

ONEOK BAKKEN PIPELINE, L.L.C.

Little Missouri Lateral Project

McKenzie County, North Dakota

North Dakota Public Service Commission

Consolidated Application for Certificate of Corridor Compatibility and Route Permit

February 2019

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1.d	Site for energy conversion facility	N/A
1.e	Preferred transmission (pipeline) corridor	2.17, Exhibits B.2-B.4
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1.c	Route evaluation relative to 49-22-09 and 49-22-05.1	7.0, 8.0
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ACRONYMS AND ABBREVIATIONS

API	American Petroleum Institute
BGEPA	Bald and Golden Eagle Protection Act
BMP	Best Management Practice
bpd	barrels per day
CFR	Code of Federal Regulations
CMRP	Construction Mitigation and Restoration Plan
CRP	Conservation Reserve Program
EI	Environmental Inspector
EO	Executive Order
ESA	Endangered Species Act
ETWS	Extra Temporary Workspace
F	degrees Fahrenheit
FSA	U.S. Department of Agriculture - Farm Service Agency
GIS	geographic information system
HDD	Horizontal Directional Drilling
ICBM	Intercontinental Ballistic Missile
IPaC	Information, Planning, and Conservation System
MBTA	Migratory Bird Treaty Act
Merjent	Merjent, Inc.
MMcf/d	Million Cubic Feet per Day
NDAC	North Dakota Administrative Code
NDCC	North Dakota Century Code
NDDA	North Dakota Department of Agriculture
NDDH	North Dakota Department of Health
NDDTL	North Dakota Department of Trust Lands
NDGFD	North Dakota Game and Fish Department
NDGS	North Dakota Geological Survey
NDIC	North Dakota Industrial Commission
NDPDES	North Dakota Pollution Discharge Elimination System
NDPRD	North Dakota Parks and Recreation Department
NDPSC	North Dakota Public Service Commission
NDR	North Dakota Rules
NDSWC	North Dakota State Water Commission
NGL	Natural Gas Liquid
NRCS	Natural Resources Conservation Service

NRHP	National Register of Historic Places
NWP	Nationwide Permit
NWR	National Wildlife Refuge
ONEOK	ONEOK Bakken Pipeline, L.L.C.
PCN	Pre-Construction Notification
Project	Little Missouri Lateral Project
psig	pounds per square inch gauge
ROW	Right-of-Way
SHPO	State Historic Preservation Office
SWPPP	Stormwater Pollution Prevention Plan
Targa	Targa Badlands, LLC
UDP	Unanticipated Discoveries Plan
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USDOD	U.S. Department of Defense
USDOT	U.S. Department of Transportation
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
USNPS	U.S. National Park Service
UWYO	University of Wyoming
WAWSA	Western Area Water Supply Authority
WHPA	Wellhead Protection Area
WNS	White Nose Syndrome
WPA	Waterfowl Production Area
WRP	Wetland Reserve Program

INTRODUCTION

ONEOK Bakken Pipeline, L.L.C. (ONEOK), a wholly owned subsidiary of ONEOK, Inc., owns and operates natural gas liquids (NGLs) assets in North Dakota. ONEOK is proposing the Little Missouri Lateral Pipeline Project (Project). The Project is a new 12-inch-diameter steel NGL pipeline that would originate at the Targa Badlands, L.L.C. (Targa) Little Missouri Gas Processing Plant and terminate at an interconnection with ONEOK's planned Demicks Lake Pipeline (PU-18-399). The Project would be approximately 10.8 miles in length, and is entirely located in McKenzie County, North Dakota.

ONEOK submits to the North Dakota Public Service Commission (NDPSC) a single consolidated application for a Certificate of Corridor Compatibility and Route Permit for the Project. The application provides the information required by:

- North Dakota Century Code (NDCC), Energy Conversion and Transmission Facility Siting Act, Chapter 49-22.1; and
- North Dakota Administrative Code (NDAC), Article 69-06, Energy Conversion and Transmission Facility Siting.

Construction activities are currently proposed to begin in April 2019 and be completed in the third quarter of 2019. Restoration activities may extend through 2022, if needed.

1.0 SIZE AND TYPE OF FACILITY

1.1 TYPE

The proposed Project is a Y-grade NGL transmission pipeline. The steel pipeline will meet applicable U.S. Department of Transportation (USDOT) regulations as outlined in 49 Code of Federal Regulations (CFR) Part 195.

1.2 SIZE

The Project pipeline specifications are the following:

- 12.750-inch outside diameter steel pipe
  - 0.250-inch wall thickness, Grade X-60 (standard)
  - 0.281-inch wall thickness, Grade X-60 (road crossings)
- Maximum operating pressure: 1,480 pounds per square inch gauge (psig)
- Maximum throughput: approximately 20,000 barrels per day (bpd)
- Maximum operating temperature: 120 degrees Fahrenheit (F)
- Normal operating conditions: 90 degrees F at 1,480 psig

1.3 LENGTH

The Route is approximately 10.8 miles in length and is wholly located in McKenzie County, North Dakota. Approximately 89 percent of the Route is co-located[1] with existing linear infrastructure.

1.4 ABOVEGROUND FACILITIES

The Project will involve the installation of a new launcher facility at the Targa Little Missouri Natural Gas Processing Plant at the eastern (southern) terminus and a receiver where the Project ties in with ONEOK's Demicks Lake Pipeline (PU-18-399) and Garden Creek to Riverview NGL Pipeline (PU-11-066). The launcher and receiver facilities will facilitate the introduction of in-line tools for the performance of functions varying from cleaning to integrity monitoring. Refer to Exhibit A for engineering documents.

[1] For purposes of this filing, co-location is defined as sections of the route that are parallel to and within 150 feet of existing linear infrastructure.

2.0 DESIGN OF THE FACILITY

2.1 DESIGN OF PROPOSED FACILITY

The Project design includes approximately 10.8 miles of 12-inch nominal diameter steel pipeline described in Section 1.3. The pipeline will be manufactured according to American Petroleum Institute (API) Specifications API 5L Seamless Line Pipe and will meet International Organization for Standardization 3183 and applicable USDOT regulations outlined in 49 CFR part 195. Please see Exhibit B for maps depicting the Project route.

2.2 PURPOSE AND NEED OF THE FACILITY

The purpose of the Project is to provide take-away capacity for Y-grade NGLs (a mixture of ethane, propane, butanes, iso-butane mix, pentanes, and natural gasoline) produced at Targa's Little Missouri Natural Gas Processing Plant (NDPSC Docket PU-14-853). Construction of the proposed Project would provide firm, reliable service of 20,000 barrels of NGLs per day and would provide a critical link between the Targa Plant and NGL pipeline system(s) for delivery to facilities in the Mid-Continent and Gulf Coast for additional processing prior to distribution to various markets.

Technological advances in drilling and completion associated with horizontal wells currently employed in the Bakken Shale and Three Forks formations of the Williston Basin has dramatically increased hydrocarbon production in the area. Producers remain active in the region creating demand for natural gas gathering infrastructure. Average daily natural gas production in North Dakota is currently estimated to be approximately 2,100 million cubic feet per day (MMcf/D) (Kringstad, 2018). See Section 4.1.1 for more information.

The increased production of oil and natural gas products continues to be constrained by the available infrastructure take-away capacity. While near term demands associated with increased crude oil production can be readily addressed with the installation of tankage for temporary storage coupled with additional trucking or rail capacity to bring it to market, the associated natural gas production is typically lost to flaring until the required infrastructure is placed into service.

As of July 2016, approximately 10 percent of gas produced was being flared (North Dakota Pipeline Authority, 2017). To continue to meet gas capture goals, infrastructure needs to be added to accommodate active drilling activities in North Dakota. The requisite infrastructure includes gathering systems and gas processing to refine the raw feedstock into commercial products. The function of the gas processing plant is to separate commercial grade methane (i.e., natural gas) from NGLs such as butane, propane, and ethane, and in turn prepare these products for delivery.

A major constraint in transporting NGLs and other hydrocarbons from North Dakota to processing/distribution centers and eventual end users in the United States is the lack of pipeline capacity. To relieve the pipeline constraints, several projects have been planned to address the growing volumes of natural gas, NGLs, and other hydrocarbons. However, pipeline capacity is not expected to keep pace with production, leaving incremental volumes to find alternative transportation methods, primarily rail or other surface transportation alternatives.

2.3 GENERAL AREA TO BE SERVED

The Project will allow for the delivery of additional NGLs from the Bakken and Three Forks production areas to facilities in the in the Mid-Continent and Gulf Coast for additional processing of the raw feedstock into commercial products prior to distribution to various markets to meet the existing need for agriculture and the petrochemical and plastics industries, as well as for refining and home heating throughout the U.S.

2.4 CAPACITY

The Project could transport up to 20,000 bpd.

2.5 TECHNOLOGY TO BE DEPLOYED/EMPLOYED

The Project will be designed, constructed, maintained, and inspected to the USDOT Pipeline and Hazardous Materials Safety Administration regulations utilizing industry standards and company policies. The system will be monitored 24 hours a day, 7 days a week, and 365 days a year by trained controls personnel. Additionally, the system is set up with a monitoring and alarm system that continuously monitors the flow and pressure of the system and readily signifies anything outside normal operating conditions.

2.6 TYPE OF PRODUCT TO BE TRANSMITTED

The Project will transport Y-grade NGLs, which are a mixture of ethane, propane, butanes, iso-butane mix, pentanes, and natural gasoline.

2.7 SOURCE OF PRODUCT TO BE TRANSMITTED

The anticipated sources of the NGLs are formations in the Williston Basin.

2.8 FINAL DESTINATION OF PRODUCT

NGLs will be shipped out of North Dakota via the Project and will connect with other NGL pipeline systems to transport the NGLs to facilities in the Mid-Continent and Gulf Coast for additional processing prior to distribution to various markets.

2.9 WIDTH OF RIGHT-OF-WAY

The temporary construction ROW would be 75 feet wide, of which 50 feet would remain as permanent ROW. For the portion of the Project which is co-located (approximately 89 percent), the proposed pipeline would generally be installed 50 feet offset from existing pipelines with the workspace located adjacent to the existing pipeline permanent easements.

In addition to the temporary construction ROW, extra temporary workspace (ETWS) would typically be required adjacent to crossings of roadways, railroads, waterbodies, wetlands, or other utilities, horizontal directional drill (HDD) pipe fabrication areas, areas requiring additional trench depth or spoil storage

areas, certain pipe bend locations, locations with soil stability concerns or side slope construction, and truck turnarounds or equipment passing lanes.

ONEOK will generally maintain its permanent easement along the entire length of the Project except as restricted by environmental conditions, foreign lines, and landowner agreements. This ROW will be reclaimed to near its pre-existing use once construction is complete. ONEOK has located ETWS outside of sensitive environmental resources to the extent possible.

2.10 REQUIREMENT FOR AND GENERAL LOCATION OF ANY NEW ASSOCIATED FACILITIES

The launcher and receiver facilities will facilitate the introduction of in-line tools for the performance of functions varying from cleaning to integrity monitoring. Refer to Exhibit A for engineering documents. See Section 1.4 for more information.

2.11 ESTIMATED DISTANCE BETWEEN SURFACE STRUCTURES FOR PIPELINE FACILITIES

The launcher and receiver facilities will facilitate the introduction of in-line tools for the performance of functions varying from cleaning to integrity monitoring. Refer to Exhibit A for engineering documents.

Table 2.11-1
Location and Description of Aboveground Facilities

Type	Description	Section	Township	Range
Trap	Launcher	30	149N	98W
Trap	Receiver	1	149N	100W

2.12 MAXIMUM DESIGN OPERATING PRESSURE AND TEMPERATURE FOR PIPELINE FACILITIES

The maximum operating pressure for the pipeline is 1,480 psig and the maximum operating temperature is 120 degrees F. Under normal operating conditions the pipeline will operate at a summertime temperature of 90 degrees F and 1,480 psig.

2.13 MAXIMUM DESIGN FLOW RATE FOR PIPELINE FACILITIES

The Project could transport up to 20,000 bpd. Refer to Sections 1.2 and 2.4.

2.14 NUMBER AND GENERAL LOCATION FOR COMPRESSOR OR PUMPING STATIONS

No new compression or pumping stations will be required for this Project.

2.15 ESTIMATED TOTAL COST OF CONSTRUCTION

ONEOK will invest approximately $15 million in North Dakota to develop this Project. Once constructed and in-service, the continued costs of maintenance and operation of the proposed pipeline are relatively minimal.

2.16 PREFERRED LOCATION OF FACILITY

The Project will be located entirely in McKenzie County, North Dakota, originating at the Targa Little Missouri Natural Gas Processing Plant in Township 149N, Range 98W, Section 30 moving generally west and north, and terminating in Township 149N, Range 100W, Section 1 at a planned interconnection with ONEOK's Demicks Lake Pipeline (PU-18-399) and ONEOK's Garden Creek to Riverview NGL Pipeline (PU-11-066). The proposed Project is approximately 10.8 miles in length of which 9.6 miles (approximately 89 percent) will be co-located with existing pipeline corridors. Project location maps that depict the pipeline route are provided in Exhibit B. The Townships, Ranges, and Sections crossed by the Project route are presented in the following table:

Table 2.16-1
Location Summary

Township	Range	Section(s) Crossed by Route
149 North	98 West	30
149 North	99 West	17-18, 20-21, 25-28
149 North	100 West	1, 12-13

2.17 PREFERRED LOCATION OF CORRIDOR

ONEOK and its affiliates own and operate several assets throughout the region. The operation of these assets is conducted in a manner to maximize the overall value of the NGLs, which benefits regional stakeholders (i.e., producers, royalty owners, and the State) through direct payments and tax revenues. The Project Corridor described in this application provides ONEOK with the opportunity to utilize existing pipeline corridors and minimize landowner and environmental impacts. ONEOK requests that the Corridor described in this application be certificated by the NDPSC.

Selection of the proposed Corridor and Route entailed a program which evaluated several geographic information system (GIS) data layers for the Project area. Information relative to high consequence areas (e.g., populated areas, wetlands, waterbodies, areas of cultural significance or high probability, public lands) and other unfavorable constructability or operational features were evaluated in an attempt to avoid and minimize proximity and potential impacts to these features. Features for favorable constructability or operations, such as existing ROWs (e.g., pipelines, roads, railways, power lines), were also evaluated to maximize co-location.

After selection of a preliminary location for routing the pipeline, ONEOK developed a one-mile-wide study area for analysis and agency consultation (see Section 6 for more detail). The shortest route that accomplished the desired impact avoidance and minimization while maximizing co-location efforts served as the baseline for developing the proposed study area, Corridor, and Route. This baseline was then

evaluated for environmental, engineering, construction, and ROW considerations for further optimization.

ONEOK worked with engineering and environmental firms to develop and refine the Route and Corridor within the study area. Environmental field surveys were conducted within an approximately 300-foot-wide survey corridor, generally centered on the pipeline route, to identify sensitive resources and to further refine the route. The Corridor described in this application generally follows the proposed Route along a generally 300-foot-wide corridor where environmental surveys were conducted. Segment alternatives and areas that were surveyed but fall outside of the 300-foot-wide corridor have been excluded from the Corridor ONEOK is requesting to be certified by the NDPSC. In a few isolated areas, the Corridor is slightly wider than 300 feet to allow ETWS for safety reasons and/or to assist in segments of the Project which require pullback sections for HDDs or extra space for crossing of unique areas. Several factors went into consideration in selecting the pipeline route, including:

- Human – choosing a route that minimizes impacts and ensures public safety;
- Environmental – choosing a route that minimizes disturbances to biological and cultural resources; and
- Constructability – considering terrain and obstacles such as roads, waterbodies, and other utilities to achieve safe and efficient construction.

The location of the Project Corridor and Route is depicted on the aerial maps in Exhibits B.2 – B.4.

2.18 DESCRIPTION OF ROW PREPARATION AND CONSTRUCTION AND RECLAMATION PROCEDURES

Pipeline construction occurs in a linear fashion and, at any one time during the Project, any of the following activities may occur. The typical sequence of construction activities for the Project is as follows:

- Staking the workspace boundaries and utilities;
- Clearing of construction area;
- Installing temporary erosion and sediment controls;
- Grading and stump removal, if necessary;
- Segregation of topsoil, where necessary;
- Pipe delivery, bending, and welding;
- Trenching;
- Pipe installation;
- Backfilling excavations;
- Cleanup and final grading;
- Soil compaction treatment, where necessary;
- Stone removal, where necessary;
- Final restoration; and
- Upon final stabilization, removal of temporary erosion and sediment controls.

Rough and final grading includes restoring disturbed areas as near as practicable to preconstruction conditions, returning the topsoil where topsoil has been stripped, preparing a seedbed (where applicable) for permanent seeding, installing, or repairing temporary erosion and sediment control measures, repairing/replacing fences, and installing permanent erosion and sediment controls. Pre-existing

landowner soil conservation improvements and structures disturbed by pipeline construction will be restored to the approximate pre-construction line and grade.

ONEOK has developed a Revegetation Plan for the Project to provide procedures to be followed during the revegetation of areas disturbed as a result of construction (see Section 9 for more information). In areas of cultivated cropland, the land will be returned to its original land use as soon as practical following construction. Additionally, ONEOK will comply with applicable permit conditions and landowner agreements.

2.19 LANDOWNER NOTIFICATION, EASEMENT ACQUISITION, AND COMPENSATION

Prior to conducting field surveys, ONEOK reviewed courthouse records for the purpose of identifying current landowners along the route. ONEOK contacted landowners to introduce the Project and to obtain permission to conduct surveys. ONEOK is in the process of negotiating easement agreements with landowners to give the company the right to construct, operate, and maintain the pipeline along a specified portion or corridor of each landowner's property in return for monetary compensation. ONEOK will obtain a permanent pipeline easement with an additional temporary easement during construction. When applicable, ONEOK will offer additional compensation for damages resulting from pipeline construction, such as the loss of crops.

The refinement of the route includes adjustments made per landowner request. ONEOK, at all times, negotiates in good faith and necessary easement conditions and restrictions are presented and discussed.

3.0 SCHEDULE

3.1 OBTAINING CERTIFICATE OF CORRIDOR COMPATIBILITY

ONEOK seeks a Certificate of Corridor Compatibility by or before April 15, 2019.

3.2 OBTAINING ROUTE PERMIT

ONEOK seeks a Route Permit by or before April 15, 2019.

3.3 COMPLETING ROW ACQUISITION

ONEOK anticipates completing ROW acquisition in March 2019.

3.4 STARTING CONSTRUCTION

ONEOK plans to begin construction on the Project upon receipt of regulatory approval and applicable permits in April 2019.

3.5 COMPLETING CONSTRUCTION

Completion of construction is anticipated to occur in the third quarter of 2019.

3.6 TESTING OPERATIONS

Testing of the pipeline and facilities is expected to be conducted in the third quarter of 2019.

3.7 COMMENCING OPERATIONS

The in-service date for the Project is anticipated to be in the third quarter of 2019.

4.0 ALTERNATIVES

4.1 ALTERNATIVES TO THE PROPOSED FACILITY

Construction of the proposed Project will provide firm, reliable service for 20,000 bpd of NGL take-away capacity from the Targa Little Missouri Natural Gas Processing Plant. The products will be delivered to the Mid-Continent and Gulf Coast for additional processing. ONEOK identified and evaluated several Project alternatives; however, none of these alternatives effectively satisfied the Project objective. These alternatives included:

- No Action Alternative;
- Trucking Transportation Alternative; and
- Rail Transportation Alternative.

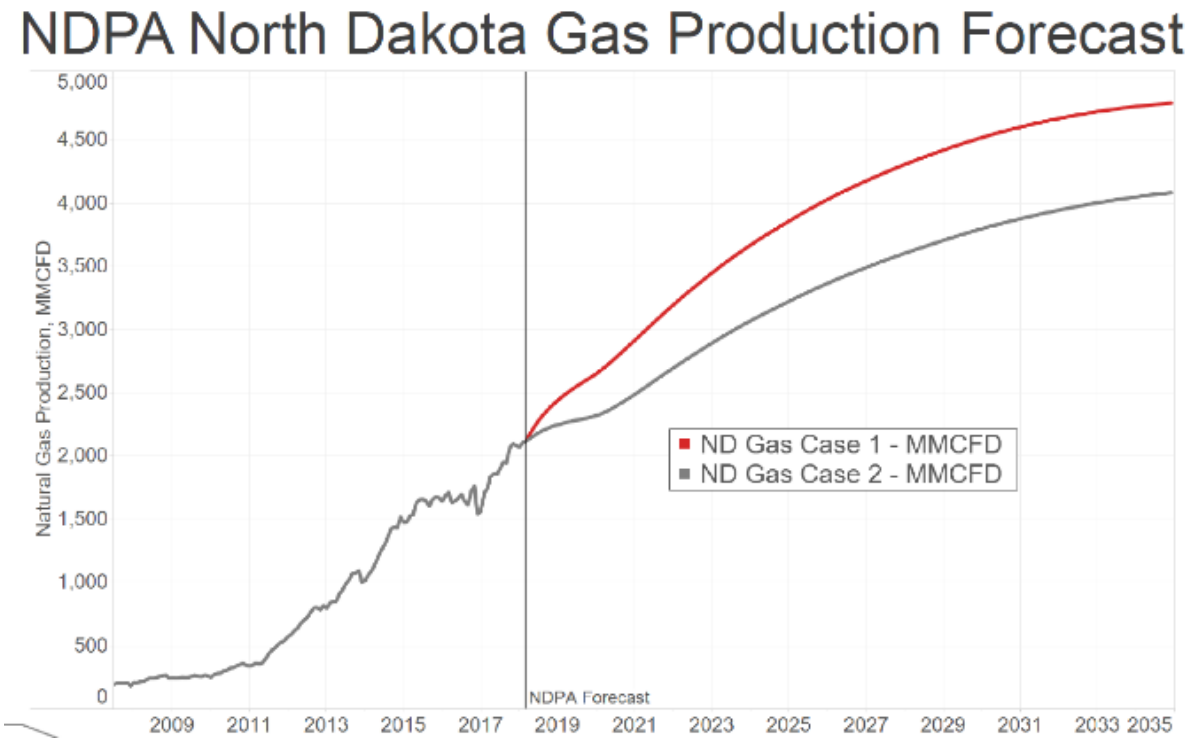
4.1.1 No Action Alternative

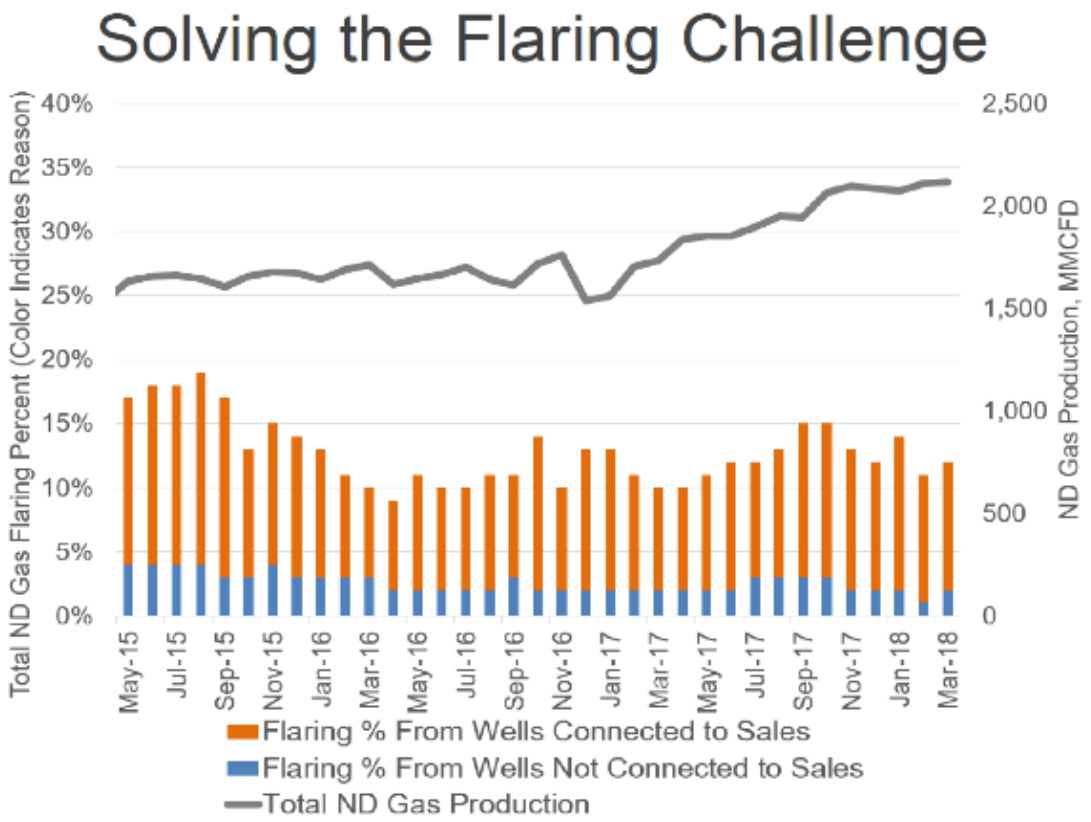
The primary objective of the Project is to provide take-away capacity for the NGLs produced at the Targa Little Missouri Natural Gas Processing Plant. Under the No Action alternative, the Project would not be constructed, and the plant could not effectively process gas produced in the region.

Within the region, NGL production from the Williston Basin has increased from 250 MMcf/d in 2011 to almost 2,100 MMcf/d presently and is projected by the North Dakota Industrial Commission (NDIC) to continue to increase through 2035 (see Figure 4.1.1-1). Thus, development of solutions for gas gathering, processing, and take-away infrastructure are needed. Historically, gathering, processing, and pipeline constraints have held back production growth in the Williston Basin region.

A No Action Alternative will leave the region constrained by limited transport capacity for safe and reliable transmission of NGL products to markets. The No Action Alternative does not meet the commercial needs of ONEOK and does not serve the industry and public at-large. For these reasons, ONEOK rejected the No Action Alternative.

Figure 4.1.1-1 North Dakota NGL Production Forecast





Source: Kringstad, 2018

4.1.2 Truck Transportation Alternative

A Trucking Transportation Alternative was reviewed and rejected due to the volumes of NGLs that will be produced from the Targa Little Missouri Natural Gas Processing Plant. The maximum daily capacity provided by the proposed Project will be equal to an estimated 20,000 barrels or 840,000 gallons of NGLs. The average load for an NGL truck is approximately 10,000 gallons per truck. Thus, it would require 84 trucks per day to be loaded at the Targa Little Missouri Natural Gas Processing Plant, an average of 3.5 trucks every hour for 24 hours a day. Similarly, it would require these 84 trucks per day to be unloaded (i.e., transloaded) at a railcar facility terminal.

This level of truck activity is not logistically feasible, as it will cause significant amounts of heavy vehicle traffic for the area residents, as well additional wear and tear on the infrastructure. Further, any disruption in the trucking capacity due to seasonal load restrictions on roads, inclement weather, or road repairs would result in a plant shutdown and flaring of gas production. The Trucking Transportation Alternative is additionally constrained by the road network in the rural area of the Project. For these reasons, ONEOK rejected the Trucking Transportation Alternative.

4.1.3 Rail Transportation Alternative

A Rail Transportation Alternative was also evaluated as a surface transportation alternative. However, the lack of active railroad service within reasonable proximity to the Targa Little Missouri Natural Gas Processing Plant's location limited the viability of this alternative. Upon further analysis, this alternative was determined not feasible due to the associated environmental impacts and financial, logistic, and time constraints necessary to acquire land and construct the requisite rail infrastructure. This alternative would also require a third-party rail operator.

A Rail Transportation Alternative would require the design and construction of rail car loading and offloading facilities, lateral service lines, and ancillary facilities necessary to support the requisite volumes of NGLs, requiring land acquisition and permanent conversion of agricultural land to industrial. Use of rail would require a completely different Project design than that currently proposed for the Project.

While rail tanker cars are a vital part of the short-haul distribution network for NGLs, pipelines are a more reliable, safe, and economical alternative for the large volumes to be transported and long distances to be covered by the Project. As such, the Rail Transportation Alternative is not considered a viable alternative and was rejected.

4.2 ROUTE/SEGMENT ALTERNATIVES

ONEOK has conducted a thorough analysis of the Project Corridor. The purpose of this analysis was to confirm that the proposed Project Corridor is suitable and would cause minimal environmental impacts, thus conforming to the NDPSC siting criteria.

In conjunction with these efforts, ONEOK studied routing alternatives based upon criteria as discussed in Section 2.17. A variety of routes were explored, but later rejected due to a host of feasibility constraints. In support of ONEOK's route selection, the desktop studies of the Project Corridor were refined and augmented with field studies along the entire length of the Project Corridor where landowner permission for surveys was obtained by trained natural and cultural resource specialists.

The environmental survey was conducted across a minimum 300-foot-wide area generally centered on the proposed Route. Field crews performed these comprehensive natural and cultural resource surveys in summer and fall of 2018. The purpose of these field studies was two-fold:

(1) to definitively identify any potential resource issues (e.g., wetlands, waterbodies, protected species, critical habitats, or cultural resources) within the Project Corridor; and

(2) to provide the baseline field data necessary to prescribe alternative routing or mitigation as necessary to minimize environmental impacts.

Based upon desktop and field studies as well as input from regulatory agencies, ONEOK developed its Preferred Route. The Route begins on the eastern end in Township 149N, Range 98W, Section 30, moving generally west and north, and terminates in Township 149N, Range 100W, Section 1 at a planned interconnection with ONEOK's Demicks Lake Pipeline (PU-18-399) and ONEOK's Garden Creek to Riverview NGL Pipeline (PU-11-066). ONEOK has chosen this Project alignment to meet landowner requests and to minimize impacts to environmental features. The Route meets the Project's objectives while conforming to the NDPSC's transmission route siting requirements. Additionally, in selection of the Route, ONEOK co-located approximately 89 percent (9.6 miles) of the Route with existing utilities.

The results of environmental field surveys are discussed in the following sections and the full Natural Resources Survey Report is contained in Exhibit C. The Cultural Resources Survey Report is privileged and not included in this application. Refer to Sections 5.1 and 6.8 for a summary of the cultural resource work, results, and consultation with the North Dakota State Historic Preservation Office (SHPO).

5.0 ENVIRONMENTAL STUDIES

ONEOK defined its study area as a one-mile-wide corridor generally centered on the pipeline route and conducted an initial desktop analysis for cultural resources, wetlands and waterbodies, and other sensitive environmental resources. The assessment was conducted utilizing GIS mapping, agency database review, peer-reviewed articles, and internet research. Following the desktop analysis, the appropriate agencies were consulted for cultural and biological resources (see Section 6).

Field studies for the Project focused on a generally 300-foot-wide environmental survey corridor, centered on the pipeline. The survey corridor was widened in select locations to allow for flexibility in pipeline routing or in areas where ETWS is anticipated to be required. Following the 2018 environmental field survey season, ONEOK adopted a reroute to the Project which shifted the original centerline on the eastern end of the Project. A portion of this reroute (approximately 0.2 mile between milepost 0.15 – 0.35) was not surveyed as part of the survey effort for this Project[2]; however, was included in natural resource and cultural resource surveys conducted for a ONEOK-sponsored project in 2014 (Targa Lateral Pipeline Project, NDPSC Docket PU-14-254). ONEOK plans to conduct additional surveys of this segment prior to construction to confirm the results of the 2014 surveys.

Taking into account the environmental field surveys completed for this Project in 2018 and the Targa Lateral Pipeline project in 2014, nearly 100 percent[3] of the Project Corridor (as shown on the maps in Exhibits B.2 – B.4) has been surveyed for natural resources and cultural resources, respectively. The Project Corridor is the corridor ONEOK is requesting be certificated by the NDPSC. Some environmental field surveys were performed on areas outside of the Project Corridor. The natural resource survey report (Exhibit C) includes details on the full field surveys; however, analysis of environmental resources and impacts in this application is limited to the area within the Project Corridor. Field data collected from the 2014 natural resource surveys is displayed on the maps in Exhibit B.4.

ONEOK contracted specialized consultants to perform cultural, wetland and waterbody, habitat, noxious weeds, and special species assessment surveys for the Project. Additional surveys, including a tree and shrub inventory, and eagle and raptor nest surveys were also initiated and will be supplemented at the pre-construction phase as needed.

5.1 CULTURAL RESOURCE INVENTORY

According to the North Dakota Energy Conversion and Transmission Facility Siting Act, among the "*factors to be considered [by the Commission] in evaluating applications and designation of sites, corridors, and routes,*" is the effect of the proposed site or route on existing scenic areas, historic sites and structures, and paleontological or archaeological sites. The repository in North Dakota for this information is the North Dakota SHPO, which acts as a technical resource during identification and evaluation of areas, sites, and structures and during reviews of Project effects. The NDPSC tasks the Applicant to coordinate identification and effects discussions with the SHPO.

[2] This reroute was adopted after snow/frozen ground conditions in late 2018. As such, field surveys have not been possible to date.

[3] A small triangular portion of the Corridor (less than 0.1 acre) near milepost 0.35 was not surveyed by either project; however, it appears to have been disturbed by previous development.

Since June 2018, ONEOK has sponsored desktop and field reviews of a study area that completely encompass the Project Corridor and Route. The review tasks included: canvassing the SHPO previous survey and archaeological and historic structure files and characterizing them in a Class I cultural resource report; documenting archaeological sites and historic structure field inventory of an area that includes the Project Corridor and Route in a Class III cultural resource report; and corresponding with SHPO and other federal agencies about the resources identified and projected avoidance measures, where applicable. The standards of the National Register of Historic Places (NRHP) are used in North Dakota to differentiate those sites for which impacts are considered during Project reviews (i.e., eligible, not evaluated for inclusion on the NRHP) from those for which impacts are not considered.

ONEOK commissioned a Class I cultural resources literature review of records from the SHPO to identify previously completed cultural resource investigations and recorded cultural resources within the Corridor. The Class I literature review identified 62 previously recorded cultural resources within one-half mile of the Project route. Of these, 44 are recommended not eligible for inclusion in the NRHP, 1 is eligible for inclusion in the NRHP, and 17 remain unevaluated regarding their NRHP eligibility. A total of 11 previously recorded cultural resources were identified within the Project Corridor.

Fieldwork associated with the Class III Cultural Resource Inventory of the Project was completed on October 25, 2018 (France, 2018). During the inventory, 4 new cultural resources were recorded, and 12 previously recorded sites were investigated. Of the 16 cultural resources encountered, 11 are located within the proposed Corridor. Of these 11 sites, 10 sites are recommended not eligible for inclusion in the NRHP and require no further consideration. One site has been left unevaluated; therefore, ONEOK has routed around the unevaluated site to avoid impacts. The 2014 cultural resource survey for the Targa Lateral Project did not identify any cultural sites between mileposts 0.15 – 0.35.

ONEOK understands that details and locations of cultural resources are considered as privileged; as such, these features are not displayed on the enclosed maps with this application and the Class III survey report is not included with this filing. ONEOK submitted the Class III cultural resource survey report (France, 2018) to SHPO for a technical review on February 15, 2019. A response is pending (see Section 6.8).

As noted previously, the 2014 cultural resource survey for the Targa Lateral Project did not identify any cultural sites between mileposts 0.15 – 0.35. ONEOK will submit a follow-up consultation request to SHPO specific to this portion of the route in the near future. ONEOK will file copies of future correspondence with the SHPO to the NDPSC to document that the Project will not adversely affect cultural resources.

ONEOK will work with the SHPO to clarify NRHP recommendations and finalize avoidance and mitigation measures, if needed. ONEOK will file copies of future correspondence with the SHPO to the NDPSC to document that the Project will not adversely affect cultural resources.

5.2 WETLAND AND WATERBODY INVENTORY

Wetland and waterbody surveys were conducted within the Project Corridor in summer and fall 2018. Wetland delineations were conducted pursuant to the 1987 U.S. Army Corps of Engineers (USACE) Wetlands Delineation Manual (USACE, 1987), the 2010 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (Version 2.0) (USACE, 2010), the Classification of Wetland and Deepwater Habitats of the United States (Cowardin et al., 1979), and the National Wetland Plant List (Lichvar et al., 2016). Waterbody survey methods followed the protocols set forth in the

Regulatory Guidance Letter No. 05-05, Ordinary High-Water Mark Identification (USACE, 2005) and The Classification of Wetland and Deepwater Habitats of the United States (Cowardin et al., 1979).

The results of this survey can be found in the Natural Resource Survey Report provided in Exhibit C. Mapping of wetlands and waterbodies within the surveyed corridor are included in the Selection Criteria maps in Exhibit B.4. In addition, one wetland/stream complex (Spring Creek) was delineated between milepost 0.15 – 0.35 during the 2014 natural resources surveys and is displayed on Exhibit B.4. A summary of delineated features for the Route is provided in Table 5.2-1 below.

Table 5.2-1
Summary of Delineated Wetlands and Waterbodies

Component	Palustrine Emergent Wetland	Palustrine Open Water	Waterbody
Number of Delineated Features in Corridor	12	0	6
Number of features crossed by Route Centerline	5	0	5
Temporary Impacts (acres)[1]	0.93	0	0.12
Permanent Impacts (acres)[2]	0	0	0

[2] ONEOK is currently finalizing crossing methods for each feature. The acreage presented in this table assumes a worst-case scenario where all features open cut.

[1] All wetlands and waterbodies will be restored to pre-construction conditions following construction activities. Please see Section 9 and Exhibit G for more information on construction and restoration plans.

ONEOK will implement appropriate minimization and mitigation measures at these features, which may include avoidance (e.g., workspace modification or HDD) or use of construction mats and other best management practices (BMPs) to minimize impacts when working in or around wetlands. Refer to the Project maps in Exhibit B.4 for the location of each feature and Section 9 for information regarding additional minimization measures.

5.3 WILDLIFE INVENTORY

Wildlife surveys were conducted within the Project Corridor in conjunction with the wetland and waterbody delineations in summer and fall 2018. Details regarding the wildlife observed during field surveys are included in the Natural Resources Survey Report included in Exhibit C. Suitable habitat for one federally-listed species (Dakota skipper) was found within the Project Corridor (see Section 5.3.1). No additional unique habitat was identified in the 2014 natural resource surveys for the portion of the Route between mileposts 0.15 and 0.35.

5.3.1 Federally Protected Species Review

A review of the U.S. Fish and Wildlife Service (USFWS) Endangered Species Information, Planning, and Conservation System (IPaC) website (USFWS, 2018a) was conducted to determine the potential for listed species and critical habitat that may be present in McKenzie County, North Dakota. Field surveys for listed species and a general habitat assessment of the Project Corridor were conducted in the summer of 2018. Details regarding the wildlife observed during field surveys are provided in the Natural Resources Survey Report included in Exhibit C. The Natural Resources Survey report was submitted to the USFWS for review and comment on February 21, 2019.

Table 5.3-1 provides a summary of protected species in McKenzie County. A brief description of each species and their preferred habitat is also provided below. Project-based conservation measures to minimize potential environmental effects to listed species are included in Section 6.1.1.1. A summary of ONEOK's consultation with USFWS with respect to federally-listed threatened and endangered species is included in Section 6.1 and in Exhibit D.

Table 5.3-1
Federally Listed Species in McKenzie County, ND

Scientific Name	Common Name	Status
Canis lupus	Gray wolf	Endangered
Myotis septentrionalis	Northern long-eared bat	Threatened
Sterna antillarum	Interior least tern	Endangered
Charadrius melodus	Piping plover (Northern Great Plains population)	Threatened
Calidris canutus rufa	Rufa red knot	Threatened
Grus americana	Whooping crane	Endangered
Scaphirhynchus albus	Pallid sturgeon	Endangered
Hesperia dacotae	Dakota skipper	Threatened

Gray wolf

A habitat generalist, the gray wolf historically occupied most habitat types in North America. The species shows little preference for one cover type over another and successfully utilize alpine, forest, grassland, shrubland, and woodland habitats across their range (Mech, 1974). Once thought to require wilderness areas with little to no human disturbance, recent range expansions have demonstrated the species' ability to tolerate higher rates of anthropogenic development than previously thought. Given abundant prey and low rates of human-caused mortality, wolves can survive in proximity to human-dominated environments (Fuller, 1989).

The general Project-based conservation measures discussed in Section 6.1.1.1 would minimize potential impacts on gray wolf individuals and habitat. In addition to these general Project-based conservation measures, the following species-specific conservation measures would be implemented as appropriate. If a gray wolf is sighted by ONEOK's contractor or Environmental Inspector (EI) within one mile of the construction workspace during construction, or if the USFWS or another federal or state wildlife management agency notifies ONEOK of a gray wolf sighting within one mile of the construction workspace, construction activities would cease until the individual(s) have left the area. Any wolf sightings by a contractor or EI would be immediately reported to the USFWS and the North Dakota Game and Fish Department (NDGFD).

Observations of wolves in North Dakota are sporadic; the species is not believed to support a breeding population in the state, and individuals are likely dispersers from adjacent populations (i.e., Minnesota and Manitoba) (Licht and Fritts, 1994). As dispersers, individual wolves are transient and highly mobile. Naturally curious, they may stray close to the Project Corridor, but would likely retreat upon seeing or hearing construction activities.

As such, adverse impacts to gray wolves are not expected.

Northern long-eared bat

The northern long-eared bat is a medium-sized bat of the Vespertilionidae family. The species overwinters in small crevices or cracks in hibernacula, such as caves and mines. In summer, the species roosts either singly or in colonies under loose bark or in crevices and hollows in both live trees and snags. A habitat generalist, roost tree selection appears also to be opportunistic, and the species will use a variety of tree sizes and species; however, they appear to prefer trees with a diameter at breast height of at least 3 inches. Less frequently, northern long-eared bats have been observed roosting in man-made structures such as sheds or barns. Although historically less common in the western portion of its range, northern long-eared bats occur throughout North Dakota (USFWS, 2015).

The primary threat to the northern long-eared bat is the spread of white nose syndrome (WNS); in the absence of this disease, it is unlikely the species would be suffering the dramatic population declines seen across its range (USFWS, 2015).

The northern long-eared bat was listed as a federally threatened species in May 2015, with an interim 4(d) rule; the final 4(d) rule was effective as of February 16, 2016. A 4(d) rule may only be applied to species listed as threatened, and is a tool periodically utilized by the USFWS to allow for flexibility in Endangered Species Act (ESA) implementation. The rule allows the USFWS to tailor take restrictions to those that make the most sense for protecting and managing at-risk species and directs the USFWS to issue regulations considered "necessary and advisable to provide for the conservation of threatened species" (USFWS, 2016a).

The USFWS has developed a WNS zone map identifying counties containing hibernacula where bats have been found to exhibit WNS and/or have tested positive for the fungus that causes WNS. These counties have been buffered by approximately 150 miles; within this area, the northern long-eared bat is considered to be at greater risk of population decline. This map was reviewed for this Project Corridor in December 2018 (map date October 1, 2018) (USFWS, 2018b).

Some tree clearing will be necessary for this Project; however, the Project Corridor falls outside of the WNS zone. For projects with no federal nexus, in areas outside of the 150-mile-wide WNS zone, incidental take from lawful activities is not prohibited (USFWS, 2016b), and clearing can be conducted at any time of year, per the exemptions of the 4(d) rule.

Interior least tern

The smallest of the American terns, the interior population of least terns breed and raise young along sandy, open beaches and islands along major river systems. In North Dakota, the interior least tern utilizes sparsely vegetated sandbars on the Missouri River for nesting, foraging and raising young. The species 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. Approximately 100 pairs breed in North Dakota during the summer before flying to coastal areas of Central and South American and the Caribbean Islands (USFWS, 2016c).

Migrating and foraging least terns could potentially utilize wetlands near the Project Corridor; however, suitable nesting habitat for the least tern is not present in the Project Corridor. As such, Project activities are not expected to have adverse impacts on least terns.

Piping plover

Piping plovers are small shore birds that nests on sandbars in rivers and sandy beaches bordering lakes and reservoirs. The Great Plains population of piping plovers are annual migrants; the species overwinters on the Gulf coast and migrates to summer nesting areas in the central U.S. and southern Canada. The species arrives in North Dakota in mid-April and remains until late August. Piping plovers utilize wide, sparsely vegetated beaches and barren river sandbars, as well as alkali wetlands in the Great Plains for nesting, foraging, sheltering, brood-rearing, and dispersal (USFWS, 2016d; 2018c).

Critical habitat has been designated for the piping plover in McKenzie County; however, the Project Corridor does not intersect with designated critical habitat for the species. The nearest designated critical habitat for the species is associated with the Missouri River/Lake Sakakawea reservoir, approximately 15 miles north of the Project area. The Project will have no impact on designated critical habitat.

Piping plovers are tracked by the Breeding Bird Survey; only 15 individuals were recorded between 1977 and 2017 (Pardieck et al., 2018). Data from the International Piping Plover Census conducted in 2011 identified 623 adult piping plovers and 255 breeding pairs in North Dakota; no individuals or breeding pairs were identified in McKenzie County (Elliot-Smith et al., 2015). In addition, databases of sightings by private individuals (eBird, 2018; NDBS, 2018; ND-Birds, 2018) were also searched for plover occurrences in the Project Corridor. No piping plover sightings were reported by these sources in McKenzie County.

Wetland and waterbody surveys conducted in 2018 did not identify the presence of wetlands with suitable habitat for piping plover within the proposed Project workspaces (see Exhibit C), and it is unlikely that piping plovers would be present in the Project area. As such, Project activities are not expected to have adverse impacts on piping plovers.

Rufa red knot

The rufa red knot is a large sandpiper noted for its long-distance migration between summer breeding grounds in the Arctic and wintering areas at high latitudes in the Southern Hemisphere. Some red knots wintering in the northwestern Gulf of Mexico migrate through interior North America during both spring and fall and use stopover sites in the Northern Great Plains. The species relies heavily on exposed substrate at wetland edges for stopover habitat; the suitability of a wetland for red knots depends on water levels and may vary annually (Skagen, 2006; USFWS, 2014a).

The red knot is not a resident of North Dakota; the species is an infrequent migrant during bi-annual migrations (May 15 - June 15 and July 15 - Sept 15). The number of migrating shorebirds documented in the interior can vary dramatically due to high inter-annual availability in water levels and habitat quality at mid-continental wetlands.

The general Project-based conservation measures discussed in Section 6.1.1.1 would minimize potential impacts on rufa red knot individuals and habitat. In addition to these general Project-based conservation measures, the following species-specific conservation measures would be implemented, as appropriate. If a rufa red knot is sighted by ONEOK's contractor or EI within one mile of the construction workspace during construction, or if the USFWS notifies ONEOK of a rufa red knot sighting within one mile of the construction workspace, construction activities would cease until the individual(s) have left the area. Any sightings by ONEOK's contractor or EI within the construction workspace would be immediately reported to the USFWS and the NDGFD. To avoid long-term impacts on the rufa red knot's migratory stopover

habitat, wetlands crossed by the Project would be restored to pre-construction conditions. With these conservation measures in place, adverse impacts to rufa red knots are not expected.

Whooping crane

Whooping cranes embark on a bi-annual migration from summer nesting and breeding grounds in Wood Buffalo National Park in northern Alberta to the barrier islands and coastal marshes of the Aransas National Wildlife Refuge (NWR) on the Gulf Coast of Texas (USFWS, 2014b). Twice yearly in the spring and fall, the cranes migrate along the Central Flyway, a migratory corridor approximately 220 miles wide and 2,400 miles in length and includes eastern Montana and portions of North Dakota, South Dakota, Nebraska, Kansas, Oklahoma, and eastern Texas. During the migration, cranes make numerous stops, roosting in large shallow marshes, and feeding in harvested grain fields (USFWS, 2014b).

In North Dakota, the whooping crane is not present year-round; they are only present during the bi-annual migration between winter grounds and summer nesting sites (late April to June 15 and September 15 to November 15). As such, the species cannot be confirmed as present in or absent from the Project Corridor. However, the Project Corridor falls within the 95 percent migration corridor (i.e., the 220-mile band where 95 percent of all whooping crane sightings have occurred[4]), and suitable stopover habitat (i.e., open landscape wetlands and croplands) is present in the vicinity of the Project. Construction activities have the potential to impact individual whooping cranes. Specifically, if construction takes place during the species' migration period, human presence or noise from construction activities and equipment may cause migrating whooping cranes to startle and flush from wetlands or fields and/or to divert from the area.

The general Project-based conservation measures discussed in Section 6.1.1.1 would minimize potential impacts on whooping crane individuals and habitat. In addition to these general Project-based conservation measures, the following species-specific conservation measures would be implemented, as appropriate. If a whooping crane is sighted by ONEOK's contractor or EI within one-mile of the construction workspace during construction, or if the USFWS notifies ONEOK of a whooping crane sighting within one mile of the construction workspace, construction activities would cease until the individual(s) have left the area. Any whooping crane sightings by ONEOK's contractor or EI would be immediately reported to the USFWS, and the NDGFD. To avoid long-term impacts on the whooping crane's migratory stopover habitat, wetlands crossed by the Project would be restored to pre-construction conditions. With these conservation measures in place, adverse impacts to whooping cranes are not expected.

Pallid sturgeon

The pallid sturgeon inhabits the Missouri and Mississippi Rivers from Montana to Louisiana. Wild pallid sturgeon have been noted in the Missouri River downstream from the Fort Peck Dam in Montana to the headwaters of Lake Sakakawea, North Dakota, and downstream from Garrison Dam, North Dakota to the headwaters of Lake Oahe, South Dakota (USFWS, 2014c). The pallid sturgeon's preferred habitat includes the benthic environment associated with swift waters of large turbid, free-flowing rivers with braided channels, dynamic flow patterns, periodic flooding of terrestrial habitats, and requiring extensive micro

[4] https://gf.nd.gov/wildlife/id/grassland-birds/whooping-crane

habitat diversity. The species is usually found in main-channel habitat with a sand or gravel bottom (USFWS, 1990).

The Project Corridor does not cross the Missouri or Yellowstone Rivers. As such, impacts to pallid sturgeon are not anticipated.

Dakota skipper

The Dakota skipper is a small-to-medium sized butterfly characterized by a short, sturdy body and a quick, skipping flight. The species is an obligate of high-quality prairie habitat (i.e., grasslands or discrete patches of habitat within a grassland that are predominantly native and that have not been tilled). The species can be found in both wetlands and uplands, but do not thrive in heavily grazed or cultivated areas. Adults emerge in mid-June, feeding on the nectar of flowering native forbs; harebell, wood lily, and purple coneflower are common components of their diet, and larvae of the Dakota skipper feed on grasses, favoring little bluestem; the species overwinters at the base of grasses in the soil of the site which they inhabit.

Critical habitat has been designated for the Dakota skipper in McKenzie County; however, the nearest designated critical habitat for the species is located approximately 30 miles from the Project. The Project will have no impacts to designated critical habitat.

In North Dakota, the skipper typically occupies both wet-mesic and dry-mesic prairie (USFWS, 2014d). Surveys to identify suitable Dakota skipper habitat were conducted in June 2018 by qualified surveyors within an environmental survey boundary. Thirteen native prairie grassland areas found to be dominated by requisite species for the Dakota skipper were delineated within the Survey Corridor. These areas are considered Type B Dakota skipper habitat and total approximately 19.14 acres. Presence/absence surveys were not conducted for this species.

ONEOK has designed its workspace to completely avoid all areas of potentially suitable habitat as delineated during 2018 surveys. If suitable Dakota skipper habitat is found during habitat surveys in 2019 between mileposts 0.15 and 0.35, ONEOK would avoid these areas utilizing bore or horizontal directional drill construction methods. ONEOK will also install fencing and signage along the construction right-of-way to prevent accidental incursion into delineated suitable habitat.

All construction activity will be restricted during the flight period in areas adjacent to delineated suitable habitat. This conservation measure is expected to entirely eliminate the risk of injury to adult Dakota skippers during the flight period. The 2019 flight period dates will be determined using information from a known Dakota skipper reference site and a qualified Dakota skipper surveyor.

With these conservation measures in place, adverse impacts to Dakota skippers are not expected.

See Section 6.1 for a summary of consultations with USFWS and Section 9.4 for conservation measures which will be implemented to reduce impacts on the Dakota skipper.

5.3.2 Migratory Bird Treaty Act

Migratory birds are protected under the Migratory Bird Treaty Act (MBTA), which prohibits the taking of any migratory bird, or a part, nest, or eggs of any such bird, except under the terms of a valid permit issued pursuant to federal regulations. Executive Order (EO) 13186 (66 Federal Register 3853) directs federal

agencies to identify where unintentional take is likely to have a measurable negative effect on migratory bird populations and to avoid or minimize adverse effects on migratory birds through enhanced collaboration with the USFWS. EO 13186 states that emphasis should be placed on species of concern, priority habitats, and key risk factors, and that particular focus should be given to addressing population-level impacts.

Surveys of the Project Corridor were conducted in the summer of 2018, which confirmed that suitable nesting habitat for migratory birds is present within the Project Corridor or within line-of-site of the Project Corridor. ONEOK has developed a Migratory Bird Plan to outline measures it will implement to avoid, minimize, and reduce possible impacts on migratory birds (see Section 9 and Exhibit G for more information). Conservation measures will be developed in consideration of statutory authority, regulatory guidance, and through experience with state and federal agencies on past projects in the region.

Prior to initiating pre-clearing activities and construction, ONEOK will also conduct environmental training for company and contractor supervisory personnel. Where constructing the Project outside of the peak nesting season for migratory birds is not feasible, ONEOK will conduct ground surveys to identify migratory bird nests that prior to construction activities. Varying activity restriction buffers around active nests will be utilized as conservation measures for the plan.

A summary of ONEOK's consultation with USFWS with respect to MBTA is included in Section 6.1 and in Exhibit D.

5.3.3 Bald and Golden Eagle Protection Act

Bald and golden eagles are protected by both the MBTA and the Bald and Golden Eagle Protection Act (BGEPA). The BGEPA prohibits the take of a bald or golden eagle adults, juveniles, or chicks including their parts, nests, or eggs without a permit. Take is defined by the BGEPA as to pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb. The BGEPA also addresses impacts resulting from human-induced alterations occurring around previously used nesting sites.

No eagle nests were identified during the natural resource surveys conducted in 2018 and to date, no nests have been identified by the agencies ONEOK has consulted with (see Section 6). If a nest is identified prior to construction, ONEOK would conduct additional surveys to determine if the nest is active. If any nests are active, ONEOK would work with the USFWS to determine the appropriate buffer distance buffer and/or timing restriction to prevent disruption to the individuals.

A summary of ONEOK's consultation with USFWS with respect to BGEPA is included in Section 6.1 and in Exhibit D.

5.4 TREE/SAPLING/SHRUB INVENTORY

During the natural resource surveys described above, crews noted general areas where trees and shrubs are present and also conducted a formal tree and shrub inventory based on guidance from recent NDPSC-issued orders. A tree and shrub inventory report is being finalized in a separate report and will record the pre-construction status of these resources, which will form the baseline for restoration and mitigation reconciliation. Prior to construction, ONEOK will conduct an additional tree and shrub inventory for the portion of the route that was not surveyed as part of the 2018 field season (between mileposts 0.15 and 0.35) and file this report with the Commission upon completion.

ONEOK anticipates authorization of the Project will require all trees and shrubs that are removed to be replaced at a 2:1 ratio. ONEOK will submit its tree and shrub inventory and proposed mitigation plan upon completion. ONEOK will file the tree and shrub inventory report upon finalization.

5.5 NOXIOUS WEEDS INVENTORY

The Federal Noxious Weed Act of 1974 established a federal program to control the spread of noxious weeds. The U.S. Secretary of Agriculture was given the authority to declare plants "Noxious Weeds" and limit the interstate spread of such plants without a permit. North Dakota law (NDCC § 4.1-47-02) requires every person to do all things necessary and proper to control the spread of noxious weeds and makes it illegal for any person to distribute, sell, or offer for sale within this state a noxious weed.

The North Dakota Department of Agriculture (NDDA) lists 11 species of noxious weeds and invasive species. In addition to the NDDA noxious weed and invasive species list, localized weed boards within each county manage noxious weeds and invasive species and may develop a list of additional weeds for enforcement within their jurisdiction. McKenzie County has designated five additional species as noxious weeds (refer to Table 5.5-1 and Exhibit C).

Table 5.5-1
State and County Listed Noxious Weeds

Common and Scientific Name	State of North Dakota	McKenzie County
Absinth wormwood (*Artemisia absinthium*)	x	x
Baby's breath (*Gypsophila*)		x
Black henbane (*Hyoscyamus niger*)		x
Canada thistle (*Cirsium arvense*)	x	x
Common burdock (*Arctium minus*)		x
Dalmatian toadflax (*Linaria dalmatica*)	x	x
Diffuse knapweed (*Centaurea diffusa*)	x	x
Field bindweed (*Convolvulus arvensis*)		x
Halogeton (*Halogeton glomeratus*)		x
Houndstongue (*Cynoglossum officinale*)		x
Leafy spurge (*Euphorbia esula*)	x	x
Musk thistle (*Carduus nutans*)	x	x
Purple loosestrife (*Lythrum salicaria*)	x	x
Russian knapweed (*Acroptilon repens*)	x	x
Saltcedar (*Tamarix chinensis*)	x	x
Spotted knapweed (*Centaurea maculosa*)	x	x
Yellow starthistle (*Centaurea solstitialis*)		x
Yellow toadflax (*Linaria vulgaris*)	x	x

Field surveys conducted in the summer of 2018 documented 42 areas of noxious weeds within the planned Project Corridor with a total area of approximately 53.6 acres. Of the 42 occurrences, 40 were Canada thistle and two were common burdock. Within the Route/workspace, there are 17 areas of noxious weeds totaling 15.9 acres, all consisting of Canadian thistle.

A detailed description of these areas and maps displaying their locations are included in the Natural Resources Survey Report included in Exhibit C. Prior to construction, ONEOK will conduct an additional noxious weed inventory for the portion of the route that was not surveyed as part of the 2018 field season (mileposts 0.15 – 0.35) and file the report with the Commission upon completion.

It is ONEOK's intent to minimize the potential introduction and/or spread of invasive species and noxious weeds along its construction ROW during pipeline construction activities and the revegetation timeframe. However, it is not practicable for ONEOK to eradicate undesirable species that are adjacent to its ROW. ONEOK will minimize the potential for the establishment of undesirable species by minimizing the time duration between final grading and permanent seeding. ONEOK will also require that construction equipment be cleaned before arriving on the construction spread to prevent the introduction of undesirable species to the Project area, as described in the Project's Weed Management Plan and Revegetation Plan, which addresses weed control. The McKenzie County Weed Board requires a Weed Management Plan be prepared and submitted for approval. ONEOK has developed a draft of this plan, which will be finalized and submitted to McKenzie County for review and approval prior to construction. See Sections 6.17 and 9 for more information.

6.0 AGENCY NOTIFICATIONS AND PERMITTING

In October 2018, ONEOK initiated consultation and coordination with federal, state, and local agencies requesting review of a one-mile study area surrounding the Project. Letters and/or emails were submitted with accompanying maps of the Project. As noted previously, ONEOK adopted a reroute in early 2019 which shifted the original centerline on the eastern end of the Project to the south. This reroute fell wholly within the original one-mile-study area presented to each agency. As such, follow-up submittals to each agency displaying the current route were not submitted.[5]

A summary of these consultations is provided in Table 6.0-1 and further details on each consultation are included in the following sections. A table summarizing the current state of environmental permits required for the Project is included as Exhibit F.

Table 6.0-1
Summary of Agency Notifications[1]

Agency	Applicable Resource/Program	Date Submitted	Response Received
USFWS North Dakota Field Office	Federally listed threatened and endangered species, USFWS-managed lands, MBTA consultation, and BGEPA consultation	10/9/2018 2/21/2019	Pending
USACE, Regulatory Office	Crossings of Section 408 Civil Works projects or other USACE-owned or managed lands; any special requirements, restrictions, or specifications regarding constructing pipelines across or under USACE-regulated features; and any permits issued through USACE which may be applicable to the Project to include anticipated permitting timeframes	10/10/2018 12/19/2019[2]	Pending
U.S. Department of Agriculture (USDA) Natural Resources Conservation Service-McKenzie County	Identification of impacts to NRCS-administered lands and programs	10/10/2018	10/24/2018
USDA Farm Services Agency (FSA)	Identification of impacts to FSA-administered lands and programs	10/10/2018	10/11/2018
U.S. Department of Defense (USDOD) - Cable Affairs	Identification of intercontinental ballistic missiles and launch facilities locations relative to the route	10/10/2018	10/10/2018

[5] The only exception is the February 21, 2019 submittal to USFWS which included the Natural Resource Report (Exhibit C). Detailed route maps were included in this submittal.

Table 6.0-1 Summary of Agency Notifications[1]			
Agency	**Applicable Resource/Program**	**Date Submitted**	**Response Received**
NDGFD	State Conservation Priority Species, Game Refuges, Game Management Areas and Private Land Open to Sportsmen	10/10/2018 2/14/2019 (eagle nest request)	11/1/2018 Pending
North Dakota Parks and Recreation Department	North Dakota Natural Heritage Inventory system, State Parks, Recreation areas, Natural areas, and Land and Water Conservation Fund projects	10/10/2018 12/14/2018[2]	Pending
North Dakota SHPO	Natural Register of Historic Places, Cultural Resources Consultation	2/15/2019	Pending
North Dakota Geological Survey (NDGS)	Identification of impacts to NDGS-administered lands and programs	10/10/2018	11/5/2018
North Dakota Department of Health (NDDH)	Identification of impacts to NDDH-administered programs	10/10/2018	10/23/2018
North Dakota State Water Commission (NDSWC)	Identification of impacts to rural water supply systems and NDSWC-administered projects	10/10/2018 12/14/2018[2]	Pending
North Dakota Department of Trust Lands (NDDTL) – School Trust	Identification of impacts to NDDTL-administered School Trust lands.	10/10/2018	10/19/2018
NDDTL – Mineral Trust	Identification of impacts to NDDTL-administered Mineral Trust lands	10/10/2018	12/26/2018
Western Area Water Supply Authority (WAWSA)	Identification of impacts to rural water supply systems and WAWSA-administered projects	10/10/2018 12/14/2018[2]	Pending
McKenzie County Board of Commissioners	Confirmation of any local ordinances or other resources under McKenzie County jurisdiction applicable to the Project; any permits issued through the Board of Commissioners office which may be applicable to the Project; and a summary of any applicable permit process and anticipated timeframes	10/10/2018 12/14/2018[2]	12/14/2018 12/17/2018

Table 6.0-1 Summary of Agency Notifications[1]			
Agency	**Applicable Resource/Program**	**Date Submitted**	**Response Received**
McKenzie County Water Resource Board	Locations of any county-regulated drains, ditches, and/or other drainage features; relevant special requirements, restrictions, or specifications; relevant local ordinances and/or permits; and a summary of permit process and anticipated timeframes	10/10/2018 12/14/2018[2]	Pending
McKenzie County Weed Control Board	Confirmation of current listing of noxious weeds; known locations of noxious and/or invasive weed species along the proposed route; and guidance and/or recommendations for weed control, pesticide use, and non-chemical treatment options	10/10/2018	10/10/2018

1 **Full copies of agency consultations are included in Exhibit D.**
2 **Follow up emails were sent to these agencies whom had not responded to the original consultation request.**

6.1 U.S. FISH AND WILDLIFE SERVICE

The USFWS administers several programs designed to identify and protect special status plant and animal species, critical habitats, and lands managed by the agency including the MBTA and the BGEPA. Additionally, the USFWS administers NWR and Waterfowl Production Areas (WPAs) as well as wetland and grassland easements throughout North Dakota. ONEOK provided the USFWS with project notification on October 9, 2018, which included a description of the Project and an assessment of its impacts relative to the interests of the USFWS.

At the time of this filing, a formal written response has not yet been received; however, ONEOK is working with the USFWS and will file relevant communication, upon receipt. At the time the original consultation letter was submitted, field surveys were ongoing. As noted previously, ONEOK submitted an updated consultation request with a copy of its Natural Resource Survey Report to USFWS on February 21, 2019. ONEOK will file its response from USFWS upon receipt.

6.1.1 Federally Protected Species Review

Project-specific consultations were initiated with the USFWS requesting confirmation regarding the presence or absence of federally protected species and their designated critical habitat. A Project notification letter was submitted to the USFWS in October 2018 and a follow up consultation with additional information and a copy of the Natural Resources Report (Exhibit C) was provided on February 21, 2019.

Results of our federally protected species review are discussed in greater detail in Section 5.3.1 of this application and a record of communication can be found in Exhibit D.

6.1.1.1 Project-based Conservation Measures for federally-listed species

In order to minimize potential environmental effects resulting from pipeline construction activities as well as operation and maintenance activities, ONEOK has developed general conservation measures to be employed on the Project. ONEOK would provide pre-construction environmental training to all ONEOK and contractor personnel whose activities may impact the environment during pipeline and facility construction. As part of this training, ONEOK would provide information on proper identification of whooping cranes, red knots, and gray wolves and correct procedures regarding a sighting.

ONEOK would also retain EIs to verify that environmental protection measures, permit conditions, and other specifications are implemented appropriately by the contractor during Project construction, including conservation measures associated with threatened and endangered species. The EIs would have stop-work authority to enforce all provisions of federal, state and local regulations and the provisions and requirements of any other applicable permits. Additionally, ONEOK would adhere to post-construction restoration and revegetation procedures prescribed by applicable permit conditions to ensure minimization of erosion during operation and maintenance of the pipeline. ONEOK would comply with applicable federal, state, and local rules and regulations, and take all appropriate precautions to protect against environmental degradation.

6.1.2 Migratory Bird Treaty Act

Migratory birds are federally protected by the MBTA, which prohibits the taking, killing, possession, and transportation of migratory birds, their eggs, parts, and nests, except when specifically permitted by regulations. In North Dakota, both native prairie and non-native grasslands provide breeding, nesting, foraging, brood-rearing, and dispersal habitat for many species of migratory birds. As summarized in Section 9, ONEOK will implement a Migratory Bird Plan during construction to protect migratory birds and eagles/raptors.

6.1.3 Bald and Golden Eagle Protection Act

Bald and golden eagles are protected by both the MBTA and the BGEPA. The BGEPA prohibits the take of a bald or golden eagle adults, juveniles, or chicks including their parts, nests, or eggs without a permit. Take is defined by the BGEPA as to pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb. The BGEPA also addresses impacts resulting from human-induced alterations occurring around previously used nesting sites.

As summarized in Section 9, ONEOK will implement an Migratory Bird Plan during construction to protect migratory bird and eagle/raptors. See Section 5.3.3 for further discussion.

6.1.4 Wetland and Grassland Easements

The USFWS administers NWRs and WPAs, as well as wetland and grassland easements throughout North Dakota. A desktop review of information available in the public domain, including U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle maps, USGS Protected Areas Database-US dataset, and the

USFWS IPaC has been completed for the Project Corridor. Desktop analysis indicates no USFWS managed lands are located within the Project Corridor.

Wetland and grassland easement data is not typically publicly available and must be obtained from USFWS staff. In its consultation letters submitted to USFWS, ONEOK has requested confirmation that the Project does not impact any USFWS easements or other interests. A response has not been received to date. In lieu of a response from USFWS, ONEOK has relied on discussions with each landowner impacted along its Route regarding conservation easements. Based on these discussions and individual landowner knowledge, ONEOK has not identified any parcels impacted by the Route that contain USFWS wetland or grassland easements.

A record of this communications submitted to USFWS can be found in Exhibit D. Any responses received will be filed in Exhibit D upon receipt.

6.2 U.S. ARMY CORPS OF ENGINEERS

The USACE regulates impacts to waters of the U.S.[6] under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act. Based on a review of the wetland and waterbody data collected during field surveys (see Section 5.2 and Exhibit C), the pipeline will cross features that likely fall within the USACE's jurisdiction. ONEOK expects that the Project will be eligible for coverage under the USACE Nationwide Permit (NWP) 12, which authorizes temporary impacts to USACE-jurisdictional waters due to construction of utility lines. Based on a review of anticipated temporary impacts to waters of the U.S., at this time, ONEOK does not anticipate that the Project will meet one of the following seven criteria that trigger the need for a Pre-Construction Notification (PCN) to the USACE:

1. Mechanized land clearing in a forest wetland;
2. A Section 10 permit is required;
3. The crossing length of the utility line in waters of the U.S. exceeds 500 feet (applied to each crossing individually);
4. The utility line is within a jurisdictional area and runs parallel to a stream bed that is within a jurisdictional area;
5. Discharges that result in the loss (i.e., permanent fill) of greater than 1/10 acre of Waters of the U.S.;
6. Permanent access roads constructed above grade in waters of the U.S. for a distance of more than 500 feet; or
7. Permanent access roads are constructed in waters of the U.S. with impervious surfaces.

If a PCN is not required to be submitted, work within jurisdictional waters will be conducted in accordance with the General Conditions of NWP 12. If it is determined a PCN is required, ONEOK will inform the NDPSC and provide a copy of USACE's approval upon receipt. See Exhibit F for more information.

On October 10, 2018, ONEOK initiated Project-specific consultations with the USACE requesting notification of Section 408 Civil Works projects or other USACE-owned or managed lands within the study area; any special requirements, restrictions, or specifications regarding constructing pipelines across or under USACE-regulated features; and any permits issued through USACE which may be applicable to the

[6] As defined in 40 CFR 230.3

Project to include anticipated permitting timeframes. As ONEOK did not receive a response to its initial request, a follow-up email was sent on December 14, 2018. A response is pending.

6.3 U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE

The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) administers the Grassland Reserve Program, Wetland Reserve Program (WRP), as well as the Farm and Ranch Lands Protection Program and the Agricultural Conservation Easement Program.

On October 10, 2018, ONEOK provided Project notification to the NRCS requesting a review of the Project for concerns related to NRCS-administered lands and programs. The NRCS responded on October 24, 2018 and did not identify any NRCS-administered easements in the Project area. NRCS stated that since the Project does not involve federal funding, the Farmland Protection Policy Act does not apply. NRCS also recommended that impacts to wetlands be avoided and provided guidelines for minimizing temporary impacts to wetlands.

Through landowner communications to-date, ONEOK has not identified any parcels with NRCS easements. A record of communication with the NRCS can be found in Exhibit D.

6.4 U.S. DEPARTMENT OF AGRICULTURE, FARM SERVICE AGENCY

Lands enrolled in the USDA-FSA-administered Conservation Reserve Program (CRP) are privately owned; however, the FSA has administrative responsibilities to ensure the provisions of CRP are maintained throughout the contract period. The CRP program stipulates that lands enrolled in CRP may not have the vegetative cover disturbed during the Primary Nesting and Brood Rearing Season (April 15 through August 1) unless disturbance of the existing cover is minimal, and a waiver of this provision is granted by the FSA.

On October 10, 2018, ONEOK provided Project notification to the FSA requesting confirmation regarding FSA-administered lands and programs in the Project Corridor. The FSA responded on October 11, 2018, stating they cannot provide specific information, but can provide the names of all FSA participants in the county.

In lieu of obtaining the full list of CRP enrollees in McKenzie County from the FSA, ONEOK has relied on discussions with each landowner impacted along its Route regarding conservation easements. Based on these discussions and individual landowner knowledge, ONEOK has not identified any parcels that are crossed that contain FSA-administered easements. Should CRP land be impacted by the Project within the Primary Nesting and Brood Season noted above, ONEOK will apply for a waiver from FSA.

A record of communication with the FSA can be found in Exhibit D.

6.5 U.S. DEPARTMENT OF DEFENSE

Review of aerial imagery (University of Wyoming [UWYO], 2018) for each Minot Air Force Base Minuteman Intercontinental Ballistic Missile (ICBM) site suggested the absence of ICBM launch or launch control facilities within 1,200 feet of the Project Corridor. On October 10, 2018, ONEOK provided Project notification to the U.S. Department of Defense (USDOD) requesting confirmation regarding the presence or absence of ICBM facilities within 1,200 feet of the Project Corridor. The USDOD confirmed in their

October 10, 2018 response that no USDOD lands are located within the one-mile-wide evaluation corridor. A record of this communication can be found in Exhibit D.

6.6 NORTH DAKOTA GAME AND FISH DEPARTMENT

The NDGFD has oversight of the State's game species. On October 10, 2018, ONEOK provided Project notification to the NDGFD requesting information regarding the presence or absence of State Conservation Priority Species within the Project Corridor. The NDGFP provided a written response on November 2, 2018.

The NDGFD's response indicated their primary concern is the possible disturbance of native prairie and wooded draws. The NDGFD requested every effort be made to prevent destruction of these areas and disturbed areas be reclaimed to pre-Project conditions. The NDGFD requested appropriate precautions be taken to protect any wetlands that cannot be avoided. Lastly, the NDGFD stated that aerial surveys for raptor nests should be completed before construction begins and that a one-half-mile buffer be implemented around active eagle nests (known occupied within the past five years). A copy of the NDGFD's response is included in Exhibit D.

On February 14, 2019, ONEOK requested locations of bald and golden eagle nesting data from the NDGFD; a response is pending. Once received, any conditions of the response will be incorporated into ONEOK's construction work plans. Records of this communication are included as Exhibit D. ONEOK has not identified any raptor or eagle nests in the vicinity of the Project either during its field surveys or agency consultations. If the NDGFD does not identify any known nest locations, ONEOK is not planning to conduct aerial surveys prior to construction.

As outlined in Section 9, ONEOK has already accounted for many of these concerns and has developed, or will develop, plans and procedures to address these items during construction. ONEOK will continue to review work plans and procedures to incorporate NDGFD's recommendations where feasible.

6.7 NORTH DAKOTA PARKS AND RECREATION DEPARTMENT

The North Dakota Parks and Recreation Department (NDPRD) Natural Resource Division's scope of authority and expertise covers recreation and biological resources (rare species and ecological communities, in particular). The NDPRD also maintains a database identifying the locations and recorded occurrences of plant and animal species of special concern. The NDPRD authority includes management of state park lands and Land and Water Conservation funded recreation projects.

On October 10, 2018, Project notification was initiated with the NDPRD seeking confirmation regarding the presence or absence of managed lands, ecological resources, rare species, or their critical habitats within the Project Corridor. As ONEOK did not receive a response to its initial request, a follow-up email was sent on December 14, 2018. A response is pending.

6.8 NORTH DAKOTA STATE HISTORIC PRESERVATION OFFICE

According to the North Dakota Energy Conversion and Transmission Facility Siting Act, among the "*factors to be considered [by the Commission] in evaluating applications and designation of sites, corridors, and routes,"* is the effect of the proposed site or route on existing scenic areas, historic sites and structures, and paleontological or archaeological sites. The repository in North Dakota for this information is the

SHPO, which acts as a technical resource during identification and evaluation of areas, sites, and structures and during reviews of Project effects. The NDPSC tasks the Applicant to coordinate identification and effects discussions with the SHPO.

ONEOK submitted the Class III cultural resource survey report (France, 2018) to SHPO for a technical review on February 15, 2019. A response is pending. As noted previously, the 2014 cultural resource survey for the ONEOK Targa Lateral Project did not identify any cultural sites between mileposts 0.15 – 0.35. ONEOK will submit a follow-up consultation request to SHPO specific to this portion of the route in the near future and request concurrence that no NRHP-eligible resources will be impacted. ONEOK will file copies of future correspondence with the SHPO to the NDPSC to document that the Project will not adversely affect cultural resources.

6.9 NORTH DAKOTA GEOLOGICAL SURVEY

On October 10, 2018, Project notification was initiated with the North Dakota Geological Survey (NDGS) to solicit comments on the Project. In a November 5, 2018 response, the NDGS noted that the pipeline route is generally free from mapped landslide deposit areas but does pass near a previously mapped localized slide area near the center of Section 30, Township 149 North, Range 98 West. ONEOK has since modified its route and avoids this feature. Other landslide deposit areas were identified within the one-mile study area but are not located within the Project Corridor (see Exhibit B.2).

NDGS also identified the following areas where additional engineering review could be considered due to slope instability:

- Spring Creek crossing (approximate milepost 0.2)[7]
- Cherry Creek crossing (approximate milepost 7.0)
- Unnamed Creek crossing (approximate milepost 7.6)

Due to the sensitive nature of these areas and anticipated difficulty restoring the riparian areas, after an engineering and constructability review, ONEOK decided to cross each of the waterbodies via the bore or HDD method. These crossing methods will avoid direct in-stream impacts and will also result in no/minimal impact of the riparian slopes which may be difficult to restore due to instability issues.

6.10 NORTH DAKOTA DEPARTMENT OF HEALTH

The North Dakota Pollution Discharge Elimination System (NDPDES) is the regulatory program that regulates water discharges such as construction stormwater, trench dewatering, and hydrostatic discharge permits. ONEOK will procure the following NDPDES permits from the North Dakota Department of Health (NDDH) as described below.

Construction Stormwater: The NDDH, through their NDPDES construction stormwater program, authorizes the discharge of stormwater associated with construction activities under their general permit North Dakota Rules (NDR)10-0000. Per the Energy Policy Act of 2005 and the remand of the U.S. Environmental Protection Agency's rule by the Ninth Circuit Court of Appeals, this Project is exempt from

[7] Note: The location of the Spring Creek crossing location identified in NDGS' response letter correlates to an earlier version of the Route which crossed the waterbody approximately 0.5 mile to the north. ONEOK assumes NDGS' comment also applies to the current crossing location near milepost 0.2 (see Exhibit B.2)

requiring permit coverage under NDR10-0000. However, ONEOK has developed and will implement a Stormwater Pollution Prevention Plan (SWPPP) to prevent pollutant runoff from the construction site from entering waters of the State. See Section 9 and Exhibit G for more information.

Hydrostatic Test Water Discharges: The NDDH also provides authorization to discharge water from hydrostatic testing of pipe and dewatering activities during construction under the NDPDES general permit NDG07-0000. ONEOK will apply for permit coverage and comply with the requirements of NDG07-0000 for hydrostatic test discharge and dewatering activities associated with the Project. Coverage under the permit is generally granted no more than 30 days after submittal of an application. ONEOK will file a copy of this permit with the NDPSC upon receipt.

The NDDH also administers the North Dakota Source Water Protection Program, which was developed in response to the 1996 Safe Drinking Water Act amendments. The program identifies wellhead protection areas (WHPA) for groundwater-dependent public water systems or a source water protection area for surface water-dependent public water systems. Based on review of the NDDH Wellhead Protection and Source Water Protection Areas datasets (NDDH, 2018), the nearest protection area is located approximately 0.6 mile from the Project. This WHPA is listed as "Fertile Fields".

On October 10, 2018, Project notification was initiated with the NDDH seeking confirmation regarding NDDH-administered programs in the Project Corridor. The NDDH responded on October 23, 2018 stating that it believes environmental impacts from the proposed construction would be minor and can be controlled by proper construction methods. Furthermore, NDDH noted that the department owns no land in or adjacent to the proposed Project, does not have any projects scheduled in the area, and believes the proposed activities are consistent with the State Implementation Plan for the Control of Air Pollution for the State of North Dakota.

The Department provided the following comments/recommendations with respect to construction:

- Care should be taken near any water of the state to minimize impacts and stream beds and banks should be restored and revegetated as soon as possible after work has been completed. Caution should also be taken to prevent spills of oil and grease and other contaminants from equipment maintenance and fueling.
- Projects disturbing one or more areas are required to have a permit to discharge stormwater until the site is stabilized by reestablishment of vegetation or other permanent cover. NDDH also noted that local municipalities may have additional requirements with respect to stormwater management, and recommended checking with local official to confirm any local stormwater management considerations are addressed.
    - As noted above, the state of North Dakota recognizes the federal construction stormwater exemption for oil and natural gas projects. As such, ONEOK does not intend to apply for coverage under the NDDH's General Permit NDR10-0000; however, ONEOK will develop and implement a project-specific SWPPP to prevent pollutant runoff from the construction site from entering waters of the State.
- The NDDH noted the proposed Project overlies the Tobacco Garden glacial drift aquifers which is a sensitive groundwater area. Care should be taken to avoid spills of any materials that may have an adverse effect on groundwater quality and all spills must be immediately reported to NDDH and appropriate remedial actions performed.
    - The location of the aquifer is displayed on the maps in Exhibit B.4. Information on ONEOK's spill control and prevention measures is included in Sections 7.3.1 and 9.

- Projects that involve pipelines should select locations that minimize the potential for impacts to human health and the environment during and after construction by avoiding, when possible, source water protection areas and sensitive surface and groundwater environments. In addition, pipeline routes should select area with natural barriers to both surface and ground waters, when possible. A spill response plan should be developed and implemented, and surveillance and monitoring for early detection of leaks should be required.

As noted in Section 9 of this application, ONEOK has implemented numerous mitigation measures and developed several plans (see Exhibit G) to minimize impacts to waters of the state, as well as addressing spill control and response.

6.11 NORTH DAKOTA STATE WATER COMMISSION

Appropriation of water from the State's water resources is permitted by the North Dakota State Water Commission (NDSWC). Typically, ONEOK will truck in water for hydrostatic testing of the pipe and/or dust control, rather than appropriating water from a nearby surface or groundwater source. As such, ONEOK does not anticipate that the Project will require a permit from the NDSWC. Should the scope of the Project change and a permit be required, ONEOK will apply for permit coverage through the NDSWC at that time. If a permit is obtained for water appropriation, it will be filed with the NDPSC upon receipt.

On October 10, 2018, Project notification was initiated with the NDSWC seeking confirmation regarding NDSWC-administered sovereign lands, water supply systems, projects, and other programs within the Project Corridor. Based on a desktop review, ONEOK did not identify any of these resources within the Study Area. As ONEOK did not receive a response to its initial request, a follow-up email was sent on December 14, 2018. A response is pending.

6.12 NORTH DAKOTA DEPARTMENT OF TRUST LANDS – SCHOOL TRUST LANDS

On October 10, 2018, ONEOK provided Project notification to the North Dakota Department of Trust Lands (NDDTL) Surface Management Division requesting comments regarding the presence of State School Trust Lands within the Project Corridor. A preliminary review of the Surface Trust Land dataset (NDGIS, 2018a) concluded School Trust Lands were within the 1-mile-wide study area but not directly crossed by the Project.

In a response received by ONEOK on October 19, 2018, the NDDTL stated that any proposed projects crossing NDDTL property would need to apply for a Rights of Way permit. The NDDTL confirmed the presence of one School Trust Lands within the study area (in Township 149 North, Range 99W, Section 16); however, this parcel will not be crossed by the Project. The location of School Trust Lands in relation to the Project are displayed on the maps in Exhibit B.4. A copy of the correspondence with NDDTL is included in Exhibit D.

6.13 NORTH DAKOTA DEPARTMENT OF TRUST LANDS – MINERAL TRUST LANDS

On October 10, 2018, ONEOK provided Project notification to the NDDTL Minerals Management Division requesting comments regarding the presence or absence of State Mineral Trust Lands within the Project Corridor. A preliminary review of the NDDH Mineral Trust Land dataset (NDGIS, 2018b) identified State Mineral Trust Lands located within the Project study area, but not directly crossed by the Route. In a

December 26, 2018 response, NDDTL confirmed the location of Mineral Trust lands provided in ONEOK's letter and accompanying mapset. The Route does not directly cross any NDDTL-administered Mineral Trust Lands (see Exhibit B.4) and no additional action should be required.

6.14 WESTERN AREA WATER SUPPLY AUTHORITY

On October 10, 2018, Project notification was initiated with the Western Area Water Supply Authority (WAWSA) seeking information related to rural water supply systems and WAWSA-administered projects. As ONEOK did not receive a response to its initial request, a follow-up email was sent on December 14, 2018. A response is pending.

6.15 MCKENZIE COUNTY BOARD OF COMMISSIONERS

On October 10, 2018, Project notification was initiated with the McKenzie County Board of Commissioners seeking information regarding any local ordinances, permits, or other resources under the Board's jurisdiction which may be applicable to the Project, as well as a summary of any permit processes and anticipated timeframes, if applicable. As ONEOK did not receive a response to its initial request, a follow-up email was sent on December 14, 2018. The Board responded on December 14, 2018 and forwarded the notification to another commissioner who tracks public comments. This commissioner requested further project details and electronic files and maps which were subsequently provided via email on December 20, 2019.

To date, no specific concerns have been raised by the Board of Commissioners. ONEOK plans to submit updated maps showing the current Route in the near future.

6.16 MCKENZIE COUNTY WATER RESOURCE BOARD

On October 10, 2018, Project notification was initiated with the McKenzie County Water Resource Board seeking comment on the following topics:

- Locations of any county-regulated drains, ditches, and/or other drainage features;
- Any special requirements, restrictions, or specifications regarding constructing pipelines across or under county-regulated drainage features;
- Any local ordinances related to drainage; and
- Any applicable permits with a summary of the permit process and anticipated timeframes.

As ONEOK did not receive a response to its initial request, a follow-up email was sent on December 14, 2018. A response is pending and will be filed in Exhibit D upon receipt.

6.17 MCKENZIE COUNTY WEED CONTROL BOARD

On October 10, 2018, Project notification was initiated with the McKenzie County Weed Control Board seeking comment on the following topics:

- Confirmation that the list of noxious weeds obtained by ONEOK is correct and current;
- Known locations of noxious and/or invasive weed species along the proposed route; and
- Guidance and/or recommendations for weed control, pesticide use, and non-chemical treatment options.

ONEOK received a response from the Weed Control Board on October 10, 2018 which stated ONEOK would be required to complete and submit a McKenzie County Weed Management Form. ONEOK will complete and submit the form to McKenzie County for review and approval prior to construction. A record of this communication can be found in Exhibit D. See Section 9 and Exhibit F for more information.

7.0 CRITERIA

The information presented in this section was developed to demonstrate conformance with the NDPSC's siting criteria for transmission facilities. ONEOK has conducted a thorough inventory of the Project Corridor and evaluated the resources within it to assess the compatibility of the Project with the NDPSC's siting criteria. The following sections identify and discuss the presence or absence of siting criteria within the Project Corridor and Route. Where siting criteria are identified, the location of each is shown on the maps in Exhibits B.2-B.4. GIS data is also being provided in electronic form.

7.1 EXCLUSION AREAS

Exclusion areas are geographic areas that must be excluded in the consideration of a route for a transmission facility. A buffer zone of a reasonable width must also be included to protect the area. The following table and text identify and discuss exclusion areas within the Project Corridor.

Table 7.1-1
Exclusion Areas
NDPSC Certificate of Corridor Compatibility and Route Permit

Exclusion Area	Located within Study Area	Located within the Project Corridor	Crossed by Route	Administering Agency
National Parks	No	No	No	U.S. National Park Service (USNPS)
National Memorial Parks	No	No	No	USNPS
National Historic Sites and Landmarks	No	No	No	USNPS
National Natural Landmarks	No	No	No	USNPS
National Wilderness Areas	No	No	No	USNPS; USFS
National Monuments	No	No	No	USNPS
State Parks	No	No	No	NDPR
State Historic Sites	No	No	No	State Historical Board
State Monuments	No	No	No	State Historical Board
State Historical Markers	No	No	No	State Historical Society
State Archaeological Sites	No	No	No	State Historical Board
State Nature Preserves	No	No	No	State Park Service
County Parks and Recreation Areas, Municipal Parks, and Parks under other Governmental Jurisdiction	No	No	No	Various
Areas Critical to the Life Stages of Threatened or Endangered Animal or Plant Species	Yes	Yes	No	USFWS
Areas Where Animal or Plant Species Unique or Rare to the State Would be Irreversibly Damaged	No	No	No	Various
Areas within 1,200 feet of an ICBM facility	No	No	No	USDOD

Table 7.1-1 Exclusion Areas NDPSC Certificate of Corridor Compatibility and Route Permit				
Exclusion Area	**Located within Study Area**	**Located within the Project Corridor**	**Crossed by Route**	**Administering Agency**
Areas within 30 feet of direct line of ICBM launch facility	No	No	No	USDOD

7.1.1 Federal Resource Review

Review of digital data (U.S. National Park Service [NPS], July 2018) available from USNPS, and the USFWS shows that there are no national parks, national memorial parks, national historic sites and landmarks, national wilderness areas, or national monuments located within the Project Corridor or Route. Therefore, there will be no direct impacts to national parks, sites, monuments, or wilderness. The nearest federally managed park land is the Theodore Roosevelt National Park (North Unit) located approximately 5 miles south and east of the Project.

As described in Section 5.3 and 6.1, suitable habitat for one federally listed species (Dakota skipper) was identified within the Project Corridor; however, ONEOK has modified its centerline and designed its workspace to completely avoid direct impacts to these areas. As noted in Section 6.1, ONEOK provided a copy of its Natural Resources Report to USFWS with project specific conservation measures. With this conservation measures in place, ONEOK assumes the USFWS will agree that the Project will result in no direct impacts to the species or its habitat.

Based on cultural resource surveys conducted for the Project, impacts to NRHP-eligible sites are not anticipated (see Section 5.1). ONEOK submitted its Class III Cultural Resources Report to the North Dakota SHPO for concurrence on February 15, 2019. As noted previously, ONEOK will submit a follow-up consultation request to SHPO specific to the portion of the Route between mileposts 0.15 – 0.35 which was surveyed for a different ONEOK project in 2014 (no cultural resources were identified in this segment). A response to the February 15, 2019 submittal is pending and all responses from SHPO will be filed with the NDPSC upon receipt. ONEOK anticipates the SHPO will agree with its determination that the Project will not impact NRHP-eligible cultural sites.

Based on the information above, impacts to federal exclusion areas will be avoided.

7.1.2 State Resource Review

Review of digital data (NDPRD, 2018) available from the NDPRD indicates that there are no designated or registered state parks, sites, monuments, or nature preserves within the Project Corridor or Route. The Killdeer Mountains Wildlife Management Area administered by the NDGFD is the nearest such area and is located approximately 16 miles southeast of the Project. Therefore, there will be no direct impacts to state parks, sites, monuments, or nature preserves.

7.1.3 County Resource Review

Review of publicly available data shows that there are no county parks and recreational areas, municipal parks, or parks owned or administered by other governmental subdivisions within the Project Corridor or crossed by the Route. The nearest such areas are located in the vicinity of Watford City approximately 6 miles north of the Project. Therefore, no direct impacts are anticipated.

7.1.4 Areas of Critical Habitat

The USFWS has designated critical habitat for two federally listed species in McKenzie County (piping plover and Dakota skipper). The nearest designated critical habitat for the piping plover is associated with the Missouri River/Lake Sakakawea reservoir, approximately 15 miles north of the Project area. The nearest known Dakota skipper designated critical habitat is located approximately 30 miles northeast of the Project. The Project will have no impact on designated critical habitat.

As described in Section 5.3, ONEOK commissioned natural resource surveys of the Corridor. The scope of the surveys included documentation of the presence or absence of federally listed and state listed species of concern or evidence of suitable habitats for these species. The results of these field studies are detailed in Section 5.3.1, and planned mitigation measures are discussed in Section 9 of this document. Consultation requests have been submitted to USFWS and formal correspondence regarding federally-listed species will be provided when received.

7.1.5 Areas where Unique or Rare Species Rare to the State Would Be Irreversibly Damaged

Based upon field surveys, the Project will not result in irreversible impacts that are detrimental to plant and animal species or their habitats that are unique or rare to the State. The implementation of the proposed construction and restoration plans (see Section 9 and Exhibit G) and full compliance with environmental permits will help minimize temporary impacts and mitigate the potential for irreversible damage.

7.1.6 Areas within 1,200 Feet of ICBM Facility or 30 Feet of Direct Line of Launch Facility

Based upon information compiled by the UWYO regarding current and historic missile site locations (UWYO, 2018), which was comprised of both tabular data describing these sites and supported with additional aerial imagery for each Minot Air Force Base Minuteman ICBM site, ONEOK has confirmed the absence of ICBM launch or launch control facilities located within 1,200 feet of the Route. This was confirmed through consultation with the USDOD as described in Section 6.5.

7.2 AVOIDANCE AREAS

Avoidance areas are geographic areas that may not be considered in the routing of a transmission facility unless it is shown there is no reasonable alternative under the circumstances. A route may contain avoidance areas; however, avoidance areas may not encompass more than 50 percent of the Project Corridor width at any point, unless there is no reasonable alternative. The following table and text identify and discuss avoidance areas within the Project Corridor.

Table 7.2-1 Avoidance Areas NDPSC Certificate of Corridor Compatibility and Route Permit				
Avoidance Area	**Located within Study Area**	**Located within Project Corridor**	**Impacted by Route**	**Administering Agency**
National Historic Districts	No	No	No	State Historic Society
National Wildlife Areas	No	No	No	USFWS
National Wild, Scenic, or Recreational Rivers	No	No	No	Heritage Conservation Recreation Service, State
NWRs	No	No	No	USFWS
National Grasslands	No	No	No	USFS
State Wild, Scenic, or Recreational Rivers	No	No	No	State of North Dakota Legislative Assembly
State Game Refuges	No	No	No	NDGFD
State Game Management and Management Areas	No	No	No	NDGFD
State Forests	No	No	No	State Forest Service
State Forest Management Lands	No	No	No	State Forest Service
State Grasslands	No	No	No	State Park Service
Historical Resources not specifically designated as Exclusion or Avoidance Areas	Yes	Yes	No	SHPO
Geologically Unstable Areas	Yes	Yes	No	State Geological Survey
Within 500 Feet of a Residences, School, or Place of Business	Yes	No	No	Landowner
Reservoirs	No	No	No	USACE; NDSWC
Municipal Water Supplies	No	No	No	NDSWC
Water Sources for Organized Rural Water Districts	No	No	No	NDSWC
Irrigated Land[1]	N/A	N/A	N/A	NDSWC
Areas of Recreational Significance not designated as exclusion areas	No	No	No	Various

[1] Irrigated land does not apply to underground transmission facilities.

7.2.1 Federal Resource Review

ONEOK conducted a comprehensive review of publicly available information and field studies of the Project Corridor. This review confirmed the absence of designated or registered historic districts, refuges, and wild, scenic, or recreational rivers within the Project Corridor.

As described in Sections 5.1 and 6.8, ONEOK conducted Class III cultural resources surveys and has concluded the Project will not result in impacts to NRHP-eligible resources. ONEOK submitted this report and a request for concurrence to the North Dakota SHPO on February 15, 2019. A follow-up consultation request to SHPO specific to this portion of the route surveyed in 2014 (mileposts 0.15 – 0.35) will be submitted in the near future. Response letters from the North Dakota SHPO will be filed with the NDPSC, upon receipt.

7.2.2 State Resource Review

ONEOK conducted a review of publicly available resources and concluded no designated or registered game refuges, game management areas, management areas, forests, forest management lands, or grasslands are within the Project Corridor.

7.2.3 Historical Resources Not Designated as Exclusion/Avoidance Areas

See Section 5.1 for a discussion of historical resource desktop and field studies conducted for completion of Class I and Class III cultural resource reports and see Section 6.8 for a discussion of agency consultations conducted with the SHPO regarding the Project. None of the cultural resources identified within the Project Corridor were determined to be NRHP-eligible thus are not protected and should not be considered as an avoidance area. One unevaluated site has been avoided and will not be impacted.

7.2.4 Geologically Unstable Areas

A desktop review of the NDGS landslide mapping data was completed. Several landslide deposits were identified within the Study Area of the Project near mileposts 0.5 and 5.5; however, the Route and Corridor do not intersect these features and no impacts are anticipated. (see Exhibit B.2).

As noted in Section 6.9, in its response to ONEOK's consultation request, NDGS identified the following areas where additional engineering review could be considered due to slope instability:

- Spring Creek crossing (approximate milepost 0.2)[8]
- Cherry Creek crossing (approximate milepost 7.0)
- Unnamed Creek crossing (approximate milepost 7.6)

Each of these three areas has been identified as on the Avoidance and Exclusion maps (see Exhibit B.2); however, as described previously, ONEOK will avoid impacts each of these features by crossing them via the bore or HDD method.

North Dakota has not experienced an earthquake of sufficient magnitude to damage steel welded pipe or structural steel structures in recorded history. Sinkholes are known to occur in the region, but these are related to subsurface mining activities as opposed to limestone dissolution.

According to review of NDGS and USGS abandoned mine data, one abandoned mine is located within the Project Corridor near milepost 10.6 in Township 149 North, Range 100 West, Section 12. However, based on a review of historic aerial photography, this area has been a cultivated farm field since at least 1995. Based on aerial imagery, it appears there is an abandoned mine located approximately 0.25 mile to the southwest (see Exhibit B.2). ONEOK assumes this is the actual location of the abandoned mine; as such, no impacts are anticipated and specialized construction techniques in this area are not anticipated to be required.

[8] Note: The location of the Spring Creek crossing location identified in NDGS' response letter correlates to the previous version of the Route which crossed the waterbody approximately 0.5 mile to the north. ONEOK assumes NDGS' comment also applies to the current crossing location at milepost 0.2 (see Exhibit B.2)

7.2.5 Areas within 500 Feet of a Residence, School, or Place of Business

Based on a review of aerial photography as well as discussions with landowners, ONEOK has identified two structures near milepost 6.7 which have been confirmed as occupied residences or businesses within 500 feet of the Route. Both of these structures are owned by the same landowner and ONEOK has secured a landowner waiver which is included as Exhibit E.

There are several structures located south of the Route associated with oil and gas development between mileposts 0.7 and 0.9. ONEOK has confirmed through visual inspection and/or discussions with the owner that none of these structures are occupied.

7.2.6 Reservoirs and Municipal Water Supplies

ONEOK has confirmed the absence of reservoirs or municipal source water protection areas for community water supply sources within the Project Corridor.

7.2.7 Water Sources for Organized Rural Water Districts

Based on a review of publicly available data, ONEOK is not aware of any water sources for organized rural water districts within the Project Corridor. As discussed in Section 6.14, ONEOK submitted a consultation request to WAWSA and a response is pending.

7.2.8 Irrigated Land

Irrigated land does not apply to underground transmission facilities.

7.2.9 Areas of Recreational Significance but Not Designated Exclusion Areas

Based on a review of publicly available data, ONEOK has not identified any areas of recreational significance within the Project Corridor. In additional, none of the county agencies ONEOK consulted with have identified any areas of recreational significance in the vicinity of the Project.

7.3 SELECTION CRITERIA

The State of North Dakota Rules Section 69-06-08-02.3 (NDR, 2018) specifies selection criteria considered in designating a pipeline corridor or route. These criteria are used to determine whether adverse effects from the location, construction, and maintenance of the facility will be at an acceptable minimum or whether these effects will be managed and maintained at an acceptable minimum.

The selection criteria that were considered for the Project include:

- Agricultural Production;
- Family Farms and Ranches;
- Land Suitable for Irrigation;
- Surface Drainage and Groundwater Flow Patterns;
- Sound Sensitive Areas;
- Visual Effects;
- Extractive and Storage Resources;

- Wetlands, Woodlands, and Wooded Areas;
- Communication or Electric Control Facilities;
- Human Health and Safety;
- Animal Health and Safety; and
- Plant Life.

Potential impacts and measures to avoid and minimize these impacts, as they relate to each of the selection criteria, are discussed in the following subsections.

7.3.1 Agricultural Impacts

Agricultural Production: The Route would temporarily affect approximately 118 acres of land in North Dakota, of which approximately 61 acres (51.7 percent) are located on privately owned cropland (USGS, 2014). The majority of the land crossed can be characterized as either agricultural or natural vegetative cover. Once the construction is complete, the land will be restored to its pre-construction contours and land use. ONEOK will provide settlements to landowners for crop loss resulting from Project construction.

Family Farms and Ranches: The Route would temporarily affect approximately 46 acres (40.1 percent) are comprised of privately-owned farms and/or ranches.[9] Once construction is complete, the land will be restored to its pre-construction contours and land use. ONEOK will negotiate easements with all affected landowners. The Project will have no permanent impacts to lifestyle or farm/ranch operations once construction is completed.

The location of pipeline markers is defined under 49 CFR part 195 for pipelines. ONEOK works with local landowners and county officials to ensure that pipeline markers are located where required but also in an acceptable location for these parties. These markers are to be placed in full view so that they are not accidentally damaged by nor cause damage to landowner or county equipment.

Lands Suitable for Irrigation: This section is not applicable to buried pipelines (NDAC 69-06-08-02(2)(h)).

