

APPENDIX D
Natural Resources Report



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**Natural Resources and Wetland
Delineation Report for the
Arrow NB Residue Gas Pipeline and
Arrow Bakken NGL Pipeline Project,
McKenzie County, North Dakota**


Prepared for

Arrow Field Services, LLC

Prepared by

SWCA Environmental Consultants

December 2016



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Arrow Field Services, LLC

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1.0 INTRODUCTION

1.1 BACKGROUND

Arrow Field Services, LLC (Arrow) is proposing to construct and operate the Arrow NB Residue Gas Pipeline and Arrow Bakken NGL Pipeline system on privately owned lands in McKenzie County, North Dakota (the project). SWCA Environmental Consultants (SWCA) conducted natural resources field surveys to identify exclusion and avoidance areas as specified in North Dakota Administrative Code 69-06-08-02 for the proposed pipeline system.

As proposed, two pipelines will be used to transfer residue gas and natural gas liquid (NGL) approximately 2.6 miles to existing third-party transmission pipelines. Residue gas and NGL will be transferred through 10- and 8-inch-diameter welded steel pipeline, respectively. The project falls under the jurisdiction of the North Dakota Public Service Commission (NDPSC); therefore, Arrow contracted SWCA to conduct natural resources field services.

SWCA conducted field surveys of a 200-foot-wide pipeline survey corridor (100-foot-wide right-of-way [ROW]) on November 15 and 16, 2016, to determine the potential presence and extent of wetlands and waterbodies, including those that are likely jurisdictional waters of the U.S. according to the U.S. Army Corps of Engineers (USACE) regulatory program. Concurrently with the wetland determinations, SWCA conducted a cursory threatened and endangered species survey and habitat assessment; a tree, sapling, and shrub enumeration survey; and a noxious weed survey. Site layout maps of the survey area and natural resource features identified during the field surveys are provided in Appendix A.

This report describes the methodology used by SWCA to complete each of the aforementioned surveys. Additionally, this report presents the results of the completed field surveys and provides regulatory recommendations to comply with the Clean Water Act of 1972 (33 United States Code [USC] 1251-1387). Lastly, this report ensures observance of and offers mitigation measures for resources protected by the Endangered Species Act of 1973 (ESA) (16 USC 1531-1544), Migratory Bird Treaty Act of 1918 (MBTA) (16 USC 703-712), and Bald and Golden Eagle Protection Act of 1940 (BGEPA) (16 USC 668).

1.2 SURVEY AREA

Overall, northwest North Dakota is characterized by a moderate to cool climate, with cold, dry winters and mild to warm summers. Mean annual precipitation for the area is 14 to 16 inches. The project is located in the Northwestern Great Plains (level III ecoregion) which is a semiarid rolling plain of shale and sandstone-derived soils punctuated by occasional buttes and badlands (U.S. Geological Survey [USGS] 2014).

The surveyed area for the project discussed herein (Figure 1) is situated on the USGS Tepee Buttes (1995) and Lone Butte NW (1995), North Dakota, quadrangles. The project corridor that was surveyed in November 2016 is located in Sections 21, 28, and 29, Township (T) 149 North (N), Range (R) 98 West (W), McKenzie County, North Dakota.



Figure 1. General topography within project area.

1.3 REGULATORY BACKGROUND

1.3.1 North Dakota Administrative Code Section 69-06-08-02

In accordance with North Dakota Administrative Code Section 69-06-08-02, Transmission Facility Corridor and Route Criteria, certain geographical areas shall be either excluded or avoided from consideration for a transmission facility route.

Areas to be excluded include, but are not limited to, areas critical to the life stages of threatened or endangered animal or plant species, and areas where animal or plant species that are unique or rare to this state would be irreversibly damaged. To comply, proponents shall not cross any areas critical to the life stages of threatened or endangered animal or plant species and not cross any areas where animal or plant species that are unique or rare to this state occur.

Areas to be avoided include, but are not limited to, Scenic, or Recreational Rivers; Wildlife Refuges; Designated or Registered State Wild, Scenic, or Recreational Rivers; Game Refuges; Game Management Areas; Management Areas; Forests; Forest Management Lands; and Grasslands. To comply, proponents shall avoid previously listed areas unless the applicant shows that, under the circumstances, there is no reasonable alternative.

1.3.2 Clean Water Act, Section 404

Section 404 of the Clean Water Act prohibits the discharge of dredged or fill material into waters of the U.S., including certain wetlands, also known as jurisdictional waters, without a permit from the USACE.

1.3.3 USACE Nationwide Permit 12

Nationwide Permit (NWP) 12 authorizes the construction of utility line projects in non-tidal waters of the U.S., provided the activity does not result in the permanent loss of greater than 0.5 acre of waters of the U.S., including wetlands. In conjunction with NWP 12, Section 401 certification is required for all Section 404 permits (i.e., NWP 12). Section 401 certification is mandated by the North Dakota Department of Health (NDDH) and requires all projects under this certification to follow their Construction and Environmental Disturbance Requirement guidelines (Appendix B).

NWP 12 requires that the permittee submit a pre-construction notification prior to commencing construction if any of the following criteria are met.

- The activity involves mechanized land clearing in a forested wetland.
- The utility line exceeds 500 feet in length through any single crossing of a water of the U.S.
- The utility line is placed within a jurisdictional area (i.e., water of the U.S.) and it runs parallel to a streambed that is within that jurisdictional area.
- Discharges result in the permanent loss of greater than 0.1 acre of waters of the U.S.
- Permanent access roads are constructed above grade in waters of the U.S. for a distance of more than 500 feet.
- Permanent access roads are constructed in waters of the U.S. with impervious materials.

1.3.4 USACE Regional Conditions

The USACE has published several regional conditions for projects operating under NWPs in North Dakota (USACE 2012). The regional conditions apply to wetlands classified as “fens,” waters adjacent to natural springs, the Missouri River, historic properties, and fish-spawning areas.

1.3.5 Endangered Species Act

In the absence of a federal nexus (i.e., any action carried out, funded, or permitted by a federal agency), the ESA protects endangered and threatened species and their habitats by prohibiting the “take” of a listed animal, except as authorized by the U.S. Fish and Wildlife Service (USFWS) pursuant to Section 10 of the ESA. The use of a Section 404 NWP will include the project meeting NWP general condition 18 on endangered species.

The lack of discovery of threatened or endangered species does not signify their non-existence within any particular area, but only that no primary or secondary indications of these species were recorded.

1.3.6 Migratory Bird Treaty Act

The MBTA provides that it is unlawful to pursue, hunt, take, capture, or kill; attempt to take, capture, or kill; possess, offer to sell, barter, purchase, deliver, or cause to be shipped, exported, imported, transported, carried, or received any migratory bird, part, nest, egg, or product, manufactured or not. Oil and gas developments are advised to consider this federal act when

considering seasonal timing, best management practices, and pre-construction survey requirements.

1.3.7 Bald and Golden Eagle Protection Act

The BGEPA prohibits anyone, without a take permit issued by the Secretary of the Interior, from “take” of an eagle. This may include 1) injury to an eagle; 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior; or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior. Oil and gas developments in North Dakota are subject to compliance with the BGEPA, and should consider this federal act when planning spatial and temporal aspects of construction or other disruptive activities, best management practices, and pre-construction survey requirements.

2.0 METHODS

2.1 PRE-FIELD REVIEW

Prior to conducting field surveys, SWCA reviewed applicable National Wetlands Inventory (NWI) data (USFWS 2012a), National Hydrography Dataset (NHD) flowline data (USGS 2011), the threatened and endangered species list for McKenzie County (USFWS 2015a), as well as preliminary National Weather Service climatic data.

2.2 WETLANDS

NWI mapping for the region indicates the presence of wetlands within the project area (USFWS 2012a). SWCA biologists conducted wetland delineations within the survey area based on the principles and guidelines provided in the *Corps of Engineers Wetlands Determination Manual* (Manual) (Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetland Determination Manual: Great Plains Region Version 2.0* (Supplement) (USACE 2010). According to the Manual, an area is a wetland if three specific wetland indicators—hydrophytic vegetation, wetland hydrology, and hydric soils—are present, with certain exceptions. All wetlands and waterbodies geographically referenced within the survey area during field survey are depicted on the site layout maps in Appendix A. Wetland delineation data forms are provided in Appendix C.

2.2.1 Hydrophytic Vegetation

SWCA recorded all plants within the vegetative community of the data point survey area based on the respective stratum in which each species is located. The Supplement defines a tree as a woody-stemmed plant with a trunk diameter at breast height (DBH) of equal to or greater than 3 inches, regardless of height. The sapling and shrub stratum is composed of woody-stemmed plants with a DBH of less than 3 inches, regardless of height. The herbaceous stratum includes all non-woody-stemmed plants regardless of height. Finally, the woody vine stratum includes all woody-stemmed vines, regardless of diameter.

SWCA recorded the binomial scientific name and percent cover of all plants within a 30-foot radius for the tree stratum, a 15-foot radius for the sapling/shrub stratum, a 5-foot radius for the

herbaceous stratum, and a 30-foot radius for the woody vine stratum. SWCA noted each plant species' respective USFWS wetland indicator status (i.e., upland [UPL], facultative upland [FACU], facultative [FAC], facultative wetland [FACW], and obligate [OBL]). Common hydrophytic indicators include; Rapid Test, where all dominant species across all strata are rated OBL or FACW based on visual assessment; Dominance Test, whereas using the "50/20 rule" greater than 50% of dominant species had an indicator status of FAC, FACW, or OBL; and Prevalence index (PI), whereas the PI is 3.0 or less.

2.2.2 Wetland Hydrology

A wetland was determined to contain wetland hydrology if at least one primary indicator or at least two secondary indicators of wetland hydrology were present, as defined by the Manual and Supplement. Common hydrologic indicators include the presence of surface water, high water table, soil saturation, water marks on trees or other objects, sediment deposits, water-stained leaves, and oxidized rhizospheres on living roots.

2.2.3 Hydric Soil

Biologists recorded detailed notes regarding soil profiles including the hue, value, and chroma (i.e., color) of the soil (using Munsell Soil Color Charts); the depth and extent of that soil color within the entire soil profile; the concentration of any redoximorphic concentrations or depletions; and the texture of the soil at each depth where a color change was observed. Common hydric soil indicators of the Northern Great Plains subregion include the presence of hydrogen sulfide gas within the soil pit, redox depressions, redox dark surfaces, and depleted matrix.

2.3 WATERBODIES

The lateral extent of jurisdictional waterbodies (i.e., ponds, creeks, streams, lakes) was identified by the presence of an ordinary high water mark (OHWM), if present. Common identifiable indicators of an OHWM include physical characteristics such as a clear, natural line impressed on the bank; shelving; changes in the character of soil; destruction of terrestrial vegetation; the presence of litter and debris; or other appropriate means that consider the characteristics of the surrounding areas. The OHWM typically represents the potential limits of USACE jurisdiction, unless there is a wetland adjacent to the waterbody (USACE 2008). Please note that the USACE has full discretion in determining the jurisdictional status of referenced wetlands and waterbodies.

The NHD is a digital vector dataset referred to by SWCA biologists in the field to confirm or disprove the existence of features such as lakes, ponds, streams, rivers, canals, dams, and stream gages (USGS 2011). NHD flowlines are features that contain flow direction and form a network (USGS 2011). In the field, SWCA can confirm or disprove NHD flowlines lines based on the presence of streams, OHWMs, hydrophytic vegetation, wetland hydrology, and hydric soils. A desktop analysis is then performed to determine if the confirmed waterbodies show significant nexus to waters as described in Definition of Waters of the United States (Title 33 Code of Federal Regulations Part 328.3 [a] [1]–[3]).

SWCA classified streams as perennial, intermittent, or ephemeral based on field observations. During a typical year, a perennial stream contains flowing water year-round and the water table is located above the streambed. Groundwater is the primary water source for stream flow while precipitation runoff is supplemental. Additionally, the USGS topographic maps were used as reference.

An intermittent stream has flowing water for only portions of the year, when groundwater provides water for stream flow. During dry periods, intermittent streams may not have flowing water. Runoff from rainfall is a supplemental source of water for stream flow.

An ephemeral stream has flowing water only during, and for a short duration after, precipitation events in a typical year. Ephemeral stream beds are located above the water table year-round. Groundwater is not a source of water for the stream. Runoff from rainfall is the primary source of water for stream flow.

2.4 TREE, SAPLING, AND SHRUB COUNT

SWCA ecologists determined the total number of trees, saplings, and shrubs present within the survey area by employing several different techniques depending on the type of woody vegetation habitat (i.e., forested upland, shrubland, or shelterbelt) encountered and the overall extent of each habitat within the ROW. The boundary of all forested upland, shrubland, and shelterbelt habitat were mapped using a Trimble GeoXT (Section 2.7). In forested upland and shrubland habitat, SWCA counted the number of all woody-stemmed vegetation with a diameter at breast height (DBH) of ≥ 1 inch. In shelterbelt areas, all woody-stemmed vegetation, regardless of DBH were inventoried via direct count. Biologists taxonomically identified all recorded individuals to the species level within each habitat type.

2.5 NOXIOUS WEED SURVEYS

“Noxious weed” is a plant species designated as state-listed or county-listed noxious weeds. They generally are not native to a given area, spread rapidly, and have adverse ecological and economic impacts. Noxious weed species may have high reproduction rates and are usually adapted to occupy a diverse range of habitats otherwise occupied by native species. These species may subsequently out-compete native plant species for resources, causing a reduction in native plant populations. Noxious weed communities (both alive and residual) were identified and mapped during field surveys by visual inspection of the survey corridor.

2.6 WILDLIFE INCLUDING THREATENED AND ENDANGERED SPECIES

Prior to conducting field surveys, SWCA reviewed information obtained from the USFWS list of threatened and endangered species by North Dakota county (USFWS 2015a) regarding the presence of threatened or endangered species that may occur within the survey area. This document does not represent a comprehensive survey, but rather acknowledges the potential presence of listed species. Wildlife sightings can involve primary observations (i.e., actual sighting of an animal) or secondary observations (i.e., observation of scat, tracks, feathers, or fur deposits). SWCA completed surveys for suitable habitats that would have the potential to support any listed species. No occupancy or species-specific surveys were conducted.

A 0.5 mile line-of-sight binocular survey for raptor nests was conducted. SWCA noted all wildlife observed during the field survey.

2.7 MAPPING

The boundaries of each wetland, waterbody, and woody vegetation habitat were geographically recorded using a Trimble GeoXT global positioning system (GPS) unit. The GPS unit is capable of recording geographic data with sub-meter accuracy. SWCA used Universal Transverse Mercator Zone 13 North as the projected coordinate system and North American Datum 1983 as the datum. ArcGIS v10.3 (ESRI Redlands, California) was used to analyze recorded features, calculate areas, and generate the maps provided in Appendix A. Please note that all data recorded using the GPS unit and displayed on the attached maps are for review purposes only and do not represent a professional civil survey.

3.0 RESULTS

3.1 VEGETATION

During the field survey, SWCA ecologists identified four general types of vegetative communities within the survey area. These vegetative communities were classified as herbaceous upland, shrubland and upland woody vegetation, cropland, and palustrine emergent (PEM) wetland. PEM wetlands are characterized by the presence of herbaceous hydrophytic or submergent aquatic macrophytes. Photographs of the survey area are provided in Appendix D.

Vegetation communities met the hydrophytic vegetation criterion for wetlands if any of the hydrophytic indicators as described in the Supplement were met. The upland communities failed to meet at least one of the three assessed wetland criterion.

3.1.1 Herbaceous Upland

The herbaceous upland community identified in the survey area was dominated by non-woody vegetation such as grasses and forbs. The dominant herbaceous community within the proposed pipeline survey area includes native and non-native grasses and forbs such as Kentucky bluegrass (*Poa pratensis*), smooth brome (*Bromus inermis*), and crested wheatgrass (*Agropyron cristatum*).

3.1.2 Cropland

The Cropland identified in the survey area were small grains. Common crops in the area include common wheat (*Triticum aestivum*), durum wheat (*Triticum durum*), canola (*Brassica napus*), oats (*Avena sativa*), and barley (*Hordeum vulgare*) (U.S. Department of Agriculture 2006).

3.1.3 Hydrophytic Vegetation

Aquatic vegetation species identified during the survey included broadleaf cattail (*Typha latifolia*), foxtail barley (*Hordeum jubatum*), and curly dock (*Rumex crispus*).

3.2 HYDROLOGY

Although precipitation data are not available for the exact site of the project, it is likely analogous to the precipitation data for Williston, Williams County, North Dakota, due to proximity of the Williston weather station to the project area: Williston is approximately 35 miles northwest of the project area.

According to National Weather Service preliminary climatological data for Williston, 5.06 inches of precipitation were recorded from August 1 through November 16, 2016 (Table 1). This amount is 1.28 inches above normal for this time period, suggesting slightly wetter than normal conditions.

Table 1. Monthly Recorded Rainfall at National Weather Service Station in Williston, North Dakota

Month	Recorded Precipitation (inches)	Normal Precipitation (inches)	Difference (inches)
August 2016	0.45	1.45	-1.00
September 2016	3.54	1.06	2.48
October 2016	1.06	0.92	0.14
November 1–16, 2016	0.01	0.35	-0.34
Total	5.06	3.78	1.28

Source: National Oceanic and Atmospheric Administration 2016.

