC 668–668d, 54 Sta. 250) and the Migratory Bird Treaty Act of 1918 (MBTA) (916 USC 703–711) protect nesting migratory bird species. The listed species and their federal status are provided in Table 3-8. SWCA Environmental Consultants (SWCA) biologists did not observe any of these species, although potential suitable habitat of the Dakota skipper, Sprague's pipit, and gray wolf was observed within or near the project area.

Table 3-8. Summary of Potential Effects to Threatened and Endangered Species.

Species	Federal Status	Habitat Suitability or Known Occurrence	Operator-Committed Measures	Effects Determination
Black-footed Ferret (<i>Mustela nigripes</i>)	Endangered	Species is presumed extirpated from North Dakota.	None	No Effect
Gray Wolf (<i>Canis lupus</i>)	Endangered	Nearest known gray wolf populations exist in Minnesota, Canada, Montana, and Wyoming. Western North Dakota sightings in the late twentieth century are speculated to be solitary, transient, young adult males seeking to establish territory.	None	No Effect
Whooping Crane (<i>Grus americana</i>)	Endangered	Birds may occasionally stopover during migration due to the presence of suitable foraging habitat near the project areas.	Drilling or construction activity would cease and the Bureau of Indian Affairs (BIA) and U.S. Fish and Wildlife Service would be notified if whooping cranes are sighted within 1 mile of the project area. Activities may commence when the birds have left the 1-mile buffer area.	May Affect, Is Not Likely to Adversely Affect
Piping Plover (<i>Charadrius melodus</i>)	Threatened	Birds are unlikely to be present due to lack of suitable foraging or nesting habitat. The nearest suitable nesting and foraging habitat occurs on the shoreline and islands of Lake Sakakawea, approximately 2.4 to 8.2 miles from proposed well pads and access roads.	See migratory bird protective measures for whooping crane.	May Affect, Is Not Likely to Adversely Affect

Species	Federal Status	Habitat Suitability or Known Occurrence	Operator-Committed Measures	Effects Determination
Designated Critical Habitat for Piping Plover	Designated Critical Habitat	Critical Habitat occurs within the watershed of the project area, on the shoreline and islands of Lake Sakakawea, approximately 1.87 to 16.82 river miles from proposed well pads and access roads.	Petro-Hunt would implement all best management practices (BMPs), erosion control measures, and spill prevention practices required by the Clean Water Act. Petro-Hunt would use a semi-closed-loop drilling system for each well pad. Petro-Hunt would surround each well pad with a berm to prevent hazardous runoff or spills.	May Affect, Is Not Likely to Adversely Affect
Interior Least Tern (<i>Sterna antillarum</i>)	Endangered	The nearest suitable nesting and foraging habitat occurs on the shoreline and islands of Lake Sakakawea, approximately 1.87 to 16.82 river miles, and 2.5 to 8.2 straight line miles from proposed well pads and access roads. Migrating or foraging interior least terns may transition through the project area.	See migratory bird protective measures for whooping crane. See Designated Critical Habitat protective measures for piping plover.	May Affect, Is Not Likely to Adversely Affect
Pallid Sturgeon (<i>Scaphirhynchus albus</i>)	Threatened	Lake Sakakawea is between 1.87 and 16.82 river miles from proposed well pads and access roads.	Petro-Hunt would implement all BMPs, erosion control measures, and spill prevention practices required by the BIA and the Clean Water Act. Petro-Hunt would use a semi-closed-loop drilling system for each well pad. Petro-Hunt would surround each well pad with a berm to prevent hazardous runoff or spills.	May Affect, Is Not Likely to Adversely Affect
Dakota Skipper (<i>Hesperia dacotae</i>)	Candidate	Suitable habitat was noted within the project area. However, no adverse impact is anticipated as a result of construction activities.	The proposed well pads would be reclaimed as soon as possible after their lifespan is complete. Impacted areas would be returned to pre-construction contours.	May Affect, Is Not Likely to Adversely Affect

Species	Federal Status	Habitat Suitability or Known Occurrence	Operator-Committed Measures	Effects Determination
Sprauge's Pipit (<i>Anthus spragueii</i>)	Candidate	Suitable habitat was noted within the project area. However, no adverse impact is anticipated as a result of construction activities.	The proposed well pads would be reclaimed as soon as possible after their lifespan is complete. Impacted areas would be returned to pre-construction contours.	May Affect, Is Not Likely to Adversely Affect
Other Federally Protected Species				
Bald Eagle (<i>Haliaeetus leucocephalus</i>)	Bald and Golden Eagle Protection Act (BGEPA) and Migratory Bird Treaty Act of 1918 (MBTA)	Raptor habitat survey was conducted. No evidence of bald eagle nesting or foraging habitat occurs in the project area.	A 0.5-mile line of sight survey was conducted during the initial field survey and no suitable nesting habitat was observed within the project area. No additional bald eagle surveys will be conducted.	No Adverse Effects Anticipated

Species	Federal Status	Habitat Suitability or Known Occurrence	Operator-Committed Measures	Effects Determination
Golden Eagle (<i>Aquila chrysaetos</i>)	BGEPA and MBTA	Raptor habitat survey was conducted. No eagle nests were observed in the project area. Nesting habitat was present and golden eagles may occasionally visit or forage within or around the project area.	A 0.5-mile line of sight survey was conducted during the initial field survey. The closest known golden eagle nest occurrence is approximately 1.8 miles northeast of the Fort Berthold #148-95-27B-34-4H, -5H & Fort Berthold #148-95-22C-15-4H, -5H well pad. An additional survey for eagle nests was conducted on April 22, 2011, by Josh Ruffo at the Fort Berthold #148-94-35D-27-2H/ Fort Berthold #147-94-2A-11-2H location. A small grove of trees was present within the 0.5-mile buffer of the well location and access road. This area was investigated by using binoculars to scan for any signs of nesting activity. No eagle nests were observed during the course of the field survey.	No Adverse Effects Anticipated
Migratory Birds	MBTA	Suitable habitat for nesting migratory grassland birds occurs in the project area.	See migratory bird protective measures for whooping crane.	No Adverse Effects Anticipated

3.7.2 General Wildlife Species Occurrence and Habitat

No wildlife was observed during the September 1, 2, and 21, 2010, field visits.

3.7.3 Potential Impacts to Wetlands, Habitat, and Wildlife

With the implementation of the above standard BMPs, general design measures, and species-specific measures, no additional riparian areas or wetlands would be directly or indirectly affected by the proposed access roads or well pads. The Fort Berthold #148-95-27B-34-4H, -5H/Fort Berthold #148-95-22C-15-4H, -5H access road wetland crossing has been minimized to impact less than 0.1 acre of wetland.

No impacts to listed species are anticipated because of the low likelihood of their occurrence within the proposed project areas, confirmed by on-site assessments conducted by SWCA biologists. If construction is planned during the critical season, a migratory bird survey would be conducted prior to commencement of construction. Additionally, Petro-Hunt has committed to using a semi-closed-loop drilling system. For additional information on general BMPs and other operator-committed measures, please see Sections 2.2.9, Construction Details, and 3.12, Mitigation and Monitoring.

Minor impacts to unlisted wildlife species and their habitats could result from the construction of the well pads and access roads; increased vehicular traffic density; drilling activities; and long-term disturbances during commercial production. Ground clearing may impact habitat for small birds, small mammals, and other wildlife species. The proposed project 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 MBTA (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 well pads over areas with existing disturbances;
- dry cuttings pit;
- removing any oil found in pits and ponds and containing it in tanks for proper disposal;
- installing covers under drip buckets and spigots; and
- conducting interim reclamation of at least half the disturbed area.

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.

3.8 CULTURAL RESOURCES

Historic properties, or cultural resources, on federal or tribal lands are protected by many laws, regulations, and agreements. Section 106 of the National Historic Preservation Act of 1966 (16 USC 470 et seq.) 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 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 (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 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. Thus, BIA consults and corresponds with the THPO regarding cultural resources on all projects proposed within the exterior boundaries of the 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 Fort Berthold 148-95-27B-34-4H/Fort Berthold 148-95-27B-34-5H/Fort Berthold 148-95-22C-15-4H/ Fort Berthold 148-95-22C-15-5H (formerly Fort Berthold 148-95-27B-34-2H/Fort Berthold 148-95-27B-34-3H/Fort Berthold 148-95-22C-15-2H/Fort Berthold 148-95-22C-15-3H) project approximately 22.76 acres were inventoried on September 2, 2010 (Herson 2011a). For the Fort Berthold 148-94-9D-4-2H expansion project approximately 6.17 acres were inventoried on September 21, 2010 (Herson 2011b). No historic properties were located that appear to possess the quality of integrity and meet at least one of the criteria (36 CFR 60.6) for inclusion on the National Register. As the lead federal agency, and as provided for in 36 CFR 800.5, on the basis of the information provided, BIA reached a

determination of no historic properties affected for this undertaking. This determination was communicated to the THPO on May 25, 2011; however, the THPO did not respond within the allotted 30 day comment period. For the Fort Berthold 147-94-2A-11-2H/Fort Berthold 148-94-35D-26-2H project approximately 10.12 acres were inventoried between September 1 and 21, 2010 (Smith and Schleicher 2011). No historic properties were located that appear to possess the quality of integrity and meet at least one of the criteria (36 CFR 60.6) for inclusion on the National Register. As the lead federal agency, and as provided for in 36 CFR 800.5, on the basis of the information provided, BIA reached a determination of no historic properties affected for this undertaking. This determination was communicated to the THPO on May 24, 2011; however, the THPO did not respond within the allotted 30 day comment period.

No cultural resources that are potentially eligible for listing on the National Register are known to be present in the area of potential effect; therefore, there would be no adverse impacts to cultural resources as a result of the Proposed Action.

If cultural resources are discovered during construction or operation, the operator shall immediately stop work, secure the affected site, and notify the BIA and THPO. Unexpected or inadvertent discoveries of cultural resources or human remains trigger mandatory federal procedures that include work stoppage and BIA consultation with all appropriate parties. Following any such discovery, operations would not resume without written authorization from the BIA. Project personnel are prohibited from collecting any artifacts or disturbing cultural resources in the area under any circumstance. Individuals outside the ROW are trespassing. No laws, regulations, or other requirements have been waived; no compensatory mitigation measures are required. The presence of qualified cultural resource monitors during construction activities is encouraged for implementation of any ground disturbing activities.

3.9 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.

Hydrogen sulfide (H₂S) is extremely toxic in concentrations above 500 parts per million, 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.

Standard mitigation measures would be applied, and because release of H₂S at dangerous concentration levels is very unlikely, no direct impacts from H₂S are anticipated with implementation of the project.

Tanker trips would depend on production, but Petro-Hunt 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.

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.

3.9.1 Potential Impacts to Public Health and Safety

With the implementation of the described reporting and management of hazardous materials, no adverse impacts to public health and safety are anticipated as a result of the proposed new wells. Other potential adverse impacts to any nearby residents 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 proved 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.

3.10 SOCIOECONOMICS

3.10.1 Socioeconomic Analysis Area

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 their proximity to the proposed well locations and overlap with the Reservation could result in socioeconomic impacts. 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.

3.10.2 Population and Demographic Trends

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 in 2008 (%)	Predominant Minority in 2008 (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 Indian Reservation ¹	11,897	1.8	178.02	+13.33	American Indian	Caucasian (~27%)

County or Reservation	Population in 2008	% of State Population	% Change Between 1990–2000	% Change Between 2000–2008	Predominant Group in 2008 (%)	Predominant Minority in 2008 (Percent of Total Minority Population)
Statewide	641,481	100	0.005	-0.1	Caucasian	American Indian (8.6%)

Source: U.S. Census Bureau 2010a.

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 Indian 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.

3.10.3 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, 2007 economic data indicates that the major employers in North Dakota include government and government enterprises, which employed 16.6%; health care and social assistance, which employed 11.7%; and retail trade, which employed at 11.3% of the state’s labor force (U.S. Bureau of Economic Analysis 2009a). Energy development and extraction, power generation, and services related to these activities have become increasingly important over the last several years and many service sector jobs are directly and indirectly associated with oil and gas development.

Table 3-10 provides data on 2009 employment opportunities for the Analysis Area, and changes in unemployment for the period between 2005 and 2009. All counties in the Analysis Area, and the entire state of North Dakota, showed average weekly wages that were lower than the national average in 2009. In 2009, total employment in the state of North Dakota was approximately 354,916, with a statewide unemployment rate of 4.3% of the workforce, one of the lowest in the nation (Bureau of Labor Statistics 2009). While some counties in the Analysis Area experienced a slight increase in unemployment, others were unchanged or experienced a decreased unemployment.

Table 3-10. 2009 Total Employment, Average Weekly Wages, and Unemployment Rates.

Location	Total Employment (September 2009)	Average Weekly Wage (September 2009)	Unemployment Rate (2009)	Change in Unemployment Rate (2005–2009)
United States	128,088,742	\$840	9.8%	
North Dakota	354,916	\$680	4.3%	+0.9%
Dunn County	929	\$647	4.5%	+1.1%
McKenzie County	2,899	\$839	3.5%	-0.2%
McLean County	3,594	\$755	5.0%	No change

Location	Total Employment (September 2009)	Average Weekly Wage (September 2009)	Unemployment Rate (2009)	Change in Unemployment Rate (2005–2009)
Mountrail County	3,126	\$681	4.2%	-1.8%
On or Near Fort Berthold Indian Reservation*	1,287	N/A	71%	N/A

Sources: Bureau of Labor Statistics 2009; U.S. Department of Agriculture 2010; Bureau of Indian Affairs 2005.

* Represents 2005 data only.

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).

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.

3.10.4 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).

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 3-10, unemployment rates in all counties, including the Reservation, were equal to or above the state average of 4.3%. 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 (Table 3-11). 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).

Table 3-11. Income and Poverty in Analysis Area, 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%

Unit of Analysis	Per Capita Income ¹	Median Household Income	Percent of all People in Poverty ²
Fort Berthold Indian 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 U.S. Department of Agriculture (USDA) 2009

³ North Dakota State Data Center 2009

3.10.5 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, with 2008 updates (U.S. Census Bureau 2010a). 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 3-12 provides housing unit supply estimates in the Analysis Area, including the Reservation and four overlapping counties.

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.

Table 3-12. 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 2010a.

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 3-13.

Table 3-13. 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 2009a, 2009b.

3.10.6 Potential Impacts to Area Socioeconomics

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 wells. 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 3-14, 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, Petro-Hunt 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 mixture of local and Petro-Hunt employees would work in the project area. Therefore, any increase in workers would constitute a minor increase in population in the project area required for short-term operations and would not create a noticeable increase in demand for services or infrastructure on the Reservation or the communities near the project area.

Although the Analysis Area has experienced a recent decline in population between 2000 and 2008 (as shown in Table 3-9), the population on the Reservation itself has increased. This has not led to significant housing shortages. The historic housing vacancy rate (Table 3-12) indicates that housing has remained available despite the growth of the population on the Reservation. The levels of available housing are therefore anticipated to be 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 project area.

Table 3-14. 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 Dunn County 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.

3.11 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 Order and is responsible for related legal action. Working criteria for designation of targeted populations are provided in Final Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analyses (EPA 1998). This guidance uses a statistical approach to consider various geographic areas and scales of analysis to define a particular population's status under the Order.

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 3-15 summarizes relevant data regarding minority populations for the Analysis Area.

Table 3-15. Minority Population Breakdown by North Dakota County and Race, 2000–2008².

Race	Dunn		McKenzie		McLean		Mountrail		North Dakota	
	2000	2008	2000	2008	2000	2008	2000	2008	2000	2008
Total Population	3,600	3,318	5,737	5,674	9,311	8,337	6,629	6,511	642,204	641,481
Non-Hispanic	3,573	3,275	5,679	5,581	9,230	8,191	6,542	6,327	634,418	628,254
Hispanic or Latino ¹	27	43	58	93	81	146	87	184	7,786	13,227
Races										
Caucasian	3,123	2,818	4,457	4,329	8,632	7,610	4,546	4,086	596,722	586,272
African American	1	2	4	30	2	9	7	27	4,157	6,956
American Indians and Alaska Natives	448	467	1,216	1,230	568	587	1,988	2,277	31,440	35,666
Asian / Pacific Islanders	8	3	4	10	12	19	17	20	3,912	5,095

*Environmental Assessment: Petro-Hunt, LLC,
Fort Berthold #148-94-9D-04-2H, Fort Berthold #148-94-35D-26-2H/Fort Berthold #147-94-2A-11-2H,
and Fort Berthold #148-95-27B-34-4H, -5H/Fort Berthold #148-95-22C-15-4H, -5H*

Race	Dunn		McKenzie		McLean		Mountrail		North Dakota	
	2000	2008	2000	2008	2000	2008	2000	2008	2000	2008
Two or More Races	25	28	39	75	97	112	71	101	5,973	7,492
All Minorities	509	543	1,321	1,438	760	808	2,170	2,609	53,268	55,209
% Minority Population	14.1	16.4	23.0	25.3	8.2	9.7	32.7	40.1	8.3	8.6
Change in Minority Population (2000-2008)	+6.7%		+8.9%		+6.3%		+20.2%		+3.6%	

¹ Hispanic or Latino may be of any race.

