Environmental Assessment

MHA #1-04H-149-90
MHA #1-10-15H-149-90

Prepared for:

The Bureau of Indian Affairs

and

QUESTAR®

Questar Exploration and Production

October 2009

McCain and Associates, Inc.
2718 Gateway Avenue
Suite 101
Bismarck, ND 58501

Finding of No Significant Impact

Questar Exploration and Production

MHA #1-04H-149-90
MHA #1-10-15H-149-90

Fort Berthold Indian Reservation
McLean County, North Dakota

The U.S. Bureau of Indian Affairs (BIA) has received a proposal for two oil/gas wells, access roads and related infrastructure on the Fort Berthold Indian Reservation to be located in Section 10, T149N, R90W. Associated federal actions by BIA include determinations of effect regarding cultural resources, approvals of leases, rights-of-way and easements, and a positive recommendation to the Bureau of Land Management regarding the Applications for Permit to Drill.

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

This determination is based on the following factors:

1. Agency and public involvement was solicited and environmental issues related to the proposal were identified.

2. Protective and prudent measures were designed to minimize impacts to air, water, soil, vegetation, wetlands, wildlife, public safety, water resources, and cultural resources. The remaining potential for impacts was disclosed for both the proposed action and the No Action 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.

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.

ACTING Bat Wally
Regional Director

10-15-09
Date

Environmental Assessment

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Questar Exploration and Production

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1.0 Purpose and Need for the Proposed Action

Questar Exploration and Production (Questar) is proposing to drill two horizontal oil/gas wells from a single well pad on the Fort Berthold Indian Reservation to evaluate and potentially develop the commercial potential of natural resources. The U.S. Bureau of Indian Affairs (BIA) is the surface management agency for potentially affected tribal lands and individual allotments. The BIA also holds title to subsurface mineral rights. Developments are proposed on lands held in trust by the United States in McLean County, North Dakota, approximately 14 miles south and 3 miles west of Parshall (Figure 1). The proposed wells are:

- *MHA #1-04H-149-90*
- *MHA #1-10-15H-149-90*

The economic development of available resources and associated BIA actions are consistent with BIA's general mission. Leasing and development of mineral resources offers substantial economic benefits to both the Three Affiliated Tribes of the Mandan, Hidatsa, and Arikara Nation and to individual tribal members. Oil and gas exploration and development activities are conducted under authority of the Indian Mineral Leasing Act of 1938 (25 USC 396a, *et seq.*), the Indian Mineral Development Act of 1982 (25 USC 2101, *et seq.*), the Federal Onshore Oil and Gas Royalty Management Act of 1982 (30 USC 1701, *et seq.*), and the Energy Policy Act of 2005 (42 USC 15801, *et seq.*). BIA actions in connection with the proposed project are largely administrative and include approval of leases, easements and rights-of-way, a determination regarding cultural resource effects and a recommendation to the Bureau of Land Management (BLM) regarding approval of the Applications for Permit to Drill (APDs).

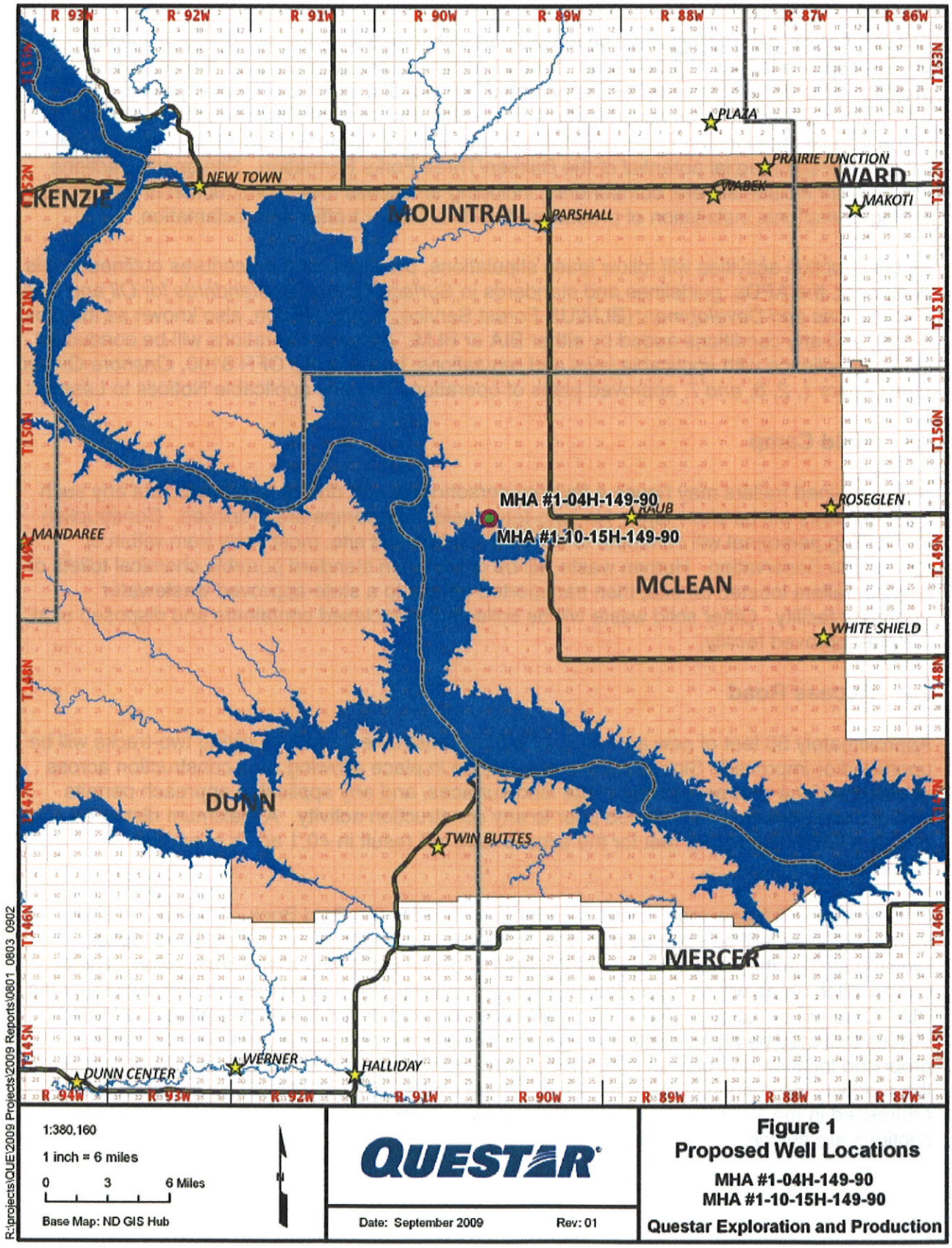
These proposed federal actions require compliance with the *National Environmental Policy Act* of 1969 (NEPA) and regulations of the Council on Environmental Quality (CEQ, 40 CFR 1500-1508). APDs submitted by Questar included in Section 7 of this document, describe developmental, operation, and reclamation procedures and practices that contribute to the technical basis of this Environmental Assessment (EA). The procedures and practices described in the application are critical elements in both the project proposal and the BIA's decision regarding environmental impacts. This EA will result in either a Finding of No Significant Impact (FONSI) or a decision to prepare an Environmental Impact Statement (EIS).

There are several components to the proposed action. New roads are needed to access the proposed well site. The well pad will be constructed to accommodate drilling and completion operations. Pits for drill cuttings will be constructed, used, and reclaimed. Drilling and completion information can result in long-term commercial production at the site, in which case supporting facilities will be installed. The working portions of the well pad and the access road will remain in place during commercial production. All project components will eventually be abandoned and reclaimed, as specified in this document and the APDs and according to any other federal conditions, unless formally transferred with federal approval to either the BIA or the landowner. The proposed wells are exploratory, in that results can also support developmental decisions on other leases in the surrounding area, but this EA addresses only the installation and possible long-term operation of the listed wells and directly associated infrastructure and facilities. Additional NEPA analysis, decisions, and federal actions will be required prior to any other developments.

Any authorized project will comply with all applicable federal, state, and tribal laws, rules, policies, regulations, and agreements. No construction, drilling, or other ground-disturbing

operations will begin until all necessary leases, easements, surveys, clearances, consultations, permissions, determinations, and permits are in place.

Figure 1. Proposed Well Locations.



2.0 Proposed Action and Alternatives

The **No Action Alternative** must be considered within an EA. If this alternative is selected, BIA will not approve leases, rights-of-way, or other administrative proposals for the proposed project. This document analyzes the potential impacts of a specific proposed project, two exploratory oil/gas wells on mixed surface ownership and mineral estate within the boundaries of the Fort Berthold Indian Reservation in McLean County, North Dakota. The proposed wells will test the commercial potential of the Bakken/Three Forks Formation. Site-specific actions will or might include several components, including an access road, construction of a well pad, drilling operations, installation of production facilities, tanker traffic, and reclamation.

All construction activities will follow lease stipulations, practices, and procedures outlined in this document, the APDs, guidelines and standards in *Surface Operating Standards for Oil and Gas Explorations and Development* (BLM/US Forest Service, Fourth Edition, also known as the Gold Book), and any conditions added by either BIA or BLM. All lease operations will be conducted in full compliance with applicable laws and regulations, including 43 CFR 3100, *Onshore Oil and Gas Orders 1, 2, 6, and 7,* approved plans of operations and any applicable Notices to Lessees.