Wetland communities observed during the delineation effort displayed at least one primary or two secondary indicators of wetland hydrology, as defined by the Manual and Supplement. Upland communities either failed to display hydrologic indicators or failed to meet the hydrophytic vegetation and hydric soils criteria defined by the Manual and Supplement. Common indicators of wetland hydrology observed during field surveys included Saturation (A3), Algal Mat or Crust (B4), Salt Crust (B11), Surface Soil Cracks (B6), Drainage Patterns (B10), Geomorphic Position (D2), and FAC-Neutral Test (D5).

3.3 WETLANDS

SWCA recorded three PEM wetlands within the 200-foot-wide survey corridor, totaling approximately 1.41 acres (Table 2 and Appendix A). WET1 is a seasonal wetland found within an agricultural field. WET2 is associated with a NHD flowline. WET3 is a spring-fed wetland on a south-facing slope. SWCA’s preliminary determination is that WET2 is potentially jurisdictional due to its connectivity to Elkhorn Creek. WET1 and WET3 are isolated and likely non-jurisdictional; however, the USACE has the final authority to determine jurisdictional status. Proposed impacts to WET2 would be temporary, not resulting in loss, and fall under NWP 12 criteria (see Section 1.3.3).

Table 2. PEM Wetland Acreage within the Survey Area

Feature ID	Associated Sampling Point	Sample Point Location		Total Size (acres)	Total Size within 100-foot Construction ROW (acres)
		Latitude	Longitude		
WET1	DP1W	47.709214	-103.224746	1.00	0.46
	DP2U	47.709285	-103.224713		
	DP3W	47.708824	-103.224797		
	DP4U	47.70879	-103.224852		
WET2	DP5W	47.70107	-103.224894	0.27	0.12
	DP6U	47.701111	-103.224887		
WET3	DP8W	47.692145	-103.239825	0.14	<0.01
	DP9U	47.692149	-103.239896		
Total				1.41	0.58

3.4 WATERBODIES

SWCA did not identify any non-wetland waterbodies (streams, rivers, lakes, etc.) in the survey area. Two NHD flowlines were present within the survey corridor. The two flowlines were upland swales with no OWHM.

3.5 SOILS

Based on Natural Resources Conservation Service (NRCS) mapping (NRCS 2016), eighteen soil map units are present in the project corridor. The project area analyzed for soils covers the 200-foot-wide survey corridor. All soil map units within the survey area are listed in Table 3.

Table 3. Soil Map Units Present within the Survey Area

Soil Map Units	MUSYM	% Slope	Area within 200-foot Survey Corridor (acres)	% of Total Area
Zahl-Cabba-Williams complex	E3641D	9 to 15	13.61	21.30
Brandenburg-Cabba-Dogtooth complex	E3013F	15 to 70	11.08	17.34
Williams-Zahl loams	E3541B	3 to 6	5.17	8.09
Williams-Zahl loams	E3541C	6 to 9	4.16	6.51
Cabba-Chama-Shambo loams	E2617F	9 to 50	3.95	6.18
Dogtooth-Janesburg-Cabba complex	E0701F	6 to 35	3.62	5.67
Farnuf loam	E2120B	2 to 6	2.66	4.16
Amor-Cabba loams	E2601C	6 to 9	2.66	4.16
Arnegard loam	E2107A	0 to 2	2.29	3.58
Cabba-Chama-Sen silt loams	E2741D	9 to 15	2.18	3.41
Zahl-Williams-Cabba complex	E3639C	6 to 9	1.98	3.10
Searing-Ringling loams	E3043B	3 to 6	1.98	3.10
Golva silt loam	E2213B	2 to 6	1.91	2.99
Chama-Cabba-Sen silt loams	E2737C	6 to 9	1.81	2.83

Soil Map Units	MUSYM	% Slope	Area within 200-foot Survey Corridor (acres)	% of Total Area
Daglum-Belfield complex	E0447B	0 to 6	1.68	2.63
Savage silty clay loam	E0837C	6 to 9	1.58	2.47
Dooley-Zahl complex	E3703C	6 to 9	1.50	2.35
Brandenburg-Searing-Dogtooth complex	E3013D	6 to 15	0.08	0.13
Total			63.90	100.00

Source: NRCS 2016

The soil series that are most prevalent within the survey area are described in Sections 3.5.1 through 3.5.5 (NRCS 2016).

3.5.1 Zahl

The Zahl series consists of very deep, slowly permeable, well-drained soils found on glacial till plains, moraines, and valley side slopes at approximately 1 to 60 percent. The mean annual precipitation found throughout the spatial extent of this soil type is approximately 14 inches and mean annual air temperature is approximately 40 degrees Fahrenheit (°F). This soil type is largely used for rangeland foraging. Native vegetation species common to this soil type include western wheatgrass (*Pascopyrum smithii*), little bluestem (*Schizachyrium scoparium*), and needle and thread (*Hesperostipa comata*) (NRCS 2016).

3.5.2 Caba

The Cabba series consists of shallow, well-drained, moderately permeable soils found on hills, escarpments, and sedimentary plains. The soil slopes broadly range between 2 and 70 percent. The mean annual precipitation found throughout the spatial extent of this soil type is approximately 16 inches and mean annual air temperature is approximately 43°F. The most common vegetation species found on this soil type are little bluestem, green needlegrass (*Nasella viridula*), and other various herbs, forbs, and shrub species (NRCS 2016).

3.5.3 Williams

The Williams series consists of very deep, slowly permeable, well-drained soils found on glacial till plains and moraines with slopes at approximately 0 to 35 percent. The mean annual precipitation found throughout the spatial extent of this soil type is approximately 14 inches and mean annual air temperature is approximately 42°F. This soil type is largely used for cultivation. Native vegetation species common to this soil type include western wheatgrass, needle and thread, blue grama (*Bouteloua gracilis*), and green needlegrass (NRCS 2016).

3.5.4 Bradenburg

The Brandenburg series consists of very deep, excessively drained soils, found on undulating to steep upland where the predominant slope is between 2 and 70 percent. The mean annual precipitation found throughout the spatial extent of this soil type is 13 to 18 inches and mean annual air temperature is 39°F to 45°F. This soil type is largely used for cultivation. Short to mid-height prairie grasses are the common vegetation to this soil series (NRCS 2016).

3.5.5 Dogtooth

The Dogtooth series consists of moderately deep, well-drained, very slowly permeable soils found in uplands where the predominant slope is between 0 and 25 percent. The mean annual precipitation found throughout the spatial extent of this soil type is approximately 15 inches and mean annual air temperature is approximately 42°F. The most common vegetation species found on this soil type are range and pasture grasses including western wheatgrass and blue grama (NRCS 2016).

3.6 TREE, SAPLING, AND SHRUB COUNT

During SWCA’s field survey, two tree and shrubland areas were geographically referenced within the survey area. The number of trees SWCA counted that may be impacted by the project as currently proposed for sample points WV1 and WV2 are summarized in Table 4 (see sample points locations on Appendix A figures). The NDPSR requires a 2:1 post- to pre-construction mitigation for all trees, saplings, and shrubs impacted during the construction of the proposed pipeline. Therefore, SWCA estimates approximately 48 2-year-old sapling individuals would need to be replanted in order to fulfill the 2:1 mitigation requirement.

SWCA recommends that only native species of trees and shrubs be used, and that they be planted in habitats where they are typically found on the landscape. Trees and shrubs should not be planted in native prairie.

Table 4. Tree, Sapling, and Shrub Count

Woody Vegetation (WV) ID	Species	Type	Number of Trees		Estimated Mitigation Commitment
			Survey Corridor	100-foot-wide Construction ROW	
WV1	Green ash (<i>Fraxinus pennsylvanica</i>)	Planted	21	9	18
WV2	Silver buffaloberry (<i>Shepherdia argentea</i>)	Natural	40	15	30
Total			61	24	48

3.7 NOXIOUS WEEDS

Noxious weeds have the potential to detrimentally affect public health, ecological stability, and agricultural practices. North Dakota Century Code (Chapter 63-01.1) and the North Dakota Department of Agriculture (NDDA) recognize 11 species as noxious, as listed in Table 5 (NDDA 2015). In 2015, nine state-listed noxious weed species were found on 323 acres in McKenzie County (NDDA 2015). Individual counties have the authority to add additional species to their list of noxious weeds. McKenzie County added five additional species to its noxious weed list, as shown in Table 5 (McKenzie County Weed Board 2016).

SWCA did not identify any occurrences of state-listed or county-listed noxious weeds within the survey corridor. Surveys were conducted outside of the growing season, however residual plant matter would have likely been observed if noxious weed communities were present.

Arrow will monitor and control noxious weeds within their ROW prior to and subsequent to construction.

Table 5. Noxious Weeds in McKenzie, North Dakota (2015)

Common Name	Scientific Name	McKenzie County (acres)
State-Listed Noxious Weeds		
Absinth wormwood	<i>Artemisia absinthium</i>	13.0
Canada thistle	<i>Cirsium arvense</i>	232.0
Dalmatian toadflax	<i>Linaria dalmatica</i>	0.0
Diffuse knapweed	<i>Centaurea diffusa</i>	1.0
Leafy spurge	<i>Euphorbia esula</i>	62.0
Musk thistle	<i>Carduus nutans</i>	3.0
Purple loosestrife	<i>Lythrum salicaria</i>	0.0
Russian knapweed	<i>Acroptilon repens</i>	2.0
Salt cedar	<i>Tamarix ramosissima</i>	3.0
Spotted knapweed	<i>Centaurea stoebe</i>	6.0
Yellow toadflax	<i>Linaria vulgaris</i>	1.0
County-Listed Noxious Weeds		
Black henbane	<i>Hyoscyamus niger</i>	1.5
Common burdock	<i>Arctium minus</i>	6.0
Field bindweed	<i>Convolvulus arvensis</i>	0.0
Houndstongue	<i>Cynoglossum officinale</i>	10.0
Yellow star-thistle	<i>Centaurea solstitialis</i>	0.0
Total		340.5

Sources: North Dakota Department of Agriculture (2015); McKenzie County Weed Board (2016).

3.8 WILDLIFE

Nine wildlife species listed as threatened or endangered under the ESA have potential to occur in McKenzie County (USFWS 2015a). The listed endangered species include the gray wolf (*Canis lupus*), black-footed ferret (*Mustela nigripes*), whooping crane (*Grus americana*), interior least tern (*Sterna antillarum*), and pallid sturgeon (*Scaphirhynchus albus*). The listed threatened species include the piping plover (*Charadrius melodus*) and its designated critical habitat, Dakota skipper (*Hesperia dacotae*) and its designated critical habitat, rufa red knot (*Calidris canutus rufa*), and northern long-eared bat (*Myotis septentrionalis*).

SWCA conducted a threatened and endangered species suitable habitat survey concurrently with the wetland determinations. SWCA did not observe any primary (i.e., actual sighting) or secondary (i.e., tracks, scat, feather, or fur) indication of the presence of threatened or endangered species. However, the lack of discovery of threatened or endangered species does not signify their non-existence within the area, but only that no primary or secondary indications of these species were recorded.

3.8.1 Gray Wolf

Federal Status: Endangered

The gray wolf, listed as endangered in the United States in 1978, was believed extirpated from North Dakota in the 1920s and 1930s, with only sporadic reports from the 1930s to the present (Licht and Huffman 1996; USFWS 1978). The presence of wolves in most of North Dakota consists of occasional dispersing animals from Minnesota and Manitoba (Licht and Fritts 1994; Licht and Huffman 1996). Most documented gray wolf sightings within western North Dakota are believed to be young males seeking to establish territory (Hagen et al. 2005). The Turtle Mountain region of north-central North Dakota provides marginal habitat that may be able to support a very small population of wolves. The closest known pack of wolves is the Minnesota population located approximately 17 miles from the northeast corner of North Dakota.

The gray wolf uses a variety of habitats that support a large prey base, including montane and low-elevation forests, grasslands, and desert scrub (USFWS 2013a). Due to a lack of forested habitat and the distance from Minnesota and Manitoba populations, as well as the troubled relationship between humans and wolves and their vulnerability to being shot in open habitats (Licht and Huffman 1996), the re-establishment of gray wolf populations in North Dakota is unlikely. Additionally, habitat fragmentation may further act as a barrier against wolf recolonization in western North Dakota. The gray wolf is not expected to be impacted by the proposed project.

3.8.2 Black-footed Ferret

Federal Status: Endangered

Black-footed ferrets are nocturnal, solitary carnivores of the weasel family that have been largely extirpated from the wild primarily due to range-wide decimation of the prairie dog (*Cynomys* sp.) ecosystem (Kotliar et al. 1999). They have been listed by the USFWS as endangered since 1967, and have been the object of extensive re-introduction programs (USFWS 2013b). Ferrets inhabit extensive prairie dog complexes of the Great Plains, typically composed of several smaller colonies in proximity to one another that provide a sustainable prey base. The *Black-footed Ferret Survey Guidelines for Compliance with the Endangered Species Act* (USFWS 1989) states that ferrets require black-tailed prairie dog (*Cynomys ludovicianus*) towns or complexes greater than 80 acres in size, and towns of this dimension may be important for ferret recovery efforts (USFWS 1988a). Prairie dog towns of this size were not observed during the field survey. Therefore, the black-footed ferret is not expected to be impacted by the proposed project.

3.8.3 Whooping Crane

Federal Status: Endangered

The whooping crane was listed as endangered in 1970 in the United States by the USFWS and in 1978 in Canada. Historically, population declines were caused by shooting and destruction of nesting habitat in the prairies from agricultural development. Current threats to the species include habitat destruction, especially suitable wetland habitats that support breeding and nesting, as well as feeding and roosting during their fall and spring migration (Canadian Wildlife Service and USFWS 2007).

The winter 2015–2016 total wild population of the Wood Buffalo-Aransas population was estimated at 329 birds (USFWS 2016a). There is only one self-sustaining wild population, the Aransas-Wood Buffalo National Park population, which nests in Wood Buffalo National Park and adjacent areas in Canada, where approximately 83% of the wild nesting sites occur (Canadian Wildlife Service and USFWS 2007; USFWS 2013c). McKenzie County, including the project area, is within the primary migratory flyway of whooping cranes.

Whooping cranes probe the soil subsurface with their bills for foods on the soil or vegetation substrate (Canadian Wildlife Service and USFWS 2007). Whooping cranes are omnivores and foods typically include agricultural grains, as well as insects, frogs, rodents, small birds, minnows, berries, and plant tubers. The largest amount of time during migration is spent feeding in harvested grain fields (Canadian Wildlife Service and USFWS 2007). Studies indicate that whooping cranes use a variety of habitats during migration, in addition to cultivated croplands, and generally roost in small palustrine (marshy) wetlands within 0.62 mile of suitable feeding areas (Howe 1987, 1989). Whooping cranes have been recorded in riverine habitats during their migration, with eight sightings along the Missouri River in North Dakota (Canadian Wildlife Service and USFWS 2007:18). In these cases, they roost on submerged sandbars in wide, unobstructed channels that are isolated from human disturbance (Armbruster 1990).

It is well-documented that migrating whooping cranes use habitats in the vicinity of the project for roosting and feeding. The project area is located within the migratory corridor for the whooping crane, with the nearest sighting being approximately 13.31 miles west from the pipeline corridor (USFWS, M. Tacha, unpublished data). Suitable whooping crane foraging habitat (i.e., cultivated cropland) was observed within the survey area; however, high levels of disturbance near the project area from existing roads, agriculture production, oil and gas activity, etc., minimize the likelihood for cranes to use the area within or near the pipeline corridor. The whooping crane is not expected to be impacted by the proposed project.

3.8.4 Interior Least Tern

Federal Status: Endangered

The interior population of the least tern is listed as endangered by the USFWS (1985a). This bird is the smallest member of the gull and tern family, measuring approximately 9 inches in length. Terns remain near flowing water, where they feed by hovering over and diving into standing or flowing water to catch small fish (USFWS 2013d).

The interior population of least terns breeds in isolated areas along the Missouri, Mississippi, Ohio, Red, and Rio Grande river systems, where they nest in small colonies. From late April to August, terns nest in a shallow hole scraped in an open sandy area, gravel patch, or exposed flat; and in bare sandbars along rivers, sand and gravel pits, or lake and reservoir shorelines. The adults continue to care for chicks after they hatch. Least terns in North Dakota often will be found sharing sandbars with the piping plover, a threatened species (USFWS 2013d).

Census data indicate over 8,000 least terns in the interior population. In North Dakota, the least tern is found mainly on the Missouri River from Garrison Dam south to Lake Oahe, and on the Missouri and Yellowstone Rivers upstream of Lake Sakakawea (USFWS 1990a, 2013d). Approximately 100 pairs breed in North Dakota (USFWS 2013d). Details of their migration

are not known, but their winter range is reported to include the Gulf of Mexico and Caribbean Islands (USFWS 1990a, 2013d).