² U.S. Census Bureau estimates of population demographics were made in July 2008.

Source: U.S. Census Bureau 2010a.

In July 2008, the U.S. Census estimated that North Dakota's total minority population comprised approximately 55,209 persons, or 8.6% of the state's total population (i.e., 641,481 residents). This represents an increase of 3.63% over the 2000 minority population of the state, even though the overall state's total population decreased during the same time. An even stronger trend of increased minority population, and decrease in overall population occurred in the Analysis Area during the same time period. As presented in Table 3-15, the number of Caucasian residents decreased, while minorities in nearly all categories increased, producing a strong increase in the percentage of minority population in each of the counties in the Analysis Area during the period from 2000 until 2008 (U.S. Census Bureau 2010a). The four counties of the Analysis Area showed an increase of 6.3% to 20.2% in minority population, compared with the statewide increase of 3.6%.

The American Indian and Alaska Native population is the largest minority in each of the counties, as well as for the state as a whole (North Dakota Indian Affairs Commission [NDIAC] 2010). The NDIAC reports that American Indian population (race alone or in combination) in North Dakota has increased 12% from 31,440 in 2000 to 35,666 in 2008 (U.S. Census Bureau 2010a), with estimates for the future American Indian population (one race only) at 47,000 in 2015 and 59,000 in 2025 in North Dakota (NDIAC 2010). The Reservation had a total population of 5,915 in the 2000 census, with 67.4% American Indian, mostly with tribal affiliations with MHA Nation (NDAIC 2010).

Poverty rate data for the counties in the Analysis Area are summarized in Table 3-16. The data show that poverty rates have decreased in the Analysis Area during the period from 2000 to 2008 (U.S. Census Bureau 2010b). However, except for McLean County, the poverty rates are higher and the median household incomes are lower for area residents in 2008, compared with the statewide poverty rate of 11.5% and median household income of \$45,995.

Table 3-16. Poverty Rates and Median Household Income for the Analysis Area.

Location	2000	2008	2008 Median Household Income
Dunn County	13.3%	12.2%	\$40,801
McKenzie County	15.7%	14.4%	\$44,704
McLean County	12.3%	11.1%	\$46,131
Mountrail County	15.7%	14.0%	\$41,551
North Dakota	10.4%	11.5%	\$45,996

Source: U.S. Census Bureau 2010b.

3.11.1 Potential Impacts to Environmental Justice

The Analysis Area, having larger and increasing minority populations, compared with statewide numbers, could result in disproportionately beneficial impacts from the proposed oil field development. These would derive from direct and indirect economic opportunities for tribal members. 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. Poverty rates in the Analysis Area have already begun to decrease since oil and gas development began after 2000, as shown in Table 3-16. There is potential for adverse economic impacts to tribal members who do not reside within the Reservation and therefore do not share in direct or indirect benefits.

Potential adverse impacts could occur to tribes and tribal members, as well, such as the potential disturbance of any Traditional Cultural Properties and cultural resources. These potential impacts are reduced through surveys of proposed well locations and access road routes and thorough reviews and determinations by the BIA that there would be no effect to historic properties. Furthermore, nothing is known to be present that qualifies as a Traditional Cultural Property or for protection under the American Indian Religious Freedom Act. The possibility of disproportionate impacts to tribes or tribal members is further reduced by the requirement 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.

3.12 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. 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. Petro-Hunt 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.

3.12.1 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 Petro-Hunt is committed to following.

- 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.
- Storing chemicals properly (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.

Petro-Hunt 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.

Petro-Hunt 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.

3.12.2 Mitigation and Safety Measures Committed to by Petro-Hunt

3.12.2.1 Air Quality

Petro-Hunt commits to the following:

- 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 water or dust suppressants to control fugitive dust on roads; and
 - control road speeds.
- Drilling BMPs to reduce rig emissions
 - Use cleaner diesel (Tier 2, 3, and 4) engines.
- 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.

3.12.2.2 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.

3.12.2.3 Utility Lines

All utility lines, including electric lines and other lines essential to oil well operations, will be installed underground.

3.12.2.4 Fire Control

Petro-Hunt 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.

3.12.2.5 Traffic

Construction personnel would stay within the approved ROW or would follow designated access roads.

3.12.2.6 Semi-Closed-Loop System

Petro-Hunt commits to using a semi-closed-loop system at all locations.

3.12.2.7 Wildlife

During an informal Section 7 consultation with the USFWS, the following mitigation measures were agreed upon to reduce the potential impact to protected species.

3.12.2.7.1 *Bald and Golden Eagle and Migratory Bird Protective Measures*

- SWCA biologists conducted a 0.5-mile line of sight survey from the project area for bald and golden eagle nests. No nests or individuals were observed.
- The nearest known golden eagle nest occurs approximately 1.8 miles north and east of the project area.
- Petro-Hunt will conduct all construction outside of the migratory bird breeding season (between February 1 and July 15); or, if construction occurs during bird breeding season, Petro-Hunt will either:
 - mow/clear vegetation in the construction ROW and maintain (prior to February 1) and until ground disturbing activities occur (weather conditions permitting); or
 - conduct an ornithological survey of the project area five days before construction begins, and if nests are discovered, notify BIA and USFWS.

3.12.2.7.2 *ESA Protective Measures*

- Piping Plover and its Designated Critical Habitat, Interior Least Tern, and Pallid Sturgeon: Erosion control mechanisms would be deployed to reduce the potential for sediment transport into drainages and subsequently Lake Sakakawea. The disturbed area would be reclaimed per the BIA's requirements as soon as practicable after construction is complete. Petro-Hunt would surround each well pad with a berm to prevent hazardous runoff or spills. Berms would also be constructed around the storage tanks on the location to contain 110% of daily production.
- Whooping Crane: If a whooping crane is sighted within 1 mile of the proposed project area, work will be stopped and the BIA and USFWS will be notified. In

coordination with the USFWS, work may resume after the bird(s) leaves the area.

- Netting of the cuttings pit.

It is the opinion of the USFWS that Petro-Hunt's commitment to implement the avoidance measures described above demonstrates compliance with the ESA, MBTA, and BGEPA. Copies of the USFWS letters resulting from the Section 7 consultation are provided in Appendix B.

3.12.2.8 Cultural Resources

Petro-Hunt recognizes the need to protect cultural resources on the project locations and has committed to the following.

- Prohibiting all project workers from collecting artifacts or disturbing cultural resources in any area under any circumstances.
- Avoiding impacts to National Register-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.

3.13 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 damaged cultural resources, wildlife killed as a result of collision with vehicles (i.e., construction machinery and work trucks), and energy expended during construction and operation.

3.14 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 the access road and well pad would eliminate any forage or habitat use by wildlife and/or livestock. Any allottees to which compensation for land disturbance is owed would be properly compensated for the loss of land use. The initial disturbance area would decrease considerably once the wells are drilled and non-necessary areas have been reclaimed. Rapid reclamation of the project area would facilitate revived wildlife and livestock usage, stabilize the soil, and reduce the potential for erosion and sedimentation.

3.15 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 in the vicinity of the project area include farming, grazing, roads, and other oil and gas wells. 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. The cumulative impact area (CIA) may vary depending on the particular resource under consideration, but effects may be felt as far as 20 miles from the proposed project.

Within the Reservation and near the proposed project areas, development projects remain few and widely dispersed, but off-reservation well density is much higher, as shown in Table 3-17 and Figure 3-10. Seven active wells occur within 1 mile of the project area, as shown in Table 3-17, with four being confidential. A cumulative total of 79 active and confidential wells occur within a 5-mile CIA, 316 active and confidential wells within a 10-mile CIA, and a cumulative total of 835 active and confidential wells occur within a 20-mile CIA, with the majority of wells in the 20-mile CIA being off the Reservation.

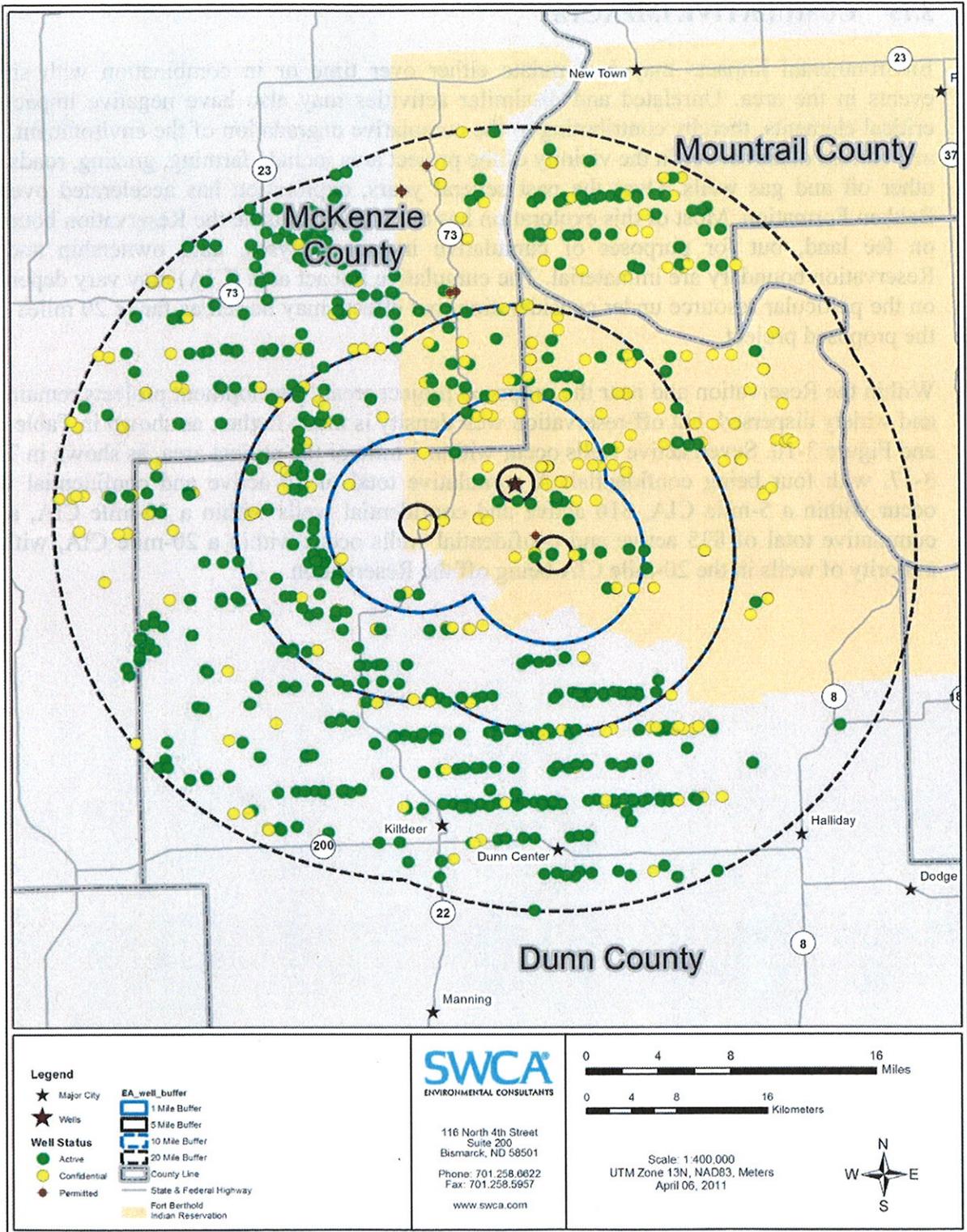


Figure 3-10. Active, confidential, and permitted wells within a 1-, 5-, 10-, and 20-mile radius of the proposed project locations.

Table 3-17. Active, Confidential, Active, and Permitted Wells within the Cumulative Impact Area.

Well Type	Fort Berthold #148-94-9D-04- 2H		Fort Berthold #148-94-35D-26-2H & Fort Berthold #147-94-2A-11-2H		Fort Berthold #148-95-27B-34- 4H, -5H & Fort Berthold #148-95- 22C-15-4H, -5H	
1-mile CIA						
Reservation (on/off)	on	off	on	off	on	off
Active Wells	2	0	2	0	0	0
Confidential Wells	2	0	0	0	2	0
Permitted Wells	0	0	0	0	0	0
Cumulative total active and confidential wells within 1-mile CIA	7					
5-mile CIA						
Reservation (on/off)	on	off	on	off	on	off
Active Wells	17	0	38	0	3	2
Confidential Wells	35	0	28	0	9	6
Permitted Wells	2	0	1	0	1	0
Cumulative total active and confidential wells within 5-mile CIA	79					
10-mile CIA						
Reservation (on/off)	on	off	on	off	on	off
Active Wells	65	7	43	38	30	86
Confidential Wells	82	9	63	11	43	44
Permitted Wells	2	0	2	0	2	0
Cumulative total active and confidential wells within 10-mile CIA	316					
20-mile CIA						
Reservation (on/off)	on	off	on	off	on	off
Active Wells	124	338	97	308	93	400
Confidential Wells	149	96	135	94	120	133
Permitted Wells	13	2	5	1	11	2
Cumulative total active and confidential wells within 2-mile CIA	835					

CIA = cumulative impact area

Reasonably foreseeable future cumulative impacts must also be considered. Should development of the proposed new wells prove productive, it is likely that Petro-Hunt or other operators would pursue additional development in the area. None of the project areas proposed in this EA would 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. Petro-Hunt has suggested, but not yet formally proposed, that potentially six to seven additional 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.

3.15.1 Cumulative Effects on Land Use

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. 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.

3.15.2 Cumulative Effects on Human Health and Safety

The main effect of the proposed wells and other foreseeable future well-field development on human health and safety is related to the possibility of accidental release of petroleum, drilling or fracking fluids, or H₂S into the environment. A cumulative total of seven active and confidential oil and gas wells currently occur within 1 mile of the proposed locations, and the nearest home is within 0.25 mile of the nearest well. In addition, the proposed wells would add to the cumulative total of 835 existing wells located within 20 miles of the proposed well pads. Maintaining adequate setbacks from residences, along with adequate spill prevention measures and other emergency plans, would generally prevent hazardous materials from coming into direct contact with drinking water, surface water, and groundwater, or residential populations. However, the risk of accidental release of toxic or hazardous substances is never completely eliminated. Therefore, the proposed project would incrementally contribute to a low level of cumulative impact on human health and safety in the CIA.

3.15.3 Cumulative Effects on Air Quality

It is anticipated that the pace and level of oil and gas development within this region of the state would 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 within the region. In general, however, the increase in emissions associated with the Proposed Action would occur predominantly during construction and drilling operations and would therefore be localized, largely temporary, and limited in comparison with regional emissions.

3.15.4 Cumulative Effects on Vegetation and Wildlife

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 within the general area have reduced, and would likely continue to reduce, the amount of available habitat for listed species as well as unique wildlife, such as migratory grassland birds. Potential cumulative impacts of the proposal plus other foreseeable future oil and gas development on the Reservation could include habitat fragmentation from construction of other well pads and roads, with potential effects on migratory grassland birds. The project would generate new long-term disturbance of approximately 26.5 acres of grassland habitat during the construction of roads and well pads, out of a total 804,244 acres within a 20-mile radius of the project. Similar levels of disturbance have occurred at 835 active wells within the 20-mile radius, as indicated above. Existing oil and gas development is estimated to have disturbed approximately 8,350 acres (10 acres per well), or approximately 1% of the available surface area within the 20-mile radius. The project would result in an estimated relative incremental increase of less than 1% long-term disturbance when added to the existing surface disturbance.

3.15.5 Cumulative Effects on Surface Water and Groundwater Resources

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 Upper Moccasin Creek, Lower Moccasin Creek/ Moccasin Creek Bay, and Lost Bridge sub-watersheds, but increases in degradation would be reduced by Petro-Hunt'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, Petro-Hunt 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, planting cover crops to stabilize soil following construction and before permanent seeding takes place. Additional information regarding BMPs can be found in Section 3.11, Mitigation and Monitoring.

No adverse impacts potable water aquifers and associated groundwater wells are anticipated from the development of the proposed new wells, based on current data and research on the geological effects of HF methods and processes. As a result, it can be reasonably assumed that there would be no cumulative impacts as a result of current and future oil and gas development on the Reservation which target deep geological formations such as the Bakken and Three Forks.