2.1 Field Camp

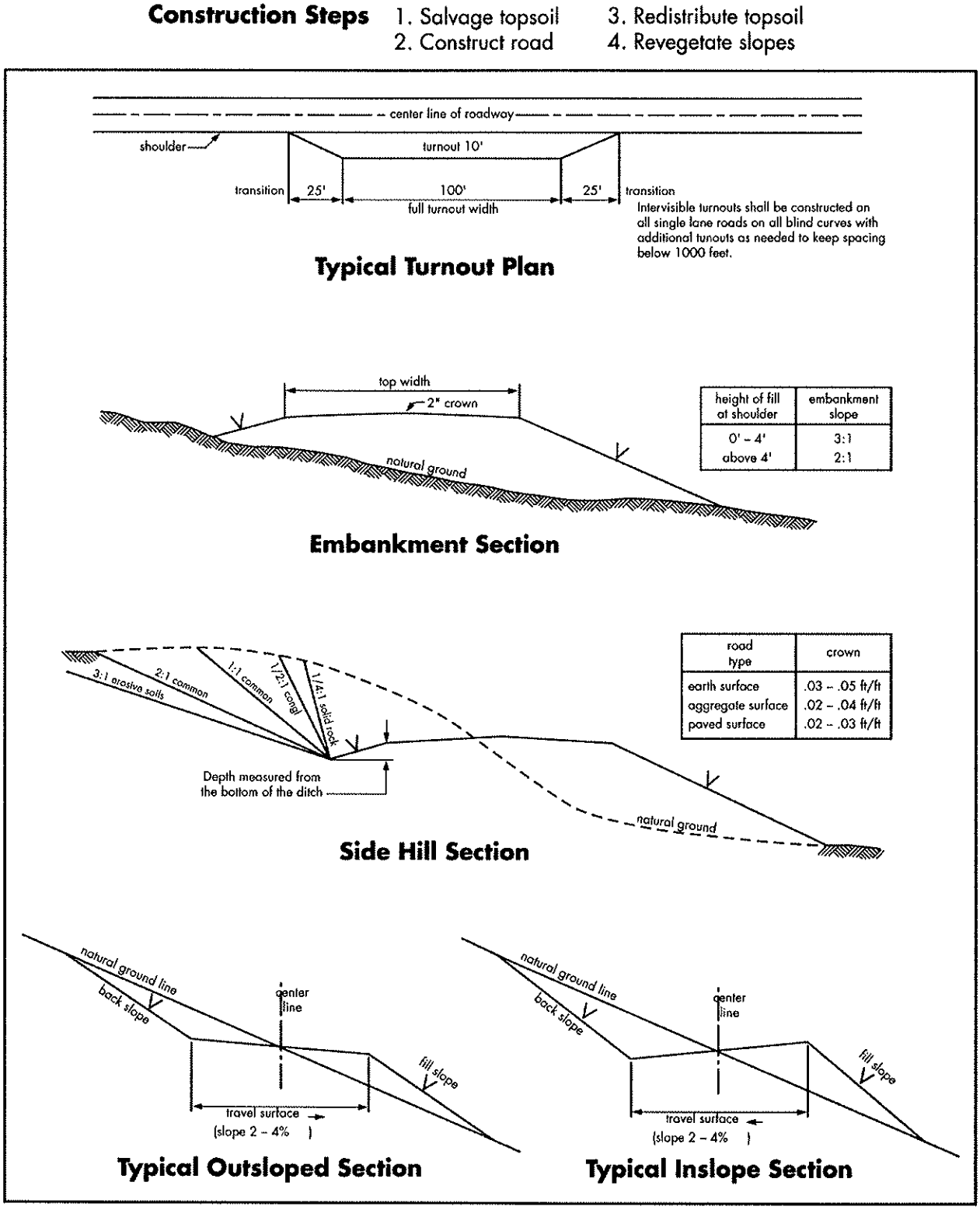
Self-contained trailers may house a few key personnel during drilling operations, but any such arrangements will be short-term. No long-term residential camps are proposed. Construction and drilling personnel will commute to the proposed project site, most likely from within or around the Reservation.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

2.2 Access Road

Approximately 56 feet of new access road will be constructed and no existing two-tracks will be upgraded or improved. Signed agreements will be in place allowing road construction across affected surface allotments and private land surfaces, and any applicable approach permits and/or easements will be obtained prior to any construction activity. A maximum disturbed right-of-way (ROW) width of 66 feet for the access road will result in <0.1 acres of surface disturbance.

Construction will follow road design standards outlined in the Gold Book. A minimum of six inches of topsoil will be stripped from the access road corridor, with the stockpiled topsoil redistributed on the outslope areas of the borrow ditches following road construction. These borrow ditch areas will be reseeded as soon as practical with a seed mixture determined by the BIA. Care will be taken during road construction to avoid disturbing or disrupting any buried utilities that may be along existing roads. If commercial production is established from the proposed location, the access road will be graveled with a minimum of four inches of gravel and the roadway will remain in place for the life of the well(s). Details of road construction are addressed in the Multi-Point Surface Use and Operations Plan in the APDs. Typical cross-sections are shown in Figure 2.

Figure 2. Typical roadway cross section (Gold Book)



2.3 Well Pad

The proposed well pad will consist mainly of an area leveled for the drilling rig and related equipment, and a pit excavated for drilling fluids, drill cuttings, and fluids produced during drilling activities. The well pad area will be cleared of vegetation, stripped of topsoil, and graded to the specifications in the approved APDs. Topsoil will be stockpiled and stabilized until disturbed areas are reclaimed and re-vegetated. Excavated subsoils will be used in well pad construction, with the finished well pad graded to ensure positive water drainage away from the drill site. Erosion control will be maintained through prompt re-vegetation and by constructing all necessary surface water drainage controls, including berms, diversion ditches, and waterbars.

The level area of the well pad used for drilling and completion operations (including a reserve pit for drill cuttings) will be approximately 385 by 502 feet (4.4 acres). Cut and fill slopes and stockpiled topsoil and reserve pit backfill on the edge of the pad will disturb another 0.9 acres for a total of 5.3 acres of surface disturbance for the proposed dual well pad. Details of pad construction and reclamation are diagrammed in the APDs for the site.

2.4 Drilling

After securing mineral leases, Questar submitted APDs to the BLM for the proposed wells. The BLM North Dakota Field Office forwarded the APDs to the BIA's Fort Berthold Agency in New Town, North Dakota, for review and concurrence. BLM will not approve an APD until BIA completes its NEPA process and recommends APD approval. No construction or drilling will begin until an approved permit has been obtained from the BLM.

After location construction, rig transportation and on-site assembly will take up to seven days. A rotary drill rig will require approximately 35-45 days to reach target depths, depending on the length of the horizontal lateral to be drilled. For reference, a typical drilling rig is shown in Figure 3.

For the upper 2,500 +/- feet of the drilled hole, a fresh-water based mud system with non-hazardous additives such as bentonite will be used to minimize contaminant concerns. Water will be obtained from a commercial source for the drilling of the surface hole. All aquifers of economic importance (Fort Union) as further defined in Sections 2.5 and 3.4.2.1 will be cemented behind pipe. Following the setting and cementing of the surface casing, an oil-based mud system system will be used to drill the intermediate section of the well. The oil-based drilling fluids reduce the potential for hole sloughing while drilling through shale formations. The drilling efficiencies created by using an oil-based drilling mud system minimizes the overall drill time and any associated direct impacts during the drilling process. Please refer to the Drilling Plan within the APDs for the particulars of all casing and cementing depths, type and weight of pipe used, and mud components.

Cuttings generated from drilling will be deposited in the reserve pit. The reserve pit will be lined with an impervious (plastic/vinyl) liner to prevent drilling fluid seepage and contamination of the underlying soil. The liner will be installed over sufficient bedding (either straw or dirt) to cover any rocks, will overlap the pit walls, extend under the mud tanks, and will be covered with dirt and/or rocks to hold it in place.

Although a closed loop drilling system was not required at the on-site for this particular location, Questar's normal operating practices and philosophy for minimizing fluids and solids control is to utilize a closed loop system, which will greatly reduce any potential impacts encountered by

open pits. These normal operating practices fall in-line with a "closed loop" mud system as defined by the BIA.

- Reserve pit is lined with minimum 16 mil liner

- Fluids are not circulated to or from the reserve pit as part of the circulating system. All fluids are contained in a steel tank circulating system.

- All solids control equipment are maintained to achieve as high a solids content as possible in order to discharge cuttings to the reserve pit with minimal associated fluids.

- Excess fluid that may accumulate in the reserve pit (rain, snow melt, fluids associated with the cuttings) is removed from the pit at the conclusion of the well and properly disposed of or re-used. Any residual fluids not able to be removed from the top of the reserve pit are entrained in the solidification process when the pit is reclaimed.

In order to protect both wildlife and livestock, the entire location will be fenced, with a cattle guard at the entry of the access road to the pad site. All fencing will be installed in accordance with Gold Book guidelines and maintained until the reserve pits are solidified and/or backfilled.

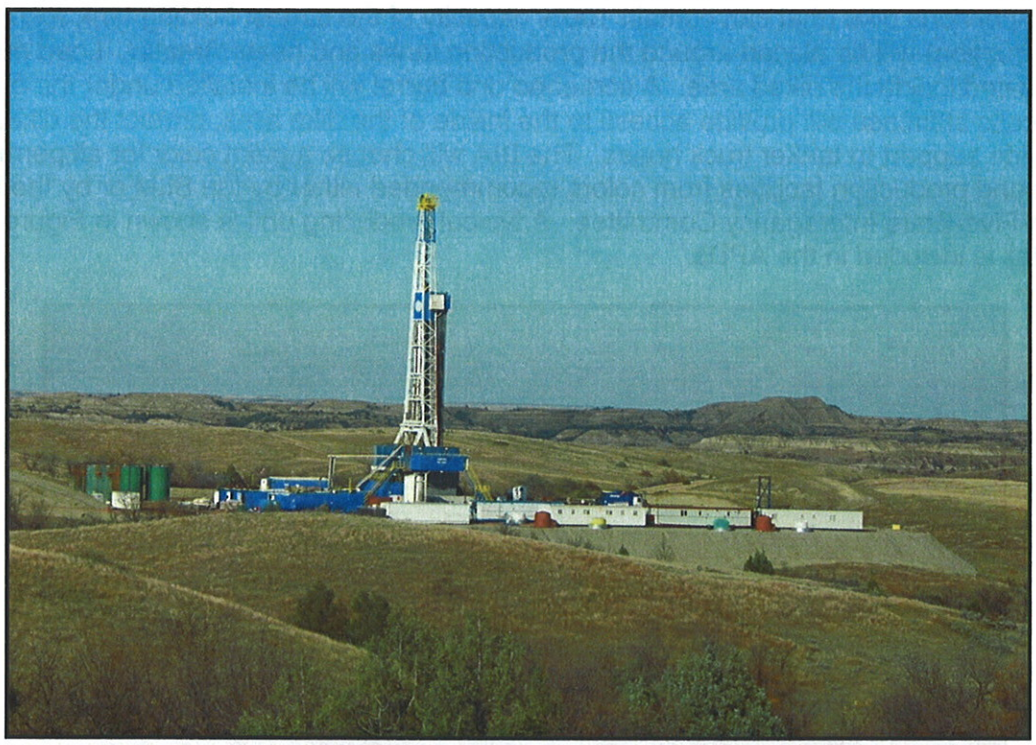


Figure 3. Typical drill rig (McCain and Associates, Inc.)

2.5 Casing and Cementing

Surface casing will be set to approximately 2,500 feet and cemented back to the surface during drilling, isolating all near-surface aquifers in the project area. The Fox Hills Formation will be encountered at approximately 1,700 feet and the Pierre Formation at about 1,800 feet. A production casing cemented from approximately 11,256 feet up to about 4,000 feet will isolate potential hydrocarbon zones in the Dakota Formation that occur below 4,500 feet. The

producing horizontal section will not be cased. Casing and cementing operations will be conducted in full compliance with *Onshore Oil and Gas Orders 2* (Title 43 CFR 3160).

2.6 Completion and Evaluation

A work-over rig will be moved onto the well site following the completion of the drilling operations. Approximately 30 days are usually needed to clean out the well bore, pressure test the casing, perforate and fracture the horizontal portion of the hole, and run production tubing for commercial production. A mixture of sand and a carrier (water and/or nitrogen) may be pumped into the well bore under extreme pressure to fracture the target formation. The sand particles will stabilize the fractures, increase the capture zone and maximize the field drainage. The fracture fluids will be recovered by flowing the well back to the surface. Pits or tanks will be used to collect fluids for disposal. Disposal will be conducted in accordance to NDIC rules and regulations.

2.7 Commercial Production

If drilling, testing, and production support commercial production from either of the proposed wells, additional equipment would be installed including a pumping unit at the well head, a vertical heater/treater, storage tanks (usually four 400-barrel steel tanks), and a flare/production pit. An impervious dike (that can contain 100% capacity of the largest holding tank and a single day's production) will be placed around the production tanks and heater/treater. Load out lines will be located inside the diked area. A screened drip barrel will be installed under the outlet. A metal access staircase will provide access to the inside of the dike area, protect the dike, and may provide support to tanker truck hoses. The BIA will choose a paint color for all permanent aboveground production facilities from colors recommended either by the BLM or by the Rocky Mountain Five-State Interagency Committee. A typical producing unit is shown in Figure 4 and more detail is included in the APDs.