Surface Drainage: Standard pipeline construction techniques to be employed would not modify existing surface drainage patterns. Care will be taken throughout the construction process to minimize environmental impacts, including modification of drainage patterns. During restoration, those areas that were disturbed during construction will be restored, the local topography will be restored to its original contours, vegetation will be reestablished and impacts will be minimal and temporary. BMPs will be implemented in accordance with the Project-specific SWPPP, which will be modeled after the NDDH Construction Storm Water General Permit requirements (see Section 9 and Exhibit G). Permanent impacts to surface drainage are not anticipated.

Ground Water: Well data has been recorded by the NDSWC for the Project Area. Well data indicates that groundwater is generally located at least 80 feet below the surface. The required tie-in excavations for the proposed Project are not anticipated to reach these depths as such no impact to groundwater is anticipated. If groundwater is encountered during construction activities, it will be dewatered in accordance with ONEOK's construction plans (see Section 9) and applicable state and/or local permits (see Exhibit F).

[9] Approximately by sum of grassland/herbaceous and hay/pasture land use types (USGS, 2014)

As described in Section 6.11, the NDDH noted that the Project crosses Tobacco Garden glacial drift aquifer, which is a sensitive ground water resource. NDDH stated that care should be taken to avoid any spills of material that may have an impact of groundwater quality and that all spills must be reported to NDDH and appropriate remedial actions performed.

As described in Section 9, ONEOK has developed a Spill Prevention, Control, and Countermeasures (SPCC) Plan which provides details on preventative measures, response, notification, and remediation procedures. In addition, ONEOK plans to cross the main waterbody in this area (Cherry Creek) via the HDD method which will avoid in-stream impacts. ONEOK will utilize its HDD Inadvertent Release Control and Mitigation Contingency Plan (see Section 9 and Exhibit G) at this crossing. The location of the surficial aquifer and Cherry Creek is displayed on the maps in Exhibit B.4.

7.3.2 Sound-Sensitive Land Uses

Temporary increases in ambient sound will occur in the areas immediately surrounding active construction. The Project is located in a rural setting away from major population centers. Construction will take place over a period of approximately 6 months; however, no one area will have ongoing daily activity, as construction will progress from one area of the route into the next. Construction activities at any given point along the Project are generally limited to daylight hours. The use of heavy equipment or trucks will be the primary noise generating activity during construction and excavation. The level of impact may vary by equipment type, duration of construction activity, and the distance between the noise source and the receptor. Once constructed and in-service, normal pipeline operations are not audible. Construction and operation of the Project is expected to comply with applicable noise requirements and local ordinances.

7.3.3 Visual Effect on Adjacent Areas

No permanent aboveground features are proposed as a part of the Project and the majority of the Project crosses cropland and herbaceous rangeland, which will be restored in accordance with landowners. As such, the visual effect of the Project on adjacent areas will be minimal.

7.3.4 Extractive and Storage Resources

This Project will not affect any known extractive or storage resources. As noted in Section 7.2.4, a review of desktop data identified an abandoned mine located near milepost 10.6 (see Exhibit B.2); however, based on a review of historic aerial photography, this area has been a cultivated farm field since at least 1995 and ONEOK assumes the locational data is not correct.

Impacts on potential future extractive development would not constitute a substantial loss of resource availability because of the narrow, linear nature of the pipeline ROW relative to the expanse of areas with resource potential.

7.3.5 Wetlands, Woodlands, and Wooded Areas

A comprehensive desktop review of published data, including aerial photography and NWI data, was conducted to assess the presence or absence of wetlands, woodlands, and wooded areas. The review of the proposed Project Corridor confirmed the presence of these resources. In addition, as described in Section 5.4, ONEOK commissioned field surveys to further identify and record the locations of these

resources along the Route. The results of these field studies (see Exhibit B) will be used to implement construction measures to avoid or minimize impacts, where possible. Land use and land cover information is shown in Exhibit B.3. Proposed mitigation measures are detailed in Section 9 and detailed survey results can be found in Exhibit C.

As detailed in Section 5.4, a formal tree and shrub inventory was conducted (in conjunction with natural resource surveys) based on guidance from recently issued NDPSC orders. A stand-alone tree and shrub inventory report is being finalized and will record the pre-construction status of these resources. Prior to construction, ONEOK will conduct an additional inventory for the portion of the Route that was not surveyed as part of the 2018 field season (between mileposts 0.15 and 0.35). These reports will be filed with the Commission upon completion and will form the baseline for restoration and mitigation assumed to be required by the NDPSC.

7.3.6 Radio and TV Reception and Other Communication or Electronic Facilities

Based on review of publicly available information, no radio and TV reception and other communication or electronic facilities are located within the Project Corridor. The proposed Project is a buried, underground utility. No impacts on television or radio reception or communication or electronic control facilities are anticipated to occur as a result of the Project.

7.3.7 Human Health and Safety

During construction, residences and businesses in proximity to construction activities will be exposed to short-term increases in construction-related noise and dust. The construction ROW, access roads, and spoil piles near residential and commercial areas will be watered down as needed to control fugitive dust emissions during construction. Following construction, measures to stabilize and revegetate the ROW will be taken promptly to minimize further dust emissions. Heavy construction equipment required for pipeline installation will generate unavoidable short-term increases in sound levels. Increases in noise levels due to equipment operation will be limited to the period of active construction and will primarily be avoided during night-time hours (10pm – 7am). Twenty-four-hour construction activities are generally limited to completing tasks that commenced during the day and where ceasing to complete could jeopardize the installation. This largely applies to some phases of HDDs, various bores, and occasional aboveground facility construction.

The USDOT's pipeline standards are published in Part 195 of Title 49 of the CFR. The regulations are intended to ensure adequate protection of the public and to prevent accidents and failures. Part 195 addresses petroleum pipeline safety issues, specifying material selection and qualification, minimum design requirements, and protection from internal, external, and atmospheric corrosion.

Actual installation of the pipeline and all construction and testing records will be subject to inspection. All pipe installed along the Project will be externally coated with a fusion bonded epoxy to resist corrosion. Once installed, internal inspections will be conducted on the pipeline at regular intervals using in-line inspection technology. The pipeline will undergo hydrostatic testing above maximum allowable operating pressure to ensure its integrity and will be placed into service only after successful completion and commissioning to verify compliance with all construction standards and requirements.

ONEOK will ensure that a public education and outreach program is developed to promote public awareness of pipelines and pipeline safety in accordance with USDOT requirements. Proper signage and

warnings at road and highway crossings, railroad crossings, navigable rivers, and other locations will alert the public to the presence of underground lines and to provide information, contact numbers, and emergency data.

7.3.8 Animal Health and Safety

ONEOK will avoid, minimize, and mitigate impacts to protected species to the maximum extent practicable. Consultations with state and federal agencies related to protected species are provided in Sections 5.3.1 and 6.1.1. Impacts to the majority of animal species will be short-term and temporary, and the construction workspace will be restored to its pre-construction conditions following installation of the pipe.

7.3.9 Plant Life

As noted on the land use/land cover maps (see Exhibit B.3), the majority of the Route crosses cultivated cropland and herbaceous grasslands. Field surveys did not identify any protected or endangered plant species; however, suitable habitat for Dakota skipper was encountered with the Corridor. As described in Sections 5.3 and 6.1, ONEOK's has designed the Route to avoid all patches of suitable habitat for the species and will implement several other conservation measures as noted in this application.

All areas disturbed by construction of the Project will be revegetated in accordance with applicable agency standards and landowner requests. In addition, ONEOK will complete tree and shrub mitigation per NDPSC guidelines.

7.4 POLICY CRITERIA

7.4.1 LOCATION AND DESIGN

The Project facilities are being sited in accordance with the North Dakota Energy Conversion and Transmission Facility Siting Act (NDCC chapter 49-22.1). Efforts to avoid and minimize environmental and human impacts are ongoing. Additionally, discussions with landowners regarding placement of the pipeline on respective tracts have been ongoing for several months.

Facilities will be constructed and operated according to all applicable regulations. The Project will meet or exceed state and federal safety requirements and will be designed in accordance with 49 CFR part 195. All persons and firms providing service to ONEOK are required to conduct their work in compliance with environmental conditions, permit authorizations, and applicable regulations and will be held accountable for their actions.

7.4.2 TRAINING AND UTILIZATION OF IN-STATE LABOR

Construction of the Project will require at least 100 workers in North Dakota.

7.4.3 ECONOMIES OF CONSTRUCTION AND OPERATION

The Little Missouri Lateral Project will be an additional North Dakota asset for ONEOK. In 2017, ONEOK paid ad valorem tax in excess of $375,000. Once constructed and in-service, the continued costs of maintenance and operation of the proposed pipeline are minimal.

7.4.4 USE OF CITIZEN COORDINATING COMMITTEES

ONEOK, Inc. has established and maintains a good relationship with the local residents through its long-term regional presence operating various assets in the area. Through these relationships, ONEOK, Inc. has maintained several grassroots communication channels to inform local residents regarding the developments associated with the Project. ONEOK, Inc. will continue to maintain contact with local government officials. Through this contact, Project-related information will be exchanged and should concerns arise, ONEOK, Inc. will work with officials to resolve those issues.

7.4.5 COMMITMENT OF PORTION OF TRANSMITTED PRODUCT FOR USE IN STATE

The proposed Project will originate at Targa's Little Missouri Natural Gas Processing Plant and deliver NGLs to ONEOK's proposed Demicks Lake Pipeline Project (PU-18-399) and ONEOK's Garden Creek to Riverview NGL Pipeline (PU-11-066). The products handled, transferred, and shipped will be delivered to markets located out of the state.

7.4.6 LABOR RELATIONS

ONEOK maintains positive labor relations with its staff and contract work force and does not anticipate encountering any adverse labor relations on this Project. ONEOK is an equal opportunity employer committed to diversity and inclusion. Additionally, the labor market in the region is generally supportive of the oil and gas industry.

7.4.7 POLICIES AND COMMITMENTS TO LIMIT ENVIRONMENTAL IMPACT

ONEOK is committed to protecting the environment during all phases of construction of the Project. Before construction, environmental field surveys of the pipeline route were conducted to identify wetlands, streams, threatened and endangered species and their habitat, cultural resources, agricultural or forested areas, and special land-use designations. In consultation with state and federal agencies, ONEOK developed mitigation plans to protect these sensitive areas during and after construction. Once the pipeline is operational, ongoing monitoring and maintenance activities will be implemented to ensure the safe operation of the pipeline.

7.4.8 COORDINATION OF FACILITIES

As noted previously, the Project originates at Targa's Little Missouri Natural Gas Processing Plant in McKenzie County and will tie in with ONEOK's planned Demicks Lake Pipeline (PU-18-399) and ONEOK's Garden Creek to Riverview NGL Pipeline (PU-11-066), which will then transport NGLs to the midcontinent for additional processing. ONEOK's affiliate, ONEOK Rockies Midstream, L.L.C., owns and operates several gas processing plants in North Dakota (Garden Creek I and II, Bear Creek, Lonesome Creek, Stateline I and II, Grassland, and Demicks Lake). ONEOK provides take-away capacity via pipeline for the NGLs produced at the plants. Coordination of the proposed Project with existing facilities is anticipated to be seamless, as the proposed Project will provide additional take-away transportation capacity of NGLs in North Dakota.

7.4.9 MONITORING IMPACTS

ONEOK has established and maintained positive landowner and community relationships throughout the region through its open communication and commitment to corporate citizenship standards that are based on integrity. ONEOK monitors landowner concerns through its ROW department and responds to all reasonable requests. In a similar manner, ONEOK monitors community concerns and responds to all reasonable concerns brought to its attention by local community leaders. ONEOK will select a contractor for construction of the Project and will coordinate the oversight responsibilities for construction activities with this contractor throughout the Project. Environmental responsibilities will be coordinated in the same manner.

During operation, pipeline control personnel provide 24-hour electronic surveillance of ONEOK pipeline operations. In addition, ONEOK uses a number of inspection methods and processes to mitigate corrosion and minimize the potential for third-party damage to the pipelines. These include regular ROW patrols, inspections of cathodic protection equipment, and coordination with the North Dakota One-Call Center to mark the pipeline or to be present during excavation to ensure the public's safety and the integrity of the pipeline.

ONEOK designs, constructs, operates, and maintains its pipeline systems to ensure safety and reliability. If a leak were detected, the company is able to stop the flow of product remotely from its control center. ONEOK continues to establish and maintain contact with appropriate fire, police, and other public officials. This communication establishes the responsibility and resources of each government organization that may respond to a pipeline emergency. ONEOK also acquaints officials with the abilities of the pipeline operator when responding to an emergency. In all cases, emergency responders are directed to protect people first, then the environment next, and then property.

7.4.10USING EXISTING AND PROPOSED ROWS AND CORRIDORS

ONEOK selected the Project alignment to maximize the use of existing utility corridors. Of the 10.8-miles of the Route, approximately 89 percent (9.6 miles) is co-located with existing utilities.

7.4.11OTHER EXISTING OR PROPOSED TRANSMISSION FACILITIES

ONEOK, Inc. is one of the largest publicly traded master limited partnerships and is a leader in the gathering, processing, storage, and transportation of natural gas and NGLs in the U.S. The company operates NGLs systems connecting NGL supply in the Rocky Mountain and Mid-Continent regions with key market centers. In addition, the company owns and operates:

- 7,100 miles of NGL gathering pipelines;
- 4,370 miles of NGL distribution pipelines;
- 26 billion cubic feet of storage capacity;
- 7 NGL fractionators;
- 8 NGL product terminals; and
- 840,000 bpd of net NGL fractionation capacity.

ONEOK, Inc. has owned and operated natural gas pipelines since 1906.

8.0 OTHER FACTORS CONSIDERED

8.1 PUBLIC HEALTH, WELFARE, NATURAL RESOURCES, AND THE ENVIRONMENT

Refer to Sections 5.0, 7.1, 7.2, 7.3, 7.4.3, 7.4.7, and 7.4.9.

8.2 TRANSMISSION TECHNOLOGIES AND SYSTEMS DESIGNED TO MINIMIZED ADVERSE ENVIRONMENTAL EFFECTS

The Project design is consistent with existing pipeline technologies. A variety of measures will be taken to avoid, minimize, or mitigate impacts to sensitive resources, including implementing trenchless construction (i.e., HDD, bores), narrowing ROW widths, rerouting, and route deviations, etc. Trenchless techniques avoid the need for open cut trenches, thereby minimizing environmental impacts and eliminating ground-level surface hazards in sensitive areas along the route. BMPs will be used to minimize impacts from clearing, trenching, and reclamation of the construction ROW. Potential impacts to environmentally sensitive areas will be either avoided through rerouting, HDD/bore, or by protecting sites during construction.

ONEOK's Construction Mitigation and Restoration Plan (CMRP) will prescribe construction techniques and mitigation measures that will be employed to minimize the effects of construction on environmental resources. Mitigation measures are also discussed in Section 9 of this application. The Project does not include new energy conversion or transmission technologies that are expressly designed to minimize adverse environmental effects.

8.3 BENEFICIAL USES OF WASTE ENERGY FROM A PROPOSED ENERGY CONVERSION FACILITY

The Project does not involve new energy conversion facilities; as such, the potential for beneficial uses of waste energy from a proposed energy conversion facility does not apply to the Project.

8.4 UNAVOIDABLE ADVERSE DIRECT AND INDIRECT ENVIRONMENTAL EFFECTS

Unavoidable adverse direct and indirect environment effects will be temporary, short-term, and will be minimized to the extent practicable. The Project has been co-located and will run parallel to existing infrastructure (e.g., pipelines, utility corridors, railways) to the extent possible. ONEOK will implement measures to mitigate potential impacts to resources such as vegetation, wildlife, agricultural, transportation, and noise levels. Refer to Section 9 for a complete description of mitigation measures.

8.5 CORRIDOR OR ROUTE ALTERNATIVES DEVELOPED DURING THE HEARING THAT MINIMIZE ADVERSE EFFECTS

A description of the alternatives analyzed in the design of the Project is presented in Section 4 of this application. The Project Corridor and Route have been designed based on landowner engagement, stakeholder outreach, civil surveys, environmental surveys, and constructability analysis, among other

considerations. Reroutes of varying lengths and for a variety of reasons have been made to minimize adverse effects to sensitive areas. ONEOK will continue to adjust the Route based on additional constructability concerns and necessary feature avoidance. ONEOK will participate in the hearing process and will address any alternatives developed during the process, as applicable.

8.6 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF NATURAL RESOURCES IF DESIGNATED

The Project was designed to co-locate the pipeline within existing linear infrastructure (i.e., pipeline, utility, road, and railroad corridor) to the extent practicable (89 percent). This design minimizes irreversible or irretrievable commitments of natural resources due to conversion of greenfield to industrial uses and optimizing existing fragmentation. Generally, all areas impacted by pipeline construction will return to previous land use. In isolated areas, long-term vegetation impacts will result from converting wooded areas to herbaceous/scrub shrub areas to comply with federal pipeline regulations. This conversion of vegetation ensures safety and integrity of the pipeline and facilitates aerial inspections of the pipeline.

The Project will not result in an irreversible and irretrievable commitment of natural resources.

8.7 DIRECT AND INDIRECT ECONOMIC IMPACTS OF THE FACILITY

Estimated total spending for construction of the Project is $15 million. This estimate includes construction of the pipeline, engineering, and real estate services, easement payments, mitigation payments, and other support services. Construction outputs for the Project include employment, labor income, and production spending. The Project is expected to employ at least 100 workers for construction of the Project. These economic impacts will be realized during construction in 2019 and throughout operations and maintenance annually starting in 2019.

North Dakota imposes taxes on sales, use, gross receipts and lodging, and individual income. Local governments may impose taxes on the same tax bases; however, most unincorporated areas do not impose local option sales taxes. The Project will contribute directly and indirectly to tax bases at the state and local levels.

Construction of this Project would provide firm, reliable service for an additional 20,000 bpd of NGL and provide a critical transportation link between the Targa Little Missouri Natural Gas Processing Plant and ONEOK's NGL transmission system for delivery to facilities in the Mid-Continent and Gulf Coast for additional processing prior to distribution to various markets.

8.8 EXISTING PLANS FOR OTHER DEVELOPMENTS IN THE VICINITY

ONEOK, Inc. the parent company of ONEOK Bakken Pipeline, L.L.C., is the largest independent operator of natural gas gathering and processing facilities in the Williston Basin, with a natural gas gathering system of more than 38,000 miles and more than 3 million net acres where production is dedicated to its systems. ONEOK's 10-year plan describes the company's plans for future development in the region.

As noted previously, this Project will terminate at an interconnection with ONEOK's planned Demicks Lake Pipeline (PU-18-399) and ONEOK's Garden Creek to Riverview NGL Pipeline (PU-11-066). An application for the Demicks Lake Pipeline project was submitted to the NDPSC in November 2018 and is currently

under review. In addition to this Project, ONEOK is aware of several other current or foreseeable projects in McKenzie County, North Dakota, undergoing NEPA review, or applications are being developed to meet state permitting requirements. These projects include three new NGL pipelines, two crude oil gathering lines, one fiber optic cable, two pipeline conversion projects (minimal new construction), three natural gas processing plants or plant expansions, and one residential subdivision outside of Watford City. In addition, according to the NDIC – Oil and Gas Division (NDIC 2019), there are 25 active drilling rigs in McKenzie County.

Based on a review of the scope and location of present and foreseeable projects, ONEOK has concluded that this Project is not in conflict with any known or proposed developments planned in the area.

8.9 RECYCLING OF CONVERSION BYPRODUCTS AND EFFLUENTS

Recycling of conversion byproducts and effluents is not applicable to this type of project.

8.10 POLICIES AND COMMITMENTS TO LIMIT ENVIRONMENTAL IMPACT

ONEOK is committed to conducting its business in compliance with all applicable environmental laws and regulations. These laws, regulations, and standards are designed to safeguard the environment, human health, wildlife, and natural resources.

ONEOK will conduct its activities with the objectives of providing a healthful and safe workplace for its employees and preventing accidents and environmental incidents. All persons and firms providing service to ONEOK are required to conduct their work in compliance with environmental conditions, permit authorizations, and applicable regulations and will be held accountable for their actions in that regard.

8.11 ENERGY CONSERVATION THROUGH USE OF A PRIMARY ENERGY SOURCE OR RAW MATERIAL

ONEOK is committed to energy conservation through management of energy costs and energy usage in the operations of the Project.

8.12 NON-RELOCATION OF RESIDENTS

No residents will be relocated as a result of the Project.

8.13 DEDICATION OF AN AREA ADJACENT TO THE FACILITY FOR LAND USE SUCH AS RECREATION, AGRICULTURE, OR WILDLIFE MANAGEMENT

ONEOK does not own property adjacent to the proposed Project suitable for recreation, agricultural, or wildlife management purposes. The current land use of properties adjacent to the Project is primarily agricultural/range land (see Exhibit B.3).

The Project will result in the development of a buried pipeline and other industrial type ancillary facilities. No land is being acquired for the Project. Therefore, no areas are proposed for dedication.

8.14 SECONDARY USES OF APPROPRIATE ASSOCIATED FACILITIES FOR RECREATION AND THE ENHANCEMENT OF WILDLIFE

The Project will result in the development of a buried pipeline and other industrial type ancillary facilities. As such, these developments are not typically suitable for recreational or wildlife application.

8.15 PROBLEMS RAISED BY FEDERAL, STATE, AND LOCAL AGENCIES

ONEOK provided Project-specific notification to various federal, state, and local agencies; through this notification process, these agencies have the opportunity to identify possible sensitive environmental resources within the study area and any related agency concerns. Section 6 of this application summarizes the consultations that have taken place to date. ONEOK is actively working with federal, state, and local agencies and will address problems that are raised. A complete record of these agency communications is provided in Exhibit D. ONEOK will continue to file agency responses with the Commission as they are received.

9.0 MITIGATION MEASURES

ONEOK has developed, or is in the process of developing, several Project control documents that will be utilized during construction activities to minimize and mitigate impacts to environmental resources. Draft copies of these plans have been included in Exhibit G of this filing. These plans will be finalized prior to construction and incorporated into contract documents and enforced by ONEOK:

- CMRP
    - Comprehensive control document that describes general mitigation measures related to erosion and sedimentation, stream/wetland crossings, highway/rail crossings, dewatering and hydrostatic testing, and revegetation.
- Migratory Bird Plan
    - Describes measures to be taken to ensure no impacts occur to federally protected migratory birds and eagles/raptors or their habitat.
- SWPPP
    - Outlines construction stormwater management and erosion/sediment controls.
- Spill Prevention, Control, and Countermeasure Plan
    - Outlines spill prevention and BMPs and provides details on spill response and notification procedures in the event of a spill.
- HDD Inadvertent Release Control and Mitigation Contingency Plan
    - Provides measures to minimize the potential for release of drilling mud during HDD operations. Establishes procedures and responsibilities for containment/cleanup in the event of an inadvertent release.
- Unanticipated Discoveries Plan (UDP)
    - Provides response measures to be followed in the event of a discovery of cultural resources or human remains.
- Revegetation Plan
    - Describes revegetation and permanent restoration of disturbed ROW. Appropriate seed mixes will be incorporated into this plan. This plan also addresses control of noxious and invasive weeds.
- Weed Management Plan
    - Outlines methods to control state- and county-listed noxious weeds. This plan will be submitted to the McKenzie County Weed Management District for review and approval prior to commencing construction.
- Dust Control Plan
    - Outlines methods of controlling fugitive dust emissions caused by construction activities/soil exposure.
- Ecozone Reclamation Plan
    - Delineates Project segments into “Ecozones” based on pre-construction soil sample. This plan provides guidance on site-specific restoration based on field collected data.

The plans, as they relate to specific resources, are referenced in the following sections. In addition to these plans, the Project will be subject to permits from various federal, state, and local agencies (environmental permits are discussed in Section 6 and a summary table is included as Exhibit F). To further ensure compliance with permits, plans, obligations, and commitments, ONEOK will employ one or more EIs during the Project. The EI(s) will be responsible for monitoring construction activities and will provide daily reports to ONEOK staff.

9.1 HUMAN ENVIRONMENT

ONEOK will require its construction contractor to clean up, on a daily basis, all personal litter, bottles, and paper deposited by ROW preparation and construction crews. Waste and scrap that is the product of pipeline construction will be removed and properly disposed of in accordance with applicable regulations before construction is completed. To the maximum extent practicable, ONEOK will minimize noise and dust resulting from construction near residential areas.

Paved roads and railroad crossings will be bored; therefore, use of these facilities will not be disrupted as a result of the Project. Gravel roads will be open cut or bored. Open cutting a road will temporarily close it to traffic; however, the road network throughout the Project Area is sufficient that suitable alternative routes are readily available to prevent any significant delays in traffic. Furthermore, the trench can be plated to allow for traffic crossing when construction is not active (i.e., after the end of the work day).

ONEOK will obtain applicable permits prior to conducting road crossings. Temporary signs will be posted at each crossing as appropriate to alert motorists to construction activity. Paved roads and railroads will be bored, which will minimize interference with traffic flow caused by construction activities.

As noted above, ONEOK has developed, or is in the process of developing, several Project control plans, which will be utilized during construction activities to minimize and mitigation impacts. Drafts of several of these plans are included in Exhibit G.

9.2 TERRAIN AND GEOLOGICAL RESOURCES

ONEOK will, to the maximum extent practicable, restore the area affected by pipeline construction to its pre-construction condition. Restoration will be compatible with the safe operation, maintenance, and inspection of the pipeline. Measures such as slope breakers, erosion control blankets, and re-vegetation will be employed to maintain the stability of slopes along the ROW. No crown of backfill material will be left over the trench in wetlands.

9.3 SOILS

Pipeline construction activities such as clearing, grading, trench excavation, and backfilling, as well as the movement of construction equipment along the ROW, may result in impacts on soil resources. Clearing removes protective cover and exposes soil to the effects of wind and precipitation, which may increase the potential for soil erosion and movement of sediments into sensitive environmental areas. Grading and equipment traffic may compact soil, reducing porosity and percolation rates, which could result in increased runoff potential. Trench excavation and backfilling could lead to a mixing of topsoil and subsoil and may introduce rocks to the soil surface from deeper soil horizons.

ONEOK will minimize or avoid these impacts to soils by implementing the mitigation measures described in its CMRP. The CMRP will be included in contract documents and enforced as such throughout the duration of the Project. Temporary erosion and sedimentation control measures may include installation of silt fence, straw bales, slope breakers, trench breakers, erosion control fabric, and mulch.

To minimize potential impacts to soil productivity, topsoil will be segregated during trench excavation in agricultural land, unsaturated wetlands, and if applicable, other areas where soil productivity is an important consideration. Unless otherwise requested by the landowner, topsoil in cropland will be

removed to a maximum depth of 12 inches from the trench and spoil storage area and stored separately from the trench spoil. After the trench is backfilled, topsoil will be returned to its approximate original location in the soil horizon.

Compaction of agricultural soils will be minimized by restricting construction activities during periods of prolonged rainfall. Where unacceptable levels of compaction occur in agricultural lands, a chisel plow or other deep tillage equipment will be utilized to loosen the soil during restoration.

ONEOK will retain EIs to monitor the contractor's compliance with applicable requirements to protect soil resources during construction of the Project.

Recognizing the unique terrain and soils within portions of the Project Corridor, ONEOK commissioned a baseline analysis of the soils throughout the Project area by a professional soil scientist and restoration contractor. The purpose of the study was to identify existing soil conditions across the entire Project length, highlight problem areas, plan construction controls, and design restoration measures in a more site-specific manner. The results of these studies were used to an "Ecozone Reclamation Plan" which is included in Exhibit G. This Plan should provide valuable information to ONEOK to assist in targeted, site-specific restoration.

Pending final construction design, geotechnical investigations may be initiated at certain HDD locations to assist in planning the set-up, profile, and completion of boring efforts and to minimize risk for unexpected conditions during construction.

9.4 VEGETATION AND WILDLIFE

ONEOK will clear the ROW to the extent necessary to assure suitable access for construction, safe operation, and maintenance of the pipeline. In areas that require permanent revegetation, ONEOK will specify appropriate seed mixes, application rates, and seeding dates, taking into account recommendations of appropriate state and federal agencies and landowner requests. In non-agricultural areas, vegetation cleared from extra workspace will be allowed to revegetate after construction depending on arrangements with the landowner. Consequently, significant changes in cover types are not anticipated.

ONEOK will take appropriate precautions to protect livestock and crops from being affected by construction. Operation of the proposed pipeline is not anticipated to significantly affect terrestrial wildlife, fisheries resources, or other aquatic species. Shelter belts and trees will be protected and restored by ONEOK to the extent practicable in a manner compatible with the safe operation, maintenance, and inspection of the pipeline.

Noxious Weeds: The Project Corridor intersects 42 noxious weed patches of which 17 are intersected by the Route (see Exhibit C). To mitigate the spread of noxious weeds, equipment leaving infested areas will be visually inspected prior to leaving the area, and vegetation and soils will be cleaned from vehicles and equipment. The vehicles and equipment will be cleaned to remove remaining soils and vegetation prior to entering uninfected tracts. ONEOK will also comply with its Weed Management Plan (see Exhibit G), which will be submitted to the McKenzie County Weed Board for review and approval prior to commencing construction.

Trees and shrubs: ONEOK will comply with the NDPSC's tree and shrub mitigation specifications. A formal tree and shrub inventory was initiated in fall 2018 and an addition inventory will be conducted prior to construction to cover the portion of the Route which was not surveyed (mileposts 0.15 – 0.35). Results from these inventories will provide a baseline for tree and shrub mitigation for the Project, which ONEOK assumes will be a condition of the NDPSC's Order. See Section 5.4 for more information.

Additional field work may occur prior to construction as the workspace is finalized and pending final regulatory authorization of the Project. The clearing or removal of trees or shrubs will be done selectively and minimally, in a manner that minimizes the disturbance to woody vegetation and in compliance with NDPSC's specifications. The replacement of trees and shrubs will be based upon actual impacts due to construction, will meet the 2:1 ratio specified, and will be fully documented.

Wetlands and Waterbodies: ONEOK will minimize impacts to wetland and waterbodies by minimizing workspace through these features and by utilizing low-impact crossing methods, such as HDD, where appropriate. Furthermore, ONEOK will conduct all regulated crossings in compliance with the USACE NWP 12. After completion of waterbody crossings, ONEOK will revegetate disturbed stream banks in accordance with the CMRP, Revegetation Plan, and requirements of applicable state or federal permits. During construction in unsaturated wetlands, topsoil will be segregated from the trench line to preserve natural sources of seed and rootstock. After the trench is backfilled, the topsoil will be replaced to facilitate the natural revegetation process. Features will be returned to their pre-construction condition and contours.

Whooping crane: If a whooping crane is sighted within the construction corridor, or if the USFWS notifies ONEOK of a whooping crane sighting within one mile of the construction ROW, ONEOK would suspend construction activities, and work would not resume until the birds have left the area. Any whooping crane sightings would be immediately reported to the USFWS and the NDGFD. As part of pre-construction activities, ONEOK would conduct environmental training with contractors and construction crews, providing them information on proper identification of the species and correct procedures regarding a sighting. In addition, to avoid long-term impacts on whooping crane migratory stopover habitat, wetlands that are crossed by the Project would be restored to pre-construction contours. With these conservation measures in place, Project activities are not anticipated to have adverse impacts on the whooping crane.

Rufa red knot: If red knots are sighted during construction or if the USFWS notifies ONEOK of a red knot sighting within 1 mile of construction activities, ONEOK would suspend construction activities, and work would not resume until the birds have left the area. Any sightings within the construction corridor would be immediately reported to the USFWS. As part of pre-construction activities, ONEOK would conduct environmental training with contractors and construction crews, providing them information on proper identification of the species and correct procedures regarding a sighting. In addition, to avoid long-term impacts on the red knot's migratory stopover habitat, wetlands crossed by the Project would be restored to pre-construction contours. With these conservation measures in place, Project activities are not anticipated to have adverse impacts on the rufa red knot.

Dakota skipper: ONEOK has designed its workspace to completely avoid all patches of suitable Dakota skipper habitat that were delineated during 2018 field surveys (see Section 5.3 and Exhibit C). In addition, ONEOK will install fencing and signage along the construction ROW to prevent accidental intrusions into these areas. Also, all work in areas adjacent to the delineated suitable habitat will be conducted outside the species' flight period (generally, two weeks at the end of June/beginning of July). ONEOK would work

directly with the USFWS to determine the exact start and end dates of the flight period. With these measures in place, Project activities will not have adverse impacts on Dakota skippers.

Bald and Golden Eagles: ONEOK has not identified any known eagle nest locations based on its consultations with USFWS and NDPRD, as well as its 2018 field surveys. ONEOK sent a specific request for known eagle nest data to NDGFD on February 14, 2019 with the current Route (a response is pending). ONEOK will work with the USFWS and other agencies as necessary if an active eagle nest is identified within 1 mile of the Project.

Migratory Bird Treaty Act: The commonly observed timeframe for avian migration in North Dakota is February 1st to July 15th. Construction activities for the proposed Project are planned to begin in April 2019. Based on the Project's schedule, construction activities are anticipated to occur during the recognized migration/breeding season. ONEOK will develop and implement a mitigation plan which may include conducting surveys for nesting birds prior to the commencement of ground disturbing activities and implementing avoidance and monitoring measures of any active nests.

To the extent feasible, ONEOK will adjust Project execution with the objective of meeting the goals listed above.

9.5 LAND USE

ONEOK will obtain and comply with applicable county permits and zoning and land use regulations. Permits may include, but are not limited to, grade and fill permits, ditch crossing permits, and road and utility permits. ONEOK will retain one or more EIs to monitor compliance with environmental conditions of county or township permits.

ONEOK will repair surface drains and drainage tiles disturbed during ROW preparation, construction, and maintenance activities. ONEOK will repair private roads and farm lanes damaged when moving equipment or when obtaining access to the ROW. ONEOK will repair or replace fences and gates removed or damaged as a result of ROW preparation, construction, or maintenance activities.

The Project will be installed at a minimum depth of 48 inches from the surface contour to minimize the potential for environmental damage resulting from deep tillage activities unless modified to accommodate special construction issues at the site. Upon installation of the pipeline, all Project locations will be returned to their original pre-construction contours and land use to the extent feasible.

9.6 CULTURAL RESOURCES

Consideration for impacts to cultural resources have occurred throughout the course of the Project. Avoidance is the preferred method of treatment for historic properties. As discussed in Sections 5.1 and 6.8, ONEOK conducted Class III inventory surveys throughout the Project Corridor and concluded the Project will not have an adverse impact on NRHP-eligible cultural resources. ONEOK submitted its Class III cultural resource report to the North Dakota SHPO and a request for concurrence on its finding on February 15, 2019. A response is pending. Also as noted previously, the 2014 cultural resource survey for the Targa Lateral Project did not identify any cultural sites between mileposts 0.15 – 0.35. ONEOK will submit a follow-up consultation request to SHPO specific to this portion of the Route in the near future and file the SHPO response upon receipt.

There is always the potential during construction to encounter previously unknown cultural resources or human remains. As such, ONEOK has developed a Project-specific UDP (see Exhibit G), which describe the actions to be taken in the event a previously unrecorded paleontological or cultural resource site is discovered during construction activities, specifically calling for work to stop until the appropriate authority can be contacted. This plan will be incorporated into contract documents and implemented throughout the Project.

10.0 DEVELOPMENT

10.1 AREAS OF KNOWN GEOLOGIC INSTABILITY

As noted in Section 7.2.4, desktop analysis identified several landslide deposits within the Project Study Area; however, none of these areas are within the Project Corridor. Also as noted previously, the NDGS also identified three stream crossings where additional engineering review was recommended. Based on an internal review by ONEOK's engineering and constructability groups, ONEOK is proposing to cross each of these three features via bore or HDD which will avoid impacts.

Also as noted in Section 7.2.4, desktop analysis of the Project identified potential abandoned mine near milepost 10.8; however, based on a review of historic aerial imagery as well as field surveys conducted in 2018, it is assumed the actual location of the mine is approximately 0.25 mile to the southwest.

10.2 PRESENT AND FUTURE NATURAL RESOURCE DEVELOPMENT IN THE AREA

A small percentage of North Dakota is held in public ownership. Of the 45 million acres of land in the state, less than 3 million are owned in fee title by state and federal land management agencies. Most of these agencies work in cooperation with private producers in managing these lands. For example, the NDGFD leases certain tracts of wildlife management areas for grazing, haying, and food plots. The USFS manages land for multiple uses and the sustained yield of renewable resources such as water, forage, wildlife, and recreation, as well as industry such as oil and gas development.

As discussed in Section 7.1.1, there are no national parks, national memorial parks, national historic sites and landmarks, national wilderness areas, or national monuments located within the Project Corridor. There are no designated or registered state parks, sites, monuments, or nature preserves along the Project Corridor. There are no county parks, recreational areas, municipal parks, or parks owned or administered by other governmental subdivisions crossed by the route. As such, there will be no direct impacts to national parks, sites, monuments, or wilderness.

As discussed in Section 7.2.1, there are no federally-managed wildlife areas; wild, scenic, or recreational rivers; or wildlife refuges within the study area, Project Corridor, or Route. The land use along the pipeline route is primarily in agricultural production with a significant number of oil wells and other pipeline systems and associated infrastructure in the area. As the pipeline is a buried utility, surface land use will return to preexisting conditions once the pipeline is installed.

Other known development projects in the vicinity of the Project are discussed in Section 8.8 of this application. ONEOK is not aware of any federal, state, or local natural resource development plans within the Project Corridor or Study Area.

11.0 QUALIFICATIONS OF PREPARERS

Eddie Zedaker
Environmental Engineer
ONEOK, Inc.

Degree: B.S. Biosystems Engineering, Auburn University

Mr. Zedaker is an Environmental Project Manager with 7 years of environmental planning experience in a wide range of development projects. He has both performed and managed the assessment, siting, permitting, and construction of a wide range of federal, state, and municipal infrastructure projects throughout the mid-west and southeast regions. Mr. Zedaker manages ONEOK's third party environmental and cultural resource consultants and serves as a coordinator for environmental and other necessary project permits.

Blake Holland
Project Manager
ONEOK, Inc.

Degree: B.S. Mechanical Engineering, University of Oklahoma

Mr. Holland has been managing pipeline related projects in various regions which ONEOK operates in over the past 5 years. As project manager for the Little Missouri Lateral Project, Mr. Holland manages and coordinates activities of the project team to execute the Project. Mr. Holland is responsible for oversight of the entire planning, siting, construction, and restoration process. He is tasked with meeting the commercial objectives and schedule of the project while maintaining strict compliance with all federal, state, and local regulations.

Paul Hartzheim, M.S.
Senior Environmental Analyst
Merjent, Inc.

Degree(s): M.S. Water Resources Science, B.S. Environmental Science, University of Minnesota-Twin Cities

Mr. Hartzheim is a Senior Analyst and Project Manager with 13 years of environmental consulting experience serving the pipeline and renewables industries. He has served as Project Manager, Deputy Project Manager, and resource specialist on numerous projects in over 20 states. Mr. Hartzheim's responsibilities have included preparation of federal, state, and local permit applications, State Public Utility Commission filings, construction and industrial SWPPPs, National Pollutant Discharge Elimination System applications, Soil Erosion and Sediment Control Plans, Environmental Mitigation Plans; and coordination of state and federal agency consultations. Mr. Hartzheim has also assisted in data collection, interpretation and analysis, developing and conducting environmental training modules, and coordinating and managing field survey efforts and EIs.

Maddy Krumwiede, PMP
Project Manager/Senior Environmental Analyst
Merjent, Inc.

Degree(s): M.B.A, North Dakota State University; B.S. Civil Engineering, North Dakota State University

Ms. Krumwiede is a Project Manager and Senior Analyst with Merjent with 9 years of experience in the water resources and environmental regulation fields. Her experience in the environmental field includes project management, interpretation and analysis of project-related data/maps to evaluate permit needs and form strategies during the planning stages of projects, coordinating environmental field surveys, conducting environmental training, performing compliance inspections, and EI coordination. Ms. Krumwiede has a variety of permitting experience including preparation of federal, state, and local permit applications, National Pollutant Discharge Elimination System applications and SWPPPs, preparation of Environmental Assessments, and coordination with local, state, and federal units of government.

Lucas Bicknell, M.S.
Environmental Analyst
Merjent, Inc.

Degree(s): M.S. Environmental and Conservation Science, North Dakota State University; B.S. Zoology: Wildlife and Fisheries Management, North Dakota State University

Mr. Bicknell is an Environmental Analyst with Merjent with 6 years of experience in the water resources and environmental regulation fields. His experience in the environmental field includes project management, interpretation and analysis of regulations, coordinating environmental field surveys and inspections, conducting environmental training and compliance inspections. Mr. Bicknell has permitting experience in 38 states at the federal, state, and local levels to include construction and industrial National Pollutant Discharge Elimination System applications and SWPPPs, Aboveground Storage Tank and Spill Prevention, Control, and Countermeasure regulations, and coordination with local, state, and federal units of government.

12.0 BIBLIOGRAPHY

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Exhibit A

Engineering Documents

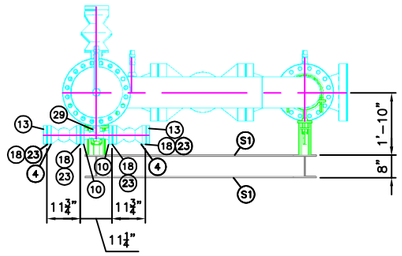
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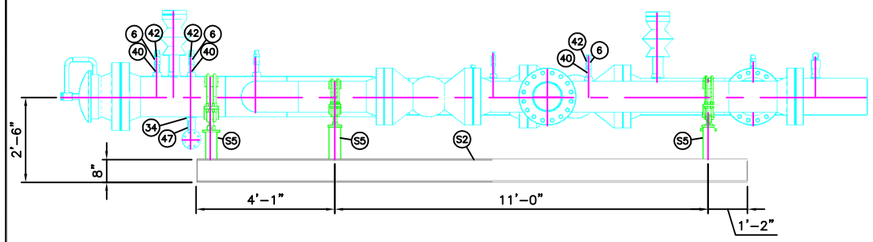
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S2	2	WBX31	16'-3"	1007.50
TOTAL WEIGHT: 1379.50				

SUPPORT BILL OF MATERIAL

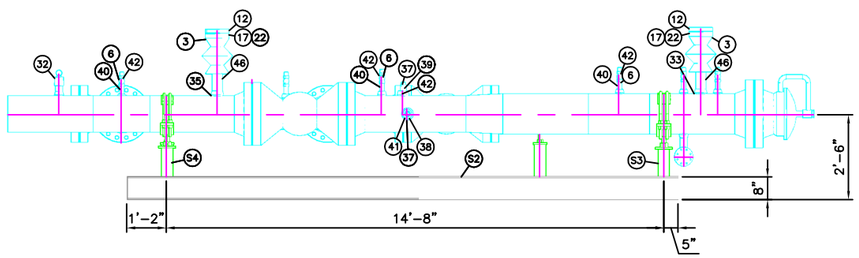
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S5	2	EZ-LINE 510-B-10"	1'-10"	PIPE SUPPORT



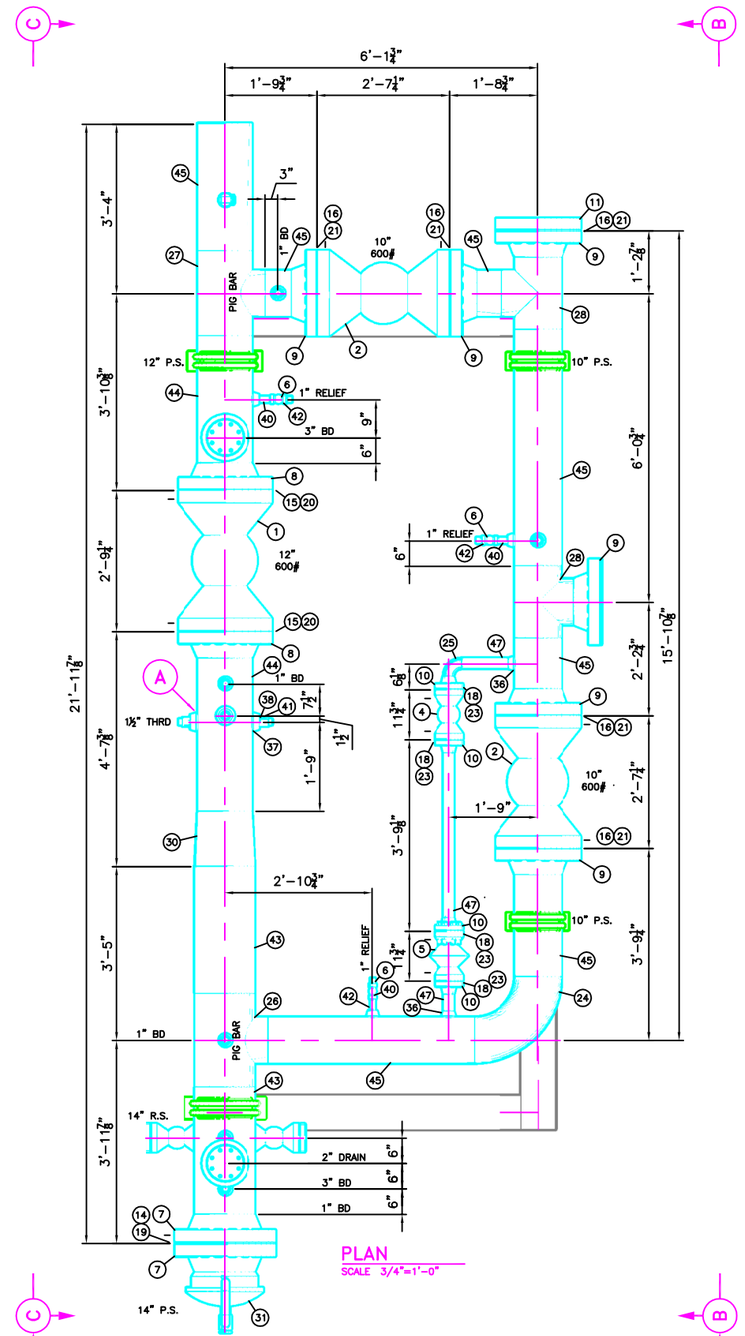
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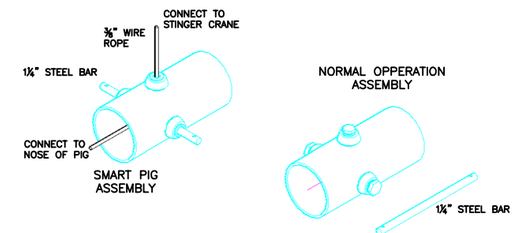
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ELEVATION C
SCALE 1/2"=1'-0"



PLAN
SCALE 3/4"=1'-0"



DETAIL A
SCALE 1"=1'-0"

PIPING BILL OF MATERIAL

MARK	SIZE	QTY	DESCRIPTION	LENGTH
1	12"	1	VALVE, BALL, RFFE, ANSI 600 SEE DWG. STD-M-5000 & STD-M-5001(MOTOR OPERATOR)	2'-9"
2	10"	2	VALVE, BALL, RFFE, ANSI 600 SEE DWG. STD-M-5000 & STD-M-5001(MOTOR OPERATOR)	2'-7"
3	3"	2	VALVE, PLUG, RFxWE, ANSI 600	1'-2"
4	2"	3	VALVE, BALL, RFFE, ANSI 600, w/ VITON OR FLOUROCARBON SEALS	1½"
5	2"	1	VALVE, PLUG, RFFE, ANSI 600	1½"
6	1"	9	VALVE, BALL, THREADED, 3000#, w/ VITON OR FLOUROCARBON SEALS	1⅝"
7	14"	2	FLANGE, ANSI 600, RFWN, SCH STD, F-42, MSS-SP-44	
8	12"	2	FLANGE, ANSI 600, RFWN, SCH STD, F-42, MSS-SP-44	
9	10"	6	FLANGE, ANSI 600, RFWN, SCH STD, ASTM A-105	
10	2"	6	FLANGE, ANSI 600, RFWN, SCH XH, ASTM A-105	
11	10"	1	FLANGE, ANSI 600, RF BLIND, SCH STD, ASTM A-105	
12	3"	2	FLANGE, ANSI 600, RF BLIND, SCH STD, ASTM A-105	
13	2"	2	FLANGE, ANSI 600, RF BLIND, SCH XH, ASTM A-105	
14	14"	1	GASKET, 1/8" THK, 600LB RF SPIRAL WOUND TYPE 304 FLEXIBLE GRAPHITE FILLER, 1/8" CENTERING RING, FLEXITALLIC STYLE CGI OR EQUAL	
15	12"	2	GASKET, 1/8" THK, 600LB RF SPIRAL WOUND TYPE 304 FLEXIBLE GRAPHITE FILLER, 1/8" CENTERING RING, FLEXITALLIC STYLE CGI OR EQUAL	
16	10"	5	GASKET, 1/8" THK, 600LB RF SPIRAL WOUND TYPE 304 FLEXIBLE GRAPHITE FILLER, 1/8" CENTERING RING, FLEXITALLIC STYLE CG OR EQUAL	
17	3"	2	GASKET, 1/8" THK, 600LB RF SPIRAL WOUND TYPE 304 FLEXIBLE GRAPHITE FILLER, 1/8" CENTERING RING, FLEXITALLIC STYLE CG OR EQUAL	
18	2"	8	GASKET, 1/8" THK, 600LB RF SPIRAL WOUND TYPE 304 FLEXIBLE GRAPHITE FILLER, 1/8" CENTERING RING, FLEXITALLIC STYLE CG OR EQUAL	
19	1⅜"	20	BOLTS, STUD, ANSI 16.5 GR B-7 W/(2) HVY. HEX HD NUTS (14"-600#) 1 SET	10"
20	1⅛"	40	BOLTS, STUD, ANSI 16.5 GR B-7 W/(2) HVY. HEX HD NUTS (12"-600#) 2 SETS	9½"
21	1¼"	80	BOLTS, STUD, ANSI 16.5 GR B-7 W/(2) HVY. HEX HD NUTS (10"-600#) 5 SETS	9"
22	1"	16	BOLTS, STUD, ANSI 16.5 GR B-7 W/(2) HVY. HEX HD NUTS (3"-600#) 2 SETS	5"
23	⅝"	64	BOLTS, STUD, ANSI 16.5 GR B-7 W/(2) HVY. HEX HD NUTS (2"-600#) 8 SETS	4½"
24	10"	1	ELBOW 90, SCH STD, SML, ASTM A-234	
25	2"	1	ELBOW 90, SCH XH, SML, ASTM A-234	
26	14"x10"	1	TEE, REDUCING, SCH STD, SML, Y-42, MSS-SP-75 (WITH PIG BAR)	
27	12"x10"	1	TEE, REDUCING, SCH STD, SML, Y-42, MSS-SP-75 (WITH PIG BAR)	
28	10"	2	TEE, STR, SCH STD, SML, ASTM A-234	
29	2"	1	TEE, STR, SCH XH, SML, ASTM A-234	
30	14"x12"	1	REDUCER, CONC S/STD, SML, Y-42, MSS-SP-75	
31	14"	1	CLOSURE, ANSI 600, HORIZONTAL, STANDARD BORE, WELD IN, WITH VITON O-RINGS MFG.: HUBER-YALE FIG. 500, TWINLOCK, OR TDW D2000	
32	2"	1	KIDD PIG SIG, SCRAPER PASSAGE INDICATOR SEE DWG: STD-M-5000 FOR MANUAL OPERATIONS SEE DWG: STD-M-5001 FOR ELECTRONIC OPERATIONS	
33	14"x3"	1	WELDOLET, SCH XH, ASTM A-105	
34	14"x2"	1	WELDOLET, SCH XH, ASTM A-105	
35	12"x3"	1	WELDOLET, SCH XH, ASTM A-105	
36	10"x2"	2	WELDOLET, SCH XH, ASTM A-105	
37	12"x1½"	3	THREADOLET, 36-1, 3000# FS A-234	
38	1½"x1¼"	2	BUSHING, THREADED, HEX HEAD, 3000#	
39	1½"x1"	1	BUSHING, THREADED, HEX HEAD, 3000#	
40	1"	9	NIPOLET, SCH XXH, SML, GRADE B	4"
41	1¼"	2	PLUG, THREADED, HEX HEAD, 3000#	
42	1"	10	PLUG, THREADED, HEX HEAD, 3000#	
43	14"	1	14.000" O.D.x0.375" Wall Thickness, Specification: API 5L, Grade X-42, Sch. STD, Method of MFG: ERW, End Finish: PE&B, Lbs/ft: 63.37	5'-0"
44	12"	1	12.750" O.D.x0.375" Wall Thickness, Specification: API 5L, Grade X-42, Sch. STD, Method of MFG: ERW, End Finish: PE&B, Lbs/ft: 49.56	8'-0"
45	10"	1	10.750" O.D.x0.365" Wall Thickness, Specification: API 5L, Grade B, Sch. 40, Method of MFG: ERW, End Finish: PE&B, Lbs/ft: 40.48	12'-8⅜"
46	3"	1	3.500" O.D.x0.216" Wall Thickness, Specification: API 5L, Grade B, Sch. 40, Method of MFG: ERW , End Finish: PE&B, Lbs/ft: 7.58	1'-0"
47	2"	1	2.375" O.D.x0.218" Wall Thickness, Specification: API 5L, Grade B, Sch. 80, Method of MFG: SMLS, End Finish: PE&B, Lbs/ft: 5.02	5'-10"

P:\Standards\STD-P-2010

MK	DATE	REVISIONS	BY	AP.
1	8/6/17	REVISED NIPOLET BOM	MBC	TDS
2	5/3/18	REVISED BOM	MBC	TDS
3				
4				
5				
6				
7				

MK	DATE	REVISIONS	BY	AP.
8				
9				
10				
11				
12				
13				
14				

NOTICE
This drawing has not been published and is the sole property of ONEOK NGL PIPELINE LP, Box 29 Medford, Ok., and is loaned to the borrower for his confidential use only; and in consideration of the loan of this drawing the borrower promises and agrees that it shall not be reproduced, copied, loaned, or otherwise disposed of directly or indirectly, nor used for any purpose other than for which it is specifically furnished.

DWG. NO.	REFERENCE DRAWINGS

ONEOK
NGL PIPELINE, L.P.
P.O. BOX 29
MEDFORD, OK 73759

STANDARD 12"-600# TRAP W/ RIGHT HAND BYPASS DIMENSIONS & B.O.M.

DES.:		AFE#:	DATE: 1/9/17
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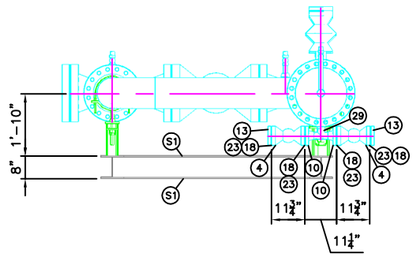
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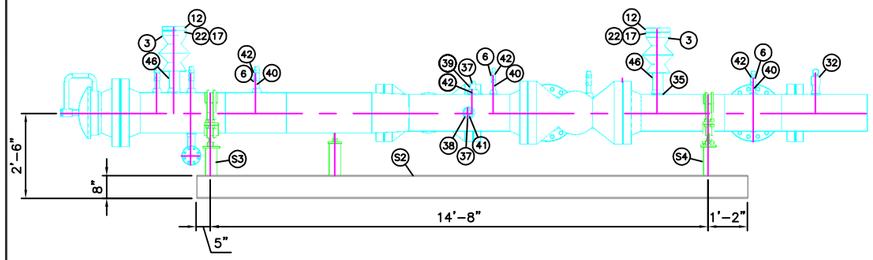
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S2	2	W8X31	16'-3"	1007.50
TOTAL WEIGHT: 1379.50				

SUPPORT BILL OF MATERIAL

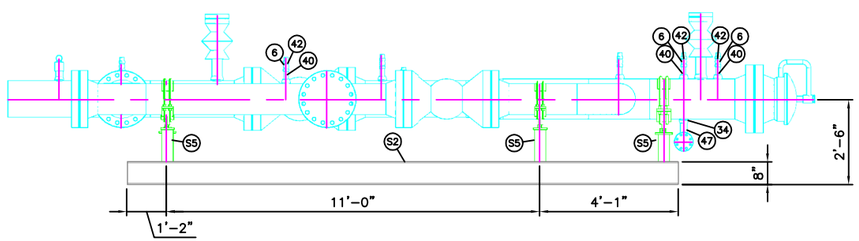
MARK	QTY	MODEL	LENGTH TO CENTERLINE OF PIPELINE	STYLE
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S5	2	EZ-LINE 510-B-10"	1'-10"	PIPE SUPPORT



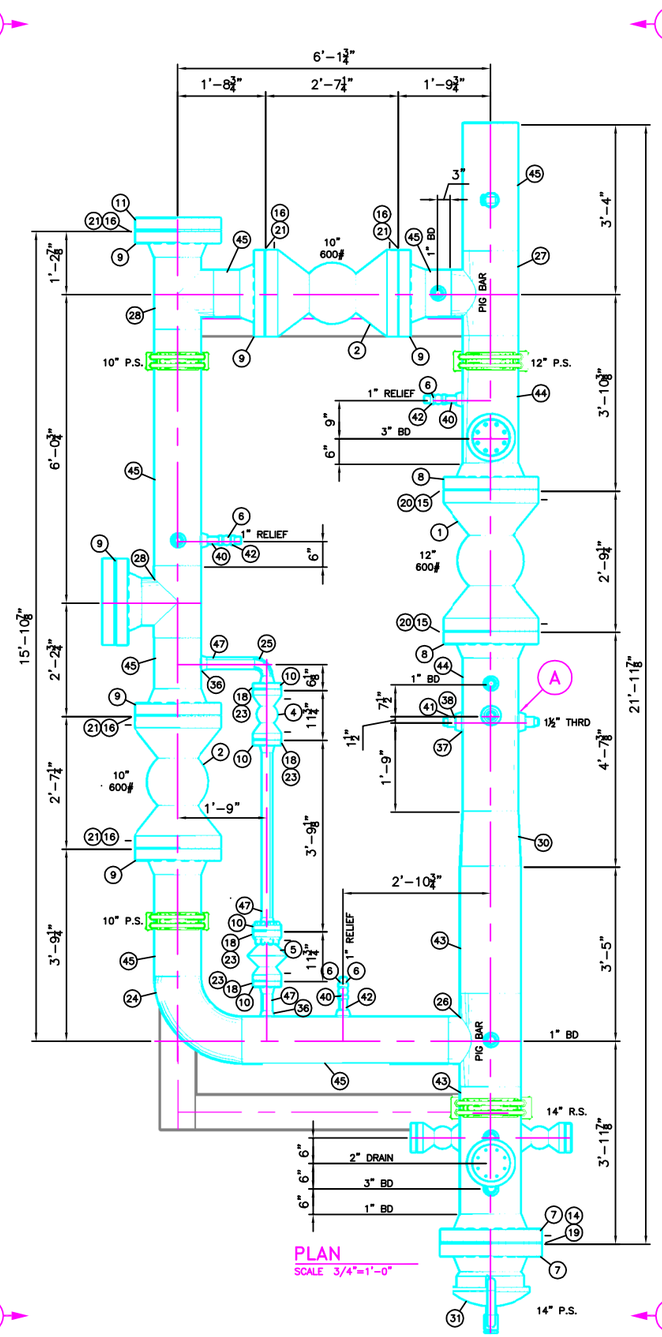
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ELEVATION B
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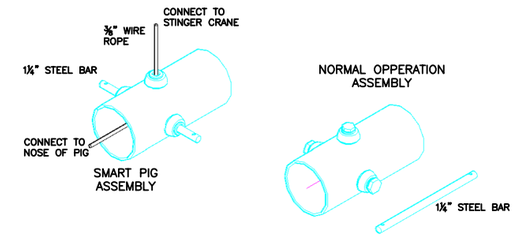
ELEVATION C
SCALE 1/2"=1'-0"



PLAN
SCALE 3/4"=1'-0"

PIPING BILL OF MATERIAL

MARK	SIZE	QTY	DESCRIPTION	LENGTH
1	12"	1	VALVE, BALL, RFFE, ANSI 600 SEE DWG. STD-M-5000 & STD-M-5001(MOTOR OPERATOR)	2'-9"
2	10"	2	VALVE, BALL, RFFE, ANSI 600 SEE DWG. STD-M-5000 & STD-M-5001(MOTOR OPERATOR)	2'-7"
3	3"	2	VALVE, PLUG, RFxWE, ANSI 600	1'-2"
4	2"	3	VALVE, BALL, RFFE, ANSI 600, w/ VITON OR FLOUROCARBON SEALS	1 1/2"
5	2"	1	VALVE, PLUG, RFFE, ANSI 600	1 1/2"
6	1"	9	VALVE, BALL, THREADED, 3000#, w/ VITON OR FLOUROCARBON SEALS	1 5/8"
7	14"	2	FLANGE, ANSI 600, RFWN, SCH STD, F-42, MSS-SP-44	
8	12"	2	FLANGE, ANSI 600, RFWN, SCH STD, F-42, MSS-SP-44	
9	10"	6	FLANGE, ANSI 600, RFWN, SCH STD, ASTM A-105	
10	2"	6	FLANGE, ANSI 600, RFWN, SCH XH, ASTM A-105	
11	10"	1	FLANGE, ANSI 600, RF BLIND, SCH STD, ASTM A-105	
12	3"	2	FLANGE, ANSI 600, RF BLIND, SCH STD, ASTM A-105	
13	2"	2	FLANGE, ANSI 600, RF BLIND, SCH XH, ASTM A-105	
14	14"	1	GASKET, 1/8" THK, 600LB RF SPIRAL WOUND TYPE 304 FLEXIBLE GRAPHITE FILLER, 1/8" CENTERING RING, FLEXITALLIC STYLE CGI OR EQUAL	
15	12"	2	GASKET, 1/8" THK, 600LB RF SPIRAL WOUND TYPE 304 FLEXIBLE GRAPHITE FILLER, 1/8" CENTERING RING, FLEXITALLIC STYLE CGI OR EQUAL	
16	10"	5	GASKET, 1/8" THK, 600LB RF SPIRAL WOUND TYPE 304 FLEXIBLE GRAPHITE FILLER, 1/8" CENTERING RING, FLEXITALLIC STYLE CG OR EQUAL	
17	3"	2	GASKET, 1/8" THK, 600LB RF SPIRAL WOUND TYPE 304 FLEXIBLE GRAPHITE FILLER, 1/8" CENTERING RING, FLEXITALLIC STYLE CG OR EQUAL	
18	2"	8	GASKET, 1/8" THK, 600LB RF SPIRAL WOUND TYPE 304 FLEXIBLE GRAPHITE FILLER, 1/8" CENTERING RING, FLEXITALLIC STYLE CG OR EQUAL	
19	1 3/8"	20	BOLTS, STUD, ANSI 16.5 GR B-7 W/(2) HVY. HEX HD NUTS (14"-600#)	10"
20	1 1/4"	40	BOLTS, STUD, ANSI 16.5 GR B-7 W/(2) HVY. HEX HD NUTS (12"-600#)	9 1/2"
21	1 1/4"	80	BOLTS, STUD, ANSI 16.5 GR B-7 W/(2) HVY. HEX HD NUTS (10"-600#)	9"
22	1"	16	BOLTS, STUD, ANSI 16.5 GR B-7 W/(2) HVY. HEX HD NUTS (3"-600#)	5"
23	5/8"	64	BOLTS, STUD, ANSI 16.5 GR B-7 W/(2) HVY. HEX HD NUTS (2"-600#) 8 SETS	4 1/2"
24	10"	1	ELBOW 90, SCH STD, SML, ASTM A-234	
25	2"	1	ELBOW 90, SCH XH, SML, ASTM A-234	
26	14"x10"	1	TEE, REDUCING, SCH STD, SML, Y-42, MSS-SP-75 (WITH PIG BAR)	
27	12"x10"	1	TEE, REDUCING, SCH STD, SML, Y-42, MSS-SP-75 (WITH PIG BAR)	
28	10"	2	TEE, STR, SCH STD, SML, ASTM A-234	
29	2"	1	TEE, STR, SCH XH, SML, ASTM A-234	
30	14"x12"	1	REDUCER, CONC S/STD, SML, Y-42, MSS-SP-75	
31	14"	1	CLOSURE, ANSI 600, HORIZONTAL, STANDARD BORE, WELD IN, WITH VITON O-RINGS MFG.: HUBER-YALE FIG. 500, TWINLOCK, OR TDW D2000	
32	2"	1	KIDD PIG SIG, SCRAPER PASSAGE INDICATOR SEE DWG: STD-M-5000 FOR MANUAL OPERATIONS SEE DWG: STD-M-5001 FOR ELECTRONIC OPERATIONS	
33	14"x3"	1	WELDOLET, SCH XH, ASTM A-105	
34	14"x2"	1	WELDOLET, SCH XH, ASTM A-105	
35	12"x3"	1	WELDOLET, SCH XH, ASTM A-105	
36	10"x2"	2	WELDOLET, SCH XH, ASTM A-105	
37	12"x1 1/2"	3	THREADOLET, 36-1, 3000# FS A-234	
38	1 1/2"x1 1/4"	2	BUSHING, THREADED, HEX HEAD, 3000#	
39	1 1/2"x1"	1	BUSHING, THREADED, HEX HEAD, 3000#	
40	1"	9	NIPOLET, SCH XXH, SML, GRADE B	4"
41	1 1/4"	2	PLUG, THREADED, HEX HEAD, 3000#	
42	1"	10	PLUG, THREADED, HEX HEAD, 3000#	
43	14"	1	14.000" O.D.x0.375" Wall Thickness, Specification: API 5L, Grade X-42, Sch. STD, Method of MFG: ERW, End Finish: PE&B, Lbs/ft: 63.37	5'-0"
44	12"	1	12.750" O.D.x0.375" Wall Thickness, Specification: API 5L, Grade X-42, Sch. STD, Method of MFG: ERW, End Finish: PE&B, Lbs/ft: 49.56	8'-0"
45	10"	1	10.750" O.D.x0.365" Wall Thickness, Specification: API 5L, Grade B, Sch. 40, Method of MFG: ERW, End Finish: PE&B, Lbs/ft: 40.48	12'-8 3/8"
46	3"	1	3.500" O.D.x0.216" Wall Thickness, Specification: API 5L, Grade B, Sch. 40, Method of MFG: ERW , End Finish: PE&B, Lbs/ft: 7.58	1'-0"
47	2"	1	2.375" O.D.x0.218" Wall Thickness, Specification: API 5L, Grade B, Sch. 80, Method of MFG: SMLS, End Finish: PE&B, Lbs/ft: 5.02	5'-10"



DETAIL A
SCALE 1"=1'-0"

P:\Standards\STD-P-2011

MK	DATE	REVISIONS	BY	AP.	MK	DATE	REVISIONS	BY	AP.
1	8/6/17	REVISED NIPOLET BOM	MBC	TDS	8				
2	5/3/18	REVISED BOM	MBC	TDS	9				
3					10				
4					11				
5					12				
6					13				
7					14				

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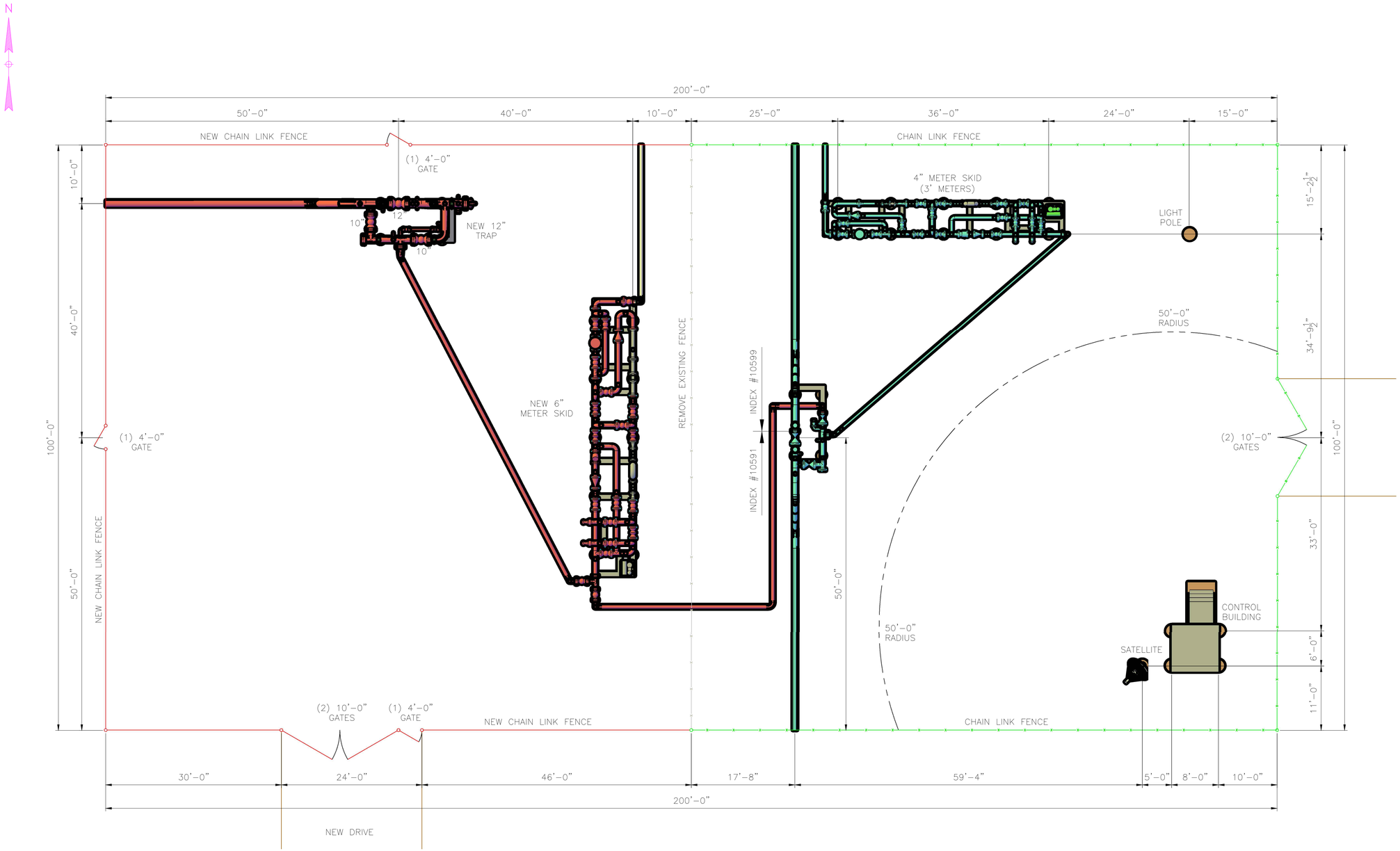
DWG. NO.	REFERENCE DRAWINGS

ONEOK
NGL PIPELINE, L.P.
P.O. BOX 29
MEDFORD, OK 73759

STANDARD 12"-600# TRAP W/ LEFT HAND BYPASS DIMENSIONS & B.O.M.

DES.:		AFE#:	DATE: 1/9/17		
DR.:	MBC		DWG. NO.:	STD-P-2011	REV. 2
CH.:	TDS	SCALE: AS NOTED			
AP.:		CAD#: STDP2010			

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MK	DATE	REVISIONS	BY	AP.	MK	DATE	REVISIONS	BY	AP.
1	7/25/14	REVISED SITE LAYOUT	MBC		8				
2	1/28/16	CONVERTED TRAP TO MAIN LINE SETTING	MBC	TDS	9				
3	2/1/16	ADDED INDEX NUMBERS	TDS		10				
4	9/14/18	ADDED 12" TRAP & 6" METER	MBC	TDS	11				
5					12				
6					13				
7					14				

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DWG. NO.	REFERENCE DRAWINGS

ONEOK
NGL PIPELINE, L.P.
P.O. BOX 29
MEDFORD, OK 73759

ONEOK TARGA SADDLE BUTTE SITE# 649
OVERALL SITE LAYOUT

DES.:	AFE#:	DATE: 5/24/18	
DR.: MBC		DWG. NO.: 649-0-001	REV. 4
CH.:	SCALE: 1/8"=1'		
AP.:	CAD#: 649-0-001		

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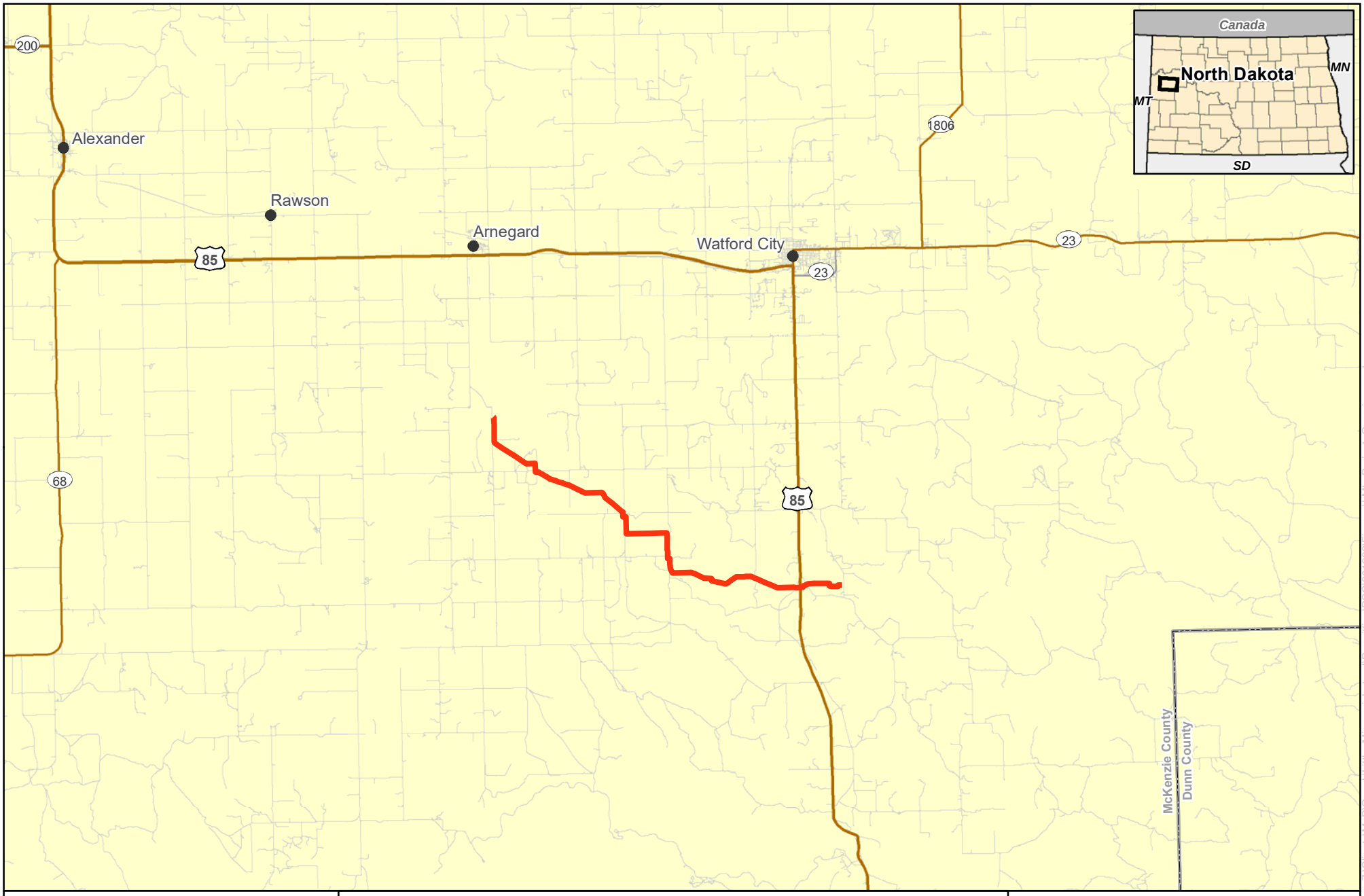
Exhibit B

Project Maps

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B.1 Project Overview

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0 1.5 3 Miles

1 inch = 3 miles

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For Environmental Review Purposes Only

Exhibit B.1
ONEOK Bakken Pipeline, L.L.C.
Little Missouri Lateral Pipeline Project
Project Location Map
McKenzie County, ND

Proposed Route

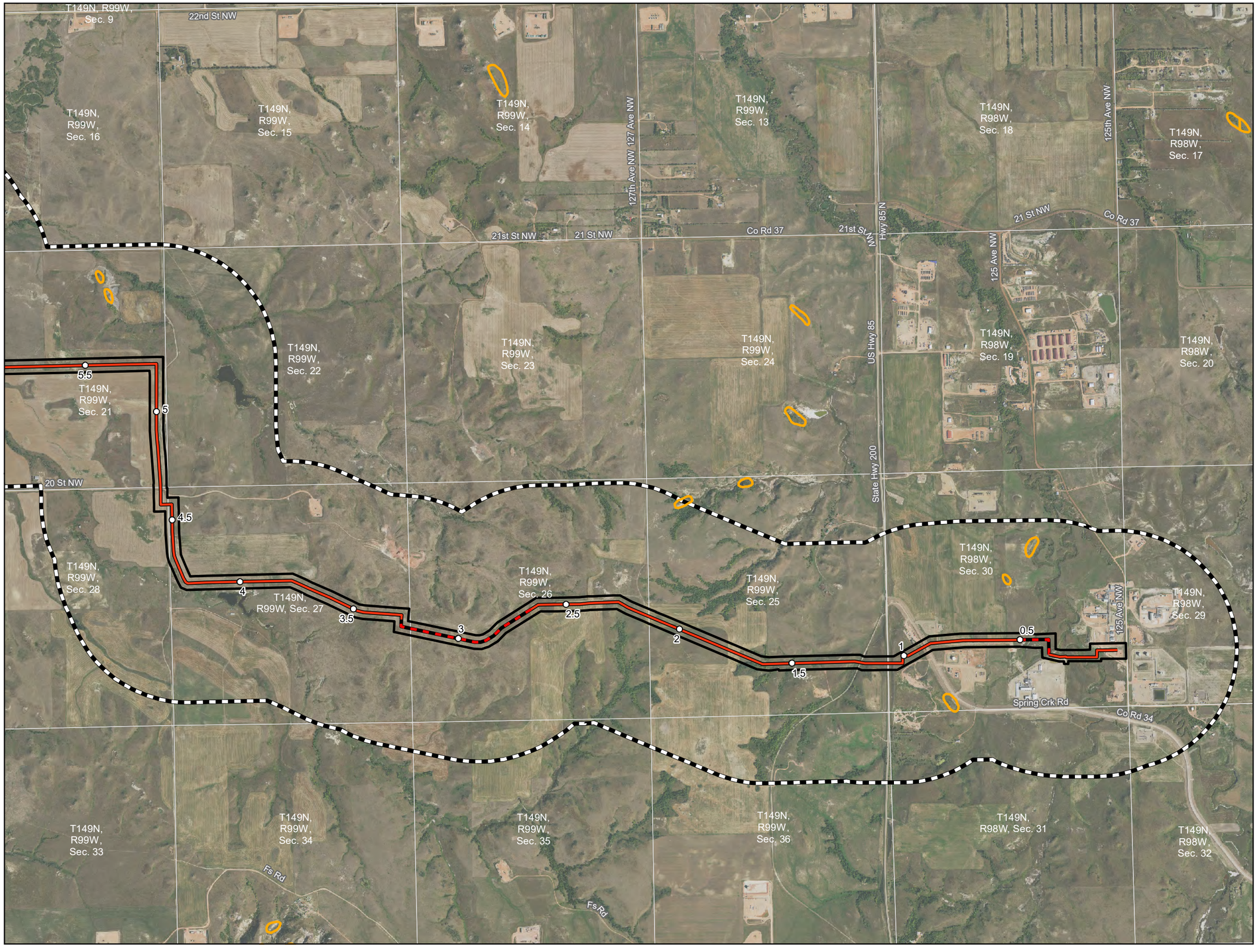
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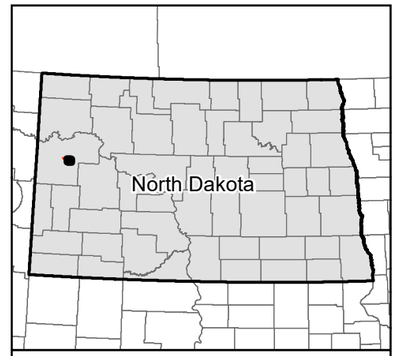
Date: (2/15/2019)

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B.2 Avoidance and Exclusion Maps

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0 1,000 2,000 Feet

1 inch = 2,000 feet

N
W E
S

Imagery Source: USDA-FSA-APFO Aerial Photography Field Office

- Milepost
- Centerline: Co-located
- Centerline: Not Co-located
- Project Corridor
- 1-Mile Study Area
- Section Boundary

Avoidance Areas

- Abandoned Mine
- Occupied Structure within 500' of Route
- Occupied Structure (500' Buffer)
- Landslide Deposits

*No exclusion areas within vicinity of Project

Exhibit B.2
ONEOK Bakken Pipeline, L.L.C.
Little Missouri Lateral Pipeline Project

Avoidance and Exclusion Maps
Page 1 of 2

McKenzie County, ND

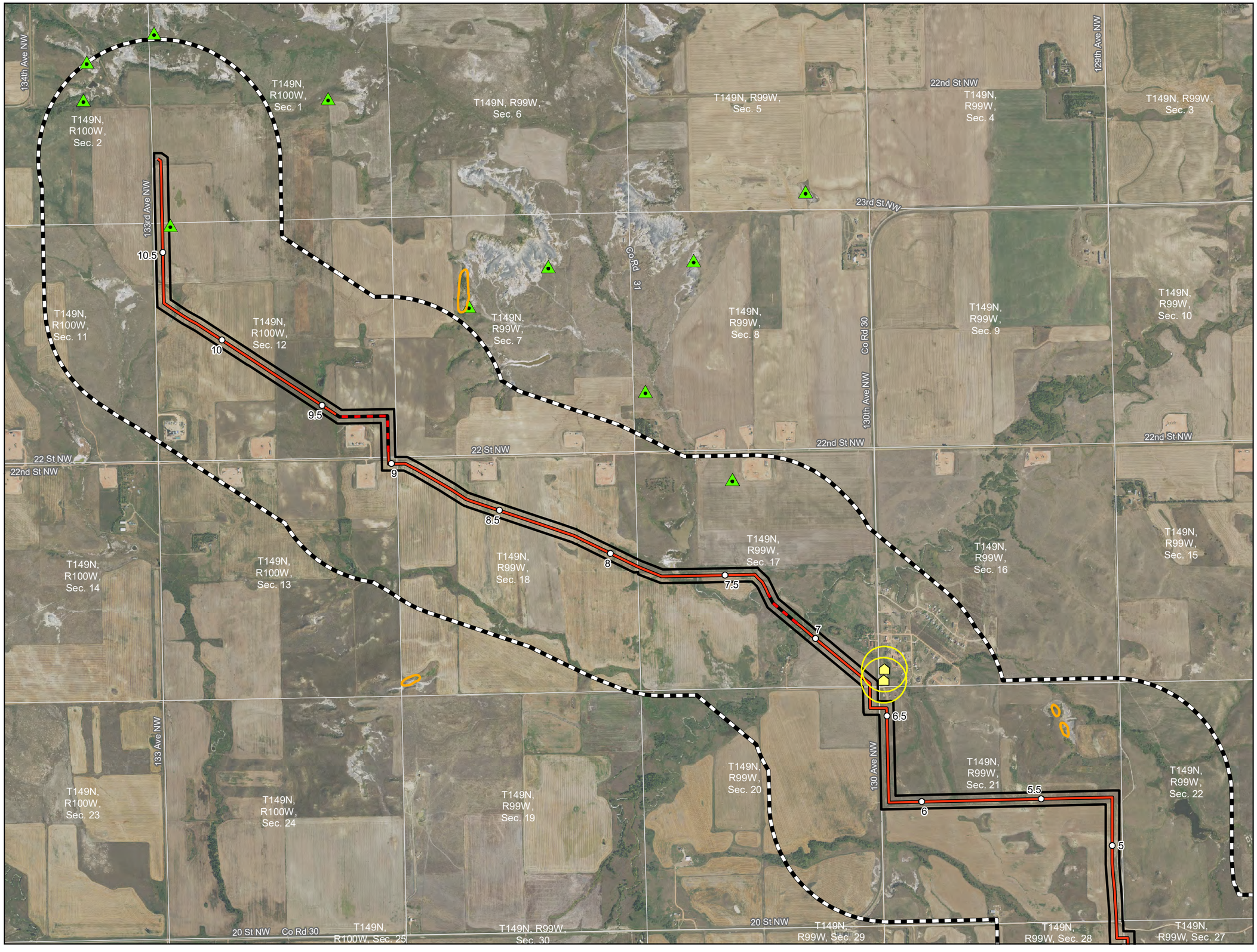
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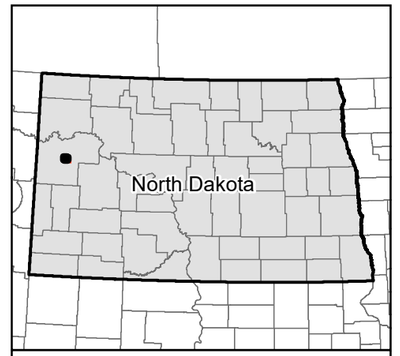
Date: (2/15/2019)

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2/15/2019

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0 1,000 2,000 Feet

1 inch = 2,000 feet

Imagery Source: USDA-FSA-APFO Aerial Photography Field Office

N W E S

- Milepost
- Centerline: Co-located
- Centerline: Not Co-located
- Project Corridor
- 1-Mile Study Area
- Section Boundary

Avoidance Areas

- Abandoned Mine
- Occupied Structure within 500' of Route
- Occupied Structure (500' Buffer)
- Landslide Deposits

*No exclusion areas within vicinity of Project

Exhibit B.2
ONEOK Bakken Pipeline, L.L.C.
Little Missouri Lateral Pipeline Project

Avoidance and Exclusion Maps
Page 2 of 2

McKenzie County, ND

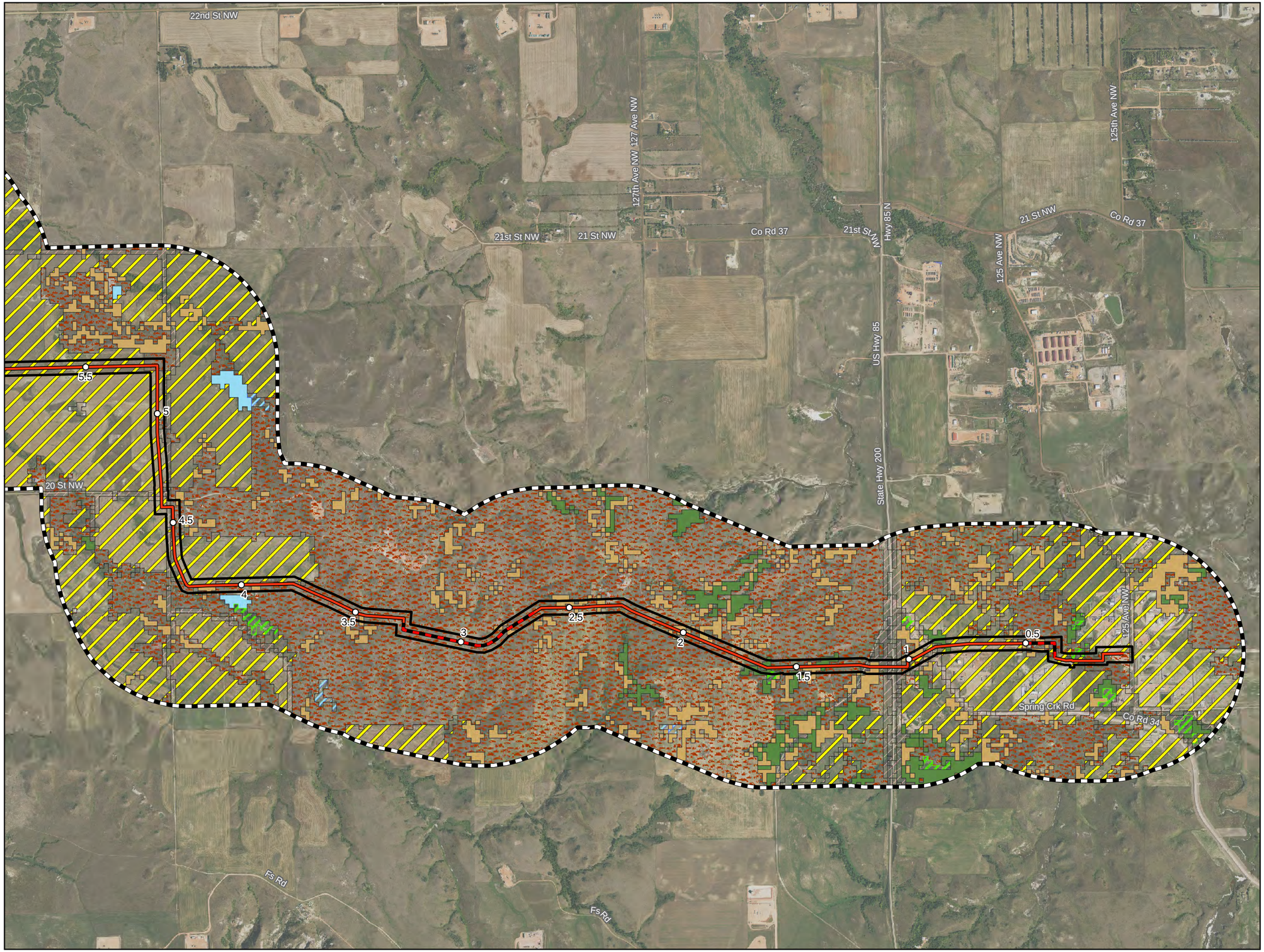
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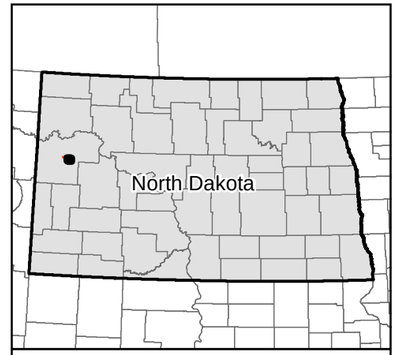
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B.3 Land Use/Land Cover Maps

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0 1,000 2,000 Feet

1 inch = 2,000 feet

Imagery Source: USDA-FSA-APFO Aerial Photography Field Office

N W E S

- Milepost
- Centerline: Co-located
- Centerline: Not Co-located
- Project Corridor
- 1-Mile Study

LULC Classification

- Barren Land
- Cultivated Crops
- Forested
- Developed
- Emergent Herbaceous Wetlands
- Grassland/Herbaceous
- Hay/Pasture
- Open Water
- Shrub/Scrub
- Woody Wetlands

Exhibit B.3
ONEOK Bakken Pipeline, L.L.C.
Little Missouri Lateral Pipeline Project

Land Use/Land Cover Maps
Page 1 of 2

McKenzie County, ND

Emerjent

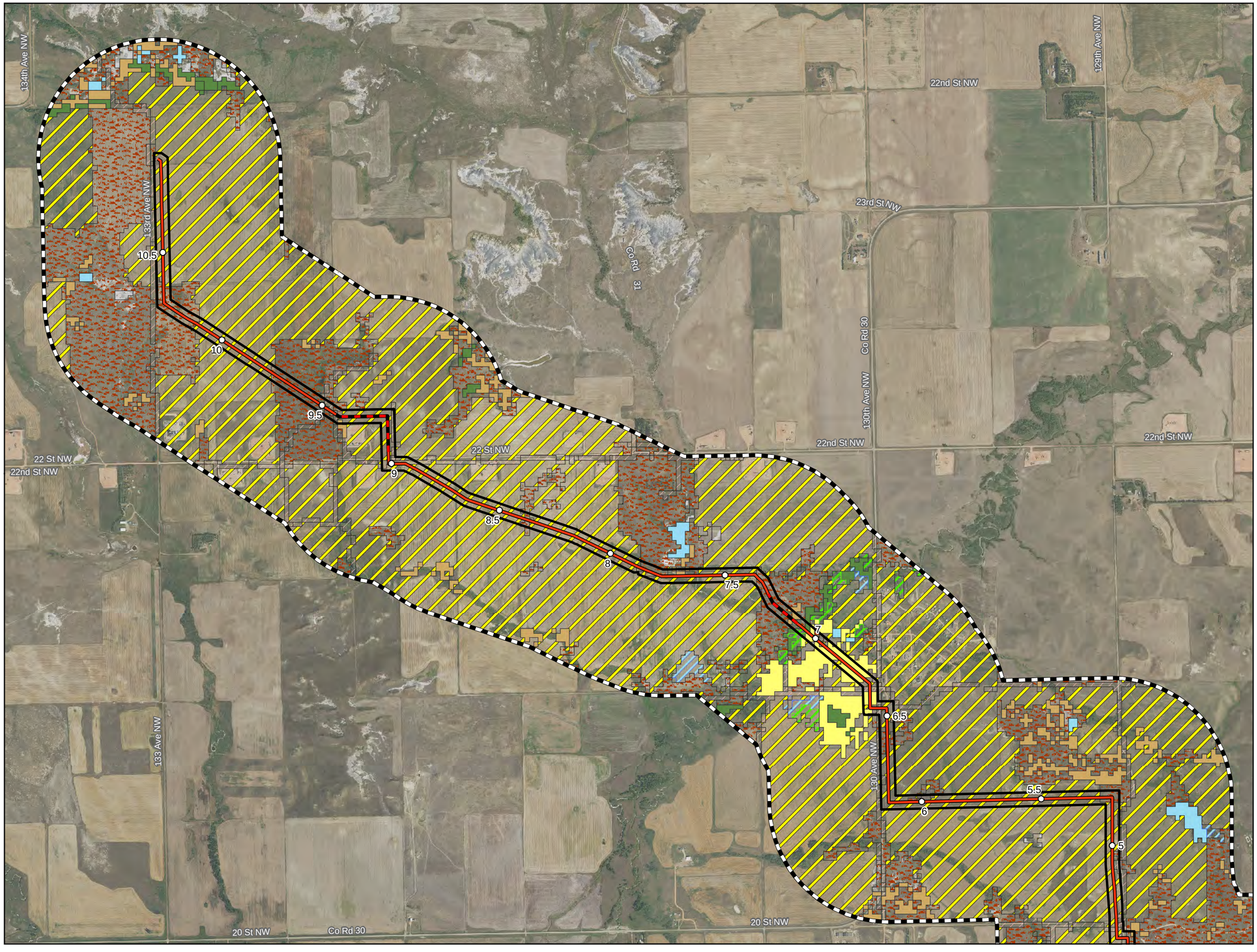
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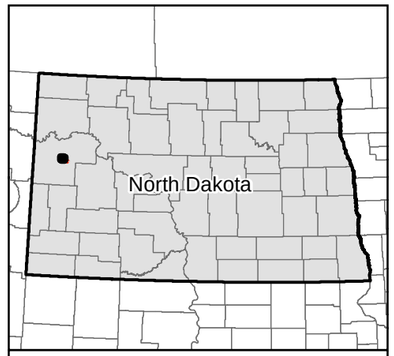
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Source: Z:\Clients\M_P\ONEOK\Little_Missouri_Lateral\Permitting\PSC\201902\Figures\LML_PSC_Land_Use_Map_Book.mxd

Date: (2/15/2019)

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0 1,000 2,000 Feet

1 inch = 2,000 feet

Imagery Source: USDA-FSA-APFO Aerial Photography Field Office

N
W E
S

- Milepost
- Centerline: Co-located
- Centerline: Not Co-located
- Project Corridor
- 1-Mile Study

LULC Classification

- Barren Land
- Cultivated Crops
- Forested
- Developed
- Emergent Herbaceous Wetlands
- Grassland/Herbaceous
- Hay/Pasture
- Open Water
- Shrub/Scrub
- Woody Wetlands

Exhibit B.3
ONEOK Bakken Pipeline, L.L.C.
Little Missouri Lateral
Pipeline Project

Land Use/Land Cover Maps
Page 2 of 2

McKenzie County, ND

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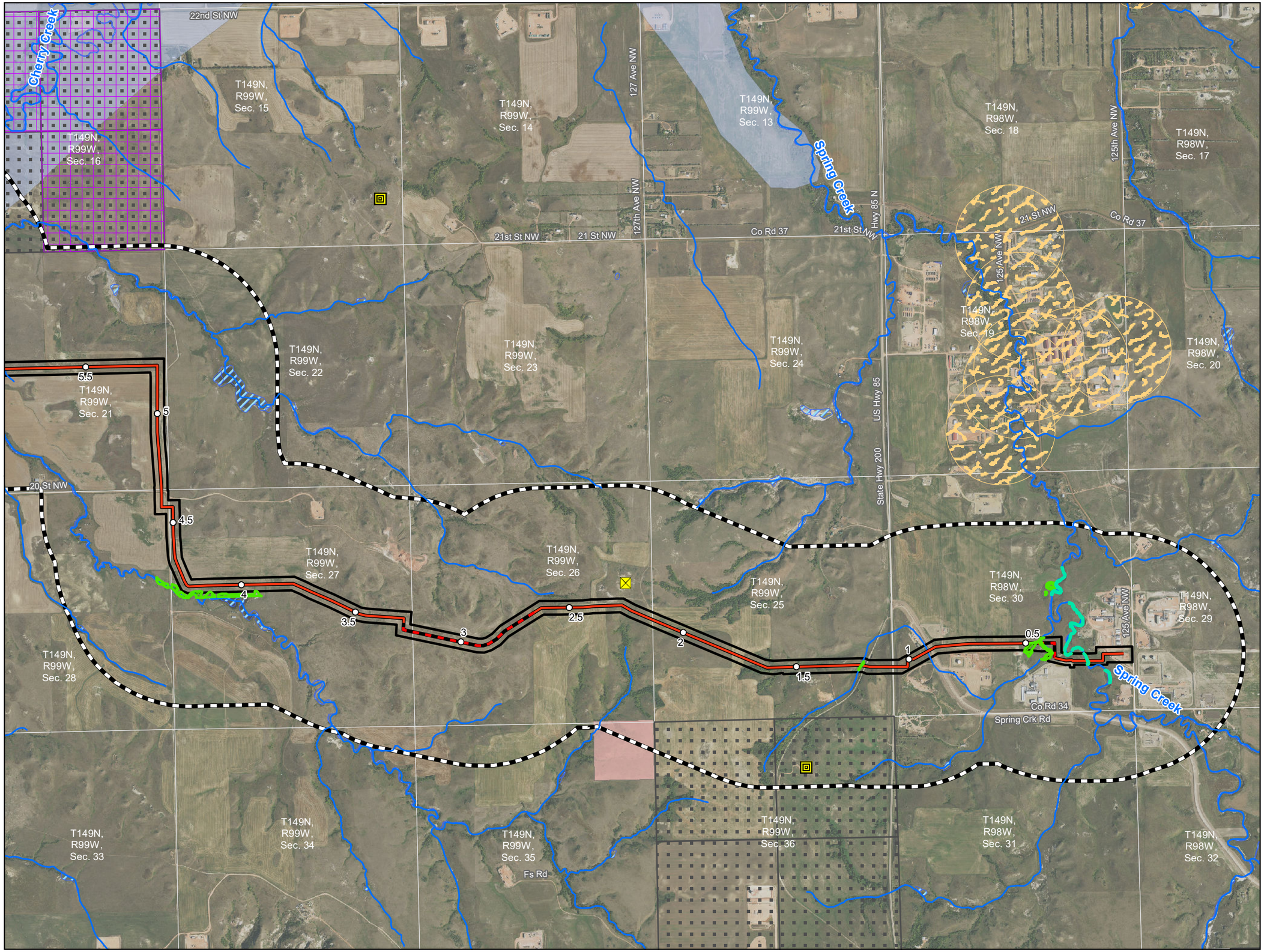
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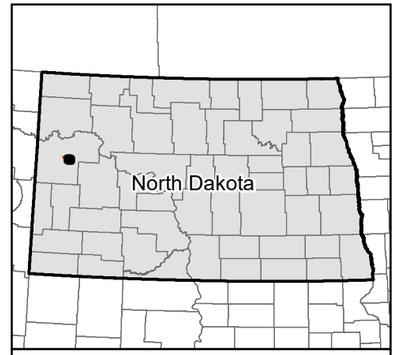
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Date: (2/15/2019)

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B.4. Selection Criteria (Other) Maps

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0 1,000 2,000 Feet

1 inch = 2,000 feet

Imagery Source: USDA-FSA-APFO Aerial Photography Field Office

N W E S

- Milepost
- Centerline: Co-located
- Centerline: Not Co-located
- Project Corridor
- 1-Mile Study Area
- Section Boundary
- Antenna Structure
- Radio Tower
- NDDTL - School Trust Land
- NDDTL - Mineral Trust Land
- NHD Flowline
- Field Delineated Waterbody
- Field Delineated Wetland
- NWI Wetland
- Wellhead Non-Community Protection Area
- BLM Land
- Surficial Aquifer

Exhibit B.4
ONEOK Bakken Pipeline, L.L.C.
Little Missouri Lateral Pipeline Project

Selection Criteria Maps
Page 1 of 2

McKenzie County, ND

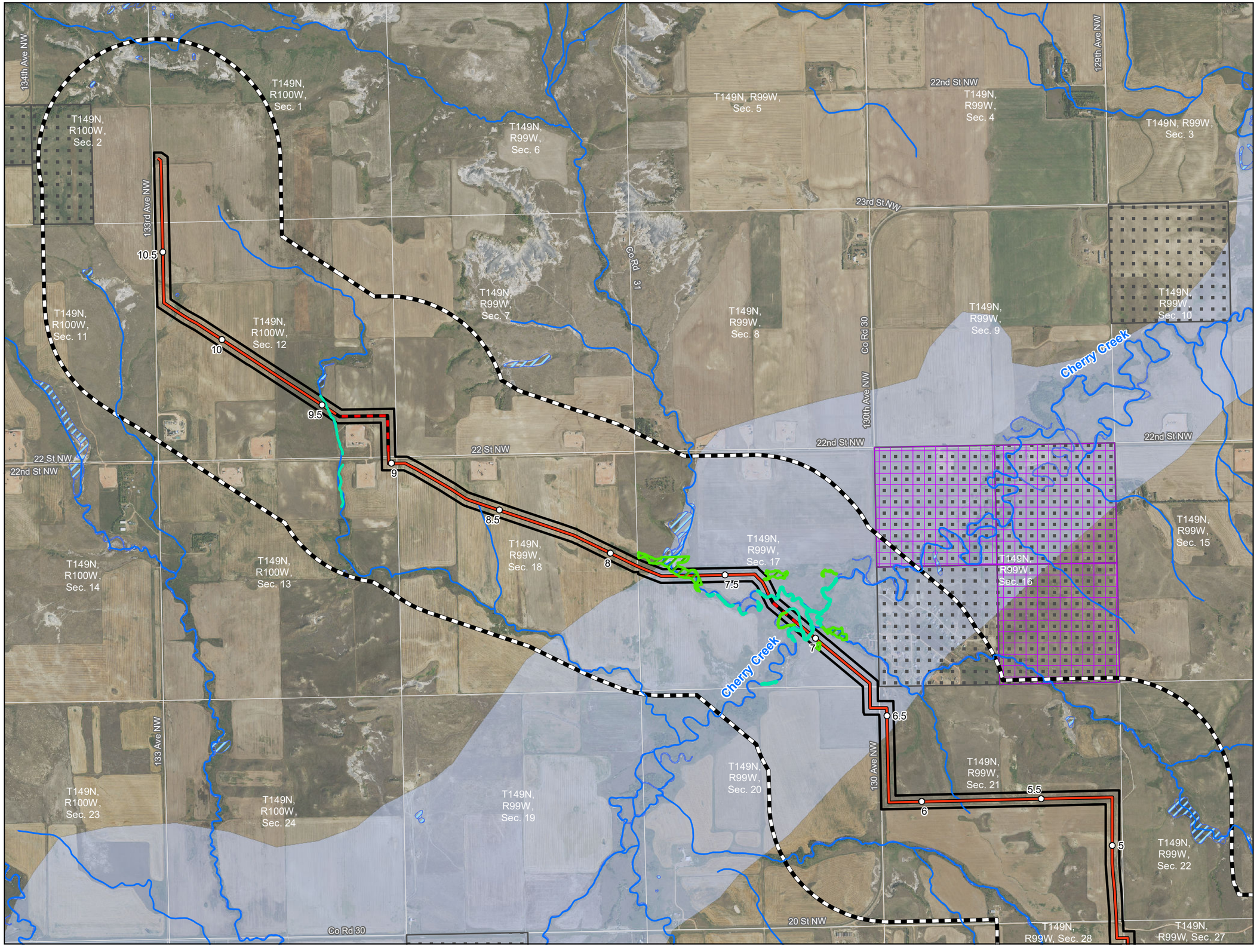
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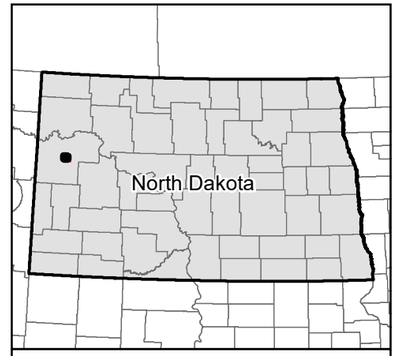
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2/22/2019

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Date: (2/22/2019)

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0 1,000 2,000 Feet

1 inch = 2,000 feet

Imagery Source: USDA-FSA-APFO Aerial Photography Field Office

N W E S

- Milepost
- Centerline: Co-located
- Centerline: Not Co-located
- Project Corridor
- 1-Mile Study Area
- Section Boundary
- Antenna Structure
- Radio Tower
- NDDTL - School Trust Land
- NDDTL - Mineral Trust Land
- NHD Flowline
- Field Delineated Waterbody
- Field Delineated Wetland
- NWI Wetland
- Wellhead Non-Community Protection Area
- BLM Land
- Surficial Aquifer

Exhibit B.4
ONEOK Bakken Pipeline, L.L.C.
Little Missouri Lateral Pipeline Project

Selection Criteria Maps
Page 2 of 2

McKenzie County, ND

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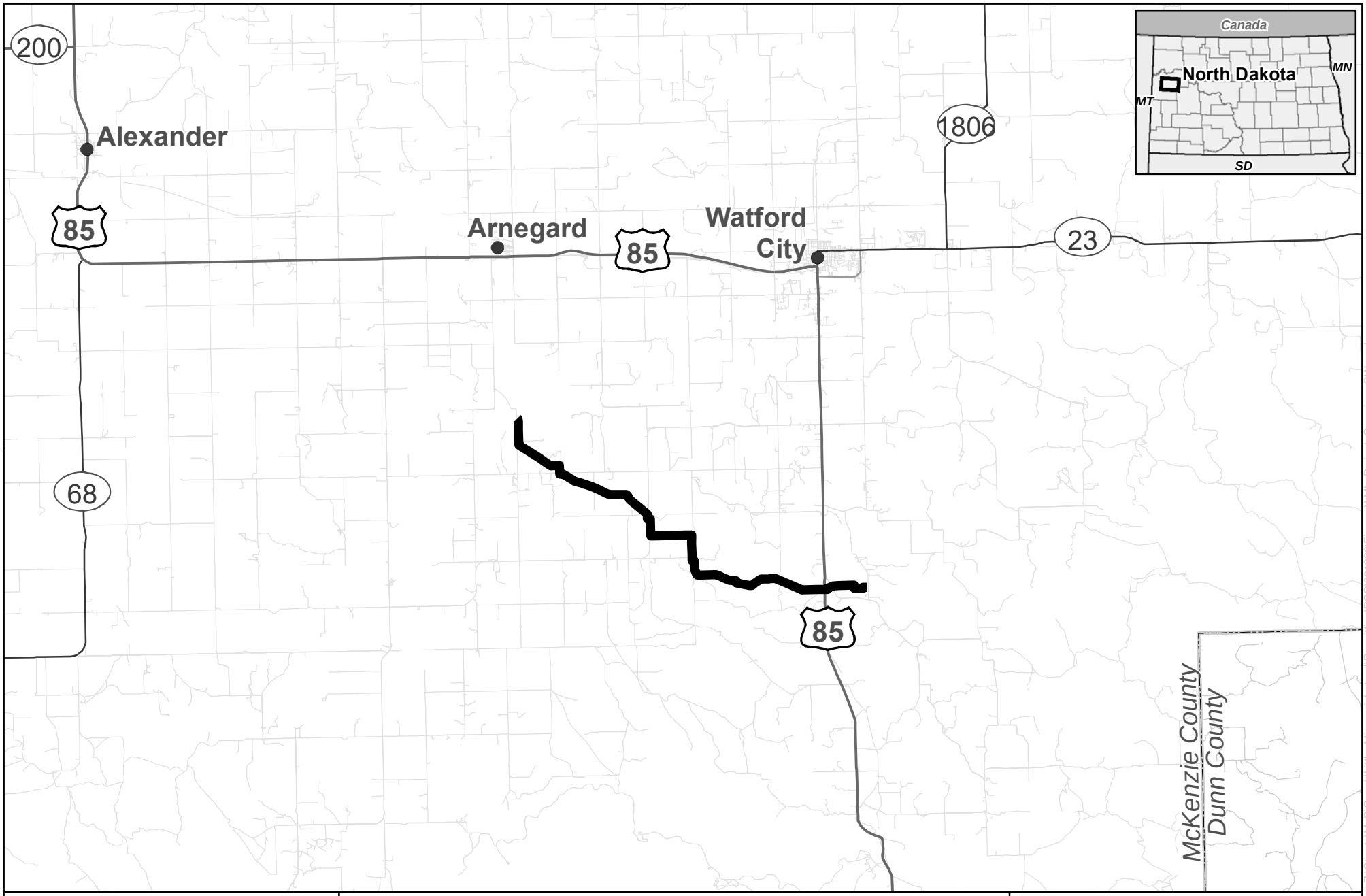
2/22/2019

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Date: (2/22/2019)

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B.5 Black and White Map for Publications

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0 1.5 3 Miles

1 inch = 3 miles

N W E S

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Exhibit B.5
ONEOK Bakken Pipeline, L.L.C.
Little Missouri Lateral Pipeline Project
Project Location Map
McKenzie County, ND

Proposed Route

Source: Z:\Clients\M_P\ONeok\Little_Missouri_Lateral\Permitting\PSC\201902\Figures\LML_Project_Overview_BW.mxd

Date: (2/15/2019)

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Exhibit C

Natural Resources Survey Report

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NATURAL RESOURCES REPORT

Little Missouri Lateral Pipeline Project
McKenzie County, North Dakota
Carlson McCain Project #7559

Prepared for:

Merjent, Inc.
TractorWorks Building
800 Washington Avenue N.
Minneapolis, MN 55401

December 17, 2018

Carlson McCain

600 South 2nd Street, Suite 105

Bismarck, ND 58504

Tel 701-255-1475

Fax 701-255-1477

ENVIRONMENTAL • ENGINEERING • LAND SURVEYING

Little Missouri Lateral Project

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Appendix F. Dakota Skipper Habitat Forms

1.0 SCOPE OF WORK

Carlson McCain, Inc. (Carlson McCain) was contracted to locate and map noxious weeds, delineate wetlands and waterbodies, document raptor nests, and assess habitat for threatened and endangered species within the boundaries of ONEOK Bakken Pipeline, LLC's Little Missouri Lateral Pipeline Project (Project) located in McKenzie County, North Dakota. The Project is approximately 11 miles and has a variable width corridor (Survey Corridor) that is most commonly 300-feet wide. Natural resources surveys covered approximately 856.9 acres. Table 1 summarizes the location of Project features. Figure 1 of Appendix A depicts the location of the Project.