3.15.6 Cumulative Effects on Cultural Resources

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, as these resources would be avoided, negating the cumulative impacts to the archaeological record.

3.15.7 Cumulative Effects on Socioeconomics

The Proposed Action would incrementally add to existing and future socioeconomic impacts in the general area. The Proposed Action includes seven 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. Petro-Hunt 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 to which 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 areas and explaining the actions proposed at each 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 would be submitted to all cooperating federal agencies and also to those agencies with interests in or near the proposed actions that could be affected by those actions.

Table 4-1. Scoping Comments.

Organization	Name	Comment	Response
Barnes County Municipal Airport, Manager	Lindemann, Larry	No Comment	
Bureau of Indian Affairs	Bercier, Marilyn	No Comment	
Bureau of Land Management	Bagley, Lonny	No Comment	
Bureau of Land Management	Nash, Mike	No Comment	
Dunn County	Hauck, Reinhard	No Comment	
Dunn County	Kadmas, Ray	No Comment	
Enerplus Resources (USA) Corporation	Thingelstad, Blane	No Comment	
EOG Resources, Inc.	Smith, Heather	No Comment	
Federal Aviation Administration	Obenauer, Steve	No objections provided the FAA is notified of any construction or alterations as required by Federal Aviation Regulations, part 77, Objects Affecting Navigable Airspace, paragraph 77.9.	The FFA will be notified of any construction or alterations as required by Federal Aviation Regulations, part 77, Objects Affecting Navigable Airspace, paragraph 77.9.
Federal Emergency Management Agency	Kyner, Dave	Major concern is whether or not project is located within a mapped Special Flood Hazard Area.	Project area is not in a flood hazard area. Please see Section 3.3, Water Resources.
Fort Berthold Agency	Turcotte, Daryl	No Comment	
Fort Berthold Rural Water Director, Three Affiliated Tribes	Danks, Marvin	No Comment	
Garrison Project Office Corps of Engineers, Omaha District		No Comment	
Indian Affairs Commission	Davis, Scott	No Comment	
Killdeer, Weydahl Field	Hoffman, Warren	No Comment	
McKenzie County	Cayko, Richard	No Comment	
McKenzie County	Olson, Frances	No Comment	

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 and Fort Berthold #148-95-27B-34-4H, -5H/Fort Berthold #148-95-22C-15-4H, -5H*

Organization	Name	Comment	Response
McKenzie Electric Cooperative	Thorson, Gary	No Comment	
McLean County Board of Commissioners	Hudson-Schenfisch, Julie	No Comment	
McLean Electric Cooperative, Inc.	Rudolph, Reginald	No Comment	
Mercer County, County Courthouse		No Comment	
Midcontinent Cable Company	Boyd, Bill	No Comment	
Minot AirForce Base	Chief Missile Engineer	No Comment	
Montana Dakota Utilities	Dixon, Doug	No Comment	
Mountrail Board of County Commissioners, Chairman	Hynek, David	No Comment	
National Parks Service	Chevance, Nick	No Comment	
New Town Municipal Airport	Johnson, Harley	No Comment	
NoDak Electric Cooperative, Inc.	Berg, George	No Comment	
North Dakota Department of Health	Glatt, David	Impacts will be minor and can be controlled by proper construction methods.	See Sections 2.2.10, Construction Details, and 3.12, Mitigation and Monitoring, for site-specific details and BMPs.
North Dakota Department of Transportation	Peterson, Walter	No Comment	
North Dakota Game and Fish Department	McKenna, Mike	[Paul Schadewald] Recommend construction be avoided where possible in native prairie, wooded draws, riparian areas, and wetlands. Botanical and raptor surveys suggested.	See Affected Environment Sections 3.5 Wetlands, 3.6 Vegetation and Noxious Weeds, and 3.7 Wildlife. BMPs discussed in APD and will be covered in Conditions of Approval.

*Environmental Assessment: Petro-Hunt, LLC,
 Fort Berthold #148-94-9D-04-2H, Fort Berthold #148-94-35D-26-2H/Fort Berthold #147-94-2A-11-2H,
 and Fort Berthold #148-95-27B-34-4H, -5H/Fort Berthold #148-95-22C-15-4H, -5H*

Organization	Name	Comment	Response
North Dakota Parks and Recreation Dept.	Prchal, Doug	[Jesse Hanson] 1) The project as defined does not affect state park lands or Land and Water Conservation Fund recreation projects. 2) The proposed project is in proximity to the Killdeer Mountain Four Bears Scenic Byway and we recommend development be completed with the least amount of or no visual impact. 3) No current or historic plant or animal species of concern or significant ecological communities are known to occur within one-mile radius of the project area. 4) Recommend that any impacted areas be revegetated with species native to the project area.	See Sections 2.2.11 Reclamation, 3.5 Wetlands, 3.6 Vegetation and Noxious Weeds, 3.7 Wildlife, and 3.12 Mitigation and Monitoring for more information.
Northern Border Pipeline Company	Attn: Land Department	No Comment	
Parshall-Hankins Field Airport	Kuehn, John	No Comment	
Petro-Hunt, LLC	Nordquist, Don	No Comment	
Reservation Telephone Cooperative	Jarski, Tim	No Comment	
Sisseton-Wahpeton Sioux Tribe, Chairman	Selvage, Michael	No Comment	
Southwest Water Authority	Massad, Mary	No Comment	
Spirit Lake Sioux Tribe	Pearson, Myra	No Comment	
Standing Rock Sioux Tribe, Chairman	Murphy, Charles	No Comment	

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Fort Berthold #148-94-9D-04-2H, Fort Berthold #148-94-35D-26-2H/Fort Berthold #147-94-2A-11-2H,
and Fort Berthold #148-95-27B-34-4H, -5H/Fort Berthold #148-95-22C-15-4H, -5H*

Organization	Name	Comment	Response
State Historical Society	Paaverud, Merl	Send copy of reports and forms to keep archives current.	Reports will be sent to the required agencies. See Section 3.8 Cultural Resources.
THPO, Three Affiliated Tribes	Crows Breast, Elgin	No Comment	
Three Affiliated Tribes	Brugh, V. Judy	No Comment	
Three Affiliated Tribes	Fox, Fred	No Comment	
Three Affiliated Tribes	NAGRPA Office	No Comment	
Three Affiliated Tribes	Natural Resources Dept.	No Comment	
Three Affiliated Tribes	Packineau, Mervin	No Comment	
Three Affiliated Tribes	Poitra, Fred	No Comment	
Three Affiliated Tribes	Strahs, Arnold D.	No Comment	
Three Affiliated Tribes	Whitcalfe, Frank	No Comment	
Three Affiliated Tribes	Williams, Damon	No Comment	
Three Affiliated Tribes	Wolf, Malcolm	No Comment	
Three Affiliated Tribes, Chairman	Hall, Tex	No Comment	
Turtle Mountain Band of Chippewa	Ferris, Kade M.	No Comment	
U.S. Army Corps of Engineers	Cimarosti, Dan	Enclosed Section 10 Application in case a permit is required. Please use the attached fact sheets for the use of Nationwide Permit (NWP) 14.	A Section 10 Application will be completed for the Fort Berthold #148-95-27B-34-2H, -3H wells. The access road to the Fort Berthold #148-95-27B-34-4H, -5H/ Fort Berthold #148-95-22C-15-4H, -5H will require the use of NWP 14. Total disturbance of the wetland would be less than 0.1 acre.

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Fort Berthold #148-94-9D-04-2H, Fort Berthold #148-94-35D-26-2H/Fort Berthold #147-94-2A-11-2H,
and Fort Berthold #148-95-27B-34-4H, -5H/Fort Berthold #148-95-22C-15-4H, -5H*

Organization	Name	Comment	Response
U.S. Army Corps of Engineers	Laux, Eric	[Brad Thompson] Acknowledges receipt of letter. Project is not within USACE owned or operated lands so no floodplain or flood risk information is provided.	Thank you for your comment.
U.S. Army Corps of Engineers	Sorensen, Charles	USACE recommends the construction of a catch trench on the downward slope side of the well location to contain any hazardous materials, using a closed loop drilling system, and if possible, construction should occur between August 15 and April 1 (February 1 if trees are present).	See 2.2.10 Construction Details for information regarding berms. Petro-Hunt would construct a berm around the location to contain all hazardous materials. The wells would utilize a semi-closed-loop system.
U.S. Bureau of Reclamation	Nelson, Richard	[Kelley McPhillips] The proposed well pads appear to be very near rural water pipelines (Fort Berthold Rural Water System).	A one-call will be made before any digging occurs to mark any underground utilities in the area.
U.S. Department of Agriculture (NRCS)	Sweeney, Paul	[Jerome Schaar] Regarding the FPPA [Farmland Protection Policy Act] no further action is required. Recommends impacts to wetlands be avoided.	FPPA does not apply to the project. See Section 3.5 Wetlands.
U.S. Environmental Protection Agency	Dhieux, Joyce	No Comment	
U.S. Environmental Protection Agency	Hefferman, Dan	No Comment	
U.S. Environmental Protection Agency	Svoboda, Larry	No Comment	

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 and Fort Berthold #148-95-27B-34-4H, -5H/Fort Berthold #148-95-22C-15-4H, -5H*

Organization	Name	Comment	Response
U.S. Environmental Protection Agency	Truskowski, Brent	No Comment	
Ward County Board of Commissioners	Erickson, Carroll	No Comment	
West Plains Electric Cooperative, Inc.	Schelkoph, David	No Comment	
Western Area Power Administration	Paulson, Gerald	No Comment	
Williams Productions RMT Co.	Head, Jennifer	No Comment	
Xcel Energy	Manager	No Comment	
Zenergy Operating Company, LLC	Bryan, Kelley	No Comment	

5.0 LIST OF PREPARERS

An interdisciplinary team contributed to this document according to guidance provided in Part 1502.6 of CEQ regulations. This document was drafted by SWCA Environmental Consultants under the direction of the BIA. Information was compiled from various sources within SWCA.

Petro-Hunt, LLC

- Mike Lindsey
- Mike Huber

SWCA Environmental Consultants

- Sarah Ruffo, Wildlife Biologist
Prepared scoping letters and the EA.
- Joshua Ruffo, Wildlife Biologist
Conducted natural resource surveys for well pads and access roads; prepared the Scoping.
- Mike Cook, Biologist
Reviewed document for content and adequacy.
- Nicholas Smith, Archaeologist
Conducted cultural resource surveys for well pad and access road and prepared cultural resource reports.
- Nelson Klitzka, Archaeologist
Conducted cultural resource surveys for well pad and access road.
- Alan Hutchinson, Archaeologist
Conducted cultural resource surveys for well pad and access road.
- Jolene Schliecher, Archaeologist
Prepared cultural report.
- Chandler Herson, Archaeologist
Prepared Cultural Reports
- Branden Bornemann, GIS Specialist
Created maps and spatially derived data.
- Rick Wadleigh, NEPA Specialist
Reviewed document for content and adequacy.

6.0 REFERENCES

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7.0 ACRONYMS

°F	degrees Fahrenheit
APD	Application for Permit to Drill
AQI	Air Quality Index
BGEPA	Bald and Golden Eagle Protection Act
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
BMP	Best Management Practice
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CH ₄	methane
CIA	cumulative impact area
CO	carbon monoxide
CO ₂	carbon dioxide
CWA	Clean Water Act
EA	environmental assessment
EIS	environmental impact statement
EJ	Environmental Justice
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FONSI	Finding of No Significant Impact
GHG	greenhouse gas
H ₂ S	hydrogen sulfide
HAP	hazardous air pollutant
HUC	hydrologic unit code
MBTA	Migratory Bird Treaty Act
MHA Nation	Three Affiliated Tribes of the Mandan, Hidatsa, and Arikara Nation
NAAQS	National Ambient Air Quality Standards
N ₂ O	nitrous oxide
NDCC	North Dakota Century Code
NDDA	North Dakota Department of Agriculture
NDDH	North Dakota Department of Health
NDIC	North Dakota Industrial Commission
NEPA	National Environmental Policy Act
NO ₂	nitrogen dioxide
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NTL	Notice to Lessees
O ₃	ozone
PM	particulate matter
PSD	Prevention of Significant Deterioration
ROW	right-of-way
SO ₂	sulfur dioxide

SWCA	SWCA Environmental Consultants
THPO	Tribal Historic Preservation Officer
TMD	total measured depth
TRNP	Theodore Roosevelt National Park
TVD	total vertical depth
USC	United States Code
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
VOC	volatile organic compound

*Environmental Assessment: Petro-Hunt, LLC,
Fort Berthold #148-94-9D-04-2H, Fort Berthold #148-94-35D-26-2H/Fort Berthold #147-94-2A-11-2H,
and Fort Berthold #148-95-27B-34-4H, -5H/Fort Berthold #148-95-22C-15-4H, -5H*

APPENDIX A
Threatened and Endangered Species
Dunn County, North Dakota

ENDANGERED SPECIES ACT

Black-footed Ferret (*Mustela nigripes*)

Affects Determination: No Effect

Black-footed ferrets are nocturnal, solitary carnivores of the weasel family that have been largely extirpated from the wild primarily due to range-wide decimation of the prairie dog (*Cynomys* sp.) ecosystem (Kotliar et al. 1999). They have been listed by the U.S. Fish and Wildlife Service (USFWS) as endangered since 1967, and have been the object of extensive re-introduction programs (USFWS 2010a). Ferrets inhabit extensive prairie dog complexes of the Great Plains, typically composed of several smaller colonies in proximity to one another that provide a sustainable prey base. The *Black-footed Ferret Survey Guidelines for Compliance with the Endangered Species Act* (USFWS 1989) states that ferrets require black-tailed prairie dog (*Cynomys ludovicianus*) towns or complexes greater than 80 acres in size, and towns of this dimension may be important for ferret recovery efforts (USFWS 1988a). Prairie dog towns of this size are not found in the project area. In addition, this species has not been observed in the wild for more than 20 years. The proposed project will have **no effect** on this species.

Gray Wolf (*Canis lupus*)

Affects Determination: No Effect

The gray wolf, listed as endangered in the United States in 1978, was believed extirpated from North Dakota in the 1920s and 1930s with only sporadic reports from the 1930s to present (Licht and Huffman 1996). The presence of wolves in most of North Dakota consists of occasional dispersing animals from Minnesota and Manitoba (Licht and Fritts 1994; Licht and Huffman 1996). Most documented gray wolf sightings that have occurred within North Dakota are believed to be young males seeking to establish territory (Hagen et al. 2005). The Turtle Mountains region in north-central North Dakota provides marginal habitat that may be able to support a very small population of wolves. The closest known pack of wolves is the Minnesota population located approximately 28 kilometers (km) from the northeast corner of North Dakota.

The gray wolf uses a variety of habitats that support a large prey base, including montane and low-elevation forests, grasslands, and desert scrub (USFWS 2010b). Due to a lack of forested habitat and distance from Minnesota and Manitoba populations, as well as the troubled relationship between humans and wolves and their vulnerability to being shot in open habitats (Licht and Huffman 1996), the re-establishment of gray wolf populations in North Dakota is unlikely. Additionally, habitat fragmentation, in particular road construction as a result of oil and gas development, may further act as a barrier against wolf recolonization in western North Dakota. Therefore, the proposed project will have **no effect** on the gray wolf.

Whooping Crane (*Grus americana*)

Affect Determination: May Affect, Is Not Likely to Adversely Affect

The whooping crane was listed as endangered in 1970 in the United States by the USFWS, and in 1978 in Canada. Historically, population declines were caused by shooting and destruction of nesting habitat in the prairies from agricultural development. Current threats to

the species includes habitat destruction, especially suitable wetland habitats that support breeding and nesting, as well as feeding and roosting during their fall and spring migration (Canadian Wildlife Service and U.S. Fish and Wildlife Service 2007).

The July 2010 total wild population was estimated at 383 (USFWS 2010c). There is only one self-sustaining wild population, the Aransas-Wood Buffalo National Park population, which nests in Wood Buffalo National Park and adjacent areas in Canada, where approximately 83% of the wild nesting sites occur (Canadian Wildlife Service and U.S. Fish and Wildlife Service 2007; USFWS 2010c). Dunn and McKenzie counties, including the project area, are within the primary migratory flyway of whooping cranes.