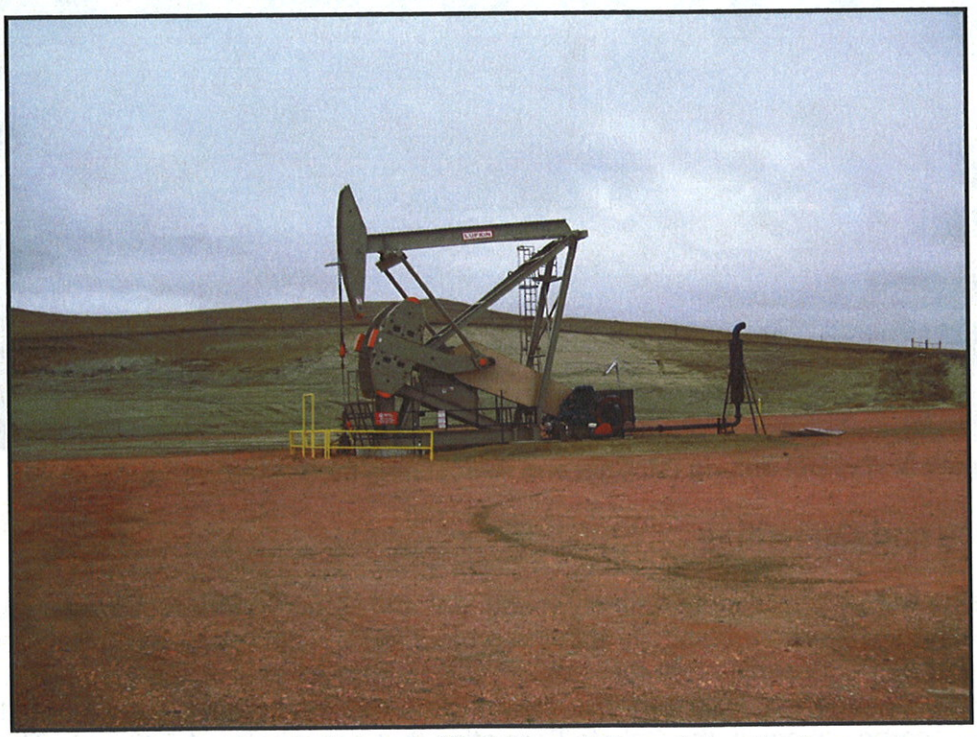


Figure 4. Typical producing unit (McCain and Associates, Inc.)

Oil will be collected in tanks installed on location and periodically trucked to an existing oil terminal for sales. Produced water will be collected and contained in tanks and will be removed for periodic disposal at an approved disposal site. Production volumes of oil and water will dictate trucking frequency.

The duration of production operations cannot be reliably predicted, but some oil wells have pumped for more than 100 years. An initial estimate of daily production is approximately 500 barrels of oil and 100 barrels of water. The production is anticipated to decrease after three months to approximately 200 barrels of oil and 50 barrels of water per day. The produced water is primarily comprised of fracture fluids and should decrease over time.

Ancillary infrastructure, such as right-of-way for oil, gas and water pipelines and powerlines may be applied for in the future by the well site operator. This EA addresses any impacts that may be caused by the installation of ancillary infrastructure as long as they are developed adjacent to or within the ROW of the proposed access road. This EA does not address any impacts that will be caused outside this area.

Large volumes of natural gas are not expected from these wells. Small volumes will 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 (NDCC 28-08-06.4).

Results could also encourage additional exploration. Should future oil/gas exploration activities be proposed wholly or partly on trust land, those proposals and associated federal actions would require additional site specific NEPA analysis and BIA consideration prior to implementation.

2.8 Construction Details

2.8.1 MHA #1-04H-149-90 and MHA #1-10-15H-149-90

The MHA #1-04H-149-90 and MHA #1-10-15H-149-90 is a dual well pad site located in the NW¼NW¼ of Section 10, T149N, R90W, in McLean County, ND. The location is near the corner of McLean Co 23rd St NW and 75th Avenue NW. The proposed dual well pad will be approximately 385 by 502 feet in size and will disturb approximately 5.3 total acres. Soil stockpiles will be placed on the south side of the pad site.

The MHA #1-04H-149-90 borehole surface location will be approximately 340 feet from the north line (FNL) and 265 feet from the west line (FWL) of Section 10. The borehole will be directionally drilled horizontally in a northwesterly direction to the bottomhole target at 500 feet from the north line (FNL) and 1,550 feet from the west line (FWL) in Section 4.

The MHA #1-10-15H-149-90 borehole surface location will be approximately 382 feet from the north line (FNL) and 265 feet from the west line (FWL) of Section 10. The borehole will be directionally drilled horizontally in a southeasterly direction to the bottomhole target at 500 feet from the south line (FSL) and 2,140 feet from the west line (FWL) in Section 15.

The proposed site has an approximate 1-3% westerly sloping face. Surface water runoff from the well location flows to the west and then to the south to an intermittent drainage to Deep Water Bay of Lake Sakakawea.

The site is along the access road to Deep Water Bay Recreation Area Boat Ramp, Deep Water Bay Cabin Site and Fish-Camp Court. The nearest occupied dwelling is approximately 0.3 miles from the proposed site. The recreation boat ramp is approximately 0.8 miles to the SW of the proposed site.

Figure 5. MHA #1-04H-149-90 and MHA #1-10-15H-149-90 Location

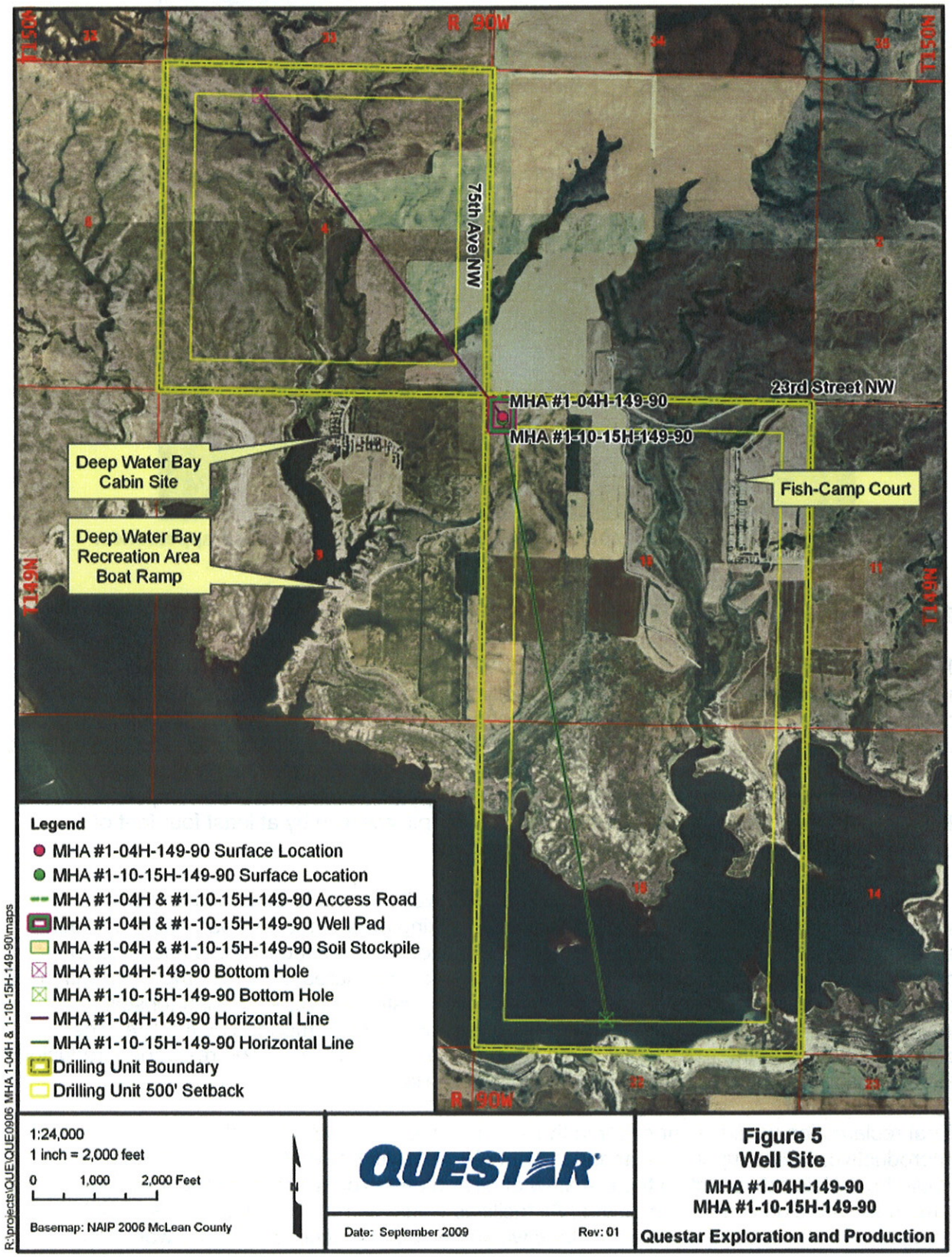


Figure 6. MHA #1-04H-149-90 and MHA #1-10-15H-149-90 general appearance.
The photo was taken from road access facing north across pad location.

2.9 Reclamation

The drill cuttings will be treated and solidified. The reserve pit will be backfilled, and buried as soon as possible after well completion. Any oily residue is dispersed and captured, preventing coalescence and release to the environment at significant rates in the future. Controlled mixing of cuttings with non-toxic reagents causes an irreversible reaction that quickly results in an inert, solid material. The alkaline nature of the stabilized material also chemically stabilizes various metals that may be present, primarily by transforming them into less soluble compounds. Treated material would then be buried in the reserve pit, overlain by at least four feet of overburden as required by adopted NDIC regulations.

If commercial production equipment is installed, the well pad would be reduced in size to <1 acre, reclaiming the rest of the original pad. The working area of the well pad and the running surface of the access road would be surfaced with scoria or crushed rock obtained from a previously approved location. Other interim reclamation measures to be accomplished within the first year include reduction of the cut and fill slopes, redistribution of stockpiled topsoil, installation of erosion control measures, and reseeding as recommended by the BIA. The outslope portions of the road would be covered with stockpiled topsoil and re-seeded, reducing the residual access-related disturbance to about 28' wide.

Final reclamation would occur either in the very short term if the proposed well is commercially unproductive, or later upon final abandonment of commercial operations. All disturbed areas would be reclaimed, reflecting the BIA view of oil and gas exploration and production as temporary intrusions on the landscape. All facilities would be removed, well bores would be plugged with cement and dry hole markers would be set. The access road and work areas

would be leveled or backfilled as necessary, scarified, re-contoured and re-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. Please refer to the Surface Use Plan within the attached APDs in Section 7 for further detail regarding both interim and final reclamation measures. Figures 7 and 8 show an example of reclamation from the Gold Book.