Table 1. Location of the Environmental Survey Corridor.

Section(s)	Township (T), Range (R)
30, 31	T149N, R98W
7, 17, 18, 20, 21, 25, 26, 27, 28, 36	T149N, R99W
1, 12, 13	T149N, R100W

An assessment of land use was conducted for the Project using 2017 aerial photography. Approximately 41% (344.1 acres) of the Survey Corridor is currently used for agriculture production. Three percent (23.5 acres) of the Survey Corridor is within existing road right-of-ways. Commercial and/or residential development accounts for 4% or 34.6 Acres. The remaining 53 percent (454.7 acres) of the Survey Corridor is a mixture of native and tame grasslands, forested areas, and riparian areas.

2.0 PROCEDURES

Natural resource surveys were conducted concurrently as access to tracts within the Survey Corridor became available. Carlson McCain biologists Chad Tucker (Wildlife Biologist) and Kathie Kjar (Senior Ecologist) conducted field surveys from June 19 - 20, 2018. Chad Tucker and Mike Fettes (Natural Resource Specialist) conducted field surveys from June 21 – 22, July 31, and August 1 – 3, 2018. Kathie Kjar and Mike Fettes performed field surveys on August 13 and October 24, 2018 and Chad Tucker conducted surveys on September 11-12, 2018.

Field surveys and feature nomenclature were documented in accordance with Merjent's 2018 Biological Field Survey Protocols for the Little Missouri Lateral Pipeline Project (Merjent 2018), which is included in Appendix B. Geospatial field data was collected using Sony Xperia Android Tablets paired with an EOS ARROW Lite global positioning system.

2.1 Wetland/Waterbody Field Delineation

Wetland delineations were conducted in accordance with the U.S. Army Corps of Engineers (USACE) *1987 Wetland Delineation Manual* and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (Version 2.0)* (Manual).

Prior to field work, existing resource information was used to aid in identifying and delineating wetlands and drainage features within the Project Area. These resources included: McKenzie County National Agriculture Imagery Program (NAIP) aerial photographs; U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (USFWS 2018a); digital web soil survey of McKenzie County; and the U.S. Geological Survey National Hydrography Dataset (NHD) (USGS 2007).

A description of the wetland type and documentation of the vegetation, hydrology, and hydric soils were recorded on the associated USACE Wetland Determination Data Forms of the Great Plains Manual. Delineated wetlands were given Cowardin classification descriptions. Wetlands were documented with paired upland and wetland observation points.

Existing vegetation was classified using hydrophytic criteria as outlined in the Manual and the *National Wetland Plant List* (Lichvar et al. 2016). Hydric soil indicators were determined using the *Field Indicators of Hydric Soils in the United States*; *Guide for Identifying and Delineating Hydric Soils, Version 7.0* (USDA-NRCS, 2010). Hydrology was determined on-site by observation of hydrologic indicators.

Hydrological indicators used for wetland identification were determined on-site based on soils, topographic position, and presence of hydric vegetation. Waterbodies were defined using USACE Ordinary High Water Mark (OHWM) criteria and definitions provided by the U.S. Environmental Protection Agency (USEPA) in *Draft Guidance on Identifying Waters Protected by the Clean Water Act*. Wetlands and waterbodies were field classified in accordance with guidelines set forth in the *Classification of Wetlands and Deepwater Habitats of the United States* by the Federal Geographic Data Committee (FGDC).

Rainfall data from the North Dakota Agricultural Weather Network (NDAWN) was gathered for a three-month period (April, May, and June) prior to the field survey to determine moisture conditions against historic monthly averages. Table 2 shows monthly (2018) rainfall data and monthly historic rainfall averages from two NDAWN Stations (Dunn 1SW, and Watford City 2E). The NDAWN Stations are named after their respective town locations. The selected NDAWN Stations are located in close proximity to the Project to give

representative data. Rainfall levels were an average of 2.04" below average for the April to June 18 period prior to the start of the field surveys on June 19.

Table 2. Pre-survey Rainfall Levels[1]

NDAWN Station	April Rainfall		May Rainfall		June 1-18 Rainfall		Change from Average
	Actual	Average	Actual	Average	Actual	Average	
Dunn 1SW (Dunn Center, North Dakota)	0.43	1.21	1.05	2.34	1.19	1.93	-2.81
Watford City 2E (Watford City, North Dakota)	0.46	0.85	1.21	2.20	1.92	1.8	-1.26

[1] North Dakota Agricultural Weather Network (NDAWN) 2018 Data

2.2 Federally Listed Wildlife Species Survey

Assessments for federally listed threatened and endangered species were conducted by evaluating historic and present occurrences and by determining if potential habitat exists within the Survey Corridor. Background data was collected for preliminary review and to aid in the field inventory of the biological resources. Data included the USFWS list of federally listed species for North Dakota, USFWS Designated Critical Habitat for Threatened and Endangered Species Geospatial Data, the North Dakota Parks and Recreation Department's (NDPRD) species of concern list, and North Dakota Game and Fish Department (NDGF) Geospatial Data along with known range and habitat requirements for each species.

Table 3. Federally Listed Threatened and Endangered Species within the Survey Corridor

Federally Listed Threatened and Endangered Species		
Common Name	**Scientific Name**	**Status**
Northern long-eared bat	*Myotis septentrionalis*	Threatened
Gray wolf	*Canis lupus*	Endangered
Whooping crane	*Grus americana*	Endangered
Pallid sturgeon	*Scaphirhynchus albus*	Endangered
Least tern	*Sterna antillarum*	Endangered, Critical Habitat Designated
Dakota skipper	*Hesperia dacotae*	Threatened, Critical Habitat Designated
Piping plover	*Charadrius melodus*	Threatened, Critical Habitat Designated
Red knot	*Calidris canutus rufa*	Threatened
(USFWS 2018b)		

2.3 Noxious and Invasive Weed Survey

North Dakota has 11 state-listed noxious weeds (NDDA 2018). The McKenzie County Weed Control District lists five additional species as invasive (NDDA 2018). Table 4 provides a list of noxious and/or invasive weed species listed in McKenzie County.

Table 4. North Dakota State and McKenzie County Listed Noxious and Invasive Weeds.

North Dakota State Listed Noxious Weeds		McKenzie County, ND Invasive Weeds	
Common Name	**Scientific Name**	**Common Name**	**Scientific Name**
Absinth wormwwod	*Aremisia absinthium*	Baby's breath	*Gypsophila paniculata*
Canada thistle	*Cirsium arvense*	Black henbane	*Hyoscyamus niger*
Dalmatian toadflax	*Linaria genistifolia*	Common burdock	*Arctium minus*
Diffuse knapweed	*Centaurea diffusa*	Halogeton	*Halogeton glomeratus*
Leafy spurge	*Euphorbia esula*	Houndstongue	*Cynoglossum officinale*
Musk thistle	*Carduus nutans*		
Purple loosestrife	*Lythrum salicaria*		
Russian knapweed	*Acroptilon repens*		
Saltcedar	*Tamarix chinensis*		
Spotted knapweed	*Centaurea maculosa*		
Yellow toadflax	*Linaria vulgaris*		

2.4 Raptor Nest Survey and Migratory Bird Nesting Habitat Survey

A pedestrian survey for raptor nests located within ½-mile line-of-sight of the Survey Corridor was conducted. A direct survey for migratory bird nests was not conducted; However, habitat types were documented.

3.0 RESULTS

3.1 Wetlands

Carlson McCain documented 14 wetlands within the Survey Corridor. Delineated wetlands totaled 15.27 acres. Table 5 summarizes wetland locations and their field classifications. Wetland locations are depicted in Appendix A, Figure 2. Photographs are included in Appendix C and USACE Wetland Determination Forms are included in Appendix D.

Table 5. Delineated Wetlands.

Wetland ID	Cowardin Classification	Hydro Connection	Location	Longitude	Latitude	Acres
W_A-01	PEM	Yes	Section 17, T149N, R99W	-103.387098	47.725498	6.48
W_A-02	PEM	Yes	Section 17, T149N, R99W	-103.384973	47.724476	0.25
W_A-03	PEM	No	Section 17, T149N, R99W	-103.378015	47.724883	1.29
W_A-04	PEM	Yes	Section 17, T149N, R99W	-103.37344	47.724951	0.23
W_A-05	PEM	Yes	Section 17, T149N, R99W	-103.377475	47.722062	0.19
W_A-06	PEM	Yes	Section 17, T149N, R99W	-103.372637	47.721273	1.51
W_A-07	PEM	No	Section 17, T149N, R99W	-103.374359	47.720514	0.24
W_A-08	PEM	Yes	Section 28, T149N, R99W	-103.348231	47.697851	0.45
W_A-09	PEM	Yes	Section 27, T149N, R99W	-103.345563	47.69719	1.76
W_A-10	PEM	Yes	Section 27, T149N, R99W	-103.341417	47.697034	1.2
W_A-11	PEM	No	Section 25, T149N, R99W	-103.285995	47.691968	0.07
W_A-12	PEM	Yes	Section 30, T149N, R98W	-103.270463	47.692901	1.15
W_A-13	PEM	Potential	Section 30, T149N, R98W	-103.269379	47.69607	0.04
W_A-14	PEM	Yes	Section 30, T149N, R98W	-103.268925	47.696525	0.41
					Total	**15.27**

3.2 Waterbodies.

The field survey delineated six waterbodies within the Survey Corridor with a combined acreage of 5.97 acres. The data collected for the waterbodies is summarized in Table 6 and depicted in Appendix A, Figure 2. Field photographs of representative waterbodies are included in Appendix C and Waterbody Data Forms are included in Appendix E.

Table 6. Delineated Waterbodies.

Waterbody ID	Cowardin Classification	Waterbody Name[1]	Flow Regime	Longitude	Latitude	Acres	OHWM Crossing Width (ft)	Top of Bank Crossing Width (ft)
S_A-001	R4SB7	Unnamed	Ephemeral	-103.417274	47.733029	0.17	3	5
S_A-002	R4SB7	Unnamed	Intermittent	-103.379299	47.723361	1.52	15	24
S_A-003	R2UB3	Cherry Creek	Perennial	-103.375172	47.721998	0.08	25	48
S_A-004	R4SB7	Unnamed	Intermittent	-103.376239	47.722346	2.28	5	8
S_A-005	R4SB7	Unnamed	Intermittent	-103.374184	47.722194	0.20	20	25
S_A-006	R4SB5	Spring Creek	Intermittent	-103.265802	47.692097	1.73	16	32
					Total	5.98		

[1] USGS NHD dataset.

3.3 Federally Listed Threatened and Endangered Species

Threatened and endangered species that have been documented and/or have the potential to occur within the Survey Corridor are listed in Table 3 along with designated critical habitat (USFWS 2018b). A review of USFWS and NDGF GIS species information datasets along with habitat data gathered from the on-site field surveys was conducted for the proposed Project. Threatened and endangered species information gathered from the review is documented below in the species discussions.

During the field surveys, no state or federally listed species were observed. During the field surveys, 17 locations that held potential habitat for state or federally listed species were mapped. Table 7 summarizes the data from the potential habitat areas.

Table 7. Areas of Potential Habitat for Federally or State Listed Species

Habitat ID	Habitat Type	Location	Species	Longitude	Latitude	Acres
H_A-011	Native prairie	Section 27, T149N, R99W	Dakota skipper	-103.32934	47.69481	1.82
H_A-012	Native prairie	Section 26, T149N, R99W	Dakota skipper	-103.32342	47.69442	1.67
H_A-013	Native prairie	Section 26, T149N, R99W	Dakota skipper	-103.31894	47.69434	1.13
H_A-014	Native prairie	Section 26, T149N, R99W	Dakota skipper	-103.31652	47.69495	2.3
H_A-018	Mature trees	Section 25, T149N, R99W	Northern long-eared bat	-103.29513	47.69193	1.04
H_A-020	Native prairie	Section 36, T149N, R99W	Dakota skipper	-103.28746	47.68799	0.50
H_A-034	Native prairie	Section 27, T149N, R99W	Dakota skipper	-103.33020	47.69649	2.15
H_A-035	Native prairie	Section 27 & 28, T149N, R99W	Dakota skipper	-103.32628	47.69609	0.46
H_A-036	Native prairie	Section 26, T149N, R99W	Dakota skipper	-103.32238	47.69569	2.66
H_A-037	Native prairie	Section 26, T149N, R99W	Dakota skipper	-103.32099	47.69620	1.96
H_A-038	Native prairie	Section 26, T149N, R99W	Dakota skipper	-103.32256	47.69601	1.14
H_A-039	Native prairie	Section 26, T149N, R99W	Dakota skipper	-103.31984	47.69559	2.01
H_A-040	Native prairie	Section 26, T149N, R99W	Dakota skipper	-103.31725	47.69593	0.94
H_A-041	Native prairie	Section 26, T149N, R99W	Dakota skipper	-103.31344	47.69682	0.40
H_A-042	Mature trees	Section 17, T149N, R99W	Northern long-eared bat	-103.37378	47.72207	1.90
H_A-043	Mature trees	Section 17, T149N, R99W	Northern long-eared bat	-103.37317	47.72147	0.47
H_A-044	Mature trees	Section 26, T149N, R99W	Northern long-eared bat	-103.31304	47.69657	0.79
					Total	**23.34**

3.3.1 Northern long-eared bat (*Myotis septentrionalis*): Threatened

The northern long-eared bat is a forest dwelling bat. The home range of the northern long-eared bat is approximately 150 acres (60.7 ha) including a summer and winter habitat. In the summer, northern long-eared bats roost under bark or in crevices of trees, preferring to roost in tall trees and under the exfoliating bark of dead or dying trees. In the winter, northern long-eared bats hibernate in caves and mines. The northern long-eared bat prefers foraging in edge habitats and forests comprised of trees with a diversity of life stages. The primary threats to the northern long-eared bat are white-nose syndrome (WNS), alteration/loss of habitat, and wind energy (USFWS 2014a). The northern long-eared bat is federally listed statewide in North Dakota.

The USFWS announced that starting May 4, 2015, the northern long-eared bat will be listed as threatened. WNS is the predominant threat to the northern long-eared bat at this time; however, in areas not yet affected by WNS, incidental takes are not prohibited. McKenzie County is not included in the current extent of WNS.

The field survey identified 4 locations, totaling 4.20 acres, that contain suitable trees for summer roosting habitat. These areas contain mature American elm (*Ulmus americana*) and green ash trees (*Fraxinus pennsylvanica*) trees that may provide summer roosting habitat for the northern long-eared bat. These locations are identified in Table 7 and Appendix A, Figure 2. Direct surveys for bats were not conducted.

3.3.2 Whooping crane (*Grus americana*): Endangered

The primary nesting area for the whooping crane is in Canada's Wood Buffalo National Park. Aransas National Wildlife Refuge in Texas is the primary wintering area for whooping cranes. In the spring and fall, the cranes migrate primarily along the Central Flyway. During the migration, cranes make numerous stops, roosting in large shallow marshes and feeding and loafing in harvested grain fields. The primary threats to whooping cranes are power lines, illegal hunting, and habitat loss (Texas Parks and Wildlife 2006).

The whooping crane is federally listed in all counties of North Dakota. The USFWS Database (USFWS 2015a) shows McKenzie County has had eight verified whooping crane sightings. The closest confirmed sighting to the Project was of a single adult whooping crane in 2006, approximately five miles west of the Project in Section 24, T149N, R101W. The sighting locations are depicted in Appendix A, Figure 3.

3.3.3 Gray wolf (*Canis lupus*): Endangered

Rural areas throughout the State of North Dakota function as dispersal corridors for wolves representing the Western Great Lakes (east of the Missouri River and US Highway 83) and Wyoming portion of the Northern Rocky Mountain distinct population segments (DPS). Wolves representing the Western Great Lakes DPS were relisted under the Endangered Species Act as threatened, effective December 19, 2014. Wolves representing the Wyoming portion of the Northern Rocky Mountain distinct population segment (west of the Missouri River and US 83) were delisted in 2011. However, gray wolves representing a formerly listed DPS could disperse through North Dakota at any time of the year. Wolf habitat within North Dakota occurs statewide and is considered dispersal habitat. Dispersal habitat may be important for maintaining gene flow between DPSs but is not thought to be a limiting factor for the recovery of the species.

To reflect this possibility, the USFWS has classified wolves dispersing through North Dakota as endangered in all counties. The nearest verified sighting to the Project occurred in 2012, approximately 17 miles southwest of the Pipeline Corridor in Section 25, T147N, R102W (NDGF 2018) (Appendix A, Figure 3). There are three sightings recorded in the database for McKenzie County.

3.3.4 Pallid sturgeon (*Scaphirhynchus albus*): Endangered

Pallid sturgeon are found in the Mississippi, Missouri, and Yellowstone River systems and are adapted for living close to the bottom of large, shallow rivers with sand and gravel bars. Pallid sturgeon populations in North Dakota have decreased since the 1960s (Grondahl and Martin, no date). Weighing up to 85 pounds, pallid sturgeons are long-lived with individuals possibly reaching 50 years of age.

A known pallid sturgeon population occurs from the Missouri River below Fort Peck Dam to the headwaters of Lake Sakakawea and the Lower Yellowstone River up the confluence of the Tongue River, Montana (USFWS 2007). Factors leading to the decline of the pallid sturgeon and a listing as an endangered species by the USFWS in 1990 include the alteration of habitat through river channelization; creation of impoundments; and alteration of water flow regimes (USFWS 1990). The effect from these alterations within the Missouri River have reduced food sources by lowering productivity, destroying spawning habitat, altered flow conditions which can delay spawning cues, and blocked movements to spawning, feeding, and rearing areas (USFWS 2007).

The Project is approximately 15 miles from the Lake Sakakawea/Missouri River System. Due to the nature of the Project, no impacts to Lake Sakakawea are anticipated during construction and/or operation.

3.3.5 Least tern (*Sterna antillarum*) and Critical Habitat: Endangered

The interior least tern, a shorebird, is known to nest on midstream sandbars along the Yellowstone and Missouri River systems in North Dakota. The species constructs bowl-shaped depression nests on sparsely vegetated sandbars and sandy beaches during the nesting period, which occurs between mid-May and mid-August. Nesting adults have been documented to travel 7.5 miles or more from their nest sites to forage in wetlands or riverine habitat (Thompson et al. 1997). Habitat loss due to man-made changes to watersheds and river systems along with low nesting success from predation and human disturbance has caused a decline in least tern populations.

No individuals were observed in the area during the field surveys. Suitable shoreline habitat for breeding and nesting terns does not occur within the Survey Corridor. The Project is located approximately 15 miles from the Lake Sakakawea/Missouri River System. Migrating and foraging least terns could visit wetlands near the Project ROW; however, due to the lack of suitable nesting habitat and the presence of heavy grass and shrub cover, the interior least tern would likely not utilize such conditions.

3.3.6 Dakota skipper (*Hesperia dacotae*) and Critical Habitat: Threatened

The Dakota skipper, a prairie obligate species, requires nectar producing native flowers and native grasses. Historically, Dakota skippers have been associated with low, wet, prairie dominated high quality tall grass prairie habitat. Researchers have found that Dakota skippers also use upland mixed grass prairie that is relatively dry and includes ridges and hillsides. These often have small inclusions of areas with species more commonly typified with tall grass prairie. Royer and others (Royer et al. 2008) classified these into Type A and Type B habitats. Type B habitat i.e. upland mixed prairie is the most common type in western North Dakota. Larvae require grass components of mixed-grass prairie that include bluestem grasses and needlegrasses, while adults require nectar sources; therefore, suitable prairie must include nectar-producing forbs. These may include purple coneflower, blue bells, or also called harebell (*Campanula rotundifolia*), blanket flower (*Gaillardia aristata*), wood lily (*Lilium philadelphicum*), or other species that are in bloom during the adult life cycle of the Dakota skipper. McKenzie County has two parcels that the USFWS has classified as critical habitat. The closest parcel is approximately 30 miles northwest of the Survey Corridor.

Thirteen native prairie grassland areas within the Survey Corridor were found to be dominated by requisite species for the Dakota skipper. These areas are considered Type B habitat and total approximately 19.14 acres. Appendix F contains Dakota Skipper Habitat Forms from the field data collected at each area. The remaining grassland areas within the Survey Corridor were found to be dominated by non-native vegetation such as, smooth brome (*Bromus inermis*) and Kentucky bluegrass (*Poa pratensis*). These areas do not provide adequate ground cover or nectar species for the Dakota skipper.

3.3.7 Piping plover (*Charadrius melodus*) and Critical Habitat: Threatened

The piping plover is a migratory shorebird that breeds in North Dakota. Suitable nesting habitat for piping plovers in the Missouri River system is characterized as sparsely vegetated channel sandbars, sand and gravel beaches on islands, temporary pools on sandbars and islands, and island margins that interface with the river channel. The piping plover feeds on worms, insects, and mollusks. Degradation of habitat related to the channelization river systems, nest predation, and human disturbance has led to the decline of piping plover populations.

The Survey Corridor is predominantly cropland, and contains wetlands and waterbodies that are well vegetated and do not provide bare ground suitable for nesting habitat.

Critical habitat for the Northern Great Plains piping plover has been designated on alkali lakes and wetlands, the Yellowstone River, and Missouri River in North Dakota. The physical and biological features that are essential to the conservation of the species, referred to as the primary constituent elements, require special consideration for protection. In riverine habitat, these include sparsely vegetated channel sandbars, sand and gravel beaches on islands, temporary pools on sandbars and islands, and island margins that interface with the river channel, all protected from disturbance. This Project is located approximately 15 miles south of the nearest critical habitat, which is the Lake Sakakawea/Missouri River System. (Appendix A, Figure 3) (USFWS 2015b). There is no suitable or critical piping plover habitat within the Survey Corridor.

3.3.8 Red knot (*Calidris canutus rufa*): Threatened

The red knot is a shorebird that breeds in the central Canadian Arctic, with primary breeding grounds in Nunavut Territory, but some potential breeding habitat extending into the Northwest Territories (FR 2013a). The rufa red knot winters along the Atlantic coasts of Argentina and Chile (particularly the island of Tierra del Fuego), the north coast of Brazil, and further north into Mexico and the southeast United States (USFWS 2014b). During migration, the rufa red knot primarily follows the Atlantic coastline to and from breeding and wintering grounds. However, geolocator results from red knots wintering in Texas showed that some birds migrate using a central flyway across the Midwestern U.S. and may have a northern Great Plains stopover (FR 2013). Rufa red knots spend 2 to 3 months at breeding sites in northern Canada.

Red knots are specialized molluscivores, feeding primarily on hard-shelled mollusks in soft wet sand/sediment (USFWS 2014b). In addition to mollusks, red knots may feed upon shrimp, crabs, marine worms, and horseshoe crab eggs and other similar invertebrates. On the breeding ground, rufa red knots feed mostly on terrestrial invertebrates and grass shoots/seeds (FR 2013).

The shoreline of the Missouri River provides stopover habitat for the red knot. Although some individuals may stopover in North Dakota during annual migrations, the species is rare and is not reported in North Dakota in every year. Reported historical sightings since 1900 (Igl 2015), are primarily one or a few birds; however, larger flocks have been reported. The majority of these sightings have been made in the prairie pothole region during the spring migration in late April through May. An increase in future sightings may result from an increase in public awareness.

The red knot migrates annually from its breeding grounds in the Arctic to wintering habitat in southern climates. It does not nest in North Dakota but may use areas along the Missouri River as stopover habitat. The Project is located approximately 15 miles south of the Lake Sakakawea/Missouri River System and the Survey Corridor does not have suitable shoreline stopover habitat for the red knot.

3.4 Noxious and Invasive Weeds

During the survey, Canada thistle (*Cirsium arvense*) was delineated at 90 locations and common burdock (*Arctium minus*) was delineated at four locations. Approximately 107.2 acres of noxious weeds were delineated. No other noxious or invasive weed species were observed. Table 8 summarizes the noxious weed data collected. Appendix A, Figure 2, depicts the location of the noxious weeds.

Table 8. Noxious Weed Locations

Polygon ID	Species	Percent Cover	Latitude	Longitude	Acres
X_A-001	*Cirsium arvense*	35	47.73627801	-103.4186928	0.024

Polygon ID	Species	Percent Cover	Latitude	Longitude	Acres
X_A-002	*Cirsium arvense*	25	47.7351967	-103.4177223	0.005
X_A-003	*Cirsium arvense*	25	47.73493054	-103.4176113	0.008
X_A-004	*Cirsium arvense*	25	47.73303275	-103.4176046	0.004
X_A-005	*Cirsium arvense*	30	47.73280205	-103.4175436	0.010
X_A-006	*Cirsium arvense*	25	47.73084854	-103.4170227	3.025
X_A-007	*Cirsium arvense*	15	47.72422279	-103.3852649	1.173
X_A-008	*Cirsium arvense*	15	47.72484682	-103.3849242	0.115
X_A-009	*Cirsium arvense*	15	47.72467229	-103.378832	0.011
X_A-010	*Cirsium arvense*	35	47.72496397	-103.377387	4.402
X_A-011	*Cirsium arvense*	25	47.72252897	-103.3751568	37.945
X_A-012	*Cirsium arvense*	15	47.71945193	-103.3720136	10.516
X_A-013	*Cirsium arvense*	10	47.71698786	-103.3692049	0.019
X_A-014	*Cirsium arvense*	20	47.71675109	-103.3688425	0.033
X_A-015	*Cirsium arvense*	25	47.71611025	-103.368943	0.010
X_A-016	*Cirsium arvense*	20	47.71121731	-103.3689709	0.012
X_A-017	*Cirsium arvense*	25	47.71093543	-103.3688388	0.030
X_A-018	*Cirsium arvense*	20	47.71091977	-103.352801	20.423
X_A-019	*Cirsium arvense*	25	47.70234112	-103.3476405	0.018
X_A-020	*Cirsium arvense*	25	47.6996163	-103.3476211	0.026
X_A-021	*Cirsium arvense*	25	47.69786028	-103.347904	0.125
X_A-022	*Cirsium arvense*	30	47.69798064	-103.3473832	0.012
X_A-023	*Cirsium arvense*	15	47.69714259	-103.3437504	0.028
X_A-024	*Cirsium arvense* *Arctium minus*	30 10	47.69700929	-103.3432531	0.011
X_A-025	*Cirsium arvense*	25	47.69604282	-103.312969	0.105
X_A-026	*Cirsium arvense*	20	47.69204946	-103.2940386	0.012
X_A-027	*Cirsium arvense*	15	47.69214227	-103.2933702	0.022
X_A-028	*Cirsium arvense*	25	47.69233543	-103.2907828	1.148
X_A-029	*Cirsium arvense*	15	47.69204747	-103.2860824	0.213
X_A-030	*Cirsium arvense*	25	47.69208002	-103.2853528	0.122
X_A-031	*Cirsium arvense*	40	47.69299391	-103.2697049	0.017
X_A-032	*Cirsium arvense*	15	47.68717684	-103.2803497	1.132
X_A-033	*Cirsium arvense*	30	47.6888701	-103.2756835	0.020
X_A-034	*Cirsium arvense*	50	47.6885434	-103.2722542	0.063
X_A-035	*Cirsium arvense*	25	47.68835887	-103.2718629	0.020
X_A-036	*Cirsium arvense*	25	47.68829388	-103.2689182	0.052
X_A-037	*Cirsium arvense*	15	47.68824256	-103.2683456	0.020
X_A-038	*Cirsium arvense*	35	47.68837074	-103.2671347	0.155
X_A-039	*Cirsium arvense*	15	47.69025687	-103.2658455	7.899
X_A-040	*Cirsium arvense*	15	47.69099304	-103.26353	0.006
X_A-041	*Cirsium arvense*	35	47.73447657	-103.4136651	12.635

Polygon ID	Species	Percent Cover	Latitude	Longitude	Acres
X_A-042	*Cirsium arvense*	30	47.73220805	-103.4120044	0.029
X_A-043	*Cirsium arvense*	35	47.72334955	-103.3826049	0.197
X_A-044	*Cirsium arvense*	50	47.72284007	-103.3816017	0.182
X_A-045	*Cirsium arvense*	50	47.72273293	-103.3811255	0.109
X_A-046	*Arctium minus*	15	47.71985043	-103.3798029	0.003
X_A-047	*Cirsium arvense*	40	47.71913083	-103.379731	0.255
X_A-048	*Cirsium arvense*	25	47.71908213	-103.3793901	0.013
X_A-049	*Cirsium arvense*	10	47.71877756	-103.3789547	0.603
X_A-050	*Cirsium arvense*	30	47.71824162	-103.3794007	0.012
X_A-051	*Cirsium arvense*	25	47.71843602	-103.3782039	0.003
X_A-052	*Cirsium arvense*	60	47.71793033	-103.3785189	0.023
X_A-053	*Cirsium arvense*	50	47.71793287	-103.3776188	0.005
X_A-054	*Cirsium arvense*	15	47.71785809	-103.3744923	0.015
X_A-055	*Cirsium arvense*	50	47.72363982	-103.3793004	0.022
X_A-056	*Cirsium arvense*	40	47.72309792	-103.3797173	0.015
X_A-057	*Cirsium arvense*	30	47.72298449	-103.3795122	0.024
X_A-058	*Arctium minus*	50	47.72253407	-103.3767324	0.001
X_A-059	*Arctium minus*	50	47.72243888	-103.3774739	0.001
X_A-060	*Cirsium arvense*	35	47.698556	-103.3474299	0.015
X_A-061	*Cirsium arvense*	45	47.69753389	-103.3477299	0.002
X_A-062	*Cirsium arvense*	20	47.6962784	-103.3125508	0.183
X_A-063	*Cirsium arvense*	30	47.69627209	-103.3108544	0.169
X_A-064	*Cirsium arvense*	50	47.69621898	-103.3111845	0.377
X_A-065	*Cirsium arvense*	25	47.69656646	-103.3094632	0.088
X_A-066	*Cirsium arvense*	15	47.69167295	-103.2868066	0.025
X_A-067	*Cirsium arvense*	15	47.69166403	-103.2863094	0.099
X_A-068	*Cirsium arvense*	50	47.69158901	-103.2858914	0.002
X_A-069	*Cirsium arvense*	45	47.69153383	-103.2841881	0.018
X_A-070	*Cirsium arvense*	45	47.72618437	-103.3904033	0.162
X_A-071	*Cirsium arvense*	30	47.72539124	-103.3857755	0.257
X_A-072	*Cirsium arvense*	15	47.72567394	-103.3848047	0.205
X_A-073	*Cirsium arvense*	25	47.72563221	-103.3833671	0.094
X_A-074	*Cirsium arvense*	80	47.72521963	-103.3826241	0.047
X_A-075	*Cirsium arvense*	30	47.72536004	-103.3810991	0.007
X_A-076	*Cirsium arvense*	35	47.72559446	-103.3802413	0.006
X_A-077	*Cirsium arvense*	55	47.72535514	-103.3788036	0.006
X_A-078	*Cirsium arvense*	20	47.69630122	-103.2688635	0.019
X_A-079	*Cirsium arvense*	15	47.69816097	-103.2665317	0.021
X_A-080	*Cirsium arvense*	15	47.696402	-103.2671331	0.011
X_A-081	*Cirsium arvense*	20	47.69519179	-103.2670838	0.039
X_A-082	*Cirsium arvense*	25	47.69466032	-103.2667482	0.058

Polygon ID	Species	Percent Cover	Latitude	Longitude	Acres
X_A-083	*Cirsium arvense*	30	47.69431742	-103.2663872	0.198
X_A-084	*Cirsium arvense*	25	47.69411747	-103.2669678	0.021
X_A-085	*Cirsium arvense*	25	47.69384402	-103.2671697	0.083
X_A-086	*Cirsium arvense*	20	47.70044982	-103.3472509	0.010
X_A-087	*Cirsium arvense*	55	47.69710603	-103.2733721	0.061
X_A-088	*Cirsium arvense*	35	47.69687625	-103.2726042	0.160
X_A-089	*Cirsium arvense*	35	47.69683377	-103.2695122	0.063
X_A-090	*Cirsium arvense*	25	47.6928748	-103.2571567	1.567
				Total	**107.212**

3.5 Raptor Nests and Migratory Bird Nesting Habitat

No raptor nests were observed within ½-mile line-of-sight of the Survey Corridor. Approximately 454.7 acres (53%) of the Survey Area is vegetated with a mixture of forest habitat and grassland Habitat, which provides nesting habitat for migratory birds. Agricultural areas used for crop production coveres 344.1 acres (41%) of the Survey Area. The agriculture areas provide lower quality habitat for nesting migratory birds. The remaining 58.1 acres (7%) of the Survey Area is developed for us as commercial areas, residential areas, or road rights-of-ways. These developed areas provide low-quality habitat for nesting migratory birds.

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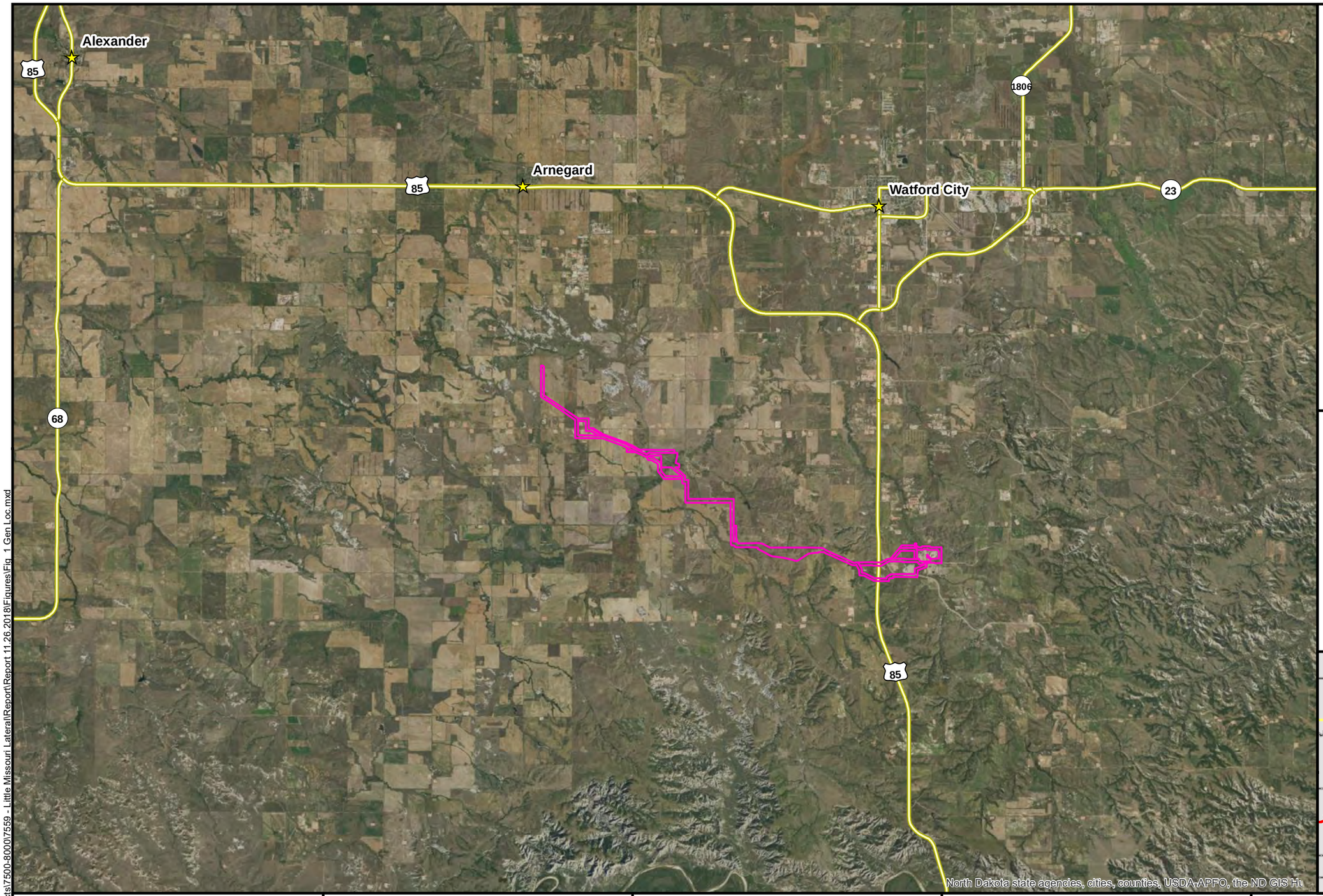
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Appendix A

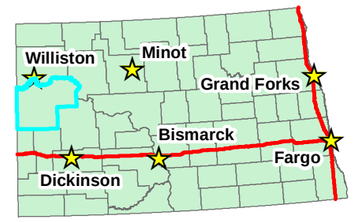
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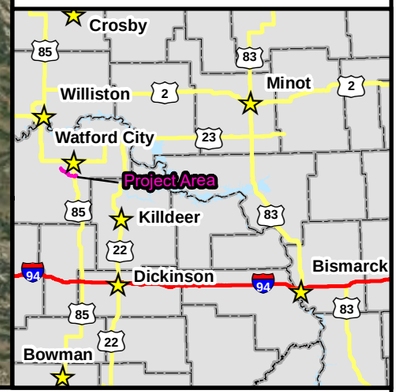
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Legend

- City
- Survey Area
- Highway





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Basemap: NAIP\North_Dakota_2016_1m

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Little Missouri Lateral Pipeline Project
McKenzie County, North Dakota

Figure 1
General Location

R100W

2

1

T149N

T149N

11

12

R100W

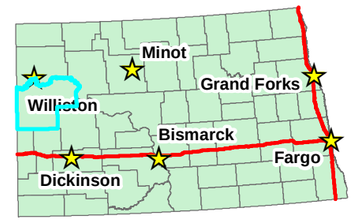
North Dakota state agencies, cities, counties, USDA-APFO, the ND GIS Hu

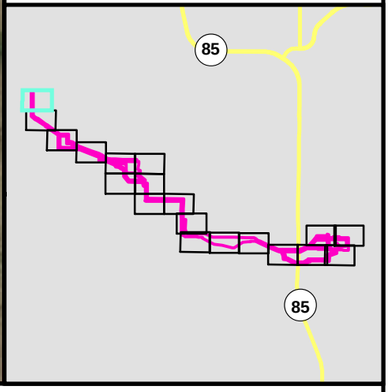
Legend

- Survey Area
- National Wetland Inventory
- PLSS Section
- Noxious Weed Location
- Delineated Waterbody
- Delineated Wetland
- Wetland Observation Point
- Upland Observation Point

Potential T&E Species Habitat

- Dakota Skipper
- Northern Long-eared Bat





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McKenzie County, North Dakota

Figure 2.1
Field Survey Data

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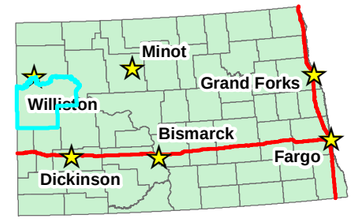


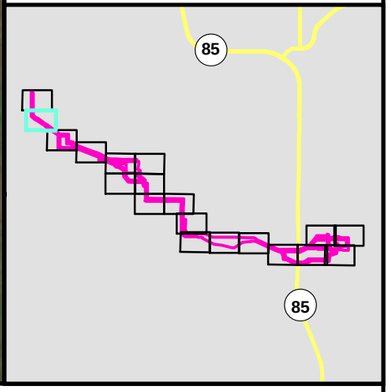
Legend

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McKenzie County, North Dakota

Figure 2.2
Field Survey Data

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R100W

R 99W

X_A-001

X_A-041

X_A-002

X_A-003

S_A-01

12

7

T149N

T149N

X_A-004

X_A-005

X_A-042

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S_A-01

18

X_A-006

R100W

R 99W

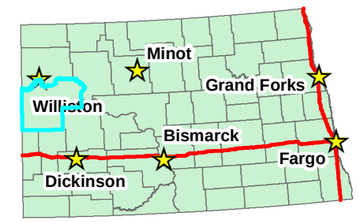
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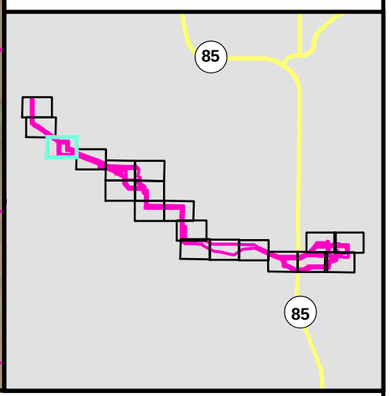
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Potential T&E Species Habitat

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McKenzie County, North Dakota

Figure 2.3
Field Survey Data

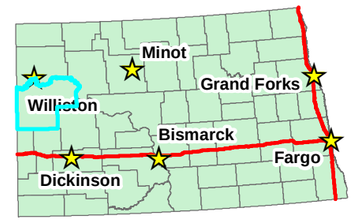


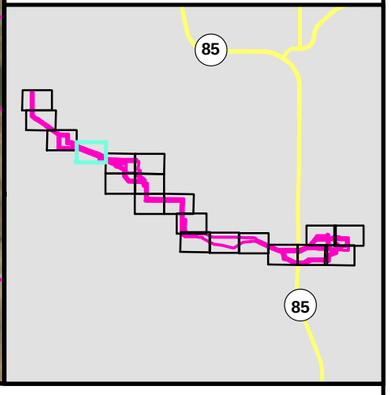
Legend

- Survey Area
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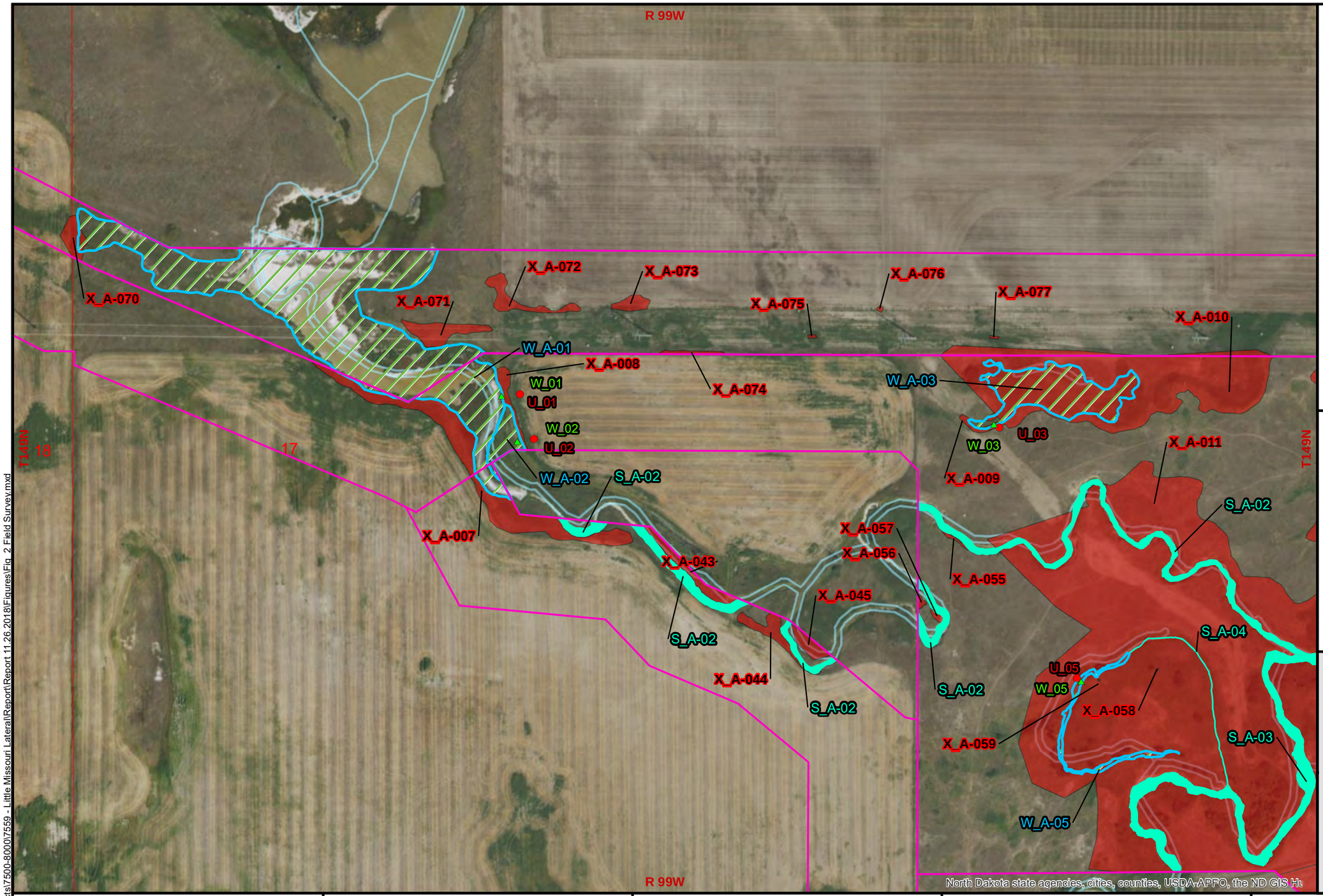
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McKenzie County, North Dakota

Figure 2.4
Field Survey Data

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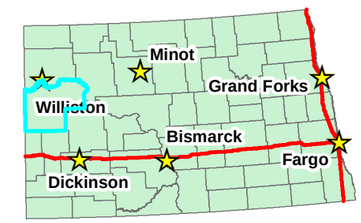


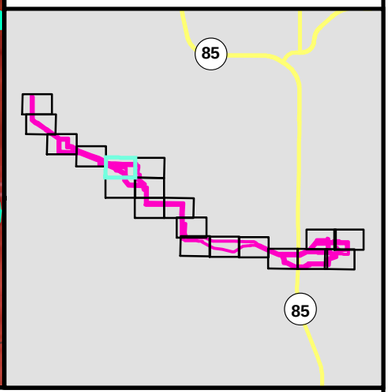
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Potential T&E Species Habitat

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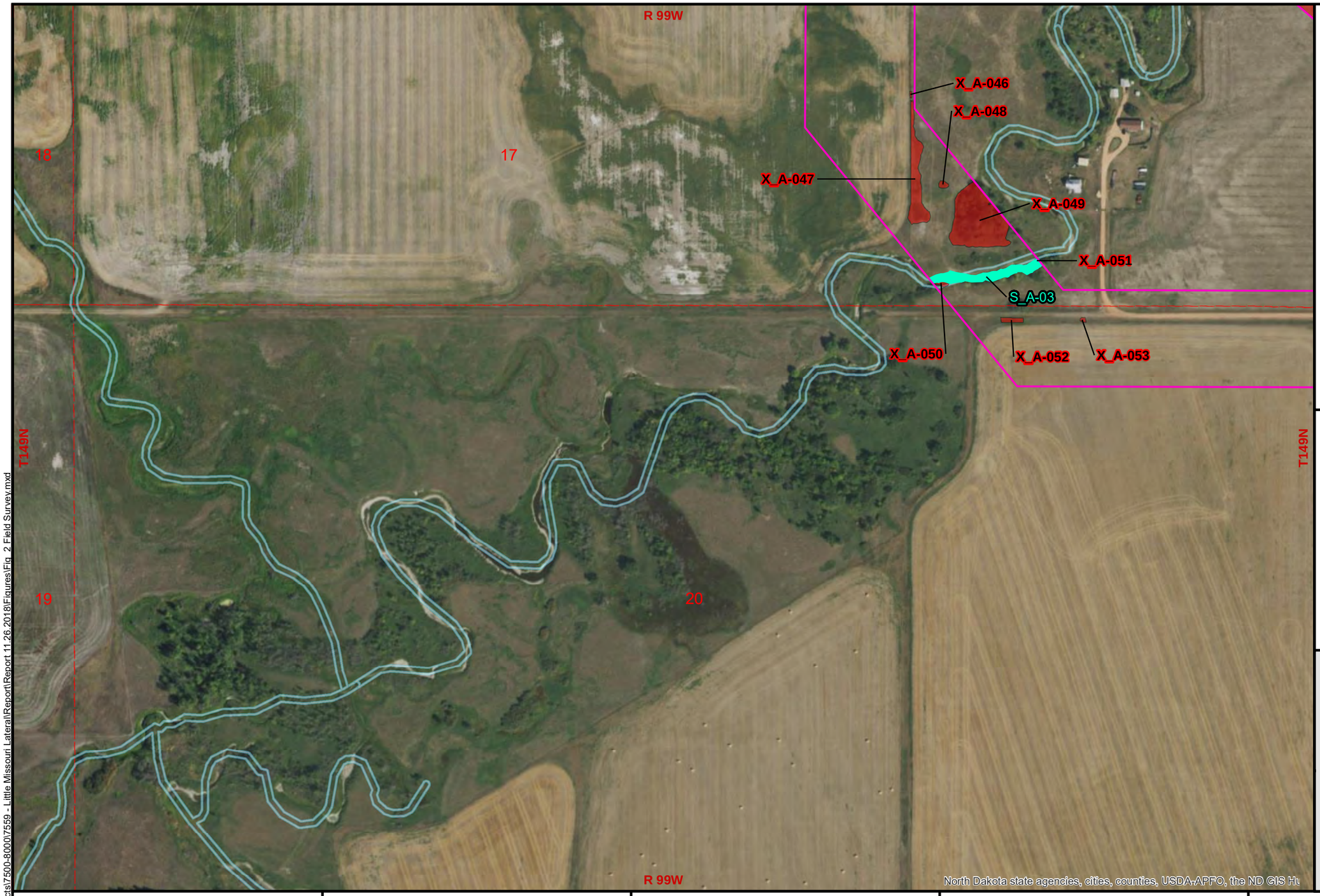
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Figure 2.5
Field Survey Data

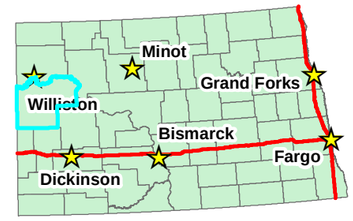


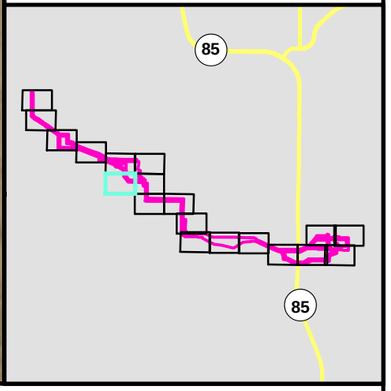
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- Delineated Waterbody
- Delineated Wetland
- Wetland Observation Point
- Upland Observation Point

Potential T&E Species Habitat

- Dakota Skipper
- Northern Long-eared Bat





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Basemap: NAIP\North_Dakota_2016_1m

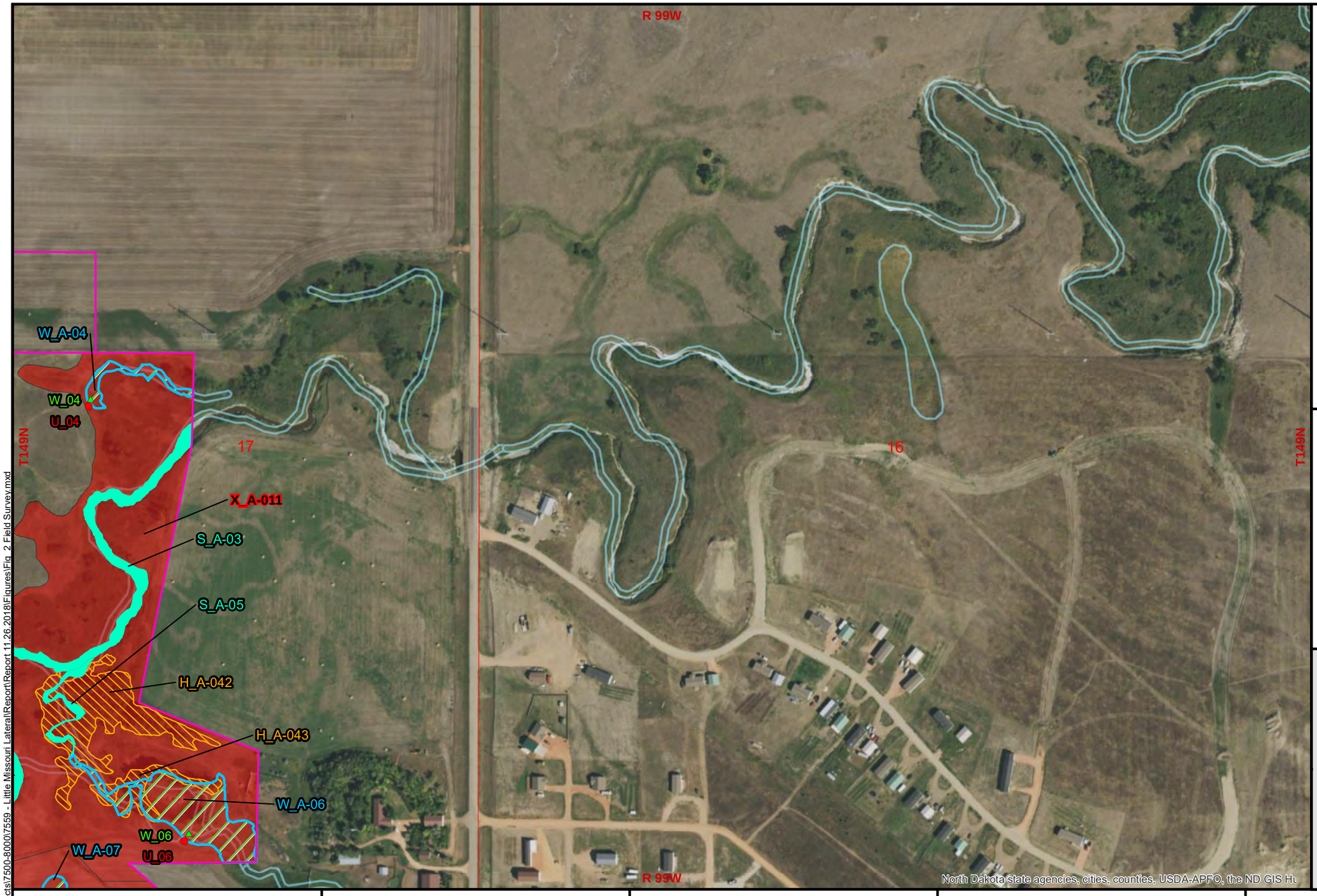
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McKenzie County, North Dakota

Figure 2.6
Field Survey Data

November 2018 R:\projects\7500-8000\7559 - Little Missouri Lateral\Report\Report 11.26.2018\Figures\Fig_2 Field Survey.mxd

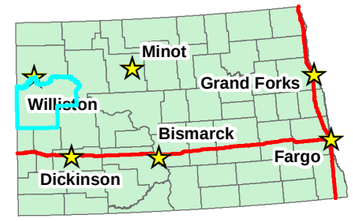


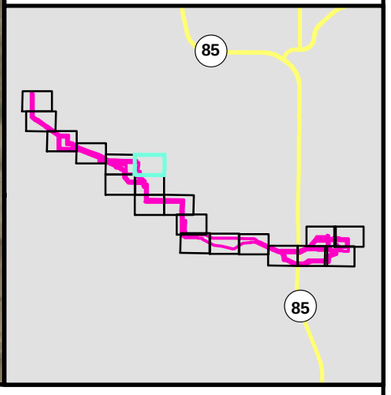
Legend

- Survey Area
- National Wetland Inventory
- PLSS Section
- Noxious Weed Location
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- Upland Observation Point

Potential T&E Species Habitat

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Figure 2.7
Field Survey Data

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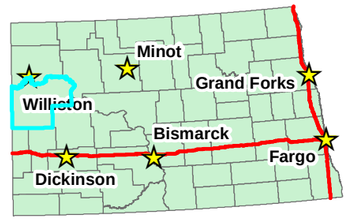
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W_A-07
X_A-012
R 99W
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X_A-054
X_A-013
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X_A-015
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North Dakota state agencies, cities, counties, USDA-APFO, the ND GIS Hu

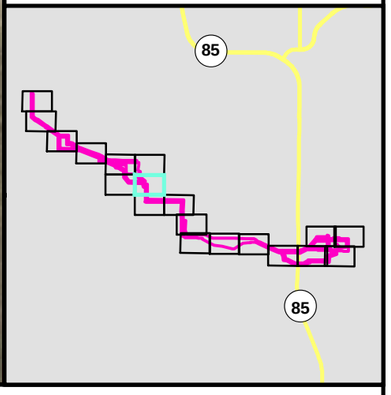
Legend

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Potential T&E Species Habitat

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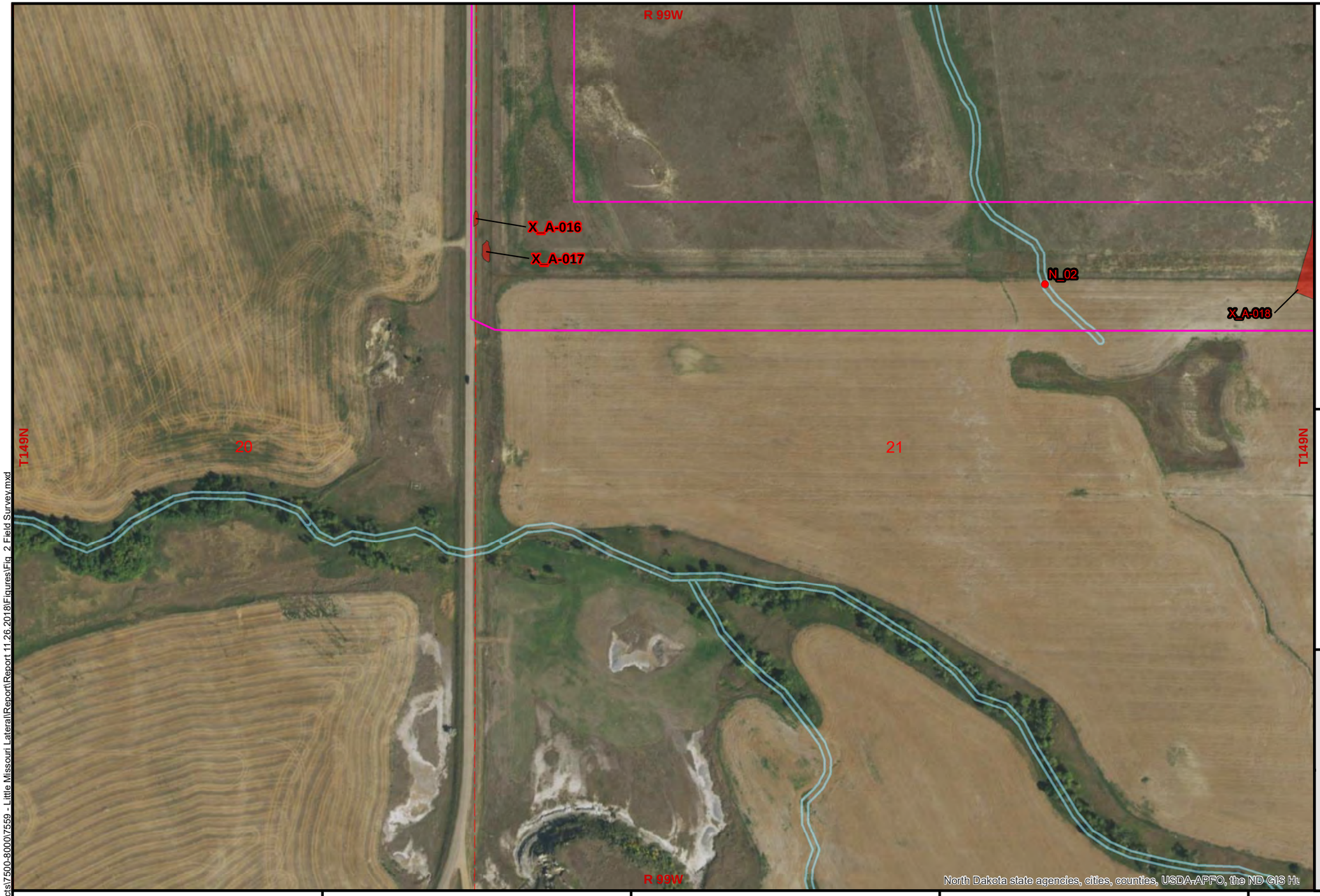
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Basemap: NAIP\North_Dakota_2016_1m

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Little Missouri Lateral Pipeline Project
McKenzie County, North Dakota

Figure 2.8
Field Survey Data

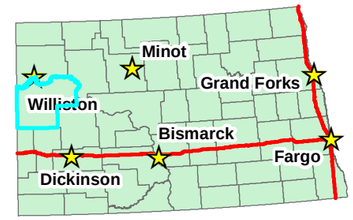


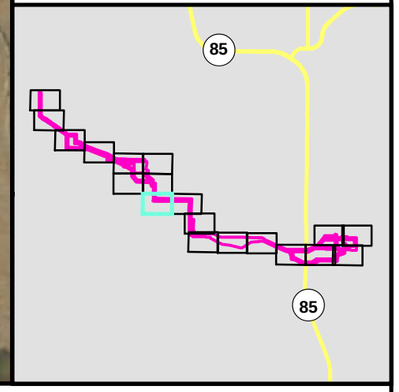
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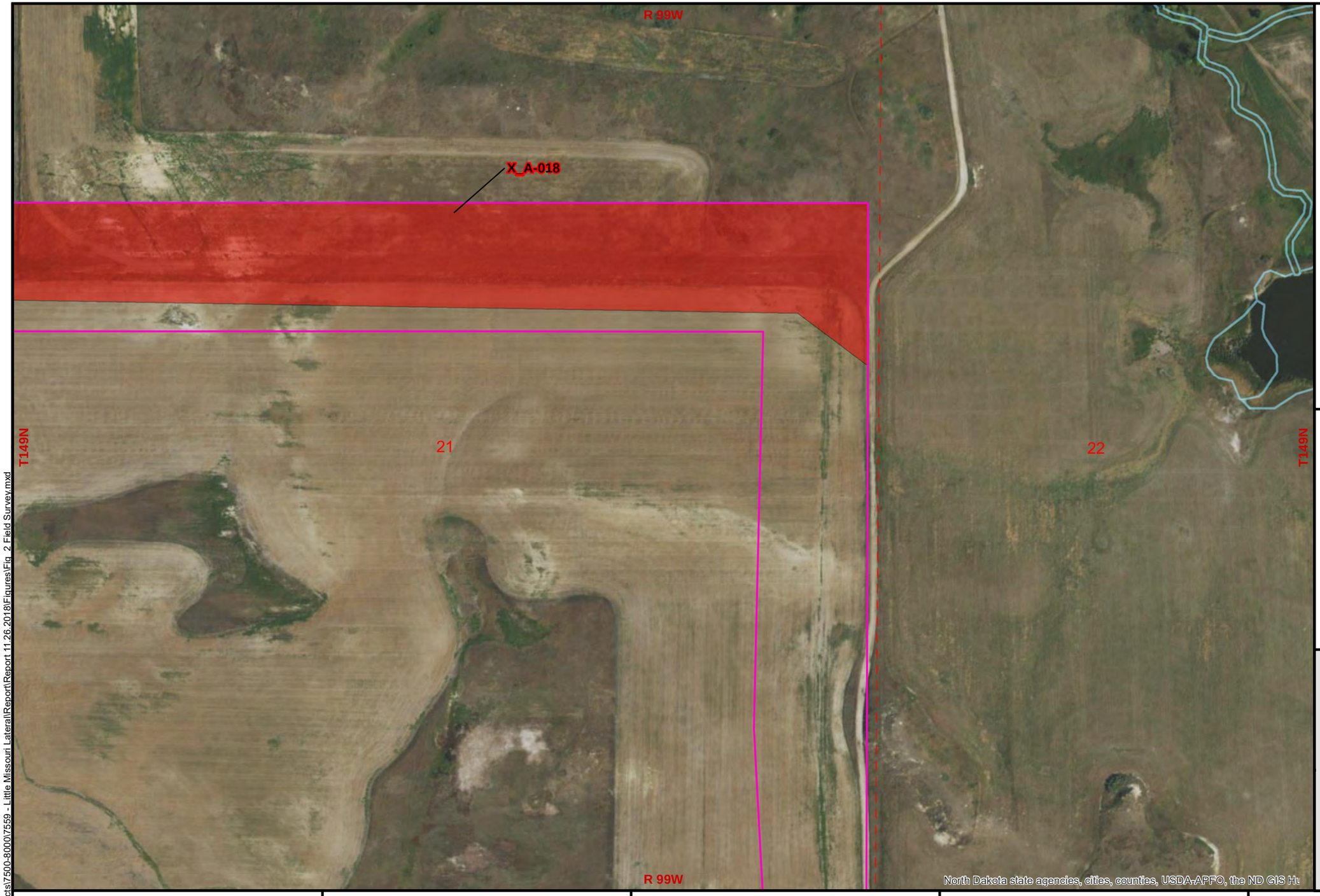
Basemap: NAIP\North_Dakota_2016_1m

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Little Missouri Lateral Pipeline Project
McKenzie County, North Dakota

Figure 2.9
Field Survey Data

November 2018 R:\projects\7500-800007559 - Little Missouri Lateral\Report\Report 11.26.2018\Figures\Fig 2 Field Survey.mxd

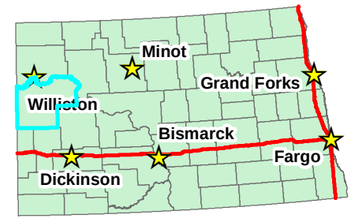


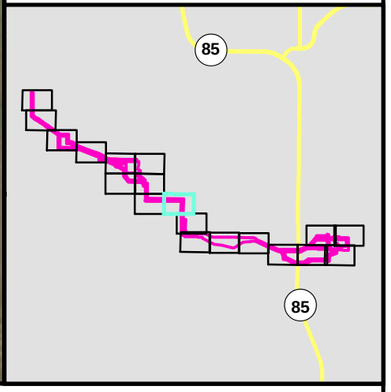
Legend

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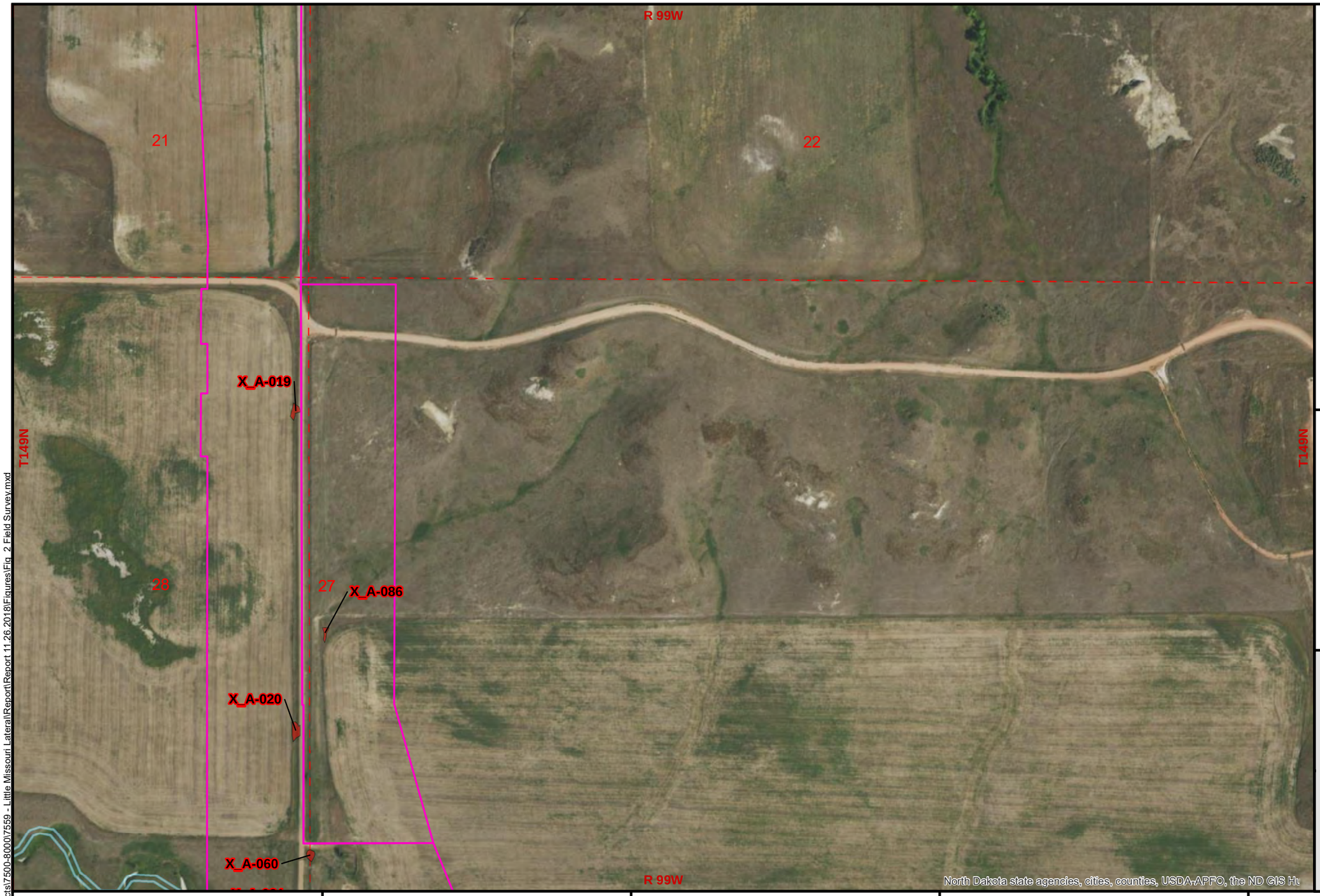
Basemap: NAIP\North_Dakota_2016_1m

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Little Missouri Lateral Pipeline Project
McKenzie County, North Dakota

Figure 2.10
Field Survey Data

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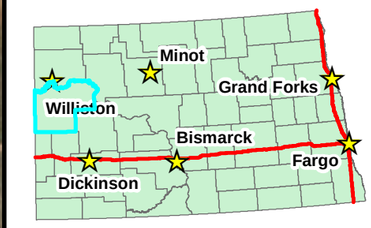


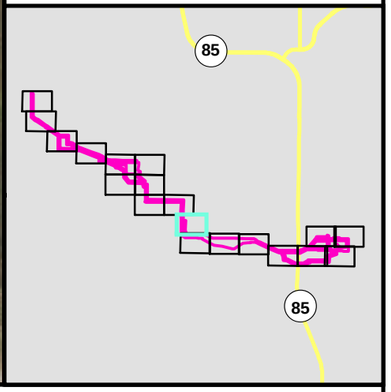
Legend

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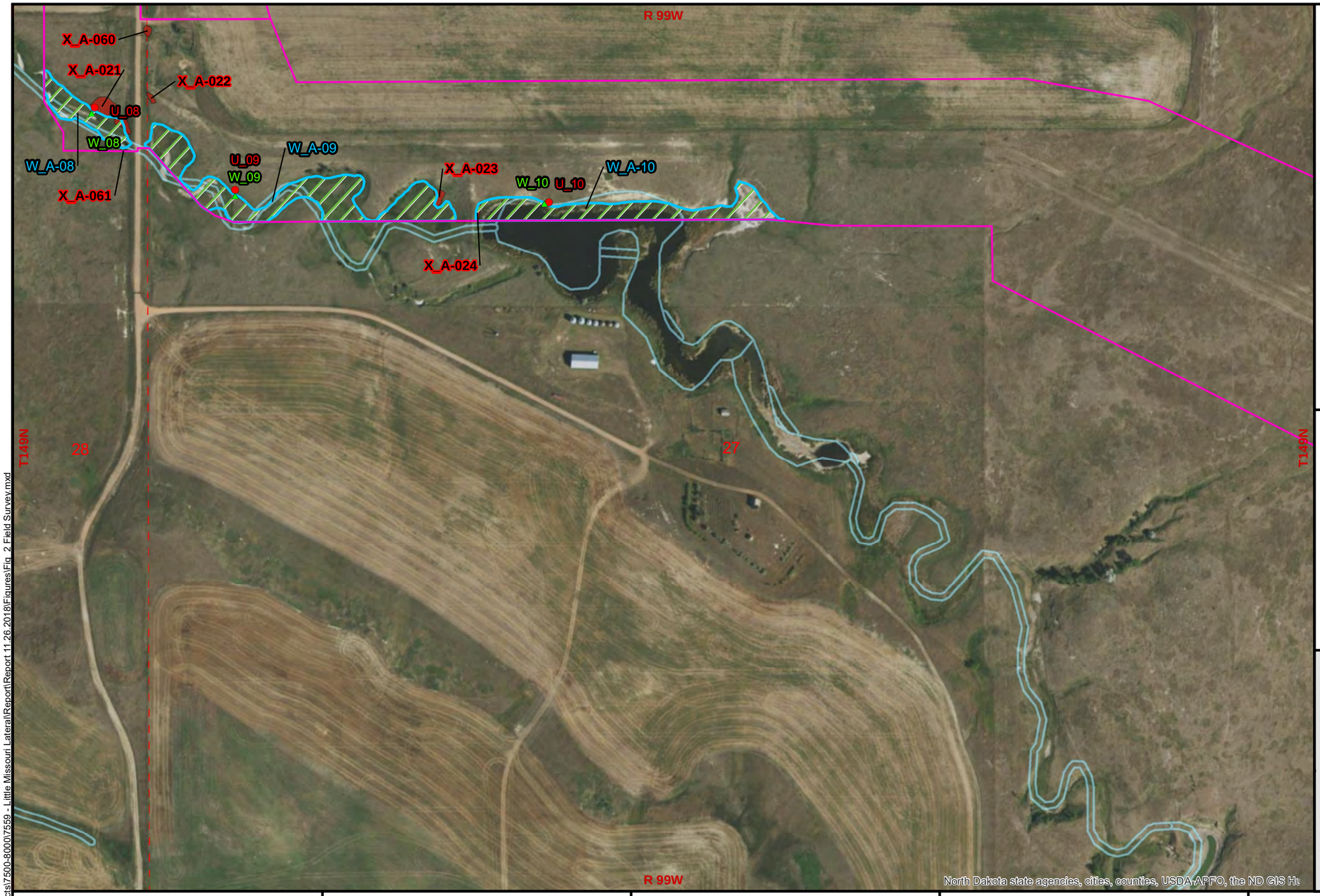
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Figure 2.11
Field Survey Data

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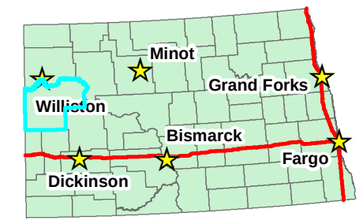


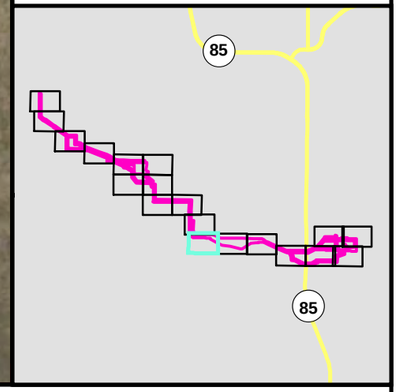
Legend

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Potential T&E Species Habitat

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- Northern Long-eared Bat





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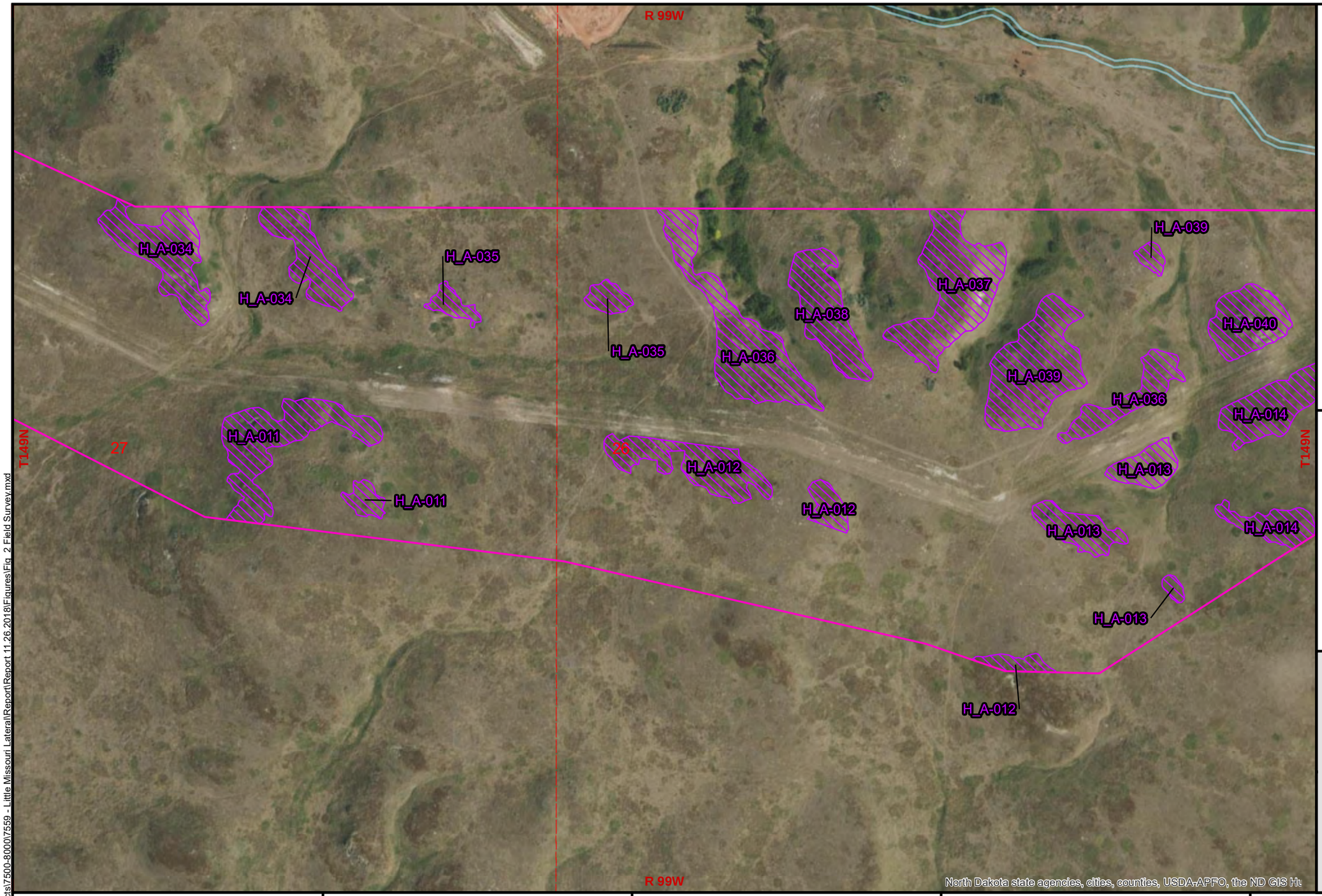
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Little Missouri Lateral Pipeline Project
McKenzie County, North Dakota

Figure 2.12
Field Survey Data

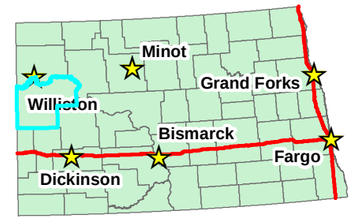


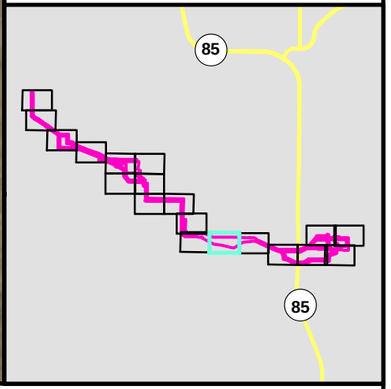
Legend

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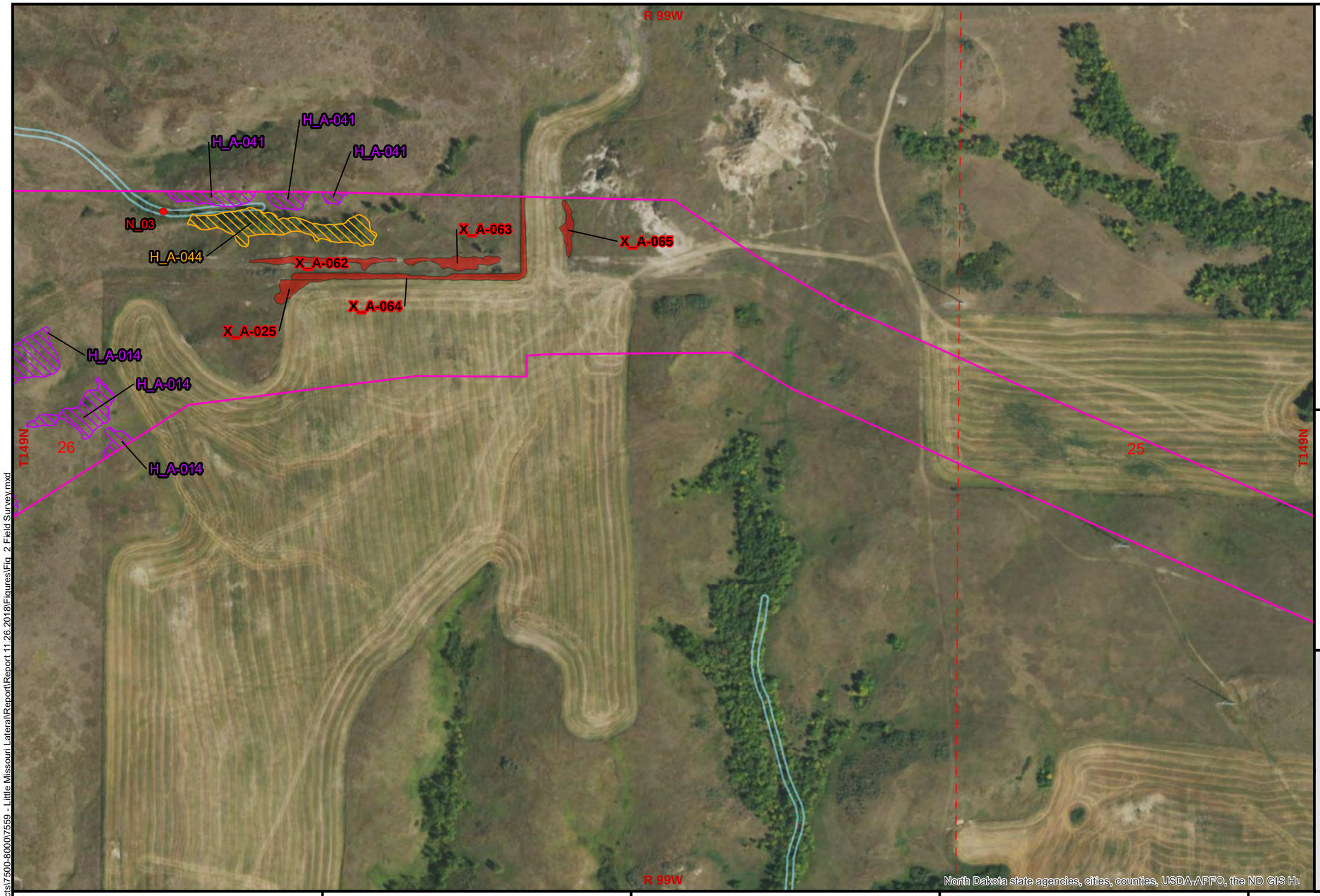
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McKenzie County, North Dakota

Figure 2.13
Field Survey Data

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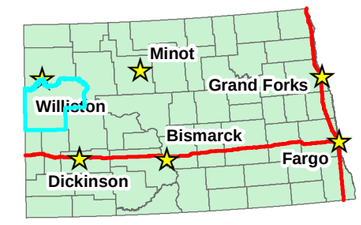


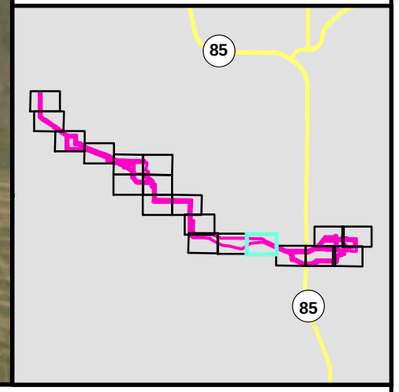
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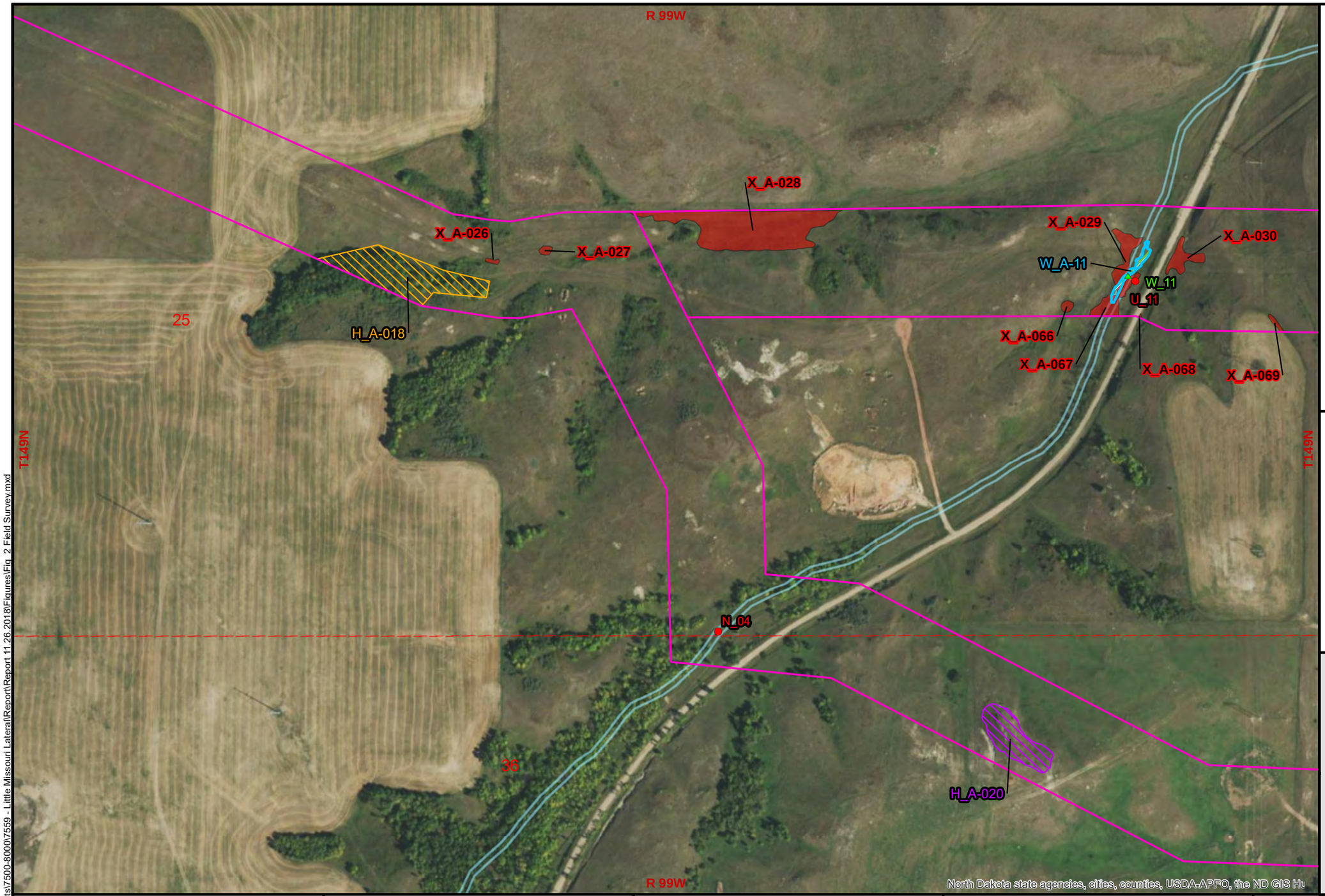
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Little Missouri Lateral Pipeline Project
McKenzie County, North Dakota

Figure 2.14
Field Survey Data

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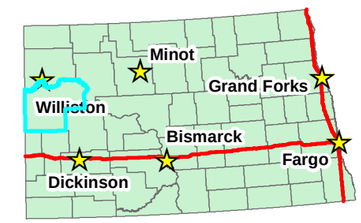


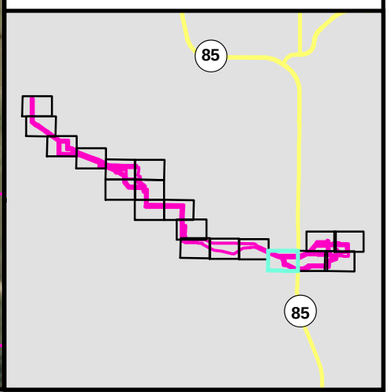
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Potential T&E Species Habitat