Loss of suitable breeding and nesting habitat for terns has resulted from dam construction and river channelization on major rivers throughout the Mississippi, Missouri, and Rio Grande river systems. River and reservoir changes have led to reduced sandbar formation and other shoreline habitats for breeding, resulting in population declines. In addition, other human shoreline disturbances affect the species (USFWS 1990a). Critical habitat has not been designated for the species (USFWS 2013d). Current conservation strategies include identification and avoidance of known nesting areas, public education, and limiting or preventing shoreline disturbances near nests and hatched chicks (USFWS 2013c).

Given the distance to suitable habitat, the likelihood of observing a tern in the project area is relatively low. The interior least tern is not expected to be impacted by the proposed project.

3.8.5 Pallid Sturgeon

Federal Status: Endangered

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

Pallid sturgeon populations occur in the Missouri River below Fort Peck Dam to the headwaters of Lake Sakakawea and the lower Yellowstone River up to the confluence of the Tongue River in Montana (USFWS 2007). This population consists of approximately 136 wild adult pallid sturgeon (USFWS 2007). Hatchery-reared sturgeon also have been stocked since 1998. The pallid sturgeon has been found to use the 15.5 miles of riverine habitat that would be inundated by Lake Sakakawea at full pool (Bramblett 1996 per USFWS 2007). Larval pallid sturgeons also have been found to drift into Lake Sakakawea. Although the majority of pallid sturgeons are found in the headwaters of Lake Sakakawea, the North Dakota Game and Fish Department has caught and released pallid sturgeon in nets set in 80 to 90 feet of water between the New Town and Van Hook areas. Based on this information, pallid sturgeon could be found throughout Lake Sakakawea (personal communication, email from Steve Krentz, Pallid Sturgeon Project Lead, USFWS, to SWCA, September 3, 2010).

Desktop analysis concluded that suitable habitat is not present in the project ROW corridor. Activities associated with the pipeline are not anticipated to adversely affect water quality and subsequently the pallid sturgeon. The pallid sturgeon is not expected to be impacted by the proposed project.

3.8.6 Piping Plover

Federal Status: Threatened

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

Plovers in the Great Plains make their nests on open, sparsely vegetated sand or gravel beaches adjacent to alkali wetlands, and on beaches, sand bars, and dredged material islands of major river systems (USFWS 2002, 2012b). The shorelines of lakes of the Missouri River constitute significant nesting areas for the bird. Piping plovers nest on the ground, making shallow scrapes in the sand, which they line with small pebbles or rocks (USFWS 1988b). Anthropogenic alterations of the landscape along rivers and lakes where piping plover nest have increased the number and type of predators, subsequently decreasing nest success and chick survival (USFWS 2002, 2012b). The birds fly south by mid to late August to areas along the Texas coast and Mexico (USFWS 2002). The Northern Great Plains population has continued to decline despite federal listing, with population estimates of 1,500 breeding pairs in 1985 reduced to fewer than 1,100 in 1990. Low survival of adult birds has been identified as a factor (Root et al. 1992). Current conservation strategies include identification and preservation of known nesting sites, public education, and limiting or preventing shoreline disturbances near nests and hatched chicks (USFWS 1988b, 2012b).

The lack of alkali wetlands, minimal disturbance to foraging wetlands, and distance to critical habitat deem the likelihood of a piping plover occurring as relatively low. The piping plover is not expected to be impacted by the proposed project.

3.8.7 Designated Critical Habitat of Piping Plover

The USFWS has designated critical habitat for the Great Lakes and Northern Great Plains populations of piping plover (USFWS 2002). Designated critical habitat for the piping plover includes 183,422 acres and 1,207.5 river miles of habitat including 354.6 river miles of the Missouri River (ND Unit 11) that flows from the Montana/North Dakota border to the North Dakota/South Dakota border (USFWS 2002). Additionally, North Dakota contains 10 units (ND Units 1–10) of designated critical habitat, which consist primarily of alkaline lakes and wetlands located north and northeast of ND Unit 11 (USFWS 2002).

Desktop analysis concluded that designated critical habitat for the threatened piping plover is not present in the pipeline ROW. The nearest designated critical habitat for piping plovers is approximately 21.27 mile northwest from the proposed pipeline. The proposed pipeline would not modify, alter, disturb, or affect the shoreline within ND Unit 11 or the alkaline lakes and wetlands within ND Units 1 through 10. Designated critical habitat of the piping plover is not expected to be impacted by the proposed project.

3.8.8 Dakota Skipper

Federal Status: Threatened

The Dakota skipper is a small butterfly with a 1-inch wingspan. The male wing ranges from a tawny-orange to brown and the female wing is darker brown with tawny-orange spots and faint white spots (USFWS 2011). On October 24, 2014, the USFWS determined a threatened species status for the Dakota skipper, and the final rule became effective November 24, 2014 (USFWS 2014). Two units of designated critical habitat—Unit 11 (McKenzie Pasture 11 East) and Unit 12 (McKenzie Pasture 12 West)—are located on the Little Missouri National Grassland, in McKenzie County.

The primary cause for the decline of this species includes the loss of high-quality native prairie habitat due to overgrazing, conversion to agriculture, and disruption of natural prairie fire cycles (USFWS 2011). ‘Type A’ habitat is low wet-mesic prairie with little topographic relief occurring in near-shore glacial lake deposits (Royer and Marrone 1992). Three plants species dominate ‘Type A’ habitat and include wood lily (*Lilium philadelphicum*), bluebell bellflower (*Campanula rotundifolia*), and mountain deathcamas (*Zigadenus elegans*) (McCabe 1981). ‘Type B’ habitat of the Dakota skipper occurs on rolling terrain over gravelly glacial moraine deposits and is dominated by big bluestem (*Andropogon gerardii*), little bluestem, and needlegrasses (*Stipa* spp.), and may include bluebell bellflower and wood lily (USFWS 2015d). Additionally, ‘Type B’ habitat supports extensive stands of purple coneflower (*Echinacea angustifolia*), upright prairie coneflower (*Ratibida columnifera*), and common gaillardia (*Gaillardia aristata*) (USFWS 2015b).

During the surveys, non-native grasslands and cropland were dominant in the project area. Dominant species recorded during surveys included Kentucky bluegrass, smooth brome, and crested wheatgrass.

Dakota skippers are not known to occur in the project area. Adult Dakota skipper dispersal is limited due to a short adult life span of 3 weeks (Dana 1991) and one annual flight per year (USFWS 2015b). The Dakota skipper may disperse an average 0.62 mile to an area that contains sufficient vegetative diversity and emigrants (Cochrane and Delphey 2002). Unless a site is within about 0.62 mile of an area that generates a sufficient number of emigrants, the species’ extirpation from the site is likely permanent.

Larval Dakota skipper habitat within dry-mesic habitat is associated with more gravelly glacial landscapes of relatively higher relief, more variable soil moisture, and somewhat higher soil temperatures (Royer et al. 2008). Soils in these habitats are classified predominantly as sandy loams, and occasionally as loamy sands (Royer et al. 2008). Soil compaction and vegetation removal substantially alter soil water movement and evaporation, thereby altering near-surface humidity (Royer et al. 2008). Livestock grazing has been shown to increase bulk density and soil compaction, which are correlated with decreased soil water content and hydraulic conductivity (Royer et al. 2008). Dakota skippers will tolerate little to no grazing in mixed-grass prairie (Cochrane and Delphey 2002; McCabe 1981). Grazing pressure within the pasture land found in the project area is categorized as moderate to severe based on visual observance by SWCA in the field.

The Eagle Nest Butte site is the nearest known occupied site and is 23.16 miles east of the project area, and the nearest designated critical habitat unit, Unit 12, is located 28.11 miles north of the project area. Because of the lack of suitable habitat and the distance to the nearest known population, the Dakota skipper is not expected to be impacted by the proposed project.

3.8.9 Designated Critical Habitat of Dakota Skipper

The USFWS has designated critical habitat for the Dakota skipper and Poweshiek skipperling (*Oarisma poweshiek*) (USFWS 2016b). Designated critical habitat for the Dakota skipper includes 19,900 acres in 38 units in Minnesota, North Dakota, and South Dakota, including Units 11 and 12 which are located in McKenzie County approximately 30.55 miles and 28.11 miles north of the project area, respectively.

The proposed project would not modify, alter, disturb, or affect critical habitat Units 11 or 12. Therefore, designated critical habitat of the Dakota skipper is not expected to be impacted by the proposed project.

3.8.10 Rufa Red Knot

Federal Status: Threatened

The rufa red knot is a medium-sized shorebird approximately 9 to 11 inches in height with breeding plumage consisting of red around the face and a prominent stripe above the eye, breast, and upper belly, and non-breeding plumage a dusky gray and white (USFWS 2013e). The USFWS published a proposal to list the rufa red knot as threatened under the ESA in the *Federal Register* in September 2013 (78 *Federal Register* 60023). On December 11, 2014, the USFWS determined a threatened species status for the rufa red knot, and the final rule became effective January 12, 2015 (79 *Federal Register* 73705).

The primary reason for decline of this species includes reduced food supplies in Delaware Bay due to commercial harvest of horseshoe crabs, but also includes areas of range loss due to rising sea levels, shorelines project, and development (USFWS 2013e). The rufa red knot breeds in the Canadian Arctic and migrates 19,000 miles to winter on the U.S. Gulf Coast and in South America. The species generally occurs along the ocean coasts during migration, but a small number have been reported across the interior United States.

Suitable habitat along Lake Sakakawea is approximately 21.88 miles northwest from the project area. The likelihood of the rufa red knot occurring in the proposed pipeline ROW is very low due to the distance to Lake Sakakawea. The rufa red knot is not expected to be impacted by the proposed project.

3.8.11 Northern Long-eared Bat

Federal Status: Threatened

On May 4, 2015, the USFWS listed the northern-long eared bat as threatened under the ESA (USFWS 2015c). The USFWS also issued an interim rule pursuant to Section 4(d) of the ESA in conjunction with the final rule (50 CFR Part 17). For areas within the species' range that are not affected by white-nose syndrome (i.e., areas outside the 150-mile white-nose syndrome buffer zone), including all of North Dakota, the interim 4(d) rule exempts incidental take from certain activities.

This medium-sized bat ranges across the eastern and north-central United States and all of the Canadian provinces (USFWS 2015d). Throughout most of this species' range, populations are patchily distributed. They emerge at dusk to fly through the understory of forested hillsides and ridges, feeding on moths, flies, leafhoppers, caddisflies, and beetles.

Most records of northern long-eared bats are from winter hibernacula surveys, with more than 780 hibernacula identified within the United States. No known hibernacula are located in North Dakota, due to either no suitable hibernacula present or a lack of survey effort (USFWS 2013f). This bat species occupies a wide range of rocky and forested habitats. Suitable winter habitat includes large caves and mines (USFWS 2015d). Summer day roosts include abandoned buildings, bridges, hollow trees, stumps, under loose bark, and rock fissures (Jones and Choate 1978). The summer roosting period is from May through October. Removal of any potential roost trees may impact the northern long-eared bat.

Suitable winter habitat for northern long-eared bats does not occur in the pipeline ROW. Nearby trees, including Green Ash trees recorded at sample point WV1 (Appendix A), and rocky outcrops can act as suitable summer day roosts. Suitable habitat in the project area is minimal and the 4(d) rule exempts incidental take for the proposed project; therefore, the northern long-eared bat is not expected to be impacted by the proposed project.

3.8.12 Wildlife Observed

During the field survey, SWCA observed various wildlife species within the survey area (Table 6). Common wildlife species may be affected both directly via death or injury from construction activities or indirectly through the temporary fragmentation of habitat as a result of construction activities and disturbance which may disrupt normal activities such as breeding, feeding, and sheltering.

Table 6. Wildlife Observed during Field Surveys of the Pipeline Route

Common Name	Scientific Name
Ring-necked pheasant	<i>Phasianus colchicus</i>
Mourning dove	<i>Zenaida macroura</i>
Mule deer	<i>Odocoileus hemionus</i>
Hungarian partridge	<i>Perdix perdix</i>
Sharp-tailed grouse	<i>Tympanuchus phasianellus</i>

3.8.13 Migratory Birds

Status: Protected under the MBTA

Suitable habitat for migratory birds exists in the entire pipeline ROW. Specifically, grassland nesting birds have the potential to occur, feed, and nest in the project area, especially during the migratory bird breeding season, which generally occurs between February 1 and July 15. Suitable woodland nesting habitat occurs in the project area, but it is minimal. All take of migratory birds, their parts, or their active nests, including eggs and young, must be avoided to prevent a violation of the MBTA.

3.8.14 Bald Eagle

Federal Status: Delisted in 2007; protected under the MBTA and the BGEPA

The bald eagle (*Haliaeetus leucocephalus*) feeds on fish and carrion and typically roosts in large trees near a water source. Bald eagle nesting habitat is typically any mature stands of conifer (*Pinophyta*) or cottonwood (*Populus* sp.) trees in association with rivers, streams, reservoirs, lakes, or any significant body of water. Bald eagles in North Dakota are usually observed along the Missouri River (North Dakota Game and Fish Department 2015a) and Yellowstone River. Bald eagles frequently migrate through the grassland habitats. Two bald eagles were observed during the field surveys; however, no nests were observed during the field surveys. The nearest known bald eagle nest is approximately 10.46 miles east from the pipeline ROW (North Dakota Game and Fish Department 2015b). The USFWS generally recommends a buffer of 0.5 mile from any eagle nest. If any active nests are discovered within 0.5 mile of the pipeline ROW, construction should halt and the USFWS should be contacted for further direction. If these recommendations are followed, bald eagles are not expected to be impacted by the proposed project.

3.8.15 Golden Eagle

Federal Status: Unlisted; protected under the MBTA and the BGEPA

The golden eagle (*Aquila chrysaetos*) prefers habitat characterized by open prairie, plains, and forested areas. Usually, golden eagles can be found in proximity to badland cliffs which provide suitable nesting habitat. Golden eagles may occur within or near the survey area; however, no golden eagles or nests were observed during the field surveys. The USFWS generally recommends a buffer of 0.5 mile from any eagle nest. If any active nests are discovered within 0.5 mile of the pipeline ROW, construction should halt and the USFWS should be contacted for further direction. If these recommendations are followed, golden eagles are not expected to be impacted by the proposed project.

4.0 CONCLUSIONS AND RECOMMENDATIONS

1. SWCA biologists recorded three wetlands, totaling approximately 1.41 acres within the 200-foot-wide survey area; 0.58 acre will be impacted by project construction.
2. SWCA did not record any waterbodies within the survey area.
3. Each of the three wetland crossings is a single, and complete project as defined by the USACE and can be constructed under NWP 12. NWP 12 authorizes the construction of utility line projects in non-tidal waters of the U.S., provided the activity does not result in the permanent loss of greater than 0.5 acre of waters of the U.S., including wetlands, and all general conditions are met. Following are the details on the use of NWP 12 for this project.
 - a. The impacts to the wetlands from the pipeline construction will be temporary and no permanent loss of wetlands will occur.
 - b. A pre-construction notice will not be required for the use of NWP 12 due to it not meeting the notice requirements in the permit.
 - c. No USACE regional conditions are applicable to this project.

- d. Follow the guidelines for construction described in NWP 12 (Appendix B), including the temporary impact area must be revegetated, as applicable, and the bed returned to pre-disturbance elevation.
 - e. The construction manager should keep a copy of NWP 12 onsite during construction of the three wetland crossings.
4. In conjunction with NWP 12, Section 401 certification is required for all section 404 permits (i.e. NWP 12). This project falls under blanket Section 401 certification by the North Dakota Department of Health (NDDH). No action is needed. NDDH requires all projects under this certification to follow their Construction and Environmental Disturbance Requirement guidelines. These can be found on the second page of the NDDH letter in Appendix E.
5. SWCA counted 24 tree, sapling, and shrub individuals that may be impacted by construction activities. Therefore, approximately 48 2-year-old saplings may need to be replanted to fulfill the NDPSC's 2:1 mitigation requirement. According to the recommendations of the North Dakota Forest Service, tree species selection for replacement should be accomplished through collaboration with a reputable area nursery. This will allow for species to be selected based on various factors including species hardiness and area soil type.
6. No threatened or endangered species or habitat were observed during the field survey.

The following threatened and endangered species are listed in McKenzie County: gray wolf, black-footed ferret, whooping crane, interior least tern, pallid sturgeon, piping plover and its critical habitat, Dakota skipper and its critical habitat, rufa red knot, and northern long-eared bat; however, these species are not likely to be impacted by construction of the proposed project.
7. Migratory birds and suitable nesting habitat were observed throughout the survey area. In order to avoid unauthorized take of migratory birds and active nests, SWCA recommends conducting construction outside of the migratory bird breeding season as practicable. If construction occurs during the bird breeding season (February 1–July 15), SWCA recommends to either mow, maintain, or completely remove vegetation within the project construction area outside the migratory bird nesting season; conduct migratory bird nesting surveys 5 days prior to construction; or prepare a habitat mitigation plan for approval by the USFWS which, once approved, would allow for clearing active nests and habitat during any time of year. If active nests (i.e., nests with eggs or young) are identified, the USFWS should be notified.
8. No active raptor nests were observed within 0.5 mile of the project area. No bald or golden eagle nests were observed. No impacts to eagles are anticipated.