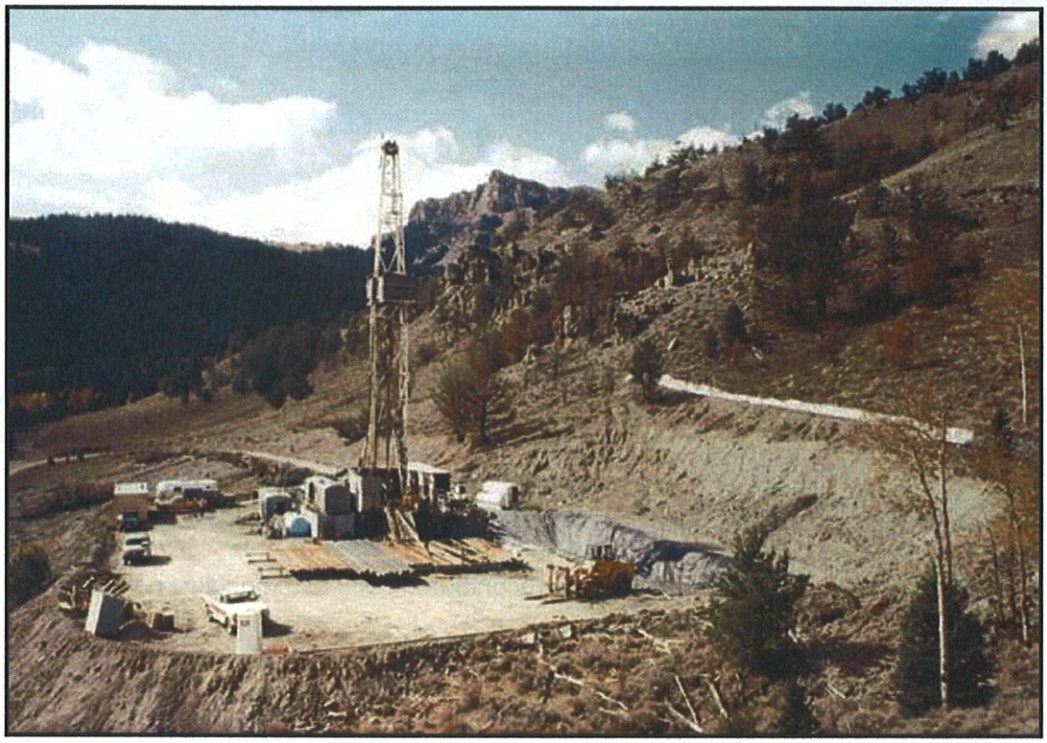


Figure 7. Typical well pad during operation.
The well pad and access road are constructed to the minimum size necessary to safely conduct drilling and completion operations.

Figure 8. Well pad after reclamation.
The well pad and access road have been recontoured back to the original contour, the topsoil respread, and the site revegetated.

2.10 Preferred Alternative

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

3.0 The Affected Environment and Potential Impacts

The Fort Berthold Indian Reservation is the home of the Three Affiliated Tribes of the MHA Nation. Located in west-central North Dakota, the Reservation encompasses more than one million acres, of which almost half are held in trust by the United States for either the MHA Nation or individual allottees. The remainder of the land is owned in fee simple title, sometimes by the MHA Nation or tribal members, but usually by non-Indians. The Reservation occupies portions of six counties, including Dunn, McKenzie, McLean, Mercer, Mountrail, and Ward. In 1954, the Garrison Dam was completed, inundating much of the Reservation. The remaining land was divided into three sections by Lake Sakakawea, an impoundment of the Missouri River upstream of the dam.

The proposed well(s) and access road are situated geologically within the Williston Basin, where the shallow structure consists of sandstones, silts and shales dating to the Tertiary Period (65 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 activities within the Reservation were limited and commercially unproductive, recent economic and technological advancement have created feasible access to the Bakken Formation.

The Reservation is within the northern Great Plains ecoregion, which consists of four physiographic units:

- Missouri Coteau Slope north of Lake Sakakawea;
- Missouri River Trench (that part not flooded);
- Little Missouri River Badlands; and
- Missouri Plateau south and west of Lake Sakakawea

Much of the Reservation is located on the Missouri Coteau Slope and is comprised of a glaciated gently rolling landscape. Elevations of the Reservation range from 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 to 17 inches. Mean temperatures fluctuate between -3° and 21°F in January and between 55° to 83° in July, with 95 to 130 frost-free days each year (Bryce *et al.* 1998; High Plains Regional Climate Center 2008).

The proposed well site and spacing units are in a rural area consisting primarily of grassland, shrubland, and cropland that is currently farmed, idle or used to graze livestock. The landscape has been previously disturbed by dirt trails and graveled and paved roadways.

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

- Air quality;
- Public health and safety;
- Water resources;
- Wetland/riparian habitat;
- Threatened and endangered species;
- Soils;
- Vegetation and invasive species;

- Cultural resources;
- Socioeconomic conditions; and
- Environmental justice.

Potential impacts to these elements are analyzed for both the No Action Alternative and the Preferred Alternative. Impacts may be beneficial or detrimental, direct or indirect, and short-term or long-term. This EA also analyzes the potential for cumulative impacts and ultimately makes a determination as to the significance of any impacts. In the absence of significant negative consequences, it should be noted that a significant benefit from the project does *not* in itself require preparation of an EIS. After consideration of the no-action alternative, existing conditions and potential impacts from the proposed projects are described below.

3.1 The No Action Alternative

Under the No Action Alternative, the proposed projects will not be constructed, drilled, installed, or operated. Existing conditions will not be impacted for 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, disposition of potentially harmful biological material, trucking, and other traffic will 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 resulting from the discovery of resources at these well locations.

3.2 Air Quality

The North Dakota Department of Health (NDDH) network of Ambient Air Quality Monitoring (AAQM) stations includes Watford City in McKenzie County, Dunn Center in Dunn County, and Beulah in Mercer County. These stations are located west, south, and southeast of the proposed well site. Criteria pollutants tracked under National Ambient Air Quality Standards (NAAQS) of the *Clean Air Act* include sulfur dioxide (SO_2), particulate matter (PM_{10}), nitrogen dioxide (NO_2), and ozone (O_3). Two other criteria pollutants – lead (Pb) and carbon monoxide (CO) – are not monitored by any of three stations. Table 1 summarizes federal air quality standards and available air quality data from the three-county study area.

Table 1. Summary of federal air quality standards and available air quality data from Dunn, McKenzie, and Mercer Counties, ND.

Pollutant	Averaging Period	NAAQS ($\mu g/m^3$)	NAAQS (ppm)	County		
				Dunn	McKenzie	Mercer
SO_2	24-Hour	365	0.14	0.004 ppm	0.004 ppm	0.011 ppm
	Annual Mean	80	0.3	0.001 ppm	0.001 ppm	0.002 ppm
PM_{10}	24-Hour	150	--	50 ($\mu g/m^3$)	35 ($\mu g/m^3$)	35 ($\mu g/m^3$)
	Annual Mean	50	--	--	--	--
$PM_{2.5}$	24-Hour	35	--	--	--	--
	Weighted Annual Mean	15	--	--	--	--
NO_2	Annual Mean	100	0.053	0.002 ppm	0.001 ppm	0.003 ppm
CO	1-Hour	40,000	35	--	--	--
	8-Hour	10,000	9	--	--	--
Pb	3-Month	1.5	--	--	--	--
O_3	1-Hour	240	0.12	0.071 ppm	0.072 ppm	0.076 ppm
	8-Hour	--	0.08	0.061 ppm	0.066 ppm	0.067 ppm

North Dakota was one of nine states in 2006 that met standards for all criteria pollutants. The state also met standards for fine particulates and the eight-hour ozone standards established by the U.S. Environmental Protection Agency (EPA) (NDDH 2007). The three counties addressed in Table 1 are also in full attainment and usually far below established limits for these pollutants (American Lung Association 2006). The Clean Air Act mandates prevention of significant deterioration in designated attainment areas. Class I areas are of national significance and include national parks greater than 6,000 acres in size, national monuments, national seashores, and federal wilderness areas larger than 5,000 acres and designated prior to 1977. There is a Class I air shed at nearby Theodore Roosevelt National Park (TRNP), which covers approximately 110 square miles in three units within the Little Missouri National Grassland between Medora and Watford City, located 30-40 miles west of the proposed projects. The reservation can be considered a Class II attainment air shed, which affords it a lower level of protection from significant deterioration.

The proposed projects are similar to other nearby approved previously installed projects. Construction, drilling, and tanker traffic will generate temporary, intermittent, and nearly undetectable gaseous emissions of particulates, SO_2, NO_2, CO_2, and volatile organic compounds. Road dust will be controlled as necessary. Best management practices will be used to limit emissions for the immediate project areas (BLM 2005). No detectable or long-term impacts to air quality or visibility are expected within the air sheds of the Reservation, state, or TRNP. No laws, regulations or other requirements have been waived; no monitoring or compensatory measures are required.

3.3 Public Health and Safety

Health and safety concerns include naturally occurring toxic gases, hazardous materials used or generated during installation or production, and hazards posed by heavy truck traffic associated with drilling, completion, and production activities.

Hydrogen sulfide gas (H_2S) is extremely toxic in concentrations above 500 parts per million (ppm), but it has not been found in measurable quantities in the Bakken Formation. Before reaching the Bakken, however, drilling will penetrate the Mission Canyon Formation, which is known to contain varying concentrations of H_2S. Release of H_2S at dangerous concentrations is very unlikely. Contingency plans submitted to BLM comply fully with relevant portions of *Onshore Oil and Gas Order 6* to minimize potential for gas leaks during drilling. Emergency response plans protect both the drilling crew and the general public within one mile of a well; precautions include automated sampling and alarm systems operating continuously at multiple locations on the well pad.

Table 2. Distance and location of residences from the proposed well site(s).

Well Name	Nearest year-round residence(s)	# of Seasonal and Year-Round Residences w/in 1 mile	# of Seasonal and Year-Round Residences w/in 5 miles
MHA #1-04H-149-90 MHA #1-10-15H-149-90	1,930' Northeast	89	110

Satellite imagery was used to identify nearby year-round and seasonal residences within one and five miles of the proposed well site. The closest permanent residence is located 1,930' (< 0.4 mile) to the northeast of the site. There are also two seasonal lake cabin areas, which include 24 seasonal housing units (Deep Water Bay Cabin Site) located less than 1,780 ' (<0.3 miles) to the southwest and 64 seasonal housing units (Fish-Camp Court) 3,900' (0.75 miles) southeast of the site.

Negative impacts from construction will be largely temporary. Noise, fugitive dust, and traffic hazards will be prevalent during the construction, drilling, and well completion (approximately 60 days) and then diminish quickly during commercial operation. Approximately 50 trips during several days will be needed to transport the drilling rig and associated equipment to the site. The same amount of traffic will be required to dismantle and transport the drilling rig following the completion of the drilling operations.

One small pick-up will travel to the well pad daily if the wells prove productive. Natural gas will initially be flared during production and the produced oil and water will be trucked away from the well site. Tanker truck activity depends directly on production of each well. Initially a successful Bakken Formation well usually produces both oil and water at a high rate. Upwards of 500 barrels of oil and 100 barrels of water per day might be expected during the initial months of production. Daily production typically decreases by 50% or more after the initial months. An oil tanker usually hauls 140 barrels and a water tanker holds 110 barrels per load. Four oil tankers and one water tanker may visit each well per day during the initial months of production. This number will decline dramatically as production declines. Established load restrictions for state and BIA roadways will be followed and appropriate haul permits will be acquired. All traffic must be confined to approved routes and conform to load and speed limits.