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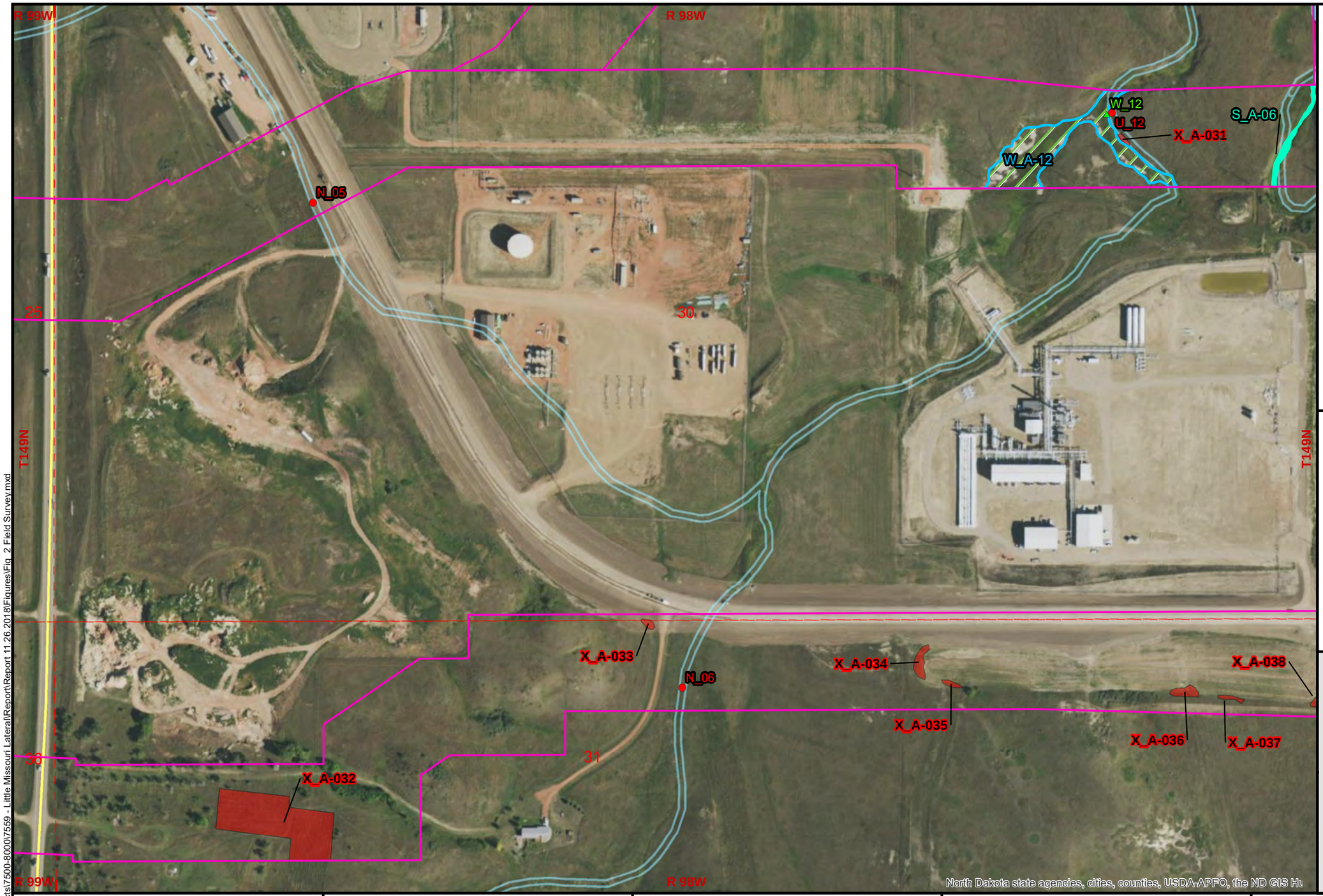
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Little Missouri Lateral Pipeline Project
McKenzie County, North Dakota

Figure 2.15
Field Survey Data

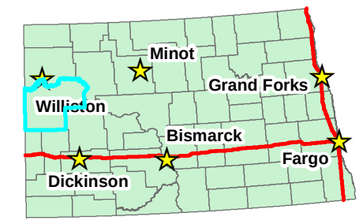


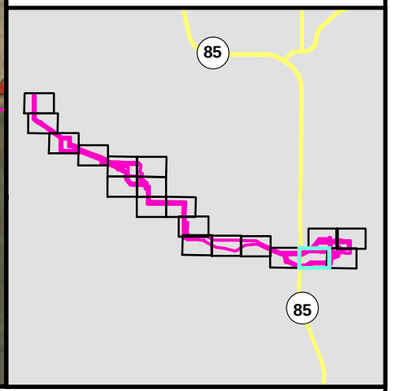
Legend

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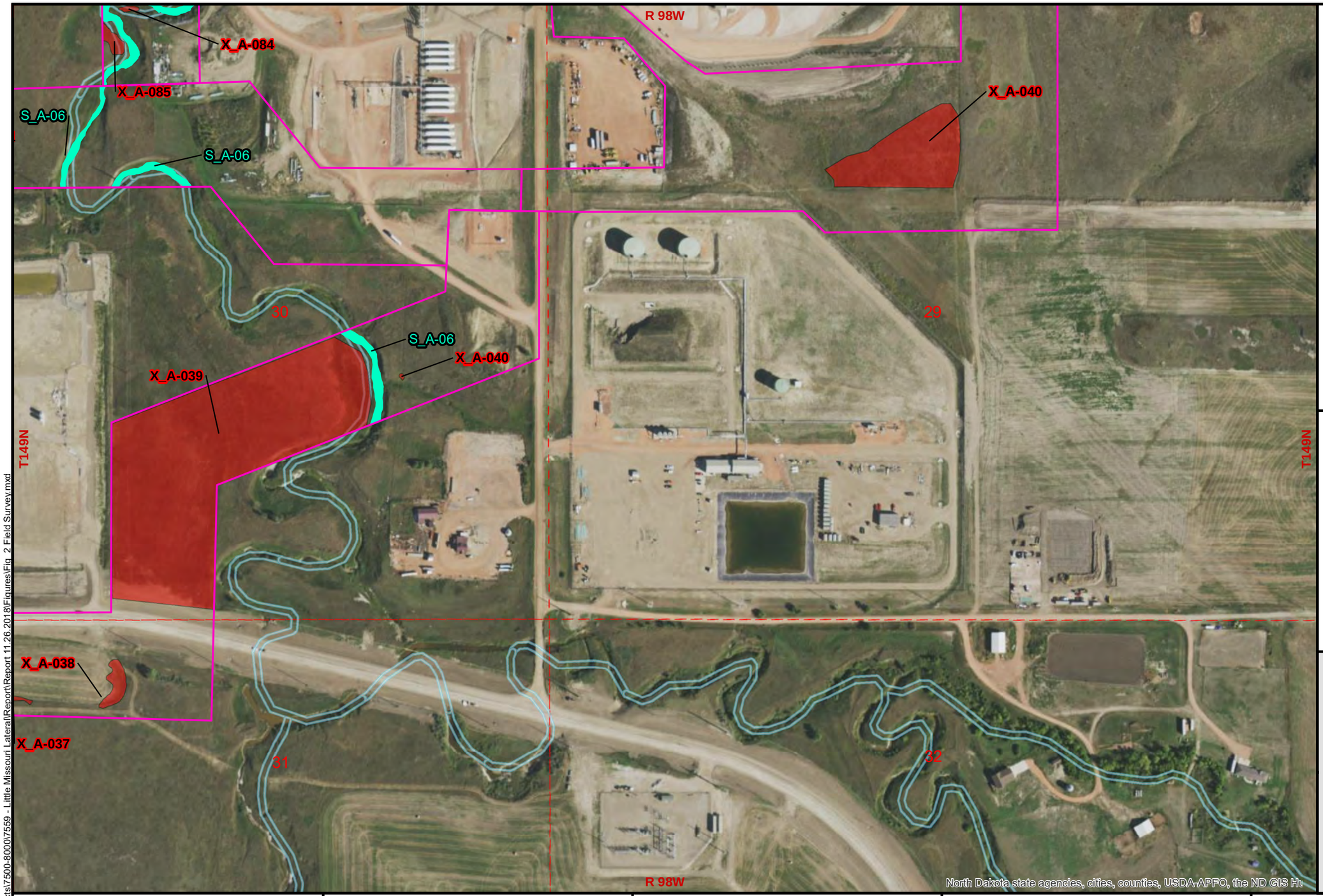
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Little Missouri Lateral Pipeline Project
McKenzie County, North Dakota

Figure 2.16
Field Survey Data

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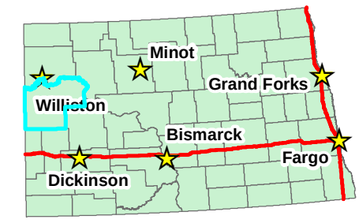


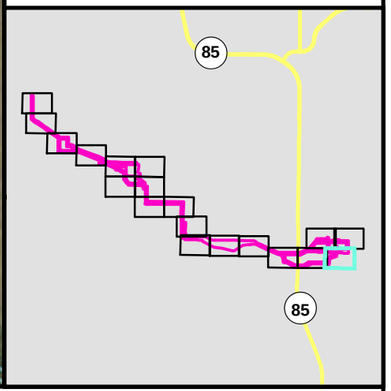
Legend

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McKenzie County, North Dakota

Figure 2.17
Field Survey Data

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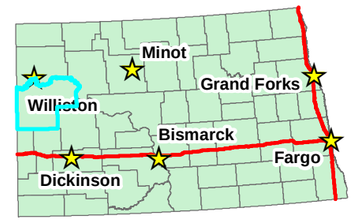
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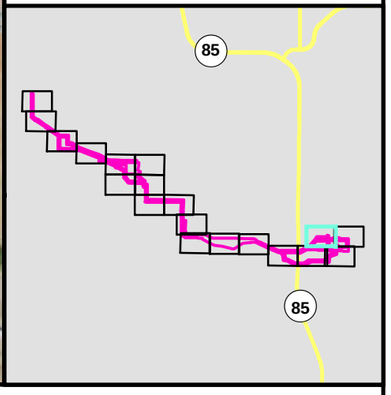
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1:3,600

0 150 300 Feet

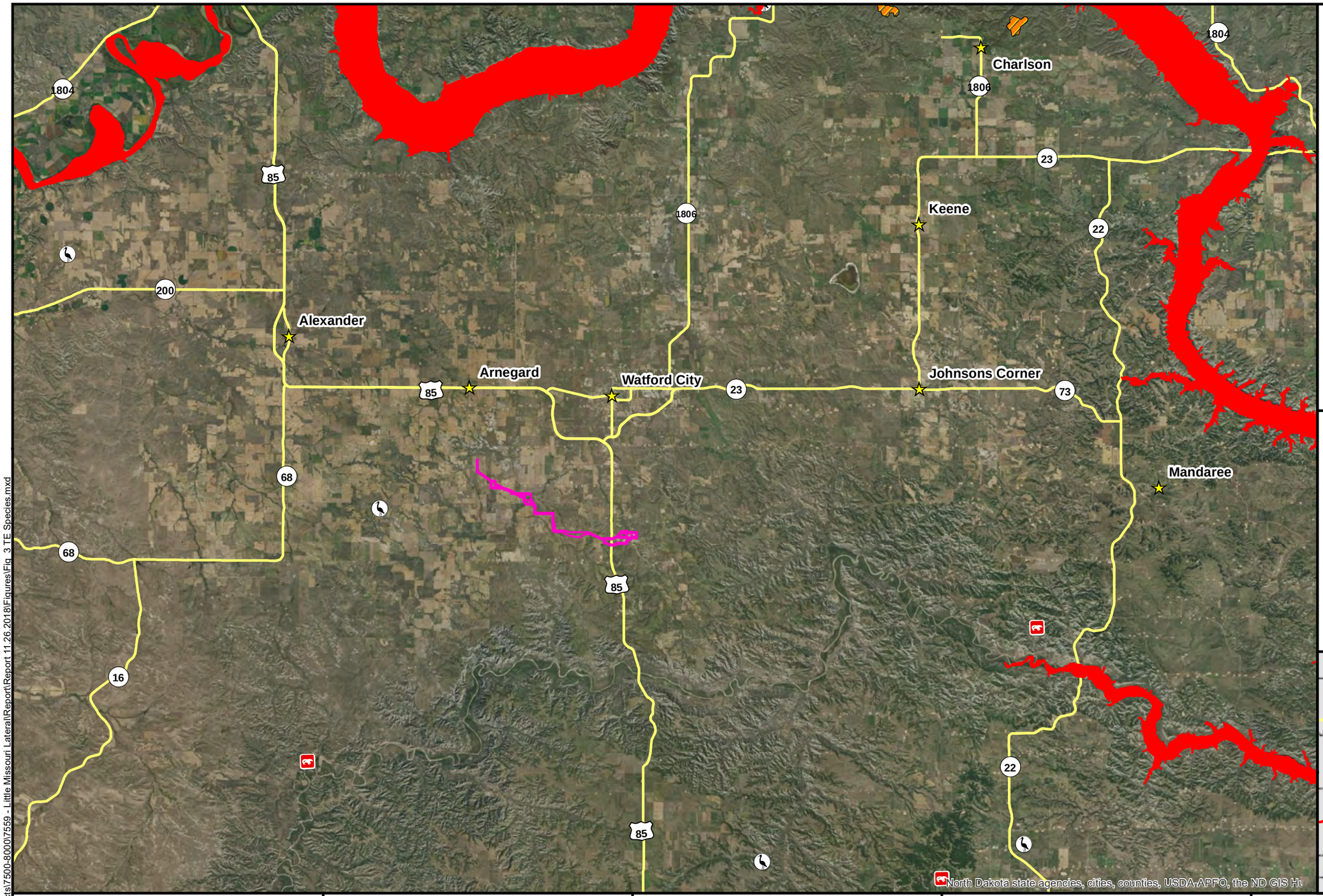
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Basemap: NAIP\North_Dakota_2016_1m

ONEOK Bakken Pipeline, LLC

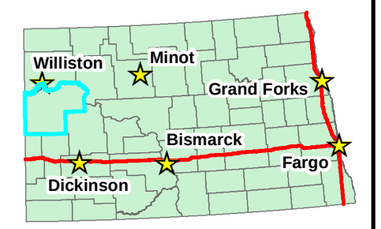
Little Missouri Lateral Pipeline Project
McKenzie County, North Dakota

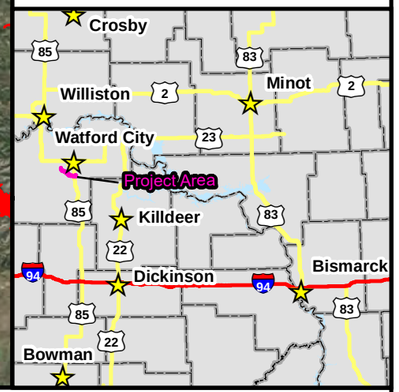
Figure 2.18
Field Survey Data



Legend

- Survey Area
- Piping Plover Critical Habitat
- Dakota Skipper Critical Habitat
- Verified Gray Wolf Sightings (Thru 2018)
- Verified Whooping Crane Sightings (thru 2015)
- City
- Highway





November 2018 R:\projects\7500-8000\7559 - Little Missouri Lateral\Report\Report 11.26.2018\Figures\Fig 3 TE Species.mxd

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1:316,800

0 2.5 5 Miles

Basemap: NAIP\North_Dakota_2016_1m

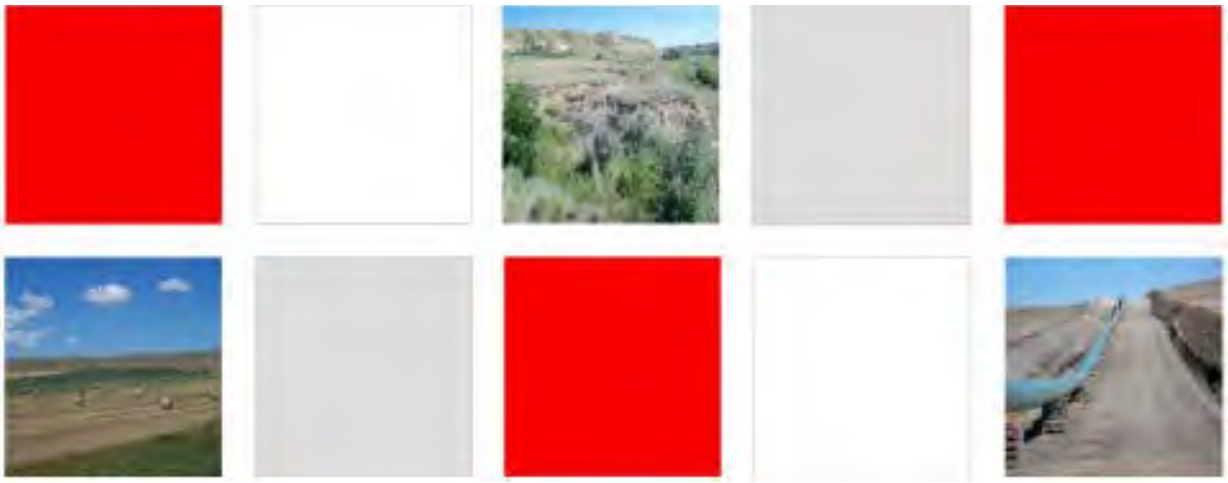
ONEOK Bakken Pipeline, LLC

Little Missouri Lateral Pipeline Project
McKenzie County, North Dakota

Figure 3
Threatened and Endangered Species

Appendix B

2018 Biological Field Survey Protocols



ONEOK Bakken Pipeline, L.L.C.

Little Missouri Lateral Pipeline Project

Natural Resources Field Survey Protocols

June 19, 2018

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1.0 SCOPE

The objective of these protocols for wetland and waterbody, habitat assessment, noxious weed, and tree and shrub surveys is to ensure that Merjent, Inc. (Merjent) and its subcontractors, implement consistent field data collection procedures for the Little Missouri Lateral Project (Project). The Natural Resource Field Survey Protocols (Protocols) incorporate all applicable agency and client requirements to-date in order to facilitate timely and complete environmental permitting applications.

2.0 SAFETY

Safety is a priority for ONEOK, Inc. (ONEOK) and Merjent. Compliance with all Project-specific safety requirements is mandated by all parties. For specific information on safety requirements, please refer to the Health & Safety Plans therein.

3.0 COMMUNICATION

Please refer to the to the Communication Plan therein.

4.0 SURVEY PROTOCOLS

The entire 300-foot-wide environmental survey corridor and proposed compressor station site will be walked during field surveys to minimize the chance of missing any wetland communities, waterbody features, noxious weeds, woody vegetation, or potential suitable habitat areas that may affect permitting, constructability, or mitigation efforts.

4.1 WETLANDS

Crews will delineate all wetlands regardless of potential jurisdictional status and will collect data for wetland features encountered in the survey corridor. Wetland delineation methods will follow standard protocols set forth in the following publications:

- 1987 U.S. Army Corps of Engineers (USACE) Wetlands Delineation Manual (1987 Manual);
- 2010 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (Version 2.0) (Regional Supplement; USACE 2010);
- Classification of Wetland and Deepwater Habitats of the United States (Cowardin et al. 1979); and
- The National Wetland Plant List (NWPL; Lichvar et al. 2016).

Data collection procedures include completing the USACE Wetland Determination Forms, collecting wetland boundaries via global positioning system (GPS) and data dictionary (see Section 5.2), collecting the spatial point data for wetland data points, and taking representative photos (see Section 5.3).

4.1.1 Vegetation

Vegetation sampling and documentation will follow procedures as described in the 1987 Manual, the Regional Supplement, community types as outlined in Cowardin et al. (1979), while using the wetland indicator statuses as prescribed by the National Wetland Plant List.

4.1.1.1 Cowardin Classifications

Cowardin classifications will be assigned to all delineated wetlands in North Dakota as either palustrine emergent (PEM), agricultural PEM (AG-PEM), palustrine unconsolidated bottom (PUB), palustrine scrub-shrub (PSS), and/or palustrine forested (PFO).

4.1.2 Hydrology

Hydrology sampling and documentation will follow procedures as described in the 1987 Manual and the Regional Supplement.

4.1.3 Soils

Soil sampling and documentation will follow procedures as described in the 1987 Manual and the Regional Supplement, which requires one soil profile to be collected at each data point.

Due to safety concerns, One Calls must be placed and marked before any ground disturbance can occur. **One calls are the responsibility of the individual performing soil excavations.**

Digging in roadside ditches is not prohibited, but is **not** recommended due to the likelihood of buried private utilities.

4.1.4 Wetland Complexes

For wetlands with multiple Cowardin classes, each discrete community will be identified when it comprises 10 percent or more of the wetland complex within the environmental survey corridor. Each discrete community within a wetland complex will require at least one representative USACE Wetland Determination Form, spatial data (boundaries and data points), and a photo.

4.1.5 Upland Inclusions

Upland inclusions within a wetland may be observed and will be delineated. In these cases, crews will collect the spatial wetland/upland boundary and a USACE upland data point to represent the upland inclusion.

4.1.6 Upland Verification - National Wetland Inventory

An area may be identified as a U.S. Fish & Wildlife Service (USFWS) National Wetland Inventory (NWI) wetland, but field indicators may conclude that the area doesn't meet the wetland parameters, thus is an upland. In these situations, field crews will:

- Collect a spatial data point location within the area indicated by NWI to be wetland;
- Collect detailed and defensible notes via data dictionary on vegetation, soil, and hydrology to document why the area is upland (note: completing a USACE Wetland Determination Form is not necessary); and
- Take a photograph of the NWI-indicated area to further characterize its upland nature.

In other instances, crews may locate an NWI that overlaps the observed wetland or is skewed from the observed wetland. In these cases, no additional documentation is needed for the upland fragment of the NWI area.

4.2 WATERBODIES

Waterbody surveys will be completed in conjunction with wetland surveys, and crews will delineate all waterbodies regardless of potential jurisdictional status. Waterbody delineation methods will follow the protocols set forth in the following publications:

- Regulatory Guidance Letter No. 05-05, Ordinary High Water Mark Identification (USACE 2005); and
- Classification of Wetland and Deepwater Habitats of the United States (Cowardin et al. 1979).

Waterbody data collection will consist of completing the Waterbody Community Data Form, collecting spatial data, and photos. Spatial data will be collected as follows:

- Waterbodies less than or equal to 10 feet between original high water mark (OHWM) will be delineated by capturing the centerline of the waterbody bed; and
- Waterbodies with an OHWM width greater than 10 feet will be delineated by capturing the OHWM along each bank.

4.2.1 Flow Regime and Cowardin Classifications

Flow regime will be defined as ephemeral, intermittent, or perennial. These will need to correspond to the appropriate Cowardin Class.

- Ephemeral Waterbodies – Defined as those features with an obvious bed and bank and are inundated following spring thaw and after periods of rainfall (otherwise these features are dry).
- Intermittent Waterbodies – Defined as those features with an obvious bed and bank, but likely have water present within the feature throughout the growing season. These features will additionally show evidence of sorting or stratification of materials (cobble, sand, organic matter).
- Perennial Waterbodies – Defined as those features with an obvious bed and bank and have standing water as well as evidence of aquatic fauna and flora consistently throughout the year.

4.2.2 Waterbodies within Wetland Complexes

There may be situations where a waterbody feature is contained within a larger wetland feature. Under these circumstances, the waterbody feature will be delineated separately from the wetland feature, as to differentiate the features for permitting and mitigation purposes.

4.2.3 National Hydrography Dataset – Upland Verification

An area may be identified as a U.S. Geological Survey National Hydrography Dataset (NHD) waterbody, but field indicators may conclude that the area does not contain a bed or bank (i.e., OHWM) and is entirely upland. In these situations, field crews will:

- Collect a spatial point location within the area indicated by NHD to be waterbody; and
- Take a photograph of the NHD-indicated area to further characterize its upland nature.

In other instances, crews may locate an NHD that overlaps the observed waterbody or is skewed from the observed feature. In those cases, no additional documentation is needed for the upland fragment of the NHD area.

4.3 HABITAT ASSESSMENTS

Habitat assessment surveys, including raptor nests, will be completed where crews will delineate all potentially suitable habitat for federal- and state-listed threatened and endangered species. Data collection for habitat assessments will be limited to GPS data collection via data dictionary and photo documentation. If a community, individual, or population is observed, polygon data will be collected.

Special attention should be paid to potential Dakota skipper (*Hesperia dacotae*; DASK) habitat during surveys. Robust notes should be taken along the Project route outlining areas of land use (pasture, rangeland, row crop, etc.), tilled/untilled land, nectar species, and the procedures outlined per the *Little Missouri Lateral 2018 Dakota Skipper Habitat Survey Protocol* provided by Merjent.

4.3.1 Listed Species

Eight federally listed threatened and endangered species may be present in the Project area in McKenzie County, North Dakota (see Table 4.3-1). Designated critical habitat is not present within the Project area.

Table 4.3-1
USFWS Federally-listed Threatened and Endangered Species [a]

Scientific Name	Common Name	Federal Status
Canis lupus	Gray wolf	Endangered
Myotis septentrionalis	Northern long-eared bat	Threatened
Sterna antillarum	Least tern	Endangered
Charadrius melodus	Piping plover	Threatened
Calidris canutus rufa	Red knot	Threatened
Grus americana	Whooping crane	Endangered
Scaphirhynchus albus	Pallid sturgeon	Endangered
Hesperia dacotae	Dakota skipper	Threatened

[a] https://ecos.fws.gov/ipac/ (accessed June 2018)

4.4 NOXIOUS WEED SURVEYS

Noxious weed surveys will be conducted where crews will delineate all occurrences of state- and county-listed noxious weeds in McKenzie County, North Dakota. Data collection for noxious weeds will be limited to GPS data collection via data dictionary and photo documentation.

The North Dakota Department of Agriculture lists 11 noxious weed species in the state and McKenzie County, North Dakota lists five additional species (see Table 4.4-1).

Table 4.4-1
North Dakota Department of Agriculture and McKenzie County Listed Noxious Weeds

Species Scientific Name	Species Common Name
North Dakota Department of Agriculture [a]	
Artemisia absinthium	Absinth Wormwood
Cirsium arvense	Canada Thistle
Linaria genistifolia	Dalmation Toadflax
Centaurea diffusa	Diffuse Knapweed
Euphorbia esula	Leafy Spurge
Carduus nutans	Musk Thistle
Lythrum salicaria	Purple Loosestrife
Acroptilon repens	Russian Knapweed
Tamarix chinensis, T. parviflora, T. ramosissima	Saltcedar
Centaurea maculosa	Spotted Knapweed
Linaria vulgaris	Yellow Toadflax
McKenzie County [b]	
Gypsophila paniculata	Baby's Breath
Hyoscyamus niger	Black Henbane
Arctium minus	Common Burdock
Halogeton glomeratus	Halogeton
Cynoglossum officinale	Houndstongue

[a] https://www.nd.gov/ndda/plant-industries/noxious-weeds (accessed June 2018)
[b] https://www.nd.gov/ndda/sites/default/files/resource/2018%20Feb%20-%20City%20County%20Noxious%20Weeds%20List.pdf (accessed June 2018)

4.5 TREE AND SHRUB SURVEYS

Tree and shrub surveys will be conducted where crews will delineate all occurrences of woody vegetation that meets the USACE 1987 definitions of trees and shrubs in North Dakota and will be performed in accordance with the North Dakota Public Service Commission's Tree and Shrub Mitigation guidance. Data collection for trees and shrubs will be limited to GPS data collection via data dictionary and photo documentation.

5.0 FIELD DATA COLLECTION

The field data collection procedures as described in Section 4.1 through 4.5 are further explained in this below, including detailed descriptions of feature ID nomenclature, spatial data collection procedures, and photos.

5.1 FEATURE ID NOMENCLATURE

Feature ID nomenclature for wetlands, waterbodies, potential habitat, noxious weeds, and woody vegetation is Project specific and will be labeled in accordance with the methods outlined below. The first character of the Feature ID is meant to decipher the feature type (e.g., wetland, stream, woody vegetation, etc.), otherwise, the format is at the discretion of the subcontractor. The Feature IDs must remain consistent for the life of the Project.

The first character of each feature IDs are to be used as follows:

- W = wetlands
  - W1 = wetland data point
  - U1 = upland data point
- S = waterbodies
- N = non-water upland verification points
- H = potential habitat
- D = potential DASK habitat
- X = noxious weeds
- T = trees, shrubs

5.2 GPS DATA COLLECTION

Sub-meter accurate GPS units will be used to locate wetland boundaries, USACE sample point locations, waterbody features, potential habitat, noxious weeds, and woody vegetation within the survey corridor. Data dictionaries will be used to supplement the spatial data collection for all disciplines.

The coordinate system to be used will be UTM Zone 14N in meters.

Polygons are required for wetlands, waterbodies, habitat, noxious weeds, and woody vegetation data. For wetlands, at least one wetland data point should be included for each wetland polygon, as well as a corresponding upland data point.

5.2.1 Start/Stop Points

Start and stop points will be used for survey tracking, coverage, and quality control purposes. Two start and stop points (one at each extent of the corridor) will be taken at the beginning of surveys and at the conclusion of surveys for each contiguous area surveyed.

For example, if four continuous tracts were surveyed, two start points will be taken at the beginning of Tract 1 and two stop points will be taken at the end of Tract 4. However, if intermittent tracts are being surveyed, each tract (or continuous area) will have its own start and stop points.

5.2.2 Data Dictionaries

Data dictionaries will be used as the main form of data collection for wetlands, waterbodies, habitat assessments, noxious weeds, and woody vegetation, and will also supplement the wetland and waterbody data. Data dictionaries must either be approved by Merjent, or will be provided to the Subcontractor by Merjent, in order to ensure full compliance with applicable regulations.

5.3 PHOTO DOCUMENTATION

Photo IDs will always match their Feature IDs. To take a photo of a wetland, waterbody, a specific Cowardin community within a complex, or a habitat area, it may be necessary to do so from outside the wetland or community. The name for the photo will match the wetland or community being photographed, not the location where it was taken. For example, a photo of a wetland taken from an upland area will be labelled with a “w”; not a “u” or other upland label.

The purpose of taking photos is to characterize the surveyed feature (wetland, waterbody, habitat, noxious weeds, tree and shrub, or upland verification points). At least one representative

photograph will be taken of each feature, except for waterbodies. Two representative photographs will be taken of each waterbody; the first photograph will be perpendicular to the waterbody, and the second photograph will be parallel to the waterbody. If multiple plant communities are present in a given wetland (e.g., wetland complex; PEM/PSS/PFO), a representative photograph of each plant community will be taken.

- Photos will be taken in the landscape (horizontal) orientation;
- Photos will be a representative image of the feature; and
- Photos will not be taken looking into the sun as this will obscure the photo. When possible, the sun should be at the back of the photographer.

6.0 REFERENCES

Cowardin, L. M., V. Carter, F.C. Golet, and E.D. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. U.S. Department of the Interior, Fish and Wildlife Service, Office of Biological Services, Washington, D.C.

Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual, Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.

Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. The National Wetland Plant List: 2016 wetland ratings. Phytoneuron 2016-30: 1-17. Published 28 April 2016. ISSN 2153 733X

USACE. 2005. Regulatory Guidance Letter No. 05-05, Ordinary High Water Mark Identification. December 7, 2005.

USACE. 2010. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains (Version 2.0). ERDC/EL TR-10-1, U.S. Army Engineer Research and Development Center, Vicksburg, MS.

USFWS. 2018. 2018 Dakota Skipper (*Hesperia dacotae*) North Dakota Survey Protocol. USFWS North Dakota Field Office. Bismarck, North Dakota.

Appendix C

Project Photographs



Photograph 1. View of Wetland W_A-01 taken facing east. Wetland W_A-01 is a large permanent wetland complex that made up approximately 6.48 acres within the Project Area.



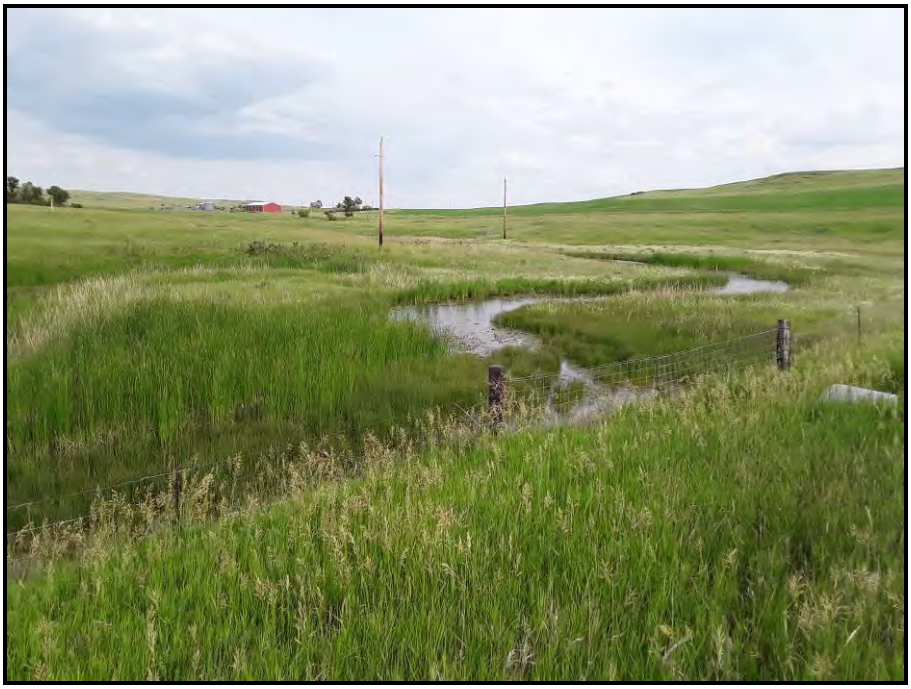
Photograph 2. View of Wetland W_A-04 taken facing east. Wetland W_A-04 is an oxbow of Cherry Creek and connects to Cherry Creek outside of the Project Area.



Photograph 3. View of Wetland W_A-06 taken facing west. Wetland W_A-06 was a large wetland complex that is the headwater for S_A-05 which eventually leads into S_A-03 (Cherry Creek).



Photograph 4. View of Wetland W_A-07 taken facing south. Wetland W_A-07 is a small, isolated wetland complex that is found in the middle of an agricultural field.



Photograph 5. View of Wetland W_A-09 taken facing southeast. Wetland W_A-09 is a large drainage wetland that connects to Wetland W_A-08 via culvert.



Photograph 6. View of Wetland W_A-013 taken facing west. Wetland W_A-013 is a small, isolated wetland complex that is dominated by woolly sedge (*Carex pellita*).



Photograph 7. View of Wetland W_A-014 taken facing northeast. Wetland W_A-014 is a large oxbow wetland that connects to Waterbody W_A-06.



Photograph 8. View of Waterbody S_A-02 (Unnamed tributary to Cherry Creek) taken facing southeast. Waterbody S_A-02 drains into Waterbody S_A-03.



Photograph 9. View of Waterbody S_A-03 (Cherry Creek) taken facing north. Waterbody S_A-03 had a very distinguished bed and bank with scattered aquatic vegetation along the banks.



Photograph 10. View of Waterbody S_A-06 (Spring Creek) taken facing northwest. Waterbody S_A-06 meanders in and out of the Project Area at three different locations, but were all labeled the same waterbody complex.



Photograph 11. View of Noxious Weed location X_A-074 taken facing east. Noxious weed location X_A-074 was a very dense patch of Canada thistle (*Cirsium arvense*) at roughly 80% within the polygon feature.



Photograph 12. View of Noxious Weed location X_A-010 taken facing northeast. Noxious weed location X_A-010 was made up of Canada thistle that almost completely encompasses Wetland W_A-03.



Photograph 13. View of Noxious Weed location X_A-064 taken facing north. Noxious weed location X_A-064 was made up of Canada thistle that shows a good example of how many of the noxious weed polygons within the Project Area are often found along field edges.



Photograph 14. View of Noxious Weed location X_A-033 taken facing northwest. Noxious weed location X_A-033 was made up of Canada thistle that is in the road right-of-way and has been mowed.



Photograph 15. View of potential Northern long-eared bat Habitat H_A-042 and H_A-043 taken facing north. Habitat H_A-042 and H_A-043 are mostly made up of peachleaf willow, boxelder (*Acer negundo*), green ash (*Fraxinus pennsylvanica*), and American elm (*Ulmus americana*) trees.



Photograph 16. View of potential Dakota Skipper Habitat H_A-039 taken facing north. Little bluestem (*Schizachyrium scoparium*) was the dominant vegetation species.



Photograph 17. View of potential Dakota Skipper Habitat H_A-034 taken facing northwest.



Photograph 18. View of potential Dakota Skipper Habitat H_A-020 taken facing northwest. Habitat H_A-020 was heavily dominated by forbs and especially wood lily (*Lilium philadelphicum*).

Appendix D

USACE Wetland Determination Forms

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Little Missouri Lateral | County: McKenzie | Sampling Date: June 20, 2018
Applicant/Owner: ONEOK Bakken Pipeline, LLC | State: ND | Sampling Point: W-001
Investigator(s): M. Fettes and C. Tucker | Section, Township, Range: Sec. 17, T149N, R99W
Landform (hillslope, terrace, etc.): Depression | Local relief (concave, convex, none): Concave | Slope (%): 0-1%
Subregion (LRR): LRRF | Lat: -103.38501 | Long: 47.72485 | Datum: NAD83
Soil Map Unit Name: E4137A: Korchea loam, 0-2% slopes, occasionally flooded | NWI Classification: PEMC
Are climatic / hydrologic conditions on the site typical for this time of year? (Yes / No) Yes (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 **X** No	**Is the Sampled Area within a Wetland?** Yes **X** No
Hydric Soil Present?	Yes **X** No	
Wetland Hydrology Present?	Yes **X** 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: 30 ft.)			
1. *None Observed*			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *None Observed*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft.)			
1. *Scirpus pallidus*	60	yes	OBL
2. *Hordeum jubatum*	15	no	FACW
3. *Chenopodium album*	5	no	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	80 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft.)			
1. *None Observed*			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 20%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC–): **1** (A)

Total Number of Dominant Species Across All Strata: **1** (B)

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

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	**60**	x 1 =	**60**
FACW species	**15**	x 2 =	**30**
FAC species	**0**	x 3 =	**0**
FACU species	**5**	x 4 =	**20**
UPL species	**0**	x 5 =	**0**
Column Totals:	**80** (A)		**110** (B)

Prevalence Index = B/A = **1.38**

Hydrophytic Vegetation Indicators:

- **X** 1 - Rapid Test for Hydrophytic Vegetation
- **X** 2 - Dominance Test is >50%
- **X** 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. Provide supporting data in Remarks.

Hydrophytic Vegetation Present? Yes **X** No

Remarks: (if observed, list morphological adaptations below).

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 ≤ 3.00).

Sampling Point: **W-001**

SOIL

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-8	2.5Y 2.5/1	80	5YR 4/6	20	C	M	Loam	
8-14	2.5Y 5/1	100					Loam	

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

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ____ Histosol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5) **(LRR F)**
- ____ 1 cm Muck (A9) **(LRR F, G, H)**
- **X** Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ____ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- **X** Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) **(LRR I, J)**
- ____ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ____ Dark Surface (S7) **(LRR G)**
- ____ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ Very Shallow Dark Surface (TF12)
- ____ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: N/A

Depth (inches): N/A

Hydric Soil Present? **Yes** **X** **No** _____

Remarks:

A positive indication of hydric soil was observed.

HYDROLOGY

Wetland hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Dry-Season Water Table (C2)
- ____ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ____ Presence of Reduced Iron (C4)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Drainage Patterns (B10)
- ____ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- **X** Geomorphic Position (D2)
- **X** FAC-Neutral Test (D5)
- ____ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present?	Yes _____	No **X**	Depth (inches):	**N/A**	
Water Table Present?	Yes _____	No **X**	Depth (inches):	**N/A**	
Saturation Present? (includes capillary fringe)	Yes **X**	No _____	Depth (inches):	**0-14**	**Wetland Hydrology Present?** Yes **X** No _____

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

Remarks:

A positive indication of wetland hydrology was observed (at least two secondary indicators).

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Little Missouri Lateral | County: McKenzie | Sampling Date: June 20, 2018
Applicant/Owner: ONEOK Bakken Pipeline, LLC | State: ND | Sampling Point: U-001
Investigator(s): M. Fettes and C. Tucker | Section, Township, Range: Sec. 17, T149N, R99W
Landform (hillslope, terrace, etc.): hillslope | Local relief (concave, convex, none): Convex | Slope (%): 1-2%
Subregion (LRR): LRRF | Lat: -103.38460 | Long: 47.72486 | Datum: NAD83
Soil Map Unit Name: E4137A: Korchea loam, 0-2% slopes, occasionally flooded | NWI Classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? (Yes / No) Yes (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 **X**
Hydric Soil Present?	Yes	No **X**
Wetland Hydrology Present?	Yes	No **X**

Is the Sampled Area within a Wetland? **Yes** **No** **X**

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: 30 ft.)			
1. *None Observed*			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *None Observed*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft.)			
1. *Wheat (cultivated)*	70	yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	70 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft.)			
1. *None Observed*			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 30%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): **0** (A)

Total Number of Dominant Species Across All Strata: **1** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **0** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	**0**	x 1 =	**0**
FACW species	**0**	x 2 =	**0**
FAC species	**0**	x 3 =	**0**
FACU species	**70**	x 4 =	**280**
UPL species	**0**	x 5 =	**0**
Column Totals:	**70** (A)		**280** (B)

Prevalence Index = B/A = **4.00**

Hydrophytic Vegetation Indicators:

X 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. Provide supporting data in Remarks.

Hydrophytic Vegetation Present? **Yes** **No** **X**

Remarks: (if observed, list morphological adaptations below).

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

Sampling Point: **U-001**

SOIL

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 3/2	100					Loam	
8-14	10YR 5/3	100					Loam	

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

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ____ Histosol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5) **(LRR F)**
- ____ 1 cm Muck (A9) **(LRR F, G, H)**
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ____ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) **(LRR I, J)**
- ____ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ____ Dark Surface (S7) **(LRR G)**
- ____ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ Very Shallow Dark Surface (TF12)
- ____ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: N/A

Depth (inches): N/A

Hydric Soil Present? **Yes** ____ **No** **X**

Remarks:

No positive indication of hydric soils was observed.

HYDROLOGY

Wetland hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Dry-Season Water Table (C2)
- ____ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ____ Presence of Reduced Iron (C4)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Drainage Patterns (B10)
- ____ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Geomorphic Position (D2)
- ____ FAC-Neutral Test (D5)
- ____ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes ____ No **X** Depth (inches): **N/A**

Water Table Present? Yes ____ No **X** Depth (inches): **N/A**

Saturation Present? (includes capillary fringe) Yes ____ No **X** Depth (inches): **N/A**

Wetland Hydrology Present? **Yes** ____ **No** **X**

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: Little Missouri Lateral County: McKenzie Sampling Date: June 20, 2018
Applicant/Owner: ONEOK Bakken Pipeline, LLC State: ND Sampling Point: W-002
Investigator(s): M. Fettes and C. Tucker Section, Township, Range: Sec. 17, T149N, R99W
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0%
Subregion (LRR): LRRF Lat: -103.38480 Long: 47.72446 Datum: NAD83
Soil Map Unit Name: E4137A: Korchea loam, 0-2% slopes, occasionally flooded NWI Classification: PEMA
Are climatic / hydrologic conditions on the site typical for this time of year? (Yes / No) Yes (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 **X** No
Hydric Soil Present? Yes **X** No
Wetland Hydrology Present? Yes **X** No

Is the Sampled Area within a Wetland? **Yes X** **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: 30 ft.)			
1. *None Observed*			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *None Observed*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft.)			
1. *Rumex crispus*	60	yes	FAC
2. *Scirpus pallidus*	20	yes	OBL
3. *Hordeum jubatum*	10	no	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	90 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft.)			
1. *None Observed*			
2.			
	90% = Total Cover		

% Bare Ground in Herb Stratum 10%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding 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	**20**	x 1 =	**20**
FACW species	**10**	x 2 =	**20**
FAC species	**60**	x 3 =	**240**
FACU species	**0**	x 4 =	**0**
UPL species	**0**	x 5 =	**0**
Column Totals:	**90** (A)		**280** (B)

Prevalence Index = B/A = **3.11**

Hydrophytic Vegetation Indicators:

X 1 - Rapid Test for Hydrophytic Vegetation
X 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. Provide supporting data in Remarks.

Hydrophytic Vegetation Present? **Yes** ___ **No** ___

Remarks: (if observed, list morphological adaptations below).

A positive indication of hydrophytic vegetation was observed (>50% of dominant species indexed as OBL, FACW, or FAC).

Sampling Point: **W-002**

SOIL

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-6	2.5Y 3/2	90	7.5YR 4/6	10	C	M	Loam	
6-12	2.5Y 5/2	95	10YR 6/6	5	C	M	Loam	

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

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ____ Histosol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5) **(LRR F)**
- ____ 1 cm Muck (A9) **(LRR F, G, H)**
- **X** Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ____ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- **X** Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) **(LRR I, J)**
- ____ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ____ Dark Surface (S7) **(LRR G)**
- ____ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ Very Shallow Dark Surface (TF12)
- ____ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: N/A

Depth (inches): N/A

Hydric Soil Present? **Yes** **X** **No** ____

Remarks:

A positive indication of hydric soil was observed.

HYDROLOGY

Wetland hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Dry-Season Water Table (C2)
- ____ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ____ Presence of Reduced Iron (C4)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Drainage Patterns (B10)
- ____ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- **X** Geomorphic Position (D2)
- **X** FAC-Neutral Test (D5)
- ____ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present?	Yes ____	No **X**	Depth (inches):	**N/A**
Water Table Present?	Yes ____	No **X**	Depth (inches):	**N/A**
Saturation Present? (includes capillary fringe)	Yes ____	No **X**	Depth (inches):	**N/A**

Wetland Hydrology Present? **Yes** **X** **No** ____

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

Remarks:

A positive indication of wetland hydrology was observed (at least two secondary indicators).

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Little Missouri Lateral | County: McKenzie | Sampling Date: June 20, 2018
Applicant/Owner: ONEOK Bakken Pipeline, LLC | State: ND | Sampling Point: U-002
Investigator(s): M. Fettes and C. Tucker | Section, Township, Range: Sec. 17, T149N, R99W
Landform (hillslope, terrace, etc.): hillslope | Local relief (concave, convex, none): Convex | Slope (%): 1-2%
Subregion (LRR): LRRF | Lat: -103.38460 | Long: 47.72448 | Datum: NAD83
Soil Map Unit Name: E4137A: Korchea loam, 0-2% slopes, occasionally flooded | NWI Classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? (Yes / No) Yes (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 **X**
Hydric Soil Present?	Yes	No **X**
Wetland Hydrology Present?	Yes	No **X**

Is the Sampled Area within a Wetland? **Yes** **No** **X**

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: 30 ft.)			
1. *None Observed*			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *None Observed*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft.)			
1. *Wheat (cultivated)*	70	yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	70 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft.)			
1. *None Observed*			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 30%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): **0** (A)

Total Number of Dominant Species Across All Strata: **1** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **0** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	**0**	x 1 =	**0**
FACW species	**0**	x 2 =	**0**
FAC species	**0**	x 3 =	**0**
FACU species	**70**	x 4 =	**280**
UPL species	**0**	x 5 =	**0**
Column Totals:	**70** (A)		**280** (B)

Prevalence Index = B/A = **4.00**

Hydrophytic Vegetation Indicators:

X 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. Provide supporting data in Remarks.

Hydrophytic Vegetation Present? **Yes** **No** **X**

Remarks: (if observed, list morphological adaptations below).

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

Sampling Point: **U-002**

SOIL

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 3/2	100					Loam	
8-14	10YR 5/3	100					Loam	

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

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ____ Histosol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5) **(LRR F)**
- ____ 1 cm Muck (A9) **(LRR F, G, H)**
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ____ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) **(LRR I, J)**
- ____ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ____ Dark Surface (S7) **(LRR G)**
- ____ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ Very Shallow Dark Surface (TF12)
- ____ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: N/A

Depth (inches): N/A

Hydric Soil Present? **Yes** ____ **No** **X**

Remarks:

No positive indication of hydric soils was observed.

HYDROLOGY

Wetland hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Dry-Season Water Table (C2)
- ____ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ____ Presence of Reduced Iron (C4)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Drainage Patterns (B10)
- ____ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Geomorphic Position (D2)
- ____ FAC-Neutral Test (D5)
- ____ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes ____ No **X** Depth (inches): **N/A**

Water Table Present? Yes ____ No **X** Depth (inches): **N/A**

Saturation Present? (includes capillary fringe) Yes ____ No **X** Depth (inches): **N/A**

Wetland Hydrology Present? **Yes** ____ **No** **X**

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: Little Missouri Lateral County: McKenzie Sampling Date: June 20, 2018
Applicant/Owner: ONEOK Bakken Pipeline, LLC State: ND Sampling Point: W-003
Investigator(s): M. Fettes and C. Tucker Section, Township, Range: Sec. 17, T149N, R99W
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%
Subregion (LRR): LRRF Lat: -103.37880 Long: 47.72461 Datum: NAD83
Soil Map Unit Name: E4137A: Korchea loam, 0-2% slopes, occasionally flooded NWI Classification: PEMA
Are climatic / hydrologic conditions on the site typical for this time of year? (Yes / No) Yes (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 **X** No
Hydric Soil Present? Yes **X** No
Wetland Hydrology Present? Yes **X** No

Is the Sampled Area within a Wetland? **Yes X** **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	Dominant	Indicator
Tree Stratum (Plot size: 30 ft.)	% cover	Species?	Status
1. *None Observed*			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *None Observed*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft.)			
1. *Carex pellita*	80	yes	OBL
2. *Hordeum jubatum*	15	no	FACW
3. *Cirsium arvense*	10	no	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	105 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft.)			
1. *None Observed*			
2.			
	90% = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC–): **1** (A)

Total Number of Dominant Species Across All Strata: **1** (B)

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

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	**80**	x 1 =	**80**
FACW species	**15**	x 2 =	**30**
FAC species	**0**	x 3 =	**0**
FACU species	**10**	x 4 =	**40**
UPL species	**0**	x 5 =	**0**
Column Totals:	**105** (A)		**150** (B)

Prevalence Index = B/A = **1.43**

Hydrophytic Vegetation Indicators:

X 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
X 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. Provide supporting data in Remarks.

Hydrophytic Vegetation Present? **Yes X** **No**

Remarks: (if observed, list morphological adaptations below).

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 ≤ 3.00).

Sampling Point: **W-003**

SOIL

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 3/1	90	7.5YR 4/6	10	C	M	Loam	
10-16	10YR 5/1	90	7.5YR 4/6	10	C	M	Loam	

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

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ____ Histosol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5) **(LRR F)**
- ____ 1 cm Muck (A9) **(LRR F, G, H)**
- **X** Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ____ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- **X** Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) **(LRR I, J)**
- ____ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ____ Dark Surface (S7) **(LRR G)**
- ____ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ Very Shallow Dark Surface (TF12)
- ____ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: N/A

Depth (inches): N/A

Hydric Soil Present? **Yes** **X** **No** _____

Remarks:

A positive indication of hydric soil was observed.

HYDROLOGY

Wetland hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ____ Surface Water (A1)
- **X** High Water Table (A2)
- **X** Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Dry-Season Water Table (C2)
- ____ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ____ Presence of Reduced Iron (C4)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Drainage Patterns (B10)
- ____ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- **X** Geomorphic Position (D2)
- **X** FAC-Neutral Test (D5)
- ____ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present?	Yes		No	**X**	Depth (inches): **N/A**
Water Table Present?	Yes	**X**	No		Depth (inches): **2-16**
Saturation Present? (includes capillary fringe)	Yes	**X**	No		Depth (inches): **0-16**

Wetland Hydrology Present? **Yes** **X** **No** _____

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

Remarks:

A positive indication of wetland hydrology was observed (at least two secondary indicators).

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Little Missouri Lateral | County: McKenzie | Sampling Date: June 20, 2018
Applicant/Owner: ONEOK Bakken Pipeline, LLC | State: ND | Sampling Point: U-003
Investigator(s): M. Fettes and C. Tucker | Section, Township, Range: Sec. 17, T149N, R99W
Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Convex | Slope (%): 2-3%
Subregion (LRR): LRRF | Lat: -103.37873 | Long: 47.72459 | Datum: NAD83
Soil Map Unit Name: E4137A: Korchea loam, 0-2% slopes, occasionally flooded | NWI Classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? (Yes / No) Yes (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	**X**
Hydric Soil Present?	Yes	No	**X**
Wetland Hydrology Present?	Yes	No	**X**

Is the Sampled Area within a Wetland? **Yes** **No** **X**

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: 30 ft.)			
1. *None Observed*			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *None Observed*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft.)			
1. *Pascopyrum smithii*	70	yes	FACU
2. *Poa pratensis*	15	no	FACU
3. *Rosa arkansas*	5	no	FACU
4. *Achillea millefolium*	5	no	FACU
5.			
6.			
7.			
8.			
9.			
10.			
	95 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft.)			
1. *None Observed*			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 5%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): **0** (A)

Total Number of Dominant Species Across All Strata: **1** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **0** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	**0**	x 1 =	**0**
FACW species	**0**	x 2 =	**0**
FAC species	**0**	x 3 =	**0**
FACU species	**95**	x 4 =	**380**
UPL species	**0**	x 5 =	**0**
Column Totals:	**95** (A)		**380** (B)

Prevalence Index = B/A = **4.00**

Hydrophytic Vegetation Indicators:

X 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. Provide supporting data in Remarks.

Hydrophytic Vegetation Present? **Yes** **No** **X**

Remarks: (if observed, list morphological adaptations below).

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

Sampling Point: **U-003**

SOIL

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-8	10YR 3/1	100					Loam	
8-12	10YR 3/2	100					Silt Loam	
12-18	10YR 5/3	100					Sandy Loam	

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

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ____ Histosol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5) **(LRR F)**
- ____ 1 cm Muck (A9) **(LRR F, G, H)**
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ____ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) **(LRR I, J)**
- ____ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ____ Dark Surface (S7) **(LRR G)**
- ____ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ Very Shallow Dark Surface (TF12)
- ____ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: N/A

Depth (inches): N/A

Hydric Soil Present? **Yes** ____ **No** **X**

Remarks:

No positive indication of hydric soils was observed.

HYDROLOGY

Wetland hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Dry-Season Water Table (C2)
- ____ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ____ Presence of Reduced Iron (C4)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Drainage Patterns (B10)
- ____ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Geomorphic Position (D2)
- ____ FAC-Neutral Test (D5)
- ____ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes ____ No **X** Depth (inches): **N/A**

Water Table Present? Yes ____ No **X** Depth (inches): **N/A**

Saturation Present? (includes capillary fringe) Yes ____ No **X** Depth (inches): **N/A**

Wetland Hydrology Present? **Yes** ____ **No** **X**

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: Little Missouri Lateral County: McKenzie Sampling Date: August 3, 2018
Applicant/Owner: ONEOK Bakken Pipeline, LLC State: ND Sampling Point: W-004
Investigator(s): M. Fettes and C. Tucker Section, Township, Range: Sec. 17, T149N, R99W
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%
Subregion (LRR): LRRF Lat: -103.37389 Long: 47.72480 Datum: NAD83
Soil Map Unit Name: E4139A: Korchea-Fluvaquents complex, channeled, 0-2% slopes, frequently flooded NWI Classification: PEMC
Are climatic / hydrologic conditions on the site typical for this time of year? (Yes / No) Yes (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 **X** No
Hydric Soil Present? Yes **X** No
Wetland Hydrology Present? Yes **X** No

Is the Sampled Area within a Wetland? **Yes X** **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: 30 ft.)			
1. *None Observed*			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *None Observed*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft.)			
1. *Spartina pectinata*	100	yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft.)			
1. *None Observed*			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): **1** (A)

Total Number of Dominant Species Across All Strata: **1** (B)

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

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	**0**	x 1 =	**0**
FACW species	**100**	x 2 =	**200**
FAC species	**0**	x 3 =	**0**
FACU species	**0**	x 4 =	**0**
UPL species	**0**	x 5 =	**0**
Column Totals:	**100** (A)		**200** (B)

Prevalence Index = B/A = **2.00**

Hydrophytic Vegetation Indicators:

X 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
X 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. Provide supporting data in Remarks.

Hydrophytic Vegetation Present? **Yes X** **No**

Remarks: (if observed, list morphological adaptations below).

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 ≤ 3.00).

Sampling Point: **W-004**

SOIL

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	5YR 2/2	100	NONE				Clay Loam	
8-14	5YR 5/1	95	7.5YR 4/6	5	C	M	Clay Loam	

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

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR F)**
- ___ 1 cm Muck (A9) **(LRR F, G, H)**
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR I, J)**
- ___ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ___ Dark Surface (S7) **(LRR G)**
- ___ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: N/A

Depth (inches): N/A

Hydric Soil Present? **Yes** X **No** ___

Remarks:

A positive indication of hydric soil was observed.

HYDROLOGY

Wetland hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes ___ No **X** Depth (inches): **N/A**

Water Table Present? Yes ___ No **X** Depth (inches): **N/A**

Saturation Present? (includes capillary fringe) Yes **X** No ___ Depth (inches): **0-14**

Wetland Hydrology Present? **Yes** X **No** ___

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

Remarks:

A positive indication of wetland hydrology was observed (at least two secondary indicators).

A positive indication of wetland hydrology was observed (at least one primary indicator).

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Little Missouri Lateral County: McKenzie Sampling Date: August 3, 2018
Applicant/Owner: ONEOK Bakken Pipeline, LLC State: ND Sampling Point: U-004
Investigator(s): M. Fettes and C. Tucker Section, Township, Range: Sec. 17, T149N, R99W
Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): Concave Slope (%): 4-5%
Subregion (LRR): LRRF Lat: -103.37392 Long: 47.72474 Datum: NAD83
Soil Map Unit Name: E4139A: Korchea-Fluvaquents complex, channeled, 0-2% slopes, frequently flooded NWI Classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? (Yes / No) Yes (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 **X**
Hydric Soil Present? Yes No **X**
Wetland Hydrology Present? Yes No **X**

Is the Sampled Area within a Wetland? **Yes** **No** **X**

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: 30 ft.)			
1. *None Observed*			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *Symphoricarpos occidentalis*	60	yes	UPL
2.			
3.			
4.			
5.			
	60 = Total Cover		
Herb Stratum (Plot size: 5 ft.)			
1. *Pascopyrum smithii*	40	yes	FACU
2. *Hesperostipa comata*	20	yes	UPL
3. *Poa pratensis*	10	no	FACU
4. *Artemisia frigida*	5	no	UPL
5. *Spartina pectinata*	5	no	FACW
6.			
7.			
8.			
9.			
10.			
	80 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft.)			
1. *None Observed*			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): **0** (A)

Total Number of Dominant Species Across All Strata: **3** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **0** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	**0**	x 1 =	**0**
FACW species	**5**	x 2 =	**10**
FAC species	**0**	x 3 =	**0**
FACU species	**50**	x 4 =	**200**
UPL species	**85**	x 5 =	**425**
Column Totals:	**140** (A)		**635** (B)

Prevalence Index = B/A = **4.54**

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. Provide supporting data in Remarks.

Hydrophytic Vegetation Present? **Yes** **No** **X**

Remarks: (if observed, list morphological adaptations below).

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

Sampling Point: **U-004**

SOIL

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 2/2	100	NONE				Silty Clay Loam	
6-12	10YR 3/2	100	NONE				Silty Clay Loam	
12-20	2.5Y 3/3	100	NONE				Silty Clay Loam	

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

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR F)**
- ___ 1 cm Muck (A9) **(LRR F, G, H)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR I, J)**
- ___ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ___ Dark Surface (S7) **(LRR G)**
- ___ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: N/A

Depth (inches): N/A

Hydric Soil Present? **Yes** ___ **No** **X**

Remarks:

No positive indication of hydric soils was observed.

HYDROLOGY

Wetland hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes ___ No **X** Depth (inches): **N/A**

Water Table Present? Yes ___ No **X** Depth (inches): **N/A**

Saturation Present? (includes capillary fringe) Yes ___ No **X** Depth (inches): **N/A**

Wetland Hydrology Present? **Yes** ___ **No** **X**

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: Little Missouri Lateral County: McKenzie Sampling Date: August 3, 2018
Applicant/Owner: ONEOK Bakken Pipeline, LLC State: ND Sampling Point: W-005
Investigator(s): M. Fettes and C. Tucker Section, Township, Range: Sec. 17, T149N, R99W
Landform (hillslope, terrace, etc.): Drainage Local relief (concave, convex, none): Concave Slope (%): 1-2%
Subregion (LRR): LRRF Lat: -103.37769 Long: 47.72243 Datum: NAD83
Soil Map Unit Name: E4139A: Korchea-Fluvaquents complex, channeled, 0-2% slopes, frequently flooded NWI Classification: PEMA
Are climatic / hydrologic conditions on the site typical for this time of year? (Yes / No) Yes (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 **X** No
Hydric Soil Present? Yes **X** No
Wetland Hydrology Present? Yes **X** No

Is the Sampled Area within a Wetland? **Yes X** **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: 30 ft.)			
1. *Fraxinus pennsylvanica*	35%	yes	FAC
2.			
3.			
4.			
	35 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *Crataegus chrysocarpa*	35%	yes	UPL
2.			
3.			
4.			
5.			
	35 = Total Cover		
Herb Stratum (Plot size: 5 ft.)			
1. *Spartina pectinata*	100	yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft.)			
1. *None Observed*			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: **3** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **67%** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	**0**	x 1 =	**0**
FACW species	**100**	x 2 =	**200**
FAC species	**0.35**	x 3 =	**1.4**
FACU species	**0**	x 4 =	**0**
UPL species	**0.35**	x 5 =	**1.75**
Column Totals:	**101** (A)		**203.15** (B)

Prevalence Index = B/A = **2.02**

Hydrophytic Vegetation Indicators:

X 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
X 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. Provide supporting data in Remarks.

Hydrophytic Vegetation Present? **Yes X** **No**

Remarks: (if observed, list morphological adaptations below).

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 ≤ 3.00).

Sampling Point: **W-005**

SOIL

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-6	7.5YR 2.5/1	100	NONE				Loam	
6-14	10YR 5/1	92	7.5YR 4/6	8	C	M	Clay Loam	

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

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR F)**
- ___ 1 cm Muck (A9) **(LRR F, G, H)**
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR I, J)**
- ___ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ___ Dark Surface (S7) **(LRR G)**
- ___ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: N/A

Depth (inches): N/A

Hydric Soil Present? **Yes** X **No** ___

Remarks:

A positive indication of hydric soil was observed.

HYDROLOGY

Wetland hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes ___ No **X** Depth (inches): **N/A**

Water Table Present? Yes ___ No **X** Depth (inches): **N/A**

Saturation Present? (includes capillary fringe) Yes ___ No **X** Depth (inches): **N/A**

Wetland Hydrology Present? **Yes** X **No** ___

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

Remarks:

A positive indication of wetland hydrology was observed (at least two secondary indicators).

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Little Missouri Lateral | County: McKenzie | Sampling Date: August 3, 2018
Applicant/Owner: ONEOK Bakken Pipeline, LLC | State: ND | Sampling Point: U-005
Investigator(s): M. Fettes and C. Tucker | Section, Township, Range: Sec. 17, T149N, R99W
Landform (hillslope, terrace, etc.): hillslope | Local relief (concave, convex, none): Concave | Slope (%): 3-4%
Subregion (LRR): LRRF | Lat: -103.37774 | Long: 47.72245 | Datum: NAD83
Soil Map Unit Name: E4139A: Korchea-Fluvaquents complex, channeled, 0-2% slopes, frequently flooded | NWI Classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? (Yes / No) Yes (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 **X**
Hydric Soil Present?	Yes	No **X**
Wetland Hydrology Present?	Yes	No **X**

Is the Sampled Area within a Wetland? **Yes** **No** **X**

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: 30 ft.)			
1. *Fraxinus pennsylvanica*	10	yes	FACU
2.			
3.			
4.			
	10 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *Symphoricarpos occidentalis*	10	yes	UPL
2. *Artemisia cana*	10	yes	FACU
3.			
4.			
5.			
	20 = Total Cover		
Herb Stratum (Plot size: 5 ft.)			
1. *Pascopyrum smithii*	55	yes	FACU
2. *Poa pratensis*	15	yes	FACU
3. *Achillea millefolium*	10	no	FACU
4. *Achillea millefolium*	5	no	FACU
5. *Artemisia ludoviciana*	5	no	FACU
6.			
7.			
8.			
9.			
10.			
	90 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft.)			
1. *None Observed*			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): **0** (A)

Total Number of Dominant Species Across All Strata: **5** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **0** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	**0**	x 1 =	**0**
FACW species	**0**	x 2 =	**0**
FAC species	**0**	x 3 =	**0**
FACU species	**110**	x 4 =	**440**
UPL species	**10**	x 5 =	**50**
Column Totals:	**120** (A)		**490** (B)

Prevalence Index = B/A = **4.08**

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. Provide supporting data in Remarks.

Hydrophytic Vegetation Present? **Yes** **No** **X**

Remarks: (if observed, list morphological adaptations below).

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

Sampling Point: **U-005**

SOIL

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 3/1	100	NONE				Silty Clay Loam	
5-14	10YR 4/2	100	NONE				Silty Clay Loam	
14-20	10YR 4/3	100	NONE				Silty Clay Loam	

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

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR F)**
- ___ 1 cm Muck (A9) **(LRR F, G, H)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR I, J)**
- ___ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ___ Dark Surface (S7) **(LRR G)**
- ___ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: N/A

Depth (inches): N/A

Hydric Soil Present? **Yes** ___ **No** **X**

Remarks:

No positive indication of hydric soils was observed.

HYDROLOGY

Wetland hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes ___ No **X** Depth (inches): **N/A**

Water Table Present? Yes ___ No **X** Depth (inches): **N/A**

Saturation Present? (includes capillary fringe) Yes ___ No **X** Depth (inches): **N/A**

Wetland Hydrology Present? **Yes** ___ **No** **X**

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: Little Missouri Lateral County: McKenzie Sampling Date: August 3, 2018
Applicant/Owner: ONEOK Bakken Pipeline, LLC State: ND Sampling Point: W-006
Investigator(s): M. Fettes and C. Tucker Section, Township, Range: Sec. 17, T149N, R99W
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%
Subregion (LRR): LRRF Lat: -103.37264 Long: 47.72109 Datum: NAD83
Soil Map Unit Name: E4139A: Korchea-Fluvaquents complex, channeled, 0-2% slopes, frequently flooded NWI Classification: PEMF
Are climatic / hydrologic conditions on the site typical for this time of year? (Yes / No) Yes (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 **X** No
Hydric Soil Present? Yes **X** No
Wetland Hydrology Present? Yes **X** No

Is the Sampled Area within a Wetland? **Yes X** **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: 30 ft.)			
1. *None Observed*			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *None Observed*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft.)			
1. *Phalaris arundinacea*	100	yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft.)			
1. *None Observed*			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): **1** (A)

Total Number of Dominant Species Across All Strata: **1** (B)

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

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	**0**	x 1 =	**0**
FACW species	**100**	x 2 =	**200**
FAC species	**0**	x 3 =	**0**
FACU species	**0**	x 4 =	**0**
UPL species	**0**	x 5 =	**0**
Column Totals:	**100** (A)		**200** (B)

Prevalence Index = B/A = **2.00**

Hydrophytic Vegetation Indicators:

X 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
X 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. Provide supporting data in Remarks.

Hydrophytic Vegetation Present? **Yes X** **No**

Remarks: (if observed, list morphological adaptations below).

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 ≤ 3.00).

Sampling Point: **W-006**

SOIL

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 2/2	95	7.5YR 4/6	5	C	PL	Silty Clay Loam	
6-12	2.5YR 3/1	90	7.5YR 4/6	10	C	M	Silty Clay Loam	
12-18	2.5YR 4/1	80	7.5YR 4/6	20	C	M	Silty Clay Loam	

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

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR F)**
- ___ 1 cm Muck (A9) **(LRR F, G, H)**
- **X** Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- **X** Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR I, J)**
- ___ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ___ Dark Surface (S7) **(LRR G)**
- ___ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: N/A

Depth (inches): N/A

Hydric Soil Present? **Yes** X **No** ___

Remarks:

A positive indication of hydric soil was observed.

HYDROLOGY

Wetland hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- **X** Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- **X** Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- **X** Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ___ Crayfish Burrows (C8)
- **X** Saturation Visible on Aerial Imagery (C9)
- **X** Geomorphic Position (D2)
- **X** FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes ___ No **X** Depth (inches): **N/A**

Water Table Present? Yes ___ No **X** Depth (inches): **N/A**

Saturation Present? (includes capillary fringe) Yes ___ No **X** Depth (inches): **N/A**

Wetland Hydrology Present? **Yes** X **No** ___

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

Remarks:

A positive indication of wetland hydrology was observed (at least two secondary indicators).

A positive indication of wetland hydrology was observed (at least one primary indicator).

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Little Missouri Lateral County: McKenzie Sampling Date: August 3, 2018
Applicant/Owner: ONEOK Bakken Pipeline, LLC State: ND Sampling Point: U-006
Investigator(s): M. Fettes and C. Tucker Section, Township, Range: Sec. 17, T149N, R99W
Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): Convex Slope (%): 3-4%
Subregion (LRR): LRRF Lat: -103.37269 Long: 47.72102 Datum: NAD83
Soil Map Unit Name: E4139A: Korchea-Fluvaquents complex, channeled, 0-2% slopes, frequently flooded NWI Classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? (Yes / No) Yes (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 **X**
Hydric Soil Present? Yes No **X**
Wetland Hydrology Present? Yes No **X**

Is the Sampled Area within a Wetland? **Yes** **No** **X**

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: 30 ft.)			
1. *None Observed*			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *None Observed*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft.)			
1. *Pascopyrum smithii*	60	yes	FACU
2. *Poa pratensis*	15	yes	FACU
3. *Achillea millefolium*	10	no	FACU
4. *Chenopodium album*	10	no	FACU
5.			
6.			
7.			
8.			
9.			
10.			
	95 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft.)			
1. *None Observed*			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 5%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): **0** (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: **0** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	**0**	x 1 =	**0**
FACW species	**0**	x 2 =	**0**
FAC species	**0**	x 3 =	**0**
FACU species	**95**	x 4 =	**380**
UPL species	**0**	x 5 =	**0**
Column Totals:	**95** (A)		**380** (B)

Prevalence Index = B/A = **4.00**

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. Provide supporting data in Remarks.

Hydrophytic Vegetation Present? **Yes** **No** **X**

Remarks: (if observed, list morphological adaptations below).

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

Sampling Point: **U-006**

SOIL

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 2/2	100	NONE				Clay Loam	
10-18	10YR 3/3	100	NONE				Clay Loam	

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

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR F)**
- ___ 1 cm Muck (A9) **(LRR F, G, H)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR I, J)**
- ___ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ___ Dark Surface (S7) **(LRR G)**
- ___ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: N/A

Depth (inches): N/A

Hydric Soil Present? **Yes** ___ **No** **X**

Remarks:

No positive indication of hydric soils was observed.

HYDROLOGY

Wetland hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes ___ No **X** Depth (inches): **N/A**

Water Table Present? Yes ___ No **X** Depth (inches): **N/A**

Saturation Present? (includes capillary fringe) Yes ___ No **X** Depth (inches): **N/A**

Wetland Hydrology Present? **Yes** ___ **No** **X**

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: Little Missouri Lateral County: McKenzie Sampling Date: June 20, 2018
Applicant/Owner: ONEOK Bakken Pipeline, LLC State: ND Sampling Point: W-007
Investigator(s): M. Fettes and C. Tucker Section, Township, Range: Sec. 17, T149N, R99W
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2%
Subregion (LRR): LRRF Lat: -103.37426 Long: 47.72047 Datum: NAD84
Soil Map Unit Name: E0447B: Daglum-Belfield complex, 0-6% slopes NWI Classification: PEMA
Are climatic / hydrologic conditions on the site typical for this time of year? (Yes / No) Yes (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 **X** No
Hydric Soil Present? Yes **X** No
Wetland Hydrology Present? Yes **X** No

Is the Sampled Area within a Wetland? **Yes X** **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: 30 ft.)			
1. *None Observed*			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *None Observed*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft.)			
1. *Scirpus pallidus*	15	yes	OBL
2. *Hordeum jubatum*	5	yes	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	20 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft.)			
1. *None Observed*			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 80%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding 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	**15**	x 1 =	**15**
FACW species	**5**	x 2 =	**10**
FAC species	**0**	x 3 =	**0**
FACU species	**0**	x 4 =	**0**
UPL species	**0**	x 5 =	**0**
Column Totals:	**20** (A)		**25** (B)

Prevalence Index = B/A = **1.25**

Hydrophytic Vegetation Indicators:

X 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
X 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. Provide supporting data in Remarks.

Hydrophytic Vegetation Present? **Yes X** **No**

Remarks: (if observed, list morphological adaptations below).

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 ≤ 3.00).

Sampling Point: **W-007**

SOIL

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 3/1	95	7.5YR 4/6	5	C	M	Loam	
12-15	2.5Y 5/1	100	NONE				Loam	

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

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR F)**
- ___ 1 cm Muck (A9) **(LRR F, G, H)**
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR I, J)**
- ___ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ___ Dark Surface (S7) **(LRR G)**
- ___ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: N/A

Depth (inches): N/A

Hydric Soil Present? **Yes** X **No** ___

Remarks:

A positive indication of hydric soil was observed.

HYDROLOGY

Wetland hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- X Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes ___ No **X** Depth (inches): **N/A**

Water Table Present? Yes ___ No **X** Depth (inches): **N/A**

Saturation Present? (includes capillary fringe) Yes **X** No ___ Depth (inches): **0-15**

Wetland Hydrology Present? **Yes** X **No** ___

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

Remarks:

A positive indication of wetland hydrology was observed (at least two secondary indicators).

A positive indication of wetland hydrology was observed (at least one primary indicator).

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Little Missouri Lateral | County: McKenzie | Sampling Date: June 20, 2018
Applicant/Owner: ONEOK Bakken Pipeline, LLC | State: ND | Sampling Point: U-007
Investigator(s): M. Fettes and C. Tucker | Section, Township, Range: Sec. 17, T149N, R99W
Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Convex | Slope (%): 2-3%
Subregion (LRR): LRRF | Lat: -103.37416 | Long: 47.72047 | Datum: NAD85
Soil Map Unit Name: E0447B: Daglum-Belfield complex, 0-6% slopes | NWI Classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? (Yes / No) Yes (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 **X**
Hydric Soil Present?	Yes	No **X**
Wetland Hydrology Present?	Yes	No **X**

Is the Sampled Area within a Wetland? **Yes** **No** **X**

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: 30 ft.)			
1. *None Observed*			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *None Observed*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft.)			
1. *Wheat (cultivation)*	40	yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	40 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft.)			
1. *None Observed*			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 60%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): **0** (A)

Total Number of Dominant Species Across All Strata: **1** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **0** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	**0**	x 1 =	**0**
FACW species	**0**	x 2 =	**0**
FAC species	**0**	x 3 =	**0**
FACU species	**40**	x 4 =	**160**
UPL species	**0**	x 5 =	**0**
Column Totals:	**40** (A)		**160** (B)

Prevalence Index = B/A = **4.00**

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. Provide supporting data in Remarks.

Hydrophytic Vegetation Present? **Yes** **No** **X**

Remarks: (if observed, list morphological adaptations below).

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

Sampling Point: **U-007**

SOIL

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/1	100	NONE				Loam	
4-12	10YR 3/2	100	NONE				Loam	
12-20	10YR 4/3	100	NONE				Loam	

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

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR F)**
- ___ 1 cm Muck (A9) **(LRR F, G, H)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR I, J)**
- ___ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ___ Dark Surface (S7) **(LRR G)**
- ___ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: N/A

Depth (inches): N/A

Hydric Soil Present? **Yes** ___ **No** **X**

Remarks:

No positive indication of hydric soils was observed.

HYDROLOGY

Wetland hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes ___ No **X** Depth (inches): **N/A**

Water Table Present? Yes ___ No **X** Depth (inches): **N/A**

Saturation Present? (includes capillary fringe) Yes ___ No **X** Depth (inches): **N/A**

Wetland Hydrology Present? **Yes** ___ **No** **X**

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: Little Missouri Lateral | County: McKenzie | Sampling Date: June 20, 2018
Applicant/Owner: ONEOK Bakken Pipeline, LLC | State: ND | Sampling Point: W-008
Investigator(s): M. Fettes and C. Tucker | Section, Township, Range: Sec. 28, T149N, R99W
Landform (hillslope, terrace, etc.): Drainage | Local relief (concave, convex, none): Concave | Slope (%): 1-2%
Subregion (LRR): LRRF | Lat: -103.34814 | Long: 47.69785 | Datum: NAD86
Soil Map Unit Name: E0515B: Rhoades-Daglum complex, 0-6% slopes | NWI Classification: PEMC
Are climatic / hydrologic conditions on the site typical for this time of year? (Yes / No) Yes (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 **X** No
Hydric Soil Present? Yes **X** No
Wetland Hydrology Present? Yes **X** No

Is the Sampled Area within a Wetland? **Yes X** **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: 30 ft.)			
1. *None Observed*			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *None Observed*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft.)			
1. *Spartina pectinata*	70	yes	FACW
2. *Typha latifolia*	15	no	OBL
3. *Sonchus arvensis*	10	no	FAC
4. *Hordeum jubatum*	5	no	FACW
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft.)			
1. *None Observed*			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): **1** (A)

Total Number of Dominant Species Across All Strata: **1** (B)

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

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	**15**	x 1 =	**15**
FACW species	**75**	x 2 =	**150**
FAC species	**10**	x 3 =	**40**
FACU species	**0**	x 4 =	**0**
UPL species	**0**	x 5 =	**0**
Column Totals:	**100** (A)		**205** (B)

Prevalence Index = B/A = **2.05**

Hydrophytic Vegetation Indicators:

X 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
X 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. Provide supporting data in Remarks.

Hydrophytic Vegetation Present? **Yes X** **No**

Remarks: (if observed, list morphological adaptations below).

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 ≤ 3.00).

Sampling Point: **W-008**

SOIL

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	2.5Y 3/2	95	10YR 3/6	5	C	PL	Loam	
2-14	2.5Y 4/1	90	7.5YR 4/6	10	C	M	Loam	

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

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR F)**
- ___ 1 cm Muck (A9) **(LRR F, G, H)**
- **X** Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- **X** Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR I, J)**
- ___ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ___ Dark Surface (S7) **(LRR G)**
- ___ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: N/A

Depth (inches): N/A

Hydric Soil Present? **Yes** X **No** ___

Remarks:

A positive indication of hydric soil was observed.

HYDROLOGY

Wetland hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- **X** Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- **X** Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- **X** Geomorphic Position (D2)
- **X** FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes ___ No **X** Depth (inches): **N/A**

Water Table Present? Yes ___ No **X** Depth (inches): **N/A**

Saturation Present? (includes capillary fringe) Yes **X** No ___ Depth (inches): **2-14**

Wetland Hydrology Present? **Yes** X **No** ___

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

Remarks:

A positive indication of wetland hydrology was observed (at least two secondary indicators).

A positive indication of wetland hydrology was observed (at least one primary indicator).

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Little Missouri Lateral County: McKenzie Sampling Date: June 20, 2018
Applicant/Owner: ONEOK Bakken Pipeline, LLC State: ND Sampling Point: U-008
Investigator(s): M. Fettes and C. Tucker Section, Township, Range: Sec. 28, T149N, R99W
Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 4%
Subregion (LRR): LRRF Lat: -103.34809 Long: 47.69790 Datum: NAD87
Soil Map Unit Name: E0515B: Rhoades-Daglum complex, 0-6% slopes NWI Classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? (Yes / No) Yes (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 **X**
Hydric Soil Present?	Yes	No **X**
Wetland Hydrology Present?	Yes	No **X**

Is the Sampled Area within a Wetland? **Yes** **No** **X**

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: 30 ft.)			
1. *None Observed*			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *None Observed*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft.)			
1. *Pascopyrum smithii*	40	yes	FACU
2. *Bromus inermus*	40	Yes	UPL
3. *Poa pratensis*	15	no	FACU
4. *Achillea millefolium*	5	no	UPL
5. *Cirsium arvensis*	5	no	FACU
6.			
7.			
8.			
9.			
10.			
	105 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft.)			
1. *None Observed*			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): **0** (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: **0** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	**0**	x 1 =	**0**
FACW species	**0**	x 2 =	**0**
FAC species	**0**	x 3 =	**0**
FACU species	**60**	x 4 =	**240**
UPL species	**45**	x 5 =	**225**
Column Totals:	**105** (A)		**465** (B)

Prevalence Index = B/A = **4.43**

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. Provide supporting data in Remarks.

Hydrophytic Vegetation Present? **Yes** **No** **X**

Remarks: (if observed, list morphological adaptations below).

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

Sampling Point: **U-008**

SOIL

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/1	100	NONE				Loam	
4-12	10YR 4/3	100	NONE				Silt Loam	

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

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR F)**
- ___ 1 cm Muck (A9) **(LRR F, G, H)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR I, J)**
- ___ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ___ Dark Surface (S7) **(LRR G)**
- ___ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: N/A

Depth (inches): N/A

Hydric Soil Present? **Yes** ___ **No** **X**

Remarks:

No positive indication of hydric soils was observed.

HYDROLOGY

Wetland hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes ___ No **X** Depth (inches): **N/A**

Water Table Present? Yes ___ No **X** Depth (inches): **N/A**

Saturation Present? (includes capillary fringe) Yes ___ No **X** Depth (inches): **N/A**

Wetland Hydrology Present? **Yes** ___ **No** **X**

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: Little Missouri Lateral County: McKenzie Sampling Date: June 20, 2018
Applicant/Owner: ONEOK Bakken Pipeline, LLC State: ND Sampling Point: W-009
Investigator(s): M. Fettes and C. Tucker Section, Township, Range: Sec. 27, T149N, R99W
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0%
Subregion (LRR): LRRF Lat: -103.34632 Long: 47.69715 Datum: NAD88
Soil Map Unit Name: E0515B: Rhoades-Daglum complex, 0-6% slopes NWI Classification: PEMC
Are climatic / hydrologic conditions on the site typical for this time of year? (Yes / No) Yes (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 **X** No
Hydric Soil Present? Yes **X** No
Wetland Hydrology Present? Yes **X** No

Is the Sampled Area within a Wetland? **Yes X** **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: 30 ft.)			
1. *None Observed*			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *None Observed*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft.)			
1. *Puccinellia nuttalliana*	60	yes	OBL
2. *Hordeum jubatum*	30	yes	FACW
3. *Carex pellita*	10	no	OBL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft.)			
1. *None Observed*			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding 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	**70**	x 1 =	**70**
FACW species	**30**	x 2 =	**60**
FAC species	**0**	x 3 =	**0**
FACU species	**0**	x 4 =	**0**
UPL species	**0**	x 5 =	**0**
Column Totals:	**100** (A)		**130** (B)

Prevalence Index = B/A = **1.30**

Hydrophytic Vegetation Indicators:

X 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
X 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. Provide supporting data in Remarks.

Hydrophytic Vegetation Present? **Yes X** **No**

Remarks: (if observed, list morphological adaptations below).

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 ≤ 3.00).

Sampling Point: **W-009**

SOIL

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	2.5Y 3/2	80	7.5YR 4/6	20	C	M	Silty Clay Loam	
12-16	2.5Y 5/1	95	7.5YR 4/6	5	C	M	Silty Clay Loam	

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

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR F)**
- ___ 1 cm Muck (A9) **(LRR F, G, H)**
- **X** Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- **X** Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR I, J)**
- ___ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ___ Dark Surface (S7) **(LRR G)**
- ___ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: N/A

Depth (inches): N/A

Hydric Soil Present? **Yes** **X** **No** ___

Remarks:

A positive indication of hydric soil was observed.

HYDROLOGY

Wetland hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- **X** Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- **X** Geomorphic Position (D2)
- **X** FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes ___ No **X** Depth (inches): **N/A**

Water Table Present? Yes ___ No **X** Depth (inches): **N/A**

Saturation Present? (includes capillary fringe) Yes **X** No ___ Depth (inches): **0-12**

Wetland Hydrology Present? **Yes** **X** **No** ___

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

Remarks:

A positive indication of wetland hydrology was observed (at least two secondary indicators).

A positive indication of wetland hydrology was observed (at least one primary indicator).

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Little Missouri Lateral | County: McKenzie | Sampling Date: June 20, 2018
Applicant/Owner: ONEOK Bakken Pipeline, LLC | State: ND | Sampling Point: U-009
Investigator(s): M. Fettes and C. Tucker | Section, Township, Range: Sec. 27, T149N, R99W
Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Convex | Slope (%): 3%
Subregion (LRR): LRRF | Lat: -103.34632 | Long: 47.69720 | Datum: NAD89
Soil Map Unit Name: E0515B: Rhoades-Daglum complex, 0-6% slopes | NWI Classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? (Yes / No) Yes (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 **X**
Hydric Soil Present?	Yes	No **X**
Wetland Hydrology Present?	Yes	No **X**

Is the Sampled Area within a Wetland? **Yes** **No** **X**

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: 30 ft.)			
1. *None Observed*			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *None Observed*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft.)			
1. *Bromus inermus*	95	yes	UPL
2. *Taraxacum officinale*	5	no	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft.)			
1. *None Observed*			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): **0** (A)

Total Number of Dominant Species Across All Strata: **1** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **0** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	**0**	x 1 =	**0**
FACW species	**0**	x 2 =	**0**
FAC species	**0**	x 3 =	**0**
FACU species	**5**	x 4 =	**20**
UPL species	**95**	x 5 =	**475**
Column Totals:	**100** (A)		**495** (B)

Prevalence Index = B/A = **4.95**

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. Provide supporting data in Remarks.

Hydrophytic Vegetation Present? **Yes** **No** **X**

Remarks: (if observed, list morphological adaptations below).

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

Sampling Point: **U-009**

SOIL

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	2.5Y 3/2	100	NONE				Silt Loam	
3-12	10YR 4/3	100	NONE				Silty Clay Loam	

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

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR F)**
- ___ 1 cm Muck (A9) **(LRR F, G, H)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR I, J)**
- ___ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ___ Dark Surface (S7) **(LRR G)**
- ___ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: N/A

Depth (inches): N/A

Hydric Soil Present? **Yes** ___ **No** **X**

Remarks:

No positive indication of hydric soils was observed.

HYDROLOGY

Wetland hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes ___ No **X** Depth (inches): **N/A**

Water Table Present? Yes ___ No **X** Depth (inches): **N/A**

Saturation Present? (includes capillary fringe) Yes ___ No **X** Depth (inches): **N/A**

Wetland Hydrology Present? **Yes** ___ **No** **X**

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: Little Missouri Lateral County: McKenzie Sampling Date: June 20, 2018
Applicant/Owner: ONEOK Bakken Pipeline, LLC State: ND Sampling Point: W-010
Investigator(s): M. Fettes and C. Tucker Section, Township, Range: Sec. 27, T149N, R99W
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-1%
Subregion (LRR): LRRF Lat: -103.34241 Long: 47.69709 Datum: NAD90
Soil Map Unit Name: E0515B: Rhoades-Daglum complex, 0-6% slopes NWI Classification: PEMFh
Are climatic / hydrologic conditions on the site typical for this time of year? (Yes / No) Yes (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 **X** No
Hydric Soil Present? Yes **X** No
Wetland Hydrology Present? Yes **X** No

Is the Sampled Area within a Wetland? **Yes X** **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: 30 ft.)			
1. *None Observed*			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *None Observed*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft.)			
1. *Typha latifolia*	25	yes	OBL
2. *Spartina pectinata*	25	yes	FACW
3. *Mentha arvensis*	5	no	FACW
4. *Rumex crispus*	5	no	FAC
5.			
6.			
7.			
8.			
9.			
10.			
	60 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft.)			
1. *None Observed*			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 40%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding 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	**25**	x 1 =	**25**
FACW species	**30**	x 2 =	**60**
FAC species	**5**	x 3 =	**20**
FACU species	**0**	x 4 =	**0**
UPL species	**0**	x 5 =	**0**
Column Totals:	**60** (A)		**105** (B)

Prevalence Index = B/A = **1.75**

Hydrophytic Vegetation Indicators:

X 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
X 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. Provide supporting data in Remarks.

Hydrophytic Vegetation Present? **Yes X** **No**

Remarks: (if observed, list morphological adaptations below).

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 ≤ 3.00).

Sampling Point: **W-010**

SOIL

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	2.5Y 4/1	70	10YR 4/6	5	C	M	Silty Clay Loam	
	2.5Y 4/2	25					Silty Clay Loam	

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

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR F)**
- ___ 1 cm Muck (A9) **(LRR F, G, H)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR I, J)**
- ___ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ___ Dark Surface (S7) **(LRR G)**
- ___ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: N/A

Depth (inches): N/A

Hydric Soil Present? **Yes** X **No** ___

Remarks:

A positive indication of hydric soil was observed.

HYDROLOGY

Wetland hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): **N/A**

Water Table Present? Yes ___ No X Depth (inches): **N/A**

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): **0-12**

Wetland Hydrology Present? **Yes** X **No** ___

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

Remarks:

A positive indication of wetland hydrology was observed (at least two secondary indicators).

A positive indication of wetland hydrology was observed (at least one primary indicator).

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Little Missouri Lateral County: McKenzie Sampling Date: June 20, 2018
Applicant/Owner: ONEOK Bakken Pipeline, LLC State: ND Sampling Point: U-010
Investigator(s): M. Fettes and C. Tucker Section, Township, Range: Sec. 27, T149N, R99W
Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 5%
Subregion (LRR): LRRF Lat: -103.34235 Long: 47.69710 Datum: NAD91
Soil Map Unit Name: E0515B: Rhoades-Daglum complex, 0-6% slopes NWI Classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? (Yes / No) Yes (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 **X**
Hydric Soil Present? Yes No **X**
Wetland Hydrology Present? Yes No **X**

Is the Sampled Area within a Wetland? **Yes** **No** **X**

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: 30 ft.)			
1. *None Observed*			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *None Observed*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft.)			
1. *Agropyrum cristatum*	60	yes	UPL
2. *Bromus inermis*	40	yes	UPL
3. *Pascopyrum smithii*	5	no	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft.)			
1. *None Observed*			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): **0** (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: **0** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	**0**	x 1 =	**0**
FACW species	**0**	x 2 =	**0**
FAC species	**0**	x 3 =	**0**
FACU species	**5**	x 4 =	**20**
UPL species	**100**	x 5 =	**500**
Column Totals:	**105** (A)		**520** (B)

Prevalence Index = B/A = **4.95**

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. Provide supporting data in Remarks.

Hydrophytic Vegetation Present? **Yes** **No** **X**

Remarks: (if observed, list morphological adaptations below).

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

Sampling Point: **U-010**

SOIL

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 4/3	100	NONE				Loam	
4-10	10YR 3/1	100	NONE				Silty Clay Loam	salt deposits
10-14	2.5Y 6/3	100	NONE				Silty Clay Loam	salt deposits

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

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR F)**
- ___ 1 cm Muck (A9) **(LRR F, G, H)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR I, J)**
- ___ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ___ Dark Surface (S7) **(LRR G)**
- ___ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: N/A

Depth (inches): N/A

Hydric Soil Present? **Yes** ___ **No** **X**

Remarks:

No positive indication of hydric soils was observed.

HYDROLOGY

Wetland hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes ___ No **X** Depth (inches): **N/A**

Water Table Present? Yes ___ No **X** Depth (inches): **N/A**

Saturation Present? (includes capillary fringe) Yes ___ No **X** Depth (inches): **N/A**

Wetland Hydrology Present? **Yes** ___ **No** **X**

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: Little Missouri Lateral County: McKenzie Sampling Date: June 21, 2018
Applicant/Owner: ONEOK Bakken Pipeline, LLC State: ND Sampling Point: W-011
Investigator(s): M. Fettes and C. Tucker Section, Township, Range: Sec. 25, T149N, R99W
Landform (hillslope, terrace, etc.): Drainage Local relief (concave, convex, none): Concave Slope (%): 1-2%
Subregion (LRR): LRRF Lat: -103.28604 Long: 47.69193 Datum: NAD92
Soil Map Unit Name: E4190F: Cabba-Chama-Havrelon, occasionally fleeded complex, 2-70% slopes NWI Classification: PEMA
Are climatic / hydrologic conditions on the site typical for this time of year? (Yes / No) Yes (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 **X** No
Hydric Soil Present? Yes **X** No
Wetland Hydrology Present? Yes **X** No

Is the Sampled Area within a Wetland? **Yes X** **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: 30 ft.)			
1. *None Observed*			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *None Observed*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft.)			
1. *Juncus arcticus*	75	yes	FACW
2. *Cirsium arvense*	15	no	FACU
3. *Phragmites australis*	15	no	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	105 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft.)			
1. *None Observed*			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): **1** (A)

Total Number of Dominant Species Across All Strata: **1** (B)

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

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	**0**	x 1 =	**0**
FACW species	**90**	x 2 =	**180**
FAC species	**0**	x 3 =	**0**
FACU species	**15**	x 4 =	**60**
UPL species	**0**	x 5 =	**0**
Column Totals:	**105** (A)		**240** (B)

Prevalence Index = B/A = **2.29**

Hydrophytic Vegetation Indicators:

X 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
X 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. Provide supporting data in Remarks.

Hydrophytic Vegetation Present? **Yes X** **No**

Remarks: (if observed, list morphological adaptations below).

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 ≤ 3.00).

Sampling Point: **W-011**

SOIL

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 3/2	90	7.5YR 4/6	10	C	M	Loam	
5-10	2.5Y 4/1	90	7.5YR 4/6	10	C	M	Loam	

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

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR F)**
- ___ 1 cm Muck (A9) **(LRR F, G, H)**
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR I, J)**
- ___ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ___ Dark Surface (S7) **(LRR G)**
- ___ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: N/A

Depth (inches): N/A

Hydric Soil Present? **Yes** X **No** ___

Remarks:

A positive indication of hydric soil was observed.

HYDROLOGY

Wetland hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes ___ No **X** Depth (inches): **N/A**

Water Table Present? Yes ___ No **X** Depth (inches): **N/A**

Saturation Present? (includes capillary fringe) Yes ___ No **X** Depth (inches): **N/A**

Wetland Hydrology Present? **Yes** X **No** ___

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

Remarks:

A positive indication of wetland hydrology was observed (at least two secondary indicators).

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Little Missouri Lateral | County: McKenzie | Sampling Date: June 21, 2018
Applicant/Owner: ONEOK Bakken Pipeline, LLC | State: ND | Sampling Point: U-011
Investigator(s): M. Fettes and C. Tucker | Section, Township, Range: Sec. 25, T149N, R99W
Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Convex | Slope (%): 4%
Subregion (LRR): LRRF | Lat: -103.28594 | Long: 47.69189 | Datum: NAD93
Soil Map Unit Name: E4190F: Cabba-Chama-Havrelon, occasionally fleeded complex, 2-70% slopes | NWI Classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? (Yes / No) Yes (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 **X**
Hydric Soil Present?	Yes	No **X**
Wetland Hydrology Present?	Yes	No **X**

Is the Sampled Area within a Wetland? **Yes** **No** **X**

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: 30 ft.)			
1. *None Observed*			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *None Observed*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft.)			
1. *Bromus inermis*	80	yes	FACU
2. *Poa pratensis*	20	yes	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft.)			
1. *None Observed*			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): **0** (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: **0** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	**0**	x 1 =	**0**
FACW species	**0**	x 2 =	**0**
FAC species	**0**	x 3 =	**0**
FACU species	**100**	x 4 =	**400**
UPL species	**0**	x 5 =	**0**
Column Totals:	**100** (A)		**400** (B)

Prevalence Index = B/A = **4.00**

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. Provide supporting data in Remarks.

Hydrophytic Vegetation Present? **Yes** **No** **X**

Remarks: (if observed, list morphological adaptations below).

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

Sampling Point: **U-011**

SOIL

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 3/1	100	NONE				Loam	
5-16	10YR 3/2	100	NONE				Loam	
16-20	10YR 4/3	100	NONE				Loam	

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

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR F)**
- ___ 1 cm Muck (A9) **(LRR F, G, H)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR I, J)**
- ___ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ___ Dark Surface (S7) **(LRR G)**
- ___ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: N/A

Depth (inches): N/A

Hydric Soil Present? **Yes** ___ **No** **X**

Remarks:

No positive indication of hydric soils was observed.

HYDROLOGY

Wetland hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes ___ No **X** Depth (inches): **N/A**

Water Table Present? Yes ___ No **X** Depth (inches): **N/A**

Saturation Present? (includes capillary fringe) Yes ___ No **X** Depth (inches): **N/A**

Wetland Hydrology Present? **Yes** ___ **No** **X**

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: Little Missouri Lateral County: McKenzie Sampling Date: June 22, 2018
Applicant/Owner: ONEOK Bakken Pipeline, LLC State: ND Sampling Point: W-012
Investigator(s): M. Fettes and C. Tucker Section, Township, Range: Sec. 30, T149N, R99W
Landform (hillslope, terrace, etc.): Drainage Local relief (concave, convex, none): Concave Slope (%): 1-2%
Subregion (LRR): LRRF Lat: -103.26991 Long: 47.69321 Datum: NAD94
Soil Map Unit Name: E4139A: Korchea-Fluvaquents complex, channeled, 0-2% slopes, frequently flooded NWI Classification: PEMC
Are climatic / hydrologic conditions on the site typical for this time of year? (Yes / No) Yes (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 **X** No
Hydric Soil Present? Yes **X** No
Wetland Hydrology Present? Yes **X** No

Is the Sampled Area within a Wetland? **Yes X** **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: 30 ft.)			
1. *None Observed*			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *None Observed*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft.)			
1. *Eleocharis palustris*	80	yes	OBL
2. *Spartina pectinata*	20	no	FACW
3. *Hordeum jubatum*	5	no	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	105 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft.)			
1. *None Observed*			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): **1** (A)

Total Number of Dominant Species Across All Strata: **1** (B)

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

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	**80**	x 1 =	**80**
FACW species	**25**	x 2 =	**50**
FAC species	**0**	x 3 =	**0**
FACU species	**0**	x 4 =	**0**
UPL species	**0**	x 5 =	**0**
Column Totals:	**105** (A)		**130** (B)

Prevalence Index = B/A = **1.24**

Hydrophytic Vegetation Indicators:

X 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
X 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. Provide supporting data in Remarks.

Hydrophytic Vegetation Present? **Yes X** **No**

Remarks: (if observed, list morphological adaptations below).

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 ≤ 3.00).

Sampling Point: **W-012**

SOIL

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	2.5Y 4/1	90	7.5YR 4/6	10	C	M	Silt Loam	
12-15	2.5Y 6/1	95	7.5YR 4/6	5	C	M	Silt Loam	

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

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR F)**
- ___ 1 cm Muck (A9) **(LRR F, G, H)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR I, J)**
- ___ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ___ Dark Surface (S7) **(LRR G)**
- ___ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: N/A

Depth (inches): N/A

Hydric Soil Present? **Yes** X **No** ___

Remarks:

A positive indication of hydric soil was observed.

HYDROLOGY

Wetland hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes ___ No **X** Depth (inches): **N/A**

Water Table Present? Yes **X** No ___ Depth (inches): **12-15**

Saturation Present? (includes capillary fringe) Yes **X** No ___ Depth (inches): **0-15**

Wetland Hydrology Present? **Yes** X **No** ___

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

Remarks:

A positive indication of wetland hydrology was observed (at least two secondary indicators).

A positive indication of wetland hydrology was observed (at least one primary indicator).

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Little Missouri Lateral County: McKenzie Sampling Date: June 22, 2018
Applicant/Owner: ONEOK Bakken Pipeline, LLC State: ND Sampling Point: U-012
Investigator(s): M. Fettes and C. Tucker Section, Township, Range: Sec. 30, T149N, R99W
Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 9-10%
Subregion (LRR): LRRF Lat: -103.26984 Long: 47.69322 Datum: NAD83
Soil Map Unit Name: E4139A: Korchea-Fluvaquents complex, channeled, 0-2% slopes, frequently flooded NWI Classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? (Yes / No) Yes (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 **X**
Hydric Soil Present? Yes No **X**
Wetland Hydrology Present? Yes No **X**

Is the Sampled Area within a Wetland? **Yes** **No** **X**

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: 30 ft.)			
1. *None Observed*			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *None Observed*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft.)			
1. *Bromus inermis*	70	yes	UPL
2. *Glycyrrhiza lepidota*	15	no	FACU
3. *Poa pratensis*	15	no	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft.)			
1. *None Observed*			
2.			
	100% = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): **0** (A)

Total Number of Dominant Species Across All Strata: **1** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **0** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	**0**	x 1 =	**0**
FACW species	**0**	x 2 =	**0**
FAC species	**0**	x 3 =	**0**
FACU species	**30**	x 4 =	**120**
UPL species	**70**	x 5 =	**350**
Column Totals:	**100** (A)		**470** (B)

Prevalence Index = B/A = **4.70**

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. Provide supporting data in Remarks.

