Environmental Assessment

United States Bureau of Indian Affairs

Great Plains Regional Office
Aberdeen, South Dakota

Arrow Midstream Holdings, LLC
Oil, Gas & Water Gathering System
Phase 1B – HWY 22

Fort Berthold Indian Reservation

December 2009

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

Finding of No Significant Impact

Arrow Midstream Holdings, LLC, Oil, Gas & Water Gathering System Phase 1B - HWY 22

The U.S. Bureau of Indian Affairs (BIA) received a proposal for construction of three pipelines (oil, gas and water) and a utilities line. The gathering system would be installed in a single 50-foot Right-of-Way (ROW) on the Fort Berthold Indian Reservation, in T148N, R94W, and T 149 N, R.94W in Dunn and McKenzie Counties, North Dakota. Associated federal actions by BIA include determinations of effect regarding cultural resources and approvals of leases, ROW and easements.

Potential of the proposed action 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 the proposed project will not significantly affect the quality of the human environment. No Environmental Impact Statement is required for any portion of the proposed activities. This determination is based on the following factors:

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

2. Protective and prudent measures were designed to minimize impacts to air, water, soil, vegetation, wetlands, wildlife, water resources, and cultural resources. The 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 was fully considered.

4. The proposed action was designed to avoid adverse effects to historic, archaeological, cultural, and traditional properties, sites, and practices. The Tribal Historic Preservation Officer has concurred with BIA's determination that no historic properties will be affected.

5. Environmental justice was fully considered.

6. Cumulative effects to the environment are either mitigated or minimal.

7. No regulatory requirements have been waived or require compensatory mitigation measures.

8. The proposed project will improve the socioeconomic condition of the affected Indian community.

Acting Regional Director – Great Plains Regional Office

12/17/09
Date

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1. Purpose and Need for the Proposed Action

Arrow Midstream Holdings, LLC (AMH) is proposing to construct and operate a trunk line extension of an oil, gas and water gathering system on the Fort Berthold Indian Reservation (Reservation). Plans also include a buried electrical power line. For convenience, this document will refer to these facilities collectively as "Phase 1B- HWY 22".

Development has been proposed on allotted and tribal land held in trust by the United States in McKenzie and Dunn Counties, North Dakota. The U.S. Bureau of Indian Affairs (BIA) is the surface management agency for potentially affected tribal lands and individual allotments. As shown in **Figure 1-1**, Phase 1B – HWY 22 would start in the NE¼SW¼ of Section 6, T148N, R94W and run north northeast for 4.85 miles, terminating in the NW¼SE¼ of Section 15, T149N, R94W. The proposed project is a branch of Arrow Midstream Holdings Pipeline (AMHP) currently under construction located in the north-central part of western North Dakota, roughly 80 miles south of the Canadian border and 60 miles east of Montana.

The economic development of available resources and associated BIA actions are consistent with BIA's general mission. Leasing and development of mineral resources offer substantial economic benefits to both the Three Affiliated Tribes of the Mandan, Hidatsa, and Arikara Nation (MHA Nation) and to individual tribal members. Phase 1B - HWY 22 is being proposed to reduce waste of valuable resources through continued flaring of gas and to mitigate environmental and public safety concerns – including visual impacts, noise, heavy truck traffic and road deterioration.

Oil and gas exploration and development activities are conducted under authority of the Indian Mineral Leasing Act of 1938 (25 United State Code [USC] 396a *et seq.*), the Gas Royalty Management Act of 1982 (30 USC 1701, *et seq.*), the Energy Policy Act of 2005 (42 USC 13522) and 25 Code of Federal Regulations (CFR) 169. BIA actions in connection with the proposed project are largely administrative and include approval of rights-of-way (ROW) and determinations regarding the effects on cultural resources.

This proposed federal action requires compliance with the *National Environmental Policy Act* of 1969 (NEPA) and analysis of the proposed project's potential to impact the human and natural environment. Compliance with NEPA is expected to both improve and explain federal decision making. This Environmental Assessment (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. Existing roads would be used to access Phase 1B – HWY 22 for construction or operation and would be maintained to existing or improved conditions. After the Phase 1B - HWY 22 corridor and facility pad were cleared and topsoil stockpiled, the pipeline trench would be excavated, pipelines installed and the trench promptly backfilled, re-graded, re-seeded and reclaimed. Analysis of potential impacts from this portion of the project is included in this document as reasonably foreseeable and stemming from BIA actions. All project components on tribal and allotted land would eventually be reclaimed and abandoned according to applicable federal and tribal conditions, unless formally transferred with federal approval to either the BIA or the landowner.

Any authorized project will comply with all applicable federal, state and tribal laws, rules, policies, regulations and agreements. No construction or other ground-disturbing operations will begin until all necessary leases, easements, surveys, clearances, consultations, permissions, determinations and permits are in place. Additional NEPA analysis, findings and federal actions will be required prior to development beyond what is described and analyzed in this EA.

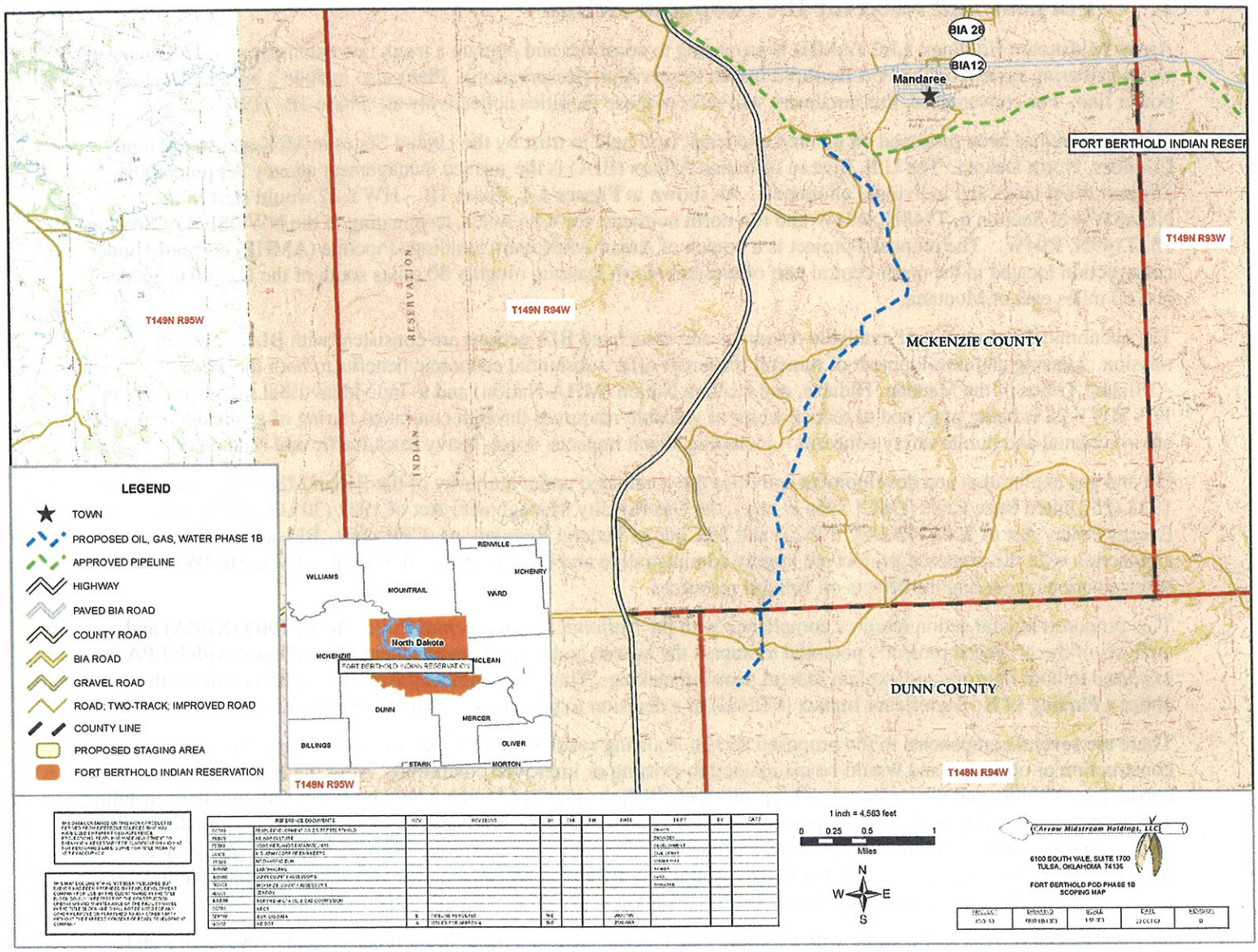

Figure 1-1 Proposed Phase 1B - HWY 22 Project Location

2. Proposed Action and Alternatives

The **No Action alternative** must be considered within an EA. If this alternative is selected, BIA would not approve the proposed oil and gas gathering system. Current land use practices would continue, as would current oil and gas operations. Transport of oil and water from wells on the reservation would continue using heavy trucks; truck traffic would increase over time as more wells were installed. Valuable resources would continue to be wasted without economic benefit, as gas is flared rather than brought to market. The No Action alternative is the only available or reasonable alternative to the specific proposal considered in this document.

The **Proposed Action alternative** consists of a single corridor in which an electrical line and pipelines for oil, gas and wastewater would be buried. As shown in Figure 1-1, the Phase 1B – HWY 22 ROW would start in the NE¼SW¼ Section 6, T148N, R94W then roughly parallel ND Highway 22 north through Sections 34, 27, 23, 22, and 14 of T149N, R94W for approximately 4.85 miles ending in the NW¼SE¼ of Section 15, T149N, R94W. All construction activities would follow stipulations, practices, and procedures outlined in this document, associated technical reports, guidelines and standards in *Surface Operating Standards for Oil and Gas Exploration and Development* (U.S. Department of the Interior [USDI] and U.S. Department of Agriculture [USDA] 2007), and any conditions added by the BIA. All pipeline operations would be conducted in full compliance with applicable laws and regulations. The proposed action is described in more detail in the remainder of this chapter.

2.1 System Design and Relation to Other Pipelines

The proposed system would consist of three separate pipelines for transport of oil, gas and produced water. An electrical utility line would also be installed for future service to compressors, well sites and pumping stations. As shown in Figure 1-1, all system components would begin at the same point where a proposed pipeline inspection gauge (PIG) launcher would be located. A 100-foot wide construction ROW corridor approximately 4.85-miles long would cross tribal and allotted lands. At the north end, the proposed Phase 1B - HWY 22 would tie into the AMHP oil, gas, and water gathering system currently under construction. The ROW would be reduced to 50-feet wide after construction is completed.

The proposed project consists of a trunkline system only, operating in conjunction with the AMHP project currently under construction, which could be operated at low or high pressure. At low pressure (no more than 80 pounds per square inch gauge [psig]), the entire system (AMHP and Phase 1B - HWY 22) could move more than 14,000 barrels of oil, nine million cubic feet of gas and 4,000 barrels of water each day. This is the expected output of about 100 wells. Operated at high pressure with necessary infrastructure, daily capacity would be more than 100,000 barrels of oil, 90 million cubic feet of gas and 15,000 barrels of water, which is roughly the output of 1,000 wells. Output from the Bakken Formation is expected to decline abruptly over the first several months of production, after which output would continue to decrease, but the rate of decline would tend to slow.

West and south of the Missouri River and Lake Sakakawea, the Fort Berthold Indian Reservation comprises about 365,000 acres. Most of these acres have been leased for oil and gas exploration and possible production. Well spacing units vary according to producer preference and geologic conditions, but commonly range from 320 acres to 1280 acres per well. Full development of the leased area therefore would result in an estimated total number of wells between 285 and 1140.