The EPA specifies chemical reporting under Title III of the *Superfund Amendments and Reauthorization Act* (SARA) of 1986, as amended. No materials used or generated by these projects for production, use, storage, transport, or disposal are on either the SARA list or on EPA's list of extremely hazardous substances in 40 CFR 355. Project designs and operational precautions mitigate against impacts from toxic gases, hazardous materials, and/or traffic. All operations, including flaring, will conform to instructions from BIA fire management staff.

Impacts from the proposed projects are considered minimal to unlikely. No laws regulations, or requirements have been waived; no compensatory mitigation measures are required.

3.4 Water Resources

3.4.1 Surface Water

The proposed wells are located on a glaciated upland in the Missouri River Regional Water Basin (Figure 9). Surface water runoff generally starts as sheet-flow until collected by ephemeral drainages leading to Lake Sakakawea. The ephemeral drainages, in turn, combine to form intermittent and/or perennial streams that flow into Lake Sakakawea.
Lake Sakakawea is part of the Missouri River sub-regional watershed and is the receiving water for runoff from the land area surrounding the well site.

3.4.1.1 MHA #1-04H-149-90 and MHA #1-10-15H-149-90

The MHA #1-04H-149-90 and MHA #1-10-15H-149-90 well site is located within the Lake Sakakawea sub-basin, the Deepwater Creek watershed and Lower Deepwater Creek sub-watershed. Surface water runoff from the well location flows west and southwest into the section line road ditch, then directly into the Deepwater Bay intermittent drainage and into Lake Sakakawea. The drainage distance from the proposed well pad to Lake Sakakawea is less than one-half mile (Table 3).

Table 3. Distance from MHA #1-04H-149-90 and MHA #1-10-15H-149-90 to Receiving Water

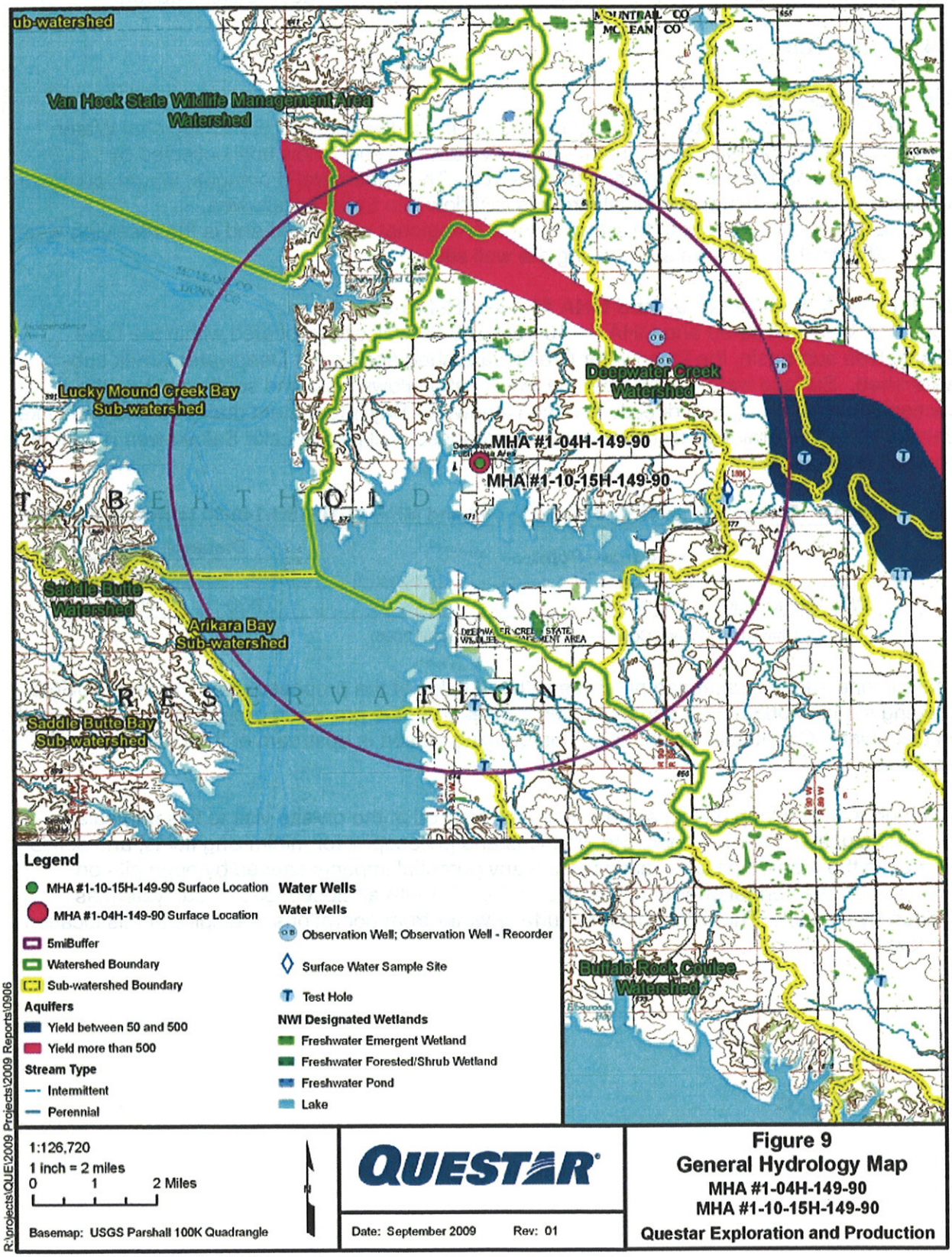
Source - Point	Distance	
	feet	mile
Well Site to Lake Sakakawea[1]	1,900	<0.4

[1]Lake level based on McLean County Aerial Photograph (NAIP 2006)

There is one surface water sampling site within 5 miles of the proposed site. This is the USGS gauging station #06332770, approximately 4 miles from the proposed project area, at the Mouth on Deepwater Creek near Raub, ND. This gauging station is upstream of the proposed well locations.

Although a closed loop drilling system was not required at the on-site visit to this particular location, Questar's normal operating practices and philosophy for minimizing fluids, and solids control, in the reserve pit will greatly reduce any potential impacts caused by open pits on location. These normal operating practices fall in-line with a "closed loop" mud system as defined by the BIA. The risks posed to surface water from operations and spills at this location are low.

Figure 9. General Hydrology Map



3.4.2 Groundwater

3.4.2.1 McLean County

The preglacial rocks in McLean County contain thick sequences of water-bearing rocks, but only those at relatively shallow depths are of importance as aquifers. These aquifers occur in the Fox Hills and Hell Creek Formations of Cretaceous age and the Fort Union Group of Paleocene age.

The Fox Hills Formation underlies the entire county. It consists of interbedded sandstone, shale, and siltstone and ranges in thickness from 233 to about 450 feet. The depth to the top of the formation ranges from about 540 feet in the eastern part of the county to about 1,200 feet in the western part.

The Hell Creek Formation, which conformably overlies the Fox Hills Formation, consists of interbedded silty shale and sandstone. In the eastern part of the county, the Hell Creek Formation was reached at a depth of 317 feet where it has a total thickness of 223 feet. The depth and thickness of the formation in the western part of the county is unknown.

3.4.3 Water Wells and Water Use Permits

There are no domestic water supply wells within five miles of the proposed well site.
There are two recorded ground observation wells within five miles of the MHA #1-04H-149-90 and MHA #1-10-15H-149-90 well site (Table 4). The ground observation wells are both drilled into the White Shield aquifer and are recorded as ground water observation wells. The closest of the wells is located in the NW¼NW¼ of Section 31, T150N, R89W; approximately 3.4 miles northeast of the proposed site. The other well is very close to the aforementioned located in the NE¼NE¼ of Section 36, T150N, R90W; approximately 3.5 miles northeast of the proposed site. There are no records from the State Water Commission indicating the status, production rate, or quality of water for these wells.

There are no current water use permits documented within 5 miles of this well site.

Table 4. Water wells within 5 miles of MHA #1-04H-149-90 and MHA #1-10-15H-149-90 well site.

LOCATION	Distance (miles) to MHA #1-04H and #1-10H-149-90	Purpose	Aquifer/ Source	Well Depth (feet)	Date
NW NW 31 T150N R89W	3.4	Observation Well	White Shield	360	7/24/1970
NE NE 36 T150N R90W	3.5	Observation Well	White Shield	380	7/27/1970

[1] ND State Water Commission 2009

Water quality will be protected by drilling with fresh water to a point below the base of the Fox Hills Formation, implementing proper hazardous materials management, and using appropriate casing and cementing. Drilling would proceed in compliance with *Onshore Oil and Gas Order* 2, *Drilling Operations* (43 CFR 3160). If cement circulation is lost, a cement bond log would be required by BLM to ascertain if remedial cementing is required to provide an adequate seal between casing and strata. Surface casing would be cemented in place to a depth of about 2,500 feet, isolating aquifers in the Fox Hills Formation and extending a minimum of 50 feet into

the underlying Pierre shale. Intermediate casing would extend from the surface and be cemented as needed to isolate potentially productive water and hydrocarbon-bearing zones.

Seepage and infiltration of hazardous materials from the reserve pits are considered unlikely due to mandatory construction and linear specifications, including a minimum of two feet of freeboard at all times. There would be no other pits or lagoons. Impacts to shallow aquifers from surface activities and spills would be avoided or managed by implementation of a Spill Prevention, Control, and Countermeasure (SPCC) Plan.

Produced water would be captured in tanks on-site and periodically trucked to an approved disposal site. BIA and BLM would monitor all operations and review site records at their discretion. Evidence of groundwater contamination related to the projects would result in a stop work order until all remedial measures were identified and implemented. These and other construction and reclamation techniques included in the APDs would minimize the potential for impacts to both surface water and groundwater. No significant impacts to surface water or groundwater are expected because of the proposed actions. No applicable laws or regulations would be waived; no compensatory mitigation measures are required to protect surface water or groundwater.

3.5 Wetlands, Habitat, and Wildlife

3.5.1 Wetlands

National Wetland Inventory (NWI) maps maintained by the United States Fish and Wildlife Service (USFWS) identify no jurisdictional wetlands within the project area. No wetlands were previously recorded near the proposed projects. On-site assessments conducted in June 2009 with representatives from BIA and BLM confirmed that riparian or wetland habitats would not be impacted by the proposed road or wells at this location.

3.5.2 Species of Concern

Assessments for Federally listed threatened and endangered species were conducted by evaluating historic and present occurrences, and by determining if potential habitat exists within the project area. Determinations were made concerning direct and cumulative effects of the proposed activities on each species and their habitat. Currently, six species and one Designated Critical Habitat are listed in both McLean and Mountrail Counties, North Dakota (Table 5).