Whooping cranes probe the soil subsurface with their bills for foods on the soil or vegetation substrate (Canadian Wildlife Service and U.S. Fish and Wildlife Service 2007). Whooping cranes are omnivores and foods typically include agricultural grains, as well as insects, frogs, rodents, small birds, minnows, berries, and plant tubers. The largest amount of time during migration is spent feeding in harvested grain fields (Canadian Wildlife Service and U.S. Fish and Wildlife Service 2007). Studies indicate that whooping cranes use a variety of habitats during migration, in addition to cultivated croplands, and generally roost in small palustrine (marshy) wetlands within 1 km of suitable feeding areas (Howe 1987, 1989). Whooping cranes have been recorded in riverine habitats during their migration, with eight sightings along the Missouri River in North Dakota (Canadian Wildlife Service and U.S. Fish and Wildlife Service 2007:18). In these cases, they roost on submerged sandbars in wide, unobstructed channels that are isolated from human disturbance (Armbruster 1990).

Suitable whooping crane foraging habitat (i.e., cultivated cropland) was observed near the project area. However, project precautionary measures would be implemented if a whooping crane is sighted within 1 mile of the project area. Petro-Hunt would cease all construction activities and notify the Bureau of Indian Affairs (BIA) and USFWS of the sighting, should a whooping crane be spotted within 1 mile of the project area. As a result, the proposed project **may affect, but is not likely to adversely affect** the endangered whooping crane.

Piping Plover (*Charadrius melodus*)

Affect Determination: May Affect, Is Not Likely to Adversely Affect

The piping plover is a small shorebird which breeds only in three geographic regions of North America: the Atlantic Coast, the Northern Great Plains, and the Great Lakes. Piping plover populations were federally listed as threatened and endangered in 1985, with the Northern Great Plains and Atlantic Coast populations listed as threatened, and the Great Lakes population listed as endangered (USFWS 1985a).

Plovers in the Great Plains make their nests on open, sparsely vegetated sand or gravel beaches adjacent to alkali wetlands, and on beaches, sand bars, and dredged material islands of major river systems (USFWS 2002, 2010d). The shorelines of lakes of the Missouri River constitute significant nesting areas for the bird. Piping plovers nest on the ground, making shallow scrapes in the sand, which they line with small pebbles or rocks (USFWS 1988b). Anthropogenic alterations of the landscape along rivers and lakes where piping plover nest have increased the number and type of predators, subsequently decreasing nest success and

chick survival (USFWS 2002, 2010d). The birds fly south by mid to late August to areas along the Texas coast and Mexico (USFWS 2002). The Northern Great Plains population has continued to decline despite federal listing, with population estimates of 1,500 breeding pairs in 1985 reduced to fewer than 1,100 in 1990. Low survival of adult birds has been identified as a factor (Root et al. 1992). Current conservation strategies include identification and preservation of known nesting sites, public education, and limiting or preventing shoreline disturbances near nests and hatched chicks (USFWS 1988b, 2010d).

Suitable shoreline habitat for breeding and nesting plovers does not occur in the project area, and Lake Sakakawea is a minimum of approximately 1.87 river miles and 2.5 straight line miles away from the proposed project. It is unlikely that migrating plovers would visit the project area during their migration. Therefore, the proposed project **may affect, but is not likely to adversely affect** piping plovers.

Designated Critical Habitat of Piping Plover

Affect Determination: May Affect, Is Not Likely to Adversely Affect

The USFWS has designated critical habitat for the Great Lakes and Northern Great Plains populations of piping plover (USFWS 2002). Designated Critical habitat for the piping plover includes 183,422 acres and 1,207.5 river miles of habitat, including areas near the proposed project, along the shoreline of Lake Sakakawea in McKenzie County, North Dakota (USFWS 2002).

It is unlikely that the project will modify, alter, disturb, or affect the shoreline of Lake Sakakawea. Therefore, the proposed project **may affect, but is not likely to adversely affect** designated critical habitat of the piping plover.

Interior Least Tern (*Sterna antillarum*)

Affect Determination: May Affect, Is Not Likely to Adversely Affect

The interior population of the least tern is listed as endangered by the USFWS (1985b). This bird is the smallest member of the gull and tern family, measuring approximately 9 inches in length. Terns remain near flowing water, where they feed by hovering over and diving into standing or flowing water to catch small fish (USFWS 2010e).

The interior population of least terns breeds in isolated areas along the Missouri, Mississippi, Ohio, Red, and Rio Grande river systems, where they nest in small colonies. From late April to August, terns nest in a shallow hole scraped in an open sandy area, gravel patch, or exposed flat and bare sandbars along rivers, sand and gravel pits, or lake and reservoir shorelines. The adults continue to care for chicks after they hatch. Least terns in North Dakota will often be found sharing sandbars with the piping plover, a threatened species (USFWS 2010e).

Census data indicate over 8,000 least terns in the interior population. In North Dakota, the least tern is found mainly on the Missouri River from Garrison Dam south to Lake Oahe, and on the Missouri and Yellowstone rivers upstream of Lake Sakakawea (USFWS 1990a, 2010e). Approximately 100 pairs breed in North Dakota (USFWS 2010e). Details of their

migration are not known, but their winter range is reported to include the Gulf of Mexico and Caribbean Islands (USFWS 1990a, 2010e).

Loss of suitable breeding and nesting habitat for terns has resulted from dam construction and river channelization on major rivers throughout the Mississippi, Missouri, and Rio Grande River systems. River and reservoir changes have led to reduced sandbar formation and other shoreline habitats for breeding, resulting in population declines. In addition, other human shoreline disturbances affect the species (USFWS 1990a). Critical habitat has not been designated for the species (USFWS 2010e).

Current conservation strategies include identification and avoidance of known nesting areas, public education, and limiting or preventing shoreline disturbances near nests and hatched chicks (USFWS 2010e).

Suitable shoreline habitat for breeding and nesting plovers does not occur in the project area, and Lake Sakakawea is a minimum of 1.87 river miles, and 2.5 straight line miles away from the proposed project. It is unlikely that terns would visit the upland habitats present in the project area. Therefore, the proposed project **may affect, is not likely to adversely affect** endangered least terns.

Pallid Sturgeon (*Scaphirhynchus albus*)

Affect Determination: May Affect, Is Not Likely to Adversely Affect

The pallid sturgeon was listed as Endangered in 1990 in the United States by the USFWS (1990b). The primary factor leading to the decline of this species is the alteration of habitat through river channelization, creation of impoundments, and alteration of flow regimes (USFWS 1990b). These alterations within the Missouri River have blocked movements to spawning, feeding, and rearing areas, destroyed spawning habitat, altered flow conditions which can delay spawning cues, and reduced food sources by lowering productivity (USFWS 2007a). The fundamental elements of pallid sturgeon habitat are defined as the bottom of swift waters of large, turbid, free-flowing rivers with braided channels, dynamic flow patterns, flooding of terrestrial habitats, and extensive microhabitat diversity (USFWS 1990b).

The pallid sturgeon population which is found near the project area occurs from the Missouri River below Fort Peck Dam to the headwaters of Lake Sakakawea and the lower Yellowstone River up the confluence of the Tongue River, Montana (USFWS 2007a). This population consists of approximately 136 wild adult pallid sturgeon (USFWS 2007a). Hatchery reared sturgeon have also been stocked since 1998. The pallid sturgeon has been found to utilize the 25 km of riverine habitat that would be inundated by Lake Sakakawea at full pool (Bramblett 1996 per USFWS 2007a). Larval pallid sturgeons have also been found to drift into Lake Sakakawea. While the majority of pallid sturgeons are found in the headwaters of Lake Sakakawea, North Dakota Game and Fish have caught and released pallid sturgeon in nets set in 80 to 90 feet of water between the New Town and Van Hook area. Based on this information, pallid sturgeon could be found throughout Lake Sakakawea (personal communication, email from Steve Krentz, Pallid Sturgeon Project Lead, U.S. Fish and

Wildlife Service, to Mike Cook, Aquatic Ecologist, SWCA Environmental Consultants, September 3, 2010).

Suitable habitat for pallid sturgeon does not occur in the project area, and Lake Sakakawea is a minimum of 1.87 river miles away from the proposed project. Potential pollution and sedimentation occurring within the project area are concerns for downstream populations of endangered pallid sturgeon. Activities associated with the construction, production, or reclamation of the proposed project area is not anticipated to adversely affect water quality and subsequently the pallid sturgeon. Therefore, the proposed project **may affect, but is not likely to adversely affect** pallid sturgeon.

Dakota Skipper (*Hesperia dactotae*)

Affect Determination: May Affect, Is Not Likely to Adversely Affect

The Dakota skipper is a small butterfly with a 1-inch wingspan and is found primarily in undisturbed native tall grass and upland dry mixed grass prairie areas with a high diversity of wildflowers and grasses (Committee on the Status of Endangered Wildlife in Canada 2003). The Dakota skipper appears to require a range of precipitation-evaporation ratios between 60 and 105 and a soil pH between 7.2 and 7.9 (McCabe 1981). Larvae feed on grasses, favoring little bluestem. Adults commonly feed on nectar of flowering native forbs such as harebell (*Campanula rotundifolia*), wood lily (*Lilium philadelphicum*), and purple coneflower. The species is threatened by conversion of native prairie to cultivated agriculture or shrublands, over-grazing, invasive species, gravel mining, and inbreeding (USFWS 2005). Dakota skippers are not known to occur within the project area; however, suitable habitat does occur. The proposed project **may affect, is not likely to adversely affect** this species. The use of best management practices and conservation guidelines (USFWS 2007b) during construction and operation and immediate reclamation of short-term disturbance should decrease direct, indirect, and cumulative impacts to this species.

Sprague's Pipit (*Anthus spragueii*)

Affect Determination: May Affect, Is Not Likely to Adversely Affect

The Sprague's pipit is a small passerine bird that is native to the North American grasslands. It is a ground nester that breeds and winters on open grasslands and feeds mostly on insects and spiders and some seeds. The Sprague's pipit is closely tied with native prairie habitat and breeds in the north-central United States in Minnesota, Montana, North Dakota, and South Dakota as well as south-central Canada (USFWS 2010f). Wintering occurs in the southern states of Arizona, Texas, Oklahoma, Arkansas, Mississippi, Louisiana, and New Mexico. Sprague's pipit are not known to occur within the project area; however, suitable habitat does occur. The proposed project **may affect, is not likely to adversely affect** this species. The use of best management practices and conservation guidelines (USFWS 2007b) during construction and operation and immediate reclamation of short-term disturbance should decrease direct, indirect, and cumulative impacts to this species.

**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

Effects of Project: No adverse effects anticipated

Suitable nesting or foraging habitat for bald eagles includes old growth trees relatively close (usually less than 1.24 miles [Hagen et al. 2005]) to perennial waterbodies. The project area does not contain old growth trees and is located at the closest approximately 1.87 river miles, and 2.4 straight line miles from Lake Sakakawea. No nests or eagles were observed within 0.5 mile line of sight during the field surveys. Therefore, no adverse effects are anticipated. However, the possibility of transient, flying bald eagle individuals traversing the project area does exist.

Golden Eagle (*Aquila chrysaetos*)

Status: Not Listed; protected under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act

Effects of Project: No adverse effects anticipated

No eagles or nests were observed during the field surveys; however, golden eagles may occur within or near the project area. The closest known golden eagle nest occurs within 1.8 miles northeast of the Fort Berthold #148-95-27B-34-4H, -5H & Fort Berthold #148-95-22C-15-4H, -5H dual well pad. The golden eagle prefers habitat characterized by open prairie, plains, and forested areas. Usually, golden eagles can be found in proximity to badland cliffs which provide suitable nesting habitat. However, no primary or secondary indication of golden eagle presence, including nests, was observed within or near the project area during the field survey. Therefore, the Project is unlikely to cause any adverse effects to golden eagles.

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*Environmental Assessment: Petro-Hunt, LLC,
Fort Berthold #148-94-9D-04-2H, Fort Berthold #148-94-35D-26-2H/Fort Berthold #147-94-2A-11-2H,
and Fort Berthold #148-95-27B-34-4H, -5H/Fort Berthold #148-95-22C-15-4H, -5H*

APPENDIX B
General Scoping Letter

*Environmental Assessment: Petro-Hunt, LLC,
Fort Berthold #148-94-9D-04-2H, Fort Berthold #148-94-35D-26-2H/Fort Berthold #147-94-2A-11-2H,
and Fort Berthold #148-95-27B-34-4H, -5H/Fort Berthold #148-95-22C-15-4H, -5H*



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February 23, 2011

Dear Interested Party:

The Bureau of Indian Affairs (BIA), in cooperation with the Bureau of Land Management (BLM), is preparing an Environmental Assessment (EA) under the National Environmental Policy Act (NEPA). The proposed action includes approval by the BIA and BLM for the construction, drilling, completion, and production of seven exploratory oil and gas wells (1 single pad and 3 dual pads) on the Fort Berthold Indian Reservation by Petro-Hunt, LLC (Petro-Hunt). The surface locations for these wells are proposed in the following locations and shown on the enclosed project location map.

- Fort Berthold #148-94-9D-04-2H: SE¼ SE¼ Section 9 Township (T) 148 North (N) Range (R) 94 West (W) Dunn County, North Dakota
- Fort Berthold #148-94-35D-26-2H/Fort Berthold #147-94-2A-11-2H: SE¼ SE¼ Section 35 T148N R94W Dunn County, North Dakota
- Fort Berthold #148-94-28A-33-1H/Fort Berthold #148-94-28A-33-2H: NW¼ NE¼ Section 28 T148N R94W Dunn County, North Dakota
- Fort Berthold #148-95-27B-34-2H/Fort Berthold #148-95-22C-15-2H: SE¼ SW¼ Section 22 T148N R95W Dunn County, North Dakota

All seven proposed exploratory oil and gas wells will be located within their own 1,280-acre spacing unit. The wells will be positioned to utilize existing roadways for access to the greatest extent possible. The drilling of these well sites is proposed to begin as early as May 2011.

The associated facilities required by the project would include roads, utility lines, production facilities (production tanks), and equipment storage facilities. In general, oil would be stored on location in tank batteries and then hauled (or in the future sent via pipeline) to the nearest processing plant or sales point. Produced water would be transported by truck to water disposal wells or enclosed tanks. Any gas produced from these wells would initially be flared until a gas pipeline could be planned, permitted and constructed, if necessary. In the future, Petro-Hunt would complete a right-of-way application for a gas and salt water pipeline to be constructed along access roads to a future-found market for gas and salt water. Petro-Hunt would utilize existing roads and previous disturbances to the greatest extent practicable. Project development would result in the construction of less than 2.5 miles of new or upgraded/improved roads to access the well pads. Each pad would disturb approximately 5.4 to 7.2 acres. Existing highways and arterial roads would provide the main access to the project area.

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

SWCA Environmental Consultants
Sarah Ruffo, Project Manager
116 North 4th Street, Suite 200
Bismarck, North Dakota 58501
(701) 258-6622
sruffo@swca.com

Comments should be submitted before March 25, 2011 so that they may be addressed in the final document. Questions for the BIA can be directed to Marilyn Bercier, Regional Environmental Scientist, or Mark Herman, Environmental Engineer, at (605) 226-7656.

Sincerely,

A handwritten signature in blue ink that appears to read "SRuffo".

Sarah Ruffo

*Environmental Assessment: Petro-Hunt, LLC,
Fort Berthold #148-94-9D-04-2H, Fort Berthold #148-94-35D-26-2H/Fort Berthold #147-94-2A-11-2H,
and Fort Berthold #148-95-27B-34-4H, -5H/Fort Berthold #148-95-22C-15-4H, -5H*

APPENDIX C

U.S. Fish and Wildlife Service Consultation Letter

*Environmental Assessment: Petro-Hunt, LLC,
Fort Berthold #148-94-9D-04-2H, Fort Berthold #148-94-35D-26-2H/Fort Berthold #147-94-2A-11-2H,
and Fort Berthold #148-95-27B-34-4H, -5H/Fort Berthold #148-95-22C-15-4H, -5H*



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services
3425 Miriam Avenue
Bismarck, North Dakota 58501

JUN 29 2011



Ms. Sarah Ruffo
Project Manager/Natural Resources Specialist
SWCA Environmental Consultants
116 North 4th Street, Suite 200
Bismarck, North Dakota 58501

Re: Petro-Hunt LLC
Seven Wells on Three Well Pads,
Fort Berthold Reservation,
Dunn County, North Dakota

Dear Ms. Ruffo:

This is in response to your June 21, 2011, letter requesting comments to assist in your preparation of an Environmental Assessment (EA) and federally-listed threatened and endangered species effects determinations on behalf of the Bureau of Indian Affairs (BIA) and the Bureau of Land Management (BLM). Petro-Hunt has proposed three well pads that would support seven exploratory oil and gas wells, and 0.65 mile of new roads to access each of the well pads on the Fort Berthold Reservation, Dunn County, North Dakota.