Hydrophytic Vegetation Present? **Yes** **No** **X**

Remarks: (if observed, list morphological adaptations below).

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

Sampling Point: **U-012**

SOIL

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/1	100	NONE				Loam	
4-12	10YR 3/2	100	NONE				Sandy Loam	
12-16	7.5YR 5/3	100	NONE				Sandy Loam	

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

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR F)**
- ___ 1 cm Muck (A9) **(LRR F, G, H)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR I, J)**
- ___ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ___ Dark Surface (S7) **(LRR G)**
- ___ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: N/A

Depth (inches): N/A

Hydric Soil Present? **Yes** ___ **No** **X**

Remarks:

No positive indication of hydric soils was observed.

HYDROLOGY

Wetland hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes ___ No **X** Depth (inches): **N/A**

Water Table Present? Yes ___ No **X** Depth (inches): **N/A**

Saturation Present? (includes capillary fringe) Yes ___ No **X** Depth (inches): **N/A**

Wetland Hydrology Present? **Yes** ___ **No** **X**

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: Little Missouri Lateral | County: McKenzie | Sampling Date: June 19, 2018
Applicant/Owner: ONEOK Bakken Pipeline, LLC | State: ND | Sampling Point: N-01
Investigator(s): K. Kjar and C. Tucker | Section, Township, Range: Sec. 18, T149N, R99W
Landform (hillslope, terrace, etc.): Upland swale | Local relief (concave, convex, none): Concave | Slope (%): 2-3%
Subregion (LRR): LRRF | Lat: -103.40440 | Long: 47.72914 | Datum: NAD83
Soil Map Unit Name: E0447B: Daglum-Belfield complex, 0-6% slopes | NWI Classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? (Yes / No) Yes (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 **X**
Hydric Soil Present?	Yes	No **X**
Wetland Hydrology Present?	Yes	No **X**

Is the Sampled Area within a Wetland? **Yes** **No** **X**

Remarks:

This point was determined not to be within a wetland due to the lack of all three wetland criteria.

Within Ag field

VEGETATION - Use scientific names of plants.

	Absolute % cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30 ft.)			
1. *None Observed*			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *None Observed*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft.)			
1. *Wheat*	100	yes	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft.)			
1. *None Observed*			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): **0** (A)

Total Number of Dominant Species Across All Strata: **1** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **0** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	**0**	x 1 =	**0**
FACW species	**0**	x 2 =	**0**
FAC species	**0**	x 3 =	**0**
FACU species	**0**	x 4 =	**0**
UPL species	**100**	x 5 =	**500**
Column Totals:	**100** (A)		**500** (B)

Prevalence Index = B/A = **5.00**

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. Provide supporting data in Remarks.

Hydrophytic Vegetation Present? **Yes** **No** **X**

Remarks: (if observed, list morphological adaptations below).

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

Sampling Point: **N-01**

SOIL

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-4	10YR 3/1	100	NONE				Loam	
4-10	10YR 3/3	100	NONE				Loam	

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

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR F)**
- ___ 1 cm Muck (A9) **(LRR F, G, H)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR I, J)**
- ___ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ___ Dark Surface (S7) **(LRR G)**
- ___ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: N/A

Depth (inches): N/A

Hydric Soil Present? **Yes** ___ **No** **X**

Remarks:

No positive indication of hydric soils was observed.

HYDROLOGY

Wetland hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes ___ No **X** Depth (inches): **N/A**

Water Table Present? Yes ___ No **X** Depth (inches): **N/A**

Saturation Present? (includes capillary fringe) Yes ___ No **X** Depth (inches): **N/A**

Wetland Hydrology Present? **Yes** ___ **No** **X**

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: Little Missouri Lateral County: McKenzie Sampling Date: June 20, 2018
Applicant/Owner: ONEOK Bakken Pipeline, LLC State: ND Sampling Point: N-02
Investigator(s): M. Fettes and C. Tucker Section, Township, Range: Sec. 21, T149N, R99W
Landform (hillslope, terrace, etc.): Upland swale Local relief (concave, convex, none): Concave Slope (%): 1-2%
Subregion (LRR): LRRF Lat: -103.36177 Long: 47.71067 Datum: NAD83
Soil Map Unit Name: E0447B: Daglum-Belfield complex, 0-6% slopes NWI Classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? (Yes / No) Yes (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 **X**	
Hydric Soil Present?	Yes	No **X**	**Is the Sampled Area within a Wetland?** Yes No **X**
Wetland Hydrology Present?	Yes	No **X**	

Remarks:

This point was determined not to be within a wetland due to the lack of all three wetland criteria.

Within Ag field

VEGETATION - Use scientific names of plants.

	Absolute % cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30 ft.)			
1. *None Observed*			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *None Observed*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft.)			
1. *Oats*	100	yes	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft.)			
1. *None Observed*			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): **0** (A)

Total Number of Dominant Species Across All Strata: **1** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **0** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	**0**	x 1 =	**0**
FACW species	**0**	x 2 =	**0**
FAC species	**0**	x 3 =	**0**
FACU species	**0**	x 4 =	**0**
UPL species	**100**	x 5 =	**500**
Column Totals:	**100** (A)		**500** (B)

Prevalence Index = B/A = **5.00**

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. Provide supporting data in Remarks.

Hydrophytic Vegetation Present? Yes No **X**

Remarks: (if observed, list morphological adaptations below).

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

Sampling Point: **N-02**

SOIL

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-3	10YR 2/1	100	NONE				Loam	
3-8	10YR 2/2	100	NONE				Silt Loam	
8-17	10YR 3/3	100	NONE				Silt Loam	

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

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR F)**
- ___ 1 cm Muck (A9) **(LRR F, G, H)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR I, J)**
- ___ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ___ Dark Surface (S7) **(LRR G)**
- ___ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: N/A

Depth (inches): N/A

Hydric Soil Present? **Yes** ___ **No** **X**

Remarks:

No positive indication of hydric soils was observed.

HYDROLOGY

Wetland hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes ___ No **X** Depth (inches): **N/A**

Water Table Present? Yes ___ No **X** Depth (inches): **N/A**

Saturation Present? (includes capillary fringe) Yes ___ No **X** Depth (inches): **N/A**

Wetland Hydrology Present? **Yes** ___ **No** **X**

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: Little Missouri Lateral County: McKenzie Sampling Date: June 21, 2018
Applicant/Owner: ONEOK Bakken Pipeline, LLC State: ND Sampling Point: N-03
Investigator(s): M. Fettes and C. Tucker Section, Township, Range: Sec. 26, T149N, R99W
Landform (hillslope, terrace, etc.): Upland swale Local relief (concave, convex, none): Concave Slope (%): 1-2%
Subregion (LRR): LRRF Lat: -103.31457 Long: 47.69670 Datum: NAD83
Soil Map Unit Name: Flasher-Rock outcrop-Vebar complex, 9 to 70 percent slopes NWI Classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? (Yes / No) Yes (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 **X**
Hydric Soil Present?	Yes	No **X**
Wetland Hydrology Present?	Yes	No **X**

Is the Sampled Area within a Wetland? **Yes** **No** **X**

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: 30 ft.)			
1. *None Observed*			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *Prunus virginiana*	30	yes	UPL
2. *Symphoricarpos occidentalis*	15	yes	UPL
3.			
4.			
5.			
	45 = Total Cover		
Herb Stratum (Plot size: 5 ft.)			
1. *Bromus inermis*	100	yes	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft.)			
1. *None Observed*			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): **0** (A)

Total Number of Dominant Species Across All Strata: **3** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **0** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	**0**	x 1 =	**0**
FACW species	**0**	x 2 =	**0**
FAC species	**0**	x 3 =	**0**
FACU species	**0**	x 4 =	**0**
UPL species	**145**	x 5 =	**725**
Column Totals:	**145** (A)		**725** (B)

Prevalence Index = B/A = **5.00**

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. Provide supporting data in Remarks.

Hydrophytic Vegetation Present? **Yes** **No** **X**

Remarks: (if observed, list morphological adaptations below).

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

Sampling Point: **N-03**

SOIL

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-3	10YR 2/2	100	NONE				Loam	
3-14	10YR 3/3	100	NONE				Loam	

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

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR F)**
- ___ 1 cm Muck (A9) **(LRR F, G, H)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR I, J)**
- ___ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ___ Dark Surface (S7) **(LRR G)**
- ___ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: N/A

Depth (inches): N/A

Hydric Soil Present? **Yes** ___ **No** **X**

Remarks:

No positive indication of hydric soils was observed.

HYDROLOGY

Wetland hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes ___ No **X** Depth (inches): **N/A**

Water Table Present? Yes ___ No **X** Depth (inches): **N/A**

Saturation Present? (includes capillary fringe) Yes ___ No **X** Depth (inches): **N/A**

Wetland Hydrology Present? **Yes** ___ **No** **X**

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: Little Missouri Lateral County: McKenzie Sampling Date: June 21, 2018
Applicant/Owner: ONEOK Bakken Pipeline, LLC State: ND Sampling Point: N-04
Investigator(s): M. Fettes and C. Tucker Section, Township, Range: Sec. 25, T149N, R99W
Landform (hillslope, terrace, etc.): Upland swale Local relief (concave, convex, none): Concave Slope (%): 1-2%
Subregion (LRR): LRRF Lat: -103.29119 Long: 47.68891 Datum: NAD83
Soil Map Unit Name: E4190F: Cabba-Chama-Havrelon, occasionally fleeded complex, 2-70% slopes NWI Classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? (Yes / No) Yes (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 **X**
Hydric Soil Present? Yes No **X**
Wetland Hydrology Present? Yes No **X**

Is the Sampled Area within a Wetland? **Yes** **No** **X**

Remarks:

This point was determined not to be within a wetland due to the lack of all three wetland criteria.

Within Ag field

VEGETATION - Use scientific names of plants.

	Absolute % cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30 ft.)			
1. *Fraxinus pennsylvanica*	15	yes	FACU
2.			
3.			
4.			
	15 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *Shepherdia argentia*	30	yes	UPL
2. *Amelanchier alnifolia*	5	no	UPL
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft.)			
1. *Bromus inermis*	75	yes	UPL
2. *Poa pratensis*	15	no	FACU
3. *Melilotus officinalis*	10	no	UPL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft.)			
1. *None Observed*			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): **0** (A)

Total Number of Dominant Species Across All Strata: **3** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **0** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	**0**	x 1 =	**0**
FACW species	**0**	x 2 =	**0**
FAC species	**0**	x 3 =	**0**
FACU species	**30**	x 4 =	**120**
UPL species	**120**	x 5 =	**600**
Column Totals:	**150** (A)		**720** (B)

Prevalence Index = B/A = **4.80**

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. Provide supporting data in Remarks.

Hydrophytic Vegetation Present? **Yes** **No** **X**

Remarks: (if observed, list morphological adaptations below).

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

Sampling Point: **N-04**

SOIL

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 3/1	100	NONE				Loam	
5-13	10YR 3/3	100	NONE				Loam	

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

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR F)**
- ___ 1 cm Muck (A9) **(LRR F, G, H)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR I, J)**
- ___ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ___ Dark Surface (S7) **(LRR G)**
- ___ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: N/A

Depth (inches): N/A

Hydric Soil Present? **Yes** ___ **No** **X**

Remarks:

No positive indication of hydric soils was observed.

HYDROLOGY

Wetland hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes ___ No **X** Depth (inches): **N/A**

Water Table Present? Yes ___ No **X** Depth (inches): **N/A**

Saturation Present? (includes capillary fringe) Yes ___ No **X** Depth (inches): **N/A**

Wetland Hydrology Present? **Yes** ___ **No** **X**

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: Little Missouri Lateral County: McKenzie Sampling Date: June 22, 2018
Applicant/Owner: ONEOK Bakken Pipeline, LLC State: ND Sampling Point: N-05
Investigator(s): M. Fettes and C. Tucker Section, Township, Range: Sec. 31, T149N, R98W
Landform (hillslope, terrace, etc.): Upland swale Local relief (concave, convex, none): Concave Slope (%): 1-2%
Subregion (LRR): LRRF Lat: -103.27991 Long: 47.69245 Datum: NAD83
Soil Map Unit Name: E0515B: Rhoades-Daglum complex, 0-6% slopes NWI Classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? (Yes / No) Yes (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 **X**	
Hydric Soil Present?	Yes	No **X**	**Is the Sampled Area within a Wetland?** Yes No **X**
Wetland Hydrology Present?	Yes	No **X**	

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: 30 ft.)			
1. *None Observed*			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *None Observed*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft.)			
1. *Elymus repens*	60	yes	FACU
2. *Grindelia squarrosa*	25	yes	UPL
3. *Melilotus officinalis*	15	no	UPL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft.)			
1. *None Observed*			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): **0** (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: **0** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	**0**	x 1 =	**0**
FACW species	**0**	x 2 =	**0**
FAC species	**0**	x 3 =	**0**
FACU species	**60**	x 4 =	**240**
UPL species	**40**	x 5 =	**200**
Column Totals:	**100** (A)		**440** (B)

Prevalence Index = B/A = **4.40**

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. Provide supporting data in Remarks.

Hydrophytic Vegetation Present? Yes No **X**

Remarks: (if observed, list morphological adaptations below).

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

Sampling Point: **N-05**

SOIL

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 2/2	100	NONE				Silt Loam	
6-12	10YR 3/1	100	NONE				Silt Loam	
12-18	10YR 3/3	100	NONE				Silt Loam	

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

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR F)**
- ___ 1 cm Muck (A9) **(LRR F, G, H)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR I, J)**
- ___ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ___ Dark Surface (S7) **(LRR G)**
- ___ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: N/A

Depth (inches): N/A

Hydric Soil Present? **Yes** ___ **No** **X**

Remarks:

No positive indication of hydric soils was observed.

HYDROLOGY

Wetland hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes ___ No **X** Depth (inches): **N/A**

Water Table Present? Yes ___ No **X** Depth (inches): **N/A**

Saturation Present? (includes capillary fringe) Yes ___ No **X** Depth (inches): **N/A**

Wetland Hydrology Present? **Yes** ___ **No** **X**

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: Little Missouri Lateral | County: McKenzie | Sampling Date: June 22, 2018
Applicant/Owner: ONEOK Bakken Pipeline, LLC | State: ND | Sampling Point: N-06
Investigator(s): M. Fettes and C. Tucker | Section, Township, Range: Sec. 31, T149N, R98W
Landform (hillslope, terrace, etc.): Upland swale | Local relief (concave, convex, none): Concave | Slope (%): 1-2%
Subregion (LRR): LRRF | Lat: -103.27525 | Long: 47.68833 | Datum: NAD83
Soil Map Unit Name: E0515B: Rhoades-Daglum complex, 0-6% slopes | NWI Classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? (Yes / No) Yes (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 **X**
Hydric Soil Present?	Yes	No **X**
Wetland Hydrology Present?	Yes	No **X**

Is the Sampled Area within a Wetland? **Yes** **No** **X**

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: 30 ft.)			
1. *None Observed*			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *None Observed*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft.)			
1. *Bromus inermis*	65	yes	UPL
2. *Poa pratensis*	20	yes	FACU
3. *Melilotus officinalis*	15	no	UPL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft.)			
1. *None Observed*			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): **0** (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: **0** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	**0**	x 1 =	**0**
FACW species	**0**	x 2 =	**0**
FAC species	**0**	x 3 =	**0**
FACU species	**20**	x 4 =	**80**
UPL species	**80**	x 5 =	**400**
Column Totals:	**100** (A)		**480** (B)

Prevalence Index = B/A = **4.80**

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. Provide supporting data in Remarks.

Hydrophytic Vegetation Present? **Yes** **No** **X**

Remarks: (if observed, list morphological adaptations below).

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

Sampling Point: **N-06**

SOIL

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 2/1	100	NONE				Loam	
5-11	10YR 3/2	100	NONE				Loam	
11-20	10YR 4/3	100	NONE				Silt Loam	

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

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR F)**
- ___ 1 cm Muck (A9) **(LRR F, G, H)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR I, J)**
- ___ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ___ Dark Surface (S7) **(LRR G)**
- ___ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: N/A

Depth (inches): N/A

Hydric Soil Present? **Yes** ___ **No** **X**

Remarks:

No positive indication of hydric soils was observed.

HYDROLOGY

Wetland hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes ___ No **X** Depth (inches): **N/A**

Water Table Present? Yes ___ No **X** Depth (inches): **N/A**

Saturation Present? (includes capillary fringe) Yes ___ No **X** Depth (inches): **N/A**

Wetland Hydrology Present? **Yes** ___ **No** **X**

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

Remarks:

No positive indication of wetland hydrology was observed.

Appendix E

Waterbody Data Forms

merjent

Little Missouri Lateral Project Waterbody Form

Feature ID:	S_A-01	**Inspection Date:**	6/19/2018
Waterbody Name:	Unnamed trib to Cherry Creek	**State:**	ND
Staff Initials	CT, KK	**County:**	McKenzie
Latitude:	47.733029	**Longitude:**	-103.417274
Cowardin:	R4SB	**Evidence of Mussels?**	No
Associated wetland(s)?	☐ check if yes)	**% Riparian Vegetation:**	0
Left Bank Height (ft):	1	**Left Bank Slope (°):**	30
Right Bank Height (ft):	1	**Right Bank Slope (°):**	30
OHWM Height (ft):	<1	**Top of Bank Width (ft):**	5
OHWM Width (ft):	3	**Water Clarity:**	No Water
OHWM Criteria:	Vegetation matted down, bent, or absent	**Avg. Water Depth (ft):**	N/A
Primary Substrate:	Silt	**Flow Rate (ft/s):**	N/A
		Flow Direction:	S

Unique Features (Check all that apply):

☐ Unstable Banks	☑ Headcutting	☐ Erosion	☐ Pools	
☐ Rock Outcrop	☐ Gravel Bars/Islands	☐ Cutoff Channels	☐ Dam	
☐ Riffles/Runs	☐ Riprap	☐ Buildings	☐ Seeps	
☐ Bridge	☐ Diversion/Intake	☐ Steep Sideslopes	☐ Other (Explain):	Depressed vegetation

Dominant Plant Species

1. Bromus inermis
2. Cirsium arvense
3. Spartina pectinata
4.
5.

Photos (List Photo ID):

7 S_A-01 Facing E

8 S_A-01 Facing S

Notes:

Drain listed in the NHD layer as an intermittent stream. However, no hydric veg was noted along the bed. Due to no hydric vegetation, OHWM information could not be recorded. Therefore, Waterbody S-A_01 was classified as an ephermal stream.

merjent

Little Missouri Lateral Project Waterbody Form

Feature ID:	S_A-02	**Inspection Date:**	6/20/2018
Waterbody Name:	Unnamed trib to Cherry Creek	**State:**	ND
Staff Initials	CT, MF	**County:**	McKenzie
Latitude:	47.723361	**Longitude:**	-103.3793
Cowardin:	R4SB	**Evidence of Mussels?**	No
Associated wetland(s)?	☐ check if yes)	**% Riparian Vegetation:**	65
Left Bank Height (ft):	8	**Left Bank Slope (°):**	30-45
Right Bank Height (ft):	8	**Right Bank Slope (°):**	30-45
OHWM Height (ft):	3	**Top of Bank Width (ft):**	24
OHWM Width (ft):	15	**Water Clarity:**	Turbid
OHWM Criteria:	Clear, natural line impressed on bank	**Avg. Water Depth (ft):**	1.5
Primary Substrate:	Silt	**Flow Rate (ft/s):**	N/A
		Flow Direction:	E

Unique Features (Check all that apply):

☑ Unstable Banks	☑ Headcutting	☑ Erosion	☑ Pools	
☐ Rock Outcrop	☐ Gravel Bars/Islands	☐ Cutoff Channels	☐ Dam	
☐ Riffles/Runs	☐ Riprap	☐ Buildings	☐ Seeps	
☐ Bridge	☐ Diversion/Intake	☑ Steep Sideslopes	☑ Other (Explain):	Depressed vegetation

Dominant Plant Species

1. Typha latifolia
2. Eleocharis palustris
3. Solidago gigantea
4. Schoenoplectus tabernaemontani
5. Sonchus arvensis

Photos (List Photo ID):

20 S_A-02 Facing NW

21 S_A-02 Facing N

600 S_A-02 Facing E

Notes:

Drains into waterbody S_A-03.

merjent

Little Missouri Lateral Project Waterbody Form

Feature ID:	S_A-03	**Inspection Date:**	8/3/2018
Waterbody Name:	Cherry Creek	**State:**	ND
Staff Initials	CT, MF	**County:**	McKenzie
Latitude:	47.721998	**Longitude:**	-103.37517
Cowardin:	R2UB	**Evidence of Mussels?**	No
Associated wetland(s)?	☐ check if yes)	**% Riparian Vegetation:**	50
Left Bank Height (ft):	6.5	**Left Bank Slope (°):**	30-40
Right Bank Height (ft):	6.5	**Right Bank Slope (°):**	30-40
OHWM Height (ft):	3.5	**Top of Bank Width (ft):**	48
OHWM Width (ft):	25	**Water Clarity:**	Turbid
OHWM Criteria:	Clear, natural line impressed on bank	**Avg. Water Depth (ft):**	3
Primary Substrate:	Silt	**Flow Rate (ft/s):**	N/A
		Flow Direction:	NE

Unique Features (Check all that apply):

☑ Unstable Banks	☑ Headcutting	☑ Erosion	☑ Pools	
☐ Rock Outcrop	☐ Gravel Bars/Islands	☐ Cutoff Channels	☐ Dam	
☑ Riffles/Runs	☐ Riprap	☐ Buildings	☐ Seeps	
☐ Bridge	☐ Diversion/Intake	☑ Steep Sideslopes	☐ Other (Explain):	Depressed vegetation

Dominant Plant Species

1. Spartina pectinata
2. Eleocharis palustris
3. Ceratophyllum demersum
4. Schoenoplectus tabernaemontani
5. Typha latifolia

Photos (List Photo ID):

38 S_A-03 Facing S
39 S_A-03 Facing NW
450 S_A-03 Facing SW
451 S_A-03 Facing N

Notes:

A large perennial stream that have various interconnecting intermittent streams within the ROW.

merjent

Little Missouri Lateral Project Waterbody Form

Feature ID:	S_A-04	**Inspection Date:**	6/20/2018
Waterbody Name:	Unnamed trib to Cherry Creek	**State:**	ND
Staff Initials	CT, MF	**County:**	McKenzie
Latitude:	47.722346	**Longitude:**	-103.37624
Cowardin:	R4SB	**Evidence of Mussels?**	No
Associated wetland(s)?	☐ check if yes)	**% Riparian Vegetation:**	90
Left Bank Height (ft):	2.5	**Left Bank Slope (°):**	15-20
Right Bank Height (ft):	2.5	**Right Bank Slope (°):**	15-20
OHWM Height (ft):	0.5	**Top of Bank Width (ft):**	8
OHWM Width (ft):	5	**Water Clarity:**	No Water
OHWM Criteria:	Vegetation matted down, bent, or absent	**Avg. Water Depth (ft):**	N/A
Primary Substrate:	Silt	**Flow Rate (ft/s):**	N/A
		Flow Direction:	S

Unique Features (Check all that apply):

☐ Unstable Banks	☐ Headcutting	☐ Erosion	☑ Pools	
☐ Rock Outcrop	☐ Gravel Bars/Islands	☐ Cutoff Channels	☐ Dam	
☐ Riffles/Runs	☐ Riprap	☐ Buildings	☐ Seeps	
☐ Bridge	☐ Diversion/Intake	☐ Steep Sideslopes	☐ Other (Explain):	Depressed vegetation

Dominant Plant Species

1. Carex pellita
2. Spartina pectinata
3. Symphoricarpos occidentalis
4. Cirsium arvense
5.

Photos (List Photo ID):

31 S_A-04 Facing NW

30 S_A-04 Facing E

Notes:

Drains into waterbody S_A-03. Wetland W_A-05 is the headwater for this stream.

merjent

Little Missouri Lateral Project Waterbody Form

Feature ID:	S_A-05	**Inspection Date:**	8/3/2018
Waterbody Name:	Unnamed trib to Cherry Creek	**State:**	ND
Staff Initials	CT, MF	**County:**	McKenzie
Latitude:	47.722193	**Longitude:**	-103.37418
Cowardin:	R4SB	**Evidence of Mussels?**	No
Associated wetland(s)?	☐ check if yes)	**% Riparian Vegetation:**	65
Left Bank Height (ft):	3.5	**Left Bank Slope (°):**	15-30
Right Bank Height (ft):	3.5	**Right Bank Slope (°):**	15-30
OHWM Height (ft):	0.5	**Top of Bank Width (ft):**	25
OHWM Width (ft):	20	**Water Clarity:**	Clear
OHWM Criteria:	Destruction of terrestrial vegetation	**Avg. Water Depth (ft):**	0.5
Primary Substrate:	Silt	**Flow Rate (ft/s):**	N/A
		Flow Direction:	N

Unique Features (Check all that apply):

☐ Unstable Banks	☐ Headcutting	☑ Erosion	☑ Pools	
☐ Rock Outcrop	☐ Gravel Bars/Islands	☐ Cutoff Channels	☐ Dam	
☐ Riffles/Runs	☐ Riprap	☐ Buildings	☐ Seeps	
☐ Bridge	☐ Diversion/Intake	☑ Steep Sideslopes	☐ Other (Explain):	Depressed vegetation

Dominant Plant Species

1. Spartina pectinata
2. Fraxinus pennsylvanica
3. Schoenoplectus tabernaemontani
4. Solidago gigantea
5. Bromus inermis

Photos (List Photo ID):

577 S_A-05 Facing S

578 S_A-05 Facing S

Notes:

Wetland W_A-06 is the headwater for this stream system that drains into waterbody S_A-03

merjent

Little Missouri Lateral Project Waterbody Form

Feature ID:	S_A-06	**Inspection Date:**	8/3/2018
Waterbody Name:	Spring Creek	**State:**	ND
Staff Initials	CT, MF	**County:**	McKenzie
Latitude:	47.692097	**Longitude:**	-103.2658
Cowardin:	R4SB	**Evidence of Mussels?**	No
Associated wetland(s)?	☐ check if yes)	**% Riparian Vegetation:**	65
Left Bank Height (ft):	6	**Left Bank Slope (°):**	25-45
Right Bank Height (ft):	6	**Right Bank Slope (°):**	25-45
OHWM Height (ft):	2.25	**Top of Bank Width (ft):**	32
OHWM Width (ft):	16	**Water Clarity:**	Turbid
OHWM Criteria:	Clear, natural line impressed on bank	**Avg. Water Depth (ft):**	2
Primary Substrate:	Silt	**Flow Rate (ft/s):**	N/A
		Flow Direction:	N

Unique Features (Check all that apply):

☑ Unstable Banks	☑ Headcutting	☑ Erosion	☑ Pools	
☐ Rock Outcrop	☐ Gravel Bars/Islands	☐ Cutoff Channels	☐ Dam	
☑ Riffles/Runs	☐ Riprap	☐ Buildings	☐ Seeps	
☐ Bridge	☐ Diversion/Intake	☑ Steep Sideslopes	☐ Other (Explain):	Depressed vegetation

Dominant Plant Species

1. Spartina pectinata
2. Eleocharis palustris
3. Schoenoplectus tabernaemontani
4. Ceratophyllum demersum
5. Typha latifolia

Photos (List Photo ID):

502 S_A-06 Facing W
503 S_A-06 Facing E
504 S_A-06 Facing SW
505 S_A-06 Facing N

Notes:

Three stream meanders in and out of the Project Area at 3 different locations. Because they are a part of the same stream system, they are labeled the same feature name.

Appendix F

Dakota Skipper Habitat Forms

Item	H-A_011	
Crew	CT/MF	
Date	6/21/2018	
Graminoid Cover	76-100	
Native Graminoid Cover	76-100	
Forb Cover	5-25	
Exposed ground	0-5	
Land-use	Rangeland	
Notes (250 characters)		
Photo 1	86 H-A_011	SW
Photo 2	87 H-A_011	W
Photo 3	90 H-A_011	Close-up

Cover Range	Land-use categories
0-5%	Pasture
5-25%	Rangeland
26-50%	Row Crop
50-75%	Other
76-100%	

*Sandy Soils
*N, E, and NW aspects
*0-35% slopes
*Heavy amounts of creeping juniper (25%) and prairie rose (15%)
*Scattered non-native species, including encroaching smooth brome
*Dominant Grass: Little bluestem; Porcupine grass
*Dominant forbs: Northern bedstraw; Stiff sunflower
*1.61 acres

Check list	Cover
Amorpha canescens	
Andropogon gerardii	
Anemone patens	5-25
Artemisia frigida	
Astragalus adsurgens	5-25
Astragalus crassicarpus	
Bouteloua curtipendula	
Calylophus serrulatus	0-5
Campanula rotundifolia	5-25
Dalea candida	
Dalea purpurea	0-5
Echinacea angustifolia	0-5
Erigeron spp.	
Gaillardia aristata	0-5
Geum triflorum	0-5
Hesperostipa comata	5-25
Hesperostipa spartea	0-5
Hypoxis hirsuta	
Liatris aspera	
Liatris ligulistylis	
Liatris punctata	
Lilium philadelphicum	
Packera plattensis	
Pascopyrum smithii	
Ratibida columnifera	0-5
Rudbeckia hirta	
Schizachyrium scoparium	50-75
Sisyrinchium montanum	
Solidago canadensis	
Sorghastrum nutans	
Sporobolus heterolepis	
Symphyotrichum sericeum	
Zigadenus elegans	
Zizia aptera	

Cover Range
0-5%
5-25%
26-50%
50-75%
76-100%

Item	H-A_012	
Crew	CT/MF	
Date	6/21/2018	
Graminoid Cover	76-100	
Native Graminoid Cover	76-100	
Forb Cover	5-25	
Exposed ground	0-5	
Land-use	Rangeland	
Notes (250 characters)		
Photo 1	95 H-A_012	W
Photo 2	94 H-A_012	S
Photo 3	93 H-A_012	NW

Cover Range	Land-use categories
0-5%	Pasture
5-25%	Rangeland
26-50%	Row Crop
50-75%	Other
76-100%	

*Southwest facing slopes 10-15% slope
*Sandy soils
*Dominant grasses: Little bluestem and porcupine grass
*Dominant forbs: Stiff sunflower and sweetclover
*Dominant shrubs: Prairie rose
*Smooth brome encroaching on all sides
*1.45 acres

Check list	Cover
Amorpha canescens	
Andropogon gerardii	
Anemone patens	0-5
Artemisia frigida	0-5
Astragalus adsurgens	0-5
Astragalus crassicarpus	
Bouteloua curtipendula	
Calylophus serrulatus	0-5
Campanula rotundifolia	0-5
Dalea candida	
Dalea purpurea	0-5
Echinacea angustifolia	0-5
Erigeron spp.	0-5
Gaillardia aristata	
Geum triflorum	0-5
Hesperostipa comata	0-5
Hesperostipa spartea	5-25
Hypoxis hirsuta	
Liatris aspera	
Liatris ligulistylis	
Liatris punctata	
Lilium philadelphicum	
Packera plattensis	
Pascopyrum smithii	0-5
Ratibida columnifera	0-5
Rudbeckia hirta	
Schizachyrium scoparium	50-75
Sisyrinchium montanum	
Solidago canadensis	
Sorghastrum nutans	
Sporobolus heterolepis	
Symphyotrichum sericeum	
Zigadenus elegans	
Zizia aptera	

Cover Range
0-5%
5-25%
26-50%
50-75%
76-100%

Item	H-A_013	
Crew	CT/MF	
Date	06/21/2018	
Graminoid Cover	76-100	
Native Graminoid Cover	76-100	
Forb Cover	5-25	
Exposed ground	0-5	
Land-use	Rangeland	
Notes (250 characters)		
Photo 1	101 H-A_013	N
Photo 2	102 H-A_013	NE
Photo 3	104 H-A_013	Close-up

Cover Range	Land-use categories
0-5%	Pasture
5-25%	Rangeland
26-50%	Row Crop
50-75%	Other
76-100%	

*North/East slope at 10-15% slope
*Encroached on all sides by smooth brome
*Scattered buffaloberry patches
Dominant grasses: little bluestem and Porcupine grass
*Dominant forbs: stiff sunflower and scarlet gaura
*Dominant shrubs: prairie rose and buffaloberry
*1.04 acres

Check list	Cover
Amorpha canescens	
Andropogon gerardii	
Anemone patens	0-5
Artemisia frigida	0-5
Astragalus adsurgens	
Astragalus crassicarpus	
Bouteloua curtipendula	
Calylophus serrulatus	0-5
Campanula rotundifolia	0-5
Dalea candida	
Dalea purpurea	
Echinacea angustifolia	0-5
Erigeron spp.	
Gaillardia aristata	0-5
Geum triflorum	
Hesperostipa comata	0-5
Hesperostipa spartea	5-25
Hypoxis hirsuta	
Liatris aspera	
Liatris ligulistylis	
Liatris punctata	
Lilium philadelphicum	
Packera plattensis	
Pascopyrum smithii	
Ratibida columnifera	
Rudbeckia hirta	
Schizachyrium scoparium	76-100
Sisyrinchium montanum	
Solidago canadensis	
Sorghastrum nutans	
Sporobolus heterolepis	
Symphyotrichum sericeum	
Zigadenus elegans	
Zizia aptera	

Cover Range
0-5%
5-25%
26-50%
50-75%
76-100%

Item	H-A_014	
Crew	CT/MF	
Date	06/21/2018	
Graminoid Cover	76-100	
Native Graminoid Cover	76-100	
Forb Cover	5-25	
Exposed ground	0-5	
Land-use	Rangeland	
Notes (250 characters)		
Photo 1	107 H-A_014	NW
Photo 2	108 H-A_014	Close-up
Photo 3	109 H-A_014	SW

Cover Range	Land-use categories
0-5%	Pasture
5-25%	Rangeland
26-50%	Row Crop
50-75%	Other
76-100%	

*South/West aspect with 10-25% slopes
*Encroached on all sides by KY bluegrass and smooth brome
*Sandy soils
*Dominant grasses: Little bluestem and prairie junegrass
*Dominant forbs: Northern bedsraw and stiff sunflower
*Dominant shrubs: Prairie rose
*1.67 acres

Check list	Cover
Amorpha canescens	
Andropogon gerardii	
Anemone patens	5-25
Artemisia frigida	05
Astragalus adsurgens	0-5
Astragalus crassicarpus	
Bouteloua curtipendula	
Calylophus serrulatus	0-5
Campanula rotundifolia	0-5
Dalea candida	
Dalea purpurea	
Echinacea angustifolia	0-5
Erigeron spp.	0-5
Gaillardia aristata	
Geum triflorum	
Hesperostipa comata	
Hesperostipa spartea	5-25
Hypoxis hirsuta	
Liatris aspera	
Liatris ligulistylis	
Liatris punctata	
Lilium philadelphicum	
Packera plattensis	
Pascopyrum smithii	
Ratibida columnifera	0-5
Rudbeckia hirta	
Schizachyrium scoparium	76-100
Sisyrinchium montanum	
Solidago canadensis	
Sorghastrum nutans	
Sporobolus heterolepis	
Symphyotrichum sericeum	
Zigadenus elegans	
Zizia aptera	

Cover Range
0-5%
5-25%
26-50%
50-75%
76-100%

Item	H-A_020	
Crew	CT/MF	
Date	06/22/2018	
Graminoid Cover	76-100	
Native Graminoid Cover	76-100	
Forb Cover	5-25	
Exposed ground	0-5	
Land-use	Rangeland	
Notes (250 characters)		
Photo 1	145 H-A_020	N
Photo 2	146 H-A_020	E
Photo 3	147 H-A_020	NE

Cover Range	Land-use categories
0-5%	Pasture
5-25%	Rangeland
26-50%	Row Crop
50-75%	Other
76-100%	

*North facing slope at 15-30% slope
*Sandy soils
*Dominant grasses: Little bluestem and porcupine grass
*Dominant forbs: Wood lily and loccoweed
*Dominant shrub: creeping juniper
*0.50 acres

Check list	Cover
Amorpha canescens	
Andropogon gerardii	
Anemone patens	0-5
Artemisia frigida	0-5
Astragalus adsurgens	0-5
Astragalus crassicarpus	0-5
Bouteloua curtipendula	0-5
Calylophus serrulatus	0-5
Campanula rotundifolia	
Dalea candida	
Dalea purpurea	0-5
Echinacea angustifolia	0-5
Erigeron spp.	
Gaillardia aristata	
Geum triflorum	
Hesperostipa comata	0-5
Hesperostipa spartea	15-25
Hypoxis hirsuta	
Liatris aspera	
Liatris ligulistylis	
Liatris punctata	
Lilium philadelphicum	5-25
Packera plattensis	
Pascopyrum smithii	
Ratibida columnifera	0-5
Rudbeckia hirta	
Schizachyrium scoparium	76-100
Sisyrinchium montanum	
Solidago canadensis	0-5
Sorghastrum nutans	
Sporobolus heterolepis	
Symphyotrichum sericeum	
Zigadenus elegans	
Zizia aptera	

Cover Range
0-5%
5-25%
26-50%
50-75%
76-100%

Item	H-A_034	
Crew	CT/MF	
Date	8/1/2018	
Graminoid Cover	76-100	
Native Graminoid Cover	76-100	
Forb Cover	5-25	
Exposed ground	0-5	
Land-use	Rangeland	
Notes (250 characters)		
Photo 1	317 H-A_034	NE
Photo 2	312 H-A_034	Close-up
Photo 3	256 H-A_034	N

Cover Range	Land-use categories
0-5%	Pasture
5-25%	Rangeland
26-50%	Row Crop
50-75%	Other
76-100%	

*Sandy Soils
*SW aspect
*0-35% slopes
*Heavy amounts of creeping juniper and prairie rose
*Scattered non-native species, including encroaching smooth brome
*Dominant Grass: Little bluestem; Porcupine grass
*Dominant forbs: Prairie sagewort
*2.15 acres

Check list	Cover
Amorpha canescens	
Andropogon gerardii	
Anemone patens	0-5
Artemisia frigida	5-25
Astragalus adsurgens	0-5
Astragalus crassicarpus	
Bouteloua curtipendula	0-5
Calylophus serrulatus	0-5
Campanula rotundifolia	5-25
Dalea candida	
Dalea purpurea	0-5
Echinacea angustifolia	0-5
Erigeron spp.	
Gaillardia aristata	0-5
Geum triflorum	
Hesperostipa comata	5-25
Hesperostipa spartea	0-5
Hypoxis hirsuta	
Liatris aspera	
Liatris ligulistylis	
Liatris punctata	
Lilium philadelphicum	
Packera plattensis	
Pascopyrum smithii	
Ratibida columnifera	0-5
Rudbeckia hirta	
Schizachyrium scoparium	50-75
Sisyrinchium montanum	
Solidago canadensis	
Sorghastrum nutans	
Sporobolus heterolepis	
Symphyotrichum sericeum	
Zigadenus elegans	
Zizia aptera	

Cover Range
0-5%
5-25%
26-50%
50-75%
76-100%

Item	H-A_035	
Crew	CT/MF	
Date	8/1/2018	
Graminoid Cover	76-100	
Native Graminoid Cover	76-100	
Forb Cover	5-25	
Exposed ground	0-5	
Land-use	Rangeland	
Notes (250 characters)		
Photo 1	251 H-A_035	Close-up
Photo 2	250 H-A_035	SE
Photo 3	257 H-A_035	S

Cover Range	Land-use categories
0-5%	Pasture
5-25%	Rangeland
26-50%	Row Crop
50-75%	Other
76-100%	

*Sandy Soils
*South aspect
*5-35% slopes
*Heavy amounts of creeping juniper (25%) and prairie rose (15%)
*Scattered non-native species, including encroaching smooth brome
*Dominant Grass: Little bluestem; Porcupine grass
*Dominant forbs: Stiff sunflower
*Dominant shrub: Creeping juniper
*0.46 acres

Check list	Cover
Amorpha canescens	
Andropogon gerardii	
Anemone patens	5-25
Artemisia frigida	0-5
Astragalus adsurgens	0-5
Astragalus crassicarpus	
Bouteloua curtipendula	0-5
Calylophus serrulatus	
Campanula rotundifolia	0-5
Dalea candida	
Dalea purpurea	0-5
Echinacea angustifolia	0-5
Erigeron spp.	
Gaillardia aristata	0-5
Geum triflorum	0-5
Hesperostipa comata	5-25
Hesperostipa spartea	0-5
Hypoxis hirsuta	
Liatris aspera	
Liatris ligulistylis	
Liatris punctata	
Lilium philadelphicum	
Packera plattensis	
Pascopyrum smithii	0-5
Ratibida columnifera	0-5
Rudbeckia hirta	
Schizachyrium scoparium	76-100
Sisyrinchium montanum	
Solidago canadensis	
Sorghastrum nutans	
Sporobolus heterolepis	
Symphyotrichum sericeum	
Zigadenus elegans	
Zizia aptera	

Cover Range
0-5%
5-25%
26-50%
50-75%
76-100%

Item	H-A_036	
Crew	CT/MF	
Date	8/1/2018	
Graminoid Cover	76-100	
Native Graminoid Cover	76-100	
Forb Cover	5-25	
Exposed ground	0-5	
Land-use	Rangeland	
Notes (250 characters)		
Photo 1	254 H-A_036	NW
Photo 2	294 H-A_036	Close-up
Photo 3	293 H-A_036	NE

Cover Range	Land-use categories
0-5%	Pasture
5-25%	Rangeland
26-50%	Row Crop
50-75%	Other
76-100%	

*East facing slopes 15-50% slope
*Sandy soils
*Dominant grasses: Little bluestem and porcupine grass
*Dominant forbs: Stiff sunflower and sweetclover
*Dominant shrubs: Artemisia cana
*Smooth brome encroaching on all sides
*2.66 acres

Check list	Cover
Amorpha canescens	
Andropogon gerardii	
Anemone patens	
Artemisia frigida	0-5
Astragalus adsurgens	0-5
Astragalus crassicarpus	
Bouteloua curtipendula	
Calylophus serrulatus	0-5
Campanula rotundifolia	0-5
Dalea candida	
Dalea purpurea	0-5
Echinacea angustifolia	0-5
Erigeron spp.	0-5
Gaillardia aristata	
Geum triflorum	5-25
Hesperostipa comata	5-25
Hesperostipa spartea	5-25
Hypoxis hirsuta	
Liatris aspera	
Liatris ligulistylis	
Liatris punctata	
Lilium philadelphicum	
Packera plattensis	
Pascopyrum smithii	0-5
Ratibida columnifera	0-5
Rudbeckia hirta	
Schizachyrium scoparium	50-75
Sisyrinchium montanum	
Solidago canadensis	
Sorghastrum nutans	
Sporobolus heterolepis	
Symphyotrichum sericeum	
Zigadenus elegans	
Zizia aptera	

Cover Range
0-5%
5-25%
26-50%
50-75%
76-100%

Item	H-A_037	
Crew	CT/MF	
Date	8/1/2018	
Graminoid Cover	76-100	
Native Graminoid Cover	76-100	
Forb Cover	5-25	
Exposed ground	0-5	
Land-use	Rangeland	
Notes (250 characters)		
Photo 1	304 H-A_037	NW
Photo 2	306 H-A_037	S
Photo 3	279 H-A_037	Close-up

Cover Range	Land-use categories
0-5%	Pasture
5-25%	Rangeland
26-50%	Row Crop
50-75%	Other
76-100%	

*South/ Ease/ North/ West facing slopes 10-15% slope
*Sandy soils
*Dominant grasses: Little bluestem
*Dominant forbs: Stiff sunflower
*Dominant shrubs: Creeping juniper
*Smooth brome encroaching on all sides
*1.96 acres

Check list	Cover
Amorpha canescens	
Andropogon gerardii	0-5
Anemone patens	0-5
Artemisia frigida	0-5
Astragalus adsurgens	0-5
Astragalus crassicarpus	
Bouteloua curtipendula	0-5
Calylophus serrulatus	0-5
Campanula rotundifolia	0-5
Dalea candida	
Dalea purpurea	0-5
Echinacea angustifolia	0-5
Erigeron spp.	0-5
Gaillardia aristata	
Geum triflorum	0-5
Hesperostipa comata	0-5
Hesperostipa spartea	5-25
Hypoxis hirsuta	
Liatris aspera	
Liatris ligulistylis	
Liatris punctata	
Lilium philadelphicum	
Packera plattensis	
Pascopyrum smithii	0-5
Ratibida columnifera	0-5
Rudbeckia hirta	
Schizachyrium scoparium	76-100
Sisyrinchium montanum	
Solidago canadensis	
Sorghastrum nutans	
Sporobolus heterolepis	
Symphyotrichum sericeum	
Zigadenus elegans	
Zizia aptera	

Cover Range
0-5%
5-25%
26-50%
50-75%
76-100%

Item	H-A_038	
Crew	CT/MF	
Date	8/1/2018	
Graminoid Cover	76-100	
Native Graminoid Cover	76-100	
Forb Cover	5-25	
Exposed ground	0-5	
Land-use	Rangeland	
Notes (250 characters)		
Photo 1	278 H-A_038	Close-up
Photo 2	295 H-A_038	N
Photo 3	297 H-A_038	W

Cover Range	Land-use categories
0-5%	Pasture
5-25%	Rangeland
26-50%	Row Crop
50-75%	Other
76-100%	

*North/ Northwest slope at 10-35% slope
*Encroached on all sides by smooth brome
*Scattered buffaloberry patches
Dominant grasses: little bluestem and Porcupine grass
*Dominant forbs: stiff goldenrod
*Dominant shrubs: buffaloberry
*1.14 acres

Check list	Cover
Amorpha canescens	
Andropogon gerardii	
Anemone patens	0-5
Artemisia frigida	0-5
Astragalus adsurgens	
Astragalus crassicarpus	
Bouteloua curtipendula	0-5
Calylophus serrulatus	
Campanula rotundifolia	0-5
Dalea candida	
Dalea purpurea	0-5
Echinacea angustifolia	0-5
Erigeron spp.	0-5
Gaillardia aristata	0-5
Geum triflorum	0-5
Hesperostipa comata	0-5
Hesperostipa spartea	5-25
Hypoxis hirsuta	
Liatris aspera	
Liatris ligulistylis	
Liatris punctata	
Lilium philadelphicum	
Packera plattensis	
Pascopyrum smithii	
Ratibida columnifera	
Rudbeckia hirta	
Schizachyrium scoparium	76-100
Sisyrinchium montanum	
Solidago canadensis	
Sorghastrum nutans	
Sporobolus heterolepis	
Symphyotrichum sericeum	
Zigadenus elegans	
Zizia aptera	

Cover Range
0-5%
5-25%
26-50%
50-75%
76-100%

Item	H-A_039	
Crew	CT/MF	
Date	8/1/2018	
Graminoid Cover	76-100	
Native Graminoid Cover	76-100	
Forb Cover	5-25	
Exposed ground	0-5	
Land-use	Rangeland	
Notes (250 characters)		
Photo 1	277 H-A_039	Close-up
Photo 2	280 H-A_039	E
Photo 3	282 H-A_039	N

Cover Range	Land-use categories
0-5%	Pasture
5-25%	Rangeland
26-50%	Row Crop
50-75%	Other
76-100%	

*North/East slope at 15-25% slope
*Encroached on all sides by smooth brome
*Scattered creeping juniper patches
Dominant grasses: little bluestem and Porcupine grass
*Dominant forbs: stiff sunflower and daisy fleabane
*Dominant shrubs: creeping juniper
*2.01 acres

Check list	Cover
Amorpha canescens	
Andropogon gerardii	
Anemone patens	0-5
Artemisia frigida	5-25
Astragalus adsurgens	
Astragalus crassicarpus	
Bouteloua curtipendula	0-5
Calylophus serrulatus	
Campanula rotundifolia	0-5
Dalea candida	
Dalea purpurea	0-5
Echinacea angustifolia	0-5
Erigeron spp.	
Gaillardia aristata	0-5
Geum triflorum	0-5
Hesperostipa comata	0-5
Hesperostipa spartea	5-25
Hypoxis hirsuta	
Liatris aspera	
Liatris ligulistylis	
Liatris punctata	
Lilium philadelphicum	
Packera plattensis	
Pascopyrum smithii	
Ratibida columnifera	0-5
Rudbeckia hirta	
Schizachyrium scoparium	76-100
Sisyrinchium montanum	
Solidago canadensis	
Sorghastrum nutans	
Sporobolus heterolepis	
Symphyotrichum sericeum	
Zigadenus elegans	
Zizia aptera	

Cover Range
0-5%
5-25%
26-50%
50-75%
76-100%

Item	H-A_040	
Crew	CT/MF	
Date	8/1/2018	
Graminoid Cover	76-100	
Native Graminoid Cover	76-100	
Forb Cover	5-25	
Exposed ground	0-5	
Land-use	Rangeland	
Notes (250 characters)		
Photo 1	242 H-A_040	N
Photo 2	241 H-A_040	W
Photo 3	244 H-A_040	S

Cover Range	Land-use categories
0-5%	Pasture
5-25%	Rangeland
26-50%	Row Crop
50-75%	Other
76-100%	

*South/West/East/North aspect with 10-25% slopes
*Encroached on all sides by KY bluegrass and smooth brome
*Sandy soils
*Dominant grasses: Little bluestem
*Dominant forbs: Blue lettuce and stiff sunflower
*Dominant shrubs: Artemisia cana
*0.94 acres

Check list	Cover
Amorpha canescens	
Andropogon gerardii	
Anemone patens	0-5
Artemisia frigida	0-5
Astragalus adsurgens	0-5
Astragalus crassicarpus	
Bouteloua curtipendula	
Calylophus serrulatus	0-5
Campanula rotundifolia	0-5
Dalea candida	
Dalea purpurea	0-5
Echinacea angustifolia	0-5
Erigeron spp.	0-5
Gaillardia aristata	
Geum triflorum	0-5
Hesperostipa comata	0-5
Hesperostipa spartea	5-25
Hypoxis hirsuta	
Liatris aspera	
Liatris ligulistylis	
Liatris punctata	
Lilium philadelphicum	
Packera plattensis	
Pascopyrum smithii	
Ratibida columnifera	0-5
Rudbeckia hirta	
Schizachyrium scoparium	76-100
Sisyrinchium montanum	
Solidago canadensis	
Sorghastrum nutans	
Sporobolus heterolepis	
Symphyotrichum sericeum	
Zigadenus elegans	
Zizia aptera	

Cover Range
0-5%
5-25%
26-50%
50-75%
76-100%

Item	H-A_041	
Crew	CT/MF	
Date	8/1/2018	
Graminoid Cover	76-100	
Native Graminoid Cover	76-100	
Forb Cover	5-25	
Exposed ground	0-5	
Land-use	Rangeland	
Notes (250 characters)		
Photo 1	231 H-A_041	E
Photo 2	232 H-A_041	W
Photo 3	237 H-A_041	W

Cover Range	Land-use categories
0-5%	Pasture
5-25%	Rangeland
26-50%	Row Crop
50-75%	Other
76-100%	

*South facing slope at 5-25% slope
*Sandy soils
*Dominant grasses: Little bluestem
*Dominant forbs: Stiff sunflower
*Dominant shrub: creeping juniper
*0.40 acres

Check list	Cover
Amorpha canescens	
Andropogon gerardii	0-5
Anemone patens	0-5
Artemisia frigida	0-5
Astragalus adsurgens	0-5
Astragalus crassicarpus	
Bouteloua curtipendula	0-5
Calylophus serrulatus	
Campanula rotundifolia	0-5
Dalea candida	
Dalea purpurea	0-5
Echinacea angustifolia	0-5
Erigeron spp.	0-5
Gaillardia aristata	
Geum triflorum	
Hesperostipa comata	0-5
Hesperostipa spartea	5-25
Hypoxis hirsuta	
Liatris aspera	
Liatris ligulistylis	
Liatris punctata	0-5
Lilium philadelphicum	
Packera plattensis	
Pascopyrum smithii	
Ratibida columnifera	
Rudbeckia hirta	
Schizachyrium scoparium	76-100
Sisyrinchium montanum	
Solidago canadensis	
Sorghastrum nutans	
Sporobolus heterolepis	
Symphyotrichum sericeum	
Zigadenus elegans	
Zizia aptera	

Cover Range
0-5%
5-25%
26-50%
50-75%
76-100%

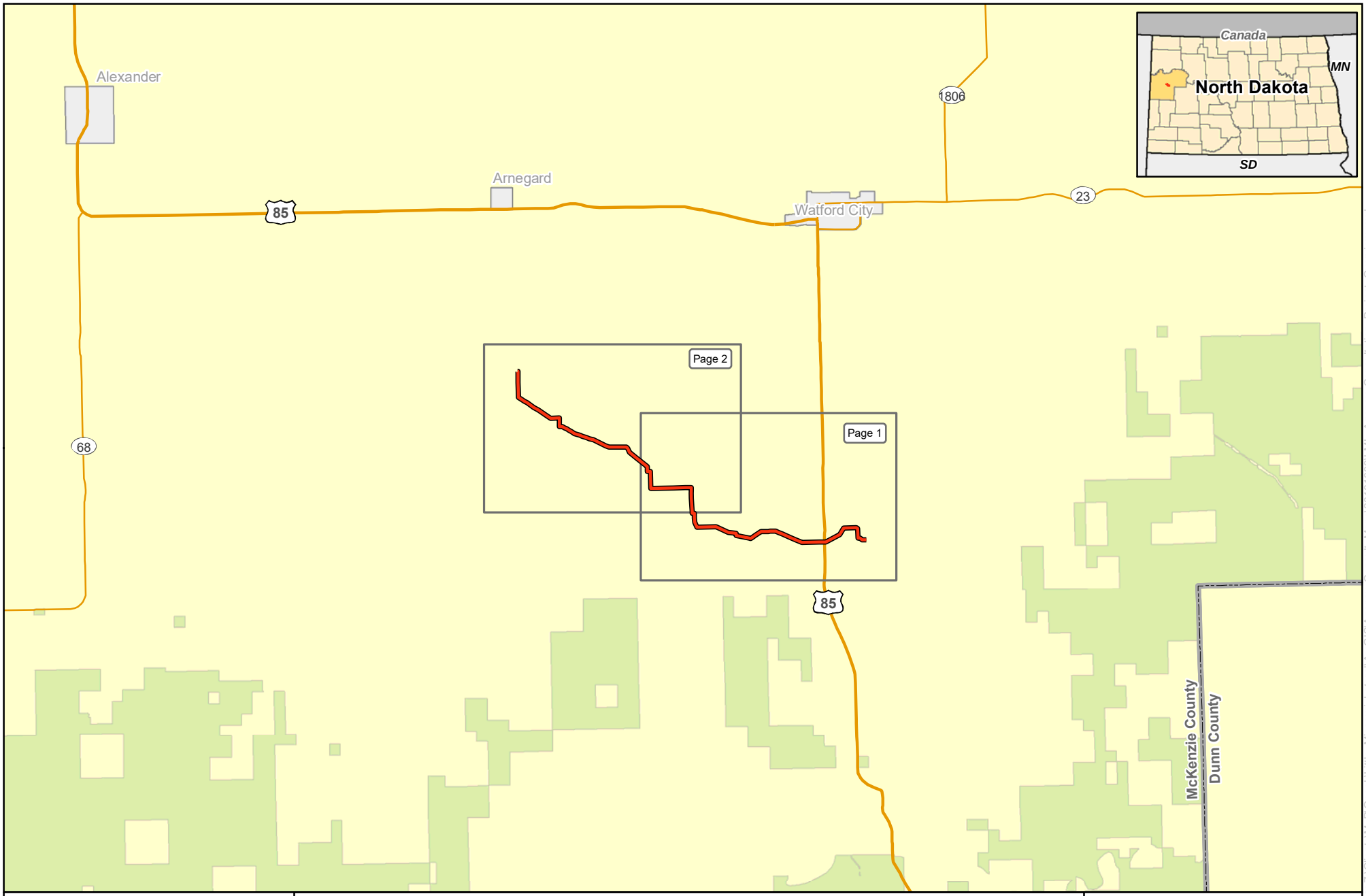
Exhibit D

Agency Consultations

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Mapset

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ONEOK
Little Missouri Lateral Pipeline Project
Project Location Map
McKenzie County, ND

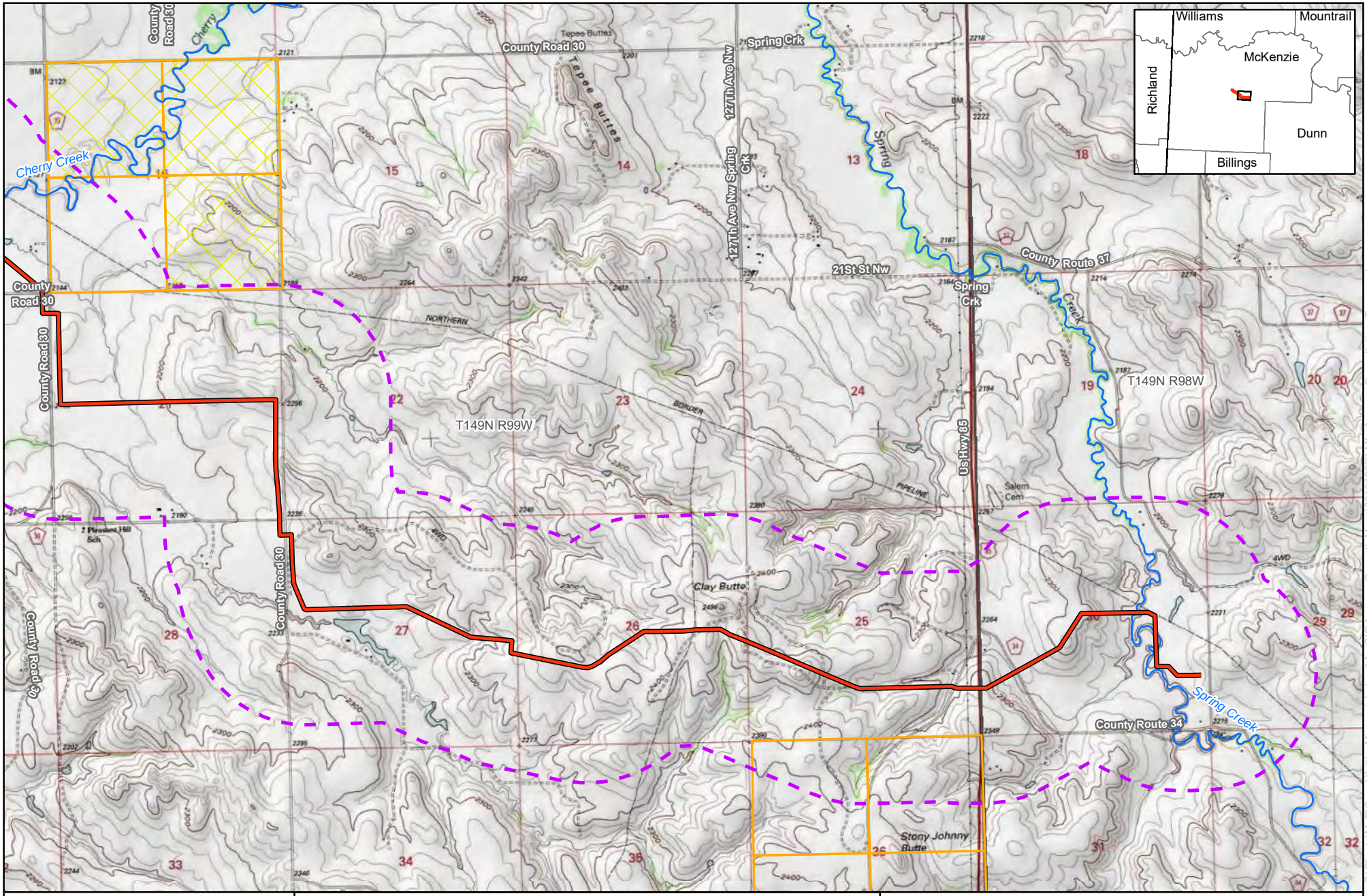
Proposed Pipeline

National Grassland

Source: Z:\Clients\M_P\Oneok\Little_Missouri_Lateral\ArcGIS\Agency_Consult_Maps\20181009\LML_Agency_Consultation_Project_Overview.mxd

Date: (10/9/2018)

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0 1,500 3,000 Feet

1 inch = 3,000 feet

N W E S

For Environmental Review Purposes Only

Page 1 of 2

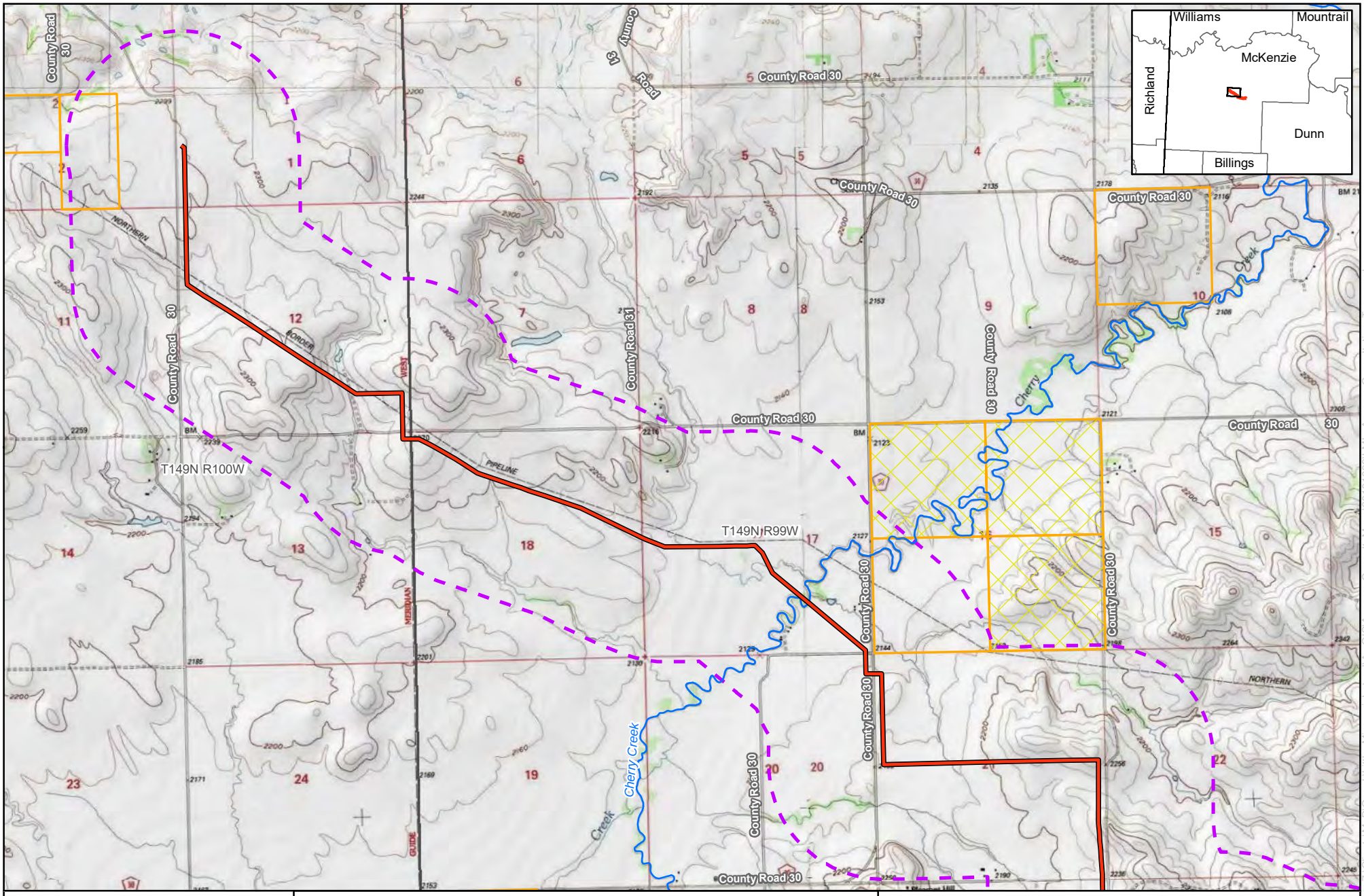
ONEOK
Little Missouri Lateral Pipeline Project
Topo Map
McKenzie County, ND

- Proposed Pipeline
- NHD Waterbody
- 1-Mile Buffer
- Township Boundary
- ND Trust Land - Mineral
- ND School Trust Land

Source: Z:\Clients\M_P\Oneok\Little_Missouri_Lateral\ArcGIS\Agency_Consult_Maps\20181009\LML_Agency_Consultation_Topo.mxd

Date: (10/9/2018)

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0 1,500 3,000 Feet

1 inch = 3,000 feet

N W E S

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Page 2 of 2

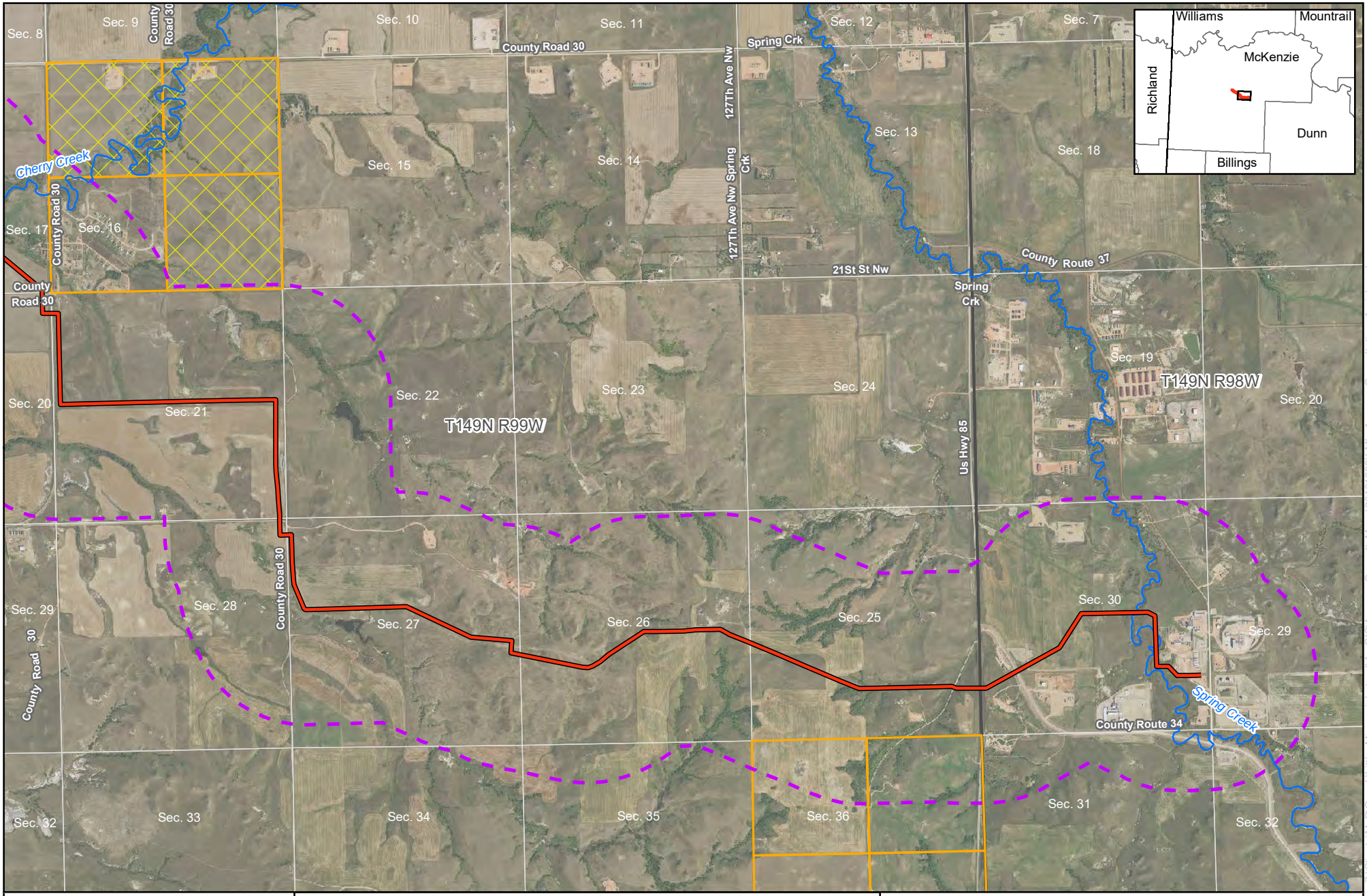
ONEOK
Little Missouri Lateral Pipeline Project
Topo Map
McKenzie County, ND

- Proposed Pipeline
- NHD Waterbody
- 1-Mile Buffer
- Township Boundary
- ND Trust Land - Mineral
- ND School Trust Land

Source: Z:\Clients\M_P\Oneok\Little_Missouri_Lateral\ArcGIS\Agency_Consult_Maps\20181009\LML_Agency_Consultation_Topo.mxd

Date: (10/9/2018)

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0 1,500 3,000 Feet

1 inch = 3,000 feet

N W E S

For Environmental Review Purposes Only

Page 1 of 2

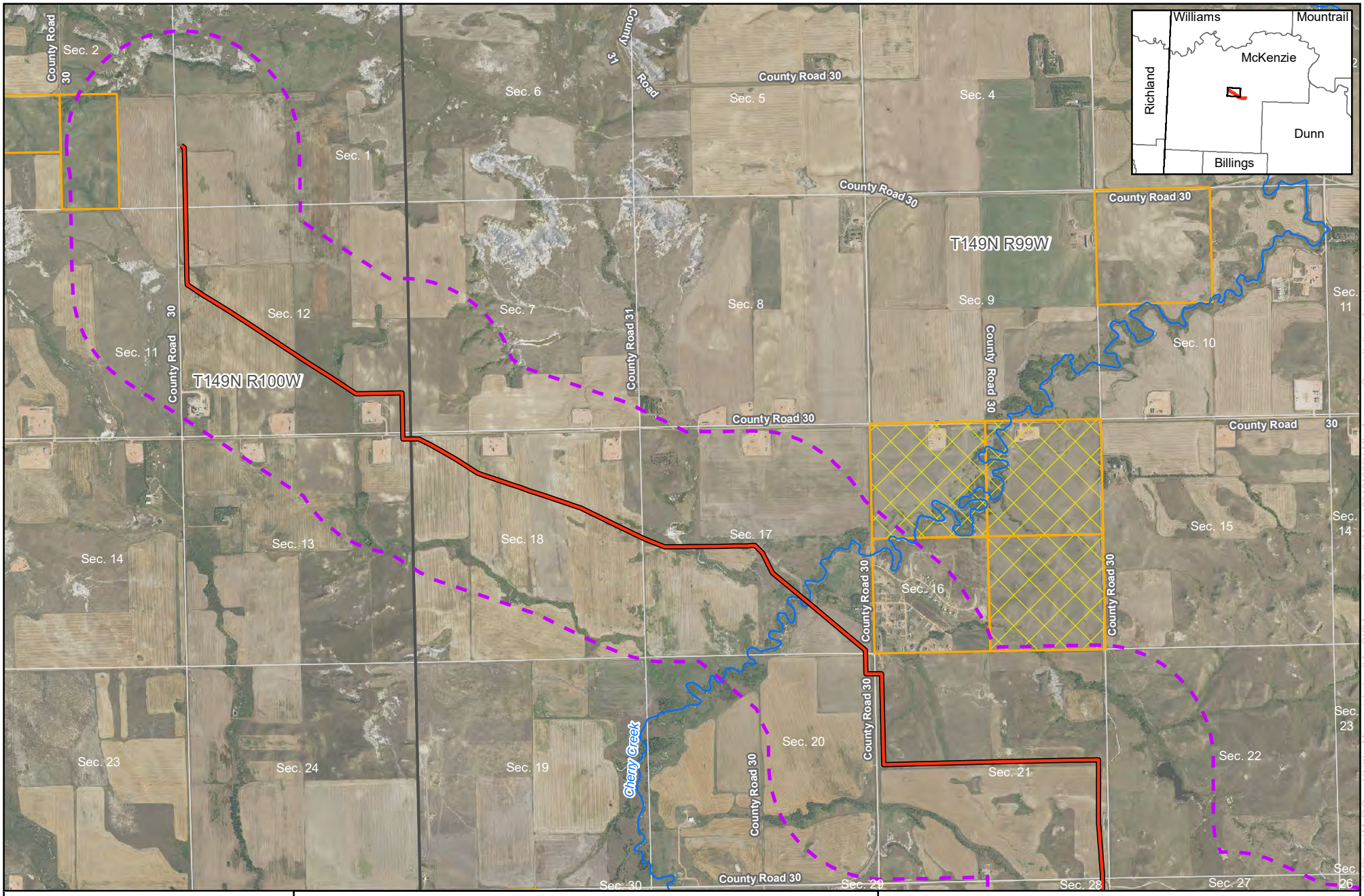
ONEOK
Little Missouri Lateral Pipeline Project
Aerial Map
McKenzie County, ND

- Proposed Pipeline
- NHD Waterbody
- 1-Mile Buffer
- Township Boundary
- Section Boundary
- ND Trust Land - Mineral
- ND School Trust Land

Source: Z:\Clients\M_P\Oneok\Little_Missouri_Lateral\ArcGIS\Agency_Consult_Maps\20181009\LML_Agency_Consultation_Aerial.mxd

Date: (10/9/2018)

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0 1,500 3,000 Feet

1 inch = 3,000 feet

N W E S

For Environmental Review Purposes Only

Page 2 of 2

ONEOK
Little Missouri Lateral Pipeline Project
Aerial Map
McKenzie County, ND

- Proposed Pipeline
- NHD Waterbody
- 1-Mile Buffer
- Township Boundary
- Section Boundary
- ND Trust Land - Mineral
- ND School Trust Land

Source: Z:\Clients\M_P\Oneok\Little_Missouri_Lateral\ArcGIS\Agency_Consult_Maps\20181009\LML_Agency_Consultation_Aerial.mxd

Date: (10/9/2018)

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U.S. Fish and Wildlife Service

Official Response Pending

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October 9, 2018

Mr. Scott Larson
U.S. Fish and Wildlife Service
North Dakota Ecological Services Field Office
3425 Miriam Avenue
Bismarck, ND 58501-7926

RE: ONEOK Bakken Pipeline, L.L.C. – Little Missouri Lateral Pipeline Project
Project Introduction and Request for Review

Dear Mr. Larson,

ONEOK Bakken Pipeline, L.L.C. (ONEOK) proposes to construct the Little Missouri Lateral Project (Project) consisting of approximately 11 miles of 12-inch-diameter new steel pipeline to transport natural gas liquids. The Project originates at the Targa Little Missouri Plant and terminates at an interconnection with ONEOK's planned Demicks Lake Pipeline, all located within in McKenzie County, North Dakota (see enclosed Project overview maps). Construction will begin as early as February 2019 and will be completed in approximately 3-4 months. After construction is complete, restoration/reclamation of the right-of-way will continue as necessary.

A detailed routing analysis has been performed on this Project taking into consideration a significant amount of information to avoid and minimize impacts of known and suspected resources. The majority of the route is co-located with existing linear utilities.

Construction will occur within an approximately 75-foot-wide construction right-of-way (ROW), 50-feet of which would be a permanent easement, and an additional 25 feet of temporary workspace adjacent to the permanent easement. This workspace will be used for temporary excavated soil storage and staging, pipeline assembly, and related equipment. Additionally, there will be extra temporary work space areas to facilitate low-impact feature crossings including roads, wetland/waterbody crossings, underground line crossings, and storage of excess soil at side-cut topographic features.

ONEOK respectfully submits this Project information to U.S. Fish and Wildlife Service to review a one-mile-wide "evaluation corridor" centered along the route of the pipeline. Sections, Townships, and Ranges within the evaluation corridor are presented in the following table. Overview and route maps are also included for your review.

ONEOK, Inc.
100 West Fifth Street
Tulsa, OK 74103
www.oneok.com

Table 1 Little Missouri Lateral Pipeline Location		
Township	Range	Sections within the Evaluation Corridor
149 North	98 West	19, 29-32
149 North	99 West	7, 8, 15-22, 25-28, 34-36
149 North	100 West	1, 2, 11-13

This letter is intended to introduce you to the Project, request confirmation of the threatened and endangered species identified within the Project area (see Table 2), and solicit comments on the species, their habitats, or designated critical habitat areas that may occur in McKenzie County. We would also appreciate your review and comments regarding migratory birds and eagles as they relate to the proposed construction activities. In addition, ONEOK has reviewed public records and did not identify any USFWS-managed lands such as Waterfowl Production Areas or wetland and grassland easements in the Project area. ONEOK requests confirmation that no USFWS-managed lands or easements are located in the Project area, or notification of their locations within the Project area.

Table 2 USFWS Federally Listed Threatened, Endangered, Proposed, and Candidate Species Potentially Present in the Little Missouri Lateral Pipeline Project Area[1]		
Scientific Name	Common Name	Status
Myotis septentrionalis	Northern long-eared bat	Threatened
Canis lupus	Gray wolf	Endangered
Scaphirhynchus albus	Pallid sturgeon	Endangered
Charadrius melodus	Piping plover	Threatened
Sterna antillarum	Least tern	Endangered
Calidris canutus rufa	Red knot	Threatened
Grus americana	Whooping crane	Endangered
Hesperia dacotae	Dakota skipper	Threatened

[1] Information for Planning and Conservation (IPaC). USFWS website. Available at https://ecos.fws.gov/ipac/. Accessed May 2018.

The Project is within the jurisdiction of the North Dakota Public Service Commission (NDPSC) and copies of correspondence received in response to this letter will be included in ONEOK's application for a Corridor Certificate and Route Permit, which will be filed with the NDPSC later this year.

Merjent, Inc. (Merjent) is assisting ONEOK with the environmental review of the Project areas, completion of regulatory applications, and consultations with other agencies. Merjent has also been coordinating natural resource surveys of the proposed Project work areas during summer 2018; survey reports will be

submitted to your agency once complete. Please identify any specific persons within your organization that should be contacted or included in future Project-related communications.

We appreciate your assistance with this request and look forward to your timely review and comments on this Project. Should you have any questions or require additional information, please contact Andrea Sampson of Merjent at 612-226-1331 or asampson@merjent.com, or myself at 918-595-1783 or Edwin.Zedaker@oneok.com.

Sincerely,



Eddie Zedaker
Environmental Engineer
ONEOK, Inc.

Enclosures: Project Overview Maps

cc: Maddy Krumwiede, Merjent
Andrea Sampson, Merjent

February 21, 2019

Mr. Scott Larson
U.S. Fish and Wildlife Service
North Dakota Ecological Services Field Office
3425 Miriam Avenue
Bismarck, ND 58501-7926

RE: ONEOK Bakken Pipeline, L.L.C. – Little Missouri Lateral Pipeline Project
Natural Resource Report and Request for Review

Dear Mr. Larson,

As detailed in our October 9, 2018 consultation letter request, ONEOK Bakken Pipeline, L.L.C. (ONEOK) is proposing to construct the Little Missouri Lateral Project (Project) consisting of approximately 10.8 miles[1] of 12-inch-diameter new steel pipeline to transport natural gas liquids. The Project originates at the Targa Little Missouri Natural Gas Plant and terminates at an interconnection with ONEOK's planned Demicks Lake Pipeline and ONEOK's existing Garden Creek to Riverview, all located within in McKenzie County, North Dakota. Since the original consultation letter was submitted, ONEOK has adopted a new route segment on the eastern end of the Project (see enclosed Project overview maps). Construction will begin as early as April 2019 and will be completed in approximately 3-4 months. After construction is complete, restoration/reclamation of the right-of-way will continue as necessary.

The Project is within the jurisdiction of the North Dakota Public Service Commission (NDPSC) and copies of correspondence received in response to this letter will be included in ONEOK's application for a Corridor Certificate and Route Permit, which will be filed with the NDPSC in February 2019.

As noted in the original consultation request, natural resource surveys of the proposed Project work areas were completed in the summer of 2018. With this submittal, ONEOK is providing a copy of the full natural resources report, which includes survey data and information on federally-listed species. The survey corridor covers the entire current Project route with the exception of approximately 0.2 mile near the beginning of the route between mileposts 0.15 and 0.35. A natural resource survey for a previous ONEOK project (the Targa Lateral Pipeline Project) was conducted in May 2014 and included this area. The Targa Lateral Pipeline Project fell under the purview of the NDPSC; a Project notification letter introducing the Project was sent to the U.S. Fish and Wildlife Service North Dakota Field Office (USFWS NDFO) on April

[1] Note: the length of the route has been shortened by approximately 0.2 mile due to a recently adopted reroute on the eastern end of the Project.

ONEOK, Inc.
100 West Fifth Street
Tulsa, OK 74103
www.oneok.com

28, 2014. Surveys to identify suitable habitat for threatened and endangered species in this segment will be conducted in 2019. ONEOK is planning to cross a waterbody feature in this segment (Spring Creek) using a bore or horizontal directional drill, and as such, would avoid any habitat delineated in this area.

As noted in our October 9, 2018 letter, we are respectfully submitting this Project information to the USFWS NDFO to review a one-mile-wide "evaluation corridor" centered along the route of the pipeline. Sections, Townships, and Ranges within the evaluation corridor are presented in the following table. We would also appreciate your review and comments regarding migratory birds and eagles as they relate to the proposed construction activities. In addition, ONEOK has reviewed public records and did not identify any USFWS-managed lands such as Waterfowl Production Areas or wetland and grassland easements in the Project area. ONEOK requests confirmation that no USFWS-managed lands or easements are located in the Project area, or notification of their locations within the Project area. Updated overview and route maps are also included for your review.

Table 1
Little Missouri Lateral Pipeline Location

Township	Range	Section(s) Crossed the Route
149 North	98 West	30
149 North	99 West	17-18, 20-21, 25-28
149 North	100 West	1, 12-13

We are also presenting the enclosed Natural Resource Report to assist in your review of the Project and its potential to impact federally listed species known to occur in McKenzie County (see Table 2). We have provided a summary of each species below with the anticipated impact resulting from the Project.

Table 2
USFWS Federally Listed Threatened, Endangered, Proposed, and
Candidate Species Potentially Present in the Little Missouri Lateral Pipeline Project Area[1]

Scientific Name	Common Name	Status
Myotis septentrionalis	Northern long-eared bat	Threatened
Canis lupus	Gray wolf	Endangered
Scaphirhynchus albus	Pallid sturgeon	Endangered
Charadrius melodus	Piping plover	Threatened
Sterna antillarum	Least tern	Endangered
Calidris canutus rufa	Red knot	Threatened
Grus americana	Whooping crane	Endangered
Hesperia dacotae	Dakota skipper	Threatened

[1] Information for Planning and Conservation (IPaC). USFWS website. Available at https://ecos.fws.gov/ipac/. Accessed May 2018.

Project-based Conservation Measures

In order to minimize potential environmental effects resulting from pipeline construction activities as well as operation and maintenance activities, ONEOK has developed general conservation measures to be employed on the proposed Project. ONEOK would provide pre-construction environmental training to all ONEOK and contractor personnel whose activities may impact the environment during pipeline and facility construction. As part of this training, ONEOK would provide information on proper identification of whooping cranes, red knots, and gray wolves and correct procedures regarding a sighting.

ONEOK would also retain Environmental Inspectors (EIs) to verify that environmental protection measures, permit conditions, and other specifications are implemented appropriately by the contractor during Project construction, including conservation measures associated with threatened and endangered species. The EIs would have stop-work authority to enforce all provisions of federal, state and local regulations and the provisions and requirements of any other applicable permits. Additionally, ONEOK would adhere to post-construction restoration and revegetation procedures prescribed by applicable permit conditions to ensure minimization of erosion during operation and maintenance of the pipeline. ONEOK would comply with applicable federal, state, and local rules and regulations, and take all appropriate precautions to protect against environmental degradation.

Northern long-eared bat

The northern long-eared bat is a medium-sized bat of the Vespertilionidae family. The species overwinters in small crevices or cracks in hibernacula, such as caves and mines. In summer, the species roosts either singly or in colonies under loose bark or in crevices and hollows in both live trees and snags. A habitat generalist, roost tree selection appears also to be opportunistic, and the species will use a variety of tree sizes and species; however, they appear to prefer trees with a diameter at breast height of at least 3 inches. Less frequently, northern long-eared bats have been observed roosting in man-made structures such as sheds or barns. Although historically less common in the western portion of its range, northern long-eared bats occur throughout North Dakota.

The primary threat to the northern long-eared bat is the spread of white nose syndrome (WNS); in the absence of this disease, it is unlikely the species would be suffering the dramatic population declines seen across its range.

The northern long-eared bat was listed as a federally threatened species in May 2015, with an interim 4(d) rule; the final 4(d) rule was effective as of February 16, 2016. A 4(d) rule may only be applied to species listed as threatened, and is a tool periodically utilized by the USFWS to allow for flexibility in Endangered Species Act (ESA) implementation. The rule allows the USFWS to tailor take restrictions to those that make the most sense for protecting and managing at-risk species and directs the USFWS to issue regulations considered “necessary and advisable to provide for the conservation of threatened species”.

The USFWS has developed a WNS zone map identifying counties containing hibernacula where bats have been found to exhibit WNS and/or have tested positive for the fungus that causes WNS. These counties have been buffered by approximately 150 miles; within this area, the northern long-eared bat is

considered to be at greater risk of population decline. This map was reviewed for this Project Corridor in February, 2019 (map date October 1, 2018)[2].

The northern long-eared bat is rare in North Dakota and Montana and has only been identified in a few locations in these states. The species is not expected to occupy the Project area during the reproductive cycle, but it may occur (temporarily) during the migratory period. It has been documented in forested habitat in the Turtle Mountains in Bottineau and Rolette Counties, North Dakota and in the riparian corridors of the Little Missouri and Missouri rivers in southwestern North Dakota and in eastern Montana. The field survey identified 4 locations, totaling 4.20 acres, that contain suitable trees for summer roosting habitat. These areas contain mature American elm (*Ulmus americana*) and green ash trees (*Fraxinus pennsylvanica*) trees that may provide summer roosting habitat for the northern long-eared bat. Some tree clearing will be necessary for this Project; however, the Project Corridor falls outside of the WNS zone. For projects with no federal nexus, in areas outside of the 150-mile-wide WNS zone, incidental take from lawful activities is not prohibited (USFWS, 2016b), and clearing can be conducted at any time of year, per the exemptions of the 4(d) rule. As such, adverse impacts to northern long-eared bats are not expected.

Gray wolf

A habitat generalist, the gray wolf historically occupied most habitat types in North America. The species shows little preference for one cover type over another and successfully utilize alpine, forest, grassland, shrubland, and woodland habitats across their range. Once thought to require wilderness areas with little to no human disturbance, recent range expansions have demonstrated the species' ability to tolerate higher rates of anthropogenic development than previously thought. Given abundant prey and low rates of human-caused mortality, wolves can survive in proximity to human-dominated environments (Fuller, 1989).

The general Project-based conservation measures discussed above would minimize potential impacts on gray wolf individuals and habitat.

In addition to these general Project-based conservation measures, the following species-specific conservation measures would be implemented as appropriate. If a gray wolf is sighted by ONEOK's contractor or EI within one mile of the construction workspace during construction, or if the USFWS or another federal or state wildlife management agency notifies ONEOK of a gray wolf sighting within one mile of the construction workspace, construction activities would cease until the individual(s) have left the area. Any wolf sightings by a contractor or EI would be immediately reported to the USFWS NDFO and the North Dakota Game and Fish Department (NDGF).

Observations of wolves in North Dakota are sporadic; the species is not believed to support a breeding population in the state, and individuals are likely dispersers from adjacent populations (i.e., Minnesota and Manitoba. As dispersers, individual wolves are transient and highly mobile. Naturally curious, they may stray close to the Project Corridor, but would likely retreat upon seeing or hearing construction activities. As such, adverse impacts to gray wolves are not expected.

[2] https://www.fws.gov/midwest/Endangered/mammals/nleb/pdf/WNSZone.pdf

Pallid sturgeon

The pallid sturgeon inhabits the Missouri and Mississippi Rivers from Montana to Louisiana. Wild pallid sturgeon have been noted in the Missouri River downstream from the Fort Peck Dam in Montana to the headwaters of Lake Sakakawea, North Dakota, and downstream from Garrison Dam, North Dakota to the headwaters of Lake Oahe, South Dakota. The pallid sturgeon's preferred habitat includes the benthic environment associated with swift waters of large turbid, free-flowing rivers with braided channels, dynamic flow patterns, periodic flooding of terrestrial habitats, and requiring extensive micro habitat diversity. The species is usually found in main-channel habitat with a sand or gravel bottom (USFWS, 1990).

The Project Corridor does not cross the Missouri or Yellowstone Rivers. As such, impacts to pallid sturgeon are not expected.

Piping plover

Piping plovers are small shore birds that nest on sandbars in rivers and sandy beaches bordering lakes and reservoirs. The Great Plains population of piping plovers are annual migrants; the species overwinters on the Gulf coast and migrates to summer nesting areas in the central U.S. and southern Canada. The species arrives in North Dakota in mid-April and remains until late August. Piping plovers utilize wide, sparsely vegetated beaches and barren river sandbars, as well as alkali wetlands in the Great Plains for nesting, foraging, sheltering, brood-rearing, and dispersal.

Critical habitat has been designated for the piping plover in McKenzie County; however, the Project Corridor does not intersect with designated critical habitat for the species. The nearest designated critical habitat for the species is associated with the Missouri River/Lake Sakakawea reservoir, approximately 15 miles north of the Project area.

Piping plovers are tracked by the Breeding Bird Survey; only 15 individuals were recorded between 1977 and 2017. Data from the International Piping Plover Census conducted in 2011 identified 623 adult piping plovers and 255 breeding pairs in North Dakota; no individuals or breeding pairs were identified in McKenzie County. In addition, databases of sightings by private individuals (i.e., eBird, North Dakota Birding Society, ND-Birds Listserv) were also searched for plover occurrences in the Project Corridor. No piping plover sightings were reported by these sources in McKenzie County.

Wetland and waterbody surveys conducted in 2018 (see enclosed report) did not identify the presence of wetlands with suitable habitat for piping plover within the proposed Project workspaces, and it is unlikely that piping plovers would be present in the Project area. As such, Project activities are not expected to have adverse impacts on piping plovers.

Interior least tern

The smallest of the American terns, the interior population of least terns breed and raise young along sandy, open beaches and islands along major river systems. In North Dakota, the interior least tern utilizes sparsely vegetated sandbars on the Missouri River for nesting, foraging and raising young. The species 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. Approximately 100 pairs breed in North

Dakota during the summer before flying to coastal areas of Central and South American and the Caribbean Islands.

Suitable nesting habitat for the least tern is not present in the Project Corridor. As such, impacts to least terns are not expected.

Rufa red knot

The rufa red knot is a large sandpiper noted for its long-distance migration between summer breeding grounds in the Arctic and wintering areas at high latitudes in the Southern Hemisphere. Some red knots wintering in the northwestern Gulf of Mexico migrate through interior North America during the spring migration and use stopover sites in the Northern Great Plains. The species relies heavily on exposed substrate at wetland edges for stopover habitat; the suitability of a wetland for red knots depends on water levels and may vary annually (Skagen, 2006; USFWS, 2014a).

Red knot breeding has not been documented in North Dakota. Therefore, the species is considered to be a spring migratory species in North Dakota and as such, migrating individuals may occur within the Project area. For the purposes of this analysis, we assume the species is not a fall migrant in North Dakota. The number of migrating shorebirds documented in the interior can vary dramatically due to high inter-annual availability in water levels and habitat quality at mid-continental wetlands. Construction activities throughout the Project Corridor have the potential to impact individuals, specifically, human presence or noise from construction activities and equipment if construction takes place during the species' migration period.

The general Project-based conservation measures discussed above would minimize potential impacts on red knot individuals and habitat.

In addition to these general Project-based conservation measures, the following species-specific conservation measures would be implemented, as appropriate. If a red knot is sighted by ONEOK's contractor or EI within one mile of the construction workspace during construction, or if the USFWS notifies ONEOK of a red knot sighting within one mile of the construction workspace, construction activities would cease until the individual(s) have left the area. Any sightings by ONEOK's contractor or EI within the construction workspace would be immediately reported to the USFWS and the NDGF. To avoid long-term impacts on the red knot's migratory stopover habitat, wetlands crossed by the Project would be restored to pre-construction conditions. With these conservation measures in place, adverse impacts to red knots are not expected.

Whooping crane

Whooping cranes embark on a bi-annual migration from summer nesting and breeding grounds in Wood Buffalo National Park in northern Alberta to the barrier islands and coastal marshes of the Aransas National Wildlife Refuge (NWR) on the Gulf Coast of Texas (USFWS, 2014b). Twice yearly in the spring and fall, the cranes migrate along the Central Flyway, a migratory corridor approximately 220 miles wide and 2,400 miles in length and includes eastern Montana and portions of North Dakota, South Dakota, Nebraska, Kansas, Oklahoma, and eastern Texas. During the migration, cranes make numerous stops, roosting in large shallow marshes, and feeding in harvested grain fields (USFWS, 2014b).

In North Dakota, the whooping crane is not present year-round; they are only present during the bi-annual migration between winter grounds and summer nesting sites (late April to June 15 and September 15 to November 15). As such, the species cannot be confirmed as present in or absent from the Project Corridor. However, the Project Corridor falls within the 95 percent migration corridor (i.e., the 220-mile band where 95 percent of all whooping crane sightings have occurred), and suitable stopover habitat (i.e., open landscape wetlands and croplands) is present in the vicinity of the Project. Construction activities have the potential to impact individual whooping cranes. Specifically, if construction takes place during the species' migration period, human presence or noise from construction activities and equipment may cause migrating whooping cranes to startle and flush from wetlands or fields and/or to divert from the area.

The general Project-based conservation measures discussed above would minimize potential impacts on whooping crane individuals and habitat.

In addition to these general Project-based conservation measures, the following species-specific conservation measures would be implemented, as appropriate. If a whooping crane is sighted by ONEOK's contractor or EI within one-mile of the construction workspace during construction, or if the USFWS notifies ONEOK of a whooping crane sighting within one mile of the construction workspace, construction activities would cease until the individual(s) have left the area. Any whooping crane sightings by ONEOK's contractor or EI would be immediately reported to the USFWS NDFO, and the NDGF. To avoid long-term impacts on the whooping crane's migratory stopover habitat, wetlands crossed by the Project would be restored to pre-construction conditions. With these conservation measures in place, adverse impacts to whooping cranes are not expected.

Dakota skipper

The Dakota skipper is a small-to-medium sized butterfly characterized by a short, sturdy body and a quick, skipping flight. The species is an obligate of high-quality prairie habitat (i.e., grasslands or discrete patches of habitat within a grassland that are predominantly native and that have not been tilled). The species can be found in both wetlands and uplands, but do not thrive in heavily grazed or cultivated areas. Adults emerge in mid-June, feeding on the nectar of flowering native forbs; harebell, wood lily, and purple coneflower are common components of their diet, and larvae of the Dakota skipper feed on grasses, favoring little bluestem; the species overwinters at the base of grasses in the soil of the site which they inhabit.

Critical habitat has been designated for the Dakota skipper in McKenzie County; however, the nearest designated critical habitat for the species is located approximately 30 miles from the Project. The Project will have no impacts to designated critical habitat.

In North Dakota, the skipper typically occupies both wet-mesic and dry-mesic prairie. Surveys to identify suitable Dakota skipper habitat were conducted in June 2018 within an environmental survey boundary. Thirteen native prairie grassland areas found to be dominated by requisite species for the Dakota skipper were delineated within the Survey Corridor. These areas are considered Type B Dakota skipper habitat and total approximately 19.14 acres. Presence/absence surveys were not conducted for this species.

All areas of potentially suitable habitat as delineated during 2018 surveys will be avoided by the Project. As noted previously, ONEOK will conduct surveys to identify suitable habitat for threatened and endangered species for the portion of the route between mileposts 0.15 and 0.35 in 2019. ONEOK is planning to cross a waterbody feature in this segment (Spring Creek) and associated riparian area using a bore or horizontal directional drill. As such, impacts to potentially sensitive habitat in this area would be avoided. ONEOK will also install fencing and signage along the construction right-of-way to prevent accidental incursion into delineated suitable habitat.

All construction activity will be restricted during the flight period in areas adjacent to delineated suitable habitat. This conservation measure is expected to entirely eliminate the risk of injury to adult Dakota skippers during the flight period. The 2019 flight period dates will be determined using information from a known Dakota skipper reference site and a qualified Dakota skipper surveyor.

With these conservation measures in place, adverse impacts to Dakota skippers are not expected.

We appreciate your assistance with this request and look forward to your timely review and comments on this Project. Should you have any questions or require additional information, please contact Andrea Sampson of Merjent at 612-226-1331 or asampson@merjent.com, or myself at 918-595-1783 or Edwin.Zedaker@oneok.com.

Sincerely,

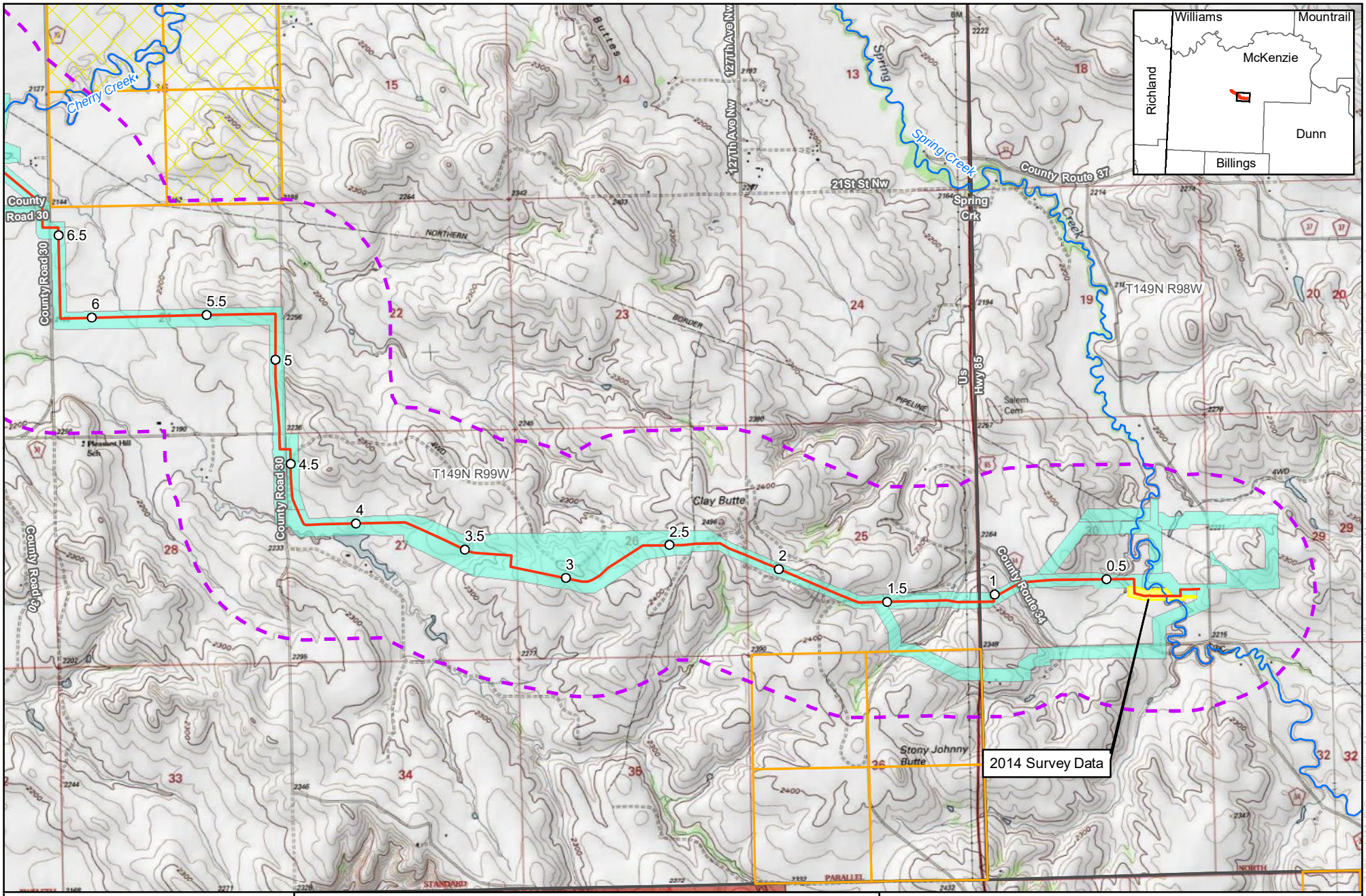


Eddie Zedaker
Environmental Engineer
ONEOK, Inc.