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APPENDIX A
Vicinity Site Layout and Soil Maps

Natural Resources and Wetland Delineation Report for the Arrow NB Residue Gas Pipeline and Arrow Bakken NGL Pipeline Project, McKenzie County, North Dakota

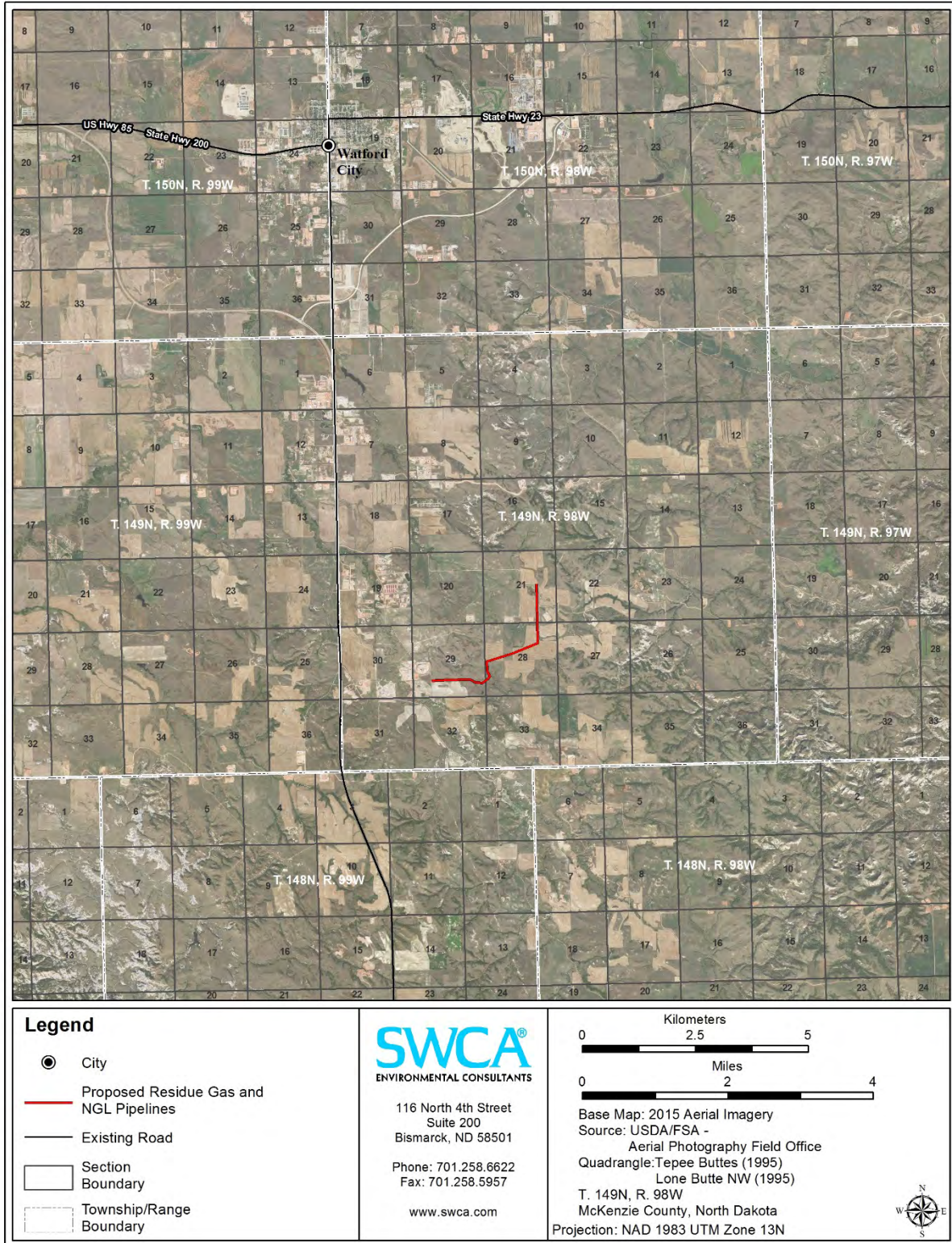


Figure A1. General location of the Arrow NB Residue Gas Pipeline and Arrow Bakken NGL Pipeline.

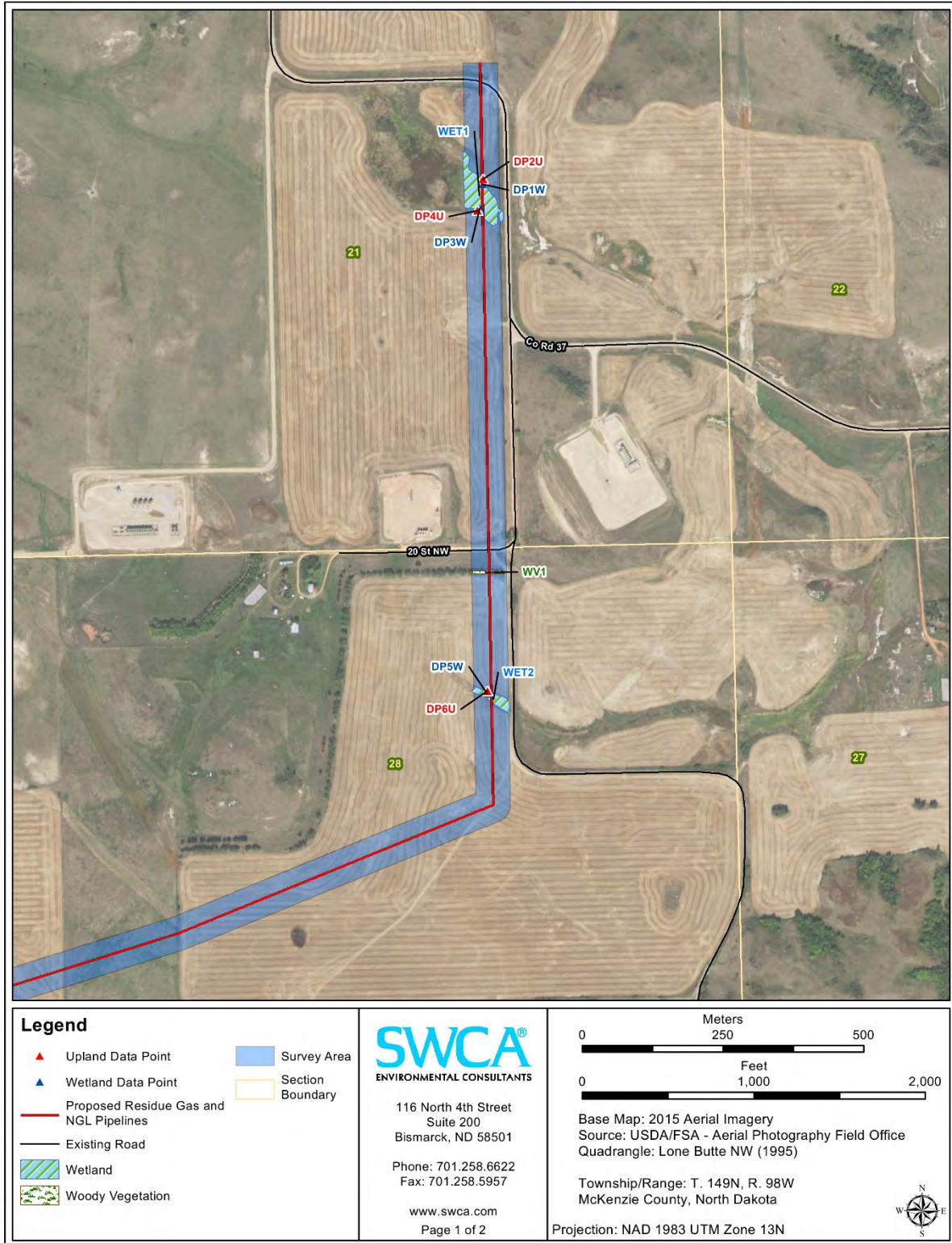


Figure A2. Arrow NB Residue Gas Pipeline and Arrow Bakken NGL Pipeline project location (map 1 of 2).

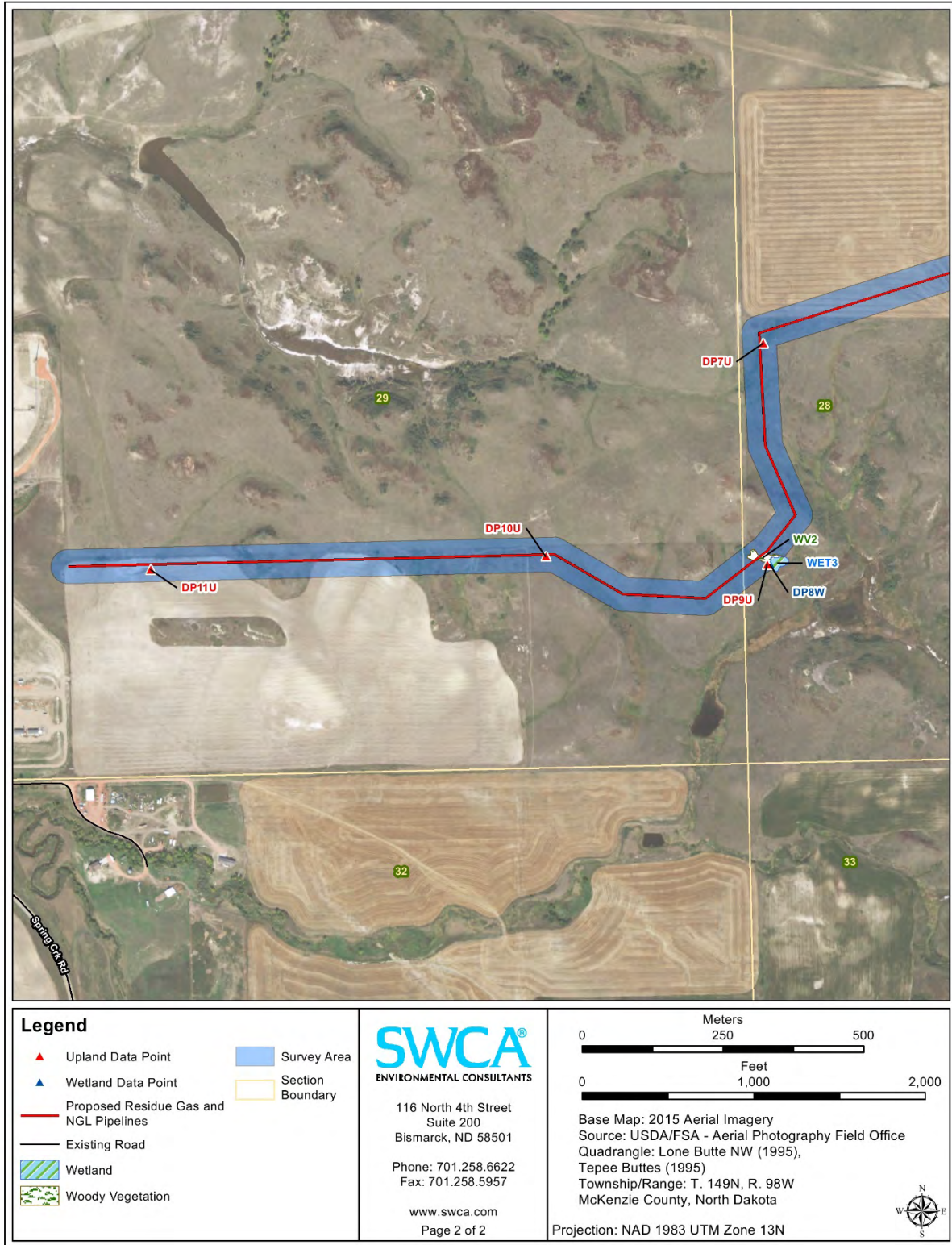


Figure A3. Arrow NB Residue Gas Pipeline and Arrow Bakken NGL Pipeline project location (map 2 of 2).

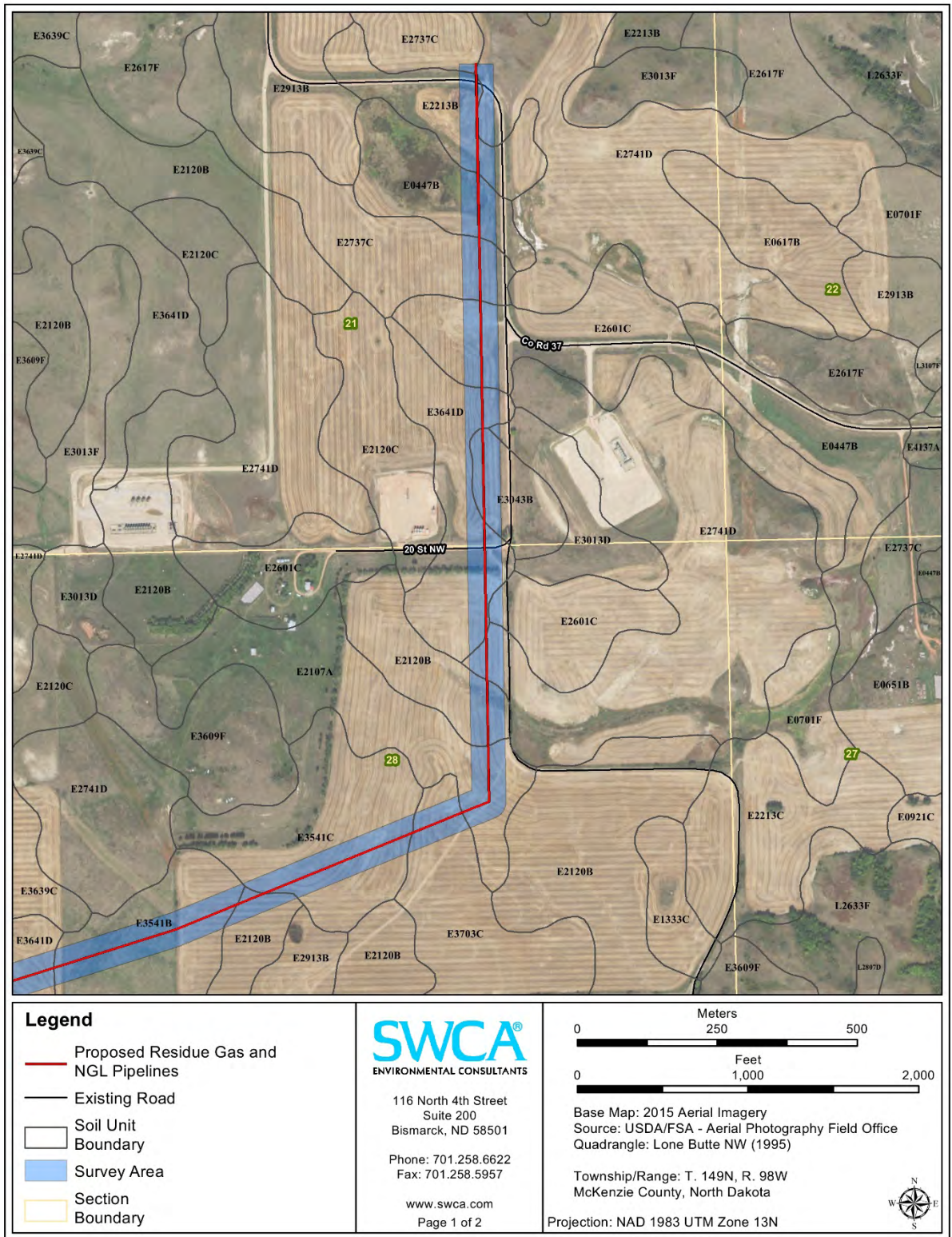


Figure A4. Arrow NB Residue Gas Pipeline and Arrow Bakken NGL Pipeline project location soils (map 1 of 2).