If well locations and production rates support additional construction, the proposed trunkline is sufficiently modular to allow for extensions east and south by either AMH or by another pipeline operator. To achieve its purpose, the proposed project must be augmented with gathering lines to individual producing wells or off-site tank batteries. Low pressure service would not require any compression or pumping stations on the Reservation, and no such facilities are included in the proposed project, but high-pressure facilities may be proposed in the future in response to production on the Reservation and producer interest. All such construction, cooperative arrangements and connections require design compatibility, mutually agreeable economic terms, additional NEPA analysis, and BIA approval. Off-Reservation connections to existing regional oil or gas pipelines do not require BIA review or approval, unless trust land may be directly or indirectly impacted.

2.2 Construction Plan and Specifications

Construction is expected to require two to three months and would be confined within a 100-foot wide temporary ROW. Pipeline materials would be staged at two proposed staging areas described below and/or trucked directly to the corridor via existing federal, state, county roads and private roads. Traffic is expected to be heavy and daily at all access points. Prior to construction, road conditions would be documented in a photographic record provided to BIA, and erosion controls would be installed as necessary or as determined by BIA. Existing roads used to access the Phase 1B - HWY 22 corridor would be maintained until final abandonment and reclamation of the corridor occurs. Excessive rutting or other surface disturbing activities would be avoided. No new roads would be constructed. Traffic would be confined to the ROW and the three proposed access roads designated in **Table 2-1** and shown in **Figure 2-1**. All off-road driving, other than within the ROW, would be strictly prohibited. Signs would be installed on approved access roads and would also be used to identify roads where access is prohibited.

The gathering system would include three pipelines: one 10-inch oil line, one 12-inch gas line, and one 6-inch waterline. The pipelines would be laid in a continuous operation in either a single 60-inch trench or in two 36-inch trenches. Although U.S. Department of Transportation (DOT) regulations do not apply in the sparsely populated project area, all pipe and facilities in the system would be designed, assembled and installed in accordance with the DOT Title 49 CFR Part 195 and Part 192, and American National Standards Institute, American Society of Mechanical Engineers B31.4 and B31.8. Oil and gas lines would be constructed of carbon steel to high pressure specifications and hydrostatically tested to more than 1,000 psig; wall thicknesses would allow for a minimum of 1/16-inch internal corrosion. The 6-inch water line would consist of a fiberglass and polyethylene composite rated and tested to at least 750 psig. All three lines could be operated at either high or low pressure.

Table 2-1 Proposed Access Roads for Phase 1B - HWY 22

Access Road Number	Location	Description	Ownership	Length (miles)
1	HWY 22 to TP 5 to pipeline allotment 862A-A	Two-track	861 A-D; 862A-C; 862A-A	0.56
2	HWY 22 to pipeline allotment 801A-A	Gravel Road; Two-track	659A-B; 659A-A; 801A; 801A-A	1.25
3	HWY 22 to pipeline allotment 714A	Two-track	HUBER; T714A	1.07

Installation of pipelines and utilities would require clearing and grading within the construction ROW. Topsoil would be separated and stockpiled to prepare for prompt re-seeding and reclamation of the disturbed surface. Continuous beneficial use of pastures, grazing units, livestock facilities and public improvements would be maintained. Trenches would be excavated to a depth of 78-inches to minimize frost heaving, using either rotary trenching equipment or backhoes, and pipelines would be covered with at least 66-inches of backfilled soil. Cover will increase to at least 72-inches at highway crossings, borrow ditches and at the lowest points within a highway ROW. Typical procedures are shown in **Figure 2-1**. After construction, the ROW would be reduced to 50-feet wide.

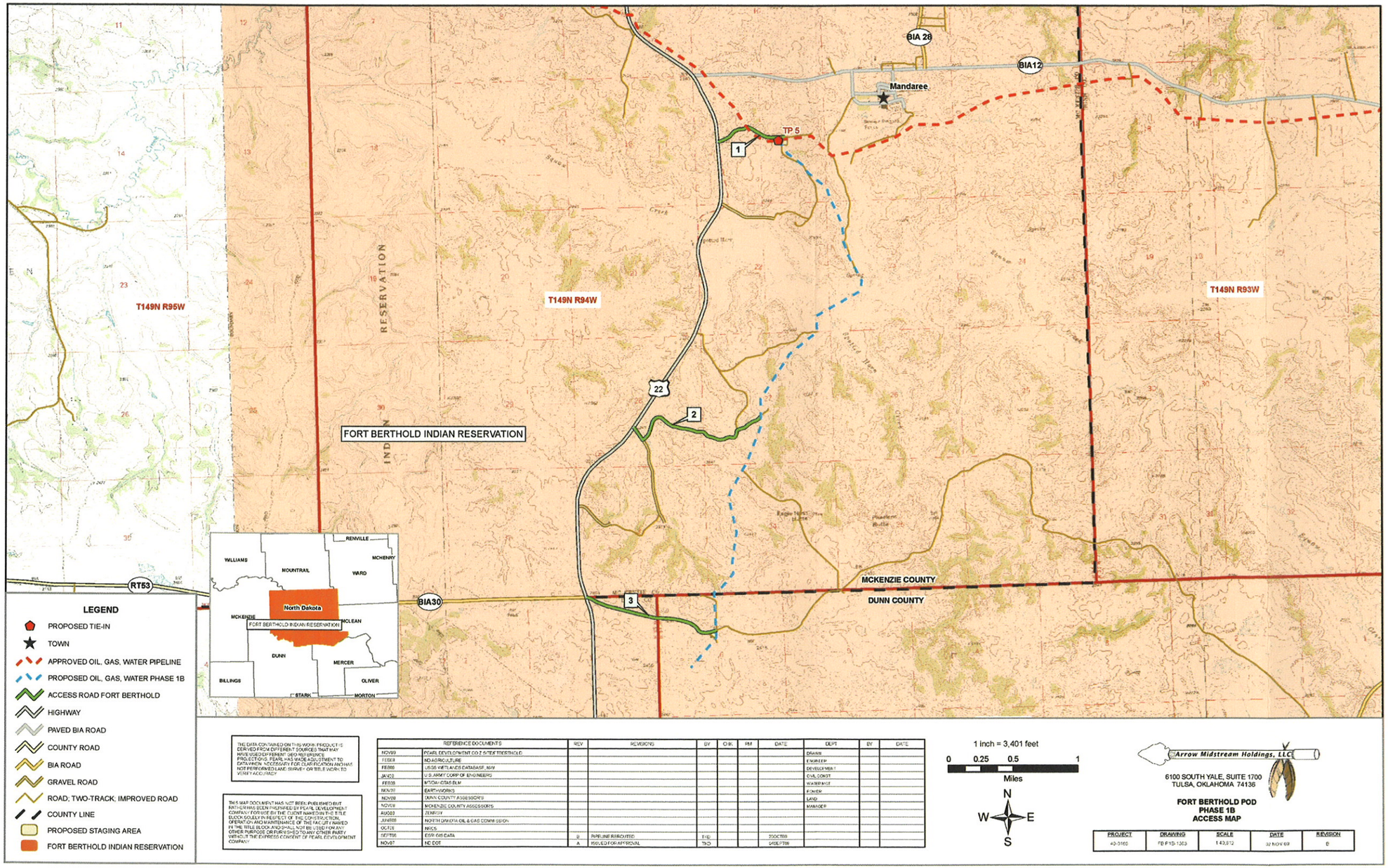

Figure 2-1 Proposed Access Roads for Phase 1B - HWY 22

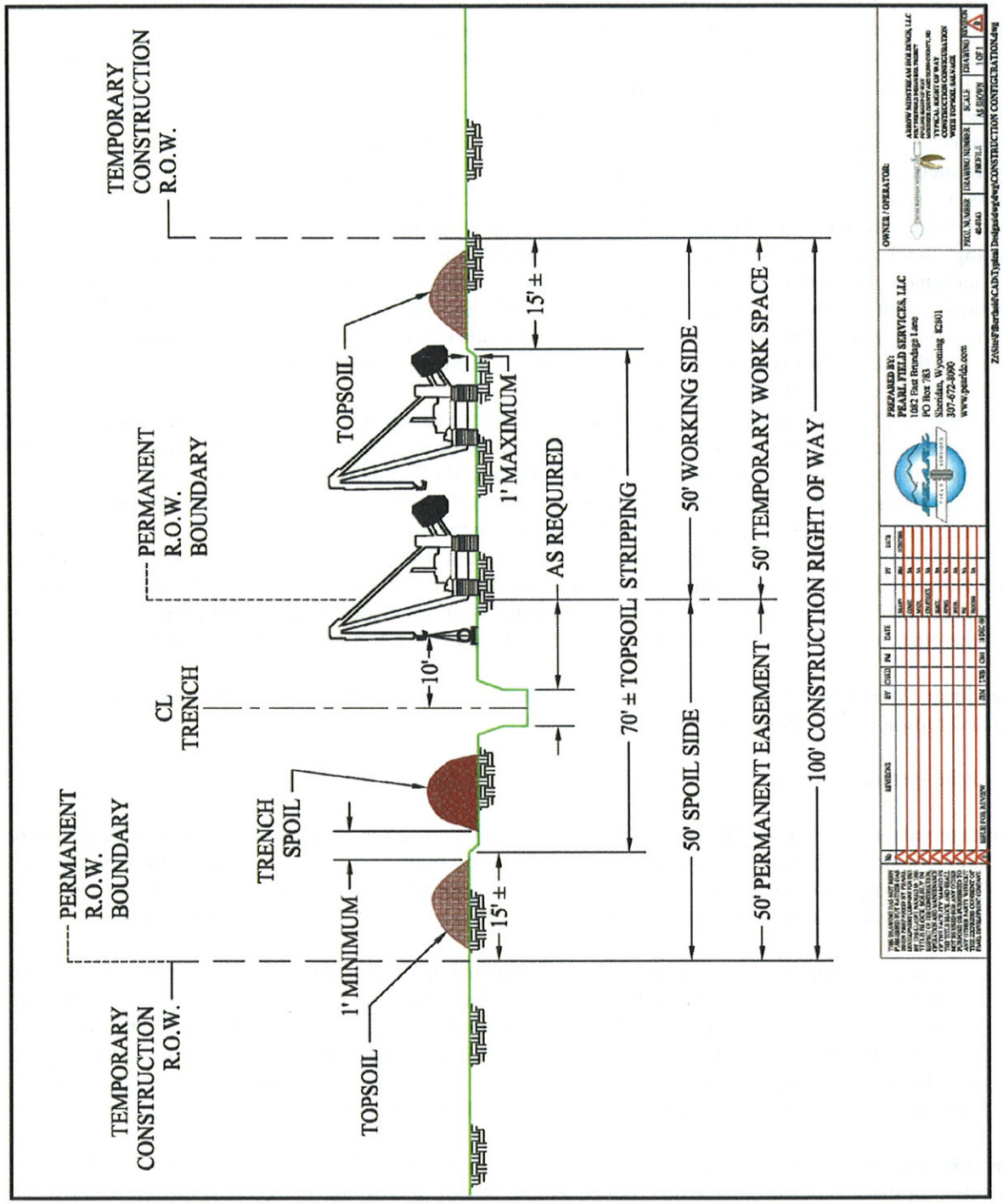

Figure 2-2 Typical ROW Construction

Trenches may be open for several days before pipes are placed and the trench backfilled. Crossings would be created as needed by temporarily filling the trench to allow pedestrians and vehicles to cross over. Ramps or soft plugs would be installed to help wildlife and domestic stock to escape the trench. BIA's instructions on all of these measures would be binding on the operator/installer. Installation involves several other procedures that are summarized below:

- **Stringing:** Stringing is a method of pipeline delivery that involves trucking the pipe from the pipe supplier to designated locations along the ROW prior to bending, line-up, and welding the pipe.
- **Bending:** After stringing is completed along a section of pipe, a hydraulic bending machine would field-bend each pipe to conform to vertical and horizontal changes in the trench. If a required bend exceeds certain design criteria, factory-bent segments may be required.
- **Welding:** After the pipe segments are bent, they would be welded together. The pipeline will be mounted on supports as a continuous line along the side of the trench to facilitate welding.
- **X-ray/Inspection:** A certified welding inspector would visually inspect each weld and 100% of the welds would be x-rayed in the field to detect flaws that could lead to pipeline failure. All welds of pre-fabricated assemblies and welds at road and stream crossings would be x-rayed.
- **Lowering:** Sideboom tractors would then lower the pipeline into the open trench. Before backfilling, the trench and pipeline would be inspected to ensure that 1) the trench is deep enough to comply with minimum cover requirements; 2) the bottom of the trench is free of large rocks, tree limbs, large roots, and other debris; 3) the pipe bends adequately conform to the trench; and 4) the external coating on the pipe has not been damaged. If the trench line is located in rock, soil padding and rock shield would be used to protect the pipeline from damage when it is lowered.
- **Hydrostatic Testing:** After the pipe is placed in the trench, the line would be pressure tested with water for structural soundness. Test water for hydrostatic testing would be trucked from a municipal source and returned, via the pipeline, to the facility. The water would then be hauled off and disposed of in a permitted facility.
- **Trench Backfilling:** Marker tape will be added to the pipeline trench to avoid unintended excavation or damage to pipes. After the trench is backfilled, it will be compacted with a wheel roller. A 3- to 6-inch crown would be left over the centerline of the trench to allow for natural subsidence. Trench breakers, or water stops, would be installed, as necessary, adjacent to wetlands or stream crossings to eliminate groundwater migration along the trench. Trench breakers are areas along the pipeline where bentonite, or a similar material, is packed around the pipe. In the event of a pipe blowout, the trench breakers effectively stop water from washing out the area.
- **Re-grading:** After the trench has been backfilled, disturbed areas would be re-graded to original contours and stockpiled topsoil would be redistributed over the ROW.