Specific locations are:

- Fort Berthold #148-94-9D-04-2H: SE1/4 SE1/4 Section 9, T. 148 N., R. 94 W., Dunn County
- Fort Berthold #148-94-35D-26-2H/Fort Berthold #147-94-2A-11-2H: SE1/4 SE1/4 Section 35, T. 148 N., R. 94 W., and NENE Section 2, T. 147 N., R. 94 W., Dunn County
- Fort Berthold #148-95-27B-34-2H, -3H/Fort Berthold #148-95-22C-15-2H, -3H: NE1/4 NW1/4 Section 27 and SE1/4SW1/4 Section 22, T. 148 N., R. 95 W., Dunn County

We offer the following comments under the authority of and in accordance with the Migratory Bird Treaty Act (16 U.S.C. 703 et seq.) (MBTA), Executive Order 13186 "Responsibilities of Federal Agencies to Protect Migratory Birds", the National Environmental Policy Act of 1969, as amended (42 U.S.C. 4321 et seq.) (NEPA), the

RECEIVED JUL 01 2011

Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d, 54 Stat. 250) (BGEPA), and the Endangered Species Act (16 U.S.C. 1531 et seq.) (ESA).

The BIA has designated SWCA to represent the BIA for informal Section 7 consultation under the ESA. Therefore, the U.S. Fish and Wildlife Service (Service) is responding to you as the designated non-Federal representative.

Threatened, Endangered, and Candidate Species

SWCA has made "may affect, not likely to adversely affect" determinations for the endangered whooping crane, interior least tern, and pallid sturgeon, and the threatened piping plover and piping plover designated critical habitat. These determinations were based on several commitments by Petro-Hunt, the following of which the Service considers to be relevant to effects to threatened and endangered species:

- Semi-closed loop systems would be used for each well pad, with a containment berm to prevent hazardous runoff or spills.
- If a whooping crane is sighted within 1 mile of a well site or associated facilities while under construction, all work will cease within 1 mile of that part of the project and the USFWS will be contacted immediately. In coordination with the USFWS, work may resume after the bird(s) leave the area.
- Petro-Hunt will implement all BMPs, erosion control measures, and spill prevention practices required by the BIA and the Clean Water Act.
- The proposed well pads will be reclaimed as soon as possible after their lifespan is complete, and impacted areas will be returned to preconstruction contours.

The Service concurs with the "may affect, not likely to adversely affect" determinations for the whooping crane, interior least tern, pallid sturgeon, piping plover, and designated critical habitat for the piping plover for the proposed well pads and associated access roads and facilities.

As a matter of policy, the Service does not concur with "no effect" determinations. However, we acknowledge your "no effect" determinations for the gray wolf and black-footed ferret.

SWCA made "may affect, not likely to adversely affect" determinations for the Dakota skipper and Sprague's pipit. No legal requirement exists to protect candidate species. Since these species are candidates, effects determinations are not required; however, Federal agencies may consider candidates as proposed for listing. BIA has previously indicated to the Service that they do not wish to consider candidate species as proposed, but BLM does. Since the surface impacts are regulated by BIA, we will assume that no effects determinations for these two candidates will be required by BIA. Measures indicated in your letter designed to avoid take of migratory birds will also help avoid direct take of Sprague's pipit.

Migratory Birds

In addition to the commitments by Petro-Hunt mentioned above and others listed in the letter, the following commitments are also relevant to compliance with the MBTA and E.O. 13186:

- Petro-Hunt will conduct all construction outside of the migratory bird breeding season (between February 1 and July 15), or if construction occurs during the bird breeding season, Petro-Hunt will mow, maintain, or completely remove vegetation within the project construction area prior to (July 16 to January 31) and during the breeding season to deter migratory birds from nesting in the project area until construction is under way, weather conditions permitting; or if the project areas are not mowed and maintained as indicated above, conduct an avian survey of the project area no greater than 5 days before construction begins, and if nests are discovered, notify BIA and USFWS.

Bald and Golden Eagles

Your letter stated a 0.5-mile line of sight survey for bald and golden eagle nests was conducted. No eagle nests were observed. No previously recorded nests are known to be present within 0.5 mile of the project area. The nearest known eagle nest site was reported to be approximately 3 miles northwest of the #148-94-9D-04-2H well pad site; 2.7 miles northeast of the #148-94-35D-26-2H & #147-94-2A-11-2H northeast of the dual well pad; and 1.8 miles northeast of #148-95-27B-34-2H, -3H & #148-95-22C-15-2H, -3H dual well pad. If a bald or golden eagle nest is sighted within 0.5 mile of the project construction area during construction or operations, activities should cease and the USFWS should be notified for advice on how to proceed.

The Service believes that with the inclusion of the stated commitments, Petro-Hunt's proposed projects are in compliance with the MBTA, E.O. 13186, and BGEPA.

Cumulative Impact Assessment

The Service encourages the action agencies to include a comprehensive cumulative impact analysis in the EA. The EA should evaluate the existing wells, associated facilities and other activities in a NEPA analysis area, consider the proposed wells and associated facilities in this context, and include an analysis of the cumulative impacts that could affect similar resources in the foreseeable future. We would appreciate receiving a copy of the final EA and FONSI.

Thank you for the opportunity to comment on this EA and federally-listed and candidate species, and for Petro-Hunt's cooperation in addressing our recommendations. If you

*Environmental Assessment: Petro-Hunt, LLC,
Fort Berthold #148-94-9D-04-2H, Fort Berthold #148-94-35D-26-2H/Fort Berthold #147-94-2A-11-2H,
and Fort Berthold #148-95-27B-34-4H, -5H/Fort Berthold #148-95-22C-15-4H, -5H*

4

require further information or the project plans change, please contact me at (701) 250-4481 or at the letterhead address.

Sincerely,



Jeffrey K. Townner
Field Supervisor
North Dakota Field Office

cc: Bureau of Indian Affairs, Aberdeen
(Attn: Marilyn Bercier)
Bureau of Land Management, Dickinson
ND Game & Fish Department, Bismarck

*Environmental Assessment: Petro-Hunt, LLC,
Fort Berthold #148-94-9D-04-2H, Fort Berthold #148-94-35D-26-2H/Fort Berthold #147-94-2A-11-2H,
and Fort Berthold #148-95-27B-34-4H, -5H/Fort Berthold #148-95-22C-15-4H, -5H*

APPENDIX D
MHA THPO Consultation Letter

Environmental Assessment: Petro-Hunt, LLC,
Fort Berthold #148-94-9D-04-2H, Fort Berthold #148-94-35D-26-2H/Fort Berthold #147-94-2A-11-2H,
and Fort Berthold #148-95-27B-34-4H, -5H/Fort Berthold #148-95-22C-15-4H, -5H



BUREAU OF INDIAN AFFAIRS
BISCOM
MC-205

United States Department of the Interior

BUREAU OF INDIAN AFFAIRS
Great Plains Regional Office
115 Fourth Avenue S.E., Suite 409
Arenita, South Dakota 57401



MAY 24 2011

Elgin Cross Haest, THPD
Murdan, Hedasa and Ankara Nation
404 Proutings Road
New Town, North Dakota 58763

Dear Mr. Cross Haest:

We have considered the potential effects on cultural resources of a proposed dual oil well pad and access road in Dismal County, North Dakota. Approximately 10.12 acres were intensively inventoried using a pedestrian methodology. Potential surface disturbances are not expected to exceed the area depicted in the enclosed report. No historic properties were located that appear to possess the quality of integrity and meet at least one of the criteria (36 CFR 60.4) for inclusion on the National Register of Historic Places. No properties were located that appear to qualify for protection under the American Indian Religious Freedom Act (42 USC 1996).

As the surface management agency, and as provided for in 36 CFR 920.5, we have therefore reached a determination of no historic properties affected for this undertaking. Consigned as BIA Case Number AAO-1888/1111, the proposed undertaking, location, and project dimensions are described in the following report:

Smith, Nicholas, and Jelene Schloicher
(2/11) A Class I and Class II Cultural Resource Inventory of the Petro-Hunt Fort Berthold 147-94-2A-11-2H and Fort Berthold 148-94-35D-26-2H Dual Well Pad and Access Road, Fort Berthold Indian Reservation, Dismal County, North Dakota. SWCA Environmental Consultants for Petro-Hunt, LLC, Bismarck.

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

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

Sincerely,

AMURG

Tom Schloicher
Regional Director

Enclosures

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

Environmental Assessment: Petro-Hunt, LLC,
Fort Berthold #148-94-9D-04-2H, Fort Berthold #148-94-35D-26-2H/Fort Berthold #147-94-2A-11-2H,
and Fort Berthold #148-95-27B-34-4H, -5H/Fort Berthold #148-95-22C-15-4H, -5H



United States Department of the Interior

BUREAU OF INDIAN AFFAIRS
East Dale Regional Office
113 South Avenue SE, Suite 400
Alaska, South Dakota 58405

MAY 25 2011



INTERNAL USE ONLY
BUREAU
MAY 25 2011

Elgin Crows Breast, THPO
Mandan, Hidatsa and Arikara Nation
404 Frontage Road
New Town, North Dakota 58763

Dear Mr. Crows Breast:

We have considered the potential effects on cultural resources of two proposed oil well pads and access roads in Duan County, North Dakota. Approximately 28.91 acres were intensively inventoried using a pedestrian methodology. Potential surface disturbances are not expected to exceed the areas depicted in the enclosed reports. No historic properties were located that appear to possess the quality of integrity and meet at least one of the criteria (36 CFR 60.4) for inclusion on the National Register of Historic Places. No properties were located that appear to qualify for protection under the American Indian Religious Freedom Act (42 USC 1996).

As the surface management agency, and as provided for in 36 CFR 810.5, we have therefore reached a determination of no historic properties affected for these undertakings. Catalogued as BIA Case Number AAU-188871611, the proposed undertakings, locations, and project dimensions are described in the following reports:

Hershey, Chandler S.

(2011a) A Class I and Class III Cultural Resource Inventory of the Petro-Hunt Fort Berthold #148-95-27B-34-2H, -3H and Fort Berthold 148-95-22C-15-2H, -3H Quad Well Pad and Access Road, Fort Berthold Indian Reservation, Duan County, North Dakota. SWCA Environmental Consultants for Petro-Hunt, LLC, Bismarck.

(2011b) A Class I and Class III Cultural Resource Inventory for the Expansion of the Existing Petro-Hunt Fort Berthold 148-94-9D-04-1H Well Pad to Permit Construction of the Petro-Hunt Fort Berthold 148-94-9D-04-2H Well, Duan County, North Dakota. SWCA Environmental Consultants for Petro-Hunt, LLC, Bismarck.

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

If you have any questions, please contact Dr. Carson M. Murdy, Regional Archaeologist, at (605) 216-7636.

Sincerely,

ACM/HA
Regional Director

Enclosures

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



United States Department of the Interior

BUREAU OF RECLAMATION

Dakotas Area Office
P.O. Box 1017
Bismarck, North Dakota 58502



DK-5000
ENV-6.00

APR 5 2011

Ms. Sarah Ruffo
Project Manager
SWCA Environmental Consultants
116 North 4th St. Suite 200
Bismarck, ND 58501

Subject: Solicitation for an Environmental Assessment for the Proposed Construction of up to Seven Exploratory Oil and Gas Wells on one Single Pad and Three Dual Pads on the Fort Berthold Indian Reservation in Dunn County, North Dakota

Dear Ms. Ruffo:

This letter is written to inform you that we received your letter of February 24, 2011, and the information and map have been reviewed by Bureau of Reclamation staff.

The proposed well pads located in Dunn County appear to be very near Reclamation facilities, in this case the rural water pipelines of the Fort Berthold Rural Water System. We have provided a map of pipelines constructed in the general area of your proposed developments.

Fort Berthold #148-95-27B-34-2H and #148-95-27B -22C-15-2H
Fort Berthold #148-94-28A-33-1H and #148-94-28A-33-2H
Fort Berthold #148-94-9D-04-2H
Fort Berthold #148-94-35D-26-2H and #147-94-2A-11-2H

The maps are provided to aid you in identification of potential for adverse effect to or crossings of Federal facilities. Reclamation facilities appear to be very near your proposed work site. Also, should you have need to cross a Fort Berthold Rural Water System pipeline, please refer to the enclosed sheet for pipeline crossing specifications and contact our engineer Colin Nygaard, as below. Since Reclamation is the lead Federal agency for the Fort Berthold Rural Water System, we request that any work planned on the reservation be coordinated with Mr. Lester Crows Heart, Fort Berthold Rural Water Director, Three Affiliated Tribes, 308 4 Bears Complex, New Town, North Dakota 58763.

Thank you for providing the information and opportunity to comment. If you have any further environmental questions, please contact me at 701-221-1287 or for engineering questions Colin Nygaard, Civil Engineer, at 701-221-1260.

Sincerely,

Kelly B. McPhillips
Environmental Specialist

Enclosures – 3

cc: See next page.

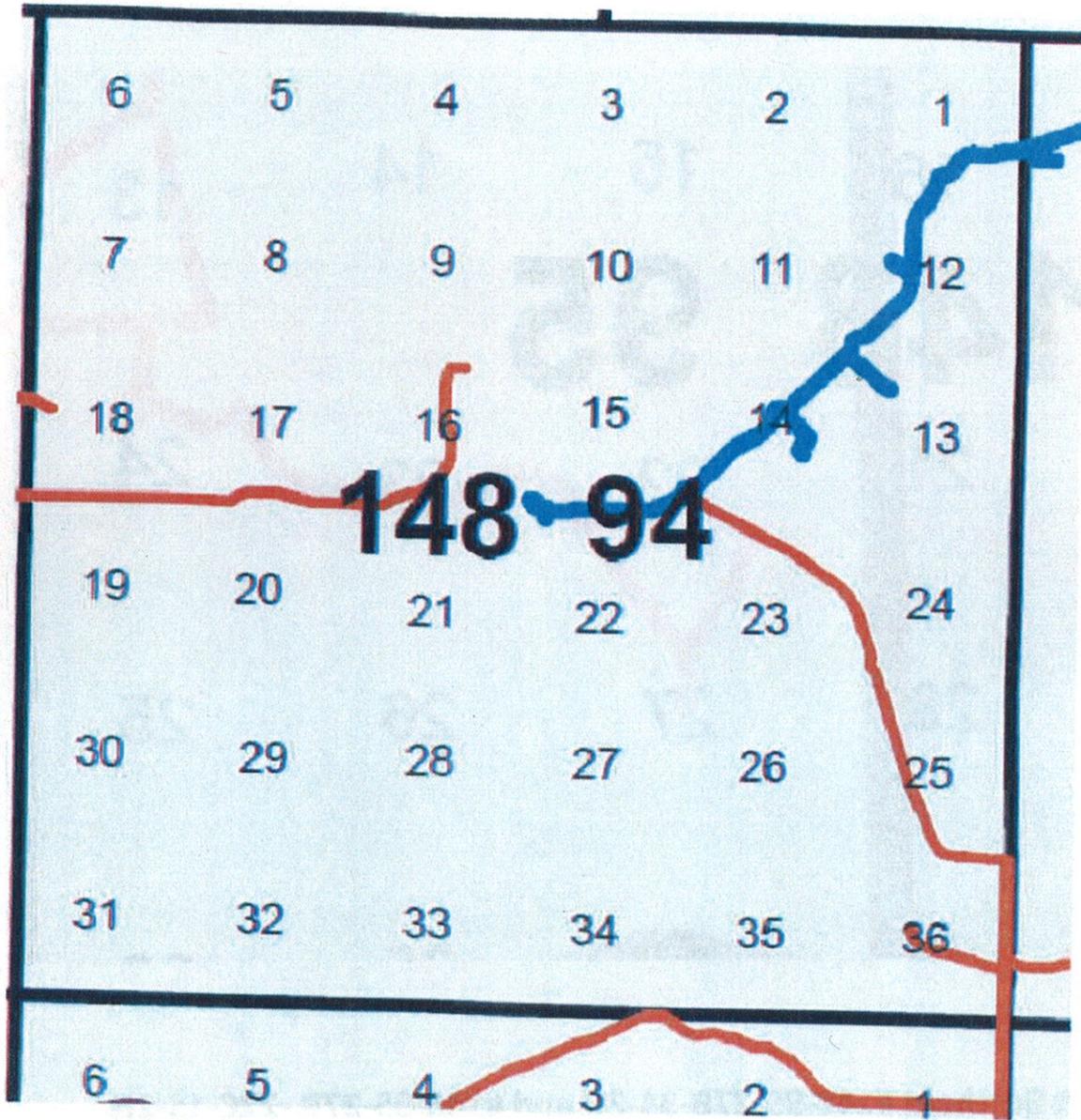
Subject: Solicitation for an Environmental Assessment for the Proposed Construction of
up to Seven Exploratory Oil and Gas Wells on one Single Pad and Three Dual Pads
on the Fort Berthold Indian Reservation in Dunn County, North Dakota