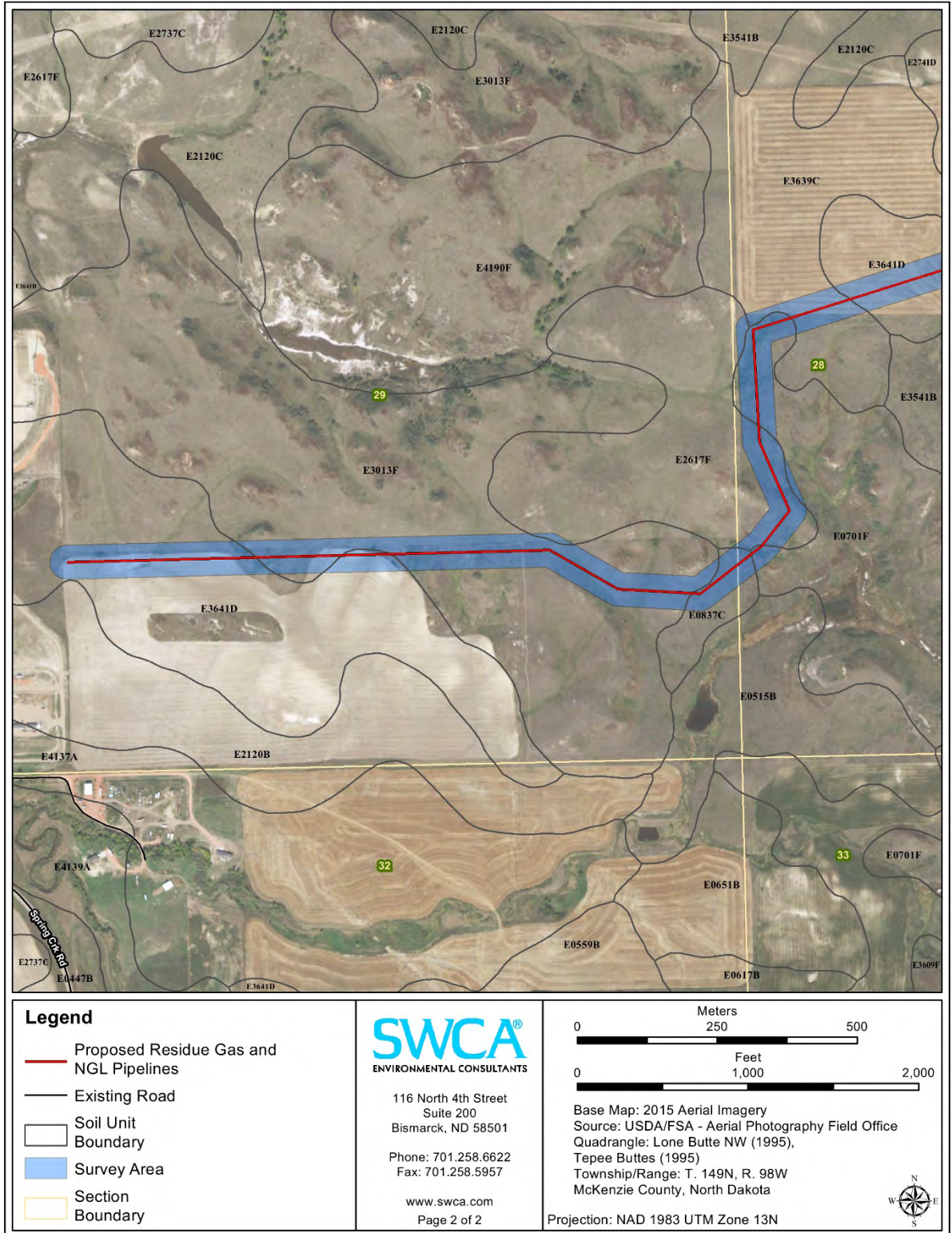


Figure A5. Arrow NB Residue Gas Pipeline and Arrow Bakken NGL Pipeline project location soils (map 2 of 2).

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APPENDIX B
NWP 12 Fact Sheet

Nationwide Permit 12

Utility Line Activities

Activities required for the construction, maintenance, repair, and removal of utility lines and associated facilities in waters of the United States, provided the activity does not result in the loss of greater than 1/2-acre of waters of the United States for each single and complete project.

Utility lines: This NWP authorizes the construction, maintenance, or repair of utility lines, including outfall and intake structures, and the associated excavation, backfill, or bedding for the utility lines, in all waters of the United States, provided there is no change in pre-construction contours. A “utility line” is defined as any pipe or pipeline for the transportation of any gaseous, liquid, liquescent, or slurry substance, for any purpose, and any cable, line, or wire for the transmission for any purpose of electrical energy, telephone, and telegraph messages, and radio and television communication. The term “utility line” does not include activities that drain a water of the United States, such as drainage tile or french drains, but it does apply to pipes conveying drainage from another area.

Material resulting from trench excavation may be temporarily sidecast into waters of the United States for no more than three months, provided the material is not placed in such a manner that it is dispersed by currents or other forces. The district engineer may extend the period of temporary side casting for no more than a total of 180 days, where appropriate. In wetlands, the top 6 to 12 inches of the trench should normally be backfilled with topsoil from the trench. The trench cannot be constructed or backfilled in such a manner as to drain waters of the United States (e.g., backfilling with extensive gravel layers, creating a french drain effect). Any exposed slopes and stream banks must be stabilized immediately upon completion of the utility line crossing of each waterbody.

Utility line substations: This NWP authorizes the construction, maintenance, or expansion of substation facilities associated with a power line or utility line in non-tidal waters of the United States, provided the activity, in combination with all other activities included in one single and complete project, does not result in the loss of greater than 1/2-acre of waters of the United States. This NWP does not authorize discharges into non-tidal wetlands adjacent to tidal waters of the United States to construct, maintain, or expand substation facilities.

Foundations for overhead utility line towers, poles, and anchors: This NWP authorizes the construction or maintenance of foundations for overhead utility line towers, poles, and anchors in all waters of the United States, provided the foundations are the minimum size necessary and separate footings for each tower leg (rather than a larger single pad) are used where feasible.

Access roads: This NWP authorizes the construction of access roads for the construction and maintenance of utility lines, including overhead power lines and utility line substations, in non-tidal waters of the United States, provided the activity, in combination with all other activities included in one single and complete project, does not cause the loss of greater than 1/2-acre of non-tidal waters of the United States. This NWP does not authorize discharges into non-tidal wetlands adjacent to tidal waters for access roads. Access roads must be the minimum width necessary (see Note 2, below). Access roads must be constructed so that the length of the road minimizes any adverse effects on waters of the United States and must be as near as possible to pre-construction contours and elevations (e.g., at grade corduroy roads or geotextile/gravel roads). Access roads constructed above pre-construction contours and elevations in waters of the United States must be properly bridged or culverted to maintain surface flows.

This NWP may authorize utility lines in or affecting navigable waters of the United States even if there is no associated discharge of dredged or fill material (See 33 CFR Part 322). Overhead utility lines constructed over section 10 waters and utility lines that are routed in or under section 10 waters without a discharge of dredged or fill material require a section 10 permit.

This NWP also authorizes temporary structures, fills, and work necessary to conduct the utility line activity. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must consist of materials,

and be placed in a manner, that will not be eroded by expected high flows. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The areas affected by temporary fills must be revegetated, as appropriate. (Sections 10 and 404)

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if any of the following criteria are met: (1) the activity involves mechanized land clearing in a forested wetland for the utility line right-of-way; (2) a section 10 permit is required; (3) the utility line in waters of the United States, excluding overhead lines, exceeds 500 feet; (4) the utility line is placed within a jurisdictional area (i.e., water of the United States), and it runs parallel to or along a stream bed that is within that jurisdictional area; (5) discharges that result in the loss of greater than 1/10-acre of waters of the United States; (6) permanent access roads are constructed above grade in waters of the United States for a distance of more than 500 feet; or (7) permanent access roads are constructed in waters of the United States with impervious materials.

Note 1: Where the proposed utility line is constructed or installed in navigable waters of the United States (i.e., section 10 waters) within the coastal United States, the Great Lakes, and United States territories, copies of the pre-construction notification and NWP verification will be sent by the Corps to the National Oceanic and Atmospheric Administration (NOAA), National Ocean Service (NOS), for charting the utility line to protect navigation.

Note 2: Access roads used for both construction and maintenance may be authorized, provided they meet the terms and conditions of this NWP. Access roads used solely for construction of the utility line must be removed upon completion of the work, in accordance with the requirements for temporary fills.

Note 3: Pipes or pipelines used to transport gaseous, liquid, liquescent, or slurry substances over navigable waters of the United States are considered to be bridges, not utility lines, and may require a permit from the U.S. Coast Guard pursuant to Section 9 of the Rivers and Harbors Act of 1899. However, any discharges of dredged or fill material into waters of the United States associated with such pipelines will require a section 404 permit (see NWP 15).

Note 4: For overhead utility lines authorized by this NWP, a copy of the PCN and NWP verification will be provided to the Department of Defense Siting Clearinghouse, which will evaluate potential effects on military activities.

Nationwide Permit General Conditions

Note: To qualify for NWP authorization, the prospective permittee must comply with the following general conditions, as applicable, in addition to any regional or case-specific conditions imposed by the division engineer or district engineer.

1. Navigation. (a) No activity may cause more than a minimal adverse effect on navigation.

(b) Any safety lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, must be installed and maintained at the permittee's expense on authorized facilities in navigable waters of the United States.

(c) The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

2. Aquatic Life Movements. No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. All permanent and temporary crossings of waterbodies shall be suitably culverted, bridged, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species.

3. Spawning Areas. Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., through excavation, fill, or downstream smothering by substantial turbidity) of an important spawning area are not authorized.

4. Migratory Bird Breeding Areas. Activities in waters of the United States that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.

5. Shellfish Beds. No activity may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWP 4 and 48, or is a shellfish seeding or habitat restoration activity authorized by NWP 27.

6. Suitable Material. No activity may use unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.). Material used for construction or discharged must be free from toxic pollutants in toxic amounts (see Section 307 of the Clean Water Act).

7. Water Supply Intakes. No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent bank stabilization.

8. Adverse Effects From Impoundments. If the activity creates an impoundment of water, adverse effects to the aquatic system due to accelerating the passage of water, and/or restricting its flow must be minimized to the maximum extent practicable.

9. Management of Water Flows. To the maximum extent practicable, the pre-construction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization and storm water management activities, except as provided below. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the pre-construction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).

10. Fills Within 100-Year Floodplains. The activity must comply with applicable FEMA-approved state or local floodplain management requirements.

11. Equipment. Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance.

12. Soil Erosion and Sediment Controls. Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow.

13. Removal of Temporary Fills. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The affected areas must be revegetated, as appropriate.

14. Proper Maintenance. Any authorized structure or fill shall be properly maintained, including maintenance to ensure public safety and compliance with applicable NWP general conditions, as well as any activity-specific conditions added by the district engineer to an NWP authorization.

15. Single and Complete Project. The activity must be a single and complete project. The same NWP cannot be used more than once for the same single and complete project.

16. Wild and Scenic Rivers. No activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while

the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status. Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency responsible for the designated Wild and Scenic River or study river (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service).

17. Tribal Rights. No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.

18. Endangered Species. (a) No activity is authorized under any NWP which is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will directly or indirectly destroy or adversely modify the critical habitat of such species. No activity is authorized under any NWP which "may affect" a listed species or critical habitat, unless Section 7 consultation addressing the effects of the proposed activity has been completed.

(b) Federal agencies should follow their own procedures for complying with the requirements of the ESA. Federal permittees must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will review the documentation and determine whether it is sufficient to address ESA compliance for the NWP activity, or whether additional ESA consultation is necessary.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that might affect Federally-listed endangered or threatened species or designated critical habitat, the pre-construction notification must include the name(s) of the endangered or threatened species that might be affected by the proposed work or that utilize the designated critical habitat that might be affected by the proposed work. The district engineer will determine whether the proposed activity "may affect" or will have "no effect" to listed species and designated critical habitat and will notify the non-Federal applicant of the Corps' determination within 45 days of receipt of a complete pre-construction notification. In cases where the non-Federal applicant has identified listed species or critical habitat that might be affected or is in the vicinity of the project, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification the proposed activities will have "no effect" on listed species or critical habitat, or until Section 7 consultation has been completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(d) As a result of formal or informal consultation with the FWS or NMFS the district engineer may add species-specific regional endangered species conditions to the NWPs.

(e) Authorization of an activity by a NWP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the U.S. FWS or the NMFS, The Endangered Species Act prohibits any person subject to the jurisdiction of the United States to take a listed species, where "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The word "harm" in the definition of "take" means an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.

(f) Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the U.S. FWS and NMFS or their world wide web pages at <http://www.fws.gov/> or <http://www.fws.gov/ipac> and <http://www.noaa.gov/fisheries.html> respectively.

19. Migratory Birds and Bald and Golden Eagles. The permittee is responsible for obtaining any "take" permits required under the U.S. Fish and Wildlife Service's regulations governing compliance with the Migratory Bird Treaty Act or the Bald and Golden Eagle Protection Act. The permittee should contact the appropriate local office of the U.S. Fish and Wildlife Service to determine if such "take" permits are required for a particular activity.

20. Historic Properties. (a) In cases where the district engineer determines that the activity may affect properties listed, or eligible for listing, in the National Register of Historic Places, the activity is not authorized, until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.

(b) Federal permittees should follow their own procedures for complying with the requirements of Section 106 of the National Historic Preservation Act. Federal permittees must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will review the documentation and determine whether it is sufficient to address section 106 compliance for the NWP activity, or whether additional section 106 consultation is necessary.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if the authorized activity may have the potential to cause effects to any historic properties listed on, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties. For such activities, the pre-construction notification must state which historic properties may be affected by the proposed work or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties. Assistance regarding information on the location of or potential for the presence of historic resources can be sought from the State Historic Preservation Officer or Tribal Historic Preservation Officer, as appropriate, and the National Register of Historic Places (see 33 CFR 330.4(g)). When reviewing pre-construction notifications, district engineers will comply with the current procedures for addressing the requirements of Section 106 of the National Historic Preservation Act. The district engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts, which may include background research, consultation, oral history interviews, sample field investigation, and field survey. Based on the information submitted and these efforts, the district engineer shall determine whether the proposed activity has the potential to cause an effect on the historic properties. Where the non-Federal applicant has identified historic properties on which the activity may have the potential to cause effects and so notified the Corps, the non-Federal applicant shall not begin the activity until notified by the district engineer either that the activity has no potential to cause effects or that consultation under Section 106 of the NHPA has been completed.

(d) The district engineer will notify the prospective permittee within 45 days of receipt of a complete pre-construction notification whether NHPA Section 106 consultation is required. Section 106 consultation is not required when the Corps determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR §800.3(a)). If NHPA section 106 consultation is required and will occur, the district engineer will notify the non-Federal applicant that he or she cannot begin work until Section 106 consultation is completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(e) Prospective permittees should be aware that section 110k of the NHPA (16 U.S.C. 470h-2(k)) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of Section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the Corps is required to notify the ACHP and provide documentation specifying the circumstances, the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on or affects historic properties on tribal lands or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.

21. Discovery of Previously Unknown Remains and Artifacts. If you discover any previously unknown historic, cultural or archeological remains and artifacts while accomplishing the activity authorized by this permit, you must immediately notify the district engineer of what you have found, and to the maximum extent practicable, avoid construction activities that may affect the remains and artifacts until the required coordination has been completed. The district engineer will initiate the Federal, Tribal and state coordination required to determine if the items or remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

22. Designated Critical Resource Waters. Critical resource waters include, NOAA-managed marine sanctuaries and marine monuments, and National Estuarine Research Reserves. The district engineer may designate, after notice and opportunity for public comment, additional waters officially designated by a state as having particular environmental or ecological significance, such as outstanding national resource waters or state natural heritage sites. The district engineer may also designate additional critical resource waters after notice and opportunity for public comment.

(a) Discharges of dredged or fill material into waters of the United States are not authorized by NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, 44, 49, 50, 51, and 52 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters.

(b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, and 38, notification is required in accordance with general condition 31, for any activity proposed in the designated critical resource waters including wetlands adjacent to those waters. The district engineer may authorize activities under these NWPs only after it is determined that the impacts to the critical resource waters will be no more than minimal.

23. Mitigation. The district engineer will consider the following factors when determining appropriate and practicable mitigation necessary to ensure that adverse effects on the aquatic environment are minimal:

(a) The activity must be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the United States to the maximum extent practicable at the project site (i.e., on site).

(b) Mitigation in all its forms (avoiding, minimizing, rectifying, reducing, or compensating for resource losses) will be required to the extent necessary to ensure that the adverse effects to the aquatic environment are minimal.

(c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland losses that exceed 1/10-acre and require pre-construction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse effects of the proposed activity are minimal, and provides a project-specific waiver of this requirement. For wetland losses of 1/10-acre or less that require pre-construction notification, the district engineer may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in minimal adverse effects on the aquatic environment. Compensatory mitigation projects provided to offset losses of aquatic resources must comply with the applicable provisions of 33 CFR part 332.

(1) The prospective permittee is responsible for proposing an appropriate compensatory mitigation option if compensatory mitigation is necessary to ensure that the activity results in minimal adverse effects on the aquatic environment.

(2) Since the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, wetland restoration should be the first compensatory mitigation option considered.

(3) If permittee-responsible mitigation is the proposed option, the prospective permittee is responsible for submitting a mitigation plan. A conceptual or detailed mitigation plan may be used by the district engineer to make the decision on the NWP verification request, but a final mitigation plan that addresses the applicable requirements of 33 CFR 332.4(c)(2) – (14) must be approved by the district engineer before the permittee begins work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation (see 33 CFR 332.3(k)(3)).

(4) If mitigation bank or in-lieu fee program credits are the proposed option, the mitigation plan only needs to address the baseline conditions at the impact site and the number of credits to be provided.

(5) Compensatory mitigation requirements (e.g., resource type and amount to be provided as compensatory mitigation, site protection, ecological performance standards, monitoring requirements) may be addressed through conditions added to the NWP authorization, instead of components of a compensatory mitigation plan.

(d) For losses of streams or other open waters that require pre-construction notification, the district engineer may require compensatory mitigation, such as stream rehabilitation, enhancement, or preservation, to ensure that the activity results in minimal adverse effects on the aquatic environment.

(e) Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the NWPs. For example, if an NWP has an acreage limit of 1/2-acre, it cannot be used to authorize any project resulting in the loss of greater than 1/2-acre of waters of the United States, even if compensatory mitigation is provided that replaces or restores some of the lost waters. However, compensatory mitigation can and should be used, as necessary, to ensure that a project already meeting the established acreage limits also satisfies the minimal impact requirement associated with the NWPs.