Other features of the system would include:

- **Air release valves** (ARVs) would be placed at about five high-elevation locations along the water pipeline to release air pressure and prevent disturbances in water flow and prevent damage to pipes and fittings. ARVs would surface in a two-foot wide covered manhole extending about 12 inches above ground surface. The manhole is a non-pressurized, insulated vessel allowing access to the ARV. ARVs pose no threat to livestock or humans.
- **Pipeline inspection gauges** (PIGs) are tools sent down gas pipelines to clean the line or inspect the walls. The Phase 1B - HWY 22 launcher will be installed at the south end of the gas pipeline on a 20' x 35' pad with an access road that surrounds the pad and is enclosed by a chain link fence. The receiver for the PIG would be located at the north end of Phase 1B - HWY 22 also with a 20' x 35' pad and access road enclosed by a chain link fence. The total fenced in area would be approximately 100' x 100'. The launcher enclosure may also include storage for 90 barrels of methanol for injection into the gas line to prevent freezing of water in that line.
- **Tie-in valves** would be needed to connect lateral pipelines to the Phase 1B - HWY 22 corridor. The number and location of these valves would be determined and proposed for BIA consideration as more productive wells are drilled.
- **Staging Areas,** approximately one acre in size, would be located at the beginning of the pipeline route near BIA Rte 30 and at the terminus near the PIG receiver location. These two staging areas would temporarily serve as storage areas for pipeline construction materials. Topsoil would be cleared and stockpiled at these locations until construction was completed. At that time, topsoil would be redistributed and the areas reseeded and reclaimed.

Non-hazardous materials, such as paper, plastic and wood, would be collected and stored in appropriate waste containers with lids. Portable toilets would be confined to trailers while parked in the ROW. A sanitation company

would be contracted to periodically remove solid, non-hazardous waste materials and deposit them in an approved landfill.

2.3 Directional Drilling

Directional drilling – sometimes referred to as horizontal drilling or boring – can reduce or mitigate surface disturbance, traffic interruptions, damage to roads and environmental impacts to waterways, wetlands, cultural resources or other valuable surface or near-surface assets. A hole would be bored beneath the asset in a shallow arch from one surface location to another. The pipeline is pulled through either the bare hole or through a casing. Locations have been identified within the proposed project area that require directional drilling, either in conformance with BIA regulations or as best management practices around running or extensive standing water. The three wetland crossings locations that would require directional drilling are listed in **Table 2-2**. Wetlands to be bored are discussed in greater detail in Section 3.10.

Table 2-2 Directional Drilling Locations

Location	Type of Asset	Asset	Length (ft)
NENW Sec 23 T149N R94W	wetland	Squaw Creek	150
SWSW Sec. 23 T. 149 N., R. 94 W	wetland	Spotted Horn Creek	100
SWNW Sec. 34 T. 149 N., R. 94 W	wetland	Tributary of Squaw Creek	170

2.4 Reclamation

Reclamation would take place throughout the project lifespan. Reclamation would be required after the initial construction, after any maintenance work or addition of auxiliary infrastructure, and before final abandonment of the decommissioned system. At all times, successful reclamation would remain the obligation and responsibility of the system operator.

Trenches would be backfilled immediately after pipe and utility installation and testing, waiting only if soils are frozen or overly wet. A stormwater pollution prevention plan is not required by the EPA. Appropriate temporary and long-term measures would be applied to all disturbed areas to minimize and control erosion. Field practices would conform with standard recommendations of the Natural Resources Conservation Service (NRCS 2003) and may include 1) installing silt fences and erosion fabric, mats or logs; 2) construction of ditches and/or water bars; 3) seeding, planting, mulching and creation of buffer strips; and/or 4) any other measures required by BIA to minimize erosion and soil loss.

After subsoil on the working side of the ROW is plowed to alleviate compaction, stockpiled topsoil would be redistributed over the ROW. Re-contouring and reclamation of disturbed areas would be accomplished as soon as possible after construction is completed, and no later than by the next appropriate planting season (fall or spring). The ROW would be re-seeded with certified, weed-free seed mixtures established by BIA. In all cases, native species would be used to the extent possible and all seeding and planting would comply with BIA directions to ensure successful reclamation.

The entire corridor would be monitored to identify areas of excessive erosion, subsidence or invasion of noxious weeds. Periodic monitoring would be performed – and repeated reclamation efforts would be undertaken in problem areas – until BIA has certified the entire corridor as successfully reclaimed. Successful reclamation is defined to include the following observable factors: reproduction from seeded and re-established species, natural invasion of plants from undisturbed adjacent communities, and control or exclusion of noxious weeds. A noxious weed survey was conducted in the project corridor. A weed management plan was developed with BIA to facilitate the treatment of known and likely noxious/invasive weed species. Details of the vegetation surveys can be found in Section 3.11. If re-seeding is not successful within two growing seasons, BIA may require extraordinary efforts to stabilize the site, such as matting the entire area or using a mix of rapidly growing forbs and annual grasses, followed by re-seeding with grasses, forbs, and shrubs with rapidly expanding, deep root systems.

Decommissioning of the pipeline would result in mandatory final reclamation of the corridor. All surface facilities would be removed. Cement foundations would be broken and hauled to an approved disposal site. Gravel pads would

be buried onsite or hauled to a disposal site. Compacted areas would be scarified, ripped and re-contoured. Stockpiled topsoil would be redistributed and re-vegetated. Due to economic and environmental costs associated with excavation and removal, pipelines would be purged with water to remove hydrocarbons, and then abandoned in place. Long-term monitoring would be required to ensure successful reclamation and implementation of any necessary remedial efforts.

2.5 Operation and Maintenance

County, state, private and BIA roads used by Phase 1B - HWY 22 would be maintained in the same or better condition as existed prior to the start of operations, as documented in photographs taken prior to construction. Maintenance of roads used to access the ROW would continue until final abandonment and reclamation of the corridor occurs. Excessive rutting or other surface disturbing activities would be avoided or immediately repaired. Maintenance on pipelines and utilities would be confined to the 50-foot permanent ROW. Corrosion or leaking might require replacement of system sections. Loss of products or waste products might require excavation of contaminated soils and other remedial projects. All applicable regulations and best management practices would be implemented aggressively to minimize waste of resources and/or environmental damage.

3. The Affected Environment and Potential Impacts

The Fort Berthold Indian Reservation is the home of the MHA Nation. Located in west-central North Dakota, the Reservation encompasses more than one million acres, of which almost half are held in trust by the United States for either the MHA Nation or individual allottees. The remainder of the land is generally 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 1956, much of the land was inundated by water and the balance divided into three sections by Lake Sakakawea, an impoundment of the Missouri River upstream of the Garrison Dam near Riverdale, North Dakota.

The proposed Phase IB project is situated geologically within the Williston Basin, where the shallow structure consists of sandstones, silts, shales and some lignite coal. These date from the Tertiary Period (65 to 2 million years ago). Oil, gas and water to be transported by the proposed project would usually be from the underlying Bakken, Sanish or Three Forks Formations. Earlier oil/gas exploration activity within the Reservation was limited and commercially unproductive, but recent economic changes and technological advances now make accessing resources more feasible. Impacts and hazards have increased proportionately.

The Reservation is in 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 (now 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. Elevation of the formerly glaciated, gently rolling landscape ranges 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° F in January and between 55° and 83° F in July, with 95 to 130 frost-free days each year (Bryce *et al.* 1998; High Plains Regional Climate Center 2008).

The proposed Phase IB project is in a rural area with native/mixed-grass prairie. Areas with steep slopes and/or rocky, thin soils are usually used to graze cattle. Some of the areas with broad gentle slopes are farmed, mostly in small grains or perennial hay crops. The broad definition of the human and natural environment under NEPA leads to the consideration of the following elements: air quality, public health and safety, socioeconomic, environmental justice cultural resources, wildlife, soils, water resources, wetlands, vegetation and invasive species. 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.

3.1 The No Action Alternative

Under the No Action alternative, the proposed project would not be constructed or operated. Trucking of products and waste products from existing wells would continue, as would the flaring of gas at well pads. With no practicable alternative, trucking and flaring would increase as more wells are completed; existing conditions would be progressively impacted for the following critical elements: air quality, invasive species, and public safety. Flaring of gas from more wells might lead over time to measurable degradation of air quality. Trucking impacts range from seeding of invasive species to loss of human life. Loss of tribal and individual royalties from existing and potential wells would impact tribal and individual economies and planning.

The No Action alternative would exacerbate the waste of resources and loss of revenue. Gas income loss due to flaring is estimated at 2 million dollars over the life of each well, based on average gas prices in North Dakota 2006-2008, Estimated Ultimate Recovery of 350,000 barrels oil per Bakken Formation well, and a typical gas to oil ratio (Energy Information Administration, 2009). Typical leases assign 18% of these revenues to the lessor, either the MHA Nation or allottees. Inasmuch as losses to producers would be significantly higher, No Action could also have an indirect dampening effect on development decisions, further depressing economic benefits to the MHA Nation and individual Indians.

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 project area. 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 3-1** summarizes federal air quality standards and available air quality data from the three-county study area.

Table 3-1 Air Quality Standards and County Data

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	0.030	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

Source: U.S. Environmental Protection Agency (EPA) 2006. $\mu g/m^3$ = micrograms per cubic meter. ppm = parts per million.

North Dakota was one of only 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 3-1 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 airshed at nearby Theodore Roosevelt National Park, which covers about 110 square miles in three units within the Little Missouri National Grassland between Medora and Watford City, about 50 miles west and upwind of the proposed Phase 1B - HWY 22 corridor. The Reservation can be considered a Class II attainment airshed, which affords it a lower level of protection from significant deterioration.

The proposed project is similar to other projects installed nearby with the approval of state offices. Construction traffic would generate temporary, intermittent and nearly undetectable gaseous emissions of particulates, SO_2, NO_2, CO, and volatile organic compounds. Road dust would be controlled as necessary and other best management practices implemented as necessary to limit emissions to the immediate project areas (USDI BLM 2009).