2

cc: Bureau of Indian Affairs
Great Plains Regional Office
Attention: Ms. Marilyn Bercier
Regional Environmental Scientist
115 Fourth Avenue S.E.
Aberdeen, SD 57401

Mr. Lester Crows Heart
Fort Berthold Rural Water Director
Three Affiliated Tribes
308 4 Bears Complex
New Town, ND 58763
(w/encl)

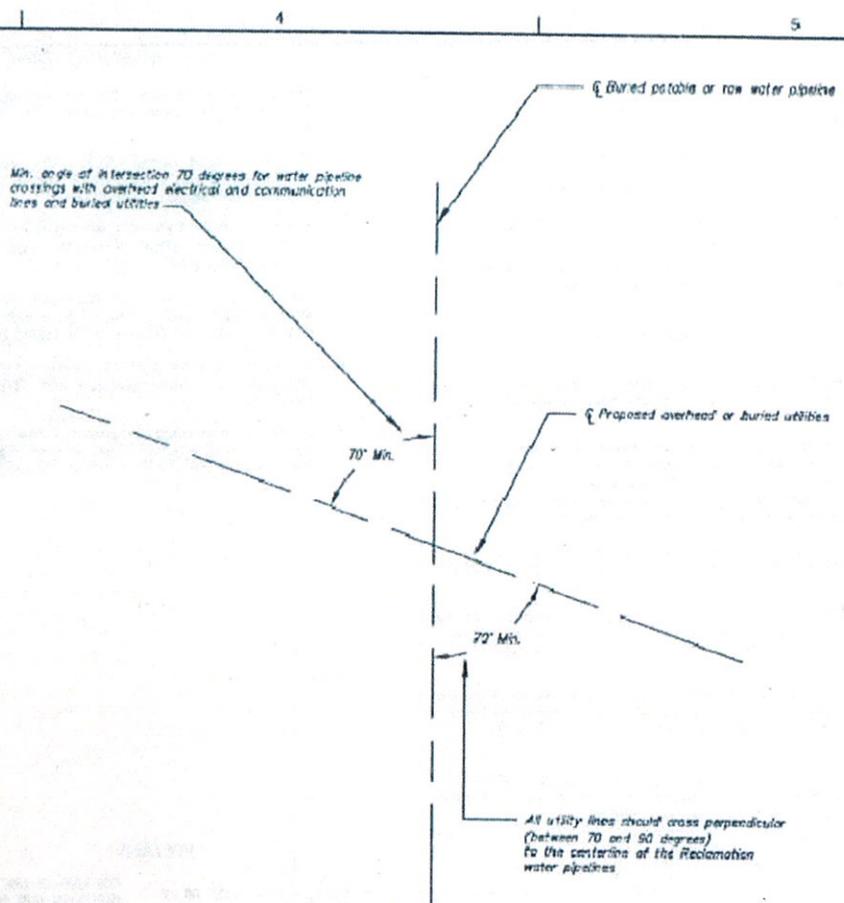
Orange and Blue Lines Depict Water Lines of the Fort Berthold Rural Water System



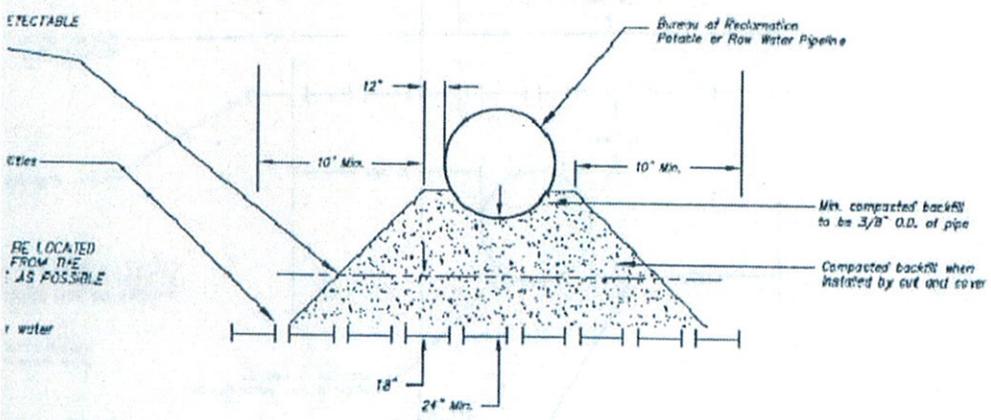
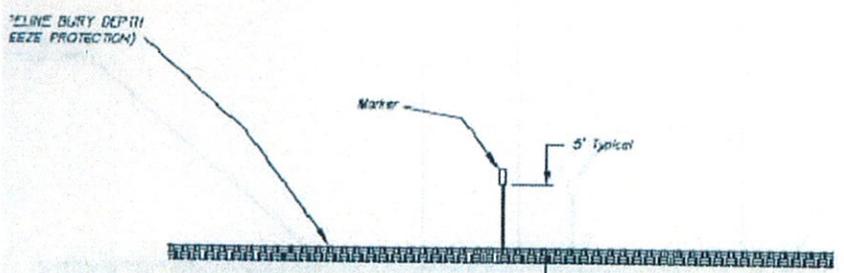
Fort Berthold #148-94-28A-33-1H and #148-94-28A-33-2H

Fort Berthold #148-94-9D-04-2H

Fort Berthold #148-94-35D-26-2H and #147-94-2A-11-2H



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GARRISON DIVISION GARRISON DIVISION UNIT, N.D.A.C.
MR&I RURAL WATER SYSTEMS
STANDARD CROSSING AND CLEARANCE REQ.
POTABLE AND RAW WATER PIPELINES

DESIGNED BY: [Signature]
CHECKED BY: [Signature]
TECH. APPROV.: [Signature]
APPROVED: [Signature]
POMEROY, NORTH DAKOTA 07-30-2010

769-603-25480
SHEET 1 OF 1



FEMA

R8-Mitigation

March 2, 2011

Ms. Sara Ruffo
SWCA Environmental Consultants
116 North 4th Street, Suite 200
Bismarck, ND 58501

Dear Ms. Ruffo:

Thank you for your inquiry regarding your proposed projects, drilling, completion and production of exploratory wells on the Fort Berhold Indian Reservation (Fort Berhold #148-94-9D-04-2H, #148-94-35D-26-2H, #148-94-35D-26-33-1H, #148-95-27B-34-2H). FEMA's major concern is if the property is located within a mapped Special Flood Hazard Area any development in these areas requires further consideration.

We recommend that you contact the local Floodplain Manager Mr. Cliff Whitman at (701) 627-4805 to receive further guidelines regarding the impact that the project might have to the regulations and policies of the National Flood Insurance Program. Considering that floods are the most devastating of all natural disasters in this country, any efforts to reduce the impacts of that hazard is worthwhile.

Let me know if I can be of assistance and please feel free to contact me at 303-235-4721.

Sincerely,

A handwritten signature in blue ink, appearing to read "D. Kyner", written over a horizontal line.

David A. Kyner
NFIP Program Specialist



March 1, 2011

Ms. Sarah Ruffo, Project Manager
SWCA Environmental Consultants
116 North 4th Street, Suite 200
Bismarck, ND 58501

Re: Seven Exploratory Oil & Gas Wells on Four Well Pads
By Petro-Hunt, LLC on the Fort Berthold Reservation, Dunn County

Dear Ms. Ruffo:

This department has reviewed the information concerning the above-referenced project submitted under date of February 23, 2011 with respect to possible environmental impacts.

This department believes that environmental impacts from the proposed construction will be minor and can be controlled by proper construction methods. With respect to construction, we have the following comments:

1. Development of the production facilities and any access roads or well pads should have a minimal effect on air quality provided measures are taken to minimize fugitive dust. However, operation of the wells has the potential to release air contaminants capable of causing or contributing to air pollution. We encourage the development and operation of the wells in a manner that is consistent with good air pollution control practices for minimizing emissions.
2. Care is to be taken during construction activity near any water of the state to minimize adverse effects on a water body. This includes minimal disturbance of stream beds and banks to prevent excess siltation, and the replacement and revegetation of any disturbed area as soon as possible after work has been completed. Caution must also be taken to prevent spills of oil and grease that may reach the receiving water from equipment maintenance, and/or the handling of fuels on the site. Guidelines for minimizing degradation to waterways during construction are attached.
3. Oil and gas related construction activities located within tribal boundaries within North Dakota may be required to obtain a permit to discharge storm water runoff from the U.S. Environmental Protection Agency. Further information may be obtained from the U.S. EPA's website or by calling the U.S. EPA – Region 8 at (303) 312-6312. Also, cities or counties may impose additional requirements and/or specific best management practices for construction affecting their storm drainage system. Check with the local officials to be sure any local storm water management considerations are addressed.

Ms. Sarah Ruffo

2.

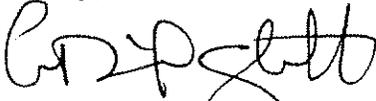
March 1, 2011

The department owns no land in or adjacent to the proposed improvements, nor does it have any projects scheduled in the area. In addition, we believe the proposed activities are consistent with the State Implementation Plan for the Control of Air Pollution for the State of North Dakota.

These comments are based on the information provided about the project in the above-referenced submittal. The U.S. Army Corps of Engineers may require a water quality certification from this department for the project if the project is subject to their Section 404 permitting process. Any additional information which may be required by the U.S. Army Corps of Engineers under the process will be considered by this department in our determination regarding the issuance of such a certification.

If you have any questions regarding our comments, please feel free to contact this office.

Sincerely,

A handwritten signature in black ink, appearing to read "L. David Glatt". The signature is fluid and cursive, with the first name "L." and last name "Glatt" clearly visible.

L. David Glatt, P.E., Chief
Environmental Health Section

LDG:cc
Attach.



Construction and Environmental Disturbance Requirements

These represent the minimum requirements of the North Dakota Department of Health. They ensure that minimal environmental degradation occurs as a result of construction or related work which has the potential to affect the waters of the State of North Dakota. All projects will be designed and implemented to restrict the losses or disturbances of soil, vegetative cover, and pollutants (chemical or biological) from a site.

Soils

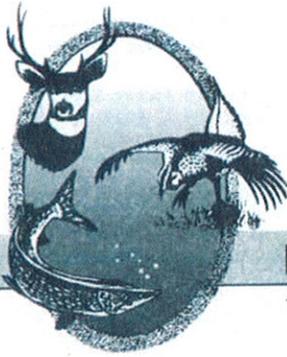
Prevent the erosion of exposed soil surfaces and trapping sediments being transported. Examples include, but are not restricted to, sediment dams or berms, diversion dikes, hay bales as erosion checks, riprap, mesh or burlap blankets to hold soil during construction, and immediately establishing vegetative cover on disturbed areas after construction is completed. Fragile and sensitive areas such as wetlands, riparian zones, delicate flora, or land resources will be protected against compaction, vegetation loss, and unnecessary damage.

Surface Waters

All construction which directly or indirectly impacts aquatic systems will be managed to minimize impacts. All attempts will be made to prevent the contamination of water at construction sites from fuel spillage, lubricants, and chemicals, by following safe storage and handling procedures. Stream bank and stream bed disturbances will be controlled to minimize and/or prevent silt movement, nutrient upsurges, plant dislocation, and any physical, chemical, or biological disruption. The use of pesticides or herbicides in or near these systems is forbidden without approval from this Department.

Fill Material

Any fill material placed below the high water mark must be free of top soils, decomposable materials, and persistent synthetic organic compounds (in toxic concentrations). This includes, but is not limited to, asphalt, tires, treated lumber, and construction debris. The Department may require testing of fill materials. All temporary fills must be removed. Debris and solid wastes will be removed from the site and the impacted areas restored as nearly as possible to the original condition.



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NORTH DAKOTA GAME AND FISH DEPARTMENT

100 NORTH BISMARCK EXPRESSWAY BISMARCK, NORTH DAKOTA 58501-5095 PHONE 701-328-6300 FAX 701-328-6352

March 16, 2011

Sarah Ruffo
Project Manager
SWCA Environmental Consultants
116 North 4th Street, Suite 200
Bismarck, ND 58501

Dear Ms. Ruffo:

RE: Fort Berthold #148-94-9D-04-2H
Fort Berthold #148-94-35D-26-2H / Fort Berthold #148-94-2A-11-2H
Fort Berthold #148-94-28A-33-1H / Fort Berthold #148-94-28A-33-2H
Fort Berthold #148-95-27B-34-2H / Fort Berthold #148-95-22C-15-2H

Petro-Hunt LLC has proposed seven exploratory oil and gas wells using one single and three dual pads on the Fort Berthold Reservation in Dunn County, North Dakota.

Our primary concern with oil and gas development is the fragmentation and loss of wildlife habitat associated with construction of the well pads and access roads. We recommend that construction be avoided to the extent possible within native prairie, wooded draws, riparian corridors, and wetland areas.

We also suggest that botanical surveys be completed during the appropriate season and aerial surveys be conducted for raptor nests before construction begins.

Sincerely,

Paul Schadewald
Chief
Conservation & Communication Division

js



Jack Dalrymple, Governor
Mark A. Zimmerman, Director

1600 East Century Avenue, Suite 3
Bismarck, ND 58503-0649
Phone 701-328-5357
Fax 701-328-5363
E-mail parkrec@nd.gov
www.parkrec.nd.gov

March 1, 2011

Sarah Ruffo
SWCA Environmental Consultants
116 North 4th St. Ste. 200
Bismarck, ND 58501

RE: BIA Petro-Hunt, LLC Proposed oil, natural gas, and water pipeline construction

Dear Ms. Ruffo:

The North Dakota Parks and Recreation Department (the Department) has reviewed the above referenced proposal for Petro-Hunt, LCC proposed oil, natural gas, and water pipeline construction in Sections 9, T148N, R94W, Section 35, T148N, R94W, Section 28, T148N R94W, Section 22, T148N, R95W, Dunn County

Our agency scope of authority and expertise covers recreation and biological resources (in particular rare plants and ecological communities). The project as defined does not affect state park lands that we manage or Land and Water Conservation Fund recreation projects that we coordinate.

The Department is also responsible for coordinating the ND's Scenic Byways and Backways Program. This proposed project is along the Killdeer Mountain Four Bears, Scenic Byways and as such we recommend any project development be completed with the least amount of or no visual impact to the immediate and distant views from the above mentioned Backways/Byways. Please contact Kevin Stankiewicz (701-328-5355) kstankiewicz@nd.gov if additional Byways and Backways information is needed.

The North Dakota Natural Heritage biological conservation database has been reviewed to determine if any current or historical plant or animal species of concern or other significant ecological communities are known to occur within an approximate one-mile radius of the project area. Based on this review, no occurrence has been identified within or adjacent to the project areas. We defer further comments regarding animal species to the North Dakota Game and Fish Department and the United States Fish and Wildlife Service.

Because this information is not based on a comprehensive inventory, there may be species of concern or otherwise significant ecological communities in the area that are not represented in the database. The lack of data for any project area cannot be construed to mean that no significant features are present. The absence of data may indicate that the project area has not been surveyed, rather than confirm that the area lacks natural heritage resources.

The Department recommends that the project be accomplished with minimal impacts and that all efforts be made to ensure that critical habitats not be disturbed in the project area to help secure rare species conservation in North Dakota. Regarding any reclamation efforts, we recommend that any impacted areas be revegetated with species native to the project area.

Thank you for the opportunity to comment on this project. Please contact Kathy Duttonhefner (701-328-5370 or kgduttonhefner@nd.gov) of our staff if additional information is needed.