Enclosures: Project Overview Maps
Project Workspace Maps with Dakota Skipper Habitat
Little Missouri Lateral Project – Natural Resources Report (2018)

cc: Maddy Krumwiede, Merjent
Andrea Sampson, Merjent

Project Overview Maps



0 1,500 3,000 Feet

1 inch = 3,000 feet

N W E S

merjent
For Environmental Review Purposes Only

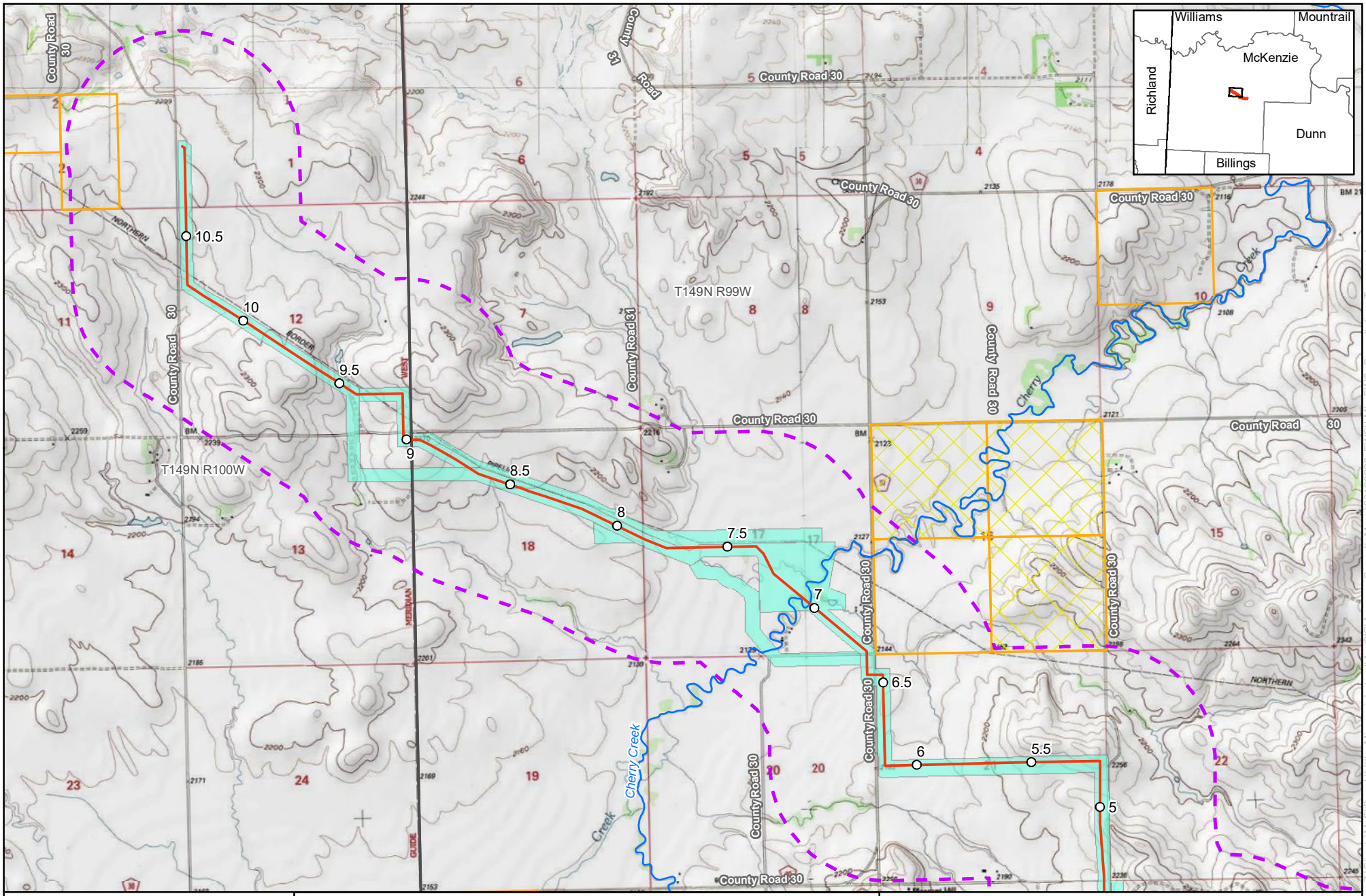
Page 1 of 2

ONEOK Bakken Pipeline, L.L.C.
Little Missouri Lateral Pipeline Project
Topo Map
McKenzie County, ND

- Milepost
- Proposed Pipeline
- NHD Waterbody
- 1-Mile Buffer
- Township Boundary
- 2018 Natural Resources Survey Corridor
- 2014 Natural Resources Survey Corridor
- ND Trust Land - Mineral
- ND School Trust Land

Source: Z:\Clients\M_P\ONEOK\Little_Missouri_Lateral\ArcGIS\Agency_Consult_Maps\20190220_FWS\LML_FWS_Consultation_Topo.mxd

Date: (2/20/2019)



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1 inch = 3,000 feet

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Page 2 of 2

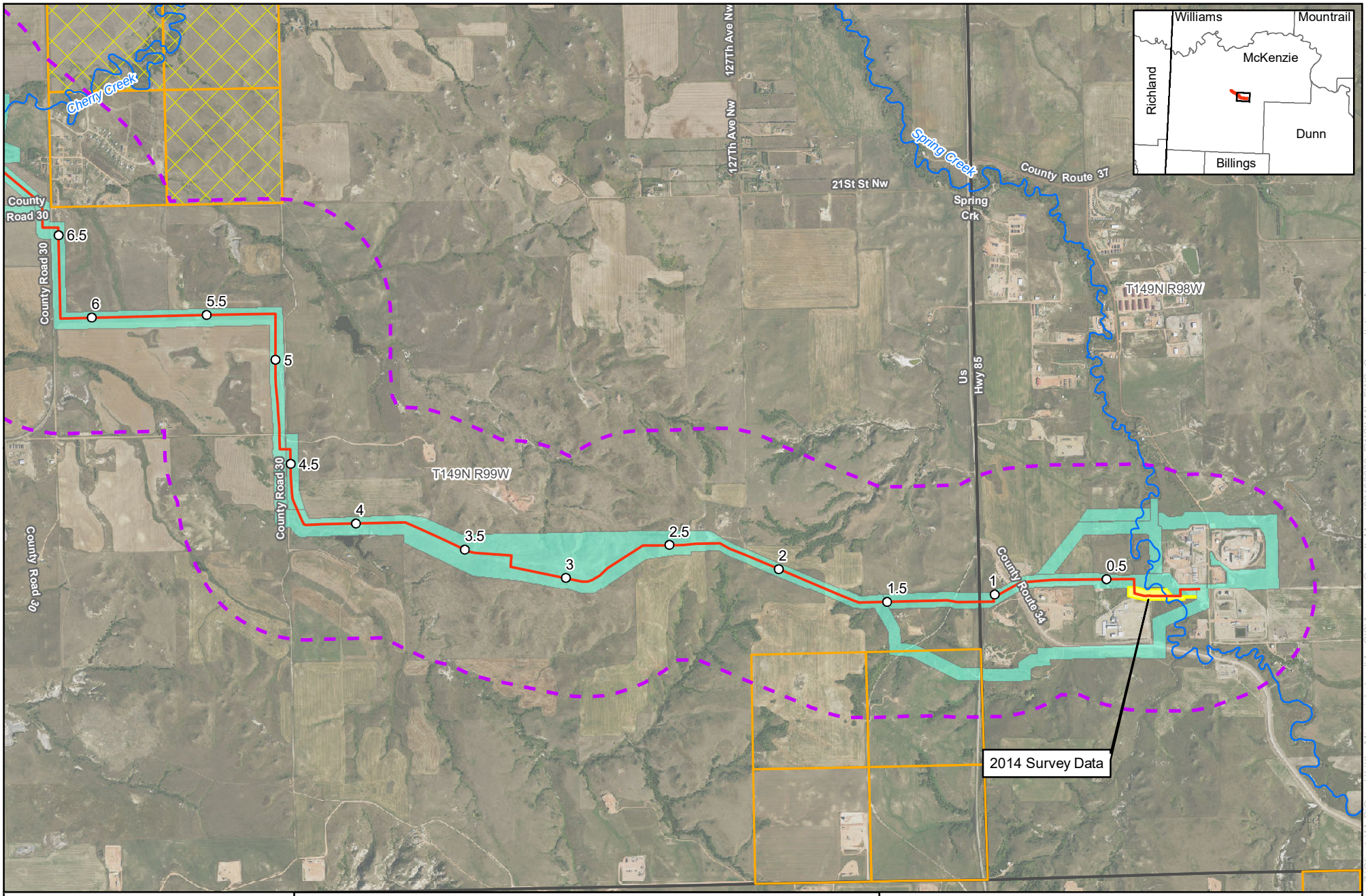
ONEOK Bakken Pipeline, L.L.C.
Little Missouri Lateral Pipeline Project
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McKenzie County, ND

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Date: (2/20/2019)

For Environmental Review Purposes Only



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For Environmental Review Purposes Only

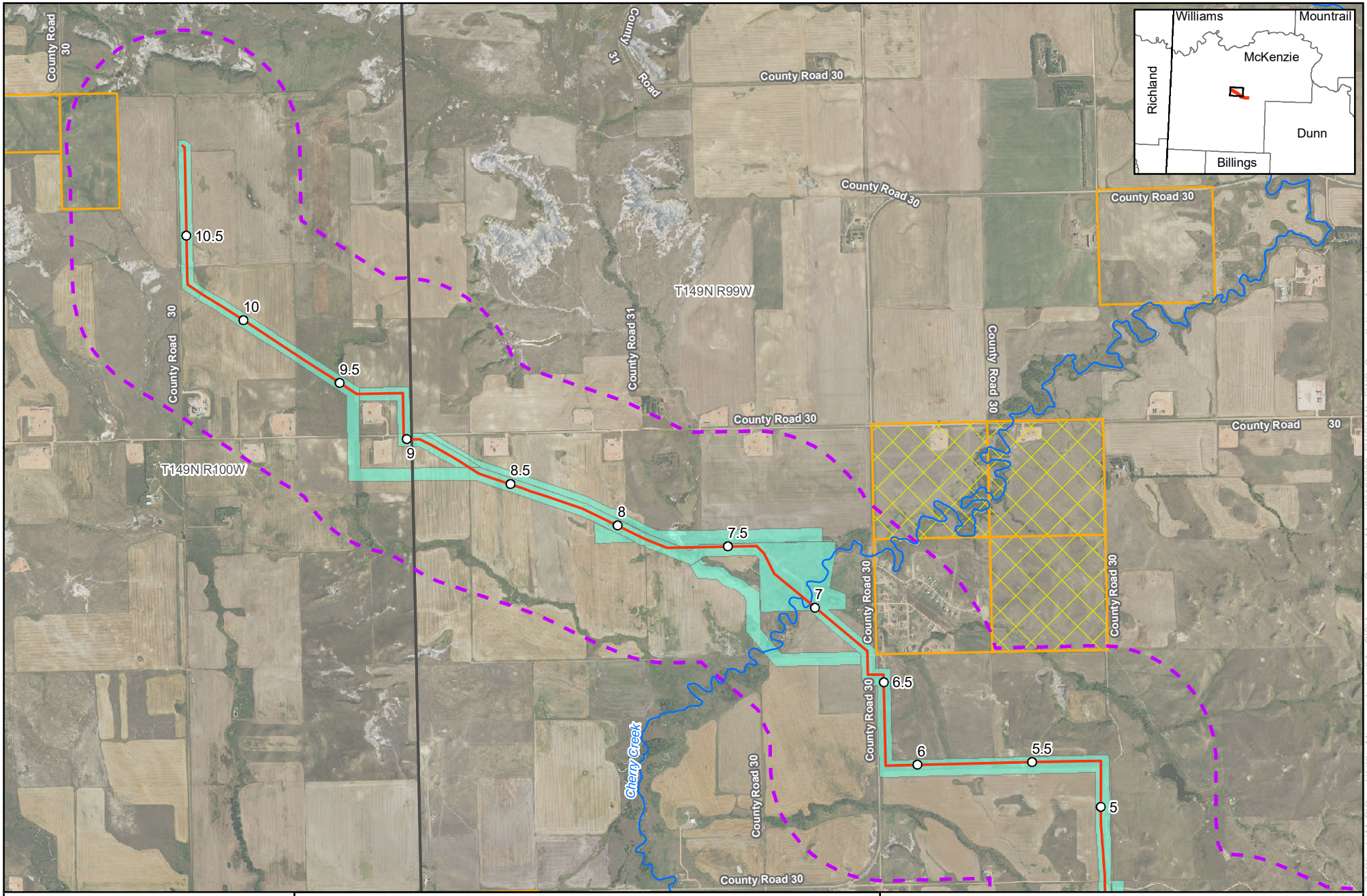
Page 1 of 2

ONEOK Bakken Pipeline, L.L.C.
Little Missouri Lateral Pipeline Project
Topo Map
McKenzie County, ND

- Milepost
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Source: Z:\Clients\M_P\ONEOK\Little_Missouri_Lateral\ArcGIS\Agency_Consult_Maps\20190220_FWS\LML_FWS_Consultation_Aerial.mxd

Date: (2/20/2019)



0 1,500 3,000 Feet

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For Environmental Review Purposes Only

Page 2 of 2

ONEOK Bakken Pipeline, L.L.C.
Little Missouri Lateral Pipeline Project
Topo Map
McKenzie County, ND

- Milepost
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Source: Z:\Clients\M_P\ONEOK\Little_Missouri_Lateral\ArcGIS\Agency_Consult_Maps\20190220_FWS\LML_FWS_Consultation_Aerial.mxd

Date: (2/20/2019)

Project Workspace Maps with Dakota Skipper Habitat

Maps Redacted from this Document

Little Missouri Lateral Project

Natural Resources Report (2018)

Included as Exhibit C of this Document

U.S. Army Corps of Engineers

Response Pending

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Lucas Bicknell

From: Lucas Bicknell
Sent: Wednesday, December 19, 2018 8:28 AM
To: 'patricia.l.mcqueary@usace.army.mil'
Cc: Maddy Krumwiede; Paul Hartzheim (phartzheim@merjent.com); Eddie Zedaker (Edwin.Zedaker@oneok.com)
Subject: Follow-Up Email: ONEOK Bakken Pipeline Little Missouri Lateral Project Notification and Request for Review
Attachments: ONEOK_Little Missouri Lateral_USACE Consult (letter)_10092018.pdf

Tracking:

Recipient	Delivery
'patricia.l.mcqueary@usace.army.mil'	
Maddy Krumwiede	Delivered: 12/19/2018 8:28 AM
Paul Hartzheim (phartzheim@merjent.com)	Delivered: 12/19/2018 8:28 AM
Eddie Zedaker (Edwin.Zedaker@oneok.com)	

Dear Ms. McQuery,

ONEOK Bakken Pipeline, L.L.C. (ONEOK) submitted a consultation request to you on October 9, 2018, to provide notification of ONEOK's proposed Little Missouri Lateral Pipeline Project and to solicit comments that will assist in the regulatory process. As we have not received a response, Merjent is following up on behalf of ONEOK to ensure you received the notification and have had the opportunity to respond. Attached is a copy of the original notification letter for your reference.

The Project is within the jurisdiction of the North Dakota Public Service Commission (NDPSC) and copies of correspondence received in response to this notification will be included in ONEOK's application for a Corridor Certificate and Route Permit, which will be filed with the NDPSC later this year.

We appreciate your review and look forward to your response. If you have any questions or need any additional information, please contact me via email or phone or Eddie Zedaker of ONEOK at Edwin.zedaker@oneok.com or 918-595-1783.

Kind regards,
Lucas Bicknell

merjent

Lucas Bicknell

TractorWorks Building
800 Washington Avenue N.
Suite 315
Minneapolis, MN 55401

612.746.3660 main
612.446.2412 direct
612.999.8142 cell
612.746.3679 fax

October 9, 2018

Ms. Patricia McQueary
State Program Manager
US Army Corps of Engineers – Omaha District
3319 University Street
Bismarck, ND 58504

RE: ONEOK Bakken Pipeline, L.L.C. – Little Missouri Lateral Pipeline Project
Project Notification and Request for Review

Dear Ms. McQueary,

ONEOK Bakken Pipeline, L.L.C. (ONEOK) proposes to construct the Little Missouri Lateral Project (Project) consisting of approximately 11 miles of 12-inch-diameter new steel pipeline to transport natural gas liquids. The Project originates at the Targa Little Missouri Plant and terminates at an interconnection with ONEOK's planned Demicks Lake Pipeline, all located within in McKenzie County, North Dakota (see enclosed Project overview maps). Construction will begin as early as February 2019 and will be completed in approximately 3-4 months. After construction is complete, restoration/reclamation of the right-of-way will continue as necessary.

A detailed routing analysis has been performed on this Project taking into consideration a significant amount of information to avoid and minimize impacts of known and suspected resources. Additionally, ONEOK is in the process of completing environmental field surveys (cultural and biological resources) of the route. The majority of the route is co-located with existing linear utilities.

ONEOK respectfully submits this Project information to the U.S. Army Corps of Engineers (USACE) to review a one-mile-wide "evaluation corridor" centered along the route of the pipeline. Sections, Townships, and Ranges within the evaluation corridor are presented in the following table. Overview and route maps are also included for your review.

Table 1
Little Missouri Lateral Pipeline Location

Township	Range	Sections within the Evaluation Corridor
149 North	98 West	19, 29-32
149 North	99 West	7, 8, 15-22, 25-28, 34-36
149 North	100 West	1, 2, 11-13

As indicated above, the purpose of this letter is to provide notification of the proposed Project and to solicit comments that will assist in the regulatory process. The Project is within the the jurisdiction of the North Dakota Public Service Commission (NDPSC) and copies of correspondence received in response to this letter will be included in ONEOK's application for a Corridor Certificate and Route Permit, which will be filed with the NDPSC later this year.

ONEOK, Inc.
100 West Fifth Street
Tulsa, OK 74103
www.oneok.com

To facilitate our review, we are requesting the following information be provided:

- A review of the Project for crossings of Section 408 Civil Works projects or other USACE owned or managed lands;
- Any special requirements, restrictions, or specifications regarding constructing pipelines across or under USACE-regulated features; and
- Any permits issued through your office which may be applicable to the Project and anticipated timeframes.

ONEOK assumes the Project will be eligible for coverage under Nationwide Permit 12 (Utility Line Activities). Following completion of field surveys and after the route and associated workspaces have been identified, ONEOK will submit a Pre-Construction Notification to your office, if deemed necessary.

Merjent, Inc. (Merjent) has been contracted by ONEOK to assist with the environmental review of the Project areas, completion of regulatory applications, and consultations with other agencies. Please identify any specific persons within your organization that should be contacted or included in future Project-related communications.

We appreciate your assistance with this request and look forward to your timely review and comments on this Project. Should you have any questions or require additional information, please contact Maddy Krumwiede of Merjent at 612-924-3973 or mkrumwiede@merjent.com, or myself at 918-595-1783 or Edwin.Zedaker@oneok.com.

Sincerely,



Edwin Zedaker
Environmental Engineer
ONEOK, Inc.

Enclosures: Project Overview Maps

Cc: Maddy Krumwiede, Merjent
Jason Renschler, USACE

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U.S Department of Agriculture - Natural Resources Conservation Service

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USDA
United States Department of Agriculture

Natural Resources
Conservation Service

Bismarck State Office
PO Box 1458
Bismarck, ND
58502-1458

Voice 701.530.2000
Fax 855-813-7556

October 24, 2018

ONEOK, Inc.
Attn: Mr. Edwin Zedaker, Environmental Engineer
100 West Fifth Street
Tulsa, OK 74103

RE: ONEOK Bakken Pipeline, L.L.C. – Little Missouri Lateral Pipeline Project

Dear Mr. Zedaker:

The Natural Resources Conservation Service (NRCS) has reviewed your letter dated October 9, 2018, concerning the proposed ONEOK Bakken Pipeline, Little Missouri Lateral Pipeline Project.

Farmland Protection Policy Act

NRCS has a major responsibility with the Farmland Protection Policy Act (FPPA) in documenting conversion of farmland (i.e., Prime, Statewide Importance and/or Local Importance) to non-agricultural use. It appears your proposed project is not supported by federal funding; therefore, FPPA does not apply to this project and no further action is needed.

Wetlands

The Wetland Conservation Provisions of the 1985 Food Security Act, as amended, provide that if a USDA participant converts a wetland for the purpose, or to have the effect of making agricultural production possible, loss of USDA benefits could occur. NRCS has developed the following guidelines for the installation of permanent infrastructure where wetlands occur. If these guidelines are followed, the impacts to the wetland will be considered minimal allowing USDA participants to continue to receive USDA benefits. Following are the requirements:

- Disturbance to the wetland must be temporary.
- No drainage of wetland is allowed (temporary or permanent).
- Mechanized landscaping necessary for installation is kept to a minimum and preconstruction contours are maintained.
- Temporary side cast material must be placed in such a manner not to be dispersed in the wetland.

(MORE)

- All trenches must be backfilled to the original wetland bottom elevation.

NRCS recommends that impacts to wetlands be avoided.

If you have additional questions pertaining to FPPA, please contact me at 701-530-2021 or by email at wade.bott@nd.usda.gov. Thank you.

Sincerely,

Steven L. Giles for

WADE D. BOTT
State Soil Scientist

October 9, 2018

Lloyd Alveshere
Soil Conservationist
US Department of Agriculture
Natural Resources Conservation Service – McKenzie County
P.O. Box 583
Watford City, ND 58854

RE: ONEOK Bakken Pipeline, L.L.C. – Little Missouri Lateral Pipeline Project
Project Notification and Request for Review

Dear Mr. Alveshere,

ONEOK Bakken Pipeline, L.L.C. (ONEOK) proposes to construct the Little Missouri Lateral Project (Project) consisting of approximately 11 miles of 12-inch-diameter new steel pipeline to transport natural gas liquids. The Project originates at the Targa Little Missouri Plant and terminates at an interconnection with ONEOK's planned Demicks Lake Pipeline, all located within in McKenzie County, North Dakota (see enclosed Project overview maps). Construction will begin as early as February 2019 and will be completed in approximately 3-4 months. After construction is complete, restoration/reclamation of the right-of-way will continue as necessary.

A detailed routing analysis has been performed on this Project taking into consideration a significant amount of information to avoid and minimize impacts of known and suspected resources. The majority of the route is co-located with existing linear utilities.

ONEOK respectfully submits a request for Project review from the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS) regarding NRCS-administered lands and parcels enrolled in NRCS easement programs. Sections, Townships, and Ranges within a one-mile-wide "evaluation corridor" are presented in the following table. Overview and route maps are also included for your review.

Table 1
Little Missouri Lateral Pipeline Location

Township	Range	Sections within the Evaluation Corridor
149 North	98 West	19, 29-32
149 North	99 West	7, 8, 15-22, 25-28, 34-36
149 North	100 West	1, 2, 11-13

The purpose of this letter is to provide notification of the proposed Project and to solicit comments that will assist in the regulatory process. The Project is within the jurisdiction of the North Dakota Public Service Commission (NDPSC) and copies of correspondence received in response to this letter will be included in ONEOK's application for a Corridor Certificate and Route Permit, which will be filed with the NDPSC later this year.

ONEOK, Inc.
100 West Fifth Street
Tulsa, OK 74103
www.oneok.com

October 9, 2018
Mr. Lloyd Alveshere

Merjent, Inc. (Merjent) has been contracted by ONEOK to assist with the environmental review of the Project areas, completion of regulatory applications, and consultations with other agencies. Please identify any specific persons within your organization that should be contacted or included in future Project-related communications.

We appreciate your assistance with this request and look forward to your timely review and comments on this Project. Should you have any questions or require additional information, please contact Maddy Krumwiede of Merjent at 612-924-3973 or mkrumwiede@merjent.com, or myself at 918-595-1783 or Edwin.Zedaker@oneok.com.

Sincerely,



Edwin Zedaker
Environmental Engineer
ONEOK, Inc.

Enclosures: Project Overview Maps

Cc: Maddy Krumwiede, Merjent

U.S Department of Agriculture – Farm Service Agency

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USDA
United States Department of Agriculture

Farm
Production
and
Conservation

Farm
Service
Agency

North Dakota
Farm Service Agency
1025 28th St. South
Fargo, ND 58103

PH: (701) 239-5695
FAX: (855) 813-6644

October 11, 2018

Merjent Inc.
C/O Paul Hartzheim, M.S.
Tractor Works Bldg.
800 Washington Ave N, Suite 315
Minneapolis, MN 55401

Dear Mr. Hartzheim,

This letter is in response to your October 10, 2018 email concerning the proposed Little Missouri Lateral Pipeline Project (Project) in McKenzie County of North Dakota.

If specifically requested, FSA will provide the producer name and address information for McKenzie County producers who have received payments from various FSA programs. It would then be up to Merjent, Inc. to determine how best to use the producer name and address information provided by FSA to contact the producers and attempt to have the producers identify the location of the FSA-administered lands that may be affected by the ONEOK project.

Please note, based on your October 10, 2018 letter, it looks like we can reasonably conclude that embedded within this request is a desire to obtain FSA held geospatial information (i.e., Common Land Unit data). It must be noted that 7 U.S.C. § 8791 of the Food, Conservation and Energy Act of 2008 does prohibit FSA from disclosing the Common Land Unit (CLU) data unless Merjent, Inc. is certified as a USDA Cooperator, which it appears Merjent, Inc. is not a USDA Cooperator, or if Merjent, Inc. provides FSA with a written consent to disclose from each producer to whom the requested records pertain.

As for a request for text data, FSA is under no statutory based obligation to review the map data provided by Merjent, Inc. and evaluate the one-mile-wide corridor centered along the route of the pipeline and take steps to identify the location and identification of any lands/easements that may be enrolled in programs administered by FSA.

FSA is under no such obligation because record disclosure under FOIA is based on how the information is retained in FSA paper and electronic files. Since FSA does not retain records categorized by "approximate one-mile-wide "evaluation corridor" centered along the route of the pipeline" FSA is not required by statute to create the records in order to respond to a FOIA request.

Based on the above information, please indicate whether you want FSA to proceed with providing only the names and addresses of FSA participants who have received payments in McKenzie County. Keep in mind, the names and addresses provided to you will include FSA participants for the entire county, not just the one-mile project corridor which you requested.

USDA is an equal opportunity provider, employer and lender.

Land enrolled in CRP shall not have the cover disturbed during the Primary Nesting and Brood Rearing Season (PNS), which in North Dakota, is from April 15 through August 1. No activity is to take place on CRP during the PNS. However, there are exceptions to this provision. If disturbance of the existing cover is minimal, a waiver of this provision could be granted.

If the Little Missouri Lateral Pipeline Project will need access to CRP during the PNS, a separate formal request to waive this provision must be submitted prior to any disturbance of CRP cover. Only the North Dakota State FSA Committee has the authority to grant a waiver of activity during the PNS. Therefore, if necessary, the request to disturb cover during the PNS shall be sent to the North Dakota State FSA Committee at the address provided in the letterhead of this letter. Such a request should include the proposed timeframe construction will occur, impact to the land enrolled in CRP and plans to restore CRP cover, if necessary.

If there are any questions, please contact this office.

Sincerely,

FOR Brad Thykeson
State Executive Director

Cc: McKenzie FSA County Office & District Director Honeyman

USDA is an equal opportunity provider, employer and lender.

October 10, 2018

Delivered via email to:
Marcy Feilmeier
US Department of Agriculture, McKenzie County Farm Service Agency
McKenzie County Executive Director
(marcy.feilmeier@nd.usda.gov)

RE: ONEOK Bakken Pipeline, L.L.C. – Little Missouri Lateral Pipeline Project
Project Notification and Request for Review

Dear Ms. Feilmeier,

ONEOK Bakken Pipeline, L.L.C. (ONEOK) proposes to construct the Little Missouri Lateral Project (Project) consisting of approximately 11 miles of 12-inch-diameter new steel pipeline to transport natural gas liquids. The Project originates at the Targa Little Missouri Plant and terminates at an interconnection with ONEOK's planned Demicks Lake Pipeline, all located within in McKenzie County, North Dakota (see enclosed Project overview maps). Construction will begin as early as February 2019 and will be completed in approximately 3-4 months. After construction is complete, restoration/reclamation of the right-of-way will continue as necessary.

A detailed routing analysis has been performed on this Project taking into consideration a significant amount of information to avoid and minimize impacts of known and suspected resources. The majority of the route is co-located with existing linear utilities.

ONEOK respectfully submits a request for Project review from the U.S. Department of Agriculture, Farm Service Agency (FSA) regarding FSA-administered lands and parcels enrolled in FSA easement programs within an approximate one-mile-wide "evaluation corridor" centered along the route of the pipeline. Sections, Townships, and Ranges within the evaluation corridor are presented in the following table. Overview and route maps are also included for your review.

Table 1
Little Missouri Lateral Pipeline Location

Township	Range	Sections within the Evaluation Corridor
149 North	98 West	19, 29-32
149 North	99 West	7, 8, 15-22, 25-28, 34-36
149 North	100 West	1, 2, 11-13

The purpose of this letter is to provide notification of the proposed Project and to solicit comments that will assist in the regulatory process. The Project is within the jurisdiction of the North Dakota Public Service Commission (NDPSC) and copies of correspondence received in response to this letter will be included in ONEOK's application for a Corridor Certificate and Route Permit, which will be filed with the NDPSC later this year.

ONEOK, Inc.
100 West Fifth Street
Tulsa, OK 74103
www.oneok.com

October 10, 2018
Ms. Marcy Feilmeier

Merjent, Inc. (Merjent) has been contracted by ONEOK to assist with the environmental review of the Project areas, completion of regulatory applications, and consultations with other agencies. Please identify any specific persons within your organization that should be contacted or included in future Project-related communications.

We appreciate your assistance with this request and look forward to your timely review and comments on this Project. Should you have any questions or require additional information, please contact Maddy Krumwiede of Merjent at 612-924-3973 or mkrumwiede@merjent.com, or myself at 918-595-1783 or Edwin.Zedaker@oneok.com.

Sincerely,



Edwin Zedaker
Environmental Engineer
ONEOK, Inc.

Enclosures: Project Overview Maps

Cc: Maddy Krumwiede, Merjent

U.S. Department of Defense

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Lucas Bicknell

From: MUNOS, CY I GS-11 USAF AFGSC 91 MMXS/MMXSFK <cy.munos@us.af.mil>
Sent: Wednesday, October 10, 2018 1:37 PM
To: Paul Hartzheim
Cc: Maddy Krumwiede; Lucas Bicknell; Zedaker, Edwin F.
Subject: RE: ONEOK: Little Missouri Lateral Project Notification

Follow Up Flag: Follow up
Flag Status: Flagged

Mr. Hartzheim,

The Minot AFB has no assets in the project area. Thanks.

Cy Munos
Chief, Cable Affairs
91 MMXS/MMXSFK
Minot AFB, ND
DSN: 453-6053
COMM.: 701-723-6053
CELL: 701-720-8274

-----Original Message-----
From: Paul Hartzheim [mailto:phartzheim@merjent.com]
Sent: Wednesday, October 10, 2018 12:57 PM
To: MUNOS, CY I GS-11 USAF AFGSC 91 MMXS/MMXSFK <cy.munos@us.af.mil>
Cc: Maddy Krumwiede <mkrumwiede@merjent.com>; Lucas Bicknell <lbicknell@merjent.com>; Zedaker, Edwin F. <Edwin.Zedaker@oneok.com>; Paul Hartzheim <phartzheim@merjent.com>
Subject: [Non-DoD Source] ONEOK: Little Missouri Lateral Project Notification

Mr. Munos,

On behalf of ONEOK Bakken Pipeline, L.L.C. (ONEOK), Merjent, Inc. is providing the attached project notification package requesting comments on ONEOK's proposed Little Missouri Lateral Project (Project). The Project consists of approximately 11 miles of new 12-inch diameter pipeline in McKenzie County, North Dakota. Project overview maps are included in the attached submittal and shapefiles of the proposed route and a one-mile buffer are also included for your convenience.

If you have any questions or need any additional information to assist in your review of this Project, feel free to contact me via email or phone. Thanks, and we look forward to your response.

Sincerely,

Paul Hartzheim, M.S.

Paul Hartzheim

TractorWorks Building

612.746.3660 main

800 Washington Avenue N.

612.746.1618 direct

Suite 315

612.845.1641 cell

Minneapolis, MN 55401

612.746.3679 fax

www.merjent.com

October 10, 2018

Delivered via email to:
Cy Munos
U.S. Department of Defense - Air Force Cable Affairs
cy.munos@us.af.mil

RE: ONEOK Bakken Pipeline, L.L.C. – Little Missouri Lateral Pipeline Project
Project Notification and Request for Review

Dear Mr. Munos,

ONEOK Bakken Pipeline, L.L.C. (ONEOK) proposes to construct the Little Missouri Lateral Project (Project) consisting of approximately 11 miles of 12-inch-diameter new steel pipeline to transport natural gas liquids. The Project originates at the Targa Little Missouri Plant and terminates at an interconnection with ONEOK's planned Demicks Lake Pipeline, all located within in McKenzie County, North Dakota (see enclosed Project overview maps). Construction will begin as early as February 2019 and will be completed in approximately 3-4 months. After construction is complete, restoration/reclamation of the right-of-way will continue as necessary.

A detailed routing analysis has been performed on this Project taking into consideration a significant amount of information to avoid and minimize impacts of known and suspected resources. The majority of the route is co-located with existing linear utilities.

ONEOK respectfully submits a request for Project review from the U.S. Department of Defense, Air Force Cable Affairs regarding the location of intercontinental ballistic missiles and launch facilities within an approximate one-mile-wide "evaluation corridor" centered along the route of the pipeline. Sections, Townships, and Ranges crossed the evaluation corridor are presented in the following table. Overview and route maps are also included for your review.

Table 1
Little Missouri Lateral Pipeline Location

Township	Range	Sections within the Evaluation Corridor
149 North	98 West	19, 29-32
149 North	99 West	7, 8, 15-22, 25-28, 34-36
149 North	100 West	1, 2, 11-13

The purpose of this letter is to provide notification of the proposed Project and to solicit comments that will assist in the regulatory process. The Project is within the jurisdiction of the North Dakota Public Service Commission (NDPSC) and copies of correspondence received in response to this letter will be included in ONEOK's application for a Corridor Certificate and Route Permit, which will be filed with the NDPSC later this year.

Merjent, Inc. (Merjent) has been contracted by ONEOK to assist with the environmental review of the Project areas, completion of regulatory applications, and consultations with other agencies. Please identify any specific persons within your organization that should be contacted or included in future Project-related communications.

ONEOK, Inc.
100 West Fifth Street
Tulsa, OK 74103
www.oneok.com

We appreciate your assistance with this request and look forward to your timely review and comments on this Project. Should you have any questions or require additional information, please contact Maddy Krumwiede of Merjent at 612-924-3973 or mkrumwiede@merjent.com, or myself at 918-595-1783 or Edwin.Zedaker@oneok.com.

Sincerely,



Edwin Zedaker
Environmental Engineer
ONEOK, Inc.

Enclosures: Project Overview Maps

Cc: Maddy Krumwiede, Merjent\

North Dakota Game and Fish Department

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GOVERNOR, Doug Burgum
DIRECTOR, Terry Steinwand
DEPUTY, Scott A. Peterson

"VARIETY IN HUNTING AND FISHING"

NORTH DAKOTA GAME AND FISH DEPARTMENT
100 NORTH BISMARCK EXPRESSWAY BISMARCK, NORTH DAKOTA 58501-5095 PHONE 701-328-6300 FAX 701-328-6352

November 1, 2018

Eddy Zedaker
Environmental Engineer
ONEOK, Inc.
100 West Fifth Street
Tulsa, OK 74103

Dear Mr. Zedaker:

RE: Little Missouri Lateral Pipeline Project

ONEOK Bakken Pipeline, LLC is proposing to construct approximately 11 miles of 12-inch-diameter new steel pipeline to transport natural gas liquids. The project originates at the Targa Little Missouri Plant and terminates at an interconnection with ONEOK's planned Demicks Lake Pipeline in McKenzie County, North Dakota. The North Dakota Game and Fish Department (NDGF) has reviewed this project for wildlife concerns.

A primary concern with pipeline projects is the possible disturbance of native prairie and wooded draws associated with construction of the pipeline and access roads. Avoidance of native prairie areas reduces impacts to a number of grassland species including many of the species of conservation priority. We ask that work within these areas be avoided to the extent possible, every effort be made to prevent destruction of woody vegetation, and disturbed areas be reclaimed to pre-project conditions.

The National Wetland Inventory indicates a variety of wetlands within the proposed project corridor. Steps should be taken to protect any wetlands that cannot be avoided, no alterations should be made to existing drainage patterns, and above-ground appurtenances should not be placed in wetland areas. Unavoidable destruction or degradation of wetland acres should be mitigated in kind.

Aerial surveys should be conducted for raptor nests before construction begins. We recommend that a ½-mile construction buffer be implemented around active eagle nest sites (known occupied within the past 5 years). Ms. Sandra Johnson, Conservation Biologist, may be contacted at 701-328-6327 for additional information on golden eagle nest sites in the state.

Information regarding the presence of Private Lands Open to Sportsmen (PLOTS) is available at:

https://gf.nd.gov/plots/guide. This page is updated to reflect changes as tracts are added or removed. PLOTS is a public access program which cost-shares with private landowners to help conserve fish and wildlife habitat. PLOTS lands are not owned or managed by the NDGF.

We do not believe this project will have significant adverse effects on wildlife or wildlife habitat provided these recommendations are implemented in the construction of the project.

Sincerely,

Greg Link
Chief
Conservation & Communication Division

js

October 9, 2018

Mr. Greg Link
Division Chief
North Dakota Game and Fish Department
Conservation and Communication Division
100 North Bismarck Expressway
Bismarck, ND 58501-5095

RE: ONEOK Bakken Pipeline, L.L.C. – Little Missouri Lateral Pipeline Project
Project Notification and Request for Review

Dear Mr. Link,

ONEOK Bakken Pipeline, L.L.C. (ONEOK) proposes to construct the Little Missouri Lateral Project (Project) consisting of approximately 11 miles of 12-inch-diameter new steel pipeline to transport natural gas liquids. The Project originates at the Targa Little Missouri Plant and terminates at an interconnection with ONEOK's planned Demicks Lake Pipeline, all located within in McKenzie County, North Dakota (see enclosed Project overview maps). Construction will begin as early as February 2019 and will be completed in approximately 3-4 months. After construction is complete, restoration/reclamation of the right-of-way will continue as necessary.

A detailed routing analysis has been performed on this Project taking into consideration a significant amount of information to avoid and minimize impacts of known and suspected resources. The majority of the route is co-located with existing linear utilities.

ONEOK respectfully submits this Project information to the North Dakota Game and Fish Department (NDGF) to review a one-mile-wide "evaluation corridor" centered along the route of the pipeline. Sections, Townships, and Ranges within the evaluation corridor are presented in the following table. Overview and route maps are also included for your review.

Table 1
Little Missouri Lateral Pipeline Location

Township	Range	Sections within the Evaluation Corridor
149 North	98 West	19, 29-32
149 North	99 West	7, 8, 15-22, 25-28, 34-36
149 North	100 West	1, 2, 11-13

The purpose of this letter is to provide notification of the proposed Project and to solicit comments that will assist in the regulatory process. ONEOK is requesting NDGF review the evaluation corridor for the presence or absence of: sensitive species; game refuge or game management lands; Private Land Open to Sportsmen lands; and projects under the direction of these or other NDGF-administered programs. The Project is within the jurisdiction

ONEOK, Inc.
100 West Fifth Street
Tulsa, OK 74103
www.oneok.com

of the North Dakota Public Service Commission (NDPSC) and copies of correspondence received in response to this letter will be included in ONEOK's application for a Corridor Certificate and Route Permit, which will be filed with the NDPSC later this year.

ONEOK has retained Merjent, Inc. (Merjent) as its environmental consultant for this project. Please identify any specific persons within your organization that should be contacted or included in future Project-related communications.

We appreciate your assistance with this request and look forward to your timely review and comments on this Project. Should you have any questions or require additional information, please contact Maddy Krumwiede of Merjent at 612-924-3973 or mkrumwiede@merjent.com or me at 918-595-1783 or Edwin.Zedaker@oneok.com.

Sincerely,



Eddie Zedaker
Environmental Engineer
ONEOK, Inc.

Enclosures: Project Overview Maps

cc: Maddy Krumwiede, Merjent

North Dakota Parks and Recreation Department

Response Pending

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October 9, 2018

Kathy Duttenhefner
North Dakota Department of Parks and Recreation
1600 East Century Avenue, Suite 3
Bismarck, ND 58503-0649

RE: ONEOK Bakken Pipeline, L.L.C. – Little Missouri Lateral Pipeline Project
Project Notification and Request for Review

Dear Ms. Duttenhefner,

ONEOK Bakken Pipeline, L.L.C. (ONEOK) proposes to construct the Little Missouri Lateral Project (Project) consisting of approximately 11 miles of 12-inch-diameter new steel pipeline to transport natural gas liquids. The Project originates at the Targa Little Missouri Plant and terminates at an interconnection with ONEOK's planned Demicks Lake Pipeline, all located within in McKenzie County, North Dakota (see enclosed Project overview maps). Construction will begin as early as February 2019 and will be completed in approximately 3-4 months. After construction is complete, restoration/reclamation of the right-of-way will continue as necessary.

A detailed routing analysis has been performed on this Project taking into consideration a significant amount of information to avoid and minimize impacts of known and suspected resources. The majority of the route is co-located with existing linear utilities.

ONEOK respectfully submits this Project information to the McKenzie County Board of Commissioners to review a one-mile-wide "evaluation corridor" centered along the route of the pipeline. Sections, Townships, and Ranges within the evaluation corridor are presented in the following table. Overview and route maps are also included for your review.

Table 1
Little Missouri Lateral Pipeline Location

Township	Range	Sections within the Evaluation Corridor
149 North	98 West	19, 29-32
149 North	99 West	7, 8, 15-22, 25-28, 34-36
149 North	100 West	1, 2, 11-13

The purpose of this letter is to provide notification of the proposed Project and to solicit comments that will assist in the regulatory process. ONEOK respectfully submits a request for Project review from the North Dakota Parks and Recreation Department (NDPR) of the North Dakota Natural Heritage Inventory (NHI) system and for presence or absence of state parks, recreation areas, natural areas, land and water conservation fund projects, and other NDPR interests. The Project is within the jurisdiction of the North Dakota Public Service Commission (NDPSC) and copies of correspondence received in response to this letter will be included in ONEOK's application for a Corridor Certificate and Route Permit, which will be filed with the NDPSC later this year.

ONEOK, Inc.
100 West Fifth Street
Tulsa, OK 74103
www.oneok.com

October 9, 2018
Ms. Duttenhefner

ONEOK has retained Merjent, Inc. (Merjent) as its environmental consultant for this project. Please identify any specific persons within your organization that should be contacted or included in future Project-related communications. ONEOK also understands that Project review of the NHI system is subject to a $60 charge. A check has been enclosed to cover this fee.

We appreciate your assistance with this request and look forward to your timely review and comments on this Project. Should you have any questions or require additional information, please contact Maddy Krumwiede of Merjent at 612-924-3973 or mkrumwiede@merjent.com or me at 918-595-1783 or Edwin.Zedaker@oneok.com.

Sincerely,



Eddie Zedaker
Environmental Engineer
ONEOK, Inc.

Enclosures: Project Overview Maps
Check for NHI Review Fee ($60)

cc: Maddy Krumwiede, Merjent

Lucas Bicknell

From: Lucas Bicknell
Sent: Friday, December 14, 2018 2:52 PM
To: 'Duttenhefner, Kathy G.'
Cc: Maddy Krumwiede; Paul Hartzheim (phartzheim@merjent.com); Eddie Zedaker (Edwin.Zedaker@oneok.com)
Subject: Follow-Up Email: ONEOK Bakken Pipeline Little Missouri Lateral Project Notification and Request for Review
Attachments: ONEOK_Little Missouri Lateral_NDPR Consult (letter)_10092018.pdf; ONEOK_Little Missouri Lateral_NDPR_Check 11393.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Dear Ms. Duttenhefner,

ONEOK Bakken Pipeline, L.L.C. (ONEOK) submitted a consultation request to you on October 10, 2018, to provide notification of ONEOK's proposed Little Missouri Lateral Pipeline Project and to solicit comments that will assist in the regulatory process. As we have not received a response, Merjent is following up on behalf of ONEOK to ensure you received the notification and have had the opportunity to respond. Attached is a copy of the original notification letter for your reference.

The Project is within the jurisdiction of the North Dakota Public Service Commission (NDPSC) and copies of correspondence received in response to this notification will be included in ONEOK's application for a Corridor Certificate and Route Permit, which will be filed with the NDPSC later this year.

We appreciate your review and look forward to your response. If you have any questions or need any additional information, please contact me via email or phone or Eddie Zedaker of ONEOK at Edwin.zedaker@oneok.com or 918-595-1783.

Kind regards,
Lucas Bicknell

merjent

Lucas Bicknell

TractorWorks Building
800 Washington Avenue N.
Suite 315
Minneapolis, MN 55401

612.746.3660 main
612.466.2412 direct
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www.merjent.com
lbicknell@merjent.com

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EHS Today's America's SAFEST

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North Dakota State Historic Preservation Officer

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February 15, 2019

Ms. Claudia Berg
State Historic Preservation Officer
State Historical Society of North Dakota
North Dakota Heritage Center
612 East Boulevard Avenue
Bismarck, ND 58505-0830

RE: ONEOK Bakken Pipeline, L.L.C.
Little Missouri Lateral Project, McKenzie County, North Dakota
Request for Cultural Review of NDPSC-Regulated Project

Dear Ms. Berg,

ONEOK Bakken Pipeline, L.L.C. (ONEOK) proposes to construct the Little Missouri Lateral Project (Project) consisting of approximately 11 miles of 12-inch-diameter new steel pipeline to transport natural gas liquids. The Project originates at the Targa Little Missouri Plant and terminates at an interconnection with ONEOK's planned Demicks Lake Pipeline, all located within in McKenzie County, North Dakota. Construction will begin as early as April 2019 and will be completed in approximately 3-4 months. After construction is complete, restoration/reclamation of the right-of-way will continue as necessary. The Project is regulated by the North Dakota Public Service Commission (NDPSC). ONEOK anticipates submitting its application to the NDPSC in February 2019.

The Project Area of Potential Effect (APE) for direct effects includes a 75-foot wide construction right-of-way (ROW), extra temporary workspaces (generally 25 feet in width adjacent to ROW), and access roads created or upgraded for pipeline construction and maintenance, with a maximum excavation depth of 10 feet. ONEOK contracted with Metcalf Archaeological Consultants, Inc (Metcalf) to conduct the Class I and III cultural resource investigations for the Project. A total of 4 newly identified cultural resources and 12 previously recorded archaeological sites were investigated. Of the 16 cultural resources encountered, 15 sites are recommended not eligible for inclusion to the National Register of Historic Places (NRHP) and require no further consideration; one site has been left unevaluated. ONEOK has routed around unevaluated site 32MZ3249 to avoid impacts. As such, a determination of *No Historic Properties Affected* was recommended by Metcalf for this Project, ONEOK agrees with the recommendation and is seeking your review and concurrence.

Subsequent to this field effort, ONEOK has continued to modify the route and, as such, will be submitting an addendum report in the near future covering the new segments.

The archaeological Class III survey report documenting the cultural resources survey of the Little Missouri Project is enclosed. Also enclosed in the Unanticipated Discoveries Plan to be implemented during construction. By this letter, ONOEK respectfully requests the State Historic Preservation Office review both documents and provide

ONEOK, Inc.
100 West Fifth Street
Tulsa, OK 74103
www.oneok.com

written concurrence that the proposed project would not affect properties listed on, or eligible for listing on, the NRHP. A copy of your response will be submitted to the NDPSC to be added to the Project docket.

We appreciate your assistance with this request and look forward to your timely review and comments on this Project. Should you have any questions or require additional information, please contact Maddy Krumwiede of Merjent at 612-924-3973 or mkrumwiede@merjent.com, or myself at 918-595-1783 or Edwin.Zedaker@oneok.com.

Sincerely,



Edwin Zedaker
Environmental Engineer
ONEOK, Inc.

Enclosures: Little Missouri Lateral Project: A Class III Cultural Resources Survey in McKenzie County, ND
Draft Unanticipated Discoveries Plan

Cc: Maddy Krumwiede and Kari Krause, Merjent

North Dakota Geological Survey

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North Dakota Geological Survey

Edward C. Murphy - State Geologist

Department of Mineral Resources

Lynn D. Helms - Director

North Dakota Industrial Commission

www.state.nd.us/ndgs

November 5, 2018

Edwin Zedaker
ONEOK, Inc.
100 West Fifth Street
Tulsa, OK 74103

Re: ONEOK Bakken Pipeline, LLC – Little Missouri Lateral Pipeline Project
Proposed Pipeline Route Evaluation Comments

The North Dakota Geological Survey appreciates the notification and opportunity to review and provide comment on your proposed oil and gas energy development project. Your evaluation request of October 9, 2018 was reviewed by our office on November 5, 2018. We dropped in the approximate alignment of the proposed pipeline route on our landslide base maps and compared it to the locations of landslides that have been identified by detailed mapping work previously completed by our office (Murphy, 2010). In addition, the entire pipeline trace was evaluated against historical aerial photography from July, 1958, LiDAR elevation data collected in October of 2014, and National Agriculture Imagery Program (NAIP) imagery from May, 2017 for the identification of any recent landslide areas.

From this route evaluation we noted that the proposed pipeline route is generally free from mapped landslide areas but does pass near a previously mapped localized slide area near the center of Sec. 30, T. 149 N., R. 98 W that should be noted (Attachment 1). There were a few smaller landslide areas previously mapped that occur within the one-mile wide route corridor but are located one-quarter mile or greater away from the proposed route. A few areas of concern were noted at the locations of stream crossings where additional engineering review could be considered. The approximate locations of these areas are listed below in Table 1:

Table 1. Identified Areas of Concern

Map Page	Description	Longitude	Latitude	PLSS
1	Creek Crossing	-103.386159	47.725222	NW, SW, 149-99-17
1	Cherry Creek Crossing	-103.375327	47.721415	SW, SE, 144-99-17
2	Areas Crossing Spring Creek	-103.267131	47.695223	NW, SE, 149-98-30

Careful examination of pipeline routes and selection of construction practices throughout the proposed pipeline project corridor should be continued.

You may also contact our offices directly, with any additional questions or comments, at (701) 328-8000.

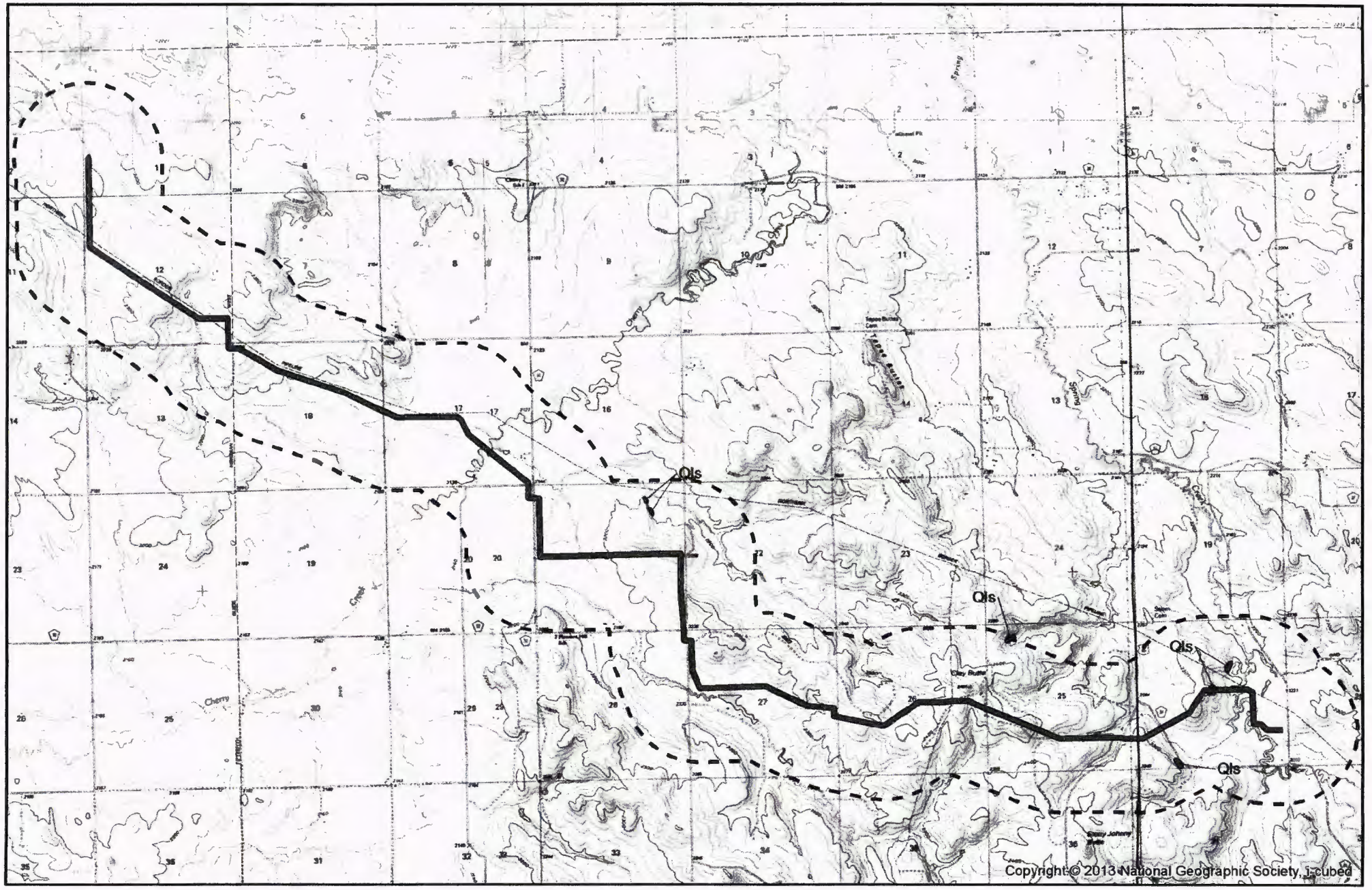
Sincerely,

North Dakota Geological Survey:

Fred Anderson

Fred Anderson
Geologist
fjanderson@nd.gov

FJA\attachment



Legend

- Landslide Deposits
- Proposed Pipeline
- 1-Mile Buffer

Attachment 1

0 0.25 0.5 1 1.5 2 Miles

N W E S

October 9, 2018

Lynn Helms
Director
North Dakota Geological Survey
600 East Boulevard
Bismarck, ND 58505

RE: ONEOK Bakken Pipeline, L.L.C. – Little Missouri Lateral Pipeline Project
Project Notification and Request for Review

Dear Mr. Helms,

ONEOK Bakken Pipeline, L.L.C. (ONEOK) proposes to construct the Little Missouri Lateral Project (Project) consisting of approximately 11 miles of 12-inch-diameter new steel pipeline to transport natural gas liquids. The Project originates at the Targa Little Missouri Plant and terminates at an interconnection with ONEOK's planned Demicks Lake Pipeline, all located within in McKenzie County, North Dakota (see enclosed Project overview maps). Construction will begin as early as February 2019 and will be completed in approximately 3-4 months. After construction is complete, restoration/reclamation of the right-of-way will continue as necessary.

A detailed routing analysis has been performed on this Project taking into consideration a significant amount of information to avoid and minimize impacts of known and suspected resources. The majority of the route is co-located with existing linear utilities.

ONEOK respectfully submits this Project information to the North Dakota Geological Survey to review a one-mile-wide "evaluation corridor" centered along the route of the pipeline. Sections, Townships, and Ranges within the evaluation corridor are presented in the following table. Overview and route maps are also included for your review.

Table 1
Little Missouri Lateral Pipeline Location

Township	Range	Sections within the Evaluation Corridor
149 North	98 West	19, 29-32
149 North	99 West	7, 8, 15-22, 25-28, 34-36
149 North	100 West	1, 2, 11-13

The purpose of this letter is to provide notification of the proposed Project and to solicit comments that will assist in the regulatory process. The Project is within the jurisdiction of the North Dakota Public Service Commission (NDPSC) and copies of correspondence received in response to this letter will be included in ONEOK's application for a Corridor Certificate and Route Permit, which will be filed with the NDPSC later this year.

Merjent, Inc. (Merjent) has been contracted by ONEOK to assist with the environmental review of the Project areas, completion of regulatory applications, and consultations with other agencies. Please identify any specific persons within your organization that should be contacted or included in future Project-related communications.

ONEOK, Inc.
100 West Fifth Street
Tulsa, OK 74103
www.oneok.com

We appreciate your assistance with this request and look forward to your timely review and comments on this Project. Should you have any questions or require additional information, please contact Maddy Krumwiede of Merjent at 612-927-3973 or mkrumwiede@merjent.com, or myself at 918-595-1783 or Edwin.Zedaker@oneok.com.

Sincerely,



Edwin Zedaker
Environmental Engineer
ONEOK, Inc.

Enclosures: Project Overview Maps

Cc: Maddy Krumwiede, Merjent

Lucas Bicknell

From: Lucas Bicknell
Sent: Friday, December 14, 2018 2:52 PM
To: lhelms@nd.gov
Cc: Maddy Krumwiede; Paul Hartzheim (phartzheim@merjent.com); Eddie Zedaker (Edwin.Zedaker@oneok.com)
Subject: Follow-Up Email: ONEOK Bakken Pipeline Little Missouri Lateral Project Notification and Request for Review
Attachments: ONEOK_Little Missouri Lateral_NDGS Consult (letter)_10092018.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Dear Mr. Helms,

ONEOK Bakken Pipeline, L.L.C. (ONEOK) submitted a consultation request to you on October 10, 2018, to provide notification of ONEOK's proposed Little Missouri Lateral Pipeline Project and to solicit comments that will assist in the regulatory process. As we have not received a response, Merjent is following up on behalf of ONEOK to ensure you received the notification and have had the opportunity to respond. Attached is a copy of the original notification letter for your reference.

The Project is within the jurisdiction of the North Dakota Public Service Commission (NDPSC) and copies of correspondence received in response to this notification will be included in ONEOK's application for a Corridor Certificate and Route Permit, which will be filed with the NDPSC later this year.

We appreciate your review and look forward to your response. If you have any questions or need any additional information, please contact me via email or phone or Eddie Zedaker of ONEOK at Edwin.zedaker@oneok.com or 918-595-1783.

Kind regards,
Lucas Bicknell

merjent

Lucas Bicknell

TractorWorks Building
800 Washington Avenue N.
Suite 315
Minneapolis, MN 55401

612.746.3660 main
612.466.2412 direct
612.746.3679 fax

www.merjent.com
lbicknell@merjent.com

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North Dakota Department of Health

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October 9, 2018

Mr. Peter Wax
North Dakota Department of Health - Environmental Health Section
600 E. Boulevard Avenue
Bismarck, ND 58505-0200

RE: ONEOK Bakken Pipeline, L.L.C. – Little Missouri Lateral Pipeline Project
Project Notification and Request for Review

Dear Mr. Wax,

ONEOK Bakken Pipeline, L.L.C. (ONEOK) proposes to construct the Little Missouri Lateral Project (Project) consisting of approximately 11 miles of 12-inch-diameter new steel pipeline to transport natural gas liquids. The Project originates at the Targa Little Missouri Plant and terminates at an interconnection with ONEOK's planned Demicks Lake Pipeline, all located within in McKenzie County, North Dakota (see enclosed Project overview maps). Construction will begin as early as February 2019 and will be completed in approximately 3-4 months. After construction is complete, restoration/reclamation of the right-of-way will continue as necessary.

A detailed routing analysis has been performed on this Project taking into consideration a significant amount of information to avoid and minimize impacts of known and suspected resources. The majority of the route is co-located with existing linear utilities.

It is our understanding that the North Dakota Department of Health (NDDH) provides guidance for implementing strategies to address environmental impacts and problems associated with new developments, administers the state hazardous waste management program, water, and air quality management programs, and oversees protection of groundwater and drinking water aquifers.

ONEOK respectfully submits this project information to the NDDH to review a one-mile-wide "evaluation corridor" centered along the route of the pipeline. Sections, Townships, and Ranges within the evaluation corridor are presented in the following table. Overview and route maps are also included for your review.

Table 1
Little Missouri Lateral Pipeline Location

Township	Range	Sections within the Evaluation Corridor
149 North	98 West	19, 29-32
149 North	99 West	7, 8, 15-22, 25-28, 34-36
149 North	100 West	1, 2, 11-13

The purpose of this letter is to provide notification of the proposed Project and to solicit comments that will assist in the regulatory process. The Project is within the jurisdiction of the North Dakota Public Service Commission (NDPSC) and

ONEOK, Inc.
100 West Fifth Street
Tulsa, OK 74103
www.oneok.com

copies of correspondence received in response to this letter will be included in ONEOK's application for a Corridor Certificate and Route Permit, which will be filed with the NDPSC later this year.

Merjent, Inc. (Merjent) has been contracted by ONEOK to assist with the environmental review of the Project areas, completion of regulatory applications, and consultations with other agencies. Please identify any specific persons within your organization that should be contacted or included in future Project-related communications.

We appreciate your assistance with this request and look forward to your timely review and comments on this Project. Should you have any questions or require additional information, please contact Maddy Krumwiede of Merjent at 612-924-3973 or mkrumwiede@merjent.com, or myself at 918-595-1783 or Edwin.Zedaker@oneok.com.

Sincerely,



Edwin Zedaker
Environmental Engineer
ONEOK, Inc.

Enclosures: Project Overview Maps

Cc: Maddy Krumwiede, Merjent

NORTH DAKOTA
DEPARTMENT of HEALTH

ENVIRONMENTAL HEALTH SECTION
Gold Seal Center, 918 E. Divide Ave.
Bismarck, ND 58501-1947
701.328.5200 (fax)
www.ndhealth.gov

October 23, 2018

Mr. Edwin Zedaker
Environmental Engineer
ONEOK, Inc.
100 West Fifth Street
Tulsa, OK 74103

Re: ONEOK Bakken Pipeline, L.L.C. – Little Missouri Lateral Pipeline Project
McKenzie County, North Dakota

Dear Mr. Zedaker:

This department has reviewed the information concerning the above-referenced project submitted under date of October 9, 2018, with respect to possible environmental impacts.

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

1. Care is to be taken during construction activity near any water of the state to minimize adverse effects on a water body. This includes minimal disturbance of stream beds and banks to prevent excess siltation, and the replacement and revegetation of any disturbed area as soon as possible after work has been completed. Caution must also be taken to prevent spills of oil and grease that may reach the receiving water from equipment maintenance, and/or the handling of fuels on the site. Guidelines for minimizing degradation to waterways during construction are attached.

2. Projects disturbing one or more acres are required to have a permit to discharge storm water runoff until the site is stabilized by the reestablishment of vegetation or other permanent cover. Further information on the storm water permit may be obtained from the Department's website or by calling the Division of Water Quality (701-328-5210). Also, cities may impose additional requirements and/or specific best management practices for construction affecting their storm drainage system. Check with the local officials to be sure any local storm water management considerations are addressed.

3. A portion of the proposed construction project overlies the Tobacco Garden glacial drift aquifer, which is a sensitive groundwater area. Care should be taken to avoid spills of any materials that may have an adverse effect on groundwater quality. All spills must be immediately reported to this Department and appropriate remedial actions performed.

4. Projects that involve construction of pipelines should select locations that minimize the potential for impacts to human health and the environment during and after construction by avoiding, when possible, source water protection areas and sensitive surface and groundwater environments. Additionally, when possible, pipeline routes should select areas with natural barriers to both surface and ground waters. Human health and the environment should be further protected by developing a spill response plan that emphasizes rapid deployment of prepositioned assets necessary to contain spills and subsequent cleanup. Proper surveillance and monitoring for early detection of leaks should be required.

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

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

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

Sincerely,

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

LDG:cc
Attach.

NORTH DAKOTA
DEPARTMENT *of* HEALTH

ENVIRONMENTAL HEALTH SECTION
Gold Seal Center, 918 E. Divide Ave.
Bismarck, ND 58501-1947
701.328.5200 (fax)
www.ndhealth.gov

Construction and Environmental Disturbance Requirements

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

Soils

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

Surface Waters

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

Fill Material

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

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North Dakota State Water Commission

Response Pending

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October 9, 2018

John Paczkowski
North Dakota State Water Commission
900 East Boulevard
Bismarck, ND 58505

RE: ONEOK Bakken Pipeline, L.L.C. – Little Missouri Lateral Pipeline Project
Project Notification and Request for Review

Dear Mr. Paczkowski,

ONEOK Bakken Pipeline, L.L.C. (ONEOK) proposes to construct the Little Missouri Lateral Project (Project) consisting of approximately 11 miles of 12-inch-diameter new steel pipeline to transport natural gas liquids. The Project originates at the Targa Little Missouri Plant and terminates at an interconnection with ONEOK's planned Demicks Lake Pipeline, all located within in McKenzie County, North Dakota (see enclosed Project overview maps). Construction will begin as early as February 2019 and will be completed in approximately 3-4 months. After construction is complete, restoration/reclamation of the right-of-way will continue as necessary.

A detailed routing analysis has been performed on this Project taking into consideration a significant amount of information to avoid and minimize impacts of known and suspected resources. The majority of the route is co-located with existing linear utilities.

It is our understanding that the North Dakota State Water Commission (NDSWC) administers water appropriation and sovereign lands permit programs and may also have relevant information regarding rural water supply systems and projects. ONEOK respectfully submits this project information to the NDSWC to review a one-mile-wide "evaluation corridor" centered along the route of the pipeline. Sections, Townships, and Ranges within the evaluation corridor are presented in the following table. Overview and route maps are also included for your review.

Table 1
Little Missouri Lateral Pipeline Location

Township	Range	Sections within the Evaluation Corridor
149 North	98 West	19, 29-32
149 North	99 West	7, 8, 15-22, 25-28, 34-36
149 North	100 West	1, 2, 11-13

The purpose of this letter is to provide notification of the proposed Project and to solicit comments that will assist in the regulatory process. The Project is within the jurisdiction of the North Dakota Public Service Commission (NDPSC) and copies of correspondence received in response to this letter will be included in ONEOK's application for a Corridor Certificate and Route Permit, which will be filed with the NDPSC later this year.

ONEOK, Inc.
100 West Fifth Street
Tulsa, OK 74103
www.oneok.com

October 9, 2018
Mr. John Paczkowski

Merjent, Inc. (Merjent) has been contracted by ONEOK to assist with the environmental review of the Project areas, completion of regulatory applications, and consultations with other agencies. Please identify any specific persons within your organization that should be contacted or included in future Project-related communications.

We appreciate your assistance with this request and look forward to your timely review and comments on this Project. Should you have any questions or require additional information, please contact Maddy Krumwiede of Merjent at 612-924-3973 or mkrumwiede@merjent.com, or myself at 918-595-1783 or Edwin.Zedaker@oneok.com.

Sincerely,



Edwin Zedaker
Environmental Engineer
ONEOK, Inc.

Enclosures: Project Overview Maps

Cc: Maddy Krumwiede, Merjent

Lucas Bicknell

From: Lucas Bicknell
Sent: Friday, December 14, 2018 2:52 PM
To: 'jpaczkowski@nd.gov'
Cc: Maddy Krumwiede; Paul Hartzheim (phartzheim@merjent.com); Eddie Zedaker (Edwin.Zedaker@oneok.com)
Subject: Follow-Up Email: ONEOK Bakken Pipeline Little Missouri Lateral Project Notification and Request for Review
Attachments: ONEOK_Little Missouri Lateral_NDSWC Consult (letter)_10092018.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Dear Mr. Paczkowski,

ONEOK Bakken Pipeline, L.L.C. (ONEOK) submitted a consultation request to you on October 10, 2018, to provide notification of ONEOK's proposed Little Missouri Lateral Pipeline Project and to solicit comments that will assist in the regulatory process. As we have not received a response, Merjent is following up on behalf of ONEOK to ensure you received the notification and have had the opportunity to respond. Attached is a copy of the original notification letter for your reference.

The Project is within the jurisdiction of the North Dakota Public Service Commission (NDPSC) and copies of correspondence received in response to this notification will be included in ONEOK's application for a Corridor Certificate and Route Permit, which will be filed with the NDPSC later this year.

We appreciate your review and look forward to your response. If you have any questions or need any additional information, please contact me via email or phone or Eddie Zedaker of ONEOK at Edwin.zedaker@oneok.com or 918-595-1783.

Kind regards,
Lucas Bicknell

merjent

Lucas Bicknell

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800 Washington Avenue N.
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Minneapolis, MN 55401

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612.466.2412 direct
612.746.3679 fax

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North Dakota Department of Trust Lands

School Trust Lands

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Lucas Bicknell

From: Graber, Kayla M. <kgraber@nd.gov>
Sent: Friday, October 19, 2018 12:15 PM
To: Maddy Krumwiede; Lucas Bicknell; Paul Hartzheim
Cc: 'Edwin.Zedaker@oneok.com'
Subject: RE: ONEOK: Little Missouri Lateral Project Notification
Attachments: 149-99-16MCK.PDF

Follow Up Flag: Follow up
Flag Status: Flagged

Good afternoon,

It does not appear that surface managed by NDDTL will be impacted with this proposed project. A rough map of NDDTL's infrastructure corridors has been attached for the section where a small portion of the 1 mile buffer radius crossed the surface. Any proposed projects crossing NDDTL managed surface would need to apply for a Rights of Way and would be subject to review and approval by the Board of University and School Lands.

Any request for review and comment for NDDTL managed mineral property can be forwarded to Drew Combs (701-328-1909 or drew.combs@nd.gov).

Any questions and future review of NDDTL surface managed requests can be forwarded to me, my information is below.

Thank you,

Kayla Graber
Land Management Specialist
North Dakota Department of Trust Lands
1707 North 9th St.
Bismarck, ND 58501

Phone: (701) 328-1916
Email: kgraber@nd.gov
Web: https://land.nd.gov

***Note**: You can apply for a ROW online or track the real time status and contact information for a right-of-way application anytime at https://land.nd.gov/SurfaceROW/RightOfWay using either the ROW number or by entering at least the first three letters of a company name.*

From: Stegmiller, Joseph H.
Sent: Wednesday, October 10, 2018 12:58 PM
To: Graber, Kayla M. <kgraber@nd.gov>
Subject: FW: ONEOK: Little Missouri Lateral Project Notification

Joseph H. Stegmiller
Natural Resources Professional
North Dakota Department of Trust Lands
1707 N 9th Street
Bismarck ND 58506-5523

PH: (701)328-1912

DEPARTMENT OF NDTRUST LANDS

From: Paul Hartzheim [mailto:phartzheim@merjent.com]
Sent: Wednesday, October 10, 2018 12:57 PM
To: Stegmiller, Joseph H. <jstegmiller@nd.gov>
Cc: Maddy Krumwiede <mkrumwiede@merjent.com>; Lucas Bicknell <lbicknell@merjent.com>; Zedaker, Edwin F. <Edwin.Zedaker@oneok.com>; Paul Hartzheim <phartzheim@merjent.com>
Subject: ONEOK: Little Missouri Lateral Project Notification

An attachment has been removed from this message in accordance with the State of North Dakota Information Technology Department's Email Service Level Agreement (https://www.nd.gov/itd/services/email/email-service-level-agreement). The attachment is NOT recoverable.

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Mr. Stegmiller,

On behalf of ONEOK Bakken Pipeline, L.L.C. (ONEOK), Merjent, Inc. is providing the attached project notification package requesting comments on ONEOK's proposed Little Missouri Lateral Project (Project). The Project consists of approximately 11 miles of new 12-inch diameter pipeline in McKenzie County, North Dakota. Project overview maps are included in the attached submittal and shapefiles of the proposed route and a one-mile buffer are also included for your convenience.

If you have any questions or need any additional information to assist in your review of this Project, feel free to contact me via email or phone. Thanks, and we look forward to your response.

Sincerely,

Paul Hartzheim, M.S.

merjent

Paul Hartzheim

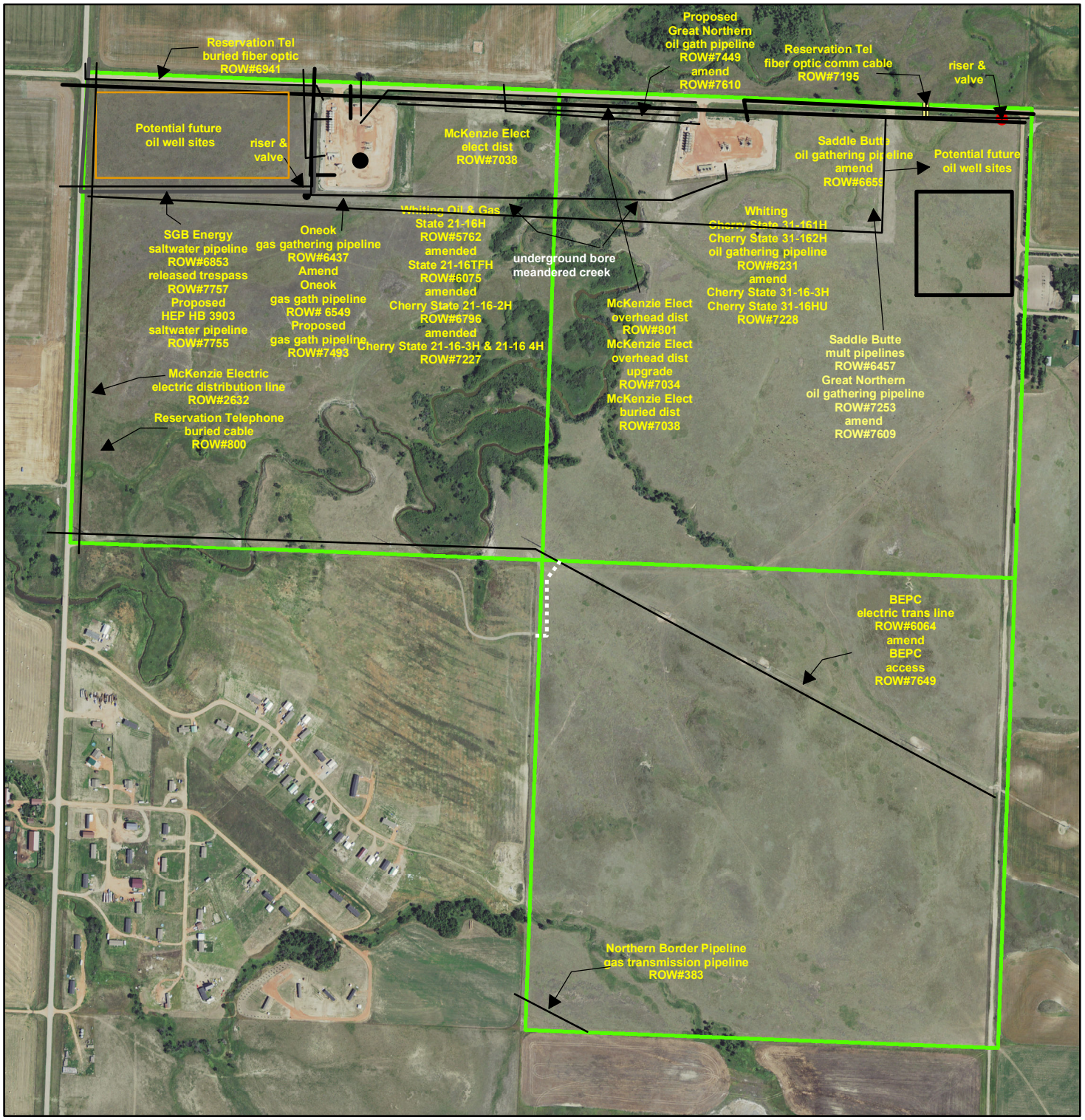
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612.845.1641 cell
612.746.3679 fax
phartzheim@merjent.com

16-T149-R99

McKenzie County

Township: Unorganized



N
W E
S

Map Datum is WGS 84 (same as NAD 83)

0 0.5 1 Miles

Printed: 2/10/2011 -- ND State Land Dept.

October 10, 2018

Delivered via email to:
Mr. Joseph Stegmiller, Natural Resources Professional
North Dakota Department of Trust Lands – Surface Management Division
JStegmiller@nd.gov

RE: ONEOK Bakken Pipeline, L.L.C. – Little Missouri Lateral Project
Project Notification and Request for Review

Dear Mr. Stegmiller,

ONEOK Bakken Pipeline, L.L.C. (ONEOK) proposes to construct the Little Missouri Lateral Project (Project) consisting of approximately 11 miles of 12-inch-diameter new steel pipeline to transport natural gas liquids. The Project originates at the Targa Little Missouri Plant and terminates at an interconnection with ONEOK's planned Demicks Lake Pipeline, all located within in McKenzie County, North Dakota (see enclosed Project overview maps). Construction will begin as early as February 2019 and will be completed in approximately 3-4 months. After construction is complete, restoration/reclamation of the right-of-way will continue as necessary.

A detailed routing analysis has been performed on this Project taking into consideration a significant amount of information to avoid and minimize impacts of known and suspected resources. The majority of the route is co-located with existing linear utilities.

ONEOK respectfully submits this project information to the North Dakota Department of Trust Lands - Surface Management Division to review a one-mile-wide "evaluation corridor" centered along the route of the pipeline to determine if Surface/School Trust lands are present. Sections, Townships, and Ranges within the evaluation corridor are presented in the following table. Overview and route maps are also included for your review.

Table 1
Little Missouri Lateral Pipeline Location

Township	Range	Sections within the Evaluation Corridor
149 North	98 West	19, 29-32
149 North	99 West	7, 8, 15-22, 25-28, 34-36
149 North	100 West	1, 2, 11-13

The purpose of this letter is to provide notification of the proposed Project and to solicit comments that will assist in the regulatory process. The Project is within the jurisdiction of the North Dakota Public Service Commission (NDPSC) and copies of correspondence received in response to this letter will be included in ONEOK's application for a Corridor Certificate and Route Permit, which will be filed with the NDPSC later this year.

ONEOK, Inc.
100 West Fifth Street
Tulsa, OK 74103
www.oneok.com

October 10, 2018
Mr. Joseph Stegmiller

Merjent, Inc. (Merjent) has been contracted by ONEOK to assist with the environmental review of the Project areas, completion of regulatory applications, and consultations with other agencies. Please identify any specific persons within your organization that should be contacted or included in future Project-related communications.

We appreciate your assistance with this request and look forward to your timely review and comments on this Project. Should you have any questions or require additional information, please contact Maddy Krumwiede of Merjent at 612-924-3973 or mkrumwiede@merjent.com, or myself at 918-595-1783 or Edwin.Zedaker@oneok.com.

Sincerely,



Eddie Zedaker
Environmental Engineer
ONEOK, Inc.

Enclosures: Project Overview Maps

cc: Maddy Krumwiede, Merjent

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North Dakota Department of Trust Lands

Mineral Trust Lands

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Lucas Bicknell

From: Nagel, Allie C. <allie.nagel@nd.gov>
Sent: Wednesday, December 26, 2018 9:31 AM
To: Lucas Bicknell
Cc: Maddy Krumwiede; Paul Hartzheim; Eddie Zedaker (Edwin.Zedaker@oneok.com)
Subject: RE: Follow-Up Email: ONEOK Bakken Pipeline Little Missouri Lateral Project Notification and Request for Review

Hi Lucas,

I apologize for the delay, I try and get these reviews completed right away. I must have missed this or possibly deliver got to my old email that is no longer receiving mail. Either way, again I apologize got the inconvenience.

We agree that the data provided represents the approximate location of the Little Missouri Lateral Pipeline Project Corridor with relation to the location of mineral interests managed by this office, for use in a filing with the PSC in the state of North Dakota.

Please feel free to contact me if you have any questions.

Respectfully,

Allisen Nagel, RPL
Land Professional
ND Department of Trust Lands
701.328.1952
allie.nagel@nd.gov

From: Lucas Bicknell [mailto:lbicknell@merjent.com]
Sent: Friday, December 14, 2018 2:52 PM
To: Nagel, Allie C. <allie.nagel@nd.gov>
Cc: Maddy Krumwiede <mkrumwiede@merjent.com>; Paul Hartzheim <phartzheim@merjent.com>; Eddie Zedaker (Edwin.Zedaker@oneok.com) <Edwin.Zedaker@oneok.com>
Subject: Follow-Up Email: ONEOK Bakken Pipeline Little Missouri Lateral Project Notification and Request for Review

CAUTION: This email originated from an outside source. Do not click links or open attachments unless you know they are safe.

Dear Ms. Nagel,

ONEOK Bakken Pipeline, L.L.C. (ONEOK) submitted a consultation request to you on October 10, 2018, to provide notification of ONEOK's proposed Little Missouri Lateral Pipeline Project and to solicit comments that will assist in the regulatory process. As we have not received a response, Merjent is following up on behalf of ONEOK to ensure you received the notification and have had the opportunity to respond. Attached is a copy of the original notification letter for your reference.

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We appreciate your review and look forward to your response. If you have any questions or need any additional information, please contact me via email or phone or Eddie Zedaker of ONEOK at Edwin.zedaker@oneok.com or 918-595-1783.

Kind regards,
Lucas Bicknell

merjent

Lucas Bicknell

TractorWorks Building
800 Washington Avenue N.
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Minneapolis, MN 55401

612.746.3660 main
612.466.2412 direct
612.746.3679 fax

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October 10, 2018

Delivered via email to:
Ms. Allisen Nagel, Land Professional
North Dakota Department of Trust Lands – Minerals Management Division
DtlMinerals@nd.gov

RE: ONEOK Bakken Pipeline, L.L.C. – Little Missouri Lateral Pipeline Project
Project Notification and Request for Review

Dear Ms. Nagel,

ONEOK Bakken Pipeline, L.L.C. (ONEOK) proposes to construct the Little Missouri Lateral Project (Project) consisting of approximately 11 miles of 12-inch-diameter new steel pipeline to transport natural gas liquids. The Project originates at the Targa Little Missouri Plant and terminates at an interconnection with ONEOK's planned Demicks Lake Pipeline, all located within in McKenzie County, North Dakota (see enclosed Project overview maps). Construction will begin as early as February 2019 and will be completed in approximately 3-4 months. After construction is complete, restoration/reclamation of the right-of-way will continue as necessary.

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ONEOK respectfully submits this Project information to the North Dakota Department of Trust Lands – Mineral Management Division to review a one-mile-wide "evaluation corridor" centered along the route of the pipeline. Sections, Townships, and Ranges within the evaluation corridor are presented in the following table. Overview and route maps are also included for your review.

Table 1
Little Missouri Lateral Pipeline Location

Township	Range	Sections within the Evaluation Corridor
149 North	98 West	19, 29-32
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ONEOK, Inc.
100 West Fifth Street
Tulsa, OK 74103
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Sincerely,



Eddie Zedaker
Environmental Engineer
ONEOK, Inc.

Enclosures: Project Overview Maps

cc: Maddy Krumwiede, Merjent

Lucas Bicknell

From: Lucas Bicknell
Sent: Friday, December 14, 2018 2:52 PM
To: Nagel, Allie C.
Cc: Maddy Krumwiede; Paul Hartzheim (phartzheim@merjent.com); Eddie Zedaker (Edwin.Zedaker@oneok.com)
Subject: Follow-Up Email: ONEOK Bakken Pipeline Little Missouri Lateral Project Notification and Request for Review
Attachments: ONEOK_Little Missouri Lateral_NDDTMineralLands_Consult (email)_10102018.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Dear Ms. Nagel,

ONEOK Bakken Pipeline, L.L.C. (ONEOK) submitted a consultation request to you on October 10, 2018, to provide notification of ONEOK's proposed Little Missouri Lateral Pipeline Project and to solicit comments that will assist in the regulatory process. As we have not received a response, Merjent is following up on behalf of ONEOK to ensure you received the notification and have had the opportunity to respond. Attached is a copy of the original notification letter for your reference.

The Project is within the jurisdiction of the North Dakota Public Service Commission (NDPSC) and copies of correspondence received in response to this notification will be included in ONEOK's application for a Corridor Certificate and Route Permit, which will be filed with the NDPSC later this year.

We appreciate your review and look forward to your response. If you have any questions or need any additional information, please contact me via email or phone or Eddie Zedaker of ONEOK at Edwin.zedaker@oneok.com or 918-595-1783.

Kind regards,
Lucas Bicknell

merjent

Lucas Bicknell

TractorWorks Building
800 Washington Avenue N.
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Minneapolis, MN 55401

612.746.3660 main
612.466.2412 direct
612.746.3679 fax

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lbicknell@merjent.com

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Western Area Water Supply Authority

Response Pending

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October 10, 2018

Mr. Mark Owan, Chair
Western Area Water Supply Authority
1117 East Broadway
P.O. Box 2343
Williston, ND 58802

RE: ONEOK Bakken Pipeline, L.L.C. – Little Missouri Lateral Pipeline Project
Project Notification and Request for Review

Dear Mr. Owan,

ONEOK Bakken Pipeline, L.L.C. (ONEOK) proposes to construct the Little Missouri Lateral Project (Project) consisting of approximately 11 miles of 12-inch-diameter new steel pipeline to transport natural gas liquids. The Project originates at the Targa Little Missouri Plant and terminates at an interconnection with ONEOK's planned Demicks Lake Pipeline, all located within in McKenzie County, North Dakota (see enclosed Project overview maps). Construction will begin as early as February 2019 and will be completed in approximately 3-4 months. After construction is complete, restoration/reclamation of the right-of-way will continue as necessary.

A detailed routing analysis has been performed on this Project taking into consideration a significant amount of information to avoid and minimize impacts of known and suspected resources. The majority of the route is co-located with existing linear utilities.

It is our understanding that the Western Area Water Supply Authority (WAWSA) facilitates a regional approach to water needs of rural residents, communities, and industries in the region, and may also have relevant information regarding rural water supply systems and projects. ONEOK respectfully submits this project information to the WAWSA to review a one-mile-wide "evaluation corridor" centered along the route of the pipeline. The Sections, Townships, and Ranges within the evaluation corridor are presented in the following table. Overview and route maps are also included for your review.

Table 1
Little Missouri Lateral Pipeline Location

Township	Range	Sections within the Evaluation Corridor
149 North	98 West	19, 29-32
149 North	99 West	7, 8, 15-22, 25-28, 34-36
149 North	100 West	1, 2, 11-13

The purpose of this letter is to provide notification of the proposed Project and to solicit comments that will assist in the regulatory process. The Project is within the jurisdiction of the North Dakota Public Service Commission

ONEOK, Inc.
100 West Fifth Street
Tulsa, OK 74103
www.oneok.com

(NDPSC) and copies of correspondence received in response to this letter will be included in ONEOK's application for a Corridor Certificate and Route Permit, which will be filed with the NDPSC later this year.

Merjent, Inc. (Merjent) has been contracted by ONEOK to assist with the environmental review of the Project areas, completion of regulatory applications, and consultations with other agencies. Please identify any specific persons within your organization that should be contacted or included in future Project-related communications.

We appreciate your assistance with this request and look forward to your timely review and comments on this Project. Should you have any questions or require additional information, please contact Maddy Krumwiede of Merjent at 612-924-3973 or mkrumwiede@merjent.com, or myself at 918-595-1783 or Edwin.Zedaker@oneok.com.

Sincerely,



Edwin Zedaker
Environmental Engineer
ONEOK, Inc.

Enclosures: Project Overview Maps

Cc: Via email at waws@wawsp.com
Maddy Krumwiede, Merjent

Lucas Bicknell

From: Lucas Bicknell
Sent: Friday, December 14, 2018 2:52 PM
To: 'WAWS@wawsp.com'
Cc: Maddy Krumwiede; Paul Hartzheim (phartzheim@merjent.com); Eddie Zedaker (Edwin.Zedaker@oneok.com)
Subject: Follow-Up Email: ONEOK Bakken Pipeline Little Missouri Lateral Project Notification and Request for Review
Attachments: ONEOK_Little Missouri Lateral_WAWSA Consult (letter)_10102018.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Dear Mr. Owan,

ONEOK Bakken Pipeline, L.L.C. (ONEOK) submitted a consultation request to you on October 10, 2018, to provide notification of ONEOK's proposed Little Missouri Lateral Pipeline Project and to solicit comments that will assist in the regulatory process. As we have not received a response, Merjent is following up on behalf of ONEOK to ensure you received the notification and have had the opportunity to respond. Attached is a copy of the original notification letter for your reference.

The Project is within the jurisdiction of the North Dakota Public Service Commission (NDPSC) and copies of correspondence received in response to this notification will be included in ONEOK's application for a Corridor Certificate and Route Permit, which will be filed with the NDPSC later this year.

We appreciate your review and look forward to your response. If you have any questions or need any additional information, please contact me via email or phone or Eddie Zedaker of ONEOK at Edwin.zedaker@oneok.com or 918-595-1783.

Kind regards,
Lucas Bicknell

merjent

Lucas Bicknell

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McKenzie County Board of Commissions

Response Pending

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October 9, 2018

Douglas Nordby, Director
McKenzie County Board of Commissioners
P.O. Box 1287
Watford City, ND 58854

RE: ONEOK Bakken Pipeline, L.L.C. – Little Missouri Lateral Pipeline Project
Project Notification and Request for Review

Dear Mr. Nordby,

ONEOK Bakken Pipeline, L.L.C. (ONEOK) proposes to construct the Little Missouri Lateral Project (Project) consisting of approximately 11 miles of 12-inch-diameter new steel pipeline to transport natural gas liquids. The Project originates at the Targa Little Missouri Plant and terminates at an interconnection with ONEOK's planned Demicks Lake Pipeline, all located within in McKenzie County, North Dakota (see enclosed Project overview maps). Construction will begin as early as February 2019 and will be completed in approximately 3-4 months. After construction is complete, restoration/reclamation of the right-of-way will continue as necessary.

A detailed routing analysis has been performed on this Project taking into consideration a significant amount of information to avoid and minimize impacts of known and suspected resources. The majority of the route is co-located with existing linear utilities.

ONEOK respectfully submits this Project information to the McKenzie County Board of Commissioners to review a one-mile-wide "evaluation corridor" centered along the route of the pipeline. Sections, Townships, and Ranges within the evaluation corridor are presented in the following table. Overview and route maps are also included for your review.

Table 1
Little Missouri Lateral Pipeline Location

Township	Range	Sections within the Evaluation Corridor
149 North	98 West	19, 29-32
149 North	99 West	7, 8, 15-22, 25-28, 34-36
149 North	100 West	1, 2, 11-13

The purpose of this letter is to provide notification of the proposed Project and to solicit comments that will assist in the regulatory process. The Project is within the jurisdiction of the North Dakota Public Service Commission (NDPSC) and copies of correspondence received in response to this letter will be included in ONEOK's application for a Corridor Certificate and Route Permit, which will be filed with the NDPSC later this year.

ONEOK, Inc.
100 West Fifth Street
Tulsa, OK 74103
www.oneok.com

To facilitate our review, we are requesting the following information be provided:

- Any local ordinances or other resources under your jurisdiction that are applicable to the Project; and,
- Any permits issued through your office which may be applicable to the Project, and a summary of the permit process and anticipated timeframes.

Merjent, Inc. (Merjent) has been contracted by ONEOK to assist with the environmental review of the Project areas, completion of regulatory applications, and consultations with other agencies. ONEOK has submitted similar consultation letters to the McKenzie County Water Resource District and Weed Control Office. Please identify any specific persons within your organization that should be contacted or included in future Project-related communications.

We appreciate your assistance with this request and look forward to your timely review and comments on this Project. Should you have any questions or require additional information, please contact Maddy Krumwiede of Merjent at 612-924-3973 or mkrumwiede@merjent.com, or myself at 918-595-1783 or Edwin.Zedaker@oneok.com.

Sincerely,



Edwin Zedaker
Environmental Engineer
ONEOK, Inc.

Enclosures: Project Overview Maps

Cc: Maddy Krumwiede, Merjent

Lucas Bicknell

From: Lucas Bicknell
Sent: Thursday, December 20, 2018 2:22 PM
To: 'Jim Talbert'; Erica Johnsrud
Cc: Maddy Krumwiede; Paul Hartzheim; Eddie Zedaker (Edwin.Zedaker@oneok.com)
Subject: RE: Follow-Up Email: ONEOK Bakken Pipeline Little Missouri Lateral Project Notification and Request for Review
Attachments: ONEOK_Little Missouri Lateral_McKenz Co_Comm_Consult (letter)_10092018.pdf

Hello Jim,

Attached is the notification letter, which includes the following:

- Project description,
- Pipeline size and length,
- Estimated project schedule,
- Townships, ranges, and sections crossed by the proposed corridor,
- Information requested from the McKenzie County Board of Commissioners, and
- Project overview, topographic, and aerial maps.

There are no aboveground structures associated with this project, as it originates at the existing Targa Gas Processing Plant and will tie-in to ONEOK's planned Demicks Lake Pipeline.

Please let me know if you have any additional questions.

Thank you,
Lucas

merjent

	Lucas Bicknell
TractorWorks Building	612.746.3660 main
800 Washington Avenue N.	612.446.2412 direct
Suite 315	612.999.8142 cell
Minneapolis, MN 55401	612.746.3679 fax

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From: Jim Talbert <jtalbert@co.mckenzie.nd.us>
Sent: Monday, December 17, 2018 10:44 AM
To: Erica Johnsrud <ejohnsrud@co.mckenzie.nd.us>; Lucas Bicknell <lbicknell@merjent.com>
Cc: Maddy Krumwiede <mkrumwiede@merjent.com>; Paul Hartzheim <phartzheim@merjent.com>; Eddie Zedaker

(Edwin.Zedaker@oneok.com) <Edwin.Zedaker@oneok.com>
Subject: RE: Follow-Up Email: ONEOK Bakken Pipeline Little Missouri Lateral Project Notification and Request for Review

Lucas,
Will you send me an electronic file describing the pipeline and exhibits showing the proposed size and location of the pipeline. Will there be any surface structures associated with this pipeline.
Jim

Jim Talbert
McKenzie County
Planning and Zoning Director
201 5th Street N.W. Suite 699
Watford City, ND 58854
Ph: (701) 444-7423
Email: jtalbert@co.mckenzie.nd.us

From: Erica Johnsrud
Sent: Friday, December 14, 2018 2:56 PM
To: Lucas Bicknell; Jim Talbert
Cc: Maddy Krumwiede; Paul Hartzheim; Eddie Zedaker (Edwin.Zedaker@oneok.com)
Subject: RE: Follow-Up Email: ONEOK Bakken Pipeline Little Missouri Lateral Project Notification and Request for Review

Lucas,

I'm copying Jim Talbert on this email as Jim keeps tabs on the public comments on these types of projects.

Please let me know if you need anything else from me.

Erica

Erica Johnsrud
McKenzie County Auditor/Treasurer
201 5th St NW Suite 543
Watford City, ND 58854
(701) 444-3616 Ext. 3 – Telephone
(701) 444-4113 – Fax
www.mckenziecounty.net

From: Lucas Bicknell [mailto:lbicknell@merjent.com]
Sent: Friday, December 14, 2018 2:53 PM
To: Erica Johnsrud
Cc: Maddy Krumwiede; Paul Hartzheim; Eddie Zedaker (Edwin.Zedaker@oneok.com)
Subject: Follow-Up Email: ONEOK Bakken Pipeline Little Missouri Lateral Project Notification and Request for Review

Dear Ms. Johnsrud,

ONEOK Bakken Pipeline, L.L.C. (ONEOK) submitted a consultation request to your office, addressed to Mr. Doug Nordby, on October 10, 2018, to provide notification of ONEOK's proposed Little Missouri Lateral Pipeline Project and to solicit comments that will assist in the regulatory process. As we have not received a response, Merjent is following up on behalf of ONEOK to ensure you received the notification and have had the opportunity to respond. Attached is a copy of the original notification letter for your reference.

The Project is within the jurisdiction of the North Dakota Public Service Commission (NDPSC) and copies of correspondence received in response to this notification will be included in ONEOK's application for a Corridor Certificate and Route Permit, which will be filed with the NDPSC later this year.

We appreciate your review and look forward to your response. If you have any questions or need any additional information, please contact me via email or phone or Eddie Zedaker of ONEOK at Edwin.zedaker@oneok.com or 918-595-1783.

Kind regards,
Lucas Bicknell

merjent

Lucas Bicknell

TractorWorks Building
800 Washington Avenue N.
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612.466.2412 direct
612.746.3679 fax

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McKenzie County Water Resource District

Response Pending

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Lucas Bicknell

From: Lucas Bicknell
Sent: Friday, December 14, 2018 2:53 PM
To: 'jshaffer@co.mckenzie.nd.us'
Cc: Maddy Krumwiede; Paul Hartzheim (phartzheim@merjent.com); Eddie Zedaker (Edwin.Zedaker@oneok.com)
Subject: Follow-Up Email: ONEOK Bakken Pipeline Little Missouri Lateral Project Notification and Request for Review
Attachments: ONEOK_Little Missouri Lateral_McKenz Co_WRB_Consult (letter)_10092018.pdf

Tracking:

Recipient	Delivery	Read
'jshaffer@co.mckenzie.nd.us'		
Maddy Krumwiede	Delivered: 12/14/2018 2:54 PM	Read: 12/14/2018 7:30 PM
Paul Hartzheim (phartzheim@merjent.com)	Delivered: 12/14/2018 2:54 PM	Read: 12/15/2018 8:53 AM
Eddie Zedaker (Edwin.Zedaker@oneok.com)		

Dear Mr. Shaffer,

ONEOK Bakken Pipeline, L.L.C. (ONEOK) submitted a consultation request to you on October 10, 2018, to provide notification of ONEOK's proposed Little Missouri Lateral Pipeline Project and to solicit comments that will assist in the regulatory process. As we have not received a response, Merjent is following up on behalf of ONEOK to ensure you received the notification and have had the opportunity to respond. Attached is a copy of the original notification letter for your reference.

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We appreciate your review and look forward to your response. If you have any questions or need any additional information, please let me know.

Kind regards,
Lucas Bicknell

merjent

Lucas Bicknell

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Minneapolis, MN 55401

612.746.3660 main
612.466.2412 direct
612.746.3679 fax

www.merjent.com
lbicknell@merjent.com

October 9, 2018

Jeff Shaffer, Director
McKenzie County Water Resource District
201 5th St NW, Suite 1456
Watford City, ND 58854

RE: ONEOK Bakken Pipeline, L.L.C. – Little Missouri Lateral Pipeline Project
Project Notification and Request for Review

Dear Mr. Shaffer,

ONEOK Bakken Pipeline, L.L.C. (ONEOK) proposes to construct the Little Missouri Lateral Project (Project) consisting of approximately 11 miles of 12-inch-diameter new steel pipeline to transport natural gas liquids. The Project originates at the Targa Little Missouri Plant and terminates at an interconnection with ONEOK's planned Demicks Lake Pipeline, all located within in McKenzie County, North Dakota (see enclosed Project overview maps). Construction will begin as early as February 2019 and will be completed in approximately 3-4 months. After construction is complete, restoration/reclamation of the right-of-way will continue as necessary.

A detailed routing analysis has been performed on this Project taking into consideration a significant amount of information to avoid and minimize impacts of known and suspected resources. The majority of the route is co-located with existing linear utilities.

ONEOK respectfully submits this Project information to the McKenzie County Water Resource District to review a one-mile-wide "evaluation corridor" centered along the route of the pipeline. Sections, Townships, and Ranges within the evaluation corridor are presented in the following table. Overview and route maps are also included for your review.