Table 5. County status of Endangered, Threatened, and Candidate species and Designated Critical Habitat

Species	Status	County	
		McLean	Mountrail
Interior Least Tern	Endangered	X	X
Whooping Crane	Endangered	X	X
Black-footed Ferret	Endangered		
Pallid Sturgeon	Endangered	X	X
Gray Wolf	Endangered	X	X
Piping Plover	Threatened	X	X
W Prairie Fringed Orchid	Threatened		
Dakota Skipper	Candidate	X	X
Designated Critical Habitat - Piping Plover		X	X

[1] USFWS (updated May 15, 2009)

3.5.3 Species Assessments

Assessments for Federally listed threatened, endangered species were conducted by evaluating historic and present occurrences and by determining if potential habitat exists within the project area. Determinations made for federally listed species are:

- No effect
- Is not likely to adversely affect
- Is likely to adversely affect
- Is likely to jeopardize a proposed species or adversely modify critical habitat
- Is not likely to jeopardize a proposed species or adversely modify critical habitat

3.5.3.1 Gray Wolf

Gray wolves, an Endangered Species in North Dakota, were historically found throughout much of North America including the Upper Great Plains. Human activities have restricted their present range to the northern forests of Minnesota, Wisconsin, and Michigan and the Northern Rocky Mountains of Idaho, Montana, and Wyoming. They now only occur as occasional visitors in North Dakota. The most suitable habitat for the gray wolf in North Dakota is found around the Turtle Mountains region where documented and unconfirmed reports of gray wolves have occurred (Grondahl and Martin, no date). The proposed projects will have ***no effect*** on this species at this time.

3.5.3.2 Interior Least Tern

The interior least tern nests on midstream sandbars along the Yellowstone and Missouri River systems. Interior least terns construct bowl-shaped depression nests on sparsely vegetated sandbars and sandy beaches. Their nesting period occurs between mid-May through mid-August. The proposed projects will not disrupt the Missouri River habitat. The proposed location is set back (more than ½ mile) from the Missouri River system and will have ***no effect*** on this species at this time.

3.5.3.3 Pallid Sturgeon

Pallid sturgeons are found within the Mississippi, Missouri, and Yellowstone River systems. Pallid sturgeon populations in North Dakota have decreased since the 1960's (Grondahl and Martin, no date). The proposed projects will not disrupt the Missouri River habitat. The proposed projects will have ***no effect*** on this species at this time.

3.5.3.4 Whooping Crane

The primary nesting area for the whooping crane is in Canada's Wood Buffalo National Park. Aransas National Wildlife Refuge in Texas is the primary wintering area for whooping cranes. In the spring and fall, the cranes migrate primarily along the Central Flyway. During the migration, cranes make numerous stops, roosting in large shallow marshes, and feeding and loafing in harvested grain fields. The primary threats to whooping cranes are power lines, illegal hunting, and habitat loss (Texas Park and Wildlife 2008).

The proposed well site is located within the Central Flyway. Approximately 75% of the whooping crane state sightings in North Dakota occur within a 90-mile corridor that includes the proposed well locations. Because collisions with power lines are the primary cause for fledgling mortality, any proposed power lines should be buried. If underground lines are not an option, power lines should be well-marked following specifications made by federal agencies. Following these guidelines, it is reasonable to expect that the proposed activities are not likely to adversely affect whooping cranes.

The proposed wells have been placed in a location that will have the least impact on whooping cranes; that is near roads, power lines, and building sites. Activities may cause any migratory cranes to divert from the area but is not likely to result in any fatalities. Any sightings should be immediately reported to the USFWS, NDGFD, and/or the BIA.

3.5.3.5 Piping Plover

Piping plovers are found along the Missouri and Yellowstone River systems and on large alkaline wetlands. Nesting sites have been documented on the shorelines of Lake Sakakawea. In addition, critical habitat has been designated along Lake Sakakawea. The proposed well locations are not within line-of-sight of Missouri River habitat.

The projects will not disrupt the Missouri River habitat or any designated Critical Habitat. The proposed projects will have ***no effect*** on this species at this time and ***no effect*** on critical habitat.

3.5.3.6 Dakota Skipper

Dakota skippers are currently listed as a candidate species in North Dakota and have been documented in Mountrail County. Larvae of the Dakota skipper feed on grasses, favoring little bluestem. Adults emerge in mid-June, feeding on the nectar of flowering native forbs. Harebell (*Campanula rotundifolia*), wood lily (*Lilium philadelphicum*), and purple coneflower (*Echinacea angustifolia*) are common components of their diet (Canadian Wildlife Service, 2004). Dakota skippers are most likely to be found along river valleys or in mesic segments of mixed grass prairie.

The proposed site is located in an agricultural field containing no critical habitat of the Dakota skipper. The proposed projects will have ***no effect*** on this species at this time.

3.5.4 Wildlife (General)

Any wildlife or wildlife habitats around the proposed site were noted and evaluated (**Table 6. Wildlife (General)**Table 6). Some of these were confirmed by direct observation or by various signs. Potential wildlife sightings may be affected by time of day, time of year, etc.

Table 6. Wildlife (General)

Location	Observed	Suitable Habitat
MHA #1-04H-149-90 MHA #1-10-15H-149-90	none	none

Potential impacts to wildlife include construction of the well pad, upgrading of existing two-track trails, construction of new roads, and potential future commercial operations. Minimal to no impacts on listed species are expected due to the sparseness of even anecdotal evidence that they may occur within the project area. On-site assessments confirmed that no threatened or endangered species would be impacted by the proposed road or wells. Ground clearing should not impact habitat for unlisted species, small birds, ground dwelling mammals or other wildlife species. The proposed projects will not affect raptor and migratory bird species through direct mortality, habitat degradation, and/or displacement of individual birds. These impacts are regulated in part through the *Migratory Bird Treaty Act* (916 USC 703-711).

Precautions benefitting all wildlife include:

- Locations overlying existing disturbances;
- Netting of the reserve pit in the interval between drilling and reclamation of the pit;
- Prompt removal of oil from open pits or ponds;
- Installation of covers on drip buckets under valves or spigots; and
- Prompt initial reclamation.

Final and complete reclamation would proceed immediately if the wells are unproductive, or promptly after a commercial well is decommissioned. Wildlife inhabiting the project area are generally expected to adapt to changing conditions and continue to thrive.

3.6 Soils

The following paragraphs discuss soils found at the well site. The Natural Resource Conservation Services (NRCS) soils data was reviewed prior to the on-site assessment and verified during the field visit. Soils on the site are well drained with minimal erosion potential. The site is suitable for construction and surface soils will allow for successful reclamation. The site should be monitored for erosion and best management practices implemented to control erosion as necessary.

3.6.1 MHA #1-04H-149-90 and MHA #1-10-15H-149-90

The proposed well site is located on a relatively level agricultural field. The NRCS has identified one soil Mapping Unit (MU), Farnuf loam (FfA) with 0 to 2 percent slopes, on the proposed well site and access road (Table 7). The on site assessment confirmed that surface soils consist of clay loams with some sand present. The soils are generally light brown in color. Topsoil across the site is approximately 10" deep. Surface soils are suitable for construction and will lend well to reclamation.

Table 7. Soil Types

Soil Name	Pad Acres	Road Acres	Total Acres
Farnuf	4.4	<0.1	4.5

3.7 Vegetation and Noxious Weeds

The Missouri Plateau Ecoregion (Missouri Slope) is a western mixed-grass and short-grass prairie (Bryce et al. 1998). The U.S. Department of Agriculture soil surveys for McLean and Mountrail Counties describe vegetation within the proposed project areas as mostly cultivated farmlands, native grasses, and wetland plants. Common grain and seed crops include wheat, oats, flax, canola, and barley. Native grasses include big bluestem, little bluestem, blue grama, side-oats grama, green needlegrass, and western wheatgrass. Typical wetland plants are smartweed, sedge species, bulrush, bluejoint and cattail. Woody draws, coulees, and drainages may host communities of chokecherry, buffaloberry, western snowberry and gooseberry.

3.7.1 MHA #1-04H-149-90 and MHA #1-10-15H-149-90

The MHA #1-04H-149-90 and MHA #1-10-15H-149-90 proposed dual well pad is located on relatively level agricultural ground. The field was planted with a legume crop (peas). The ditches surrounding the field contained crested wheatgrass (*Bromus inermis*), smooth brome grass (*Bromus inermis*) and alfalfa (*Medicago sativa*). There were no noxious weeds or threatened or endangered plant species observed on the site.

3.7.2 Noxious Weeds

The North Dakota Agriculture Commission (ND Department of Agriculture 2002) identifies twelve noxious weed plant species in the state (Table 8). Nine of the twelve noxious weed species have been reported in the county. Absinth wormwood, Canada thistle, field bindweed, leafy spurge, musk thistle, saltcedar, spotted knapweed, Russian knapweed and yellow star thistle are known to occur in McLean County (ND Department of Agriculture 2007). None of these were observed on the proposed well pad site during the on-site assessment.

Table 8. Noxious weeds known to occur in McLean and Mountrail Counties

Common Name	Scientific Name	5 year (2003-2007) Average Reported Acres of Noxious Weeds[1]	
		McLean County	Mountrail County
Absinth wormwood	*Artemisia absinthium*	1,825	1,085
Canada thistle	*Cirsium arvense*	7,102	21,232
Dalmatian toadflax	*Linaria genistifolia*	NR	NR
Diffuse knapweed	*Centaurea diffusa*	NR	NR
Field bindweed	*Convolvulus arvensis*	1,756	1,429
Leafy spurge	*Euphorbia esula*	1,598	21,928
Musk thistle	*Carduus nutans*	193	2
Purple loosestrife	*Lythrum salicaria*	NR	NR
Russian knapweed	*Acroptilon repens*	5	NR
Saltcedar	*Tamarix spp.*	38	721
Spotted knapweed	*Centaurea maculosa*	3	164
Yellow starthistle	*Centaurea solstitialis*	5	NR

[1] North Dakota Department of Agriculture 2003-2007
[2] Not Reported

Potential disturbance of 4.5 acres presents opportunities for invasive species and threatens to reduce the quality or quantity of forage or crop production. The APDs and this EA require the operator to control noxious weeds throughout the project area. Vehicles that have been driven in areas with invasive species must be cleaned with high-pressure sprayers before entering the project area.

Surface disturbance and vehicular traffic must not take place outside approved rights-of-way or the well pad. Areas stripped of topsoil must be re-seeded and reclaimed at the earliest opportunity. 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 effectively negate the potential to establish or spread invasive species.

3.8 Cultural Resources

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

The area of potential effect (APE) of any federal undertaking must also be evaluated for significance to Native Americans from a cultural and religious standpoint. Sites and practices may be eligible for protection under the *American Indian Religious Freedom Act of 1978* (42 USC 1996). Sacred sites

may be identified by a tribe or an authoritative individual (Executive Order 13007). Special protections are afforded to human remains, funerary objects, and objects of cultural patrimony under the *Native American Graves Protection and Repatriation Act* (NAGPRA, 25 USC 3001 *et seq.*).

Whatever the nature of the cultural resource addressed by a particular statute or tradition, implementing procedures invariably include consultation requirements at various stages of a federal undertaking. The MHA Nation has designated a Tribal Historic Preservation Officer (THPO) by Tribal Council resolution, whose office and functions are certified by the National Park Service. The THPO operates with the same authority exercised in most of the rest of North Dakota by the State Historic Preservation Officer (SHPO). As a result, BIA consults and corresponds with the THPO on all projects proposed within the exterior boundaries of the Fort Berthold Reservation. The SHPO may have useful information, but has no official role regarding proposed federal actions on trust land. The MHA Nation has also designated responsible parties for consultations and actions under NAGPRA and cultural resources generally.