No detectable or long-term impacts to air quality or visibility are expected within the airsheds of the Reservation, state, or Theodore Roosevelt National Park. Despite minor construction impacts, the proposed project is expected to have an overwhelmingly positive and long-term impact on air quality. In addition to eliminating flaring of gas from connected wells, the gathering system will drastically reduce heavy truck traffic. Over its first ten years, the typical Bakken Formation well will produce almost 2,000 tanker loads of oil and 450 loads of produced water. Within that period, a gathering system servicing 50 wells will make unnecessary about 6,000,000 miles of heavy truck traffic. 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 traffic hazards posed by heavy trucks and equipment during construction, hazardous materials used or generated during installation or production, and burning or explosive hazards during operation of the pipelines. Negative impacts from construction would be largely temporary. Noise, fugitive dust, and traffic hazards

would be present for sixty to ninety days during construction and then diminish sharply during operations. The U.S. EPA specifies chemical reporting requirements under Title III of the *Superfund Amendments and Reauthorization Act* (SARA) of 1986, as amended. No materials used or generated by this project for 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. The most common and potentially hazardous substances used during the construction of the pipeline would include diesel fuel, gasoline, lubricating oils, paints, and solvents. The Spill Prevention Control and Countermeasure (SPCC) plan includes procedures for hazardous materials storage, handling, disposal, cleanup and reporting. Potentially hazardous materials would be stored only in designated and permitted staging areas at least 100 feet from watercourses and wetlands. Vehicle refueling would comply with the same minimum setback. Material Safety Data Sheets for each potentially hazardous substance would be maintained onsite in the control room at AMHP central facility and at the point of use at all times.

According to the Pipeline and Hazardous Materials Safety Administration (PHMSA 2009), pipelines are a reliable and cost-effective means to transport natural gas and hazardous liquids. PHMSA statistics show one gallon of oil is spilled for every barrel of oil that is transported one million miles: "In household terms, this is less than one teaspoon of oil spilled per thousand barrel-miles". In the event of a spill, AMH would notify local emergency management authorities and state or federal response centers. After the pipeline is operational, AMH would also install and utilize the following programs for public safety: operator training, cathodic protection, detailed ROW marking, regular inspections, and integrity management programs (automated PIG launcher). Pipeline pressure would also be monitored at both ends of the system; significant leaks causing pressure drops would be located by launching a special PIG or other detection equipment down a line.

There have been four oil transport related deaths on or near the Reservation in the past two years. PHMSA data show that pipelines generally have a far better safety record (deaths, injuries, fires/explosions) than other modes of oil transportation. For a given volume transported, there are 87 times more oil transport truck-related deaths, 35 times more oil transport truck related fires/explosions and twice as many oil transport truck-related injuries. There are about 7,000 miles of gas and hazardous liquid pipelines in North Dakota. Over the past ten years, there have been no fatalities and 4 injuries associated with these facilities (PHMSA 2009).

A comprehensive gathering system would eliminate the need for most of this traffic and increase overall public safety. During the first ten years of operation, the typical Bakken Formation well is expected to produce 256,595 barrels of oil and 48,180 barrels of water. Oil is commonly carried in tankers with a capacity of 140 barrels, while water tankers usually carry up to 110 barrels. Ten-year transportation needs therefore would be about 2,300 trucks. Average roundtrip distances from oil depots can be very conservatively estimated at 50 miles. Service to each productive well on the Reservation would therefore result in at least 115,000 miles driven during the ten year period of interest. Fifty typical wells would require almost six million miles to be driven by heavy trucks on sometimes substandard roads through sometimes severe weather. Since full development estimates range from 285 wells to as many as 1,185 on the west side of the Reservation, traffic loading could be between 33 million and 130 million miles over ten years.

Combustion and explosive hazards are considered extremely unlikely for the proposed project, but modeling results show that most damage would be expected within 0.5 mile of either side of the pipeline as shown in **Figure 3-1.** Within this estimated maximum blast zone, there are seven existing homes and two abandoned home. Prevailing winds in the area are to the southwest, minimizing potential combustion and explosive hazards from the pipeline to the town of Mandaree.

Project design and operational precautions mitigate against impacts from traffic or hazardous materials. The size of the area potentially impacted by leaks, fire or explosion is limited by burial of the pipelines at least 5.5 feet underground, and the relatively small diameter of the proposed lines. All operations would conform to instructions from BIA fire management staff. Impacts from the proposed project are considered minimal, insignificant or unlikely. No laws, regulations or other requirements have been waived; no compensatory mitigation measures are required.

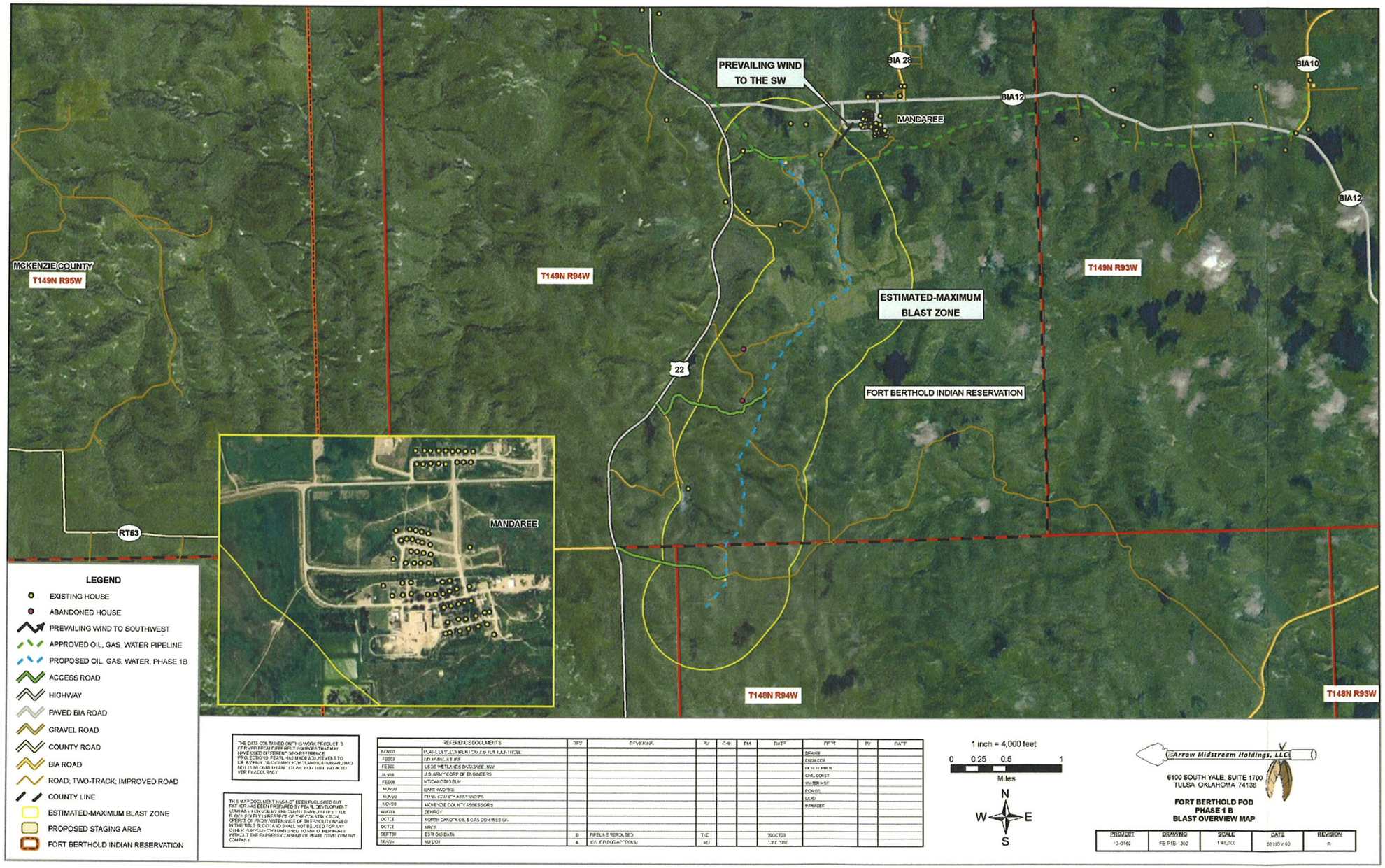

Figure 3-1 Blast Overview Phase 1B - HWY 22

3.4 Socioeconomics

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 3.4a. 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 3.2: 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 3.4b, 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 ⅔ 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 3.3: 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 3.4c. 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 3.4: 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 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.

3.5 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 proposed locations might lead to exploration and development on additional tracts owned

by currently non-benefitting allottees. The absence of lease and royalty income does not, moreover, 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 areas 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 surveys of proposed project locations 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 project has 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.

3.6 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 MHA Nation has also designated responsible parties for consultations and actions under NAGPRA and cultural resources generally.

Cultural resource inventories of this Arrow Pipeline Phase 1B and later reroutes were conducted by personnel of Beaver Creek Archaeology, Inc., using a pedestrian methodology. For the original project approximately 61 acres were intensively inventoried on July 2, 2009 (Burns and Pollman 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 of Historic Places. 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 September 28, 2009, and the THPO concurred on October 12, 2009 (see Part 4). For the additional reroutes approximately 22 acres were inventoried on October 13, 2009 (Burns 2009). No historic properties were located within the project areas 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 of Historic Places. BIA communicated a determination of **no historic properties affected** to the THPO for the reroutes on November 6, 2009; however, no response was received from the THPO within the allotted 30-day comment period.

3.7 Wildlife

The USFWS has identified six federally listed threatened and endangered species occurring in Dunn and McKenzie Counties, in addition to one species that is a candidate for listing under the *Endangered Species Act* (ESA) (USFWS 2008a). None of these species were observed during field reconnaissance of the proposed site. The state of North Dakota (North Dakota Game and Fish Department, NDGFD), BIA, Bureau of Land Management (BLM), and Fort Berthold Reservation do not have a list of threatened or endangered species different from the federal government. Tribes and states may recognize additional species of concern; such lists are taken under advisement by federal agencies, but are not legally binding in the manner of the ESA.

Whooping crane *(Grus Americana)* Status: Endangered. Likelihood of occurrence: **unlikely**
Whooping cranes historically nested in North Dakota, but the whooping crane is currently only a migrant through North Dakota in the spring and fall. During spring and fall whooping crane migration, preferred roost habitat consist of large shallow marshes with a minimal to nonexistent emergent zones and preferred foraging habitat consists of upland cropland and pastures adjacent to and usually within one kilometer (0.62 mile) of roosts (Howe 1989). The lack of a cropland/wetland matrix habitat makes migratory stopovers by whopping cranes unlikely. The proposed project will not affect this species.

Interior least tern *(Sterna antillarum)* Status: Endangered Likelihood of occurrence: **unlikely**
Natural habitat for interior least terns in North Dakota includes islands, beaches and sandbars of the Missouri and Yellowstone Rivers and along the shorelines of Lake Sakakawea and Oahe (USFWS 2006). Interior least terns are generally restricted to larger meandering rivers with a broad floodplain, slow currents and greater sedimentation rates, which allow for the formation of suitable habitat. Interior least terns experience the greatest nesting success on sand or gravel bar islands because predation by terrestrial predators is reduced (USFWS 2006). Interior least terns' seasonal habitat requisites are associated with rivers, streams and reservoirs. There is no existing suitable habitat within or near the project area that would be appropriate for this species. The proposed project will not affect this species.

Pallid sturgeon (*Scaphirhynchus albus*) Status: Endangered. Likelihood of occurrence: **would not occur**
The pallid sturgeon is known to occur in North Dakota primarily at the confluence of the Missouri and Yellowstone Rivers (USFWS 2006). There is no existing or potential aquatic habitat within or near the project area that would be suitable for this species. The proposed project would not affect this species.

Black-footed ferret (*Mustela nigripes)* Status: Endangered. Likelihood of occurrence: **would not occur**
Black-footed ferrets historically occurred in this region of North Dakota, but mostly in the extreme southwest part of the state (USFWS 2006). Suitable habitat includes large black-tailed prairie dog (*Cynomys ssp.)* colonies or complexes of colonies. The ferret's primary food source is the black-tailed

prairie dog and ferret's also inhabit black-tailed prairie dog burrows. The proposed project area does not contain active black-tailed prairie dog colonies. The black-footed ferret is not expected to be present given the paucity of food and habitat on the project area. The proposed project would not affect this species.