(f) Compensatory mitigation plans for projects in or near streams or other open waters will normally include a requirement for the restoration or establishment, maintenance, and legal protection (e.g., conservation easements) of riparian areas next to open waters. In some cases, riparian areas may be the only compensatory mitigation required. Riparian areas should consist of native species. The width of the required riparian area will address documented water quality or aquatic habitat loss concerns. Normally, the riparian area will be 25 to 50 feet wide on each side of the stream, but the district engineer may require slightly wider riparian areas to address documented water quality or habitat loss concerns. If it is not possible to establish a riparian area on both sides of a

stream, or if the waterbody is a lake or coastal waters, then restoring or establishing a riparian area along a single bank or shoreline may be sufficient. Where both wetlands and open waters exist on the project site, the district engineer will determine the appropriate compensatory mitigation (e.g., riparian areas and/or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where riparian areas are determined to be the most appropriate form of compensatory mitigation, the district engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland losses.

(g) Permittees may propose the use of mitigation banks, in-lieu fee programs, or separate permittee-responsible mitigation. For activities resulting in the loss of marine or estuarine resources, permittee-responsible compensatory mitigation may be environmentally preferable if there are no mitigation banks or in-lieu fee programs in the area that have marine or estuarine credits available for sale or transfer to the permittee. For permittee-responsible mitigation, the special conditions of the NWP verification must clearly indicate the party or parties responsible for the implementation and performance of the compensatory mitigation project, and, if required, its long-term management.

(h) Where certain functions and services of waters of the United States are permanently adversely affected, such as the conversion of a forested or scrub-shrub wetland to a herbaceous wetland in a permanently maintained utility line right-of-way, mitigation may be required to reduce the adverse effects of the project to the minimal level.

24. Safety of Impoundment Structures. To ensure that all impoundment structures are safely designed, the district engineer may require non-Federal applicants to demonstrate that the structures comply with established state dam safety criteria or have been designed by qualified persons. The district engineer may also require documentation that the design has been independently reviewed by similarly qualified persons, and appropriate modifications made to ensure safety.

25. Water Quality. Where States and authorized Tribes, or EPA where applicable, have not previously certified compliance of an NWP with CWA Section 401, individual 401 Water Quality Certification must be obtained or waived (see 33 CFR 330.4(c)). The district engineer or State or Tribe may require additional water quality management measures to ensure that the authorized activity does not result in more than minimal degradation of water quality.

26. Coastal Zone Management. In coastal states where an NWP has not previously received a state coastal zone management consistency concurrence, an individual state coastal zone management consistency concurrence must be obtained, or a presumption of concurrence must occur (see 33 CFR 330.4(d)). The district engineer or a State may require additional measures to ensure that the authorized activity is consistent with state coastal zone management requirements.

27. Regional and Case-By-Case Conditions. The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state, Indian Tribe, or U.S. EPA in its section 401 Water Quality Certification, or by the state in its Coastal Zone Management Act consistency determination.

28. Use of Multiple Nationwide Permits. The use of more than one NWP for a single and complete project is prohibited, except when the acreage loss of waters of the United States authorized by the NWPs does not exceed the acreage limit of the NWP with the highest specified acreage limit. For example, if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the United States for the total project cannot exceed 1/3-acre.

29. Transfer of Nationwide Permit Verifications. If the permittee sells the property associated with a nationwide permit verification, the permittee may transfer the nationwide permit verification to the new owner by submitting a letter to the appropriate Corps district office to validate the transfer. A copy of the nationwide permit verification must be attached to the letter, and the letter must contain the following statement and signature:

“When the structures or work authorized by this nationwide permit are still in existence at the time the property is transferred, the terms and conditions of this nationwide permit, including any special conditions, will continue to be binding on the new owner(s) of the property. To validate the transfer of this nationwide permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.”

(Transferee)

(Date)

30. Compliance Certification. Each permittee who receives an NWP verification letter from the Corps must provide a signed certification documenting completion of the authorized activity and any required compensatory mitigation. The success of any required permittee-responsible mitigation, including the achievement of ecological performance standards, will be addressed separately by the district engineer. The Corps will provide the permittee the certification document with the NWP verification letter. The certification document will include:

- (a) A statement that the authorized work was done in accordance with the NWP authorization, including any general, regional, or activity-specific conditions;
- (b) A statement that the implementation of any required compensatory mitigation was completed in accordance with the permit conditions. If credits from a mitigation bank or in-lieu fee program are used to satisfy the compensatory mitigation requirements, the certification must include the documentation required by 33 CFR 332.3(l)(3) to confirm that the permittee secured the appropriate number and resource type of credits; and
- (c) The signature of the permittee certifying the completion of the work and mitigation.

31. Pre-Construction Notification. (a) Timing. Where required by the terms of the NWP, the prospective permittee must notify the district engineer by submitting a pre-construction notification (PCN) as early as possible. The district engineer must determine if the PCN is complete within 45 calendar days of the date of receipt and, if the PCN is determined to be incomplete, notify the prospective permittee within that 45 day period to request the additional information necessary to make the PCN complete. The request must specify the information needed to make the PCN complete. As a general rule, district engineers will request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the district engineer will notify the prospective permittee that the PCN is still incomplete and the PCN review process will not commence until all of the requested information has been received by the district engineer. The prospective permittee shall not begin the activity until either:

- (1) He or she is notified in writing by the district engineer that the activity may proceed under the NWP with any special conditions imposed by the district or division engineer; or
- (2) 45 calendar days have passed from the district engineer's receipt of the complete PCN and the prospective permittee has not received written notice from the district or division engineer. However, if the permittee was required to notify the Corps pursuant to general condition 18 that listed species or critical habitat might be affected or in the vicinity of the project, or to notify the Corps pursuant to general condition 20 that the activity may have the potential to cause effects to historic properties, the permittee cannot begin the activity until receiving written notification from the Corps that there is "no effect" on listed species or "no potential to cause effects" on historic properties, or that any consultation required under Section 7 of the Endangered Species Act (see 33 CFR 330.4(f)) and/or Section 106 of the National Historic Preservation (see 33 CFR 330.4(g)) has been completed. Also, work cannot begin under NWPs 21, 49, or 50 until the permittee has received written approval from the Corps. If the proposed activity requires a written waiver to exceed specified limits of an NWP, the permittee may not begin the activity until the district engineer issues the waiver. If the district or division engineer notifies the permittee in writing that an individual permit is required within 45 calendar days of receipt of a complete PCN, the permittee cannot begin the activity until an individual permit has been obtained. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

(b) Contents of Pre-Construction Notification: The PCN must be in writing and include the following information:

- (1) Name, address and telephone numbers of the prospective permittee;
- (2) Location of the proposed project;
- (3) A description of the proposed project; the project's purpose; direct and indirect adverse environmental effects the project would cause, including the anticipated amount of loss of water of the United States expected to result from the NWP activity, in acres, linear feet, or other appropriate unit of measure; any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or

any related activity. The description should be sufficiently detailed to allow the district engineer to determine that the adverse effects of the project will be minimal and to determine the need for compensatory mitigation. Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the project and when provided results in a quicker decision. Sketches should contain sufficient detail to provide an illustrative description of the proposed activity (e.g., a conceptual plan), but do not need to be detailed engineering plans);

(4) The PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral streams, on the project site. Wetland delineations must be prepared in accordance with the current method required by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters on the project site, but there may be a delay if the Corps does the delineation, especially if the project site is large or contains many waters of the United States. Furthermore, the 45 day period will not start until the delineation has been submitted to or completed by the Corps, as appropriate;

(5) If the proposed activity will result in the loss of greater than 1/10-acre of wetlands and a PCN is required, the prospective permittee must submit a statement describing how the mitigation requirement will be satisfied, or explaining why the adverse effects are minimal and why compensatory mitigation should not be required. As an alternative, the prospective permittee may submit a conceptual or detailed mitigation plan.

(6) If any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat, for non-Federal applicants the PCN must include the name(s) of those endangered or threatened species that might be affected by the proposed work or utilize the designated critical habitat that may be affected by the proposed work. Federal applicants must provide documentation demonstrating compliance with the Endangered Species Act; and

(7) For an activity that may affect a historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places, for non-Federal applicants the PCN must state which historic property may be affected by the proposed work or include a vicinity map indicating the location of the historic property. Federal applicants must provide documentation demonstrating compliance with Section 106 of the National Historic Preservation Act.

(c) Form of Pre-Construction Notification: The standard individual permit application form (Form ENG 4345) may be used, but the completed application form must clearly indicate that it is a PCN and must include all of the information required in paragraphs (b)(1) through (7) of this general condition. A letter containing the required information may also be used.

(d) Agency Coordination: (1) The district engineer will consider any comments from Federal and state agencies concerning the proposed activity's compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the project's adverse environmental effects to a minimal level.

(2) For all NWP activities that require pre-construction notification and result in the loss of greater than 1/2-acre of waters of the United States, for NWP 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52 activities that require pre-construction notification and will result in the loss of greater than 300 linear feet of stream bed, and for all NWP 48 activities that require pre-construction notification, the district engineer will immediately provide (e.g., via e-mail, facsimile transmission, overnight mail, or other expeditious manner) a copy of the complete PCN to the appropriate Federal or state offices (U.S. FWS, state natural resource or water quality agency, EPA, State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Office (THPO), and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will have 10 calendar days from the date the material is transmitted to telephone or fax the district engineer notice that they intend to provide substantive, site-specific comments. The comments must explain why the agency believes the adverse effects will be more than minimal. If so contacted by an agency, the district engineer will wait an additional 15 calendar days before making a decision on the pre-construction notification. The district engineer will fully consider agency comments received within the specified time frame concerning the proposed activity's compliance with the terms and conditions of the NWPs, including the need for mitigation to ensure the net adverse environmental effects to the aquatic environment of the proposed activity are minimal. The district engineer will provide no response to the resource agency, except as provided below. The district engineer will indicate in the administrative record associated with each pre-construction notification that the resource agencies' concerns were considered. For NWP 37, the emergency watershed protection and rehabilitation activity may proceed immediately in cases where there is an unacceptable hazard to life or a significant loss of property or economic hardship will occur. The district engineer will consider any comments received to decide whether the NWP 37 authorization should be modified, suspended, or revoked in accordance with the procedures at 33 CFR 330.5.

(3) In cases of where the prospective permittee is not a Federal agency, the district engineer will provide a response to NMFS within 30 calendar days of receipt of any Essential Fish Habitat conservation recommendations, as required by Section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act.

(4) Applicants are encouraged to provide the Corps with either electronic files or multiple copies of pre-construction notifications to expedite agency coordination.

Further Information

1. District Engineers have authority to determine if an activity complies with the terms and conditions of an NWP.
2. NWPs do not obviate the need to obtain other federal, state, or local permits, approvals, or authorizations required by law.
3. NWPs do not grant any property rights or exclusive privileges.
4. NWPs do not authorize any injury to the property or rights of others.
5. NWPs do not authorize interference with any existing or proposed Federal project.

APPENDIX C
Wetland Delineation Data Forms

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Crestwood Residue Pipeline County: McKenzie Sampling Date: November 15, 2016
 Applicant/Owner: Crestwood State: ND Sampling Point: DP1W
 Investigator(s): D. Belisle and E. Schwartz Section, Township, Range: Sec 21 T149N R98W
 Landform (hillslope, terrace, etc.): Drainageway Local relief (concave, convex, none): concave Slope (%): 3
 Subregion (LRR): LRR-F Lat: 47.70921 Long: -103.22475 Datum: NAD-83
 Soil Map Unit Name: E0447B - Daglum-Belfield Complex NWI Classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (if no, explain in Remarks.)
 Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation Yes, Soil Yes, or Hydrology Yes naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: This point was determined to be within a wetland due to the presence of all 3 wetland criteria. Area is found to be within a heavily disturbed ag field.	

VEGETATION - Use scientific names of plants.

	Absolute % cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft.</u>)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
1. <u>None Observed</u>				
2. _____				
3. _____				
4. _____				
_____ = Total Cover				
Sapling/Shrub Stratum (Plot size: <u>15 ft.</u>)				Prevalence Index Worksheet: Total % Cover of: <u> </u> Multiply by: <u> </u> OBL species <u>100</u> x 1 = <u>100</u> FACW species <u>0</u> x 2 = <u>0</u> FAC species <u>0</u> x 3 = <u>0</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>100</u> (A) <u>100</u> (B) Prevalence Index = B/A = <u>1.00</u>
1. <u>None Observed</u>				
2. _____				
3. _____				
4. _____				
_____ = Total Cover				
Herb Stratum (Plot size: <u>5 ft.</u>)				Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u>X</u> 2 - Dominance Test is >50% <u>X</u> 3 - Prevalence Index is ≤ 3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Explain) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Typha latifolia</u>	100	Yes	OBL	
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
100 = Total Cover				
Woody Vine Stratum (Plot size: <u>30 ft.</u>)				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
1. <u>None Observed</u>				
2. _____				
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>0</u>				

Remarks:
 A positive indication of hydrophytic vegetation was observed (>50% of dominant species indexed as OBL, FACW, or FAC).
 A positive indication of hydrophytic vegetation was observed (Prevalence Index is ≤ 3.0).

SOIL

Sampling Point: DP1W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8	10YR 2/1	90	2.5YR 4/6	10	C	M	Clay Loam	
8-20	10YR 3/2	100	None	—	—	—	Clay Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

<p>Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)</p> <p><input type="checkbox"/> Histosol (A1)</p> <p><input type="checkbox"/> Histic Epipedon (A2)</p> <p><input type="checkbox"/> Black Histic (A3)</p> <p><input type="checkbox"/> Hydrogen Sulfide (A4)</p> <p><input type="checkbox"/> Stratified Layers (A5) (LRR F)</p> <p><input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)</p> <p><input type="checkbox"/> Depleted Below Dark Surface (A11)</p> <p><input type="checkbox"/> Thick Dark Surface (A12)</p> <p><input type="checkbox"/> Sandy Mucky Mineral (S1)</p> <p><input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G, H)</p> <p><input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)</p>	<p><input type="checkbox"/> Sandy Gleyed Matrix (S4)</p> <p><input type="checkbox"/> Sandy Redox (S5)</p> <p><input type="checkbox"/> Stripped Matrix (S6)</p> <p><input type="checkbox"/> Loamy Mucky Mineral (F1)</p> <p><input type="checkbox"/> Loamy Gleyed Matrix (F2)</p> <p><input checked="" type="checkbox"/> Depleted Matrix (F3)</p> <p><input type="checkbox"/> Redox Dark Surface (F6)</p> <p><input type="checkbox"/> Depleted Dark Surface (F7)</p> <p><input type="checkbox"/> Redox Depressions (F8)</p> <p><input type="checkbox"/> High Plains Depressions (F16)</p> <p>(MLRA 72 & 73 of LRR H)</p>	<p>Indicators for Problematic Hydric Soils³:</p> <p><input type="checkbox"/> 1 cm Muck (A9) (LRR I, J)</p> <p><input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)</p> <p><input type="checkbox"/> Dark Surface (S7) (LRR G)</p> <p><input type="checkbox"/> High Plains Depressions (F16)</p> <p>(LRR H outside of MLRA 72 & 73)</p> <p><input type="checkbox"/> Reduced Vertic (F18)</p> <p><input type="checkbox"/> Red Parent Material (TF2)</p> <p><input type="checkbox"/> Very Shallow Dark Surface (TF12)</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p> <p>³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.</p>
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<p>Restrictive Layer (if observed):</p> <p>Type: _____</p> <p>Depth (inches): _____</p>	<p>Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____</p>
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Remarks:
A positive indication of hydric soil was observed.

HYDROLOGY

<p>Wetland hydrology Indicators:</p> <p><u>Primary Indicators (minimum of one is required; check all that apply)</u></p> <p><input type="checkbox"/> Surface Water (A1)</p> <p><input type="checkbox"/> High Water Table (A2)</p> <p><input type="checkbox"/> Saturation (A3)</p> <p><input type="checkbox"/> Water Marks (B1)</p> <p><input type="checkbox"/> Sediment Deposits (B2)</p> <p><input type="checkbox"/> Drift Deposits (B3)</p> <p><input checked="" type="checkbox"/> Algal Mat or Crust (B4)</p> <p><input type="checkbox"/> Iron Deposits (B5)</p> <p><input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)</p> <p><input type="checkbox"/> Water-Stained Leaves (B9)</p>	<p><u>Secondary Indicators (minimum of two required)</u></p> <p><input type="checkbox"/> Surface Soil Cracks (B6)</p> <p><input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)</p> <p><input checked="" type="checkbox"/> Drainage Patterns (B10)</p> <p><input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)</p> <p>(where tilled)</p> <p><input type="checkbox"/> Crayfish Burrows (C8)</p> <p><input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)</p> <p><input checked="" type="checkbox"/> Geomorphic Position (D2)</p> <p><input checked="" type="checkbox"/> FAC-Neutral Test (D5)</p> <p><input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F)</p>
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<p>Field Observations:</p> <p>Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): <u>N/A</u></p> <p>Water Table Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): <u>>20</u></p> <p>Saturation Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): <u>>20</u> (includes capillary fringe)</p>	<p>Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____</p>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
A positive indication of wetland hydrology was observed (at least one primary indicator).
A positive indication of wetland hydrology was observed (at least two secondary indicators).