A cultural resource inventory of this well pad and access road were conducted by personnel of Kadrmas, Lee & Jackson, Inc., using an intensive pedestrian methodology. Approximately 10 acres were inventoried on May 18, 2009 (Ó Donnchadha 2009). No historic properties were located within the project area 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 these undertakings. The THPO concurred on June 18, 2009.

3.9 Socio-economics

Socioeconomic conditions include population, demographics, income, employment, and housing. These conditions can be analyzed and compared at various scales. This analysis focuses on the reservation, the four counties that overlap most of the Reservation and the state of North Dakota. The state population showed little change between the last two censuses (1990–2000), but there were notable changes locally, as shown in Table 3.9a. Populations in Dunn, McKenzie, McLean, and Mountrail counties declined 5 to 11%, while population on the Fort Berthold Reservation increased by almost 10%. These trends are expected to continue (Rathge *et al.* 2002). While American Indians are the predominant group on the reservation, they are a minority elsewhere in the state. More than two-thirds (3,986) of the Reservation population are tribal members.

Table 3.9a: Population and Demographics

County or Reservation	Population in 2000	% of State Population	% Change 1990-2000	Predominant Group	Predominant Minority
Dunn County	3,600	0.56%	- 10.1%	White	American Indian (12%)
McKenzie County	5,737	0.89%	- 10.1%	White	American Indian (21%)
McLean County	9,311	1.45%	- 11.0%	White	American Indian (6%)
Mountrail County	6,631	1.03%	- 5.6%	White	American Indian (30%)
Fort Berthold Reservation	5,915	0.92%	+ 9.8%	American Indian	White (27%)
Statewide	642,200	100%	+ 0.005%	White	American Indian (5%)

Source: U.S. Census Bureau 2007.

In addition to the ranching and farming that are employment mainstays in western North Dakota, employment on the reservation largely consists of ranching, farming, tribal government, tribal enterprises, schools, and federal agencies. The MHA Nation's Four Bears Casino and Lodge, near

New Town, employs over 320 people, 90% of which are tribal members (Three Affiliated Tribes 2008).

As shown in Table 3.9b, counties overlapping the Reservation tend to have per capita incomes, median household incomes, and employment rates that are lower than North Dakota statewide averages. Reservation residents have lower average incomes and higher unemployment rates compared to the encompassing counties. MHA Nation members are in turn disadvantaged relative to overall Reservation incomes and unemployment rates that average in non-Indian data. The most recent census found that per capita income for residents of the Reservation is $10,291 (less than ⅓ the state average). Overcrowded housing skews the median reservation household income upward to $26,274 (about ⅓ the state average). A BIA report in 2003 found that 33% of *employed* MHA Nation members were living below federal poverty levels. The unemployment rate for tribal members is 22 %, compared to 11.1% for the reservation as a whole and 4.6% statewide.

Table 3.9b: Income and Unemployment

Unit of Analysis	Per Capita Income	Median Household Income	Unemployment Rate (2007)	Employed but Below Poverty Level	Percent of All People in Poverty
MHA Nation members	--	--	22 %	33 %	Unknown
Fort Berthold Reservation	$ 10,291	$ 26,274	11.1 %	--	Unknown
Mountrail County	$ 29,071	$ 34,541	5.8 %	--	15.4%
Dunn County	$ 27,528	$ 35,107	3.4 %	--	13%
McKenzie County	$ 27,477	$ 35,348	3.1 %	--	15.8 %
McLean County	$ 32,387	$ 37,652	4.7 %	--	12.8%
North Dakota	$ 31,871	$ 40,818	3.2 %	--	11.2 %

Source: U.S. Department of Agriculture Economic Research Data 2008 and BIA 2003.

Availability and affordability of housing could impact oil and gas development and operations. Housing information is summarized in Table 3.9c. The tribal 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. 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 3.9c: Housing Units – 2000 (U.S. Census Bureau 2007 and 2008).

Housing Development	Fort Berthold Reservation	Dunn County	McKenzie County	McLean County	Mountrail County
Existing Housing					
Owner-Occupied Units	1,122	1,570	2,009	4,332	2,495
Renter-Occupied Units	786	395	710	932	941
Total	1,908	1,965	2,719	5,264	3,436
New Private Housing Building Permits 2000-2005	--	18	4	135	113
Housing Development Statistics					
State rank in housing starts	--	51 of 53	15 of 53	21 of 53	17 of 53
National rank in housing starts	--	3112 / 3141	2498 / 3141	2691 / 3141	2559 / 3141

The proposed project is not expected to have measurable impacts on population trends, local unemployment rates or housing starts. Relatively high-paying construction jobs would result from exploration and development of oil and gas reserves on the reservation, but most of these opportunities are expected to be short-term. The proposed action would require temporary employees during the well construction cycle and one to two full-time employees for the long-term

production cycle. Short-term construction employment would provide some economic benefit. Long-term commercial operations would provide significant royalty income and indirect economic benefits.

3.10 Environmental Justice

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations*, was signed by President Clinton in 1994. The Order requires agencies to advance environmental justice (EJ) by pursuing fair treatment and meaningful involvement of minority and low-income populations in federal programs, policies, decisions and operations. Fair treatment means such groups should not bear a disproportionately high share of negative environmental consequences from such undertakings. Meaningful involvement means federal officials actively promote opportunities for public participation and that federal decisions can be materially affected by participating groups and individuals.

The U.S. Environmental Protection Agency (EPA) headed the interagency workgroup established by the 1994 Order and is responsible for related legal action. Working criteria for designation of targeted populations are provided in *Final Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analyses* (EPA 1998). This guidance uses a statistical approach to consider various geographic areas and scales of analysis to define a particular population's status under the Order.

Environmental Justice is an evolving concept with potential for disagreement over the scope of analysis and the implications for federal responsiveness. It is nevertheless clear that tribal members on the Great Plains qualify for EJ consideration as both a minority and low-income population. The population of the Dakotas is predominantly Caucasian. While some 70% of Reservation residents are tribal members, Indians comprise only 5% of North Dakota residents and 12% of the population of Dunn County. Even in a state with relatively low per capita and household income, Indian individuals and households are distinctly disadvantaged.

There are, however, some unusual EJ considerations when proposed federal actions are meant to benefit tribal members. Determination of fair treatment necessarily considers the distribution of both benefits and negative impacts, due to variation in the interests of various tribal groups and individuals. There is also potential for major differences in impacts to resident tribal members and those enrolled or living elsewhere. A general benefit to MHA Nation government and infrastructure has already resulted from tribal leasing, fees and taxes. Oil and gas leasing has also already brought much-needed income to MHA Nation members who hold mineral interests, some of whom might eventually benefit further from royalties on commercial production. Profitable production rates at the proposed location might lead to exploration and development on additional tracts owned by currently non-benefitting allottees. The absence of lease and royalty income does not, moreover, preclude other benefits. Exploration and development would provide many relatively high-paying jobs, with oversight from the Tribal Employment Rights Office.

The owners of allotted surface within the project area may not 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 compensatory for productive acreage lost to road and well pad or pipeline construction. Tribal members without either surface or mineral rights would not receive any direct benefits whatsoever. Indirect benefits of employment and general tribal gains would be the only potential offsets to negative impacts.

Potential impacts to tribes and tribal members include disturbance of cultural resources. There is potential for disproportionate impacts, especially if the impacted tribes and members do not reside within the Reservation and therefore do not share in direct or indirect benefits. This potential is significantly reduced following the survey of the proposed project location and determination by the

BIA that there will be no historic properties affected. Nothing is known to be present, furthermore, that qualifies for protection under the *American Indian Religious Freedom Act.* Potential for disproportionate impacts is further mitigated by requirements for immediate work stoppage following an unexpected discovery of cultural resources of any type. Mandatory consultations would take place during any such work stoppage, affording an opportunity for all affected parties to assert their interests and contribute to an appropriate resolution, regardless of their home location or tribal affiliation.

The proposed projects have not been found to pose significant impacts to any other critical element—air, public health and safety, water, wetlands, wildlife, soils or vegetation—within the human environment. Avoiding or minimizing such impacts also makes unlikely disproportionate impacts to low-income or minority populations. The proposed action offers many positive consequences for tribal members, while recognizing Environmental Justice concerns. Procedures summarized in this document and in applicable laws, rules and orders are binding and sufficient. No laws, regulations or other requirements have been waived; no compensatory mitigation measures are required.

3.11 Mitigation and Monitoring

Many protective measures and procedures are described in this document and in the APDs. No laws, regulations, or other requirements have been waived; no compensatory mitigation measures are required.

3.12 Irreversible and Irretrievable Commitment of Resources

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

3.13 Short-Term Use Versus Long-Term Productivity

Short-term activities will not detract significantly from long-term productivity of the project area. The small areas dedicated to the access road and well pad will be unavailable for livestock grazing, wildlife habitat, and other uses. Allottees with surface rights will be compensated for loss of productive acreage and the project footprint will shrink considerably once the wells are drilled and non-working areas are reclaimed and reseeded. Successful and ongoing reclamation of the landscape will quickly support wildlife and livestock grazing, stabilize the soil, and reduce the potential for erosion and sedimentation. The major long-term resource loss corresponds with the project purpose: extraction of hydrocarbons from the Bakken Formation.

3.14 Cumulative Impacts

The landscape and vegetation of the Great Plains have undergone continual transformations due to the influences of nature and human actions. Cumulative effects have occurred as a loss and alteration of habitats caused by cultivation, range management practices, fire suppression, exotic species introductions, resource development, and other practices. Environmental impacts may accumulate either over time or in combination with similar activities in the area. Unrelated activities may also have negative impacts on critical elements, thereby contributing to cumulative degradation of the environment. Past and current disturbances in the vicinity of the proposed projects include farming, grazing, roads, and other oil/gas wells. Current land uses are

expected to continue with little change, since undivided interests in the land surface are often held by tribal members other than those holding mineral rights. Virtually all available acreage is already organized into agricultural leases or range units to utilize surface resources for economic benefit; oil and gas development is not expected to have more than a minor effect on surface use patterns.

There will be no ground disturbing activities to lands that have not been previously cultivated or otherwise physically manipulated. There are no wetlands, floodplains, or major drainage facilities adjacent to the proposed well pad. Current land uses are expected to continue with little change other than that the acreage required for development will not be cultivated. **Increased truck traffic on adjacent roadways can be expected and has a documented negative, but manageable, impact on road conditions. This management will be necessary so as not to negatively affect the access road to the Deep Water Bay Recreation Boat Access Area, the Deep Water Bay Cabin Site and Fish-Camp Court seasonal residences.**

The discovery of the Bakken Formation has resulted in a dramatic increase in exploration. The proposed wells are located on the same pad, minimizing the surface footprint. Currently, there are no active well sites within five miles of the proposed well pad; however, Questar's long-range planning includes the development of at least two additional well pads in this general vicinity. Additionally, Hess and EOG Resources each have a confidential well location in the area.