Gray wolf (*Canis lupus*) Status: Endangered. Likelihood of occurrence: **would not occur**
The most suitable habitat for the gray wolf in North Dakota is in the dense and contiguous forested areas in the north central and northeast parts of the state. There have been documented occurrences of gray wolves in south-central North Dakota (1985, 1990, and 1991) and confirmed reports of gray wolves in the Turtle Mountains of North Dakota (NDGFD 2006). The project area does not contain dense, contiguous forested areas required by the gray wolf and there have been no historical wolf sightings within or near the project area (USFWS 2006). The proposed project would not affect this species.

Piping plover (*Charadrius melodus)* Status: Threatened. Likelihood of occurrence: **unlikely**
Critical habitat for the piping plover includes sparsely vegetated shoreline beaches, peninsulas, islands composed of sand, gravel, or shale, and their interface with the water bodies (USFWS 2006). Suitable habitat for piping plovers is not present within the project area. There are no suitable nesting/ foraging habitats and surrounding area consists primarily of grassland habitats. Birds may occasionally fly though the area when migrating or moving between nesting and foraging areas. The proposed project would not affect this species.

Dakota skipper (*Hesperia dacotae)* Status: Candidate. Likelihood of occurrence: **may occur**
North Dakota has a large and stable population of Dakota skippers. In the western part of the state, its habitat includes ungrazed native prairie with little bluestem (*Schizachyrium scoparium)*, needle and thread (*Stipa viridula)*, purple coneflower (*Echinacea spp.)* and a high forb and grass diversity (USFWS 2006). The Dakota skipper has been documented within both McKenzie and Dunn Counties (USFWS 2008a). Confirmed observations were located at three sites in McKenzie County approximately 0.5 miles northwest in the NE¼SW¼ and NW¼SE¼ of Section 28, T149N, R94W and the NE¼NW¼ of Section 33, T149N, R94W (USFWS 2008). The project area has potentially suitable habitat for the Dakota skipper, though no individuals were observed during the survey.

Construction and operation of the proposed pipeline is not likely to affect the six federally listed threatened or endangered species that have ranges that include the project area. No effects are expected for the pallid sturgeon, black-footed ferret, gray wolf and whooping crane, interior least tern, and piping plover because these species do not occupy the project area, other than occasional transients. Habitat for the candidate species, Dakota skipper, is potentially found in the project area and there are confirmed observations of individuals in sections near the proposed pipeline. Only indirect effects would be likely, such as temporary displacement caused by noise or presence of humans. These potential effects are not likely to negatively affect this species or its habitat.

Wildlife occurrence and habitat within a one-mile radius of the proposed project area were inventoried on July 16, and October 20, 2009 by SWCA Environmental Consultants (SWCA), via a walking survey and visual inspection. Bird and mammal species potentially present in the vicinity of the project area based on the field reconnaissance and potential habitat, queries of state and federal natural resource related databases, and interviews with state (NDGFD 2008) and federal management personnel (USFWS 2008b) are listed in **Table 3-6**. Eighteen resident birds are known from McKenzie and Dunn Counties and at least 71 migratory birds could potentially occur in the vicinity of the project. Based on a lack of suitable waterfowl nesting habitat present within the project area, only limited use of the area (except staging on Lake Sakakawea, 10 miles from the project area) by migrating waterfowl species would be expected. A review of the NDGFD annual game bird reports for central and western North Dakota indicates that populations are healthy and stable-to-increasing in this region. In addition to avian species, 21 species of mammals could potentially occupy the project area both continually and intermittently throughout the year. A review of NDGFD winter aerial survey data indicates that white-tailed deer density within McKenzie and Dunn Counties is excellent and suggests a healthy and stable-to increasing deer population.

Construction activities that remove vegetation and disturb soil may cause direct mortality, displacement, or increased exposure to predators for less mobile wildlife species (i.e. small mammals, amphibians, reptiles, ground-nesting birds). More mobile species (i.e. medium to large mammals and birds) would be expected to disperse from the project area during construction and re-enter the area following completion of construction activities. Long-term habitat loss would be minimal and restricted to the localized area of permanently altered vegetation. Disturbance to wildlife due to noise, increased traffic, and human presence may temporarily displace individuals during the construction period. However, due to the migratory and transient behavior of wildlife species, these effects are not likely to cause long term declines in populations.

Table 3-6 Wildlife Species in McKenzie and Dunn Counties, North Dakota

Resident Birds	Migratory Birds		Mammals
American Crow	American Coot	Turkey Vulture	Pronghorn Antelope
Black-billed Magpie	Marbled Godwit	Brewer's Blackbird	Badger
Black-capped Chickadee	American Goldfinch	Cooper's hawk	Beaver
Blue Jay	Franklin's Gull	Brown Thrasher	Big Brown Bat
Short-eared Owl	American Kestrel	Northern Harrier	Coyote
Downy Woodpecker	Loggerhead Shrike	Brown-headed Cowbird	Eastern Chipmunk
Eastern Screech Owl	American Robin	American Avocet	Fox Squirrel
European Starling	Long-billed Dowitcher	Bufflehead	Franklin's Ground Squirrel
Gray Partridge	American Tree Sparrow	Greater Yellowlegs	Little Brown Bat
Great Horned Owl	Mallard	Cedar Waxwing	Long-tailed Weasel
Hairy Woodpecker	Bank Swallow	Chipping Sparrow	Meadow Vole
House Finch	Marsh Wren	Rough-legged hawk	Mink
House Sparrow	Gray Catbird	Common Yellowthroat	Muskrat
Ring-necked Pheasant	Mountain Bluebird	Ruby-throated Hummingbird	Raccoon
Sharp-tailed Grouse	Mourning Dove	Eastern Wood-Pewee	Red Fax
White-breasted Nuthatch	Killdeer	Savannah Sparrow	Red Squirrel
Wild Turkey	Northern Flicker	Semi-palmated Plover	Silver-haired Bat
Horned Lark	Least Flycatcher	Short-billed Dowitcher	Thirteen-lined Ground Squirrel
	Western Meadowlark	Snow Bunting	White-tailed Deer
	Lesser Yellowlegs	Snow Goose	Mule Deer
	Common Nighthawk	Solitary Sandpiper	White-tailed Jackrabbit
	Great Blue Heron	Song Sparrow	
	Willet	Sora	
	Black-crowned Night Heron	Spotted Sandpiper	
	Yellow Warbler	Horned Grebe	
	Canada Goose	Eared Grebe	
	Barn Swallow	Swainson's Hawk	
	Blue-winged Teal	Tree Swallow	
	Belted Kingfisher	Upland Sandpiper	
	Gadwall	Vesper Sparrow	
	Red-Headed woodpecker	Double-crested Cormorant	
	Northern Shoveler	White-fronted goose	
	Black Tern	Wood Duck	
	American Wigeon	Lesser Scaup	
	Black-bellied Plover		
	Ruddy Duck		
	Bonaparte's Gull		

3.8 Soils

Physiographically, the project area is part of the Missouri Plateau, a relatively high plain that slopes to the east and northeast. In some areas, sedimentary material is covered with a thin layer of glacial drift or till. Where present, this may consist of just a few pebbles or be distinct layer of stony soils. In places, the till has been mostly eroded away and is only represented by large granite glacial boulders.

Soils are categorized and described as soil mapping units. Published soil surveys are available for Dunn County (1982) and McKenzie County (2006) online from the NRCS (2008). Databases were reviewed and soils in the Phase IB corridor were surveyed by professionally certified specialists on July 21, 2009. Their detailed report is on file with BIA and indicates 40 soil mapping units are present, most of which are loams, silty clays and sandy loams. Most of these soils present no special construction problems and when trenched and compacted after pipeline placement, will be receptive to re-seeding and reclamation. As shown in **Table 3-7**, almost half of the Phase 1B - HWY 22 ROW is comprised of just eight soils:

Table 3-7 Common Soils

Soil	Map Unit	Percent Occurrence	Erosion Factors				
			slope	Kf	T	Hydrologic Soil Group	Wind Erodibility Group
Beisigl-Flasher-Tally complex loam	61F	21.66	9-50	0.17	3	A	2
Dogtooth-Janesburg-Cabba complex loam	38F	7.80	6-30	0.28	2	D	6
Golva silt loam	27	6.03	0-2	0.32	5	B	6
Parshall fine sandy loam	54B	9.19	0-6	0.20	5	B	3
Rhoades-Daglum complex	36B	12.00	0-6	0.32	2	D	6
Williams loam	42C	9.34	6-9	0.32	5	B	6
Williams-Bowbells loams	41B	9.88	3-6	0.28	5	B	6
Zahl-Cabba-Maschetah complex	45F	6.81	3-70	0.32	5	B	4L

- Kf indicates erodibility of material less than two millimeters in size. Values of K range from 0.02 to 0.69, with higher values indicating greater erodibility.
- T Factors estimate maximum average annual rates of erosion by wind and water that will not affect crop productivity. Tons/acre/year range from 1 for shallow soils to 5 for very deep soils, with higher T values indicating greater tolerance.
- Hydrologic Soil Groups (HSG) are based on estimates of runoff potential and infiltration rates for thoroughly wetted soils unprotected by vegetation during long-duration storms, with the rate of infiltration decreasing from Group A (high infiltration, low runoff) to Group D (low infiltration, high runoff).
- Wind Erodibility Group consists of soils with similar properties affecting susceptibility to wind erosion in cultivated areas, with susceptibility decreasing from group 1 to group 8.

- **Map Unit 61F.** Beisigl-Flasher-Tally complex, 9-50 percent slopes, are well- to somewhat excessively drained. They are located on upland ridges, with Beisigl on convex backslopes, Flasher on shoulders and Tally on concave foot slopes. Restrictive layer is found at a depth of 7-40 inches. The complex is made up of 35% Beisigl soils, 30% Flasher soils and 17% Tally soils. The remaining 18% is made up of Vebar, Amor, Telfer, Cabba, and Regan soils.

- **Map Unit 38F.** Dogtooth-Janesburg-Cabba complex loam, 6-30% percent slopes, is level to steep uplands, well drained. It is located on glacial till uplands. Permeability is very slow, surface runoff is slow to very rapid depending on slopes, and available water capacity is low.

- **Map Unit 27.** Golva silt loam, 0-2% percent slopes, is very deep and deep well drained soils that formed in silty alluvium. Permeability is moderate, surface runoff is negligible to medium, and available water capacity is moderate.

- **Map Unit 54B.** Parshall fine sandy loam, 0-6% percent slopes, are on level to moderately steep high terraces along river valleys, on outwash plains, and in swales on uplands. Permeability is moderately rapidly, surface runoff is negligible to medium, and available water capacity is high.

- **Map Unit 36B.** Williams loam, 6-9% percent slopes, is deep, gently rolling and well drained. It is located on glacial till uplands. Permeability is moderately slow, surface runoff is medium, and available water capacity is high.

- **Map Unit 42C.** Williams loam, 6-9% percent slopes, is deep, gently rolling and well drained. It is located on glacial till uplands. Permeability is moderately slow, surface runoff is medium, and available water capacity is high.

- **Map Unit 41B.** Williams-Bowbells loams, 3-6% percent slopes, is deep, gently rolling and well drained. It is located on glacial till uplands. Permeability is moderately slow, surface runoff is medium, and available water capacity is high.

- **Map Unit 45F.** Zahl-Cabba-Maschetah complex, 3-70% slopes, are well drained. They are found on ridges and till-mantled uplands, with Zahl on summits, Cabba on shoulders and Maschetah on foot slopes. Restrictive layer is found at a depth of about 20 inches. The complex is made up of 23% Zahl soils, 21% Cabba soils, and 17% Maschetah soils. The remaining 39% is made up of Williams, Chama, Straw, Amor, Dogtooth, Dooley, Savage, and Wabek soils.