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Crestwood Residue Pipeline County: McKenzie Sampling Date: November 15, 2016
 Applicant/Owner: Crestwood State: ND Sampling Point: DP2U
 Investigator(s): D. Belisle and E. Schwartz Section, Township, Range: Sec 21 T149N R98W
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Linear Slope (%): 3
 Subregion (LRR): LRR-F Lat: 47.70929 Long: -103.22471 Datum: NAD-83
 Soil Map Unit Name: E0447B - Daglum-Belfield Complex NWI Classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (if no, explain in Remarks.)
 Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation Yes, Soil Yes, or Hydrology Yes naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: This point was determined not to be within a wetland due to the lack of hydric soils and wetland hydrology. Area is found in a heavily disturbed ag field.	

VEGETATION - Use scientific names of plants.

	Absolute % cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft.</u>)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
1. <u>None Observed</u>				
2. _____				
3. _____				
4. _____				
_____ = Total Cover				
Sapling/Shrub Stratum (Plot size: <u>15 ft.</u>)				Prevalence Index Worksheet: Total % Cover of: Multiply by: OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>0</u> x 2 = <u>0</u> FAC species <u>60</u> x 3 = <u>180</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>60</u> (A) <u>180</u> (B) Prevalence Index = B/A = <u>3.00</u>
1. <u>None Observed</u>				
2. _____				
3. _____				
4. _____				
_____ = Total Cover				
Herb Stratum (Plot size: <u>5 ft.</u>)				
1. <u>Neokochia americana</u>	60	Yes	FAC	
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
60 = Total Cover				
Woody Vine Stratum (Plot size: <u>30 ft.</u>)				
1. <u>None Observed</u>				
2. _____				
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>40</u>				
Hydrophytic Vegetation Indicators: ___ 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤ 3.0 ¹ ___ 4 - Morphological Adaptations ¹ (Explain) ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.				
Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>				

Remarks:
 A positive indication of hydrophytic vegetation was observed (>50% of dominant species indexed as OBL, FACW, or FAC).
 A positive indication of hydrophytic vegetation was observed (Prevalence Index is ≤ 3.0).

SOIL

Sampling Point: DP2U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-10	10YR 2/1	100	None	—	—	—	Clay Loam	
10-20	10YR 3/2	100	None	—	—	—	Clay	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

<p>Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)</p> <p><input type="checkbox"/> Histosol (A1)</p> <p><input type="checkbox"/> Histic Epipedon (A2)</p> <p><input type="checkbox"/> Black Histic (A3)</p> <p><input type="checkbox"/> Hydrogen Sulfide (A4)</p> <p><input type="checkbox"/> Stratified Layers (A5) (LRR F)</p> <p><input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)</p> <p><input type="checkbox"/> Depleted Below Dark Surface (A11)</p> <p><input type="checkbox"/> Thick Dark Surface (A12)</p> <p><input type="checkbox"/> Sandy Mucky Mineral (S1)</p> <p><input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G, H)</p> <p><input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)</p>	<p><input type="checkbox"/> Sandy Gleyed Matrix (S4)</p> <p><input type="checkbox"/> Sandy Redox (S5)</p> <p><input type="checkbox"/> Stripped Matrix (S6)</p> <p><input type="checkbox"/> Loamy Mucky Mineral (F1)</p> <p><input type="checkbox"/> Loamy Gleyed Matrix (F2)</p> <p><input type="checkbox"/> Depleted Matrix (F3)</p> <p><input type="checkbox"/> Redox Dark Surface (F6)</p> <p><input type="checkbox"/> Depleted Dark Surface (F7)</p> <p><input type="checkbox"/> Redox Depressions (F8)</p> <p><input type="checkbox"/> High Plains Depressions (F16)</p> <p>(MLRA 72 & 73 of LRR H)</p>	<p>Indicators for Problematic Hydric Soils³:</p> <p><input type="checkbox"/> 1 cm Muck (A9) (LRR I, J)</p> <p><input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)</p> <p><input type="checkbox"/> Dark Surface (S7) (LRR G)</p> <p><input type="checkbox"/> High Plains Depressions (F16)</p> <p>(LRR H outside of MLRA 72 & 73)</p> <p><input type="checkbox"/> Reduced Vertic (F18)</p> <p><input type="checkbox"/> Red Parent Material (TF2)</p> <p><input type="checkbox"/> Very Shallow Dark Surface (TF12)</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p> <p>³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.</p>
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<p>Restrictive Layer (if observed):</p> <p>Type: _____</p> <p>Depth (inches): _____</p>	<p>Hydric Soil Present? Yes _____ No <u>X</u></p>
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Remarks:
No positive indication of hydric soils was observed.

HYDROLOGY

<p>Wetland hydrology Indicators:</p> <p><u>Primary Indicators (minimum of one is required; check all that apply)</u></p> <p><input type="checkbox"/> Surface Water (A1)</p> <p><input type="checkbox"/> High Water Table (A2)</p> <p><input type="checkbox"/> Saturation (A3)</p> <p><input type="checkbox"/> Water Marks (B1)</p> <p><input type="checkbox"/> Sediment Deposits (B2)</p> <p><input type="checkbox"/> Drift Deposits (B3)</p> <p><input type="checkbox"/> Algal Mat or Crust (B4)</p> <p><input type="checkbox"/> Iron Deposits (B5)</p> <p><input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)</p> <p><input type="checkbox"/> Water-Stained Leaves (B9)</p>	<p><u>Secondary Indicators (minimum of two required)</u></p> <p><input type="checkbox"/> Salt Crust (B11)</p> <p><input type="checkbox"/> Aquatic Invertebrates (B13)</p> <p><input type="checkbox"/> Hydrogen Sulfide Odor (C1)</p> <p><input type="checkbox"/> Dry-Season Water Table (C2)</p> <p><input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)</p> <p>(where not tilled)</p> <p><input type="checkbox"/> Presence of Reduced Iron (C4)</p> <p><input type="checkbox"/> Thin Muck Surface (C7)</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p>	<p><input type="checkbox"/> Surface Soil Cracks (B6)</p> <p><input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)</p> <p><input type="checkbox"/> Drainage Patterns (B10)</p> <p><input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)</p> <p>(where tilled)</p> <p><input type="checkbox"/> Crayfish Burrows (C8)</p> <p><input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)</p> <p><input type="checkbox"/> Geomorphic Position (D2)</p> <p><input type="checkbox"/> FAC-Neutral Test (D5)</p> <p><input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F)</p>
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<p>Field Observations:</p> <p>Surface Water Present? Yes _____ No <u>X</u> Depth (inches): <u>N/A</u></p> <p>Water Table Present? Yes _____ No <u>X</u> Depth (inches): <u>>20</u></p> <p>Saturation Present? Yes _____ No <u>X</u> Depth (inches): <u>>20</u> (includes capillary fringe)</p>	<p>Wetland Hydrology Present? Yes _____ No <u>X</u></p>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
No positive indication of wetland hydrology was observed.

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Crestwood Residue Pipeline County: McKenzie Sampling Date: November 15, 2016
 Applicant/Owner: Crestwood State: ND Sampling Point: DP3W
 Investigator(s): D. Belisle and E. Schwartz Section, Township, Range: Sec 21 T149N R98W
 Landform (hillslope, terrace, etc.): Drainageway Local relief (concave, convex, none): Concave Slope (%): 2
 Subregion (LRR): LRR-F Lat: 47.70882 Long: -103.22480 Datum: NAD-83
 Soil Map Unit Name: E0447B - Daglum-Belfield Complex NWI Classification: N/A
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (if no, explain in Remarks.)
 Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation Yes, Soil Yes, or Hydrology Yes naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: This point was determined to be within a wetland due to the presence of all 3 wetland criteria. Area is found in a heavily disturbed AG field.	

VEGETATION - Use scientific names of plants.

	Absolute % cover	Dominant Species?	Indicator Status																									
<u>Tree Stratum</u> (Plot size: <u>30 ft.</u>)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)																								
1. <u>None Observed</u>																												
2. _____																												
3. _____																												
4. _____																												
_____ = Total Cover				Prevalence Index Worksheet: <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: right;">Total % Cover of:</td> <td style="text-align: right;">Multiply by:</td> <td></td> </tr> <tr> <td>OBL species</td> <td style="text-align: center;"><u>75</u></td> <td>x 1 = <u>75</u></td> </tr> <tr> <td>FACW species</td> <td style="text-align: center;"><u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species</td> <td style="text-align: center;"><u>0</u></td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species</td> <td style="text-align: center;"><u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species</td> <td style="text-align: center;"><u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals:</td> <td style="text-align: center;"><u>75</u></td> <td>(A) <u>75</u></td> </tr> <tr> <td>Prevalence Index = B/A =</td> <td colspan="2" style="text-align: center;"><u>1.00</u></td> </tr> </table>	Total % Cover of:	Multiply by:		OBL species	<u>75</u>	x 1 = <u>75</u>	FACW species	<u>0</u>	x 2 = <u>0</u>	FAC species	<u>0</u>	x 3 = <u>0</u>	FACU species	<u>0</u>	x 4 = <u>0</u>	UPL species	<u>0</u>	x 5 = <u>0</u>	Column Totals:	<u>75</u>	(A) <u>75</u>	Prevalence Index = B/A =	<u>1.00</u>	
Total % Cover of:	Multiply by:																											
OBL species	<u>75</u>	x 1 = <u>75</u>																										
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UPL species	<u>0</u>	x 5 = <u>0</u>																										
Column Totals:	<u>75</u>	(A) <u>75</u>																										
Prevalence Index = B/A =	<u>1.00</u>																											
<u>Sapling/Shrub Stratum</u> (Plot size: <u>15 ft.</u>)																												
1. <u>None Observed</u>																												
2. _____																												
3. _____																												
4. _____																												
5. _____																												
_____ = Total Cover																												
<u>Herb Stratum</u> (Plot size: <u>5 ft.</u>)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤ 3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Explain) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																								
1. <u>Typha latifolia</u>	<u>75</u>	<u>Yes</u>	<u>OBL</u>																									
2. _____																												
3. _____																												
4. _____																												
5. _____																												
6. _____																												
7. _____																												
8. _____																												
9. _____																												
10. _____																												
<u>75</u> = Total Cover																												
<u>Woody Vine Stratum</u> (Plot size: <u>30 ft.</u>)				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>																								
1. <u>None Observed</u>																												
2. _____																												
_____ = Total Cover																												
% Bare Ground in Herb Stratum <u>25</u>																												

Remarks:
 A positive indication of hydrophytic vegetation was observed (>50% of dominant species indexed as OBL, FACW, or FAC).
 A positive indication of hydrophytic vegetation was observed (Prevalence Index is ≤ 3.0).

SOIL

Sampling Point: DP3W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-7	10YR 2/1	90	2.5YR 4/6	5	C	M	Clay Loam	
0-7	10YR 4/2	5	None	—	—	—	Clay Loam	
7-15	10YR 4/2	100	None	—	—	—	Clay Loam	
15-20	10YR 2/1	100	None	—	—	—	Clay Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.) <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Mucky Mineral (F1) <input type="checkbox"/> Stratified Layers (A5) (LRR F) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H) <input checked="" type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G, H) <input type="checkbox"/> High Plains Depressions (F16) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F) (MLRA 72 & 73 of LRR H)		Indicators for Problematic Hydric Soils³: <input type="checkbox"/> 1 cm Muck (A9) (LRR I, J) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H) <input type="checkbox"/> Dark Surface (S7) (LRR G) <input type="checkbox"/> High Plains Depressions (F16) (LRR H outside of MLRA 72 & 73) <input type="checkbox"/> Reduced Vertic (F18) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks) ³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
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Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____
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Remarks:
 A positive indication of hydric soil was observed.

HYDROLOGY

Wetland hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input checked="" type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) (where not tilled) <input checked="" type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Water-Stained Leaves (B9)		<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) (where tilled) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F)
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Field Observations: Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): <u>N/A</u> Water Table Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): <u>>20</u> Saturation Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): <u>>20</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
 A positive indication of wetland hydrology was observed (at least one primary indicator).
 A positive indication of wetland hydrology was observed (at least two secondary indicators).

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Crestwood Residue Pipeline County: McKenzie Sampling Date: November 15, 2016
 Applicant/Owner: Crestwood State: ND Sampling Point: DP4U
 Investigator(s): D. Belisle and E. Schwartz Section, Township, Range: Sec 21 T149N R98W
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Linear Slope (%): 2
 Subregion (LRR): LRR-F Lat: 47.70879 Long: -103.22485 Datum: NAD-83
 Soil Map Unit Name: E0447B - Daglum-Belfield Complex NWI Classification: N/A
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (if no, explain in Remarks.)
 Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No X
 Are Vegetation Yes, Soil Yes, or Hydrology Yes naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u> Hydric Soil Present? Yes <u> </u> No <u>X</u> Wetland Hydrology Present? Yes <u> </u> No <u>X</u>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u>
Remarks: This point was determined not to be within a wetland due to the lack of all three wetland criteria. Area is found in a heavily disturbed ag field	

VEGETATION - Use scientific names of plants.

<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;"></th> <th style="width: 10%;">Absolute % cover</th> <th style="width: 15%;">Dominant Species?</th> <th style="width: 15%;">Indicator Status</th> </tr> </thead> <tbody> <tr> <td colspan="4"><u>Tree Stratum</u> (Plot size: <u>30 ft.</u>)</td> </tr> <tr> <td>1. <u>None Observed</u></td> <td></td> <td></td> <td></td> </tr> <tr> <td>2. _____</td> <td></td> <td></td> <td></td> </tr> <tr> <td>3. _____</td> <td></td> <td></td> <td></td> </tr> <tr> <td>4. _____</td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="4" style="text-align: right;">_____ = Total Cover</td> </tr> <tr> <td colspan="4"><u>Sapling/Shrub Stratum</u> (Plot size: <u>15 ft.</u>)</td> </tr> <tr> <td>1. <u>None Observed</u></td> <td></td> <td></td> <td></td> </tr> <tr> <td>2. _____</td> <td></td> <td></td> <td></td> </tr> <tr> <td>3. _____</td> <td></td> <td></td> <td></td> </tr> <tr> <td>4. _____</td> <td></td> <td></td> <td></td> </tr> <tr> <td>5. _____</td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="4" style="text-align: right;">_____ = Total Cover</td> </tr> <tr> <td colspan="4"><u>Herb Stratum</u> (Plot size: <u>5 ft.</u>)</td> </tr> <tr> <td>1. <u>Triticum aestivum</u></td> <td style="text-align: center;">50</td> <td style="text-align: center;">Yes</td> <td style="text-align: center;">UPL</td> </tr> <tr> <td>2. _____</td> <td></td> <td></td> <td></td> </tr> <tr> <td>3. _____</td> <td></td> <td></td> <td></td> </tr> <tr> <td>4. _____</td> <td></td> <td></td> <td></td> </tr> <tr> <td>5. _____</td> <td></td> <td></td> <td></td> </tr> <tr> <td>6. _____</td> <td></td> <td></td> <td></td> </tr> <tr> <td>7. _____</td> <td></td> <td></td> <td></td> </tr> <tr> <td>8. _____</td> <td></td> <td></td> <td></td> </tr> <tr> <td>9. _____</td> <td></td> <td></td> <td></td> </tr> <tr> <td>10. _____</td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="4" style="text-align: right;">50 = Total Cover</td> </tr> <tr> <td colspan="4"><u>Woody Vine Stratum</u> (Plot size: <u>30 ft.</u>)</td> </tr> <tr> <td>1. <u>None Observed</u></td> <td></td> <td></td> <td></td> </tr> <tr> <td>2. _____</td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="4" style="text-align: right;">_____ = Total Cover</td> </tr> <tr> <td colspan="4"> % Bare Ground in Herb Stratum <u>50</u> </td> </tr> </tbody> </table>		Absolute % cover	Dominant Species?	Indicator Status	<u>Tree Stratum</u> (Plot size: <u>30 ft.</u>)				1. <u>None Observed</u>				2. _____				3. _____				4. _____				_____ = Total Cover				<u>Sapling/Shrub Stratum</u> (Plot size: <u>15 ft.</u>)				1. <u>None Observed</u>				2. _____				3. _____				4. _____				5. _____				_____ = Total Cover				<u>Herb Stratum</u> (Plot size: <u>5 ft.</u>)				1. <u>Triticum aestivum</u>	50	Yes	UPL	2. _____				3. _____				4. _____				5. _____				6. _____				7. _____				8. _____				9. _____				10. _____				50 = Total Cover				<u>Woody Vine Stratum</u> (Plot size: <u>30 ft.</u>)				1. <u>None Observed</u>				2. _____				_____ = Total Cover				% Bare Ground in Herb Stratum <u>50</u>				<table style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="2">Dominance Test worksheet:</td> </tr> <tr> <td>Number of Dominant Species That Are OBL, FACW, or FAC:</td> <td style="text-align: right;"><u>0</u> (A)</td> </tr> <tr> <td>Total Number of Dominant Species Across All Strata:</td> <td style="text-align: right;"><u>1</u> (B)</td> </tr> <tr> <td>Percent of Dominant Species That Are OBL, FACW, or FAC:</td> <td style="text-align: right;"><u>0</u> (A/B)</td> </tr> <tr> <td colspan="2">Prevalence Index Worksheet:</td> </tr> <tr> <td style="text-align: center;">Total % Cover of:</td> <td style="text-align: center;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td style="text-align: right;"><u>0</u> x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td style="text-align: right;"><u>0</u> x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td style="text-align: right;"><u>0</u> x 3 = <u>0</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td style="text-align: right;"><u>0</u> x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>50</u></td> <td style="text-align: right;"><u>50</u> x 5 = <u>250</u></td> </tr> <tr> <td>Column Totals:</td> <td style="text-align: right;"><u>50</u> (A) <u>250</u> (B)</td> </tr> <tr> <td>Prevalence Index = B/A =</td> <td style="text-align: right;"><u>5.00</u></td> </tr> <tr> <td colspan="2">Hydrophytic Vegetation Indicators:</td> </tr> <tr> <td colspan="2"><u> </u> 1 - Rapid Test for Hydrophytic Vegetation</td> </tr> <tr> <td colspan="2"><u> </u> 2 - Dominance Test is >50%</td> </tr> <tr> <td colspan="2"><u> </u> 3 - Prevalence Index is ≤ 3.0¹</td> </tr> <tr> <td colspan="2"><u> </u> 4 - Morphological Adaptations¹ (Explain)</td> </tr> <tr> <td colspan="2"><u> </u> Problematic Hydrophytic Vegetation¹ (Explain)</td> </tr> <tr> <td colspan="2">¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</td> </tr> <tr> <td colspan="2">Hydrophytic Vegetation Present? 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Remarks: No positive indication of hydrophytic vegetation was observed (≥50% of dominant species indexed as FACU or drier).																																																																																																																																																																							

SOIL

Sampling Point: DP4U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-10	10YR 2/1	100	None	—	—	—	Clay Loam	
10-20	10YR 3/2	10					Clay Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils³:
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR I, J)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	(LRR H outside of MLRA 72 & 73)
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G, H)	<input type="checkbox"/> High Plains Depressions (F16)	³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)	(MLRA 72 & 73 of LRR H)	

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes _____ No <u>X</u>
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Remarks:
No positive indication of hydric soils was observed.