Table 1
Little Missouri Lateral Pipeline Location

Township	Range	Sections within the Evaluation Corridor
149 North	98 West	19, 29-32
149 North	99 West	7, 8, 15-22, 25-28, 34-36
149 North	100 West	1, 2, 11-13

The purpose of this letter is to provide notification of the proposed Project and to solicit comments that will assist in the regulatory process. The Project is within the jurisdiction of the North Dakota Public Service Commission (NDPSC) and copies of correspondence received in response to this letter will be included in ONEOK's application for a Corridor Certificate and Route Permit, which will be filed with the NDPSC later this year.

ONEOK, Inc.
100 West Fifth Street
Tulsa, OK 74103
www.oneok.com

October 9, 2018
Mr. Jeff Shaffer

To facilitate our review, we are requesting the following information be provided:

- Locations of any county-regulated drains, ditches, and/or other drainage features;
- Any special requirements, restrictions, or specifications regarding constructing pipelines across or under county-regulated drainage features;
- Any local ordinances related to drainage; and,
- Any permits issued through your office which may be applicable to the Project, and a summary of the permit process and anticipated timeframes.

Merjent, Inc. (Merjent) has been contracted by ONEOK to assist with the environmental review of the Project areas, completion of regulatory applications, and consultations with other agencies. ONEOK has submitted similar consultation letters to the McKenzie County Weed Control Office and Board of Commissioners. Please identify any specific persons within your organization that should be contacted or included in future Project-related communications.

We appreciate your assistance with this request and look forward to your timely review and comments on this Project. Should you have any questions or require additional information, please contact Maddy Krumwiede of Merjent at 612-924-3973 or mkrumwiede@merjent.com, or myself at 918-595-1783 or Edwin.Zedaker@oneok.com.

Sincerely,

Edwin Zedaker
Environmental Engineer
ONEOK, Inc.

Enclosures: Project Overview Maps

Cc: Maddy Krumwiede, Merjent

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McKenzie County Weed Control Board

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Lucas Bicknell

To: Paul Hartzheim; Maddy Krumwiede
Subject: RE: ONEOK: Little Missouri Lateral Project Notification

From: Amber Higgins <mcweed@restel.net>
Sent: Wednesday, October 10, 2018 3:06 PM
To: Paul Hartzheim <phartzheim@merjent.com>
Subject: RE: ONEOK: Little Missouri Lateral Project Notification

Paul-

Good afternoon, if you could fill out the attachment we can get you the approved Weed Plan for Weed Control. If you have any questions feel free to contact me.

Amber Higgins#
P fNhq}lh#Frxqw|#Z hhg#R iilfhu#
Skrqh0#:340;7507464#
Id{#0:340;757:64#

From: Paul Hartzheim [mailto:phartzheim@merjent.com]
Sent: Wednesday, October 10, 2018 12:55 PM
To: Andrea Higgins
Cc: Maddy Krumwiede; Lucas Bicknell; Zedaker, Edwin F.; Paul Hartzheim
Subject: ONEOK: Little Missouri Lateral Project Notification

Ms. Higgins,

On behalf of ONEOK Bakken Pipeline, L.L.C. (ONEOK), Merjent, Inc. is providing the attached project notification package requesting comments on ONEOK's proposed Little Missouri Lateral Project (Project). The Project consists of approximately 11 miles of new 12-inch diameter pipeline in McKenzie County, North Dakota. Project overview maps are included in the attached submittal and shapefiles of the proposed route and a one-mile buffer are also included for your convenience.

If you have any questions or need any additional information to assist in your review of this Project, feel free to contact me via email or phone. Thanks, and we look forward to your response.

Sincerely,



Paul Hartzheim, M.S.

merjent

Paul Hartzheim

TractorWorks Building	612.746.3660 main
800 Washington Avenue N.	612.746.1618 direct
Suite 315	612.845.1641 cell
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October 10, 2018

Ms. Amber Higgins
McKenzie County Weed Board
mcweed@restel.net

RE: ONEOK Bakken Pipeline, L.L.C. – Little Missouri Lateral Pipeline Project
Project Notification and Request for Review

Dear Ms. Higgins,

ONEOK Bakken Pipeline, L.L.C. (ONEOK) proposes to construct the Little Missouri Lateral Project (Project) consisting of approximately 11 miles of 12-inch-diameter new steel pipeline to transport natural gas liquids. The Project originates at the Targa Little Missouri Plant and terminates at an interconnection with ONEOK's planned Demicks Lake Pipeline, all located within in McKenzie County, North Dakota (see enclosed Project overview maps). Construction will begin as early as February 2019 and will be completed in approximately 3-4 months. After construction is complete, restoration/reclamation of the right-of-way will continue as necessary.

A detailed routing analysis has been performed on this Project taking into consideration a significant amount of information to avoid and minimize impacts of known and suspected resources. The majority of the route is co-located with existing linear utilities.

ONEOK respectfully submits this Project information to the McKenzie County Weed Control Board to review a one-mile-wide "evaluation corridor" centered along the route of the pipeline. Sections, Townships, and Ranges within the evaluation corridor are presented in the following table. Overview and route maps are also included for your review.

Table 1
Little Missouri Lateral Pipeline Location

Township	Range	Sections within the Evaluation Corridor
149 North	98 West	19, 29-32
149 North	99 West	7, 8, 15-22, 25-28, 34-36
149 North	100 West	1, 2, 11-13

Based on a review of the North Dakota Century Code 4.1-47-02 and North Dakota Department of Agriculture (NDDA) guidance documents, the following noxious weeds are currently listed state-wide:

- Absinth wormwood (*Artemisia absinthium*)
- Canadian thistle (*Cirsium arvense*)
- Diffuse knapweed (*Centaurea diffusa*)
- Leafy spurge (*Euphorbia esula*)
- Musk thistle (*Carduus nutans*)
- Purple loosestrife (*Lythrum salicaria*)
- Russian knapweed (*Acroptilon repens*)
- Spotted knapweed (*Centaurea masculosa*)

ONEOK, Inc.
100 West Fifth Street
Tulsa, OK 74103
www.oneok.com\

- Yellow toadflax (*Linaria vulgaris*)
- Dalmation toadflax (*Linaria dalmatica*)
- Saltcedar (*Tamarix chinensis*)

In addition to the NDDA noxious weed and invasive species list, McKenzie County has designated the following five species as noxious weeds:

- Black henbane (*Hyoscyamus niger*)
- Common burdock (*Arctium minus*)
- Houndstongue (*Cynoglossum officinale*)
- Halogeton (*Halogeton glomeratus*)
- Baby's breath (*Gypsophila*)

To facilitate our environmental review, we are requesting the following information for the areas crossed that are within the 1-mile wide study area associated with the Project:

- Confirmation that the list of noxious weeds above is correct and current;
- Known locations of noxious and/or invasive weed species along the proposed route; and,
- Guidance and/or recommendations for weed control, pesticide use, and non-chemical treatment options.

As part of its environmental field surveys for the Project, ONEOK is conducting an inventory of noxious and invasive weeds and will develop a Noxious Weed Management Plan prior to construction. If your office has specific locational information on noxious/invasive weeds, please provide as a GIS shapefile, geographic coordinates (e.g., latitude/longitude), Public Land Survey System Section(s), or marked on a map.

As indicated above, the purpose of this letter is to provide notification of the proposed Project and to solicit comments that will assist in the regulatory process. The Project is within the jurisdiction of the North Dakota Public Service Commission (NDPSC) and copies of correspondence received in response to this letter will be included in ONEOK's application for a Corridor Certificate and Route Permit, which will be filed with the NDPSC later this year.

Merjent, Inc. (Merjent) has been contracted by ONEOK to assist with the environmental review of the Project areas, completion of regulatory applications, and consultations with other agencies. Please identify any specific persons within your organization that should be contacted or included in future Project-related communications.

We appreciate your assistance with this request and look forward to your timely review and comments on this Project. Should you have any questions or require additional information, please contact Maddy Krumwiede of Merjent at 612-927-3973 or mkrumwiede@merjent.com, or myself at 918-595-1783 or Edwin.Zedaker@oneok.com.

Sincerely,

Edwin Zedaker
Environmental Engineer
ONEOK, Inc.

Enclosures: Project Overview Maps

Cc: Maddy Krumwiede, Merjent

Exhibit E

Landowner Waivers

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ONEOK

RE: ONEOK Bakken NGL, L.L.C.-Little Missouri Lateral
Project Notification and Request for Review

Dear MTM Enterprises and Services, LLC.,

Please review the attached site map noting the proposed location of an underground pipeline and associated facilities that are included in the Little Missouri Lateral NGL Pipeline application the ONEOK Bakken NGL, L.L.C (ONEOK) intends to file the North Dakota Public Service Commission. The Project involves the construction of approximately 13 miles of 12-inch-diameter steel pipeline in McKenzie County, North Dakota.

The attached site map indicates that the Project will be located within 500 feet of your residence or business. By signing below you are confirming that you have no objection to the Project, or the future operation and maintenance of the pipeline. Your cordial cooperation in this manner is greatly appreciated.

Respectfully,

Blake Bond
Right-of-Way Agent
ONEOK Bakken NGL, L.L.C

Matt Fogarty, Registered Agent

1-15-19
Date

Two occupied structures near milepost 6.7 - see Exhibit B.2

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Exhibit F

Permit Table

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ONEOK Bakken Pipeline, L.L.C. - Little Missouri Lateral Project Environmental Permit Summary			
Agency	**Permit / Approval**	**Resource**	**Permit Status**
Federal Permits			
U.S. Army Corps of Engineers - Omaha District	Nationwide Permit (NWP) 12 (Utility Line Activities)	Waters of the U.S.	As currently designed, a Pre-Construction Notification will not be required (to be confirmed pending final project design).
State Permits			
North Dakota Public Service Commission	Certificate of Corridor Compatibility and Route Permit	Siting of Project Corridor / Route	Application submitted Feburary 2019.
State Historic Society of North Dakota (NDSHPO)	Cultural Resources Consultation (National Historic Preservation Act)	National Register of Historic Places - eligible cultural resources	Class III Cultural Resources Report was submitted to NDSHPO on Febuary 15, 2019. A response is pending.
North Dakota Department of Health (NDDH) - Division of Water Quality	General Permit for Temporary Dewatering / Hydrostatic Testing NDG07-0000	Waters of the State / Hydrostatic Discharge	Applicability to be determined pending finalization of the hydrostatic testing plan. If required, application to be submitted at least 30 days prior to discharge activities.
NDDH - Division of Water Quality	North Dakota Pollution Discharge Elimination System (NDPDES) General Stormwater Permit NDR10-0000	Waters of the State / Construction Stormwater	North Dakota recognizes federal Clean Water Act Section 402(l)(2), which exempts oil and natural gas projects from obtaining construction stormwater permit coverage. As such, ONEOK is not currently planning on securing this permit; however, ONEOK has developed a Stormwater Pollution Prevention Plan which will be utilized during construction activities.
NDDH - Division of Water Quality	Section 401 Water Quality Certification	Waters of the State - Water Quality	Concurrent with NWP 12; automatically granted for projects eligible for coverage under NWP 12.
North Dakota State Water Commission (NDSWC)	Temporary Water Permit	Waters of the State - Appropriation	ONEOK is currently reviewing its options for sourcing water for dust control, drilling mud, and hydrostatic testing. If surface or ground waters will be appropriated, ONEOK will submit an application for a Temporary Water Permit with NDSWC at least 2 weeks prior to appropriating water.
Local/County Permits			
McKenzie County Weed Board	Weed Management Plan	State- and county-listed noxious weeds	Project requires a Weed Management Plan be submitted to the County for approval. A draft Weed Management Plan has been developed and will be submitted to McKenzie County for review and approval in March 2019
McKenzie County Road Department / Engineer	Road Crossing Permits	Public Roads	To be obtained prior to construction

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Exhibit G

Project Plans

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G.1 Construction Mitigation and Restoration Plan



Little Missouri Lateral Project

CONSTRUCTION MITIGATION AND RESTORATION PLAN

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Prepared by:



January 2019

ONEOK LITTLE MISSOURI LATERAL PROJECT

CONSTRUCTION MITIGATION AND RESTORATION PLAN

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[1] Site-specific plans supersede any design presented in the typical details.

LIST OF ACRONYMS

ATWS	Additional Temporary Workspace
BMPs	Best Management Practices
CFR	Code of Federal Regulations
CMRP	Construction Mitigation and Restoration Plan
ECD	Temporary Erosion and Sediment Control Device
ETWS	Extra Temporary Workspace
HDD	Horizontal Directional Drill
LIDAR	Light Detection and Ranging
NPDES	National Pollutant Discharge Elimination System
ONEOK	ONEOK Bakken Pipeline, L.L.C.
Project	Little Missouri Lateral Pipeline Project
ROW	Right-of-Way
SPCC Plan	Spill Prevention, Control, and Countermeasure Plan or Spill Plan
TWS	Temporary Workspace

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INTRODUCTION

ONEOK Bakken Pipeline, L.L.C. (ONEOK) is committed to meeting or exceeding all applicable federal, state, and local environmental requirements during the planning, construction, and operation of the ONEOK Little Missouri Lateral Pipeline Project (hereby referred to as the Project). ONEOK has developed this Construction Mitigation and Restoration Plan (CMRP) to ensure that appropriate systems are in place to achieve compliance with the various permits and plans that have been developed for the project. ONEOK's CMRP outlines construction-related environmental policies, procedures, and mitigation measures developed by ONEOK based on ONEOK's experience implementing Best Management Practices (BMPs) during pipeline construction. The CMRP is designed to address typical circumstances that may be encountered along the Project. Project-specific permit conditions and/or landowner agreements may supersede the general practices described in this document.

This document includes the following sections:

- Section 1.0 of the CMRP describes general mitigation measures, including soil erosion and sedimentation control procedures, to be implemented during upland construction and upland restoration;
- Section 2.0 discusses stream and river construction and restoration;
- Section 3.0 describes practices for wetland construction and restoration;
- Section 4.0 discusses highway, road, and rail crossings;
- Section 5.0 discusses construction dewatering;
- Section 6.0 outlines hydrostatic testing practices;
- Section 7.0 addresses water appropriation sources and discharge locations;
- Section 8.0 addresses revegetation.

Alternative construction procedures implemented in lieu of this CMRP must provide an equal or greater level of protection to the environment and must be approved in writing by ONEOK.

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1.0 GENERAL MITIGATION MEASURES

1.1 RIGHT-OF-WAY ACCESS

Access to the right-of-way (ROW) will be from public roadways and ONEOK-approved private access roads only. The Contractor is responsible for creating signs or other methods to identify approved access roads in the field and to ensure that access is confined to the approved roads.

Road crossings and access points will be maintained in a safe and accessible condition throughout construction. ONEOK will require its construction contractor(s) to post caution signs on roads, where appropriate, to alert motorists of pipeline construction and warn them of slow traffic. In addition, trucks transporting pipe and heavy equipment will comply with all applicable state, county, and federal laws, rules, and permits for these loads.

Private/non-public roads will be negotiated with the landowner and approved by ONEOK prior to use. Use of these roads may be restricted based on the condition of the existing road (*i.e*., like-use traffic) and may not be upgraded without approval from ONEOK, the landowner, and/or applicable regulatory agencies.

Vehicle tracking of soil from the construction site onto roads will be minimized by implementation of BMPs such as installing stone pads, timber mats, or equivalent, and reducing equipment/vehicle access to the ROW where practicable (through the use of off-ROW parking). Temporary accesses will be installed in accordance with applicable permit conditions. The Contractor is responsible to promptly clean and remove all soil from tracked out of the ROW on to public roads and highways.

The Contractor will repair private roads, lanes, and public roads damaged when moving equipment or obtaining access to the ROW.

1.2 RIGHT-OF-WAY REQUIREMENTS

Construction equipment and vehicles will be confined to the approved construction ROW, access roads, and extra workspace (approved construction workspace) shown on the “Issued for Construction” construction alignment sheets. Construction activities for the Project will generally use a 75-foot-wide construction ROW as shown in Figure 1 that consists of the permanent ROW and temporary workspace (TWS). In addition, certain site-specific extra workspaces as defined below will be utilized. The construction ROW configuration may be modified to avoid and/or minimize disturbance to sensitive resource areas such as wetlands and waterways or difficult construction areas such as steep side slopes and/or in accordance with applicable permit conditions.

Permanent ROW

ONEOK will establish a new 50-foot-wide permanent easement, centered on the new pipeline. The new permanent ROW will be maintained in an herbaceous or shrub vegetative cover following construction to facilitate access and inspection and operation of the pipeline system.

Temporary Workspace

In addition to the new permanent ROW, construction will require temporary workspace (TWS). The TWS will be located adjacent to and contiguous with the proposed ROW/permanent corridor and will typically be 25 feet wide. Approved TWS will be identified on the construction alignment sheets and by distinctive staking of construction limits prior to clearing.

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Extra/Additional Workspace

Site-specific extra temporary workspace (ETWS) and/or additional temporary workspace (ATWS) locations are construction work areas beyond the permanent ROW and TWS described above and will be required at select locations such as steep slopes as shown in Figure 2, road, waterbody, railroad, some wetland crossings, and where it is necessary to cross under existing pipelines or foreign utilities. ATWS will typically be located in uplands adjacent to the construction ROW and set 50 feet back from sensitive resource boundaries where site-specific field conditions allow. However, to complete work safely, ONEOK may need to locate ATWS within a wetland or within the 50-foot setback from a wetland or waterbody based on site-specific conditions. ATWS adjacent to waterbodies and/or wetlands is addressed further in Sections 2.6 and 3.4, respectively. In all cases, the size of extra workspace will be kept to the minimum necessary to safely conduct work.

ONEOK has conducted a preconstruction review of the entire Project area to determine specific ATWS locations. ONEOK will acquire extra workspace from the landowner where necessary. All approved ATWS locations are depicted on the construction alignment sheets; use of unauthorized workspace is prohibited without ONEOK's written approval.

Pipe Storage and Contractor Yards

ONEOK and its contractors will establish pipe and contractor yards at various locations near the Project ROW. The best practices and procedures that ONEOK has approved in the CMRP, as well as all applicable permits, will be implemented as necessary at these locations.

1.3 FLAGGING AND SIGNAGE

Prior to the commencement of clearing operations, ONEOK will mark the boundaries of the approved construction workspace with distinctive stakes and flagging. ONEOK will install stakes to identify the boundaries of ATWS, staging areas, sensitive environmental areas, and along the construction ROW every 200 feet, or as appropriate, to maintain line-of-sight from one stake to the next. Other areas (pipe storage and contractor yards, borrow and disposal areas, access roads, etc.) will have signs posted for use by the Contractor during construction activities. See Table 1.3-1 for examples of the signs that will be installed on the Project.

ONEOK will preserve all existing recognizable civil survey monuments, cadastral corner markers, witness points, triangulation stations, military control monuments, or other recognizable physical markers (public and private) to the extent practicable. In the event that any such monument is at risk of damage or destruction during construction, ONEOK will ensure that the precise location of the monument is determined and properly referenced by a Professional Land Surveyor. If the monument is actually damaged or destroyed during construction, it will be rehabilitated or replaced by the Professional Land Surveyor. The monument will be replaced in accordance with the requirements of the State Board which oversees Professional Land Surveying.

Signs will be posted along the construction ROW to identify sensitive areas and to alert construction personnel of restrictions that apply. The limits of these areas will be delineated at the edge of the ROW. Fencing may also be required in some areas to further protect site-specific resources.

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TABLE 1.3-1 ONEOK Little Missouri Lateral Pipeline Project Signs	
Sign	**Description**
Approved Access Road	Project-related right-of-way access roads will be identified by road number or name and posted speed limit.
No Access	Signs identifying areas that are off limits, such as a fork in the road, which may be confused with Approved Access Areas.
Environmentally Sensitive Areas	Signs identifying environmentally sensitive areas that are off limits to disturbance or may require a special resource monitor during construction.
Waterbody	Entry and exits at delineated waterbodies.
Wetland	Entry and exits at delineated wetlands.

ONEOK has identified landowner-specific issues of concern that may be affected by construction activities. In coordination with these landowners, ONEOK will implement the following mitigation measures:

- Locate and mark above and below ground water lines;
- Locate and mark above and below ground utilities;
- Coordinate with landowners that utilize pivot irrigation systems; and
- Develop grazing deferment plans with landowners, tenants, or other grazing permit holders that address construction timing, fence cutting and bracing, temporary fencing, cattle guard locations, and water requirements for livestock.

Components of irrigation systems, waterlines, utilities, or other physical impediments impacted by construction will be repaired to at least pre-construction condition.

1.4 LINE LIST AND PERMITS

ONEOK will provide the Contractor with a Construction Line List (Line List). The Line List reflects special landowner requirements (e.g., topsoil segregation, seeding, fencing requirements, rock disposal, etc.); however, the Line List is not a comprehensive list of construction requirements. The Line List must be considered in conjunction with other Project documents and permits. The Contractor must comply with these special landowner requirements provided they conform to the Project permits. Any third-party agreements between the Contractor and the landowner must be pre-approved by ONEOK and in writing.

Permits obtained by ONEOK for this Project may have more stringent requirements than the requirements of this CMRP and/or the Line List. **In all cases, the more restrictive requirements will apply**.

1.5 NON-HAZARDOUS WASTE DISPOSAL

Non-hazardous pipeline construction wastes include human waste, trash, pipe banding and spacers, paper waste from coating products, welding rods, timber skids, cleared vegetation, stumps, drilling mud and rock. The Contractor will be responsible for removing waste from the Project area and identifying and locating proper licensed waste disposal facilities. The Contractor will not permit paper from wrapping or coating products or lightweight items to be scattered by the wind.

Waste which contains (or at any time contained) oil, grease, solvents, or other petroleum products falls within the scope of the oil and hazardous substances control, cleanup, and disposal procedures. This material will be segregated for handling and disposal as hazardous wastes.

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The Contractor will provide portable, self-contained toilets during construction operations. Wastes from these units will be collected for disposal at licensed and approved facilities.

Drill cuttings and drilling mud will be disposed of as described in Section 2.8.4 of this document.

1.5.1 Hazardous Wastes

Hazardous and potentially hazardous materials will be stored, handled, and transported in accordance with applicable laws, regulations, rules or permits. Hazardous waste materials will be stored in properly labeled containers. Each label will identify the contents in the container, indicate if the material is hazardous, and include a waste code and date of accumulation.

Personnel who will have a role in handling, storing, or otherwise managing hazardous waste will have training in accordance with applicable regulatory requirements and the manufacturer's recommendations. Personnel will be familiar with the hazards associated with particular wastes and appropriate safety procedures. Appropriate emergency response and spill equipment will be kept in an accessible area in accordance with ONEOK's *Spill Prevention, Control, and Countermeasure Plan (SPCC Plan).*

Transporters of oil, hazardous substances, and hazardous wastes will be licensed and certified according to the applicable state vehicle code. Hazardous wastes being transported off-site will be manifested. The manifest will conform to requirements of the appropriate state agency. The transporter will be licensed and certified to handle hazardous wastes on the public highways. The vehicles as well as the drivers must conform to all applicable vehicle codes for transporting hazardous wastes. The manifest will conform to applicable state and federal regulations.

Hazardous materials will be disposed of at licensed waste disposal facilities.

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1.6 TEMPORARY EROSION AND SEDIMENT CONTROLS

Temporary sediment and erosion control devices (ECDs) include, but are not limited to slope breakers, sediment barriers, stormwater diversions, trench breakers, mulch, and revegetation. The goal of ECDs is to minimize wind and water erosion on-site and prevent construction-related sediment from migrating off-site into sensitive resource areas such as streams (dry or flowing), wetlands, lakes, or cultural resource sites. The Contractor will, at all times, maintain erosion and sediment control structures as required in the project construction documents and as required by applicable permits.

ECDs will be installed as necessary and in accordance with applicable permit conditions after initial clearing but before disturbance of the soil and will be replaced by permanent ECDs as restoration is completed (see Figures 3 and 4). Additional information on ECDs is provided in the waterbody and wetland sections (Sections 2.0 and 3.0 of this Plan) and permanent restoration is addressed in ONEOK's *Revegetation Plan*.

1.7 UPLAND CLEARING

The initial stage of construction involves the clearing of tall herbaceous vegetation, brush, and trees from the ROW. Clearing may be accomplished with mowers, chain saws, and/or other hydraulic tree and brush cutting equipment. When clearing, trees will be felled onto the ROW to minimize damage to off-ROW vegetation and resources.

1.7.1 Disposal of Woody Debris

Unless otherwise directed by ONEOK, slash and woody debris will be disposed of by mowing, chipping, grinding, and/or hauling off-site to an approved disposal facility, or the material will be stockpiled at the edge of the ROW and used to stabilize erodible slopes during restoration. Disposal of trees or merchantable timber will be conducted in accordance with landowner agreements. Where landowner approval has been granted, chips may be uniformly broadcast (less than 2-inch thickness) across the ROW in non-agricultural, non-wetland areas, where they will ultimately be incorporated into the topsoil layer during grading activities. Burning of woody debris may be allowed only where the Contractor has acquired all applicable permits and approvals (e.g., agency and landowner) and in accordance with all state and local regulations. The Contractor will provide ONEOK with copies of these permits and/or approvals prior to initiating burning.

Burning will not be allowed within 100 feet of a wetland or waterbody without site-specific approval from ONEOK. No burning will be allowed in wetlands. No chips, mulch, or mechanically cut woody debris will be stockpiled in a wetland and no upland woody debris will be disposed of in a wetland or within agricultural areas (see Section 3.3 for further information on clearing in a wetland).

1.7.2 Upland Grading and Stump Removal

Grading generally follows clearing and involves leveling and smoothing the construction ROW and extra workspace areas (as necessary) to create a safe, even working surface for equipment and vehicles. Topsoil and subsoil disturbed during grading operations will not be mixed with foreign material (e.g., stumps and brush).

The objective of grading is to develop a ROW that allows the safe passage of equipment and meets the bending limitations of the pipe. The following measures will be implemented during grading unless otherwise approved or directed by ONEOK based on site-specific conditions or circumstances.

- Original contours and drainage patterns will be re-established to the extent practicable.
- Agricultural areas that have terraces will be surveyed to establish pre-construction contours to be utilized for restoration of the terraces after construction.
- Gravel access pads or timber mats will be used where necessary to prevent damage to the road shoulder and bar ditch at roadways to be crossed during construction.
- Where the construction surface remains inadequate to support equipment travel, timber mats, timber riprap, or other methods may be used to stabilize surface conditions.

1.7.3 Irrigation Systems

If pipeline construction activities interfere with the operation of existing spray irrigation systems (flood, ditch, or spray), ONEOK will establish with the landowner or tenant, an acceptable amount of time the irrigation system may be out of service with the landowner or tenant. If feasible, temporary measures will be implemented to allow an irrigation system to continue to operate across the ROW during pipeline construction. Damage to irrigation systems caused by construction-related activities will be repaired following backfilling. Irrigation ditches that are active at the time of construction will not be stopped or obstructed except for the length of time necessary to install the pipeline beneath the ditch unless otherwise approved by the landowner or applicable ditch authority.

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1.7.4 Upland Topsoil Segregation

The objective of topsoil handling is to maintain topsoil capability by conserving topsoil for future replacement and reclamation and to minimize the degradation of topsoil from compaction, rutting, loss of organic matter, or soil mixing so that successful reclamation of the ROW can occur. Topsoil generally has physical and chemical properties that are conducive to good plant growth. To prevent the mixing of topsoil with less productive subsoil during construction, topsoil will be segregated to avoid the co-mingling of soils, using the full right-of-way topsoiling method (see Figure 5). Separation should be maintained between the topsoil and subsoil piles throughout construction to prevent mixing. Upland areas where topsoil will be stripped include cropland, hay fields, pasture, residential areas, and other areas as agreed to by the landowner or as specified in the Project permits. Topsoil will not be used to construct trench breakers (see Section 1.11) or to pad the pipe or construct ramps. Gaps must be left and ECDs installed where stockpiled topsoil and spoil piles intersect with water conveyances (i.e., ditches, swales, and waterways) to maintain natural drainage and to allow wildlife access across the construction work area. Wildlife gaps (including the water conveyance gaps) will be installed at a minimum of every quarter-mile.

The following mitigation measures will be implemented during topsoil removal and storage. All work will be conducted in accordance with applicable permits.

- Stockpile stripped topsoil in a windrow along the edge of the ROW. The Contractor will perform work in a manner to minimize the potential for subsoil and topsoil to be mixed.
- Topsoil will not be used to fill a low area or to construct ramps at road or waterbody crossings.
- If required due to excessively windy conditions, topsoil piles can be tackified using either water or a suitable approved tackifier (liquid mulch binder). Further details are included in the ONEOK *Dust Control Plan*.

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Topsoil Segregation Methods

The Full ROW topsoil segregation method (see Figure 5) will be employed during construction, as indicated on the “Issued for Construction” (IFC) alignment sheets.

Soil characteristics and land use are key considerations for topsoil management during pipeline construction. ONEOK will primarily use the full ROW topsoil stripping method, unless otherwise requested by the landowner. In arid areas with a limited topsoil resource, and/or in areas where significant side-slope excavation (e.g., two-toned, side-cut, etc.) will be required to create a safe, level area. In these areas, topsoil will typically be segregated using an excavator, dozer, or similar equipment.

Depth of Upland Topsoil Stripping

The depth of topsoil to be segregated will depend on the soil conditions. In areas of deep topsoil, stripping to a maximum depth of 12 inches will generally be considered adequate to minimize impacts on agricultural soils. Additional workspace may be needed for spoil storage if more than 12 inches of topsoil are segregated. If less than 12 inches of topsoil are present, the Contractor will attempt to segregate to the depth that is present. The Environmental Inspectors and ONEOK will work with the Contractor to determine topsoil depth to be stripped.

1.7.5 Temporary Erosion and Sediment Controls

Erosion Control Devices

ECDs are intended to minimize erosion by slowing the velocity of stormwater runoff and diverting runoff from the construction ROW, preventing the movement of sediments off the construction ROW, and prohibiting the deposition of sediments into sensitive resources that may be on or adjacent to the ROW. Typical ECDs include silt fence and/or trenched-in and staked straw bales (see Figures 3 and 4) or biologs (i.e., compost socks, wattles, or excelsior logs), as well as other barriers such as compacted earth (e.g., drivable berms across travel ways), sand bags, or other appropriate materials (see Section 1.7.6).

Temporary ECDs will be installed after clearing and prior to grubbing and grading activities at the base of sloped approaches to streams, wetlands, and roads. Temporary ECDs will also be installed at the edge of the ROW as needed, and/or in other areas determined by ONEOK to slow water leaving the site and prevent siltation of waterbodies and wetlands downslope or outside of the construction ROW (e.g., swales and side slopes). Temporary ECDs will be placed across the entire construction ROW at the base of slopes greater than 5 percent where the base of the slope is less than 50 feet from drainage ways, wetlands, and/or waterbodies until the area is revegetated in accordance with the National Pollutant Discharge Elimination System (NPDES) stormwater permit (where applicable) and there is no potential scouring or sediment transport to surface waters.

If silt fence is in use, when the depth of sediment reaches about one-half of the height, the sediment will be removed. Non-functional ECDs will be repaired, replaced, or supplemented with functional structures, as required by the NPDES storm water permit.

Temporary ECDs installed across the travel lane may be removed during active daytime construction; however, the ECDs will be properly reinstalled after equipment passage, or activities in the area are completed for the day. These ECDs will also be repaired and/or replaced prior to forecasted inclement weather. The Contractor is responsible for monitoring weather conditions and adjusting resources as needed to address pending and/or existing weather conditions.

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Temporary Stabilization

Temporary stabilization is intended to minimize erosion of soil from wind and water. Installation of temporary seeding, mulch, and erosion control mats/blankets may be required by ONEOK in site-specific locations if there are construction delays within a spread and/or there is a high potential for erosion to occur. The Contractor may be required by ONEOK to install temporary stabilization materials based on site conditions, or as required in ONEOK's Project specific NPDES permit(s). Temporary stabilization measures as outlined in ONEOK's *Revegetation Plan* will be implemented to minimize erosion and for sediment control.

ONEOK will attempt to stabilize exposed slopes prior to snowfall; however, construction progress and/or seasonal weather variations may prevent installation prior to the first snowfall in some locations. Installation of stabilization measures and additional BMPs, as applicable based on site conditions, will continue after the first snowfall to protect slopes prior to spring melt and runoff.

Mulch

Mulch is an effective tool to minimize erosion and will be applied to disturbed areas (except for actively cultivated land and wetlands) if agreed to with the landowner or land managing agency, if specified by the applicable permits or licenses, or as requested by ONEOK.

Mulch will be free of noxious weeds as listed in applicable state laws. Certified weed-free mulch may also be required at site-specific locations. The Contractor(s) will be responsible for identifying and acquiring sources of certified weed-free mulch. Sources must be approved by ONEOK prior to purchase and copies of the applicable documentation must be provided to ONEOK.

Mulch will be applied at 1-2 tons per acre unless otherwise stipulated by permit conditions. Mulch will be uniformly distributed by a mechanical mulch blower, or by hand in areas not accessible to the mulch blower, to cover approximately 75 percent of the ground surface. Strands of mulch will be a minimum of 8 inches in length to allow proper anchoring. Mulch will be anchored/crimped to a depth of 2-3 inches using a mulch-anchoring tool or disc set in the straight position to minimize loss by wind and water. In areas not accessible to a mulch-anchoring tool, the mulch may be anchored by liquid tackifiers, with advance written approval from ONEOK. The manufacturer's recommended method and rate of application will be followed. Mulch will not be applied in wetlands or actively cultivated farmland.

Hydro-mulch and liquid tackifier may be used in place of straw or weed-free hay mulch with prior approval from ONEOK. Application rates will be at the manufacturer's recommended rate, equal to or greater than 2 tons per acre of straw mulch. The use of tackifiers for anchoring straw and the use of hydro-mulch and tackifier will be limited to areas that are too steep or rocky to safely or effectively operate mechanical mulch-anchoring tools. Asphalt-based tackifiers will not be used on the Project.

1.7.6 Temporary Slope Breakers

Temporary slope breakers will be installed to minimize concentrated or sheet flow runoff in disturbed areas in accordance with the following maximum allowable spacing unless otherwise specified in permit conditions. Temporary slope breakers will also be installed on slopes greater than 5 percent where the base of the slope is less than 50 feet from waterbodies, wetlands, and road crossings. The spacing between temporary slope breakers may be reduced based on site-specific conditions, as requested by ONEOK.

Slope (%)	Approximate Spacing (ft.)
5-15	300
15-30	200
>30	≤100

If the length of the slope is less than the distance of the required spacing, slope breakers will not be required unless a sensitive resource area (e.g., wetland) is located immediately down slope, or as requested by ONEOK. Temporary slope breakers may be constructed using earthen subsoil material, silt fence, straw bales, or biologs; rocked trenches may only be used in non-agricultural land. On highly erodible slopes, temporary slope breakers in the form of either earthen berms or rocked trenches will be used whenever possible.

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Temporary slope breakers will be constructed according to the following specifications:

- Earthen berms will be installed with a 2 to 4 percent outslope, with a minimum 4-foot base and a minimum height of 1.5 feet (see Figures 6 and 7);
- Straw bales used as slope breakers will be trenched in and staked tightly against one another as to not allow flow underneath or between the bales;
- The outfall of temporary slope breakers will be directed off the construction ROW into a stable well-vegetated upland area or into an appropriate energy-dissipating sediment control device (e.g., silt fence, straw bales, rock aprons) to prevent the discharge of sediments (see Figure 6);
- Proper slope breaker outfalls will be established where topsoil segregation and/or grading has created a barrier at the edge of the construction workspace;
- Gaps will be created through spoil piles where necessary to allow temporary berms to direct flow off-ROW;
- The outfall of each temporary slope breaker will be positioned to prevent sediment discharge into wetlands, waterbodies, or other sensitive resources; and
- Temporary slope breakers will be inspected and repaired as necessary to maintain operational integrity and prevent erosion in active construction areas.

1.7.7 Noise and Dust Control

The Contractor will take reasonable steps to control construction-related noise near residential areas and other noise sensitive areas as directed by ONEOK. Noise control practices may include limiting working hours and vehicle traffic in residential areas and/or additional measures as appropriate based on site-specific conditions. Dust control practices are detailed in ONEOK's *Dust Control Plan*.

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1.8 PIPE DELIVERY, BENDING, & WELDING

Individual joints of pipe will be strung along the construction ROW. This operation involves specially designed equipment to deliver pipe from pipe storage yards to the ROW. Where practical, the Contractor will drive stringing trucks along an alignment which corresponds closely to the pipeline centerline to minimize the potential for soil compaction in actively cultivated areas.

After pipe stringing is complete, the pipe will be bent, as necessary, to conform to changes in ground contours and pipeline alignment. Individual pipe joints will be welded together, and the welds will be inspected using a non-destructive testing procedure to verify weld integrity, in accordance with federal regulations. The welds will then be coated to protect them from corrosion.

1.9 UPLAND TRENCHING

Trenching in uplands consists of excavating the trench for the pipeline and is typically accomplished with a backhoe excavator or a rotary wheel ditching machine. Excavated material will be sidecast (stockpiled) within the approved construction ROW separate from topsoil (see Section 1.7.4) and stored such that erosion is minimized to the extent practicable. During construction ONEOK will coordinate with landowners to minimize disruption of access caused by the trench. Where agreed to, the Contractor will leave plugs of soil in the ditch or will construct temporary access

bridges across the trench for the landowner to move livestock or equipment. Trenches will also be sloped where started and ended to allow ramps for wildlife to escape.

1.9.1 Timing

The length of time a trench is left open will be minimized to ensure that installation of the pipe and restoration of the ROW occurs in a timely fashion.

1.9.2 Pipeline Depth

At a minimum, the pipeline will be buried in accordance with U.S. Department of Transportation (USDOT) regulations (49 Code of Federal Regulations (CFR) Part 195) to prevent damage to the pipeline from normal use of the land.

1.10 PIPE INSTALLATION

Once the trench has been inspected for proper depth, rocks, and/or other obstructions, the welded pipe will be lowered into the trench. In rocky soils, the pipe may be wrapped with a protective shielding to prevent damage to the pipe coating during backfilling.

1.11 TRENCH BREAKERS

Trench breakers are installed in sloped areas after the pipeline has been lowered into the trench to protect against subsurface water flow along the pipe after the trench is backfilled. Trench breakers will be constructed with bags filled with rock-free subsoil or sand. Topsoil **may not** be used for trench breakers. Trench breakers will be placed from the bottom of the trench to near the top of the trench, completely surrounding the pipe, **and must be properly keyed into the undisturbed trench walls** (see Figures 8 and 9). The location for trench breakers will be based on field conditions including the degree and length of slope, presence of down slope sensitive resource areas such as wetland and waterbodies, and proximity to other features such as roads and/or railroads. The following conditions apply to the placement and installation of trench breakers unless otherwise directed by ONEOK:

- Trench breakers will be spaced as described for permanent berms (see Section 1.17) or as otherwise specified by ONEOK.
- Trench breakers will be installed on slopes greater than 5 percent adjacent to streams, wetlands, or other waterbodies.
- At a minimum, trench breakers will be installed at the base of slopes greater than 5 percent where the base of the slope is less than 50 feet from a waterbody or wetland and where needed to avoid draining a waterbody or wetland.
- Topsoil will not be used to construct trench breakers.
- Where the pipeline exits a wetland towards areas of lower relief, trench breakers will be installed where there is a potential for underground drainage along the pipe in order to prevent wetland or waterbody drainage.

ONEOK will identify preliminary trench breaker locations on the Project alignment sheets. These locations will be based on a review of mapped resources and topographical maps. The actual location of each trench breaker will be selected through coordination between ONEOK's Craft Inspectors, and the Contractor's Foreman during backfilling activities.

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1.12 UPLAND BACKFILLING

Backfilling follows pipe installation and consists of replacing the material excavated from the trench. In many cases fine material will be needed to pad the pipe. Topsoil cannot be used as padding material under any circumstance. In areas where topsoil has been segregated, the subsoil will be replaced first, and then the topsoil will be spread uniformly over the area from which it was removed. Prior to backfilling, the trench will be dewatered in accordance with the methods discussed in Section 5.0 of this Plan. Rock excavated from the trench may be used to backfill the trench only to the top of the existing bedrock profile. Rock that is not returned to the trench should be considered construction debris and be removed to an approved disposal site, unless approved for use as mulch, for another acceptable construction-related purpose, or as designated by the landowner or land managing agency.

1.13 WET WEATHER SHUTDOWN

During construction, certain activities may be suspended at the direction of the Project Construction Coordinator in wet soil conditions, based on consideration of the following factors:

- Plasticity of the surface soil to a depth of approximately 4 to 8 inches;
- Extent of surface ponding;
- Extent and depth of rutting and mixing of soil horizons;
- Areal extent and location of potential rutting and compaction (i.e., can traffic be rerouted around wet area, using low ground weight, wide-track equipment, or other low impact construction techniques, using construction mats in problem areas); and
- Type of equipment and nature of the construction operations proposed for that day.

If, in consideration of the above factors, ONEOK determines that construction activities will result in significant rutting and/or the mixing of soil horizons, the Contractor will cease work in the applicable area until ONEOK determines that site conditions are such that work may continue.

The Contractor is responsible for appropriately planning for work, considering the potential for wet conditions, and being prepared to implement mitigation measures in the event of wet weather conditions. This is particularly important when conducting work in unsaturated wetlands or areas where topsoil was not segregated. The Contractor is responsible for implementing any and all such corrective measures should conditions subsequently worsen where the above-described criteria cannot be met.

1.14 CONTROLLING SPREAD OF UNDESIRABLE SPECIES

It is ONEOK's intent to minimize the potential introduction and/or spread of undesirable species (i.e., invasive species and noxious weeds) along its ROW due to pipeline construction activities. However, it is not practicable for ONEOK to eradicate undesirable species that are adjacent to its ROW. ONEOK will minimize the potential for the establishment of undesirable species by minimizing the time between final grading and permanent seeding. Greater than six days is only acceptable if final grading had to take place outside of the seeding window, as described in the *Revegetation Plan* or in the Contractor's ONEOK-approved *Ecozone Reclamation Plans* (included as an attachment in the *Revegetation Plan*).

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ONEOK will implement weed control measures, pending landowner approval, at identified infestation areas based on weed district input, or by the EIs. Weed control measures may include the application of herbicide or mechanical, and/or alternative methods. The weed control measure chosen will be the best method available for the time, place, and species of weed as identified through consultation with the appropriate regulatory agencies. Should landowners not allow the use of herbicides, alternatives methods, approved by the landowners, will be implemented.

ONEOK will also require that construction equipment and timber mats be free of soil and plant material before arriving on the construction spread, as well as be cleaned at state and county lines, to prevent the introduction of undesirable species to the project area, as described in the project's *Weed Management Plan*.

1.15 CLEANUP AND ROUGH/FINAL GRADING

Initial cleanup and rough grading activities may take place simultaneously. Cleanup involves removing construction debris (e.g., litter generated by construction crews, timber skids and similar woody debris, and excess rock).

Rough and final grading includes restoring disturbed areas as near as practicable to preconstruction conditions, returning the topsoil where topsoil has been stripped, preparing a seedbed (where applicable) for permanent seeding, installing or repairing temporary erosion and sediment control measures, repairing/replacing fences, and installing permanent erosion and sediment controls. Pre-existing landowner soil conservation improvements and structures disturbed by pipeline construction will be restored to the approximate pre-construction line and grade. Soil conservation improvements and structures include, but are not limited to, grassed waterways, toe walls, drop inlets, grade control works, terraces, levees, and farm ponds.

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1.16 TIMING

The Contractor will begin cleanup and rough grading (including installation of temporary erosion and sediment control measures) typically within 72 hours after backfilling and will attempt to complete this cleanup within fourteen (14) days after backfilling, weather and soil conditions permitting. If seasonal or other weather conditions prevent compliance with the time frames, the Contractor will maintain the erosion and sediment control measures until cleanup can be conducted.

1.17 PERMANENT EROSION AND SEDIMENT CONTROLS

During final grading, slopes in areas other than cropland will be stabilized with erosion control structures (see Figure 11). Erosion control treatments of specific physical land features are described below.

Slopes

Permanent berms (diversion dikes or slope breakers) will be installed on slopes, according to the following maximum spacing requirements unless otherwise specified in permit conditions or determined in the field by ONEOK:

Slope (%)	Approximate Spacing (ft.)
5-15	300
15-30	200
>30	≤100

Permanent berms will be constructed according to the following specifications:

- Permanent berms will be installed with a 2 to 4 percent outslope and will not cause pooling of water behind the berm.
- Permanent berms will be constructed of compacted earth.
- The outfall of berms will be directed toward appropriate energy-dissipating devices, and off the construction ROW if possible.
- Permanent berms will be inspected and repaired as deemed necessary by ONEOK to maintain function and prevent erosion.
- Erosion control blankets will be placed on slopes over 30 percent (see Figure 11) or that are a continuous slope to a sensitive resource area (e.g., wetland or waterway).
- There should be no unbroken slope length greater than 75 feet for slopes with a grade of 3:1 or steeper in order to maintain sheet flow and minimize rills and/or gullies.

1.18 SOIL COMPACTION TREATMENT

Cultivated fields and compacted or rutted cultivated areas will be tilled with a deep tillage device or chisel plowed to loosen compacted soils. Severely compacted agricultural areas will be plowed with a paraplow or other deep tillage implement. In areas where topsoil has been segregated, the subsoil will be plowed before replacing the segregated topsoil. If subsequent construction and cleanup activities result in further compaction, additional measures will be undertaken to alleviate the soil compaction.

Topsoil and subsoil will be tested at regular intervals in agricultural and residential areas. The Environmental Inspectors will conduct tests on the same soil type under similar moisture conditions in undisturbed areas to approximate preconstruction conditions. Penetrometers or other appropriate devices to conduct tests.

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1.19 ROCK REMOVAL

Excess rock will be removed from at least the top 12 inches of disturbed soil in all actively cultivated or rotated cropland and pastures, hayfields, and residential areas or as specified in permit conditions or landowner agreements. Rock removal efforts will cease when the size and density of rocks on the ROW are similar to undisturbed areas adjacent to the ROW. Excess rock will be piled in upland areas where landowner permission has been obtained or will be hauled off-site to a ONEOK-approved disposal site.

1.20 OFF-ROAD VEHICLE CONTROL MEASURES

Off-road vehicle control measures will be installed as agreed to with landowners or as directed by land management agencies at points of entry. Such measures may include installing signs, fences and gates, or placement of other barriers such as boulders or timbers. All fences and gates removed or damaged will be repaired or replaced. The Contractor may be held responsible for damage caused by trespassers if proper determent structures were not in place in a timely fashion.

1.21 REPAIR OF DAMAGED CONSERVATION PRACTICES

Soil conservation practices (such as terraces, grassed waterways, etc.) that are damaged by the pipeline construction will be restored to preconstruction conditions to the extent practicable.

1.22 LAND LEVELING FOLLOWING CONSTRUCTION

Following the completion of the pipeline, the ROW will be restored as near as practicable to its pre-construction conditions. Should uneven settling or documented surface drainage problems occur following the completion of pipeline construction, ONEOK will take appropriate steps to remedy the issue.

Permanent revegetation activities will begin as soon as soil conditions permit seedbed preparation and seed germination. Actively cultivated lands will be restored but will not be reseeded unless requested by the landowner. See Section 8.0 for more information regarding reseeding.

2.0 STREAM AND RIVER CROSSING GENERAL REQUIREMENTS

Pre-construction planning is an essential part of stream crossings. Stream crossing requirements, including construction methods, timing, erosion control, and restoration are described in this section and in the stream crossing permits issued by state and federal agencies. Prior to construction, the Contractor may identify alternative provisions to certain site-specific plans that would provide an equal or greater level of protection to stream and river ecosystems. Any proposed alternative provisions must be submitted to ONEOK far enough in advance of construction to allow ONEOK an opportunity to review the alternatives and consult with the appropriate regulatory agencies as necessary without causing construction delays. The Contractor must receive written approval from ONEOK prior to implementing the alternative crossing techniques.

The procedures in this section apply to natural or artificial streams, rivers, and other waterbodies such as jurisdictional ditches, ponds, and lakes. These procedures require that judgment be applied in the field and will be implemented under the supervision of ONEOK. The intent of the mitigation procedures is to minimize construction-related disturbance to waterbodies by limiting the duration of construction in these areas and by minimizing erosion and sedimentation, as well as implementing appropriate procedures to restore the stream to pre-construction conditions.

ONEOK is proposing to avoid all streams and wetlands that would trigger a Preconstruction Notification (PCN) with the Army Corps of Engineers (USACE/Corps). ONEOK will accomplish this by either routing around PCNs or by using a Horizontal Directional Drill (HDD) or conventional bore methods. Locations that would otherwise require a PCN will be identified in the field and on the alignment sheets as Environmentally Sensitive Areas (ESAs). Mitigation and avoidance measures at ESAs are described throughout Sections 2.0 and 3.0.

2.1 DRAINAGE DITCHES AND EPHEMERAL/ INTERMITTENT STREAMS

Ephemeral/Intermittent streams and agricultural ditches that are not identified as ESAs will typically be crossed using the wet trench method (see Section 2.8.1), as specified in the applicable permits. For ephemeral streams; small, dry intermittent streams; and agricultural drainage ditches, standard upland construction procedures may be used, which involve stringing, welding, excavating the trench with backhoes, installing the pipe in the trench, and backfilling the trench with native material unless stipulated otherwise in the Project's applicable permits. Extra workspace setbacks will be implemented in accordance with Section 2.6. The banks of each crossing will be reshaped to pre-construction contours, mulched, and, if required, seeded in accordance with ONEOK's *Revegetation Plan* to stabilize the crossing until permanent erosion control is implemented. No refueling, fuel storage, or equipment maintenance is allowed within 100 feet of a drainage ditch or intermittent stream without approval from ONEOK with additional special provisions for containment. Where dry

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swales cross the ROW, silt fence or straw bales will be installed at the edge of the ROW to prevent the flow of sediment off the approved construction workspace.

2.2 TIME WINDOW FOR CONSTRUCTION

In-stream trenching will be conducted during periods permitted by the appropriate regulatory agencies and applicable permits. In-stream trenching is not permitted at ESAs.

2.3 AGENCY NOTIFICATION

ONEOK will notify applicable regulatory agencies as well as authorities responsible for potable surface water supply intakes located within three (3) miles downstream of the crossing prior to beginning in-stream work (e.g., excavation or blasting), in accordance with applicable permit conditions or as otherwise specified by that authority. Installation or removal of bridges is not considered in-stream work for the purpose of notifying agencies of nearby public surface water intakes.

2.4 PRE-CONSTRUCTION CONSIDERATIONS

2.4.1 Hazardous Materials

Hazardous materials, chemicals, fuels, and lubricating oils will not be stored, and concrete coating activities will not be performed within 100 feet of waterbodies and in accordance with ONEOK's *SPCC Plan*. Refer to the *SPCC Plan* for additional requirements pertaining to hazardous materials.

2.4.2 Refueling/Equipment Care

Construction equipment will be refueled at least 100 feet from streams and waterbodies. Where the Contractor and ONEOK determine that conditions require construction equipment to be refueled within 100 feet of streams, the Contractor must follow the procedures described in ONEOK's *SPCC Plan* and implement additional provisions based on site-specific conditions. No equipment will be washed within 100 feet of waterbodies. Overnight parking of equipment is not allowed within 100 feet of a waterbody unless special provisions have been implemented in accordance with ONEOK's *SPCC Plan* and prior approval from ONEOK is obtained. Repair and maintenance (e.g., lubricating) of construction equipment will not be allowed within the 100-foot buffer zone without approval from ONEOK with additional special provisions for containment. The Contractor will ensure that all equipment is free of leaks prior to use on the Project and prior to entering or working in or near waterbodies.

2.4.3 Aquatic Invasive Species Considerations

The State of North Dakota has no specific regulations in relation to Aquatic Invasive Species; therefore, there are no unique considerations regarding aquatic invasive species for this project at this time.

2.5 CLEARING AND GRADING

The Contractor will leave a 20-foot buffer of undisturbed herbaceous vegetation on all stream banks during initial clearing, except where grading is needed for bridge installation, or where restricted by applicable regulations and/or permit conditions (such as impaired waterways), or where the buffer would prevent safe equipment operation. Woody vegetation within this buffer may be cut and removed during clearing, leaving the stumps and root structure intact. Non-woody vegetation and the soil profile

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will be left intact until the Contractor is ready to begin trenching the crossing. This buffer should not be confused with the 50-foot setback required for extra workspace (see Section 2.6).

Sediment barriers will be promptly installed and properly maintained at waterbody crossings and waterbodies adjacent to the construction ROW in accordance with the Project's state-specific *Stormwater Pollution Prevention Plan (SWPPP)* until replaced by permanent erosion controls or restoration of adjacent upland areas is complete.

2.6 WORKSPACE AND EXTRA WORKSPACE

The permanent easement, temporary workspace, ATWS, and any special restrictions are depicted on the construction drawings.

Extra workspaces, as defined in Section 1.2, include work areas outside the boundary of the typical construction ROW. These spaces are typically used to assemble pipe segments, stage additional equipment or materials for the crossing, and for temporary spoil storage. Clearing of forested and brushy areas for extra workspace will be avoided as much as possible. Woody vegetation in wetlands and riparian areas will typically not be cleared for the purpose of extra workspace unless approved by appropriate regulatory agencies as stipulated in permits issued for the Project. Clearing of woody vegetation is never permitted at an ESA. Extra workspaces will be constructed as follows:

- Extra workspaces will be located 50 feet away from the water's edge where topographic or other physical conditions such as stream channel meanders allow (see Figures 14-16).
- If safe work practices or site conditions do not allow for a 50-foot setback, extra workspaces should be located as far from the water's edge as site-specific conditions allow.
- Extra workspaces will be limited to the minimum size needed to safely and efficiently construct the stream crossing.

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2.7 BRIDGES AND EQUIPMENT CROSSING

Temporary bridges may be installed in certain locations to allow construction equipment to cross perennial waterbodies. Bridges may also be installed at intermittent waterbodies flowing at the time of construction, or those which have a high probability of flowing during construction. Intermittent waterbodies may cause saturated conditions, which would increase the probability of rutting. Bridges may include clean rock fill over culverts, timber mats supported by flumes, railcar flatbeds, and flexi-float apparatus, as described below and will be removed as soon as practical during final restoration. Construction equipment will be required to use the bridges, except the clearing crew and equipment necessary for installation of equipment bridges, which will be allowed a single pass across waterbodies prior to bridge installation, unless restricted by applicable permits.

An equipment bridge is only permitted at ESAs if the site-specific ESA plan calls for one, if it is clear-span (no in-stream supports), and it is above the ordinary high water mark (OHWM).

2.7.1 Types of Bridges

Equipment bridges will be constructed using one of the following techniques:

- Timber mats (clear-span and in-stream support - see Figure 16);
- Rock flume (see Figure 17);
- Railroad flat cars; and

- Other methods as approved by ONEOK and appropriate agencies.

Soil will not be used to construct temporary equipment bridges.

2.7.2 Bridge Design and Maintenance

Bridges will be built and maintained in accordance with applicable permits. At a minimum, equipment bridges will be designed and installed to withstand the maximum foreseeable stream flow that may occur while the bridge is in place. Bridges at ESAs must be above the OHWM. Bridges will not restrict flow or cause water to pool and will be constructed with clean materials. Bridges will be designed and maintained to prevent soil from entering the waterbody. Erosion and sediment control barriers will be installed and maintained around vehicle access points as necessary to prevent sediment from reaching the waterway. Soil that accumulates on the bridge decking will be removed as needed, or as deemed necessary by ONEOK.

2.8 STREAM AND RIVER CROSSING CONSTRUCTION METHODS

The following stream and river crossing methods are typically used and are subject to further restrictions by ONEOK and applicable permits and subject to modifications as approved by appropriate regulatory agencies during construction.

2.8.1 Wet Trench Method

Installation

The wet trench method (see Figure 12) will be used to cross streams and rivers that are not required by permit to be crossed using a dry crossing technique (i.e., flume, dam and pump, or directional drill (see Figure 15). The wet trench method is not permitted at ESA locations. The following procedures will be used during wet trench crossings:

- Sediment control measures will be in place before grading from the 20-foot vegetative buffer left on each stream bank. Spoil containment structures will be installed back from the stream bank so that spoil does not migrate into the stream. Grading will be directed away from the waterbody to minimize the potential for sediment to enter the stream. The grading of stream banks will be restricted to the trench line and areas necessary for safe bridge installation.
- After grading, backhoes, or draglines will be used to excavate the trench. Excavating equipment will operate from one or both banks, without entering the stream. If equipment must encroach into the stream, it will operate on clean construction mats. Streambed material will be segregated and placed within a spoil containment structure in approved construction work area limits.
- In-stream trenching and backfilling on flowing waterbodies will typically be completed within 24 hours or less on minor waterbodies (<10 feet wide) and 48 hours or less on intermediate (>10 feet to 100 feet wide) and 72 hours at major (>100 feet wide) waterbodies, or as directed by applicable permits.
- Earthen trench plugs (hard plugs) between the stream and the upland or wetland trench will be left undisturbed during excavation of the in-stream trench to prevent diversion of the stream flow into the open trench and to prevent water that may have accumulated in the adjacent upland trench from entering the waterbody. Trench plugs will be removed immediately prior to pipe placement, and then replaced when the pipe is in place. Trench water accumulated upslope of trench plugs must be dewatered appropriately prior to trench plug removal.

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- If trench dewatering is necessary, the pump intake will be suspended off the trench bottom and dewatering will take place into a sediment filter bag and/or a straw bale and geotextile dewatering structure (see Figures 19-21) where directed by ONEOK. The trench will be dewatered in such a manner that no heavily silt-laden water flows into streams or wetlands, typically in a well-vegetated upland area (see Section 5.0). Only non-woven fabric will be used for filter bags. Landowner approval is required in advance of placement of dewatering structures outside of the approved construction workspace.
- Backfilling will begin after the pipe is positioned in the trench at the desired depth. Backfill material will consist of the spoil material excavated from the trench and parent streambed unless otherwise specified in state or federal permits. The in-stream trench will be backfilled so that the stream bottom is as near as practicable to its pre-construction condition, with no impediments to normal water flow.

Temporary Stabilization

ONEOK will restore the stream banks as near as practicable to pre-construction conditions unless that slope is determined to be unstable (see Section 2.9). Once the banks have been reshaped, ECDs will be installed within 24 hours of backfilling the crossing. Temporary slope breakers will be installed on all sloped approaches to streams in accordance with the spacing requirements outlined in Section 1.7.6.

A temporary seed mix, as indicated in the *Revegetation Plan*, and mulch and/or erosion control blankets will be installed within a 50-foot buffer on either side of the stream. A sediment barrier will be installed upslope of the temporary seeding area.

2.8.2 Dam and Pump Method

Installation

The dam and pump method is a dry-crossing method that is suitable for low flow streams and is a preferred alternative to fluming for crossing meandering channels. The dam and pump method involves damming of the stream with sandbags, inflatable dams, and/or steel plates upstream and downstream of the proposed trench before excavation (see Figure 13) and pumping water around the construction area. The dam and pump method is not permitted at ESA locations. The following procedures will be implemented for dam and pump crossings:

- Pumping of the stream flow across the ROW will commence simultaneously with dam construction to prevent interruption of downstream flow. Stream flow will be pumped across the construction area through a hose(s) and will be discharged to an energy-dissipation device, such as plywood boards, to prevent scouring of the streambed.
- The pumps will be located on the upstream side of the crossing and will be placed in impermeable, sided structures which will act as containment units for the pumps and fuel containers. The pumps used for the dam and pump crossing method will not be placed directly in the stream or on the streambed. Pumps will have a pumping capacity greater than the anticipated stream flow. The pumping operation will be monitored and adjusted as necessary to maintain an even flow of water across the work area and near-normal water levels upstream and downstream from the crossing. Backup pumps of equal or greater capacity will be on-site at all times in the event that the primary pumps fail.

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- The pump intake must be suspended to prevent the uptake of sediment from the stream bottom and must be equipped with a screen with less than one-inch-diameter openings, or equivalent device, to prevent fish uptake.
- Spill kits, as described in the *SPCC Plan*, will be stored adjacent to pumps and fuel.
- Dams will be constructed of sandbags, inflatable dams, aqua-dams, and/or steel plates. The dams will prevent the stream from flowing into the construction area. The dams will be continuously monitored for a proper seal. Additional sandbags, plastic sheeting, steel plating, or similar materials will be used where necessary to minimize the amount of water seeping around the dams and into the construction work area.
- Backhoes located on one or both stream banks will excavate a trench across the streambed. Existing streambed materials will be segregated and placed within a spoil containment structure in approved construction work area limits.
- Earthen trench plugs between the stream and the upland trench will be used during excavation of the in-stream trench to prevent the diversion of any groundwater that seeps into the open trench. Trench plugs will be removed immediately before pipe placement and then replaced when the pipe is in place.
- Standing water that is isolated in the construction area by the dams will be pumped into a sediment filter bag and/or a straw bale and geotextile dewatering structure, generally located in a well-vegetated upland area, and discharged in such a manner that no heavily silt-laden water flows into streams or wetlands (see Section 5.0). Only non-woven fabric will be used for filter bags.
- Backfilling will begin after the pipe is positioned in the trench to the desired depth. Backfill material will consist of the spoil material and parent streambed excavated from the trench unless otherwise specified in state or federal permits. The in-stream trench will be backfilled so that the stream bottom is contoured to its pre-construction condition, with no impediments to normal water flow.

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Bank Stabilization

For dry-ditch crossings, complete streambed and bank stabilization before returning flow to the waterbody channel. Once the stream banks have been stabilized, the dams and pump will be removed in a manner to minimize streambed disturbance. Restoration of the banks will be completed as described in Section 2.9.

2.8.3 Flume Method

Installation

The flume method is a dry-crossing method that is suitable for crossing sensitive, relatively narrow streams that have straight channels and are relatively free of large rocks and bedrock at the point of crossing. This method involves placement of flume pipe(s) in the streambed to convey stream flow across the construction area without introducing sediment to the water (see Figure 14). The dam and flume method is not permitted at ESA locations. The procedures for using the flume method are described below.

- The flume(s) will be of sufficient diameter to transport the maximum flows anticipated to be generated from the watershed. The flume(s) typically 40 to 60 feet in length, will be installed before trenching and will be aligned so as not to impound water upstream of the flume(s) or cause downstream bank erosion. The flumes will not be removed until after the pipeline has been installed, the trench has been backfilled, and the stream banks have been stabilized.
- The upstream and downstream ends of the flume(s) will be incorporated into dams made of sand bags and plastic sheeting (or equivalent). The upstream dam will be constructed first and will funnel stream flow into the flume(s). The downstream dam will prevent backwash of water into the trench and construction work area. The dams will be continuously monitored for a proper seal. Adjustments to the dams will be made where necessary to prevent large volumes of water from seeping around the dams and into the trench and construction work area.
- After the streambed is dewatered, backhoes located on one or both stream banks will excavate a trench across the streambed. Spoil generated during trenching will be stored in a straw bale/silt fence containment area located away from the stream banks within approved construction work areas.
- Earthen trench plugs between the stream and the upland trench will be used, during excavation of the in-stream trench to prevent diversion of the stream flow into the open trench or upland sediment flowing into the stream via the trench. Trench plugs will be removed immediately before pipe placement, and then replaced when the pipe is in place.
- If trench dewatering is necessary to complete the installation of the pipe, the discharge will be pumped into a sediment filter bag or a straw bale geotextile dewatering structure, into a well-vegetated upland area, and discharged in such a manner that no heavily silt-laden water flows into streams or wetlands (see Section 5.0). Non-woven fabric must be used for filter bags.
- Backfilling will begin after the pipe is positioned in the trench to the desired depth. Backfill material will consist of the spoil material excavated from the trench and parent streambed unless otherwise specified in state or federal permits. The in-stream trench will be backfilled so that the stream bottom is similar to its pre-construction condition, with no impediments to normal water flow in a manner to minimize streambed disturbance.

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Bank Stabilization

For dry-ditch crossings, complete streambed and bank stabilization before returning flow to the waterbody channel. After the stream banks have been stabilized, the dams and flume will be removed from the streambed allowing water to resume its flow in the channel. Restoration of the banks will be completed as described in Section 2.9.

2.8.4 Horizontal Directional Drill (HDD) Method

Installation

Installing the pipe underneath a stream will involve placing a drill unit on one side of the stream (see Figure 15). Minor hand clearing is typically required, unless otherwise specified by a Project Permit, between the entry and exit points to facilitate the installation of the tracking wires, when wires are needed, and for visual inspection of the drill path. A small diameter pilot hole will be drilled under the stream along a prescribed profile. After the pilot hole has been completed, barrel reams will be used to enlarge the pilot hole to accommodate the desired pipeline diameter. Drilling

mud will be necessary to remove cuttings and maintain the integrity of the hole. Water from a ONEOK-approved source will be used to prepare the slurry of drilling mud and will be appropriated according to applicable permits (see Section 7.0). The pipe section will be pulled through the hole by the drilling rig and then welded to the adjoining sections of pipe on each side of the river.

The HDD or conventional bore method will be used at all ESA locations.

Drilling Mud

During drilling operations, drilling mud and slurry will be stored back from the river bank in an earthen berm sediment control structure, in tanks, or by other methods so that it does not flow into the stream, adjacent wetlands, or off the approved construction workspace.

ONEOK has developed a contingency plan to address measures to be performed in the event of a release of drilling mud onto the ground surface or waterbody. The plan stipulates monitoring for an inadvertent release of drilling mud during the HDD operation. The plan also outlines procedures for an inadvertent release in an ESA. See the ONEOK *Horizontal Directional Drilling Inadvertent Release Control Plan* for additional details.

After the pipe is in place, excess drilling mud and slurry will be disposed of properly, in accordance with applicable local, state, or federal regulations.

Bank Stabilization

The directional drilling method normally does not result in the disturbance of the stream banks or riparian vegetation, which reduces the potential for erosion and sedimentation at the stream crossing. Consequently, the ECDs that are installed at open-cut crossings typically are not necessary for drilled/bored crossings. However, ECDs may be utilized to assist in containing drilling mud, or adjacent disturbed ROW, on the approved construction workspace.

2.9 PERMANENT RESTORATION

Stream Banks

Stream banks disturbed during installation of the pipelines will be stabilized with erosion control materials such as jute or equivalent and seeded in accordance with ONEOK's *Revegetation Plan*. Permanent stabilization must occur prior to returning stream flow for dam and pump/flume crossings unless site and permit conditions delay permanent installation. Bank stabilization activity should not be more than 500 feet in length along the bank, and no material placed in excess of the minimum needed for erosion protection. The stabilization activity should not exceed an average of one cubic yard per running foot below the OHWM. All activity should be properly maintained, including repairing after storms or erosion events.

Where the banks have been disturbed, ONEOK will restore the slopes as near as practicable to pre-construction conditions unless that slope is determined to be unstable. Where the slope of a bank is determined to be unstable or has the potential to erode or fail, the bank will be reshaped to transition the disturbed areas into the natural stream bank with the intent to stabilize the bank and create a blended, natural appearance. If the original stream bank is excessively steep and unstable and/or flow conditions are severe, a more stable final contour may be specified, and alternate stabilization measures may be installed. Alternate stabilization measures must conform to existing permit conditions. The Contractor and Environmental Inspection team will inform ONEOK when restoring preconstruction contours is not feasible.

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Berms or other sediment filter devices will be installed at the base of sloped approaches to streams greater than 5 percent and the outlet of the berm will be directed away from the stream into a well-vegetated area (see Figures 6 and 10). Temporary ECDs will remain in place until the area has been stabilized and adequate revegetation has been established.

2.9.1 Vegetative Bank Restoration

Typically, waterbody banks will be restored as near as practicable to preconstruction conditions after backfilling is complete and will be seeded with an appropriate seed mix as specified in the *Revegetation Plan*. ECDs (e.g. erosion control blankets, silt fences, etc.) will be installed as necessary based on site-specific conditions. If installation of the pipeline creates unstable soil conditions due to either stream meanders or stream crossing angle, ONEOK will consult with the appropriate agencies to identify additional site stabilization techniques.

2.9.2 Rock Riprap Restoration

Unstable soils and/or site-specific factors such as stream velocity and flow direction may require additional restoration efforts, such as installation of rock rip-rap, to stabilize disturbed stream banks. Rock rip-rap will be used only where site-specific conditions require and where applicable state permits or approvals have been acquired. Geotextile fabric and rock riprap will be placed according to site and permit conditions (see Figure 22). Disturbed soils upslope and on either side of the riprap will be prepared for seeding according to the *Revegetation Plan* and other stream bank protection requirements.

Rock riprap will not be installed below the OHWM, which will be marked upon request, or within wetlands. Rock riprap is not to be used as a support for a bridge within a wetland or a waterbody.

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2.9.3 Bridge Removal

Equipment bridges will be removed during final cleanup or, if access is needed, after final cleanup and permanent seeding. Restoration of the bridge area will be completed upon bridge removal. Bridges installed for winter construction (if applicable) will be removed before spring break up unless access is needed for final cleanup and restoration other portions of the ROW.

2.9.4 Swales

Swales will be restored as near as practicable to original conditions. Swales will be seeded and either mulched with straw or erosion control blankets will be installed to the perceivable top of bank for the width of the approved construction workspace.

2.9.5 Drainage Ditches and Intermittent Streams

Drainage ditches and intermittent streams will be permanently restored and stabilized with erosion control blanket, permanent seeding, or other appropriate measures.

3.0 WETLAND CROSSING GENERAL REQUIREMENTS

Typical pipeline construction in wetlands will consist of clearing, stringing, trenching, dewatering, installation, backfilling, final grading, cleanup, and revegetation. However, due to the unstable nature of some wetland soils, construction activities may differ somewhat from those described for upland areas. Construction activities will be minimized in wetlands to the extent

practicable. ONEOK will also use special construction techniques to minimize the disturbance to plants and soils and to protect wetland hydrology.

Pre-construction planning is an essential part of wetland crossings. Wetland crossing requirements, including construction methods, timing, erosion control, and restoration, are described in this section and in the wetland crossing permits issued by state and federal agencies. Prior to construction, the Contractor may identify alternative provisions that would provide an equal or greater level of protection to wetland ecosystems if the Contractor considers certain parts of these procedures to be technically impractical due to site-specific engineering constraints. Any proposed alternative provisions must be submitted to ONEOK far enough in advance of construction to allow ONEOK an opportunity to review the alternatives and consult with the appropriate regulatory agencies without causing construction delays. The Contractor must receive written approval from ONEOK prior to implementing the alternative construction techniques.

The procedures in this section apply to all wetlands that will be affected by the project. These procedures require that judgment be applied in the field and will be implemented under the supervision of ONEOK. The intent of these procedures is to minimize construction-related disturbance and sedimentation of wetlands and to restore wetlands to pre-construction conditions to the extent possible. In the event a waterbody crossing is located within or adjacent to a wetland crossing, the measures in both Sections 2 and 3 will be implemented to the extent practicable.

3.1 WETLAND ACCESS

The Contractor must use the construction ROW, existing public roads, approved access roads, such as private roads under landowner agreement, to access wetland areas.

3.2 SPILL PREVENTION

3.2.1 Storage of Fuels and Other Materials

No storage of hazardous materials, chemicals, fuels, and lubricating oils, and no concrete coating activities will be permitted in, or within 100 feet of, any wetland boundary unless special provisions have been implemented in accordance with ONEOK's *SPCC Plan*.

3.2.2 Refueling, Fuel Handling, and Equipment Maintenance

Construction equipment will be refueled in upland areas at least 100 feet from a wetland. Where the Contractor and ONEOK determine that conditions require construction equipment (e.g., swamp hoe, trench dewatering pumps, or portable generators) to be refueled within 100 feet of a wetland, the Contractor must follow the procedures described in ONEOK's *SPCC Plan* and implement additional provisions based on site-specific conditions. No equipment will be washed within 100 feet of streams or waterbodies. Vehicles and equipment left on the ROW overnight must be parked at least 100 feet from a delineated wetland boundary unless special provisions have been implemented in accordance with ONEOK's *SPCC Plan*, secondary containment structures are functional and properly placed, and prior approval is obtained from ONEOK.

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3.3 CLEARING

Clearing the construction ROW in wetlands will be similar to clearing in uplands. For construction to proceed, obstructions (e.g., trees, brush, and logs) need to be removed. Typically, low ground pressure equipment will be used, limiting disturbance to the wetland. When clearing in wetlands, the following restrictions apply:

- The construction ROW width in wetlands will typically be limited to 75 feet as depicted in Figure 23 unless non-cohesive soil conditions require utilization of a greater width.
- Vegetation and trees within wetlands will be cut off at ground level, leaving existing root systems intact. Trees within ESAs will not be removed.
- Cuttings and debris will be removed from the wetland and disposed of properly.
- Between extra work areas and the edge of the wetland, limit the clearing of vegetation to the construction right-of-way.
- Mechanized tree clearing will not be allowed in forested wetlands or ESAs as identified by ONEOK.

3.4 EXTRA WORKSPACE IN WETLANDS

ONEOK attempted to locate extra workspace outside of wetlands wherever practicable; however, extra workspaces have been sited in select wetlands where the wetland is adjacent to a waterbody, road, railroads, foreign utility crossings, and/or pipeline cross-over. Clearing of forested wetlands for extra workspace will be avoided as much as possible and never allowed at ESA locations. Woody vegetation in wetlands will not be cleared for the purpose of extra workspace unless approved by the appropriate regulatory agency.

Staging areas, additional spoil storage areas, and other additional work areas (extra workspace) will be located in upland areas at least 50 feet away from wetland boundaries (see Figure 23), where safe work practices or site conditions permit. These extra workspaces may be located closer if the area is disturbed agricultural land, such as a row crop. If site conditions do not permit a 50-foot setback, then these areas will be located as far away from the wetland as is practicable. Vegetation will not be cleared between these areas and the wetland in any event. No construction activities including vegetation clearing or earthwork will occur between the extra workspace and sensitive resource areas (wetlands or waterways). The size of the additional workspace areas will be limited to the minimum needed to construct the wetland crossing.

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3.5 GRADING IN A WETLAND

Grading in a wetland, if required, will be conducted in a manner consistent with applicable federal, state, and local permits. Grading activities will be confined to directly over the trench line. Grading outside the trench will only be allowed where required to ensure safety and restore the ROW after backfilling the trench. No grading is permitted within ESAs.

3.6 CONSTRUCTION MATTING

Supplemental equipment supports, such as timber mats (see Figure 23), will be used where necessary to provide temporary portable support for construction equipment and minimize soil compaction and/or soil mixing. No equipment supports are permitted within ESAs. To prevent the spread of noxious and invasive plant species, timber mats must be free of soil and plant material prior to being transported onto the ROW. The Contractor is responsible for having a sufficient number of

construction mats to perform the work. Tree stumps, brush riprap, imported soil, and rock fill will not be brought in to stabilize the ROW, or excavations in wetlands. Timber riprap (also known as corduroy road) cannot be used without prior written approval from ONEOK. Pre-existing corduroy roads in wetlands may be used but may not be improved, maintained, restored, or replaced without site-specific authorization from applicable agencies. Subsoil excavated from the pipeline trench in the wetland may be placed on top of equipment mats for additional stabilization.

All timber mats, construction debris, and larger woody vegetative debris will be removed during the cleanup of wetlands to pre-construction condition or equivalent to surrounding area.

3.7 TRENCHING

Excavation of the pipeline trench in wetlands typically will be accomplished using backhoe excavators. The duration of open trench will be minimized to the extent possible.

3.8 TOPSOIL SEGREGATION

Typically, when constructing in wetland areas without standing water, up to one foot of topsoil (organic layer) will be stripped from the trench line and stockpiled separate from trench spoil. In standing water wetlands, topsoil segregation is not typically practical; however, ONEOK will attempt to segregate as much of the organic layer as possible based on site/saturation conditions. If normally unsaturated wetlands are saturated at the time of construction, topsoil segregation will be attempted according to Figure 23 and based on recommendations from ONEOK and appropriate regulatory agencies. Topsoil will be restored to its approximate original stratum, after backfilling is complete.

3.9 TRENCH BREAKERS

Trench breakers will be installed as necessary, near the wetland boundary, to maintain the original wetland hydrology.

3.10 PIPELINE INSTALLATION

The following procedures are intended to minimize siltation and disturbance to wetlands during installation.

3.10.1 Push/Pull Method

Large wetlands with standing water can generally not be crossed with typical crossing methods. In these areas, the pipeline will be assembled in an upland area and positioned in the trench using the “push-pull" and/or "float" techniques. Typically, this fabrication requires use of extra workspace adjacent to the construction ROW. The trench will be dug by a backhoe (or equivalent) supported on timber mats. The prefabricated section of pipeline will then be pushed-pulled into position or floated across the wetland. When the pipeline is in position, the floats, if used, will be removed and the pipeline will sink into position. Barrels, floats, and banding will be recovered and removed prior to backfilling. The trench will then be backfilled, and the wetland will be restored by a backhoe or similar equipment working from construction mats or by low ground pressure equipment. The Push/Pull method is not permitted in ESAs.

3.11 TEMPORARY EROSION AND SEDIMENT CONTROLS

ECDs at approaches to wetlands will be installed as described in this section and Section 1.7.5, according to the specifications presented on Figures 3 and 4. ECDs (e.g., silt fence) will be installed across the entire construction ROW upslope of the wetland boundary, where necessary, to

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prevent sediment flow into the wetland. Where wetlands are adjacent to the construction ROW and the ROW slopes toward the wetlands, ECDs will be installed along the edge of the construction ROW as necessary to prevent sediment flow into the wetlands. ECDs will be installed along the edge of the construction ROW, as necessary, to contain spoil and sediment within the construction ROW through wetlands. In the travel lane, these may incorporate removable sediment barriers or drivable berms. Removable sediment barriers can be removed during the construction day and re-installed after construction has stopped for the day or when heavy precipitation is imminent.

ECDs will be maintained in proper working order to prevent the flow of sediment into wetlands from spoil piles or sloped approaches that are adjacent to the wetlands. When the depth of sediment reaches one-half of the height of a sediment barrier, the barrier will be replaced, and/or the sediment removed. Non-functional sediment-control measures will be repaired, replaced, or supplemented.

3.12 BACKFILLING

The Contractor will restore wetlands as near as practicable to pre-construction conditions and must make a reasonable attempt to return the subsoil its pre-construction density. During the backfilling of wetland areas, subsoil material removed from the trench during construction will be replaced so that the material is not mounded above the adjacent ground surface (undisturbed trench wall). Subsoil that exceeds the elevation of the ground adjacent to the trench will be removed from the wetland and disposed of in an upland area or a ONEOK-approved disposal site. After the trench has been backfilled with subsoil, previously segregated topsoil will be spread over the trench area and mounded no more than 12 inches above the adjacent, undisturbed soil.

3.13 ROUGH GRADING, CLEANUP, AND TEMPORARY RESTORATION

Cleanup and rough grading activities may take place simultaneously. Cleanup activities typically will involve removing construction debris and replacing fences removed during construction. Rough grading will include restoring original conditions within the disturbed areas (i.e., ditch line, spoil storage areas, and equipment travel lane) and installing or repairing temporary ECDs. Temporary slope breakers will be installed near the boundary between the wetland and adjacent sloped approaches, to prevent sediment flow into the wetland.

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3.13.1 Timing

Cleanup and rough grading (including installation of ECDs) will begin as soon as practical after the trench is backfilled, weather permitting.

3.13.2 Temporary Stabilization

Where necessary to prevent erosion and in accordance with *ONEOK's Revegetation Plan*, disturbed wetland areas will be stabilized by seeding with a temporary cover at a rate adequate for germination and ground cover unless standing water is present. For farmed wetlands, seeding requirements will be applied for agricultural lands or as required by the landowner.

The Contractor will not use fertilizer, lime, or mulch in wetlands unless required in writing by the appropriate land management agency. ONEOK does not propose permanent planting or seeding in wetlands.

4.0 HIGHWAY, ROAD, AND RAIL CROSSINGS

4.1 EXTRA WORKSPACE

Extra workspaces for bored road and railroad crossings and open-cut road crossings will be determined on a site-specific basis and must be approved by ONEOK prior to use. These workspaces will be adjacent to the road or railroad (see Figure 24).

4.2 MAINTENANCE

Roadway crossings will be maintained in a condition that will prevent the tracking of mud onto the roadway. If mud is tracked onto a roadway, the Contractor will remove accumulated material from the road and place within a sediment barrier as soon as practical.

4.3 TEMPORARY EROSION AND SEDIMENT CONTROLS

Temporary ECDs (e.g., silt fence and/or double-staked straw bales) will be installed on sloped approaches to road crossings where vegetation has been disturbed as discussed in Section 1.7.5 and installed according to the specifications presented on Figures 3 and 4.

5.0 CONSTRUCTION DEWATERING

5.1 TRENCH DEWATERING

The following additional guidance is provided regarding trench dewatering activities to employ the maximum amount of reasonable protective measures to sensitive resource areas.

At each location where dewatering is to be conducted, the Contractor must consider the following conditions in planning the dewatering event. Prior to initiating dewatering activities, the Contractor must check the water discharge situation to ensure that the BMPs are applied in such a way as to minimize the potential for water containing sediment from reaching a sensitive resource area. Landowner approval must be acquired in advance of placement of dewatering structures outside of the approved construction ROW, if required. If dewatering off the ROW a well-vegetated upland area will be selected.

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- **Water Discharge Setting** – The Contractor will assess each water discharge situation to include:
    - Soil Type - The soil types the discharged water would flow over. The management of discharged water traveling over sandy soil is more likely to soak into the ground as compared to clay soils.
    - Ground Surface - The topography and vegetation in the area that would influence the surface flow of the discharged water.
    - Adjustable Discharge rate - The flow rate of the discharged water (which may need to vary) should be managed based on the site conditions and applicable permits to minimize instances of water from reaching a sensitive resource area. (Example - water discharged at 500 gallons per minute may soak into the ground while if discharged at a higher flow rate would cause water to flow via overland runoff into a waterbody).
    - Discharge Outfall - The amount of hose needed to attempt to discharge water at a location which drains away from waterbodies or wetlands.

- **Pump Intake** - Install a float near the suction end of the intake hose to prevent the uptake of sediment from the trench bottom (see Figures 18-21). Alternative methods may be used where the performance of the alternative method is equal to or greater than the use of a float.
- **Overwhelming Existing Drainage** - If clean discharged water will reach a waterbody, control the discharge rate to prevent downstream flooding and/or erosion.
- **Filtering Mechanism** – All dewatering discharges will be directed through a filtering device as indicated below.
    - Well-Vegetated Upland Area – Water can be directed to a well-vegetated upland area through a geotextile filter bag. The ground at the discharge location will be protected as necessary to prevent scouring/erosion of the ground surface at the end of the discharge hose. Geotextile bags will be sized appropriately for the discharge flow rate and suspended sediment particle size.
    - Straw Bale Dewatering Structure – Where the dewatering discharge point cannot be located in an upland area due to site conditions and/or distance, the discharge will be directed into a straw bale dewatering structure. The size of the straw bale dewatering structure is dependent on the maximum water discharge rate. A straw bale dewatering structure should be used in conjunction with a geotextile filter bag to provide additional filtration near sensitive resource areas.
    - Alternative dewatering methods (e.g., use of water cannons) may be approved by ONEOK on a site-specific basis.
- **Monitoring** – Trench dewatering activities will be monitored at all times by the Contractor.

5.1.1 Regulatory Notification and Reporting

ONEOK will notify appropriate agencies as required by all permits/authorizations. Reports regarding the volume and quality of the water withdrawn and discharged will be submitted by ONEOK, if required by the applicable permits. The Contractor will assist ONEOK in collecting appropriate data and any water samples required or in determining volumes of water appropriated.

5.1.2 Flow Measurement

The volume of water discharged from the trench will be recorded if required by the applicable permits. The volume may be determined using a flow meter, or equivalent method as dictated by permit stipulations.

5.1.3 Water Sampling

Water discharged from trench dewatering locations may need to be sampled as required by NPDES discharge permits. If required, the Contractor will assist ONEOK in obtaining these samples and will be responsible for complying with the permit limitations.

6.0 HYDROSTATIC TESTING

Hydrostatic testing involves filling the new pipeline segments with water acquired in accordance with applicable permits, raising the internal pressure level, and holding that pressure for a specific period of time per federal Department of Transportation regulation (49 CFR 195) to verify that

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there are no flaws in the pipe or welds. Pre-built sections (e.g., HDD sections) may be hydrostatically tested prior to installation. After the hydrostatic test is completed, the line will be depressurized, and the test water will be discharged. The Contractor will refer to the NPDES permit issued for water discharge and plan accordingly to meet the conditions of the permit. Depending on the water source and applicable permits, the hydrostatic test water may be discharged to the ground, hauled off to a ONEOK-approved disposal location, or reused for dust control.

6.1 SITING OF TEST MANIFOLDS

Hydrostatic test manifolds will be installed where necessary to ensure proper test pressures. To prevent the spread of noxious and invasive species, hydrostatic test equipment must be dry and free of soil and plant material prior to being transported onto the ROW. The selected location of test manifolds is based on engineering requirements to meet proper test pressures and incorporates changes due to topography. Where feasible, ONEOK will incorporate minor adjustments to the test manifold locations to avoid placement in wetlands and riparian areas. However, completely avoiding the placement of a test manifold in a wetland may not always be possible. The Contractor will install appropriate erosion and spill control measures where ONEOK determines that topographic conditions, primarily elevation changes, require test sections to be located in a wetland or riparian area.

The operation and refueling of hydrostatic test equipment will be in accordance with the conditions outlined in ONEOK's *Spill Plan*.

7.0 WATER APPROPRIATION SOURCES AND DISCHARGE LOCATIONS

During construction, water required for hydrostatic testing of the mainline pipe and HDD pipe sections, directional drilling, and dust control operations may be obtained from local sources, such as lakes, streams, and private or municipal wells. Water will only be withdrawn from sources approved by ONEOK and in accordance with applicable permits. Where water is appropriated from lakes or streams, the intake hose will be suspended off the stream or lake bottom and will be screened to prevent entrainment of fish. If appropriation is scheduled to occur during possible periods of low flow, including frozen conditions, a backup source will be identified. Water used for dust control activities will be applied to roads, disturbed areas, and soil piles as described in ONEOK's *Dust Control Plan*.

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7.1 APPROPRIATION FLOW MEASUREMENT

During withdrawal, adequate waterbody flow rates and volumes will be maintained to protect aquatic life and allow for downstream uses. At no time will the withdrawal rate for the water source exceed the rate specified in the applicable permits.

The volume and rate of withdrawal will be monitored to comply with applicable permit conditions. The withdrawal rate and total volume of water appropriated will be measured with a flow meter (or equivalent) and recorded. A project completion form may be required to be submitted after water use ends.

7.2 TEST WATER DISCHARGE

Hydrostatic test water discharges, sampling, testing and recordkeeping will be conducted in compliance with state-issued NPDES permits. Water used for hydrostatic testing of the mainline and HDD pipe sections will typically be discharged back to the waterbody from which it was appropriated (via direct discharge or through a dewatering structure built in an adjacent upland area) unless an alternate discharge location has been approved by the applicable agencies. Hydrostatic test waters

will not be transferred from one waterbody to another, across watershed, or major drainage divides unless specifically allowed by applicable permits. No additives to the water are permitted unless written approval is received from ONEOK and applicable permits authorize such additives.

Prior to hydrostatic testing the pipeline, ONEOK will prepare the pipe by removing accumulated construction debris, mill scale, dirt, and dust using a cleaning pig. The debris will be collected in a temporary receiver and will be properly disposed of by the Contractor. Upon completion of the cleaning operation, the pipeline will be sealed with the test headers.

Test headers and pigs will be arranged to allow for rinse water to be installed ahead of the fill pigs. Rinse water must be treated and disposed of in accordance with applicable permit conditions.

Following testing, the test section will be depressurized, and the water will be discharged to a well-vegetated, upland area and/or an appropriate dewatering structure, as described in the applicable permit. Dewatering structures include geotextile filter bags and/or a straw bale structure that may or may not be lined with geotextile fabric depending on the flow rate and overall volume of the discharge. Direct discharges to surface waters will be directed through an energy dissipation device such as a splash pup. Additional best management practices, such as the use of plastic sheeting or other material to prevent scour, will be used as necessary to prevent excessive sedimentation during dewatering. For example, in areas where highly erodible soils exist, the Contractor may use layers of visqueen (or similarly effective fabric) anchored in place during the discharge.

To minimize the potential for introduction and/or spread of invasive species due to hydrostatic testing activities, ONEOK proposes to discharge water to the same source watershed from which it was appropriated, unless otherwise specified in a Project Permit. If water is used to test multiple test sections, it will be relayed back to the source water through the pipeline for final discharge. Test water will not be discharged to a waterbody other than the appropriation source or a location within the same watershed, unless coordinated and permitted through the applicable agencies.

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7.2.1 Discharge Flow Measurement

The volume and rate of discharge will be monitored to comply with applicable permit conditions. The discharge rate and total volume of water discharged will be measured with a flow meter (or equivalent) and recorded. At no time will the discharge rate exceed the rate specified in the applicable permits. In the event no maximum discharge rate is identified, discharges will be monitored and adjusted as necessary to avoid overwhelming the discharge structure and scouring or sediment transport from the discharge location.

7.2.2 Discharge Water Sampling

Where required by permit conditions, ONEOK will sample the water during discharge. The Contractor will assist ONEOK in obtaining these samples. Chlorinated source water will be sampled at appropriation. If chlorine levels are at or above aquatic toxicity standards, the water will not be discharged directly to surface water.

7.3 REGULATORY NOTIFICATION AND REPORTING

ONEOK will notify appropriate agencies of the time of appropriations and/or discharges in accordance with applicable permit conditions. Reports regarding the volume and quality of the water withdrawn will be submitted by ONEOK if required by the applicable permits.

8.0 REVEGETATION

Permanent revegetation will involve preparing the seedbed and seeding disturbed, non-agricultural areas. The approved construction workspaces will be seeded as soon as possible after backfilling, weather and soil conditions permitting. With the exception of wetland areas, fertilizer and pH modifying agents (e.g., lime) will be applied as specified by ONEOK, in consultation with appropriate state and federal agencies and landowners. Refer to ONEOK's *Revegetation Plan* for specific information.

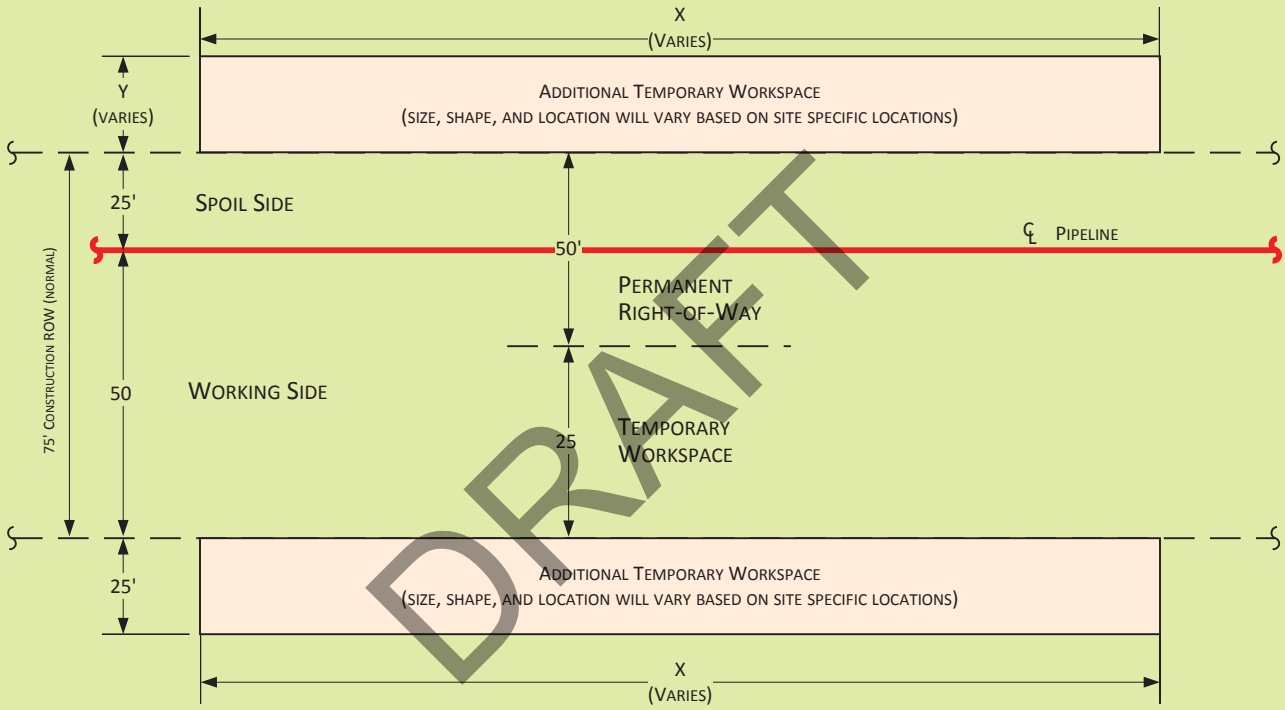
Revegetation will occur in accordance with stormwater permits and will be considered to have reached final stabilization when all soil disturbing activities are complete, and a uniform perennial vegetative cover with a density of 70 percent of the typical or existing background vegetative cover for the area has been established on disturbed unpaved areas and areas not covered by permanent structures.

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Construction Mitigation and Restoration Plan

Figures

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*not to scale

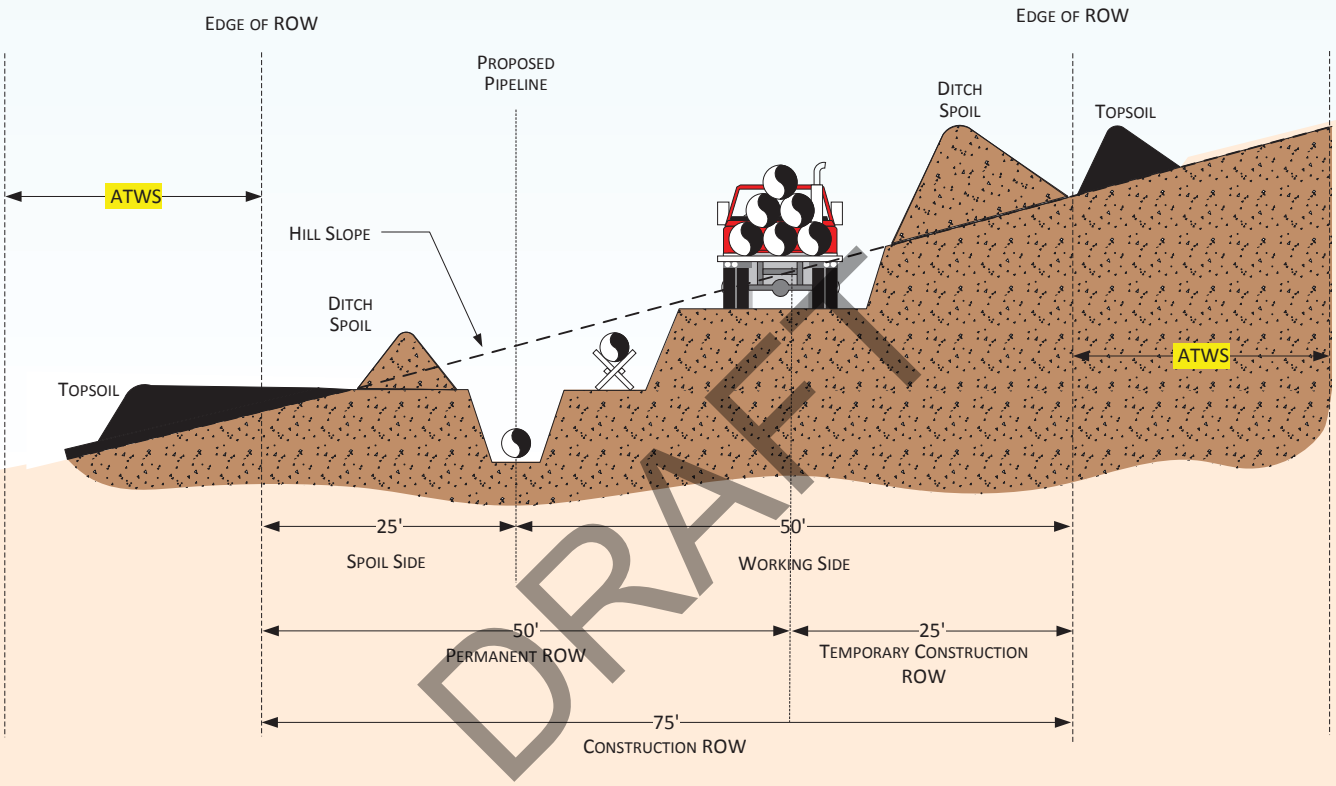
For environmental review purposes only.