Erosion potential increases in the interval between construction and reclamation, while topsoil and stabilizing vegetation are absent. Soil erosion rates have been extensively studied and various practices have been shown to feasibly and significantly reduce erosion of a wide variety of soils, including those within the project area (BLM 2009, USDI and USDA 2007). Erosion control and reclamation can be affected by topography and soil characteristics. Descriptions of two common soil complexes (45F and 61F) along the corridor indicate severe slopes are possible. Phase 1B - HWY 22, however, has been aligned and situated to generally avoid steep areas more susceptible to erosion. Sections on steeper slopes are never more than 350 feet long, where proven best management practices would be implemented to reduce erosion to negligible levels. Moderate to deep soil conditions would also tend to minimize water erosion. Low Wind Erodibility Group rating for soil complex 61F indicates relatively greater susceptibility to wind erosion, but all of the common soils have moderate to low sodium absorption ratios, indicating no restrictions on vegetative regrowth after disturbance. Directional drilling would be used to avoid increasing erosion problems in several wetland areas.

3.9 Water Resources

Surface Water

The proposed Phase 1B - HWY 22 project is located within the Missouri Region and the Lower Little Missouri River sub-basin, watershed Waterchief Bay, and sub-watersheds Upper Squaw Creek and Upper Moccasin Creek (NDWC 2009). Phase 1B - HWY 22 crosses tributaries of Upper Squaw Creek five times. The northern portion of the Phase 1B - HWY 22 project follows along the top of a ravine draining to the southeast into tributaries of Upper Squaw Creek which is a tributary of the Lower Little Missouri River. In Section 23 the project crosses a broad drainage that contributes to the Little Missouri River. After crossing this broad drainage, the rest of Phase 1B - HWY 22 to the south crosses some deep ravines that drain to the east.

Runoff is generally sheet-flow until collected by ephemeral and perennial drainages leading to the Lower Little Missouri River and eventually to the Missouri River (Lake Sakakawea). There are no water well locations within the pipeline corridor. The closest well is a domestic well located 1,715 feet to the northwest (SW ¼ Section 27, T. 149 N., R. 94 W.). Off to the east of the south end of the pipeline there is another site, purpose is unknown and it is located 1,950 feet from the pipeline (SE ¼ Section 6, T. 148 N., R. 94 W.).

Ground Water

Aquifers in Dunn and McKenzie County, North Dakota, include Sentinel Butte, Tongue River, Hell Creek, Fox Hills, Fort Union, Bennie Peer, Charbonneau, Little Missouri River, Tobacco Garden, Yellowstone Missouri, and Ludlow. Phase 1B - HWY 22 crosses the Fort Union aquifer in Section 22, T. 149 N., R. 94 W.

(NDSWC 2009). This is the only aquifer that is within close proximity of the Phase 1B - HWY 22 project. The proposed depth of Phase 1B - HWY 22 is 6.5 feet to ensure 5.5 feet of soil coverage over the largest pipeline diameter. Phase1B will be bored at least 14 feet below the surface when crossing wetlands, as described in the following section. No significant impacts to surface water or groundwater are expected as a result of the proposed Phase 1B - HWY 22 pipeline construction.

3.10 Wetlands

After review of the National Wetland Inventory maintained by the USFWS, in conjunction with soil and vegetation surveys, the Phase 1B - HWY 22 corridor was examined for wetlands meeting criteria in the Corps Wetlands Delineation manual (Environmental Laboratory, 1987) and the *Interim Regional to the Corps of Engineers Wetland Delineation Manual: Great Plains Region* (Corps 2008). Criteria include hydrophytic vegetation, hydric soils, and wetland hydrology. Areas meeting two of the three criteria are classified as wetlands. Wetland indicator status for plant species was determined using Reed (1997). Field work identified five wetlands within the Phase 1B - HWY 22 corridor as shown in **Figure 3-2,** comprising a total of 0.69 acres. Vegetation and soils were described in detail for each wetland and intervening upland.

Wetland 1

Location: N ½ SW Section 23, T. 149 N., R. 94 W.
Size: 0.39 acres
Setting: Deep intermittent drainage, running water, beaver activity
Soil: Lamoure-like silty clay loam – Cumulic Endoaquolls
Vegetation: *Spartina pectinata*, *Typha* cf. *latifolia*, *Juncus balticus*, *Puccinellia nuttaliana*, *Agropyron repens*, *Scirpus acutus*
Indicators: Vegetation, hydrology, soils
Bore: Yes

Wetland 2

Location: SWSW Section 23, T. 149 N., R. 94 W.
Size: 0.034 acres
Setting: Shallow intermittent drainage, areas of standing water
Soil: Lamoure-like silty clay loam – Cumulic Endoaquolls
Vegetation: *Spartina pectinata*, *Poa palustris*, *Carex praegracilis*, *Juncus balticus*
Indicators: Vegetation, hydrology, soils
Bore: Yes

Wetland 3

Location: SESE Section 22, T. 149 N., R. 94 W.
Size: 0.02 acres
Setting: Shallow intermittent drainage
Soil: Lamoure-like silty clay loam – Cumulic Endoaquolls
Vegetation: *Spartina pectinata*, *Puccinellia nuttalliana*, *Poa palustris*, *Carex praegracilis*, *Agropyron smithii*
Indicators: Vegetation, hydrology, soils
Bore: No

Wetland 4

Location: SESE Section 22, T. 149 N., R. 94 W.
Size: 0.004 acres
Setting: Shallow intermittent drainage
Soil: Dalmatian-like silty clay loam – Cumulic Haplustolls
Vegetation: *Spartina pectinata*, *Agrostis stolonifera*, *Melilotus officinalis*, and *Aster ericoides*
Indicators: Vegetation, hydrology, soils
Bore: No

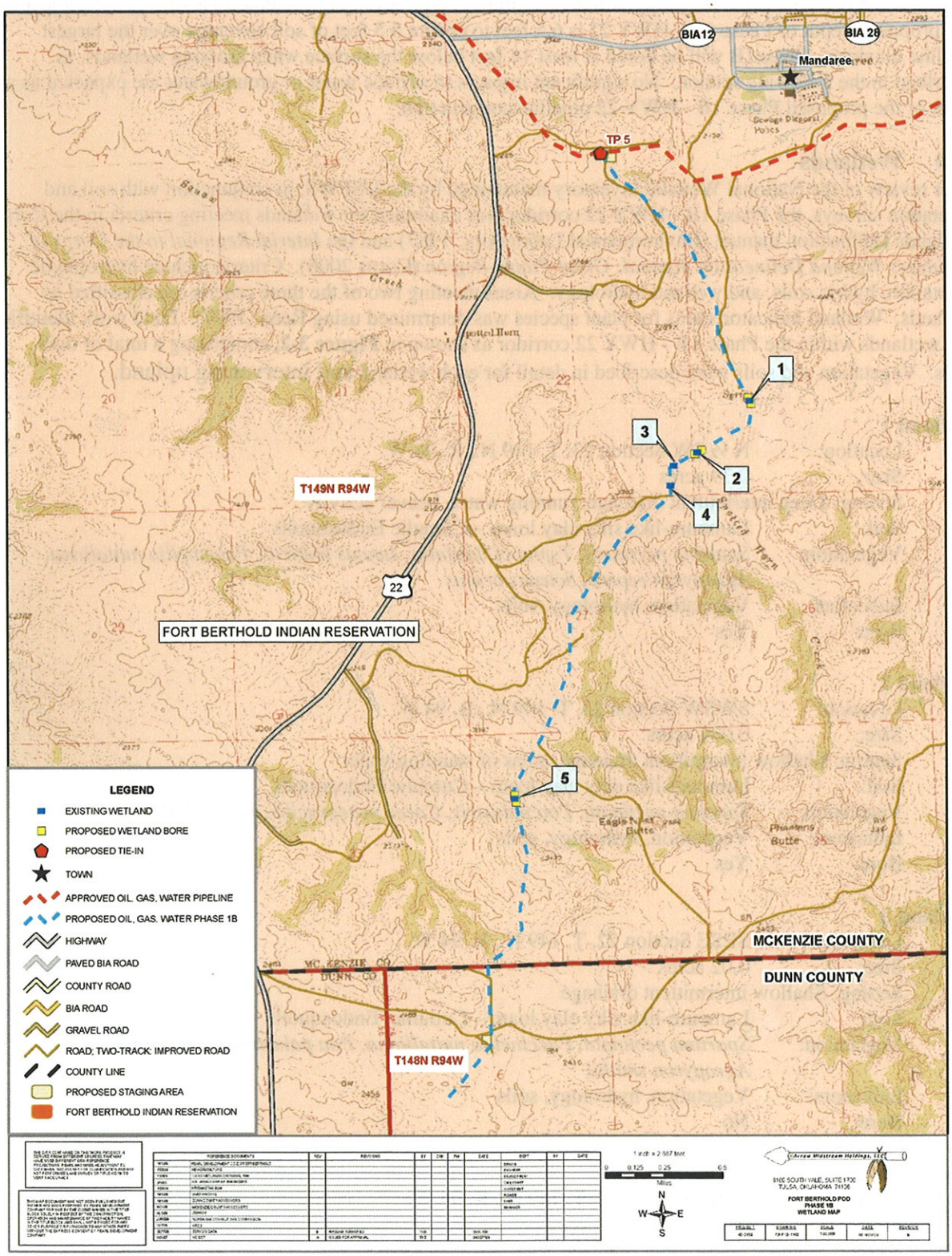

Figure 3-2 Wetland and Proposed Directional Drilling Locations within the Project Corridor

Wetland 5

Location:	W ½ NW Section 34, T. 149 N., R. 94 W.
Size:	0.24 acres
Setting:	Deep intermittent drainage, running water, and minor cattle traffic
Soil:	Lamoure-like clay loam – Cumulic Endoaqolls
Vegetation:	*Beckmannia syzigachne*, *Eleocharis palustris*, *Hordeum jubatum*, *Agrostis stolonifera*, *Carex* sp., *Panicum virgatum*, and *Sonchus arvensis*
Indicators:	Vegetation, hydrology, soils
Bore:	Yes

No permits were required by the Corps, under Section 404 of the Clean Water Act, regarding work in or near wetlands within the corridor. Wetland vegetation removed during pipeline construction would quickly grow/revegetate during the growing season following the pipeline installation. Directional drilling (see details in Section 2.3) would ensure there would be no long-term impacts to Wetlands 1, 2, and 5 listed above.

3.11 Vegetation and Invasive Species

Physiographically, the area crossed by the proposed Phase 1B - HWY 22 project is part of the Missouri Plateau, a relatively high plain that slopes to the east and northeast. The plateau is underlain by sedimentary materials deposited by water during the Tertiary period. These materials include layers of soft shale and soft sandstone noticeable on the hilltops. In some areas the sedimentary material is covered with a comparatively thin layer of glacial drift or till. Where present this till may consist of just a few pebbles or be distinct layer of stony soils. In places, the till has nearly has been nearly entirely eroded away and is only represented by large granite glacial boulders.

The south end of the Phase 1B - HWY 22 project lies on a high grassy ridge west of Mandaree. The proposed pipeline follows the ridge southwest and then crosses a broad drainage area formed by Squaw Creek and its tributaries. South of the creek the remainder of the proposed pipeline branch crossed grassy ridges and ravines with wooded or grassy slopes that varied from steep to gentle. There are five wetlands that would be crossed by the proposed route (See Section 3.10 above).

The Phase 1B - HWY 22 project area was surveyed by WPC on July 15 and 16, 2009 and re-route portions on October 19, 2009. General observations were made concerning the topography, soils and the general composition of the vegetation. All species that could be identified were noted. Special effort was made to ascertain the presence of sensitive plant species especially those of concern to the U.S. Forest Service (USFS 2004) or any listed by the North Dakota Natural Heritage Inventory (2006) as well as any species listed by North Dakota's Noxious Weed Law (2005). In addition, the presence of any species considered to be invasive by the USFS was noted. The following vegetation descriptions are taken from WPC field observations (WPC 2009).