HYDROLOGY

Wetland hydrology Indicators:	
<u>Primary Indicators (minimum of one is required; check all that apply)</u>	<u>Secondary Indicators (minimum of two required)</u>
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Drift Deposits (B3)	(where not tilled)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)
	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
	<input type="checkbox"/> Drainage Patterns (B10)
	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
	(where tilled)
	<input type="checkbox"/> Crayfish Burrows (C8)
	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
	<input type="checkbox"/> Geomorphic Position (D2)
	<input type="checkbox"/> FAC-Neutral Test (D5)
	<input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F)

Field Observations:	Wetland Hydrology Present? Yes _____ No <u>X</u>
Surface Water Present? Yes _____ No <u>X</u> Depth (inches): <u>N/A</u>	
Water Table Present? Yes _____ No <u>X</u> Depth (inches): <u>>20</u>	
Saturation Present? Yes _____ No <u>X</u> Depth (inches): <u>>20</u> (includes capillary fringe)	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
No positive indication of wetland hydrology was observed.

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Crestwood Residue Pipeline County: McKenzie Sampling Date: November 16, 2016
 Applicant/Owner: Crestwood State: ND Sampling Point: DP5W
 Investigator(s): D. Belisle and E. Schwartz Section, Township, Range: Sec. 28 T149N R98W
 Landform (hillslope, terrace, etc.): Drainageway Local relief (concave, convex, none): Concave Slope (%): 1
 Subregion (LRR): LRR-F Lat: 47.70107 Long: -103.22489 Datum: NAD-83
 Soil Map Unit Name: E2120B - Farnuf loam NWI Classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (if no, explain in Remarks.)
 Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation Yes, Soil Yes, or Hydrology Yes naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: This point was determined to be within a wetland due to the presence of all 3 wetland criteria. Area is found within a heavily disturbed ag field	

VEGETATION - Use scientific names of plants.

	Absolute % cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft.</u>)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
1. <u>None Observed</u>				
2. _____				
3. _____				
4. _____				
_____ = Total Cover				
Sapling/Shrub Stratum (Plot size: <u>15 ft.</u>)				Prevalence Index Worksheet: Total % Cover of: <u>35</u> Multiply by: OBL species <u>35</u> x 1 = <u>35</u> FACW species <u>0</u> x 2 = <u>0</u> FAC species <u>0</u> x 3 = <u>0</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>35</u> (A) <u>35</u> (B) Prevalence Index = B/A = <u>1.00</u>
1. <u>None Observed</u>				
2. _____				
3. _____				
4. _____				
_____ = Total Cover				
Herb Stratum (Plot size: <u>5 ft.</u>)				Hydrophytic Vegetation Indicators: ___ 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤ 3.0 ¹ ___ 4 - Morphological Adaptations ¹ (Explain) ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Typha Latifolia</u>	35	Yes	OBL	
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
35 = Total Cover				
Woody Vine Stratum (Plot size: <u>30 ft.</u>)				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
1. <u>None Observed</u>				
2. _____				
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>65</u>				

Remarks:
 A positive indication of hydrophytic vegetation was observed (>50% of dominant species indexed as OBL, FACW, or FAC).
 A positive indication of hydrophytic vegetation was observed (Prevalence Index is ≤ 3.0).

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Crestwood Residue Pipeline County: McKenzie Sampling Date: November 16, 2016
 Applicant/Owner: Crestwood State: ND Sampling Point: DP6U
 Investigator(s): D. Belisle and E. Schwartz Section, Township, Range: _____ Sec. 28 T149N R98W
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Linear Slope (%): 2
 Subregion (LRR): LRR-F Lat: 47.70111 Long: -103.22489 Datum: NAD-83
 Soil Map Unit Name: E2120B - Farnuf loam NWI Classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (if no, explain in Remarks.)
 Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes _____ No X
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <u>X</u> Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u>
Remarks: This point was determined not to be within a wetland due to the lack of all three wetland criteria. Area is found within a heavily disturbed ag field	

VEGETATION - Use scientific names of plants.

	Absolute % cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft.</u>)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
1. <u>None Observed</u>	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				
Sapling/Shrub Stratum (Plot size: <u>15 ft.</u>)				Prevalence Index Worksheet: Total % Cover of: _____ Multiply by: _____ OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>0</u> x 2 = <u>0</u> FAC species <u>0</u> x 3 = <u>0</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>40</u> x 5 = <u>200</u> Column Totals: <u>40</u> (A) <u>200</u> (B) Prevalence Index = B/A = <u>5.00</u>
1. <u>None Observed</u>	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				
Herb Stratum (Plot size: <u>5 ft.</u>)				Hydrophytic Vegetation Indicators: ___ 1 - Rapid Test for Hydrophytic Vegetation ___ 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤ 3.0 ¹ ___ 4 - Morphological Adaptations ¹ (Explain) ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Triticum aestivum</u>	<u>40</u>	<u>Yes</u>	<u>UPL</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
_____ = Total Cover				
Woody Vine Stratum (Plot size: <u>30 ft.</u>)				Hydrophytic Vegetation Present? Yes _____ No <u>X</u>
1. <u>None Observed</u>	_____	_____	_____	
2. _____	_____	_____	_____	
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>60</u>				

Remarks:
 No positive indication of hydrophytic vegetation was observed (≥50% of dominant species indexed as FACU or drier).

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Crestwood Residue Pipeline County: McKenzie Sampling Date: November 16, 2016
 Applicant/Owner: Crestwood State: ND Sampling Point: DP8W
 Investigator(s): D. Belisle and E. Schwartz Section, Township, Range: _____ Sec. 28 T149N R98W
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Linear Slope (%): 5
 Subregion (LRR): LRR-F Lat: 47.69215 Long: -103.23983 Datum: NAD-83
 Soil Map Unit Name: E0701F - Dogtooth-Janesburg-Cabba complex NWI Classification: N/A
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (if no, explain in Remarks.)
 Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____
Remarks: This point was determined to be within a wetland due to the presence of all 3 wetland criteria.	

VEGETATION - Use scientific names of plants.

	Absolute % cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft.</u>)				
1. <u>None Observed</u>	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				
Sapling/Shrub Stratum (Plot size: <u>15 ft.</u>)				
1. <u>None Observed</u>	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				
Herb Stratum (Plot size: <u>5 ft.</u>)				
1. <u>Spartina pectinata</u>	70	Yes	FACW	
2. <u>Typha latifolia</u>	30	Yes	OBL	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
100 = Total Cover				
Woody Vine Stratum (Plot size: <u>30 ft.</u>)				
1. <u>None Observed</u>	_____	_____	_____	
2. _____	_____	_____	_____	
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>0</u>				

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index Worksheet:

Total % Cover of:	Multiply by:
OBL species <u>30</u>	x 1 = <u>30</u>
FACW species <u>70</u>	x 2 = <u>140</u>
FAC species <u>0</u>	x 3 = <u>0</u>
FACU species <u>0</u>	x 4 = <u>0</u>
UPL species <u>0</u>	x 5 = <u>0</u>
Column Totals: <u>100</u> (A)	<u>170</u> (B)
Prevalence Index = B/A = <u>1.70</u>	

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤ 3.0¹

____ 4 - Morphological Adaptations¹ (Explain)

____ Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:
 A positive indication of hydrophytic vegetation was observed (>50% of dominant species indexed as OBL, FACW, or FAC).
 A positive indication of hydrophytic vegetation was observed (Prevalence Index is ≤ 3.0).

SOIL

Sampling Point: DP8W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10YR 4/1	95	10YR 4/6	5			Clay Loam	
6-12	GLE Y1 6/N	50					Clay Loam	
6-12	10YR 4/1	45	10YR 4/6	5			Clay Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils³:
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR I, J)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input checked="" type="checkbox"/> Loamy Gleyed Matrix (F2)	(LRR H outside of MLRA 72 & 73)
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G, H)	<input type="checkbox"/> High Plains Depressions (F16)	³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)	(MLRA 72 & 73 of LRR H)	

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____
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Remarks:
A positive indication of hydric soil was observed.

HYDROLOGY

Wetland hydrology Indicators:	
<u>Primary Indicators (minimum of one is required; check all that apply)</u>	<u>Secondary Indicators (minimum of two required)</u>
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Drift Deposits (B3)	(where not tilled)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)
	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
	<input type="checkbox"/> Drainage Patterns (B10)
	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
	<input type="checkbox"/> Crayfish Burrows (C8)
	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
	<input checked="" type="checkbox"/> Geomorphic Position (D2)
	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
	<input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F)

Field Observations:	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): <u>N/A</u>	
Water Table Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): <u>>20</u>	
Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0</u>	
(includes capillary fringe)	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
A positive indication of wetland hydrology was observed (at least one primary indicator).
A positive indication of wetland hydrology was observed (at least two secondary indicators).

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Crestwood Residue Pipeline County: McKenzie Sampling Date: November 16, 2016
 Applicant/Owner: Crestwood State: ND Sampling Point: DP9U
 Investigator(s): D. Belisle and E. Schwartz Section, Township, Range: _____ Sec. 28 T149N R98W
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Linear Slope (%): 5
 Subregion (LRR): LRR-F Lat: 47.69215 Long: -103.23990 Datum: NAD-83
 Soil Map Unit Name: E0701F - Dogtooth-Janesburg-Cabba complex NWI Classification: N/A
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (if no, explain in Remarks.)
 Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <u>X</u> Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u>
Remarks: This point was determined not to be within a wetland due to the lack of all three wetland criteria.	

VEGETATION - Use scientific names of plants.

	Absolute % cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft.</u>)				
1. <u>None Observed</u>	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>33%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				
Sapling/Shrub Stratum (Plot size: <u>15 ft.</u>)				
1. <u>None Observed</u>	_____	_____	_____	Prevalence Index Worksheet: Total % Cover of: _____ Multiply by: _____ OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>0</u> x 2 = <u>0</u> FAC species <u>40</u> x 3 = <u>120</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>60</u> x 5 = <u>300</u> Column Totals: <u>100</u> (A) <u>420</u> (B) Prevalence Index = B/A = <u>4.20</u>
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				
Herb Stratum (Plot size: <u>5 ft.</u>)				
1. <u>Panicum virgatum</u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>	Hydrophytic Vegetation Indicators: ___ 1 - Rapid Test for Hydrophytic Vegetation ___ 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤ 3.0 ¹ ___ 4 - Morphological Adaptations ¹ (Explain) ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u>Bouteloua gracilis</u>	<u>40</u>	<u>Yes</u>	<u>UPL</u>	
3. <u>Hesperostipa comata</u>	<u>20</u>	<u>Yes</u>	<u>UPL</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
_____ = Total Cover				
Woody Vine Stratum (Plot size: <u>30 ft.</u>)				
1. <u>None Observed</u>	_____	_____	_____	Hydrophytic Vegetation Present? Yes _____ No <u>X</u>
2. _____	_____	_____	_____	
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>0</u>				

Remarks:
 No positive indication of hydrophytic vegetation was observed (≥50% of dominant species indexed as FACU or drier).

SOIL

Sampling Point: DP9U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10YR 2/1	100	None	—	—	—	Silt Clay	
6-12	10YR 4/1	100	None	—	—	—	Silt Clay	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils³:
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR I, J)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	(LRR H outside of MLRA 72 & 73)
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G, H)	<input type="checkbox"/> High Plains Depressions (F16)	³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)	(MLRA 72 & 73 of LRR H)	

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes _____ No <u>X</u>
---	---

Remarks:
No positive indication of hydric soils was observed.

HYDROLOGY

Wetland hydrology Indicators:	
<u>Primary Indicators (minimum of one is required; check all that apply)</u>	<u>Secondary Indicators (minimum of two required)</u>
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Drift Deposits (B3)	(where not tilled)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)
	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
	<input type="checkbox"/> Drainage Patterns (B10)
	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
	(where tilled)
	<input type="checkbox"/> Crayfish Burrows (C8)
	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
	<input type="checkbox"/> Geomorphic Position (D2)
	<input type="checkbox"/> FAC-Neutral Test (D5)
	<input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F)

Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): <u>N/A</u> Water Table Present? Yes _____ No <u>X</u> Depth (inches): <u>>20</u> Saturation Present? Yes _____ No <u>X</u> Depth (inches): <u>>20</u> (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u>X</u>
---	---

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
No positive indication of wetland hydrology was observed.

APPENDIX D
Photographs of Project Area



Figure D1. WET1, facing south (photograph taken November 15, 2016).



Figure D2. WV1, facing west (photograph taken November 16, 2016).



Figure D3. WET2 overview, facing south (photograph taken November 16, 2016).



Figure D4. DP7U, point recorded to disprove NHD flowline, facing southwest (photograph taken November 16, 2016).



Figure D5. WET3, facing east (photograph taken November 16, 2016).

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APPENDIX E
State of North Dakota 401 Certification



March 8, 2012

DANIEL E CIMAROSTI
STATE PROGRAM MANAGER
US ARMY CORPS OF ENGINEERS
ND REGULATORY OFFICE
1513 S 12TH STREET
BISMARCK ND 58504-6640



Dear Mr. Cimarosti:

This Department has completed its review of the final notice for reissuance and modifications of Nationwide Permits.

Under Section 401 of the Clean Water Act this Department hereby certifies that there will be no violations of applicable Standards of Quality for Waters of the State if our Construction and Environmental Disturbance Requirements are attached as a condition to all Nationwide Permits.

Nationwide Permits 8, 24, and 34: Not applicable.

Nationwide Permits which are certified under Section 401 of the Clean Water Act are 1, 2, 3, 4, 5, 6, 7, 9, 10, 11, 14, 20, 21, 22, 25, 28, 30, 31, 33, 36, 37, 38, 41, 43, 44, 45, 46, 48, 49, 50, and 51.

Additional conditions are placed on the following Nationwide Permits:

Nationwide Permit 18: Section 401 Water Quality Certification is issued for discharges less than 10 cubic yards.

Nationwide Permit 19: Section 401 Water Quality Certification is issued if disposal of spoil material is at an upland site.

Nationwide Permits 12, 15, 16, 23, 27, 29, 35, 47 and 52: Projects in Class I rivers, Class IA rivers or classified lakes are denied 401 Water Quality Certification.

Nationwide Permit 13: Projects exceeding 200 linear feet in Class I rivers, Class IA rivers and classified lakes are denied 401 Water Quality Certification.

Nationwide Permit 17: 401 Water Quality Certification is denied.

Daniel E. Cimarosti
March 8, 2012
Page 2

Nationwide Permit 32: Enforcement actions involving Class I rivers, Class IA rivers, and classified lakes are denied 401 Water Quality Certification.

Nationwide Permits 39, 40 and 42: Projects that result in a loss or relocation of 150 feet or more of a stream are denied 401 Water Quality Certification.

Enclosed is a copy of Standards of Quality for Waters of the State which delineates river classifications in Appendix I and the lake classifications in Appendix II. These standards are periodically revised. Please be aware that in the event these standards are modified; subsequent review of 401 certification and/or conditions for Nationwide Permits may be required.

Should you have any questions, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Michael T. Sauer". The signature is fluid and cursive, with a long horizontal stroke at the end.

Michael T. Sauer
Senior Environmental Scientist

MTS:mjm

Enc.



Construction and Environmental Disturbance Requirements

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

Soils

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

Surface Waters

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

Fill Material

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