Perimeters of 1, 5, 10, and 20 miles around the proposed well pad were evaluated to determine the level of oil and gas activity in the surrounding area, as shown in Table 9 and Figure 10. There are approximately 74 oil and gas wells actively operating within 20 miles of the proposed wells. Also within 20 miles, there are another 71 proposed well pads (not yet permitted), 21 sites that have been issued permits to drill and 14 sites where active drilling is taking place, or has recently finished. Overall, there are approximately 175 oil and gas wells that are either active, proposed, or being drilled within a 20-mile radius of the proposed wells. Several of these occur outside of the Fort Berthold Reservation in Mountrail County. On Fort Berthold there currently are 198 wells either active, proposed, permitted or being drilled according to the NDIC as of August 24, 2009.

Table 9. Oil and Gas Well Status in Area

Distance from Well Sites	Active Wells	Confidential or Proposed Wells	Permitted to Drill	Currently Drilling	**Totals**
0-1 miles	0	0	0	0	**0**
1-5 miles	0	5	0	0	**0**
5-10 miles	16	6	6	0	**28**
10-20 miles	58	60	15	14	**147**
Cumulative Total (20-mile radius)	**74**	**71**	**21**	**14**	**175**
Fort Berthold Reservation	**85**	**89**	**17**	**7**	**198**

*NDIC OG well status - August 24, 2009

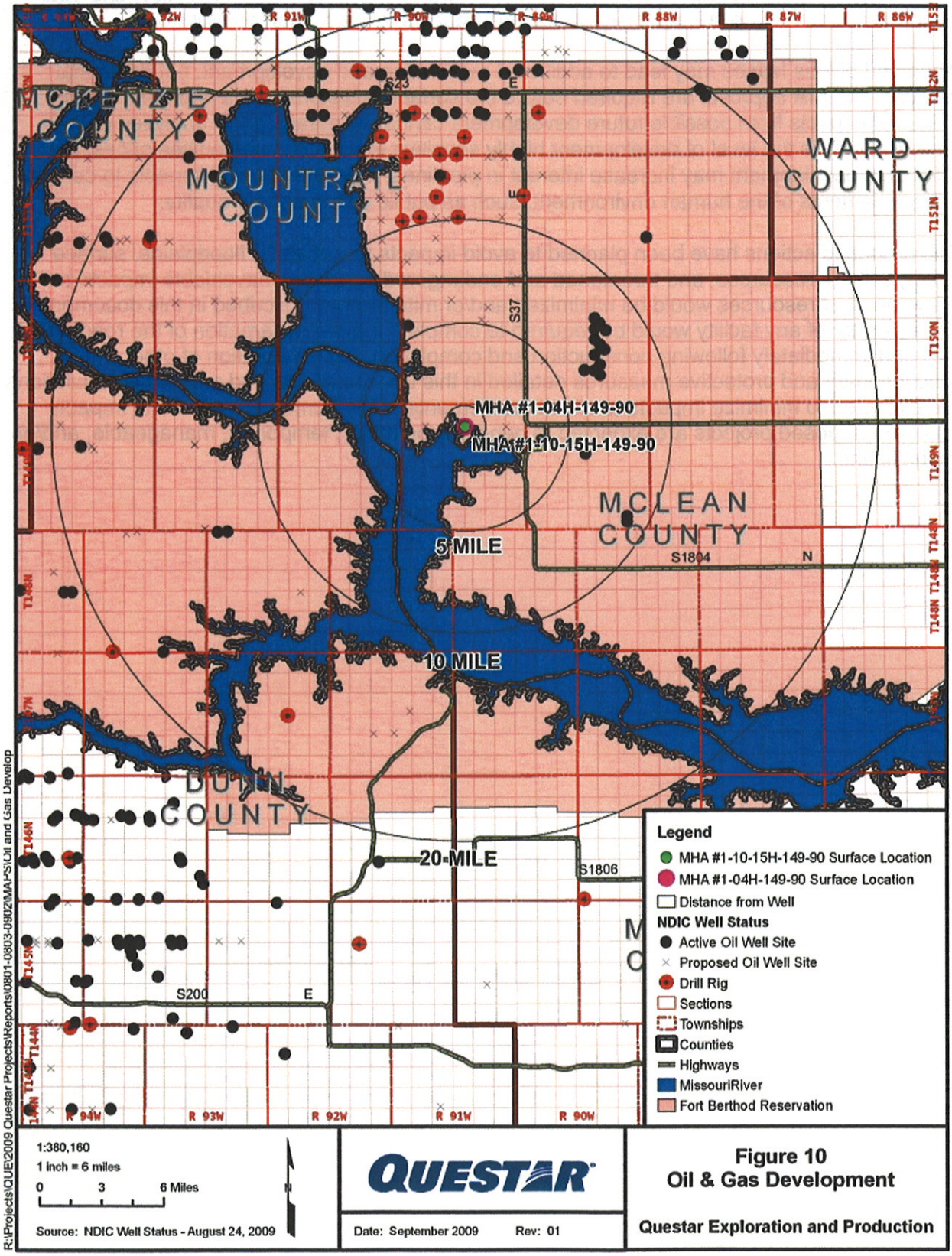
Currently there are relatively few constructed well pads within the reservation and near the proposed site. Commercial success of any new well might result in additional oil/gas

exploration proposals, but such developments are speculative at this time. Such developments would rely wherever possible on shared roads, centralized and downsized facilities, and other opportunities to reduce surface disturbance and impacts to the human environment.

Approved oil/gas leases may lead to additional exploration and development, but additional analysis and BIA approval are required before the surface is disturbed at any other location. Potential impacts from possible future development cannot be meaningfully analyzed at this time. Not only is the level of development highly sensitive to volatile commodities prices, but additional development may increase interest in pipelines, thereby *reducing* impacts to certain critical elements of the human environment, such as public safety and air quality.

The proposed actions have been planned to avoid impacts to wetlands, floodplains, surface water, cultural resources, and threatened and endangered species. Unavoidable impacts to these or other resources would be minimized and/or mitigated as described in this document. The operator of any facility would be required to complete interim reclamation of the road and well pad immediately following construction and completion. Implementation of other precautionary and protective measures detailed in this EA, the APDs, and applicable regulations are expected to minimize impacts to all critical elements of the human environment. Impacts from the proposed projects are expected to generally be minor, temporary, manageable, and/or insignificant.

Figure 10. Oil and Gas Development



4.0 Consultation and Coordination

The Bureau of Indian Affairs has completed many Environmental Assessments (EAs) for oil and gas projects at Fort Berthold since 2007. For the first 18 of these projects, prior notice was sent to about 60 tribes, government agencies, non-profit organizations, and individuals. BIA consulted directly and repeatedly with the U.S. Fish and Wildlife Service to identify issues and incorporate best management practices for wildlife protection. BIA also routinely cooperated on every project with the Bureau of Land Management regarding operational standards and reclamation procedures.

United States Department of the Interior

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

TAKE PRIDE IN AMERICA

IN REPLY REFER TO:
DESCRM
MC-208

JUN 0 3 2009

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

Dear Mr. Brady:

We have considered the potential effects on cultural resources of four oil well pads and access roads in Dunn and McLean Counties, North Dakota. Approximately 82.3 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 (16 USC 1996).

As the surface management agency, and as provided for in 36 CFR 800.5, we have therefore reached a determination of **no historic properties affected** for these undertakings. Catalogued as **BIA Case Number AAO-1626/FB/09,** the proposed undertakings, locations, and project dimensions are described in the following reports:

Ó Donnchadha, Brian
(2009) MHA 1-06H-149-91 Well Pad and Access Road: A Class III Cultural Resource Inventory, Dunn County, North Dakota. KLJ Cultural Resources for Questar Exploration and Production Company, Denver.

(2009) MHA 1-06H-149-92 Well Pad and Access Road: A Class III Cultural Resource Inventory, Dunn County, North Dakota. KLJ Cultural Resources for Questar Exploration and Production Company, Denver.

(2009) MHA 1-31H-150-91 Well Pad and Access Road: A Class III Cultural Resource Inventory, Dunn County, North Dakota. KLJ Cultural Resources for Questar Exploration and Production Company, Denver.

(2009) MHA 1-10H-149-90 & MHA 1-04H-149-90 Well Pad and Access Road: A Class III Cultural Resource Inventory, McLean County, North Dakota. KLJ Cultural Resources for Questar Exploration and Production Company, Denver.

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

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

Sincerely,

ACTING Regional Director

Enclosures

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

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

June 18, 2009

Carson Murdy
Regional Archeologist
Bureau of Indian Affairs
Great Plains Regional Office
115 Fourth Avenue SE
Aberdeen, SD, 57401

RE: Project # AAO-1626/FB/09
MHA 1-06H-149-91 well pad and access road
MHA 1-06H-149-92 well pad and access road
MHA 1-31H-150-91 well pad and access road
MHA 1-10H-149-90 well pad and access road
MHA 1-04H-149-90 well pad and access road

Dr. Murdy:

After review of the documentation provided, the Mandan Hidatsa Arikara Nations Tribal Historic Preservation Office concurs with the determination of 'No Adverse Affect'/No Historic Properties Affected' to any pre and post-historic relics, artifacts or sacred and cultural resources in the revised proposed Project area.

We respectfully request to be notified should any NAGPRA issue or others arise as the Project progresses.

Sincerely,

Perry Brady pc

Perry 'No Tears' Brady,
Tribal Historic Preservation Officer,
Mandan Hidatsa Arikara Nations.

5.0 List of Preparers

An interdisciplinary team contributed to this document, following guidance in Part 1502.6 of CEQ regulations. Portions of the documents were drafted by McCain and Associates, Inc, under contract to Questar and under the direction of BIA. Federal officials, oil and gas representatives, and consultants included the following:

Bureau of Indian Affairs
Division of Environment, Safety and Cultural Resource Management

Questar Exploration and Production
Tracy Opp, Contractor

McCain and Associates, Inc.
Todd Hartleben, Professional Engineer
Kathie Kjar, Senior Ecologist
Ryan Krapp, Wildlife Biologist/GIS Specialist
Greg Meyer, Ecologist

6.0 References and Acronyms

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Acronyms

AAQM	Ambient Air Quality Monitoring (site)
AIRFA	American Indian Religious Freedom Act
APD	Application for Permit to Drill
APE	Area of Potential Affect
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
CFR	Code of Federal Regulations
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
FONSI	Finding of No Significant Impact
GPRO	Great Plains Regional Office
MHA Nation	Three Affiliated Tribes of the Mandan, Hidatsa, and Arikara Nation
NAGPRA	Native American Graves Protection and Repatriation Act
NDCC	North Dakota Century Code
NDDH	North Dakota Department of Health
NDIC	North Dakota Industrial Commission
NDNH	North Dakota Natural Heritage
NDSWC	North Dakota State Water Commission
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NPAL	Northern Plains Agro-ecosystems Laboratory
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NTL	Notice to Lessees
SHPO	State Historic Preservation Officer
TCP	Traditional Cultural Property
TERO	Tribal Employment Rights Office
THPO	Tribal Historic Preservation Officer
TVD	Total Vertical Depth
USC	United States Code
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

7.0 Applications for Permit to Drill

Notice of Availability and Appeal Rights

Questar: MHA #1-04H-149-90
MHA #1-10-15H-149-90

The Bureau of Indian Affairs (BIA) is planning to issue administrative approvals related to installation of an oil/gas wells as shown on the attached map. Construction by Questar is expected to begin in 2009.

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

The FONSI is only a finding on environmental impacts – it is not a decision to proceed with an action and *cannot* be appealed. BIA's decision to proceed with administrative actions *can* be appealed until November 15, 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.