Phase 1B - HWY 22 route consisted of rolling grassy uplands on which the primary grass species were western wheatgrass (*Agropyron smithii*), green needlegrass (*Stipa viridula*), needle-and-thread (*Stipa comata*), prairie junegrass (*Koeleria pyramidata*) and little bluestem (*Andropogon scoparius*) (**Figure 3-4**). The proposed route crossed some woodlands primarily where the proposed route intersected north facing slopes. The most common woody species were bur oak (*Quercus macrocarpa*), green ash (*Fraxinus pennsylvanica*), buffalo berry (*Shepherdia argentea*), chokecherry (*Prunus virginiana*) and Juneberry (*Amelanchier alnifolia*). Western snowberry (*Symphoricarpos occidentalis*) was usually found around the edges of wooded ravines and in slight swales on the prairie. The most common forb species were white sage (*Artemisia ludoviciana*), fringed sage (*Artemisia frigida*), white aster (*Aster ericoides*), blue flax (*Linum perenne*) and smooth blue (*Aster laevis*). The road ditch was vegetated primarily with smooth brome (*Bromus inermis*) but there was a small amount of big bluestem (*Andropogon scoparius*). Rigid goldenrod (*Solidago rigida*) and silky wormwood (*Artemisia dracunculus*) were the most noticeable forbs. The soils along the access road were a grayish brown silty clay loam. In a few areas near the road the surface of the soil was primarily bare eroded clay with shale chips. The predominant

species on these locations were inland saltgrass (*Distichlis spicata*) and alkali grass (*Puccinellia nuttalliana*)

Figure 3-4 Vegetation in Section 22, T. 149 N., R. 94 W.

Land use along the proposed route is closely related to topographic relief and soil. The high prairie is used for predominantly for grazing and is mostly in excellent condition. The relatively flat area on the north side of Squaw Creek had been planted to small grains and hay. A similar area south of the creek had been cultivated in the past but was reverting to native species and weedy plants. The floristic diversity was reported as high as might be expected based on the typical rainfall and limited soils and habitat diversity. There were no rare species observed that are being followed by the USFS or by the North Dakota Heritage Inventory. Consequently, there were no adverse impacts anticipated on any rare plant.

There were non-native species considered to be invasive or noxious that were encountered along the proposed route. Canada thistle (*Cirsium arvense*), field bindweed (*Convolvulus arvense*) and absinth wormwood (*Artemisia absinthium*) are among the twelve species listed in North Dakota's Noxious Weed Law. Species found along the proposed route that are considered invasive include smooth brome (*Bromus inermis*), Kentucky bluegrass (*Poa pratensis*), yellow sweet clover (*Melilotus officinalis*) and crested wheatgrass (*Agropyron cristatum*). Two annual brome grasses, Japanese brome (*Bromus japonicus*) and downy brome (*Bromus tectorum*) were present. They are both becoming increasingly a problem on rangelands in western North Dakota. Consideration should be given to controlling and minimizing the spread of these undesirable species.

3.12 Mitigation and Monitoring

Monitoring programs would be initiated immediately following all reclamation efforts, whether following initial construction, any operational ground disturbance or after final reclamation. Monitoring results would be used to determine need for additional seeding, planting or other soil preparation or stabilization measures. Identified problem areas would be treated as soon as possible. Unauthorized vehicle access would be noted during monitoring and measures to block access would be taken, such as fencing or signage of the pipeline corridor. Many protective measures and procedures are described in this document. No laws, regulations, or other requirements have been waived.

3.13 Irreversible and Irretrievable Commitment of Resources

Construction of an oil, gas and water gathering system may expedite removal and consumption of oil or gas from the Bakken Formation would be an irreversible and irretrievable commitment of resources. Other potential resource commitments include acreage devoted to the facility and associated infrastructure along the Phase IB project, soil lost through wind and water erosion, cultural resources inadvertently destroyed, wildlife killed by earthmoving, habitat loss or in collisions with vehicles, and energy expended during construction and operation.

3.14 Short-term Use of the Environment versus Long-term Productivity

Short-term activities would not detract significantly from long-term productivity of the project area. The small area dedicated to the Phase IB corridor would be temporarily unavailable for livestock grazing, wildlife habitat or other uses, but original uses would be re-established very quickly. Allottees with surface rights would be compensated for temporary loss of productive acreage and project footprints would shrink considerably once the pipeline was backfilled and non-working areas were reclaimed and reseeded. Successful and ongoing reclamation of the landscape would quickly stabilize the soil, reduce potential for erosion and sedimentation, and re-establish customary land uses for wildlife and livestock. The major long-term resource loss corresponds with the project purpose: gathering of hydrocarbons from the Bakken Formation for economic benefit of MHA Nation and individual Indians.

3.15 Cumulative Impacts

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 project include farming, grazing, roads, and other oil/gas wells. Virtually all available acreage is already organized into agricultural leases of range permits. Small-scale disruption of these activities during construction of the proposed gathering system would not have more than a minor, temporary effect on surface use patterns.

Construction of the proposed system could facilitate additional oil/gas exploration by salvaging revenue streams currently wasted in flaring. Gathering capability may therefore lead to more wells drilled, even while commodity prices are relatively low, but all such developments remain speculative and incapable of analysis. Extensions of the gathering system itself are viewed generally as posing relatively minor direct impacts and tending to reduce indirectly overall oil field environmental impacts, through reductions in flaring, trucking and public hazards from all serviced wells. No significant cumulative, negative impacts are reasonably foreseen from proposed activities.

4. Consultation and Coordination

The project notice reproduced below was posted at the BIA Fort Berthold Agency and direct-mailed to the recipients listed in Table 4 on July 6, 2009.

Dear Interested Party:

The Bureau of Indian Affairs (BIA) is preparing an Environmental Assessment (EA) under the National Environmental Policy Act (NEPA), in cooperation with the Bureau of Land Management (BLM). BIA and BLM are considering approval of three pipelines (oil, gas and water) and a utilities line in one 100 foot Right-of-Way (ROW) on the Ft. Berthold Reservation by Arrow Midstream Holdings, LLC.

The proposed route of the ROW is shown on the enclosed map and described in the following paragraph:

> The ROW will start in the NWSE of Section 15, T149N R94W, tying into an oil and gas gathering pipeline ROW currently under construction. The pipeline route will head south through Sections 22, 27, 34 of T149N R94W and end in the NESW of Section 06 T148M R94W.

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

> Pearl
> Attn: Christi Haswell
> P.O. Box 783
> Sheridan, WY 82801

Questions for the BIA can be directed to Paul Hofmann, Chief, Division of Environment, Safety and Cultural Resource Management, at (605) 226-7413.

Sincerely,

Regional Director

Table 4-1 Public Comments

Name	Organization	Comment
Bagley, Lonny	Bureau of Land Management	No comments
Benson, Barry	Three Affiliated Tribes	No comments
Berg, George	NoDak Electric Cooperative, Inc.	No comments
Black, Mike	Bureau of Indian Affairs	No comments
Boland, Mike	Saddle Butte Pipelines, LLC	No comments
Boyd, Bill	Midcontinent Cable Company	No comments
Brady, Perry	THPO, Three Affiliated Tribes	No comments
Brien, David	Chairman, Turtle Mountain Band of Chippewa	No comments
Brugh, V. Judy	Three Affiliated Tribes	No comments
Cayko, Richard	McKenzie County	No comments
Christenson, Ray	Southwest Water Authority	No comments
Cimarosti, Dan	U.S. Army Corps of Engineers	No comments
Corps of Engineers, Omaha District	Garrison Project Office	No comments
Danks, Marvin	Fort Berthold Rural Water Director	No comments
Dhieux, Joyce	U.S. Environmental Protection Agency	No comments
Director, Insurance & Hazard	Federal Emergency Management Agency	No comments
Dixon, Doug	Montana Dakota Utilities	No comments
Early, John	Saddle Butte Pipeline, LLC	No comments
Erickson, Carroll	Ward County Board of Commissioners	No comments
Flores, J.R.	U.S. Department of Agriculture	No comments
Fox, Fred	Three Affiliated Tribes	No comments
Glatt, David	ND Department of Health, cont	Environmental impacts resulting from the proposed project are expected to be minor and can be controlled by proper construction methods. Use good air pollution control practices for minimizing emissions. Minimize disturbance to 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. Prevent spills of any construction material that may reach a water source. A permit to discharge stormwater may be required by the EPA. Check with the local officials to be sure any local storm water management considerations are addressed. The department owns no land in or adjacent to proposed project and has no projects scheduled. We believe proposed activities are consistent with Stat Implementation Plan for the Control of Air Pollution.
Gorton, Candace	U.S. Army Corps of Engineers	No comments
Guzman, Frank	U.S. Forest Service	No comments
Hall, Joseph	U.S. Department of Interior Bureau of Reclamation, Chief Resource Management	No comments
Hall, Tex	President, Fort Bethold Allottee Land & Mineral Owners Association	No comments
Hall, Todd	Three Affiliated Tribes	No comments
Hauck, Reinhard	Dunn County	No comments
His Horse Is Thunder, Ron	Standing Rock Sioux Tribe	Conduct Class III archeology survey before ground disturbance to potentially locate any native American artifacts and/or items of cultural significance. Use Native Americans, preferable from Fort Berthold to conduct surveys.
Hoffman, Warren	Killdeer, Weydahl Field	No comments
Hovda, Roger	Reservation Telephone Cooperative	No comments
Hudson-Schenfisch, Julie	McLean County Board of Commissioners	No comments
Hynek, David	Chair, Mountrail Board of County	No comments

	Commissioners	
Kulas, Cheryl	Indian Affairs Commission	No comments
Manager	Xcel Energy	No comments
McKenna, Mike	ND Game and Fish Department	Project may possibly disturb native prairie and wooded draws associated with construction of pipeline and access roads. It is recommended that construction be avoided to the extent possible within native prairie, wooded draws, and wetland areas. It is requested that disturbed areas be reclaimed to pre-project conditions. NWI indicates several wetlands within project corridor. Steps should be taken to avoid and protect wetland areas. Above-ground appurtenances should not be placed in wetland areas, and no alterations should be made to existing drainage patterns. No significant adverse effects on wildlife or wildlife habitat provided best management practices are implemented.
McLean, Alex	Peak North Dakota, LLC.	No comments
Melhouse, Ronald	Bureau of Reclamation	Proposed pipeline could potentially affect Reclamation facilities in the form of rural water pipelines of the fort Berthold Rural Water System. There do not appear to be any water lines within the ROW proposed.
Missile Engineer, Chief	Minot Air Force Base	No comments
Moch, Alan	ND Public Service Commission	No comments
NAGPRA Office	Three Affiliated Tribes	No comments
Nash, Mike	Bureau of Land Management	No comments
Flores, J.R.	Natural Resources Conservation Service	If project is supported by Federal funding or actions, Farmland Protection Policy Act will apply and Farmland Conversion Impact Rating Form must be completed. Disturbance to wetlands must be temporary, no drainage is allowed, preconstruction contours maintained, temporary side cast material not dispersed in wetland, trenches backfilled to original bottom elevation.
Three Affiliated Tribes	Natural Resources Department	No comments
Obenauer, Steve	Federal Aviation Administration	No comments
Olson, Frances	McKenzie County	No comments
Paaverud, Merl	State Historical Society	The SHPO looks forward to receipt of copies of reports and site forms regarding this project.
Packineau, Mervin	Three Affiliated Tribes	No comments
Paulson, Gerald	Western Area Power Administration	No comments
Pearson, Myra	Spirit Lake Sioux Tribe	No comments
Peterson, Walter	ND Department of Transportation	No comments
Poitra, Fred	Three Affiliated Tribes	No comments
Prchal, Doug	ND Parks and Recreation Department	Comment by Jesse Hanson: The proposed project does not affect state park lands. Based on review of the North Dakota Natural Heritage database, the following plant or animal species of concern are known to occur with-in or adjacent to the project area: Western Little Bluestem Prairie, central mesic tallgrass prairie, Sprague's pipit, Dakota skipper. Minimize impacts to ensure that critical habitats not be disturbed to conserve rare species. Regarding reclamation efforts, it is recommended that any impacted areas be revegetated with species native to the project area.
Representative, Mandaree Segment	Three Affiliated Tribes	No comments
Roth, Sandy	Northern Border Pipeline Company	No comments
Rudolph, Reginald	McLean Electric Cooperative, Inc.	No comments
Schelkoph, David	West Plains Electric Cooperative, Inc.	No comments
Selvage, Micheal	Chairman, Sisseton-Wahpeton Sioux Tribe	No comments
Thompson, Brad	U.S. Army Corps of Engineers	Bury pipeline deep enough to prevent exposure due to streambed erosion hazards and flood flow. Coordinate with EPA, USFWS, SD Dept of Game and Fish, and