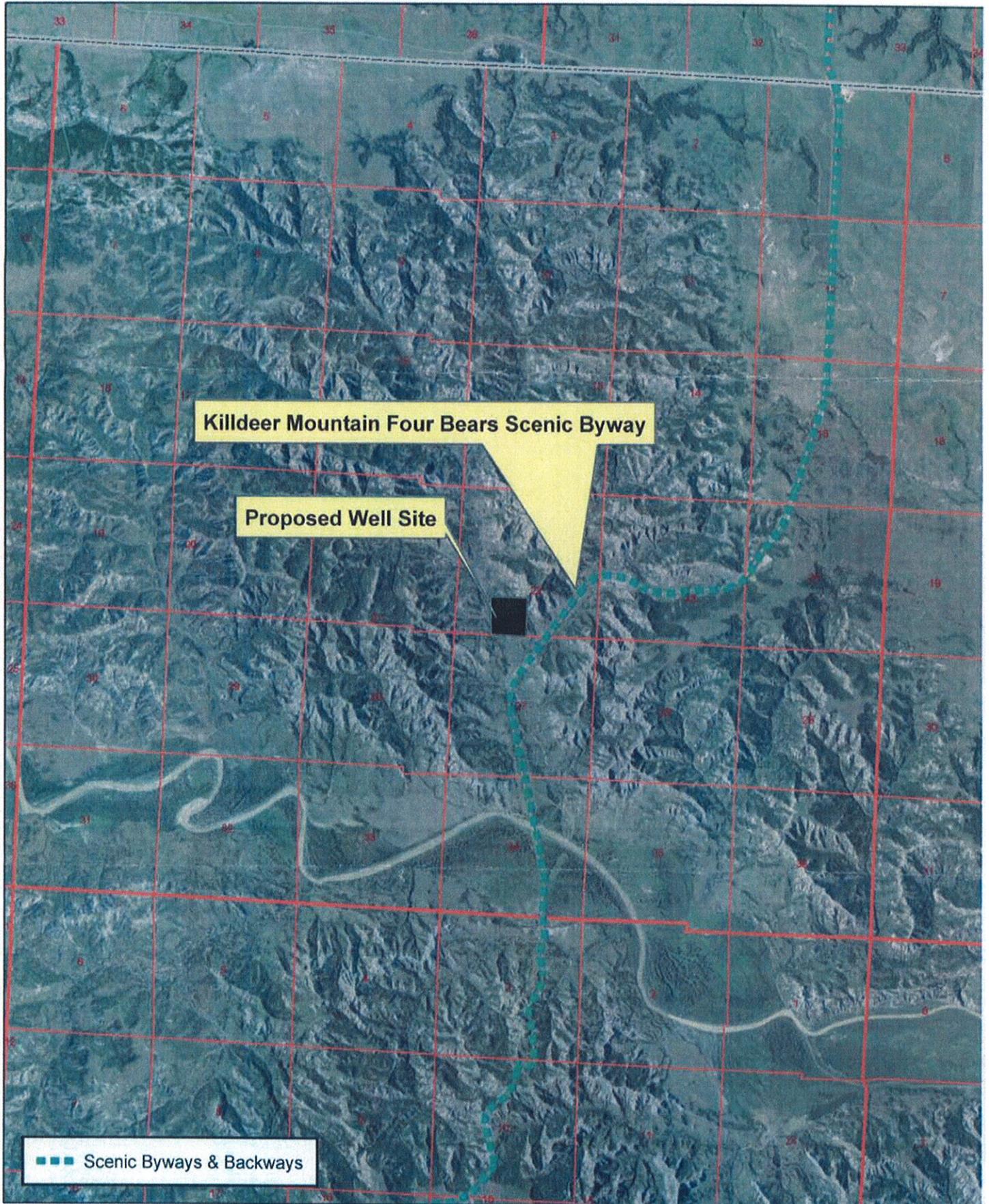
Sincerely,


Jesse Hanson, Coordinator
Planning and Natural Resources Division

R.USNDNHI*2011-48
KD2/28/11DL3.25.11

.....
Play in our backyard!

North Dakota Parks and Recreation Department
North Dakota Natural Heritage Inventory



T148N

R95W

February 2011

North Dakota Natural Heritage Inventory
Rare Animal and Plant Species and Significant Ecological Communities

Name	Surface	Designation	Byway ID
Killdeer Mountain Four Bears Scenic Byway	Paved	State	16405

United States Department of Agriculture



Natural Resources Conservation Service
P.O. Box 1458
Bismarck, ND 58502-1458

March 25, 2011

Sarah Ruffo
SWCA Environmental Consultants
Bismarck Office
116 North 4th St., Ste. 200
Bismarck, ND 58501

Re: Fort Berthold #148-94-9D-04-2H Fort Berthold #148-94-35D-26-2H
Fort Berthold #147-94-2A-11-2H Fort Berthold #148-94-28A-33-1H
Fort Berthold #148-94-28A-33-2H Fort Berthold #148-95-27B-34-2H
Fort Berthold #148-95-22C-15-2H

Dear Ms. Ruffo:

The Natural Resources Conservation Service (NRCS) has reviewed your letter dated February 23, 2011, regarding access roads, well pads, and drilling of seven wells on the Fort Berthold Indian Reservation, McKenzie County, North Dakota.

Important Farmlands - NRCS has a major responsibility with Federal Protection Policy Act (FPPA) in documenting conversion of farmland (i.e., prime, statewide, and local importance) to non-agricultural use. It appears your proposed project is not supported by federal funding or actions; therefore, no further action is required.

Wetlands – The Wetland Conservation Provisions of the 1985 Food Security Act, as amended, provide that if a USDA participant converts a wetland for the purpose of, or to have the effect of, making agricultural production possible, loss of USDA benefits could occur. NRCS has developed the following guidelines for the installation of buried utilities. If these guidelines are followed, the impacts to the wetland(s) will be considered minimal allowing USDA participants to continue to receive USDA benefits. Following are the requirements: 1) Disturbance to the wetland(s) must be temporary, 2) no drainage of the wetland(s) is allowed (temporary or permanent), 3) mechanized landscaping necessary for installation is kept to a minimum and preconstruction contours are maintained, 4) temporary side cast material must be placed in such a manner not to be dispersed in the wetland, and 5) all trenches must be backfilled to the original wetland bottom elevation.

Helping People Help the Land

An Equal Opportunity Provider and Employer

Ms. Ruffo
Page 2

NRCS would recommend that impacts to wetlands be avoided. If the project requires passage through or disturbance of a wetland, NRCS can complete a certified wetland determination, if requested by the landowner/operator.

If you have additional questions pertaining to FPPA, please contact Steve Sieler, State Soil Liaison, at (701) 530-2019.

Sincerely,

A handwritten signature in cursive script, appearing to read "Steve Sieler".

JEROME SCHAAAR
State Soil Scientist/MO 7 Leader



**STATE
HISTORICAL
SOCIETY
OF NORTH DAKOTA**

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Director

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February 25, 2011

Ms. Sarah Ruffo
Project Manager
SWCA Environmental Consultants
115 North 28th St., Suite 202
Billings MT 59101-2045

NDSHPO REF. 11-0781 BIA/Mandan Hidatsa Arikara Nation
Environmental Assessment of Petro-Hunt, LLC four oil and gas wells
Fort Berthold #148-94-9D-04-2H in SE SE [T148N R94W Section 9]
Fort Berthold #148-94-35D-26-2H/Fort Berthold #147-94-2A-11-2H in SE SE
[T148N R94W Section 35]
Fort Berthold #148-94-28A-33-1H/Fort Berthold #148-94-28A-33-2H in NW
NE [T148N R94W Section 28]
Fort Berthold #148-95-27B-34-2H/Fort Berthold #148-95-22C-15-2H in SE SW
[T148N R95W Section 22] Dunn County, North Dakota

Dear Ms. Ruffo,

We received your correspondence regarding NDSHPO REF. 11-0781
BIA/Mandan Hidatsa Arikara Nation Environmental Assessment of Petro-Hunt,
LLC four oil and gas wells Dunn County, North Dakota, as detailed above. We
request that a copy of cultural resource site forms and reports be sent to this
office so that the cultural resources archives can be kept current for researchers.

Thank you for your consideration. Consultation is with MHAN THPO. If you
have any questions please contact Susan Quinnell, Review & Compliance
Coordinator at (701)328-3576 or squinnell@nd.gov

Sincerely,



Merlan E. Paaverud, Jr.
State Historic Preservation Officer (North Dakota)
and Director, State Historical Society of North Dakota

c: Elgin Crows Breast, THPO MHAN
c: Brenda Shierts, BLM, Belle Fourche, SD



REPLY TO
ATTENTION OF

North Dakota Regulatory Office

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
NORTH DAKOTA REGULATORY OFFICE
1513 SOUTH 12TH STREET
BISMARCK ND 58504-6640
February 25, 2011

NWO-2011-0317-BIS

SWCA Environmental Consultants
ATTN: Sarah Ruffo, Project Manager
116 North 4th Street, Suite #200
Bismarck, North Dakota 58501

Dear Ms. Ruffo:

This is in response to a letter received February 24, 2011 requesting Department of the Army, U.S. Army Corps of Engineers (Corps) comments regarding the proposed construction of seven (7) oil and gas wells on four (4) well pads (approximately 5.4 acres to 7.2 acres each) located in the Dunn County, Fort Berthold Reservation, North Dakota by **Petro Hunt, LLC**. Also included is the construction of approximately 2.5 miles of new/improved access roads. The well names and descriptions are as follows:

Fort Berthold #148-94-9D-04-2H located in SE1/4SE1/4 of Section 9, Township 148 North, Range 94 West.

Fort Berthold #148-94-35D-26-2H located in SE1/4SE1/4 of Section 35, Township 148 North, Range 94 West.

Fort Berthold #148-94-28A-33-1H located in NW14/NE1/4 of Section 28, Township 148 North, Range 94 West.

Fort Berthold #148-95-27B-34-2H located in SE1/4SW1/4 of Section 22, Township 148 North, Range 95 West.

Corps Regulatory Offices administer Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act. **Section 10 of the Rivers and Harbors Act** regulates work in or affecting navigable waters. This would include work over, through, or under Section 10 water. Section 10 waters in North Dakota include the Missouri River (including Lake Sakakawea and Lake Oahe), Yellowstone River, James River south of Jamestown, North Dakota, Bois de Sioux River, Red River of the North, and the Upper Des Lacs Lake. **Section 404 of the Clean Water Act** regulates the discharge of dredge or fill material (temporarily or permanently) in waters of the United States. Waters of the United States may include, but are not limited to, rivers, streams, ditches, coulees, lakes, ponds, and their adjacent wetlands. Fill material includes, but is not limited to, rock, sand, soil, clay, plastics, construction debris, wood chips, overburden from mines or other excavation activities and materials used to create any structure or infrastructure in waters of the United States.

For any proposed well where the well line and/or bottom hole is under or crosses under Lake Sakakawea, regardless of depth, we require that project proponent provide a DA permit application (ENG Form 4345) to the Corps.

Enclosed for your information is the fact sheet for Nationwide Permit 12, Utility Line Activities. Pipeline projects are already authorized by Nationwide Permit 12 **provided the utility line can be placed without any change to pre-construction contours and all other proposed construction activities and facilities are in compliance with the Nationwide's permit conditions and 401 Water Quality Certification is obtained**. Please note the pre-construction notification requirements on page 2 of the fact sheet. **If a project involves any one of the seven notification requirements, the project proponent must submit a DA application.** Furthermore, a project must also be in compliance with the "Regional Conditions for Nationwide Permits within the State of North Dakota", found on pages 12 and 13 of the fact sheet. [The following info is for activities on a reservation] Please be advised that the United States Environmental Protection Agency (EPA), Region 8 has denied 401 Water Quality Certification for activities in perennial drainages and wetlands. Furthermore, EPA has placed conditions on activities in ephemeral and intermittent drainages. It is recommended you contact the U.S. Environmental Protection

Agency, Region 8, Attn: Brent Truskowski, 1595 Wynkoop Street, Denver, Colorado 80202-1129 to review the conditions pursuant to Section 401 of the Clean Water Act prior to any construction.

With respect to road construction and/or upgrades, find enclosed for your information is the fact sheet for Nationwide Permit 14, Linear Transportation Projects. Road crossings are already authorized by Nationwide Permit 14 **provided the discharge does not cause the loss of greater than ½ acre of waters of the United States per crossing and all other proposed construction activities are in compliance with the Nationwide's permit conditions**. Please note the pre-construction notification requirements on the front page of the fact sheet. **If a project involves (1) the loss of waters of the United States exceeding 1/10 acre per crossing; or (2) there is a discharge in a special aquatic site, including wetlands, the project proponent must submit a DA application prior to the start of construction**. Please reference General Condition 27, Pre Construction Notification on page 8 of the fact sheet. Furthermore, a project must also be in compliance with the "Regional Conditions for Nationwide Permits within the State of North Dakota", found on pages 11 and 12 of the fact sheet. [The following is included for activities on a reservation] Enclosed is a copy of the United States Environmental Protection Agency, Region 8's; General Conditions for all Nationwide Permits and specific conditions for Nationwide Permit 14.

In the event your project requires approval from the U.S. Army Corps of Engineers and cannot be authorized by Nationwide Permit(s), a Standard or Individual Permit will be required. A project that requires a Standard or Individual Permit is intensely reviewed and will require the issuance of a public notice. A Standard or Individual Permit generally requires a minimum of 120 days for processing but based on the project impacts and comments received through the public notice may extend beyond 120 days.

This correspondence letter is neither authorization for the proposed construction nor confirmation that the proposed project complies with the Nationwide Permit(s).

If any of these projects require a Section 10 and/or Section 404 permit, please complete and submit the enclosed Department of the Army permit application (ENG Form 4345) to the U.S. Army Corps of Engineers, North Dakota Regulatory Office, 1513 South 12th Street, Bismarck, North Dakota 58504. If you are unsure if a permit is required, you may submit an application; include a project location map, description of work, and construction methodology.

If we can be of further assistance or should you have any questions regarding our program, please do not hesitate to contact this office by letter or phone at (701) 255-0015.

Sincerely,



Daniel E. Cimarosti
Regulatory Program Manager
North Dakota

Enclosures

ENG Form 4345

Fact Sheet NWP 12 and 14

EPA 401 Conditions for Nationwide Permits

From: Sorensen, Charles G NWO [Charles.G.Sorensen@usace.army.mil]
Sent: Friday, March 04, 2011 9:27 AM
To: Sarah Ruffo
Cc: Ames, Joel O NWO
Subject: Comments on Petro Hunt Fort Berthold Wells

Ms. Ruffo

Thank you for letting the U.S. Army Corps of Engineers Garrison Dam/Lake Sakakawea Project comment on Petro Hunt LLC proposed Fort Berthold # 148-94-9D-04-2H, Fort Berthold # 148-94-35D-26-2H, Fort Berthold # 148-94-28A-33-1H, Fort Berthold # 148-95-27B-34-2H and Fort Berthold # 148-95-22C-15-2H. At this time the U.S. Army Corps of Engineers Garrison Dam/Lake Sakakawea Project request that consideration and if possible implement the following management practices during the exploration phase of those wells listed in the request letter

Due to the close proximity of the well location to major drainages and tributaries that directed runoff waters either through or into lands managed by the U.S. Army Corps of Engineers (USACE) there is a high risk that any storm water runoff from the well locations will enter the Missouri River/Lake Sakakawea. As such the USACE would request that Petro Hunt LLC consider the construction/establishment of a catch trench located on the down sloping side of the well pad. Said trench would help in containing any hazardous wastes from the well pad. Those fluids that accumulate in the trench should be pumped out and disposed of properly

As previously mentioned the location of the proposed well site is extremely close to lands managed by the USACE and as previously stated the possibility for contamination of the Missouri River/Lake Sakakawea is of great concern to this agency. To aid in the prevention of hazardous wastes from entering the aforementioned bodies of water, the USACE would strongly recommend that a Closed Loop Drilling Method be used in the handling of all drilling fluids

Should living quarters be established onsite it is requested that all sewage collection systems be of a closed design and all holding tanks are to be either double walled or contained in a secondary containment system. All sewage waste removed from the well site location should be disposed of properly.

That all additional fill material required for the construction of the well pad is obtained from a private supplier whose material has been certified as being free of all noxious weeds.

Prior to the drilling rig and associated equipment being moved/ placed that all equipment be either pressure washed or air blasted off Tribal lands to prevent the possible transportation of noxious or undesirable vegetation onto Tribal lands as well as USACE managed lands.

That no surface occupancy be allowed within ½ mile of any known Threatened or Endangered Species critical habitat.

If possible, all construction activities should occur between August 15th and April 1st.

If trees are present, the appropriate dates are August 15th – February 1st. By constructing during these dates, disruptions to wildlife during the breeding season maybe kept to a minimum.

Cumulative impacts are often overlooked, in the completion of NEPA compliance. To adequately assess cumulative impacts, the following activities should consider.

- a. Has the project area already been degraded, and if so, to what extent?
 - b. Are other ongoing activities in the area causing impacts, and if so, to what extent?
 - c. What is the likelihood that this project will lead to a number of associated projects?
- d. What are the trends for activities and impacts in the area?