		Parks and SHPO. Placing fill material into waters of the US requires permit under 404 of CWA.
Svoboda, Larry	U.S. Environmental Protection Agency	No comments
Thompson, Brad	U.S. Army Corps of Engineers	If the proposed pipeline may require Section 10 and/or Section 404 permit, complete and submit enclosed permit application to our office for review and authorization prior to construction.
Melland, Gary	McKenzie Electric Cooperative	We foresee no adverse affects in the operation of our power lines due to this project. Request contractor adhere to ND law and follow One-Call procedures.
Towner, Jeffrey	U.S. Fish and Wildlife Service	Avoid impacts to potential Dakota skipper habitat. Precautions should be taken to avoid wetlands and minimize disturbance as through directional drilling. Avoid/minimize impacts to existing wildlife habitat by incorporating the following: schedule construction for late summer or fall/winter to avoid disturbing waterfowl or other wildlife during breeding season; make no alterations to stream channels; use appropriate erosion control measures; avoid native prairie - reseed with native plant species if necessary; avoid wetlands - replace loss of wetland habitat if necessary; make no stream channel alterations or changes in drainage patterns.
Wells, Marcus	Chairman, Three Affiliated Tribes	No comments
Whitcalf, Frank	Three Affiliated Tribes	No comments
Williams, Damon	Three Affiliated Tribes	No comments
Wolf, Malcolm	Three Affiliated Tribes	No comments

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

SEP 2 8 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 an oil pipeline and staging areas in Dunn and McKenzie Counties, North Dakota. Approximately 61 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 (16 USC 1996). The pipeline has been routed so as to avoid any previously known traditional or historic properties.

As the surface management agency, and as provided for in 36 CFR 800.5, we have therefore reached a determination of **no historic properties affected** for this undertaking. Catalogued as **BIA Case Number AAO-1640/FB/09,** the proposed undertaking, location, and project dimensions are described in the following report:

Burns, Wade, and Jennifer Pollman
(2009) The Arrow Pipeline, Fort Berthold Phase 1B: A Class III Cultural Resource Inventory, McKenzie and Dunn Counties, North Dakota. Beaver Creek Archaeology for Pearl Development Company/Epic Resources, Sheridan, WY.

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

October 12, 2009

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

RE: Project: AO-1640/FB/09-Arrow Pipeline, Ft. Berthold Phase 1B,
McKenzie & Dunn Counties, N. Dakota.

Dr. Murdy:

After review of the documentation provided by Beaver Creek Archeology, 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 proposed Project area.

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

Sincerely,

Perry Brady pc

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

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

NOV 06 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 an oil pipeline reroute in Dunn and McKenzie Counties, North Dakota. Approximately 22 acres were intensively inventoried using a pedestrian methodology. Potential surface disturbances are not expected to exceed the areas 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 (16 USC 1996). The pipeline has been routed so as to avoid any previously known traditional or historic properties.

As the surface management agency, and as provided for in 36 CFR 800.5, we have therefore reached a determination of **no historic properties affected** for this undertaking. Catalogued as **BIA Case Number AAO-1640/FB/09,** the proposed undertaking, location, and project dimensions are described in the following report:

Burns, Wade
(2009) The Arrow Pipeline, Fort Berthold Phase 1B Reroute: A Class III Cultural Resource Inventory, McKenzie and Dunn Counties, North Dakota. Beaver Creek Archaeology for Pearl Development Company/Epic Resources, Sheridan, WY.

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,

Regional Director

Enclosures

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

5. List of Preparers

An interdisciplinary team contributed to this document, following guidance in Part 1502.6 of the Council on Environmental Quality regulations. Pearl Field Services prepared portions of this EA under contract to Zenergy, Inc/Arrow Midstream Holdings, LLC and under the direction of the BIA, Great Plains Regional Office, Division of Environment, Safety and Cultural Resource Management. Western Plains Consulting performed fieldwork and prepared the water, soil, vegetation and wildlife sections. Preparers, reviewers, consultants, and federal officials include the following:

• DESCRM	Division of Environment, Safety and Cultural Resource Management, BIA – Great Plains Regional Office. Editing of EA and recommendation to BIA Regional Director regarding FONSI or EIS.
• Scott Martin	Arrow Midstream Holdings, LLC Project Manager. Document Review.
• Pearl Field Services, LLC	Christi Haswell, Regulatory Project Manager.
	Tracey Ostheimer, Regulatory Project Coordinator.
• Western Plains Consulting	John W. Schulz, Certified Wildlife Biologist / Senior Biologist.
	Carolyn Godfread, Ph.D., Senior Botanist.
	Lance G. Loken, Senior Soil Scientist.
	Justin Askim, Wildlife Biologist / Botanist.
	Sara Simmers, Natural Resource Specialist / GIS Specialist.
• Beaver Creek Archaeology	Wade Burns, Senior Archeologist

6. References and Acronyms

American Lung Association. 2006. State of the Air 2006. [Web Page] located at: http://lungaction.org/reports/sota06_analyses5.html#region8. Accessed on April 22, 2008.

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Acronyms

AAQM	Ambient Air Quality Monitoring
AMH	Arrow Midstream Holdings, LLC
APE	Area of potential effect
ARVs	Air release valves
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
CFR	Code of Federal Regulations
Corps	U.S. Army Corps of Engineers
DOT	Department of Transportation
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FONSI	Finding of No Significant Impact
MHA Nation	Three Affiliated Tribes of the Mandan, Hidatsa, and Arikara Nation
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NDDH	North Dakota Department of Health
NDGFD	North Dakota Game and Fish Department
NDSWC	North Dakota State Water Commission
NEPA	National Environmental Policy Act
NRHP	National Register of Historic Places
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetland Inventory
PIG	Pipeline inspection gauge
PHMSA	Pipeline and Hazardous Materials Safety Administration
Psig	Pounds per Square Inch Gauge
Reservation	Fort Berthold Indian Reservation
ROW	Right-of-way
SARA	Superfund Amendments and Reauthorization Act
SHPO	State Historic Preservation Officer
SPCC	Spill Prevention, Control, and Countermeasure
TCP	Traditional Cultural Property
THPO	Tribal Historic Preservation Officer
USC	United States Code
USDA	U.S. Department of Agriculture
USDI	U.S. Department of the Interior
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service

Notice of Availability and Appeal Rights

Arrow Midstream Holdings: Phase 1B Gathering System

The Bureau of Indian Affairs (BIA) is planning to issue administrative approvals related to installation of the Phase 1B, Oil, Gas and Water Gathering System as shown on the attached map. Construction by Arrow Midstream Holdings is expected to begin in 2010.

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

The FONSI is only a finding on environmental impacts – it is not a decision to proceed with an action and *cannot* be appealed. BIA's decision to proceed with administrative actions *can* be appealed until January 17, 2010, by contacting:

United States Department of the Interior
Office of Hearings and Appeals
Interior Board of Indian Appeals
801 N. Quincy Street, Suite 300, Arlington, Va 22203.

Procedural details are available from the BIA Fort Berthold Agency at 701-627-4707.

Project locations.

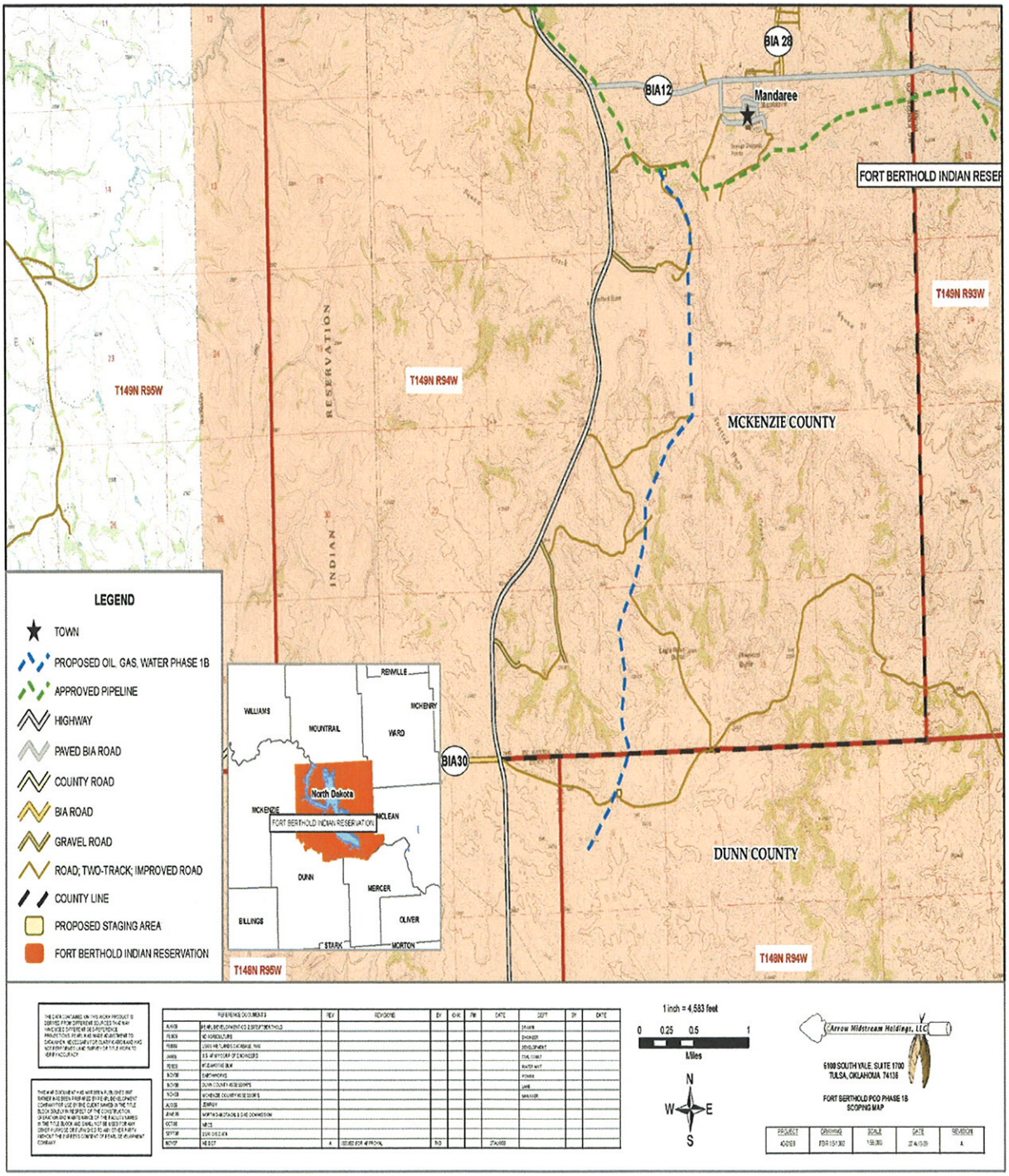

Figure 1-1 Proposed Phase IB Project Location