If you have any questions regarding the above recommendations please feel free to contact me

Charles Sorensen
Natural Resource Specialist
U.S. Army Corps of Engineers
Garrison Dam/Lake Sakakawea Project

Riverdale, North Dakota Office
(701) 654 7411 ext 232



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
1616 CAPITOL AVENUE
OMAHA NE 68102-4901

March 21, 2011

Planning, Programs, and Project Management Division

Ms. Sarah Ruffo
SWCA Environmental Consultants
116 North 4th Street, Suite 200
Bismarck, ND 58501

Dear Ms. Ruffo,

The U.S. Army Corps of Engineers, Omaha District (Corps) has reviewed your letter dated February 23, 2011, regarding the proposed construction of up to seven wells on three pad locations on the Fort Berthold Reservation in Dunn County, North Dakota. The Corps offers the following comments:

Since the proposed project does not appear to be located within Corps owned or operated lands, we are providing no floodplain or flood risk information. To determine if the proposed project may impact areas designated as a Federal Emergency Management Agency special flood hazard area, please consult the following floodplain management office:

North Dakota State Water Commission
Attention: Jeff Klein
900 East Boulevard Avenue
Bismarck, North Dakota 58505-0850
jjkein@nd.gov
T-701-328-4898
F-701-328-3747

Your plans should be coordinated with the U.S. Environmental Protection Agency, which is currently involved in a program to protect groundwater resources. If you have not already done so, it is recommended you consult with the U.S. Fish and Wildlife Service and the North Dakota Game and Fish Department regarding fish and wildlife resources. In addition, the North Dakota State Historic Preservation Office should be contacted for information and recommendations on potential cultural resources in the project area.

Any proposed placement of dredged or fill material into waters of the United States (including jurisdictional wetlands) requires Department of the Army authorization under Section 404 of the Clean Water Act. You can visit the Corp's Regulatory website for permit applications and related information. Please review the information on the provided website (<https://www.nwo.usace.army.mil/html/od-r/district.htm>) to determine if this project requires a 404 permit. For a detailed review of permit requirements, preliminary and final project plans should be sent to:

U.S. Army Corps of Engineers
Bismarck Regulatory Office
Attention: CENWO-OD-R-ND/Cimarosti
1513 South 12th Street
Bismarck, North Dakota 58504

If you have any questions, please contact Mr. John Shelman of my staff at (402) 995-2708 or by email at Johnathan.A.Shelman@usace.army.mil.

Sincerely,



Brad Thompson
Chief, Environmental Resources and Missouri River
Recovery Program Plan Formulation Section



Sound Science. Creative Solutions.

Bismarck Office
116 North 4th St, Ste 200
Bismarck, ND 58501
701.258.6622
701.258.5298
www.swca.com

RECEIVED MAY 20 2011

February 23, 2011

Dear Interested Party:

The Bureau of Indian Affairs (BIA), in cooperation with the Bureau of Land Management (BLM), is preparing an Environmental Assessment (EA) under the National Environmental Policy Act (NEPA). The proposed action includes approval by the BIA and BLM for the construction, drilling, completion, and production of seven exploratory oil and gas wells (1 single pad and 3 dual pads) on the Fort Berthold Indian Reservation by Petro-Hunt, LLC (Petro-Hunt). The surface locations for these wells are proposed in the following locations and shown on the enclosed project location map.

- **Fort Berthold #148-94-9D-04-2H:** SE¼ SE¼ Section 9 Township (T) 148 North (N) Range (R) 94 West (W) Dunn County, North Dakota
- **Fort Berthold #148-94-35D-26-2H/ Fort Berthold #147-94-2A-11-2H:** SE¼ SE¼ Section 35 T148N R94W Dunn County, North Dakota
- **Fort Berthold #148-94-28A-33-1H/ Fort Berthold #148-94-28A-33-2H:** NW¼ NE¼ Section 28 T148N R94W Dunn County, North Dakota
- **Fort Berthold #148-95-27B-34-2H/ Fort Berthold #148-95-22C-15-2H:** SE¼ SW¼ Section 22 T148N R95W Dunn County, North Dakota

All seven proposed exploratory oil and gas wells will be located within their own 1,280-acre spacing unit. The wells will be positioned to utilize existing roadways for access to the greatest extent possible. The drilling of these well sites is proposed to begin as early as May 2011.

The associated facilities required by the project would include roads, utility lines, production facilities (production tanks), and equipment storage facilities. In general, oil would be stored on location in tank batteries and then hauled (or in the future sent via pipeline) to the nearest processing plant or sales point. Produced water would be transported by truck to water disposal wells or enclosed tanks. Any gas produced from these wells would initially be flared until a gas pipeline could be planned, permitted and constructed, if necessary. In the future, Petro-Hunt would complete a right-of-way application for a gas and salt water pipeline to be constructed along access roads to a future-found market for gas and salt water. Petro-Hunt would utilize existing roads and previous disturbances to the greatest extent practicable. Project development would result in the construction of less than 2.5 miles of new or upgraded/ improved roads to access the well pads. Each pad would disturb approximately 5.4 to 7.2 acres. Existing highways and arterial roads would provide the main access to the project area.

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

SWCA Environmental Consultants
Sarah Ruffo, Project Manager
116 North 4th Street, Suite 200
Bismarck, North Dakota 58501
(701) 258-6622
sruffo@swca.com

Comments should be submitted before March 25, 2011 so that they may be addressed in the final document. Questions for the BIA can be directed to Marilyn Bercier, Regional Environmental Scientist, or Mark Herman, Environmental Engineer, at (605) 226-7656.

Sincerely,

Sarah Ruffo



Date 5/19/11

No objection provided the Federal Aviation Administration is notified of construction or alterations as required by Federal Aviation Regulations Part 77, Objects Affecting Navigable Airspace, Paragraph 77.9. Notice may be filed on-line at <https://oeaaa.faa.gov>.

Patricia L. Dressler, Environmental Protection Specialist
FAA/Bismarck Airports District Office
2301 University Drive, Building 23B
Bismarck, ND 58504



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services
3425 Miriam Avenue
Bismarck, North Dakota 58501

JUN 29 2011



Ms. Sarah Ruffo
Project Manager/Natural Resources Specialist
SWCA Environmental Consultants
116 North 4th Street, Suite 200
Bismarck, North Dakota 58501

Re: Petro-Hunt LLC
Seven Wells on Three Well Pads,
Fort Berthold Reservation,
Dunn County, North Dakota

Dear Ms. Ruffo:

This is in response to your June 21, 2011, letter requesting comments to assist in your preparation of an Environmental Assessment (EA) and federally-listed threatened and endangered species effects determinations on behalf of the Bureau of Indian Affairs (BIA) and the Bureau of Land Management (BLM). Petro-Hunt has proposed three well pads that would support seven exploratory oil and gas wells, and 0.65 mile of new roads to access each of the well pads on the Fort Berthold Reservation, Dunn County, North Dakota.

Specific locations are:

- Fort Berthold #148-94-9D-04-2H: SE1/4 SE1/4 Section 9, T. 148 N., R. 94 W., Dunn County
- Fort Berthold #148-94-35D-26-2H/Fort Berthold #147-94-2A-11-2H: SE1/4 SE1/4 Section 35, T. 148 N., R. 94 W., and NENE Section 2, T. 147 N., R. 94 W., Dunn County
- Fort Berthold #148-95-27B-34-2H, -3H/Fort Berthold #148-95-22C-15-2H, -3H: NE1/4 NW1/4 Section 27 and SE1/4SW1/4 Section 22, T. 148 N., R. 95 W., Dunn County

We offer the following comments under the authority of and in accordance with the Migratory Bird Treaty Act (16 U.S.C. 703 et seq.) (MBTA), Executive Order 13186 "Responsibilities of Federal Agencies to Protect Migratory Birds", the National Environmental Policy Act of 1969, as amended (42 U.S.C. 4321 et seq.) (NEPA), the

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Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d, 54 Stat. 250) (BGEPA), and the Endangered Species Act (16 U.S.C. 1531 et seq.) (ESA).

The BIA has designated SWCA to represent the BIA for informal Section 7 consultation under the ESA. Therefore, the U.S. Fish and Wildlife Service (Service) is responding to you as the designated non-Federal representative.

Threatened, Endangered, and Candidate Species

SWCA has made “may affect, not likely to adversely affect” determinations for the endangered whooping crane, interior least tern, and pallid sturgeon, and the threatened piping plover and piping plover designated critical habitat. These determinations were based on several commitments by Petro-Hunt, the following of which the Service considers to be relevant to effects to threatened and endangered species:

- Semi-closed loop systems would be used for each well pad, with a containment berm to prevent hazardous runoff or spills.
- If a whooping crane is sighted within 1 mile of a well site or associated facilities while under construction, all work will cease within 1 mile of that part of the project and the USFWS will be contacted immediately. In coordination with the USFWS, work may resume after the bird(s) leave the area.
- Petro-Hunt will implement all BMPs, erosion control measures, and spill prevention practices required by the BIA and the Clean Water Act.
- The proposed well pads will be reclaimed as soon as possible after their lifespan is complete, and impacted areas will be returned to preconstruction contours.

The Service concurs with the “may affect, not likely to adversely affect” determinations for the whooping crane, interior least tern, pallid sturgeon, piping plover, and designated critical habitat for the piping plover for the proposed well pads and associated access roads and facilities.

As a matter of policy, the Service does not concur with “no effect” determinations. However, we acknowledge your “no effect” determinations for the gray wolf and black-footed ferret.

SWCA made “may affect, not likely to adversely affect” determinations for the Dakota skipper and Sprague’s pipit. No legal requirement exists to protect candidate species. Since these species are candidates, effects determinations are not required; however, Federal agencies may consider candidates as proposed for listing. BIA has previously indicated to the Service that they do not wish to consider candidate species as proposed, but BLM does. Since the surface impacts are regulated by BIA, we will assume that no effects determinations for these two candidates will be required by BIA. Measures indicated in your letter designed to avoid take of migratory birds will also help avoid direct take of Sprague’s pipit.

Migratory Birds

In addition to the commitments by Petro-Hunt mentioned above and others listed in the letter, the following commitments are also relevant to compliance with the MBTA and E.O. 13186:

- Petro-Hunt will conduct all construction outside of the migratory bird breeding season (between February 1 and July 15), or if construction occurs during the bird breeding season, Petro-Hunt will mow, maintain, or completely remove vegetation within the project construction area prior to (July 16 to January 31) and during the breeding season to deter migratory birds from nesting in the project area until construction is under way, weather conditions permitting; or if the project areas are not mowed and maintained as indicated above, conduct an avian survey of the project area no greater than 5 days before construction begins, and if nests are discovered, notify BIA and USFWS.

Bald and Golden Eagles

Your letter stated a 0.5-mile line of sight survey for bald and golden eagle nests was conducted. No eagle nests were observed. No previously recorded nests are known to be present within 0.5 mile of the project area. The nearest known eagle nest site was reported to be approximately 3 miles northwest of the #148-94-9D-04-2H well pad site; 2.7 miles northeast of the #148-94-35D-26-2H & #147-94-2A-11-2H northeast of the dual well pad; and 1.8 miles northeast of #148-95-27B-34-2H, -3H & #148-95-22C-15-2H, -3H dual well pad. If a bald or golden eagle nest is sighted within 0.5 mile of the project construction area during construction or operations, activities should cease and the USFWS should be notified for advice on how to proceed.

The Service believes that with the inclusion of the stated commitments, Petro-Hunt's proposed projects are in compliance with the MBTA, E.O. 13186, and BGEPA.

Cumulative Impact Assessment

The Service encourages the action agencies to include a comprehensive cumulative impact analysis in the EA. The EA should evaluate the existing wells, associated facilities and other activities in a NEPA analysis area, consider the proposed wells and associated facilities in this context, and include an analysis of the cumulative impacts that could affect similar resources in the foreseeable future. We would appreciate receiving a copy of the final EA and FONSI.

Thank you for the opportunity to comment on this EA and federally-listed and candidate species, and for Petro-Hunt's cooperation in addressing our recommendations. If you

require further information or the project plans change, please contact me at (701) 250-4481 or at the letterhead address.

Sincerely,



Jeffrey K. Towner
Field Supervisor
North Dakota Field Office

cc: Bureau of Indian Affairs, Aberdeen
(Attn: Marilyn Bercier)
Bureau of Land Management, Dickinson
ND Game & Fish Department, Bismarck

Notice of Availability and Appeal Rights

Petro-Hunt, LLC: Fort Berthold #148-94-9D-04-2H

Fort Berthold #148-94-35D-26-2H/

Fort Berthold #147-94-2A-11-2H

Fort Berthold #148-95-27B-34-4H, -5H/

Fort Berthold #148-95-22C-15-4H, -5H

The Bureau of Indian Affairs (BIA) is planning to issue administrative approvals related to an Environmental Assessment to Authorize Land Use for the Installation of Seven Bakken/Three Forks Exploratory Oil Wells and Gas Wells on Three Well Pads on the Fort Berthold Reservation as shown on the attached map. Construction by Petro-Hunt is expected to begin in 2012.

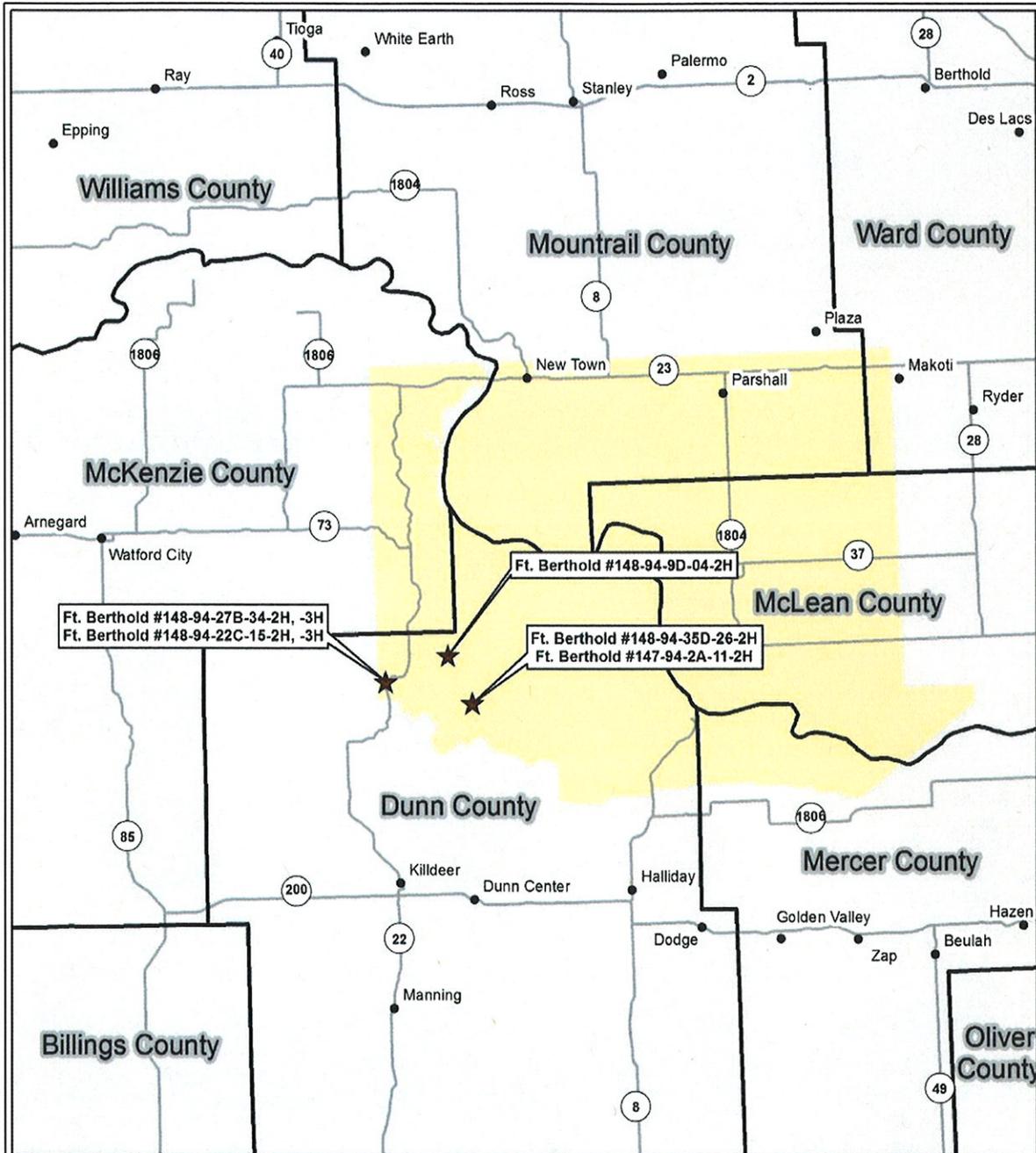
An environmental assessment (EA) determined that proposed activities will not cause significant impacts to the human environment. An environmental impact statement is not required. Contact Earl Silk, Superintendent at 701-627-4707 for more information and/or copies of the EA and the Finding of No Significant 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 February 3, 2012, 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.



Legend

- ★ Proposed Well Locations
- Major Cities
- ▭ County Line
- State and Federal Highway
- Fort Berthold Indian Reservation

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0 10 20 40
Kilometers

0 5 10 20
Miles

Scale: 1:750,000
UTM Zone 13N, NAD83, Meters
May 16, 2011