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Figure 1
Typical Construction Layout

ERM

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NOTES:

1. GRADE TO BE RESTORED AS NEAR AS PRACTICABLE TO PRECONSTRUCTION CONDITIONS DURING RESTORATION.

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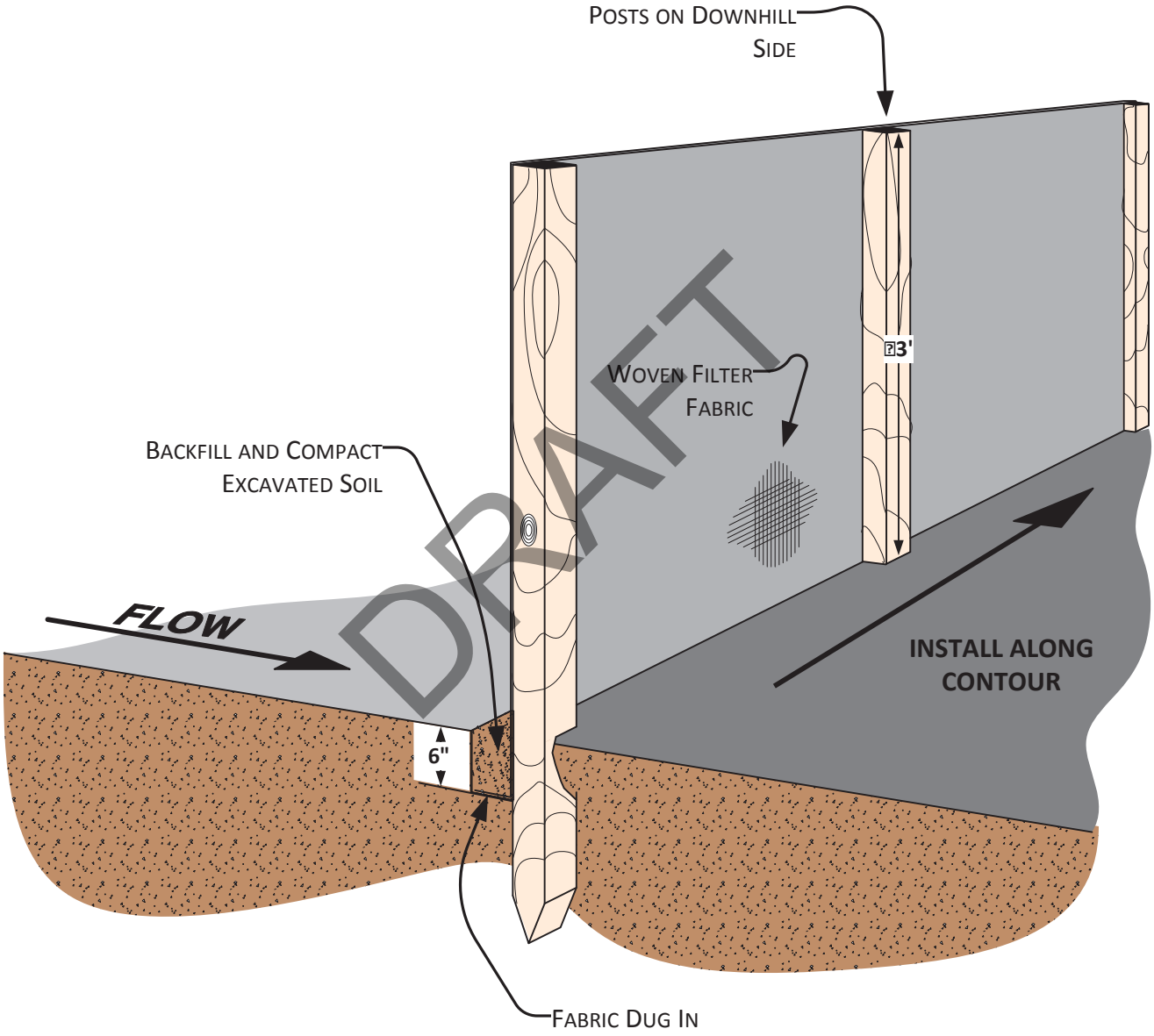
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Figure 2

Typical Construction ROW
on Sloping Terrain

ERM

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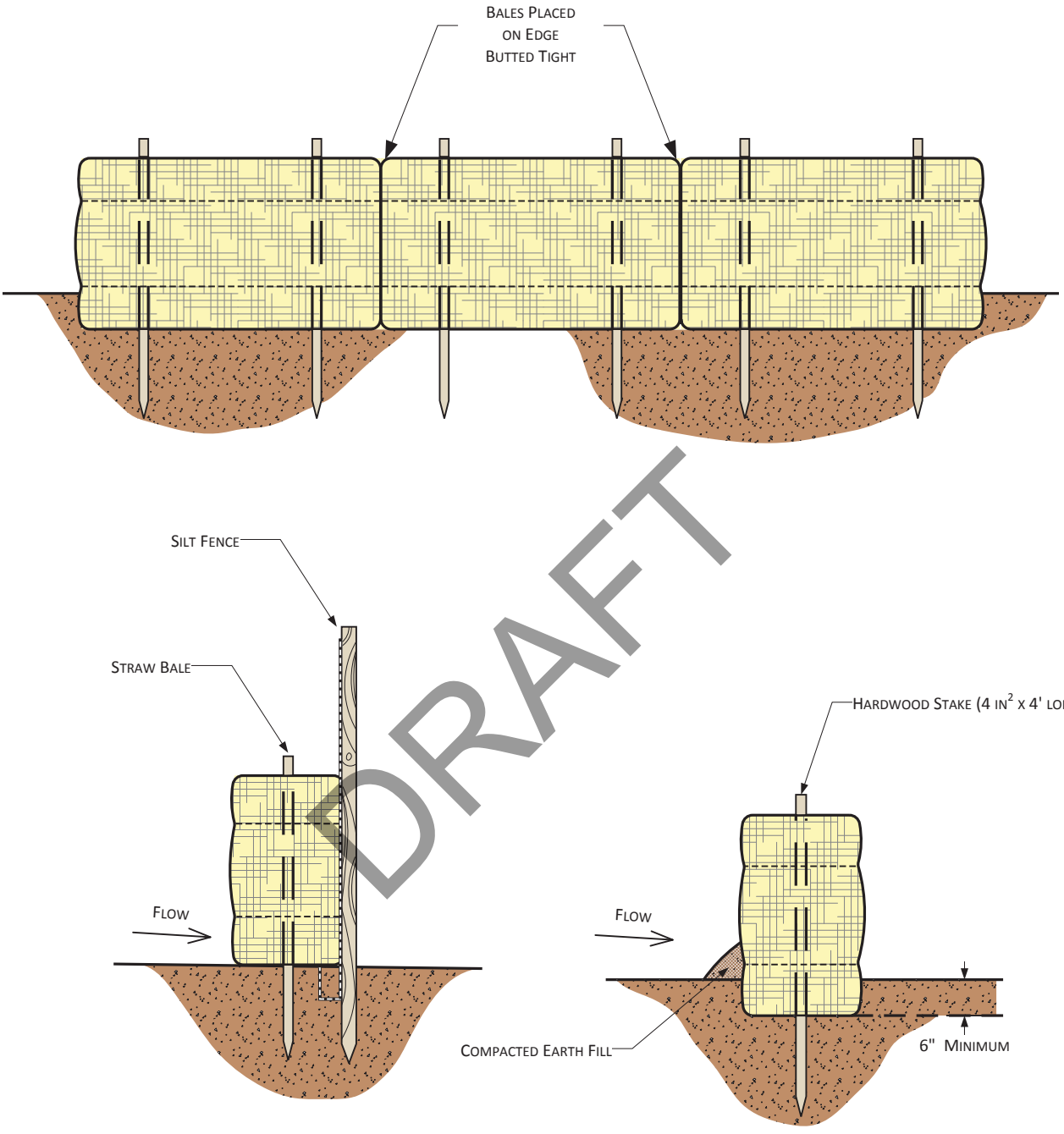
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Figure 3

Typical Silt Fence Installation
(OKS-7901-ENV-01)

ERM

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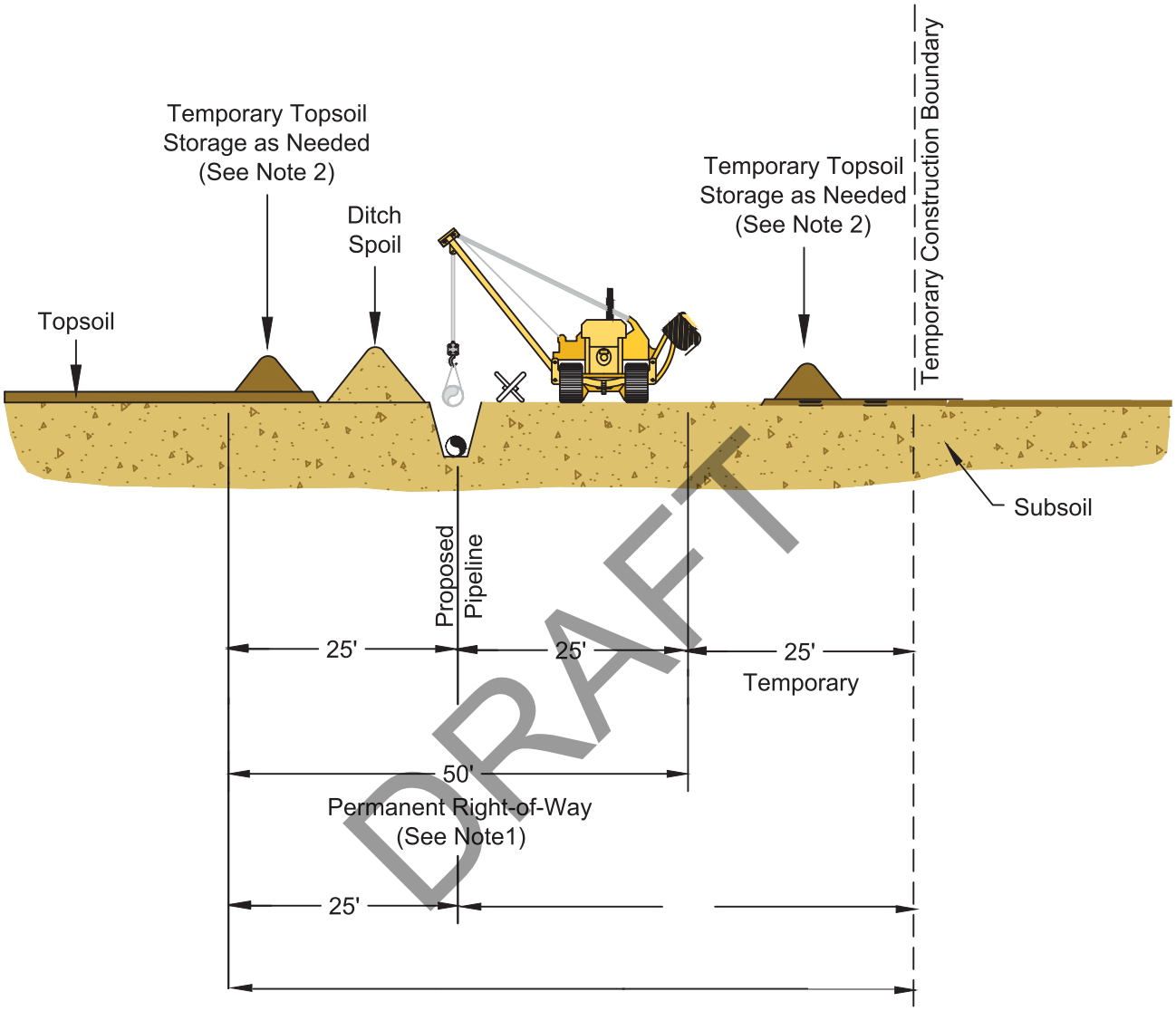
ONEOK

Figure 4

Typical Straw Bale Installation
(OKS-7901-ENV-02)

ERM

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_4_Typical_Straw_Bale.vsd	Scale: NTS	Date: 5/20/2007	Revised: 08/17/2018	Drawn By: AGPeterson



Notes:

1. Construction right-of-way will typically be 75 feet wide. The spoil side will be approximately 25 feet wide. The working side will be 50 feet wide.

2. This drawing reflects "Full Right of Way " topsoil stripping procedure. Stockpile topsoil separately from ditch spoil as shown or in other configurations approved by the company.

Figure 5
Typical Topsoil Segregation Trench
Right-of-Way
(OKS-7901-CONST-01c)

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_5_Typical_Topsoil_Segregation.vsd	Scale: NTS	Revised: 08/20/2018	Drawn By: RGCutting

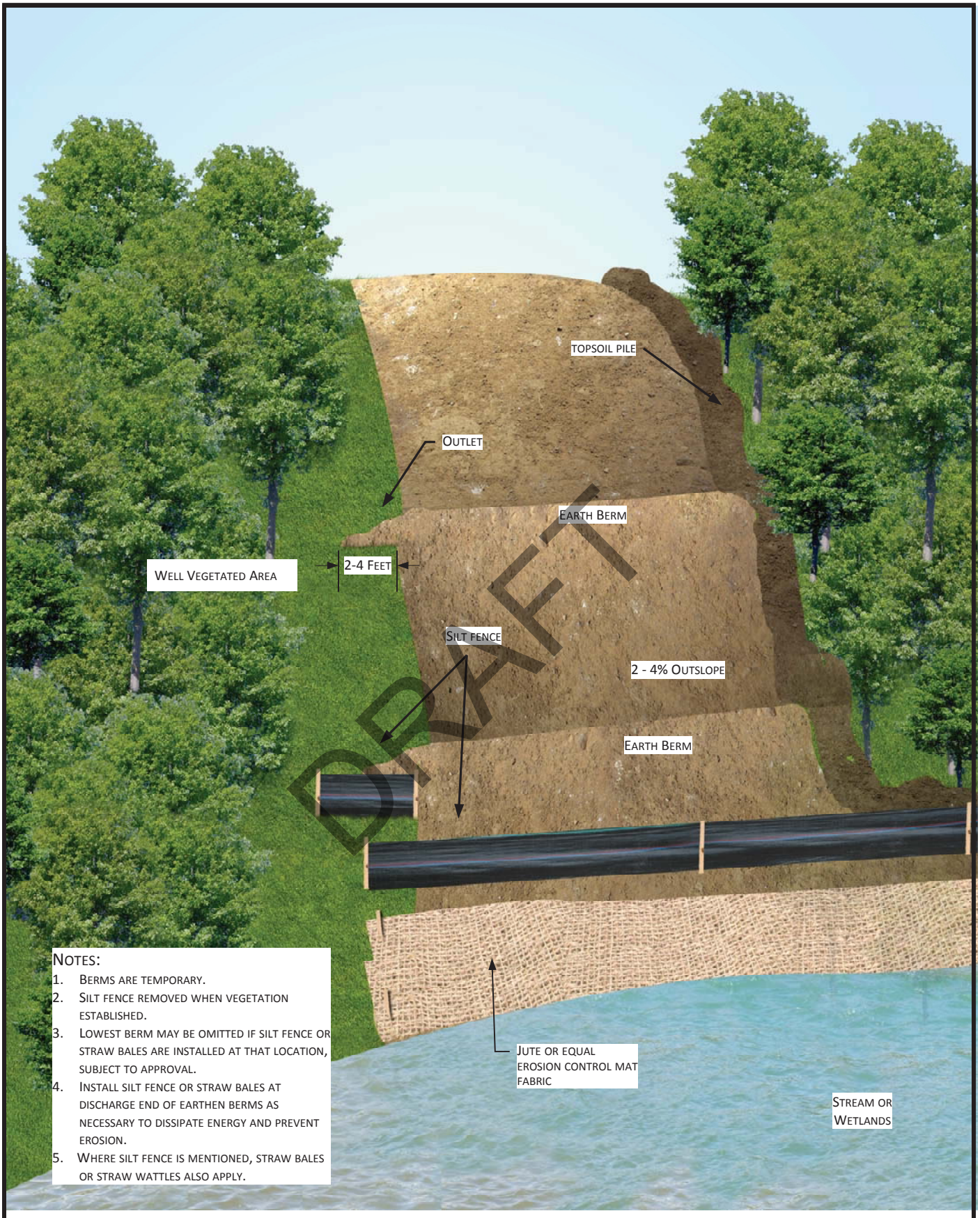


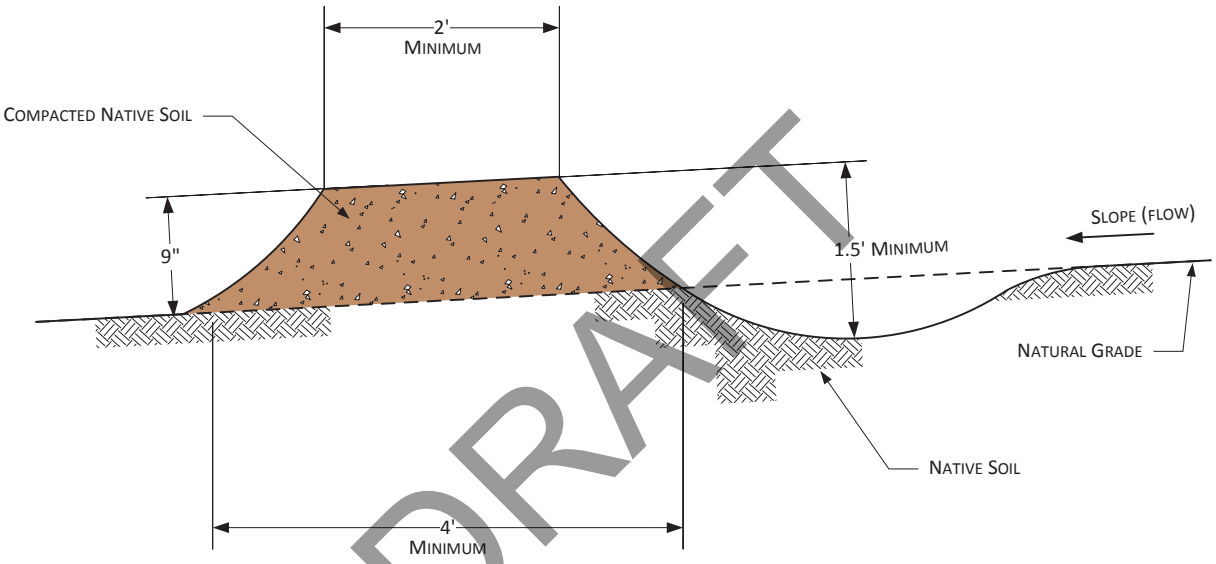
Figure 6

Typical Temporary Berms
Perspective View

ONEOK

ERM

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_8_Berms_Perspective_View.vsd	Scale: NTS	Revised: 08/20/2018	Drawn By: RGCutting



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NOTES

1. BERMS SHALL BE CONSTRUCTED WITH 2 TO 4 PERCENT OUTSLOPE.
2. BERMS SHALL BE OUTLETED TO WELL VEGETATED STABLE AREAS, SILT FENCES, STRAW BALES OR ROCK APRONS.
3. BERMS SHALL BE SPACED AS DESCRIBED IN CONSTRUCTION SPECIFICATIONS.
4. ADDITIONAL INFORMATION INCLUDED ON OTHER DRAWINGS.

For environmental review purposes only.

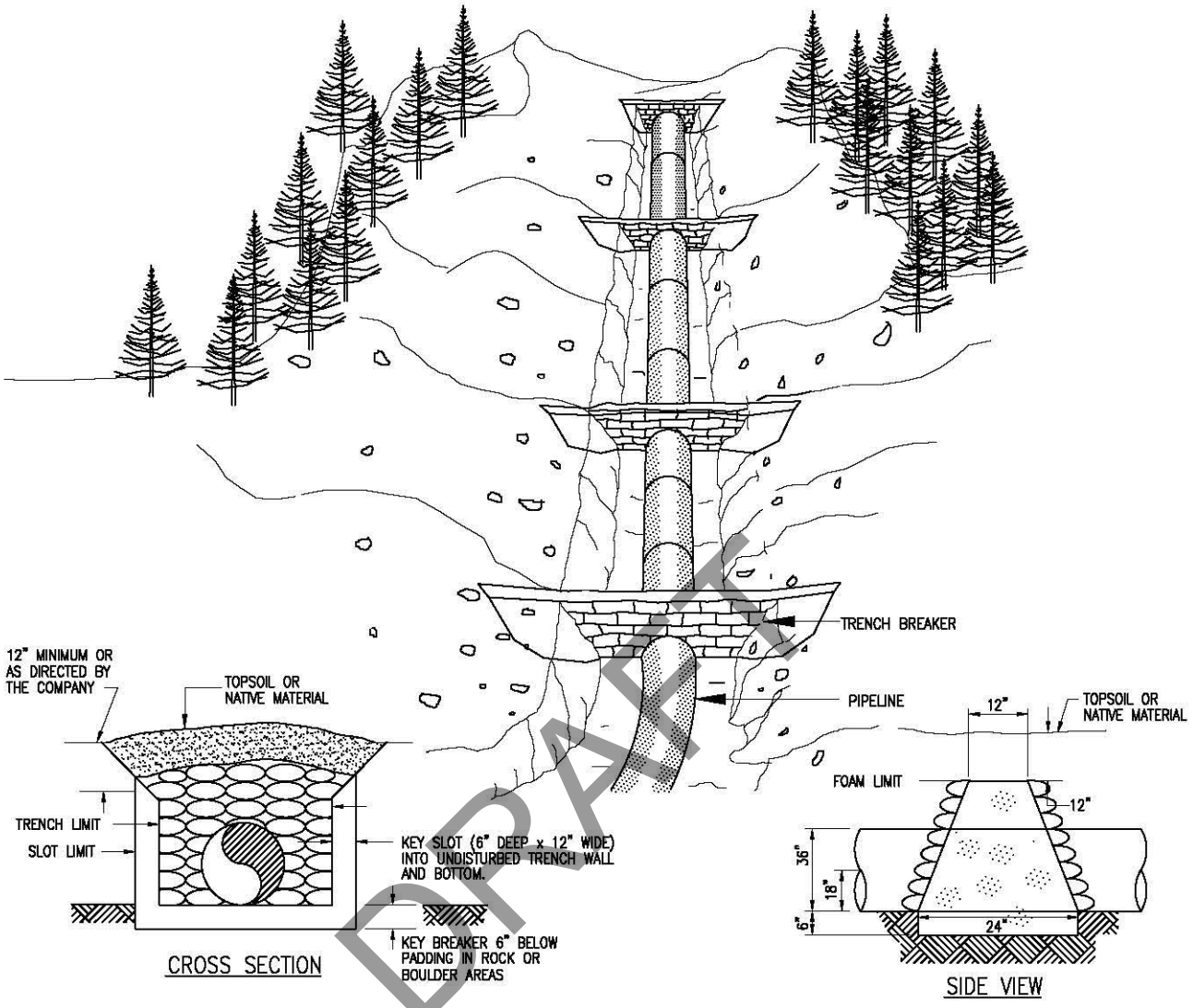
Figure 7

Typical Temporary or Permanent Berms
Elevation View

ONEOK

ERM

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_9_Berms_Elevation_View.vsd	Scale: NTS	Revised: 08/20/2018	Drawn By: RGCutting



DRAFT

NOTES:

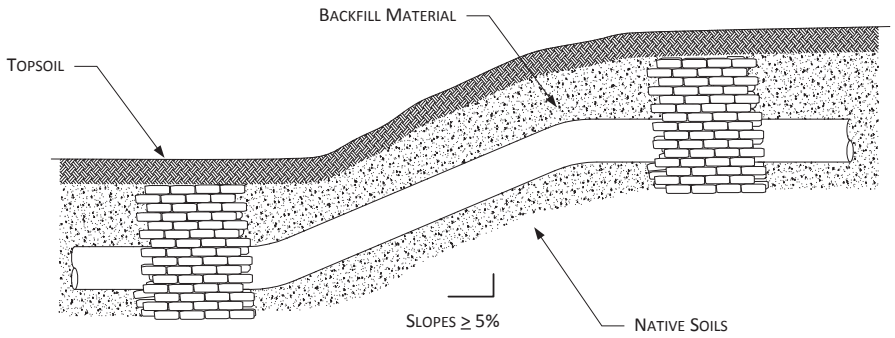
1. TRENCH BREAKERS SHALL BE INSTALLED:
   - ON SLOPES ALONG THE TRENCH LINE WHERE THE NATURAL DRAINAGE PATTERN, PROFILE, AND TYPE OF BACKFILL MATERIAL MAY RESULT IN LOSS OF BACKFILL MATERIAL OR ALTERATION OF THE NATURAL PATTERN;
   - AT THE BASE OF SLOPES ADJACENT TO WATERBODIES AND WETLANDS;
   - WHERE NEEDED TO AVOID DRAINING A WETLAND;
   - ON UPLAND SLOPES, AT THE SAME SPACING AS SLOPE BREAKERS AND UP SLOPE OF SLOPE BREAKERS;
   - IN CULTIVATED LAND AND RESIDENTIAL AREAS WHERE PERMANENT SLOPE BREAKERS ARE NOT TYP. INSTALLED, AT THE SAME SPACING AS IF PERMANENT SLOPE BREAKERS WERE REQUIRED.
2. EACH SAND BAG SHALL BE OF DIMENSION 14"X26" AND SHALL BE WOVEN POLY SPECIFICATION. EACH BAG SHALL BE FILLED TO 20" HIGH WITH 3/8" CLEAN, WASHED, AND SCREENED SAND AND FILLED TO A MINIMUM OF 55LBS.
3. BREAKER SPACING AND CONFIGURATION MAY CHANGE AS DETERMINED BY COMPANY OR SIMILARLY QUALIFIED PROFESSIONAL.
4. ALL MATERIALS SHALL BE SUPPLIED BY CONTRACTOR.
5. INSTALL ONE TRENCH BREAKER UNDER EVERY SLOPE BREAKER.

Figure 8

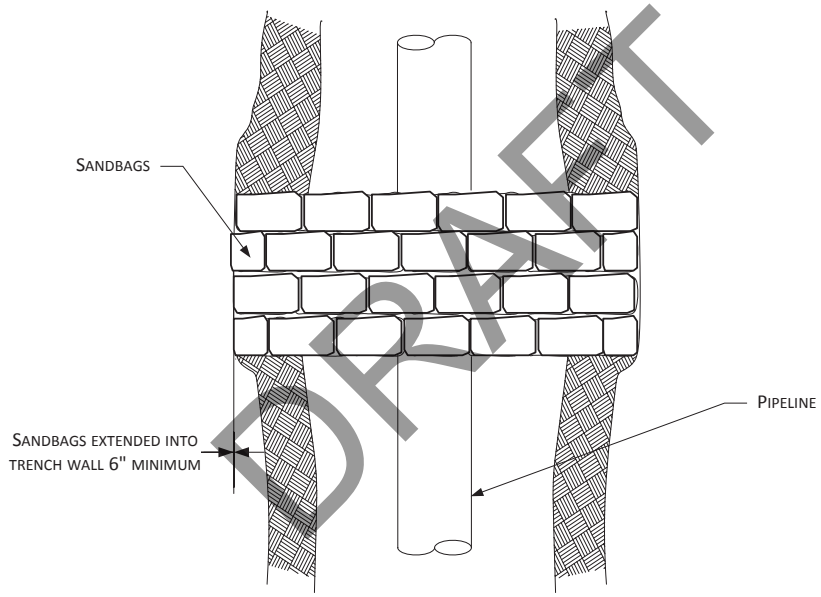
Typical Trench Breaker Perspective View

(OKS-7901-CONST-07)

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_5_Typical_Topsoil_Segregation.vsd	Scale: NTS	Revised: 08/20/2018	Drawn By: RGCutting

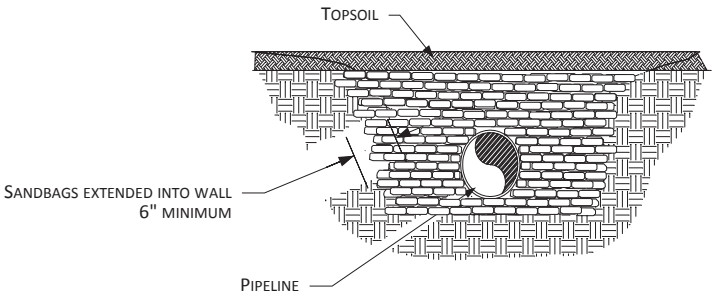


PROFILE VIEW
(NOT TO SCALE)



PLAN VIEW
(NOT TO SCALE)

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FACE VIEW
(NOT TO SCALE)

NOTES

1. BAGS WILL NOT BE FILLED WITH TOPSOIL
2. ADDITIONAL INFORMATION INCLUDED ON OTHER DRAWINGS
3. STAGGER COURSES OF BAGS

For environmental review purposes only.

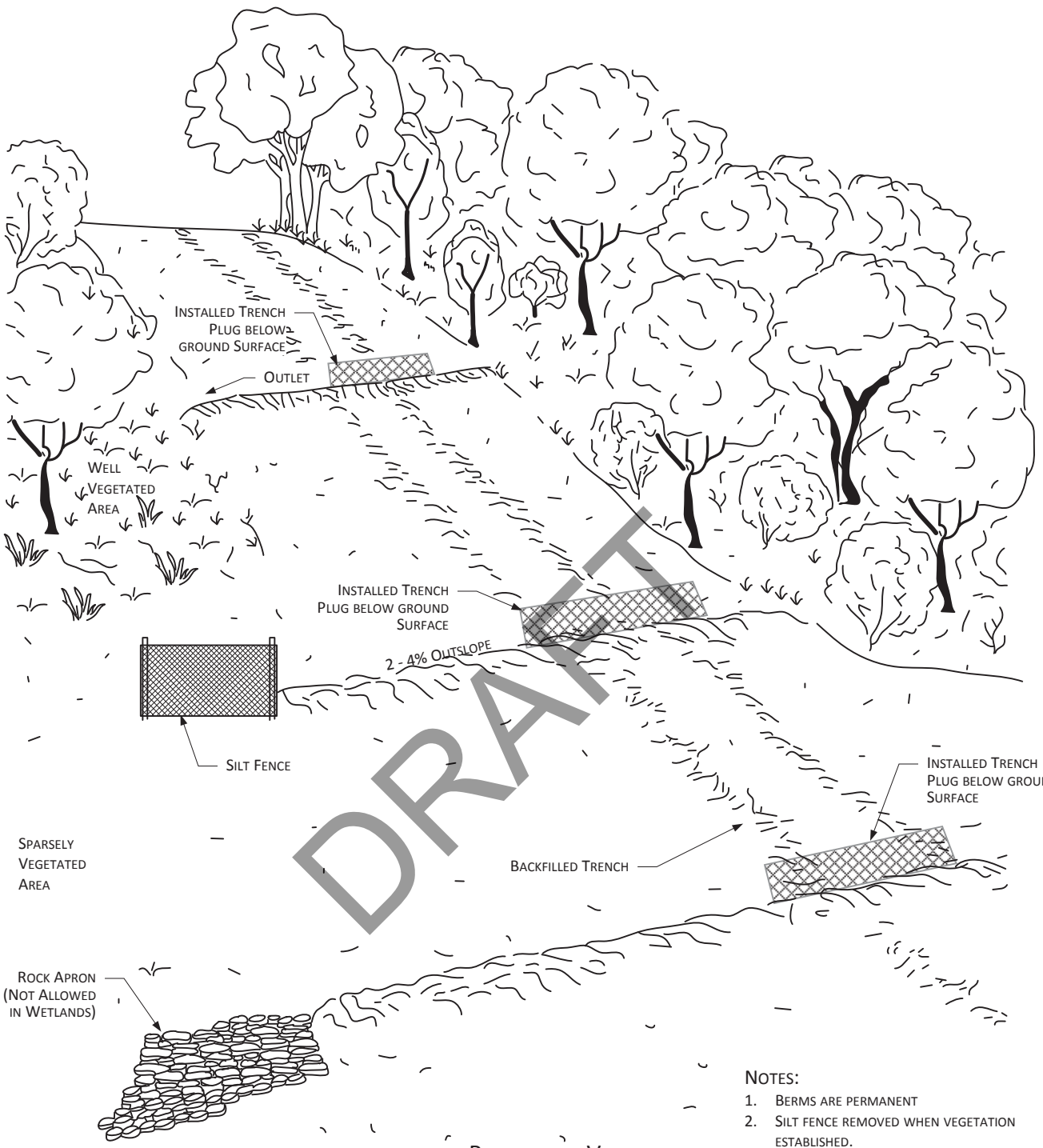
ONEOK

Figure 9

Typical Trench Breakers
Plan & Profile Views

ERM

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMPLLC_CMRP\Fig_11_Trench_Breaker_Plan_Profile_View.vsd	Scale: NTS	Revised: 08/17/2018	Drawn By: RGCutting



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Perspective View
(not to scale)

Slope %	Approximate Spacing (ft)
5-15	300
15-30	200
>30	<100

Notes:

1. Berms are permanent
2. Silt fence removed when vegetation established.
3. Lowest berm may be omitted if silt fence or straw bales are installed at that location, subject to approval.
4. Install silt fence or straw bales at discharge end of earthen berms as necessary to dissipate energy and prevent erosion.

For environmental review purposes only.

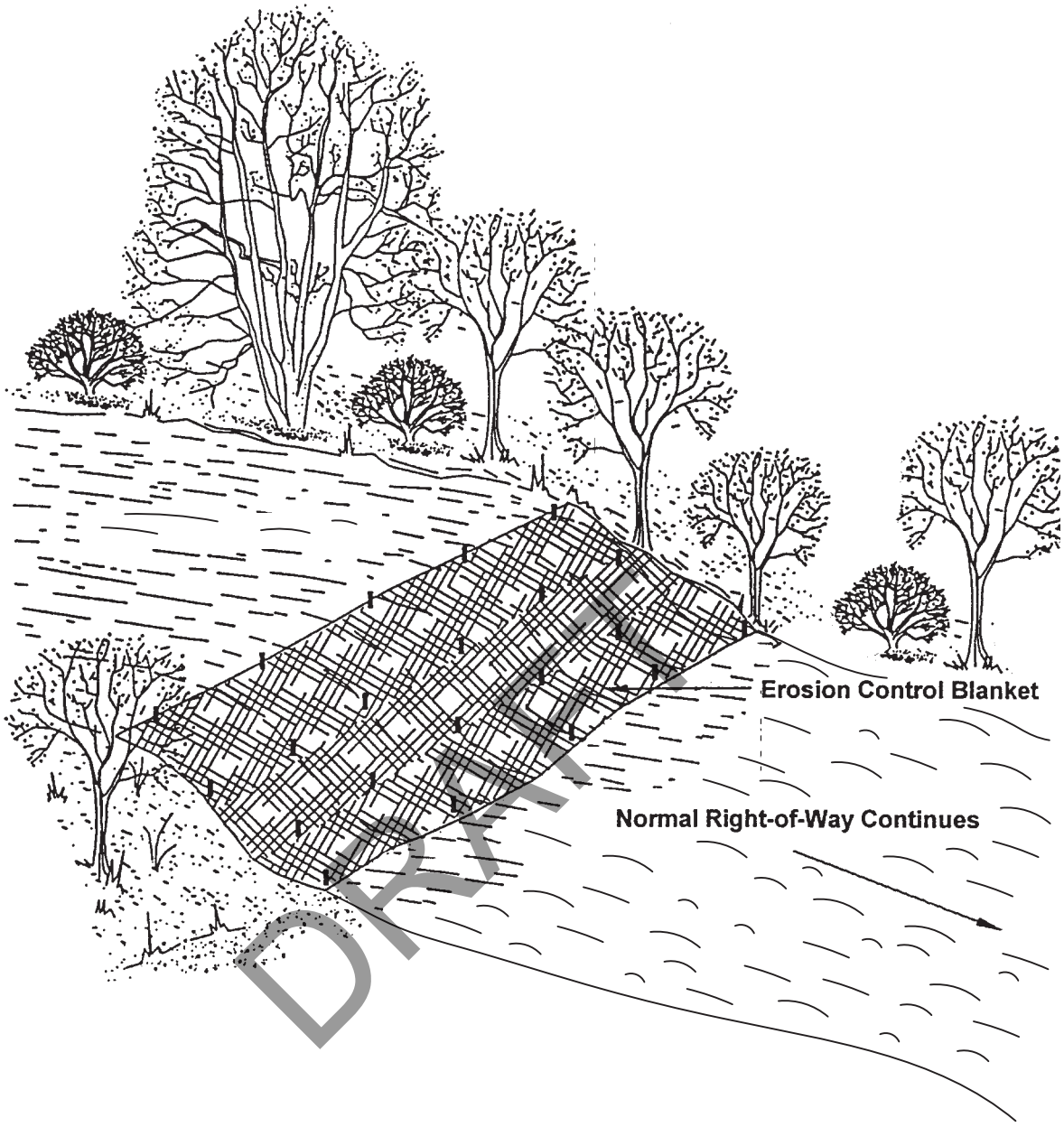
Figure 10

Permanent Slope Breakers
Perspective View

ONEOK

ERM

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_12_Slope_Breakers_Perspective_View.vsd	Scale: NTS	Revised: 08/20/2018	Drawn By: RGCutting



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NOTES

1. INSTALL EROSION CONTROL BLANKET AS PER MANUFACTURER'S SPECIFICATIONS.
2. ADDITIONAL INFORMATION INCLUDED ON OTHER DRAWINGS.

For environmental review purposes only.

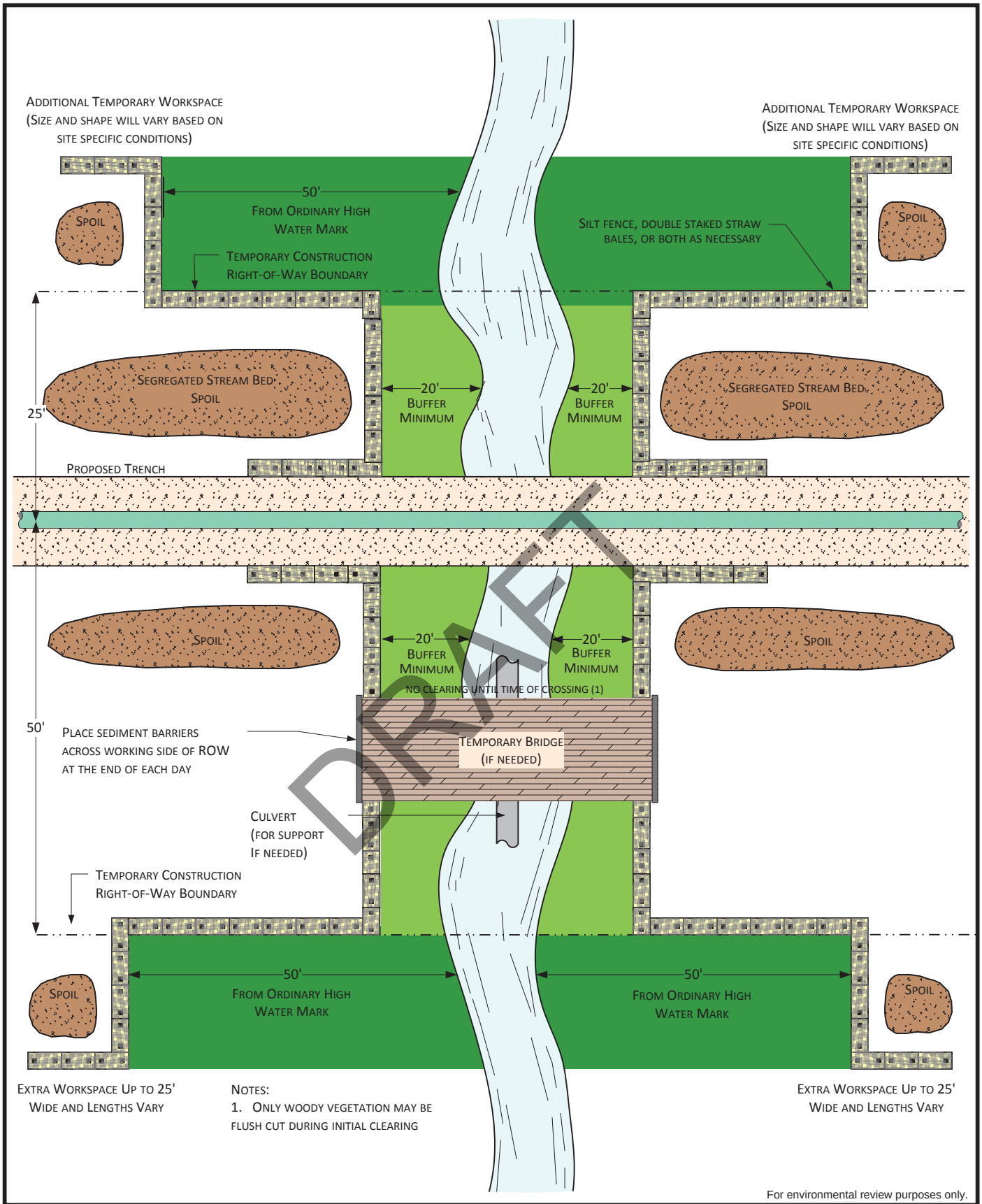
ONEOK

Figure 11

Erosion Control Blanket - Steep Slopes (≥30%)

ERM

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_13_Erosion_Control_Blanket.vsd	Scale: NTS	Revised: 08/20/2018	Drawn By: RGCutting



For environmental review purposes only.

Figure 12

Typical Waterbody Crossing
Open Cut - Wet Trench Method

ONEOK

ERM

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_14_Waterbody_Wet_Trench.vsd	Scale: NTS	Revised: 08/20/2018	Drawn By: RGCutting

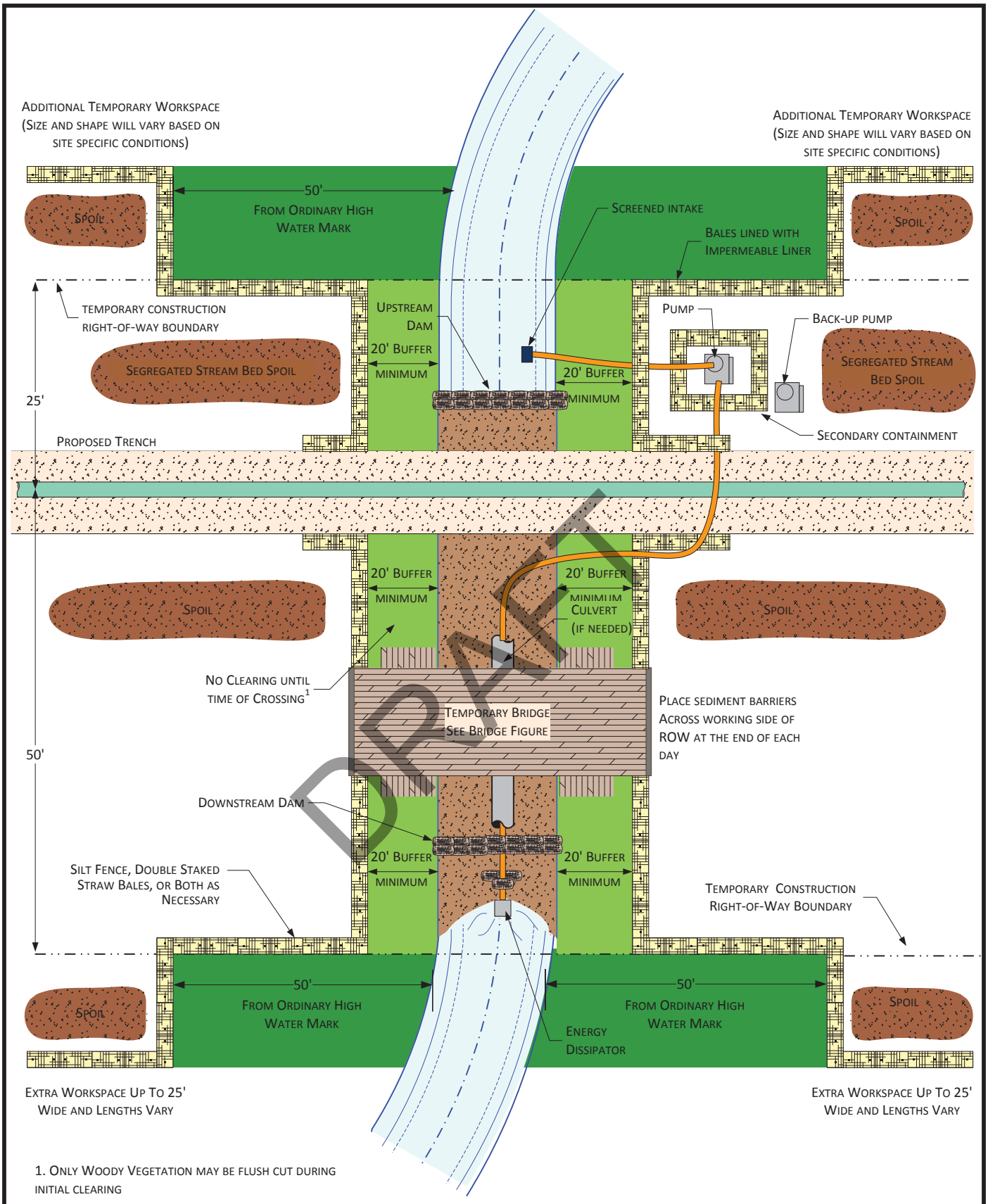
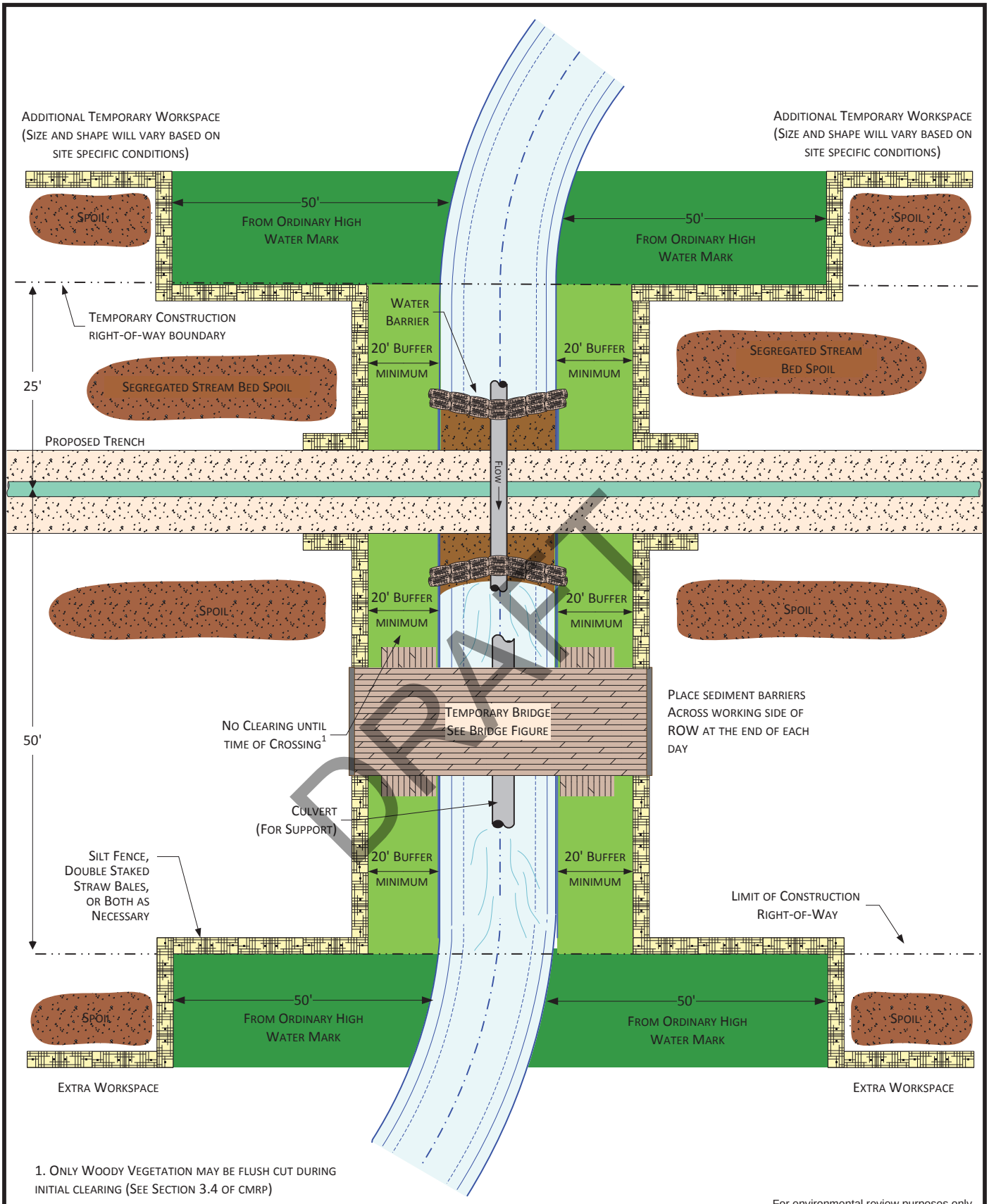


Figure 13
Typical Waterbody Crossing
Dam and Pump Method

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ERM

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_15_Waterbody_Dam_Pump.vsd	Scale: NTS	Revised: 08/20/2018	Drawn By: RGCutting



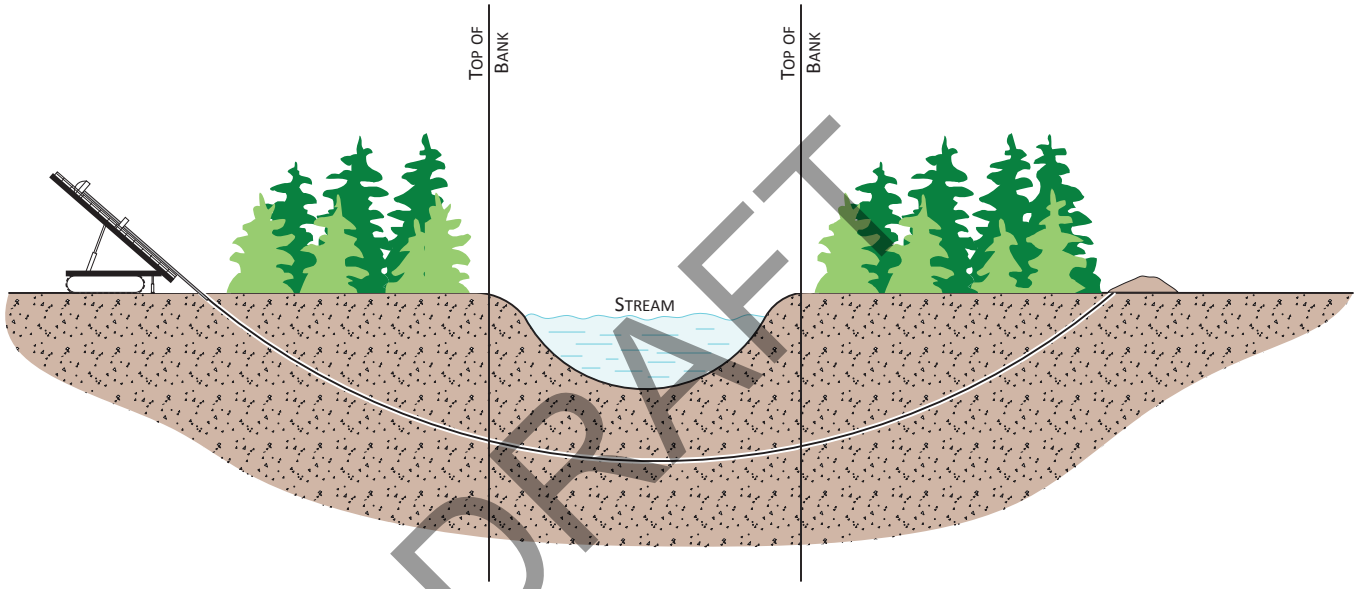
For environmental review purposes only.

Figure 14
Typical Waterbody Crossing
Flume Method

ONEOK

ERM

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMPR\Fig_16_Waterbody_Flume.vsd	Scale: NTS	Revised: 08/20/2018	Drawn By: RGCutting



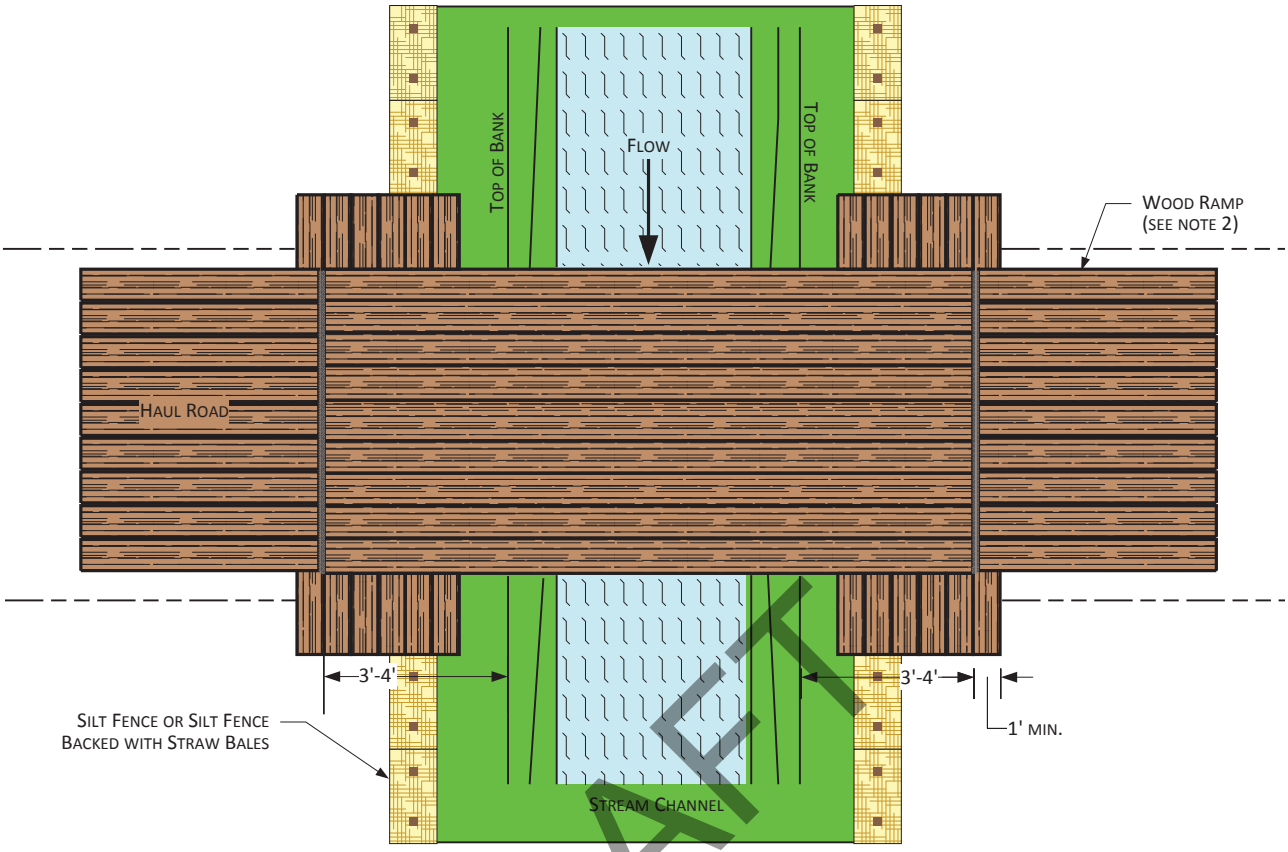
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For environmental review purposes only.

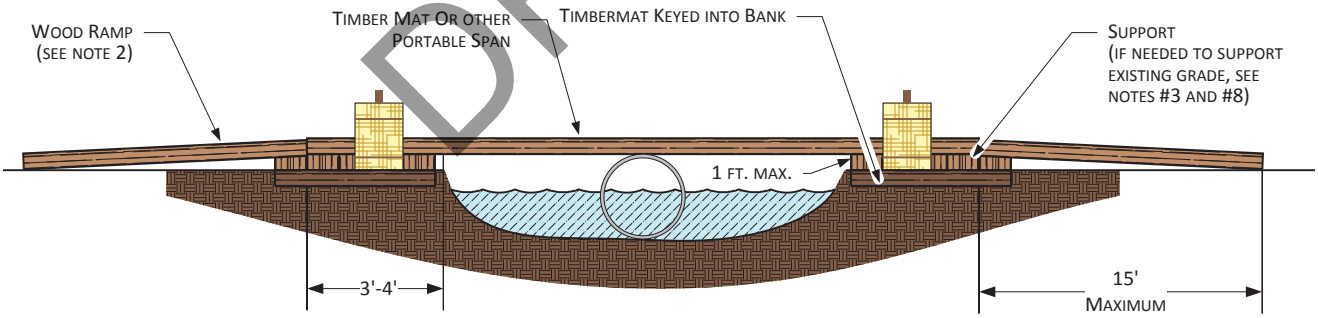
Figure 15
Typical Waterbody Crossing
Directional Drill Method

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_17_Waterbody_Directional_Drill.vsd	Scale: NTS	Revised: 08/20/2018	Drawn By: RGCutting

Plan View



Profile View



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Notes:

1. Inspect bridge opening periodically and following rainfalls of over ½". Remove any debris restricting flow and deposit it at an upland site outside of floodplain.
2. If physical circumstances prohibit wood or metal ramps, earthen ramps may be used as approved.
3. Inspect bridge elevation so bridge remains supported above high bank and does not sink into bank.
4. The culvert support must be anchored to the stream bottom and may not be supported with fill.
5. The bridge must span from top of bank to top of bank.
6. Additional support must be added on top of bank and under span if initial support starts to settle.
7. Erosion and sedimentation control measures shall be inspected and maintained in accordance with the company's Environmental Mitigation Plan

For environmental review purposes only.

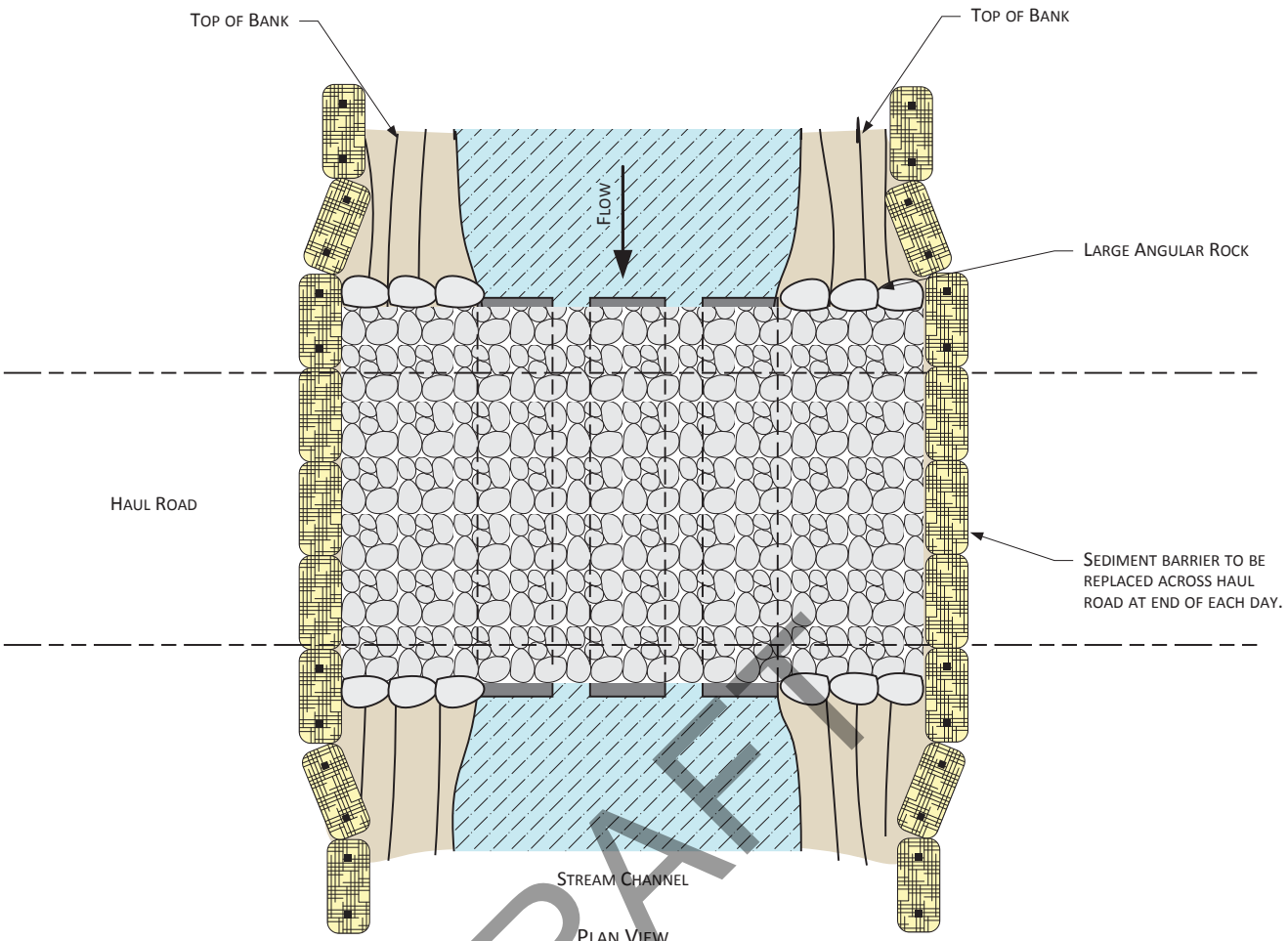
Figure 16

Typical Span Type Bridge
With or Without Instream Support
(OKS-7901-ENV-04)

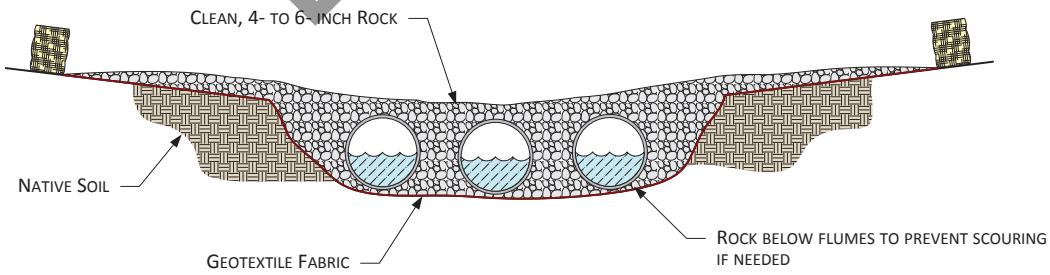
ONEOK

ERM

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_18_Span_Type_Bridge.vsd	Scale: NTS	Date: 5/20/2007	Revised: 08/17/2018	Drawn By: AGPeterson



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NOTES:

1. STEEL FLUME PIPE(S) SIZED TO ALLOW FOR STREAM FLOW AND EQUIPMENT LOAD.
2. STRAW BALES (OR EQUIVALENT) SHALL BE PLACED ACROSS BRIDGE ENTRANCE EVERY NIGHT.
3. ADDITIONAL INFORMATION INCLUDED ON OTHER DRAWINGS.

For environmental review purposes only.

Figure 17

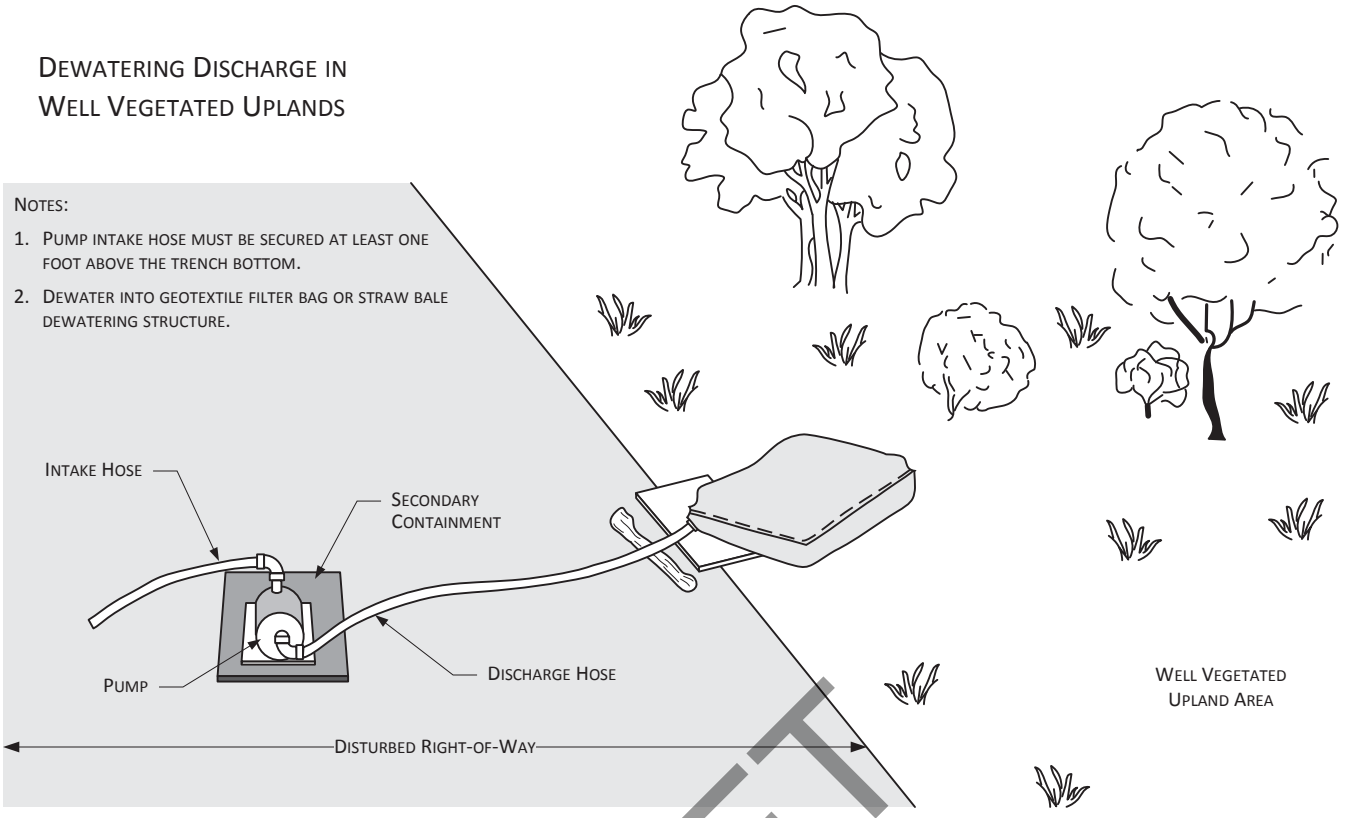
Typical Rock Flume Bridge
Method 4
(OKS-7901-ENV-03d)

ONEOK

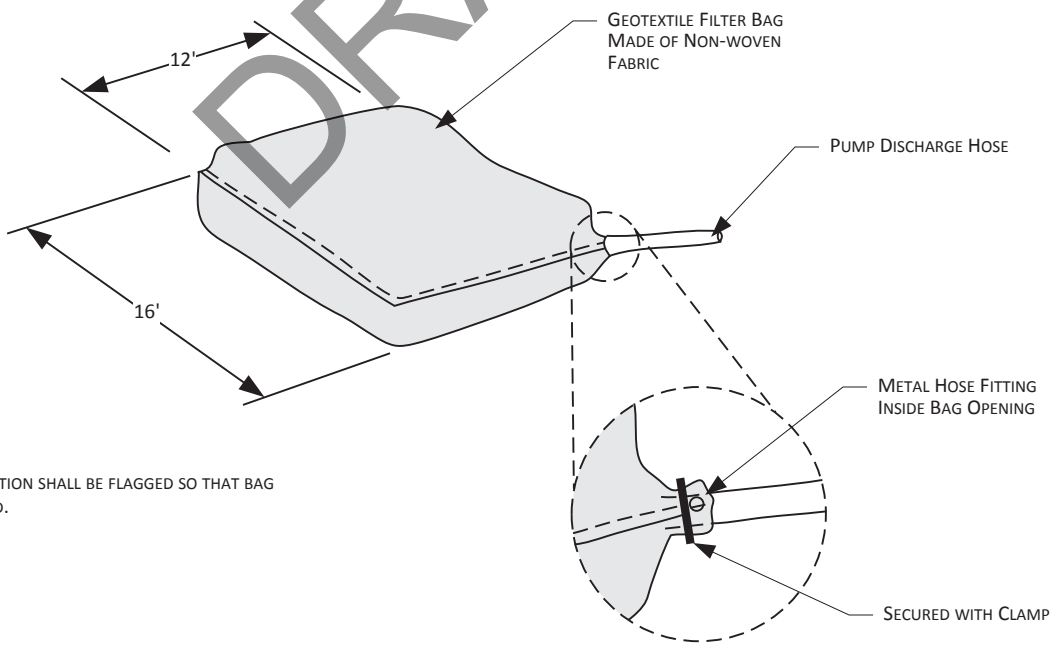
ERM

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_19_Rock_Flume_Bridge.vsd	Scale: NTS	Date: 5/20/2007	Revised: 08/17/2018	Drawn By: AGPeterson

Dewatering Discharge in Well Vegetated Uplands



Geotextile Filter Bag



Note:

1. Filter bag location shall be flagged so that bag can be removed.

DRAFT

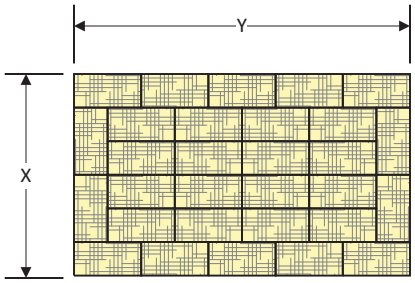
For environmental review purposes only.

Figure 18
Typical Dewatering Measures

ONEOK

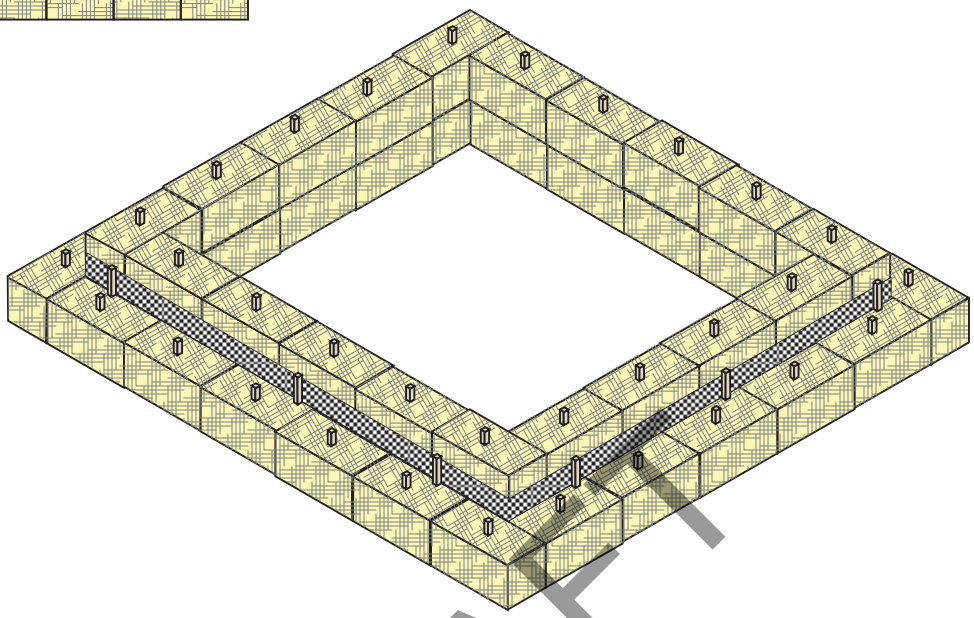
ERM

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_20_Dewatering_Measures.vsd	Scale: NTS	Revised: 08/20/2018	Drawn By: RGCutting



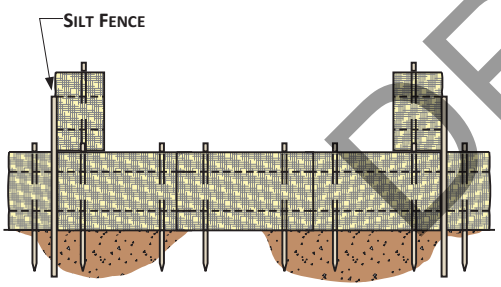
NOTES

1. ARRANGE THE STRAW BALES TO THE X AND Y DIMENSIONS AS SPECIFICIED BELOW.
2. IF BOTTOM OF STRUCTURE IS NOT LINED WITH STRAW BALES (OPTION 1), LINE ENTIRE STRUCTURE WITH GEOTEXTILE FILTER FABRIC.

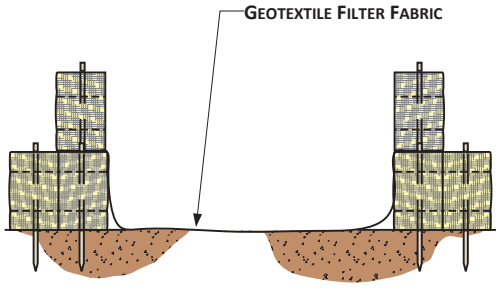


PERSPECTIVE VIEW

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OPTION 1



OPTION 2

MINIMUM SUMP DIMENSIONS (FEET)		MAXIMUM PUMPING RATE
X	Y	GALLONS PER MINUTE
10	20	300
15	20	350
20	20	400
20	25	450
25	25	500
25	30	550
30	30	660

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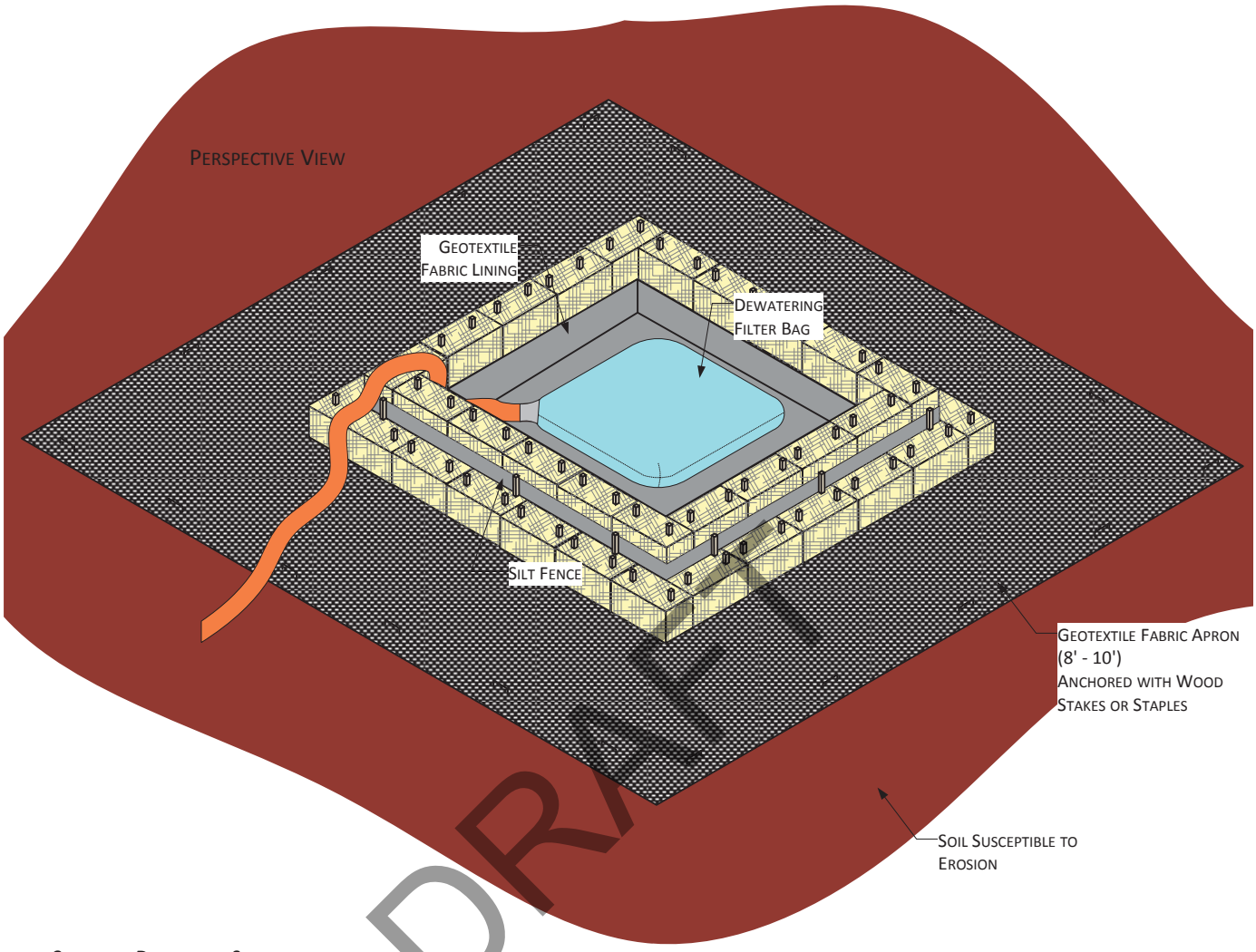
Figure 19

Straw Bale Dewatering Structure
(OKS-7901-ENV-05)

ONEOK

ERM

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_21_Straw_Bale_Dewatering.vsd	Scale: NTS	Revised: 08/17/2018	Drawn By: RGCutting



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Construct Dewatering Structure to accommodate anticipated pumping rates. See example below.

Example Pumping rate = 200 g.p.m.
Storage volume (c.f.) = 16 x 200 g.p.m. = 3200 c.f.
Height of straw bale structure = 3 feet (2 bales stacked) (based on height of bales, not silt fence)
Inside dimensions of structure = 33 x 33 feet square

Notes:

1. Silt fence ends must be wrapped to join two sections.
2. Install silt fence 2 inches above top of straw bales, and anchor a minimum of 8 inches straight down.
3. Spacing between silt fence post stakes must be 4 feet or less.
4. Dewatering intake hose supported at least 1 foot from bottom of trench being dewatered.
5. Erosion and sedimentation control measures shall be inspected and maintained in accordance with the company's upland erosion control, revegetation, and maintenance plan.

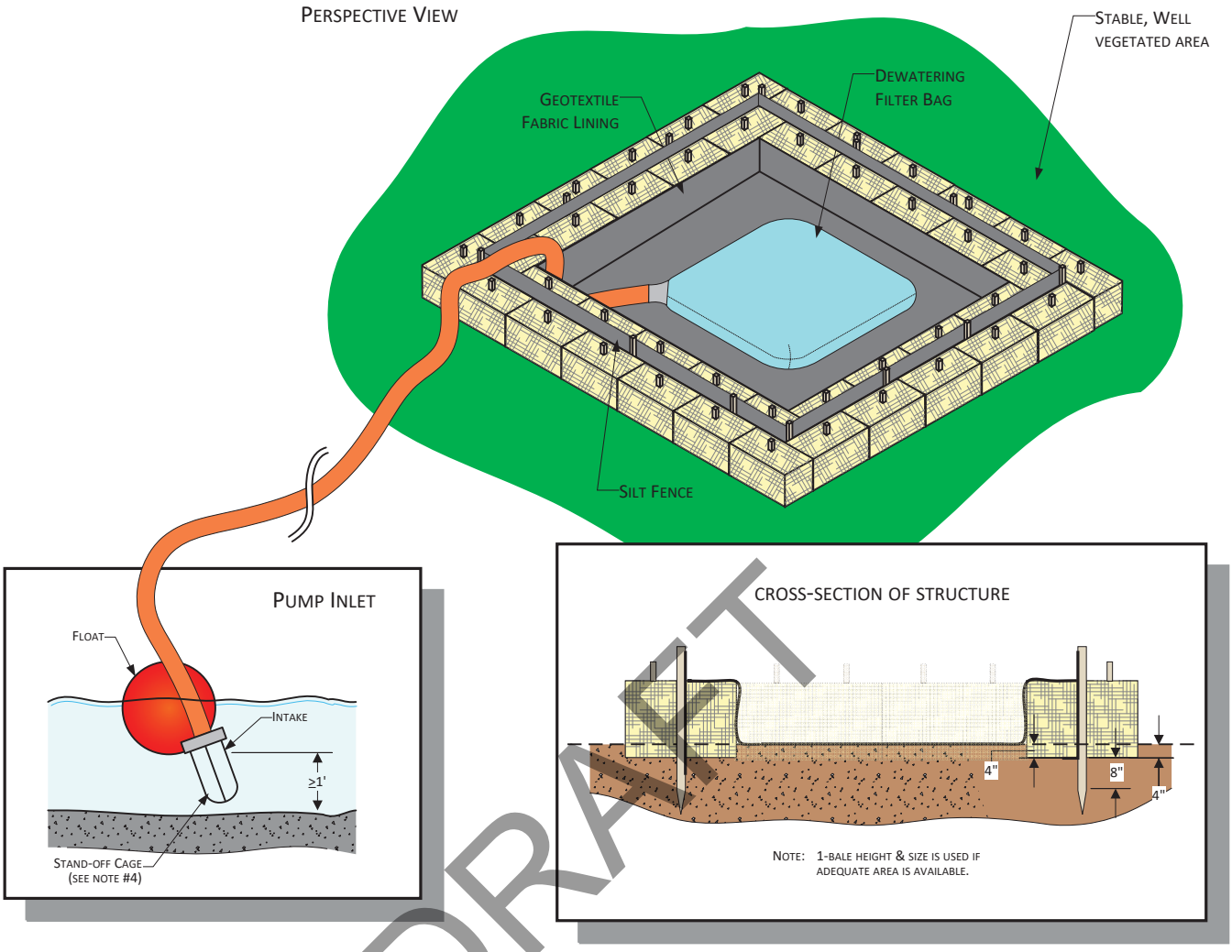
For environmental review purposes only.

Figure 20
Straw Bale Dewatering Structure
(OKS-7901-ENV-06a)

ONEOK

ERM

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_22_Straw_Bale_Dewatering.vsd	Scale: NTS	Revised: 08/17/2018	Drawn By: RGCutting



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CONSTRUCT DEWATERING STRUCTURE TO ACCOMMODATE ANTICIPATED PUMPING RATES. SEE EXAMPLE BELOW.

EXAMPLE PUMPING RATE = 200 G.P.M.
STORAGE VOLUME (C.F.) = 16 X 200 G.P.M. = 3200 C.F.
HEIGHT OF STRAW BALE STRUCTURE = 1.5 FEET (1 BALE) (BASED ON HEIGHT OF BALES, NOT SILT FENCE)
INSIDE DIMENSIONS OF STRUCTURE = 46 X 46 FEET SQUARE

NOTES:

1. SILT FENCE ENDS MUST BE WRAPPED TO JOIN TWO SECTIONS.
2. INSTALL SILT FENCE 2 INCHES ABOVE TOP OF STRAW BALE, AND ANCHOR A MINIMUM OF 8 INCHES STRAIGHT DOWN.
3. SILT FENCE POST STAKING MUST BE 4 FEET OR LESS.
4. DEWATERING INTAKE HOSE SUPPORTED AT LEAST 1 FOOT FROM BOTTOM OF TRENCH BEING DEWATERED.
5. USE A FILTER BAG AT THE DISCHARGE HOSE END.
6. EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSPECTED AND MAINTAINED IN ACCORDANCE WITH THE COMPANY'S CMRP.

For environmental review purposes only.

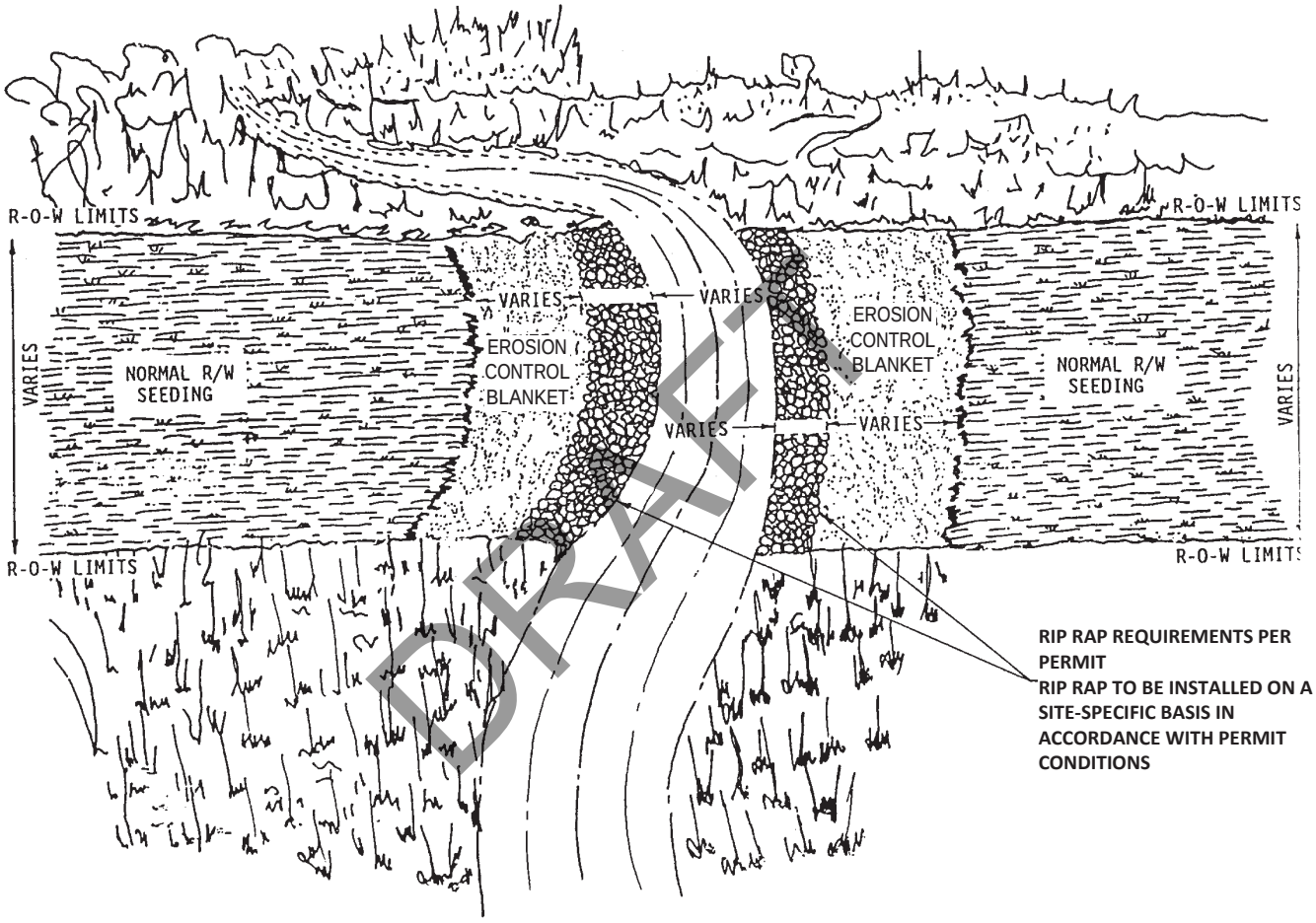
ONEOK

Figure 21
Straw Bale Dewatering Structure
(OKS-7901-ENV-06b)

ERM

K:_Client_Projects\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_23_Straw_Bale_Dewatering.vsd	Scale: NTS	Revised: 08/17/2018	Drawn By: RGCutting

NOTE: PLACE EROSION CONTROL BLANKET A MINIMUM OF ONE (1) FOOT UNDER RIP RAP. EXTEND JUTE BLANKET FROM MEAN HIGH WATER LEVEL TO SEVERAL FEET BEHIND HIGH BANK.



RIP RAP REQUIREMENTS PER PERMIT
RIP RAP TO BE INSTALLED ON A SITE-SPECIFIC BASIS IN ACCORDANCE WITH PERMIT CONDITIONS

DRAFT

For environmental review purposes only.

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Figure 22

Typical Final Stream Bank Stabilization
Rip Rap & Erosion Control
(OKS-7901-ENV-07)

ERM

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_24_Stream_Bank_Stabilization.vsd	Scale: NTS	Revised: 08/17/2018	Drawn By: RGCutting

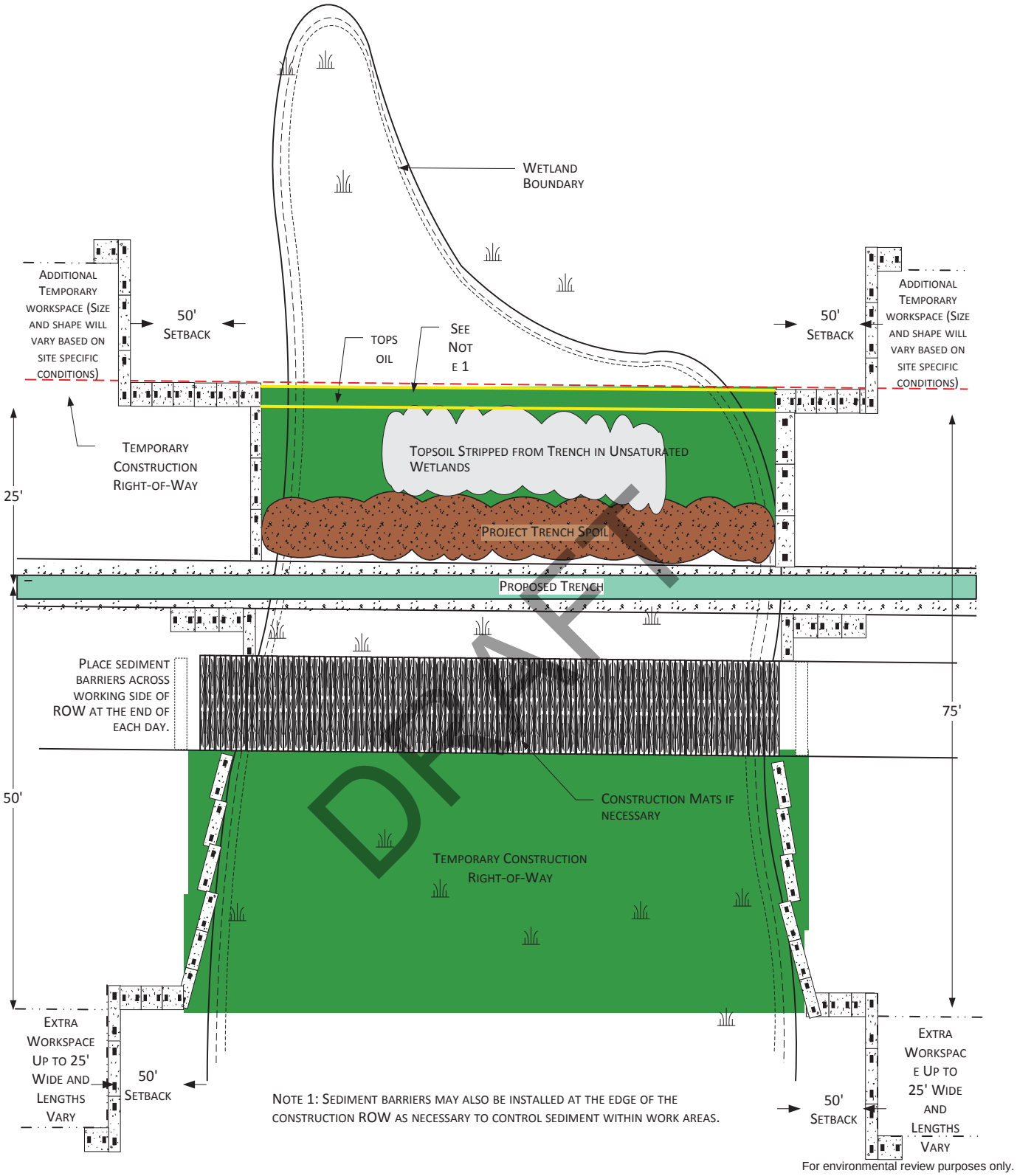


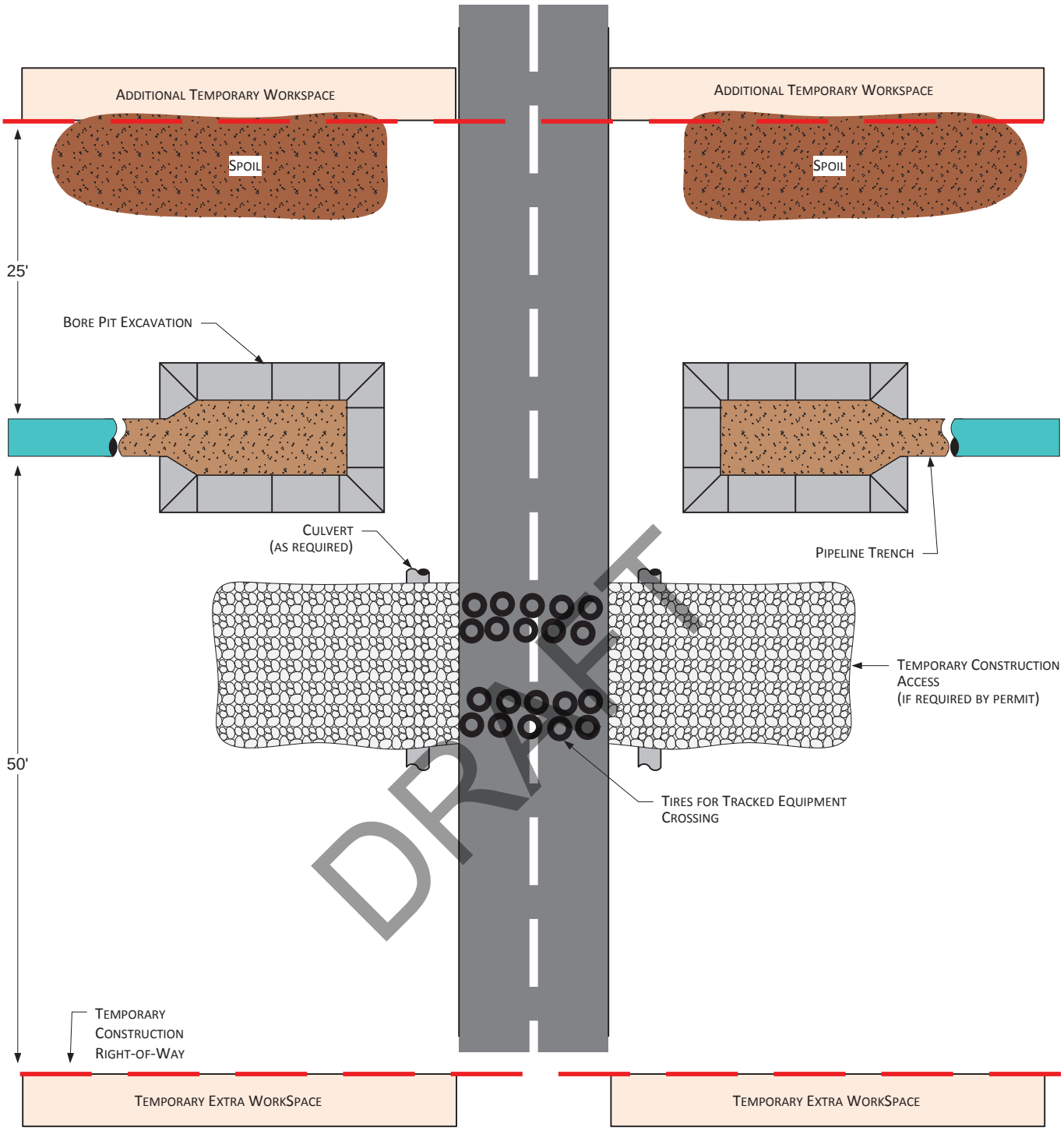
Figure 23

Typical Wetland Crossing Method
Method 5
(OKS-7901-ENV-03e)

ONEOK

ERM

K:_Client_Projects\M-O\ONE\Niobrara\EMP\Fig_24_Wetland_Crossing.vsd	Scale: NTS	Revised: 0820/2018	Drawn By: RGCutting



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PLAN VIEW

NOTES

1. PROCEDURES SHOWN IN THIS DRAWING APPLY TO IMPROVED ROADS.
2. ROADS MUST BE CLEANED AFTER EQUIPMENT CROSSES AND DIRT PLACED IN SPOIL CONTAINMENT AREAS.
3. TEMPORARY ACCESS MATERIALS MUST BE REMOVED UPON PROJECT COMPLETION.
4. ADDITIONAL INFORMATION INCLUDED ON OTHER DRAWINGS OR PERMITS.
5. CONSTRUCTION AREAS LOCATED OUTSIDE ROAD ROW.
6. INSTALL EROSION AND SEDIMENT CONTROLS AS NEEDED BASED ON SITE SPECIFIC CONDITIONS

For environmental review purposes only.

ONEOK

Figure 24
Typical Improved Road Crossing
Directional Bore Method

ERM

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_26_Improved_Road_Crossing.vsd	Scale: NTS	Revised: 08/20/2018	Drawn By: RGCutting

G.2 Migratory Bird Plan

Little Missouri Lateral Pipeline Project

MIGRATORY BIRD PLAN

DRAFT

Prepared by:

January 2019

1. INTRODUCTION

ONEOK Bakken Pipeline, L.L.C. (ONEOK), developed this Migratory Bird Conservation and Compliance Plan (Plan) to outline measures it will implement to avoid, minimize, and reduce possible impacts on migratory birds. Conservation measures were developed in consideration of statutory authority, regulatory guidance, and through experience with state and federal agencies on past projects in the region. The Plan demonstrates a good-faith effort by ONEOK to protect species of concern and achieve compliance with regulations as they relate to the Little Missouri Lateral Pipeline Project (Project) as described below.

2. REGULATORY FRAMEWORK

This Plan was developed in consideration of federal and state laws including the Migratory Bird Treaty Act (MBTA), Federal Executive Order 13186 (EO 13186), the Bald and Golden Eagle Protection Act (BGEPA) as well as agency guidance. This regulatory framework is defined and described in this section as it applies to the Project.

2.1 Migratory Bird Treaty Act and Federal Executive Order 13186

The MBTA prohibits the "take" of individual birds, their eggs and chicks, and active nests. For purposes of the MBTA, "take" is defined as "to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, wound, kill, trap, capture, or collect" (50 Code of Federal Regulations [CFR] 10.12). Unlike the federal Endangered Species Act (ESA), the MBTA does not include harassment or destruction of habitat in its list of prohibitions or within its definition of take. The MBTA applies to migratory birds that are identified in 50 CFR 10.13 (defined hereafter as "migratory birds"). Removal of any active migratory bird nest or any structure that contains an active nest (e.g., tree) where such removal results in take is prohibited. Activities, intentional or unintentional, resulting in take of migratory birds are prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (FWS) (e.g., authorization for incidental take of a federally listed migratory bird).

While the MBTA has no provisions for allowing unauthorized take, the FWS realizes that some birds may be killed even if all reasonable and practicable conservation measures to protect them are used. The FWS carries out its mission to protect migratory birds through investigations and enforcement; by fostering relationships with individuals, companies, and industries that have taken effective steps to minimize their impacts on migratory birds; and by encouraging others to enact such programs. It is not possible to absolve individuals, companies, or agencies from liability even if they implement avian mortality avoidance or similar conservation measures. However, the FWS focuses its resources on investigating and prosecuting individuals and companies that take migratory birds without identifying and implementing all reasonable, prudent, and effective measures to avoid that take.

Federal EO 13186 was issued in 2001 to provide further direction to federal agencies regarding implementation of the MBTA. Federal EO 13186 states that when evaluating impacts on migratory birds under the MBTA, federal agencies should place particular importance on species of concern, priority habitat, and key risk factors.

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2.2 Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (BGEPA) provides protection to bald and golden eagles in addition to the MBTA. The BGEPA prohibits the take; possession; sale; purchase; barter; offer to sell, purchase, or barter; transport; export; or import of any bald or golden eagle, alive or dead, including any part, nest, or egg, unless allowed by permit (16 USC 668(a)). "Take" under this statute is defined as to pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, or molest or disturb (50 CFR 22.3). "Disturb," in turn, is defined as to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, (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.

3. MIGRATORY BIRD SPECIES POTENTIALLY UTILIZING THE PROJECT AREA

Although the MBTA provides protection for all migratory birds, the FWS developed lists of Birds of Conservation Concern (BCC) to foster proactive conservation actions by federal and state agencies and private parties by focusing first on species of concern (FWS, 2008). In addition, the United States is divided into Bird Conservation Regions (BCRs); each BCR has a list of birds present or possibly present within the region that are considered BCC. The Project is located within BCR 17 (Badlands and Prairies) (U.S. NABCI Committee, 2000). ONEOK used this list as a starting point for prioritizing bird conservation measures.

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4. POTENTIAL CONSTRUCTION IMPACTS ON MIGRATORY BIRDS

The Project is most likely to impact migratory birds if construction and operation activities occur during the nesting season. Within the project areas, birds generally nest from April through July. Vegetative clearing during the nesting season would increase the potential for the Project to result in the take of a migratory bird. Typically, take from pipeline construction is not of adult birds or juveniles that have fledged from the nest because they are mobile and avoid project-related activities; instead, take is typically of eggs and nestlings due to nest destruction and loss of young.

5. PLAN IMPLEMENTATION AND PROPOSED CONSERVATION MEASURES

This section describes conservation measures ONEOK will implement during construction of the Project, all of which focus on efforts to minimize potential impacts on migratory birds.

5.1 Points of Contact for Plan Implementation

The Plan identifies actions and conservation measures that will facilitate compliance with the MBTA during Project construction. While it is the responsibility of each member of the Project team to comply with the Plan, ONEOK also expects that all Project staff will notify the Manager - Environmental when an active migratory bird nest is identified so that appropriate protection measures can be implemented, as described in more detail below.

Points of contact for plan implementation can be found in Appendix B.

5.2 Environmental Training

Prior to initiating pre-clearing activities and construction, ONEOK will conduct environmental training for company and contractor supervisory personnel. The training program will include

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conservation measures described within this Plan. In addition, ONEOK will provide large-group training sessions before each crew commences construction with periodic follow-up training for groups of newly assigned personnel. Contractors will be obligated to comply with the conservation measures and protect active nests or face disciplinary actions, including dismissal from the Project.

In addition, Project staff will be informed that they should assume that any active bird nest they encounter should be protected unless a qualified avian biologist determines the nest need not be protected. If additional active nests are identified after pre-clearing surveys, the additional nests must be brought to the attention of the Points of Contact identified in Section 6.1, so that appropriate conservation measures can be implemented.

5.3 Surveys

This section provides descriptions of the surveys and a summary of the methods for both aerial and ground-based surveys that could be completed in support of this Plan depending on construction schedules and scope.

5.3.1 Pre-Clearing Surveys

Where constructing the Project outside of the peak nesting season for migratory birds is not feasible, ONEOK will conduct ground surveys to identify migratory bird nests that could be impacted by construction activities. The peak nesting season for migratory birds in the Project area begins April 15 and ends July 30 at which time surveys will cease. The survey program will be implemented with support of trained biologists with experience in bird identification (hereinafter referred to as Avian Biologist).

The boundaries of the Project workspace and any additional or extra workspace areas will be demarcated prior to clearing and grading. Through frequent communication and coordination between the nest surveyor/Avian Biologist, civil survey, and the construction crews, avian pre-clearing surveys will typically be completed 2 to 5 days ahead of clearing/construction but no more than 14 days ahead of clearing/construction, where feasible.

Surveys will occur within the planned construction workspace and along access roads where Project traffic could impact nesting birds such as vegetated two-tracks or newly established roads. Based on the expertise of the Avian Biologist, and with authorization from ONEOK, previously disturbed areas such as active farmland, developed land, and other intensively used areas may be excluded from surveys since use of these areas for nesting by migratory birds is unlikely.

Along private access roads that occur outside of the aerial survey area for raptor nests described in Section 6.3.1, visual surveys will be conducted for raptor nests within line of site of the road. Landscape barriers between any nests and the access road will sufficiently buffer noise or visual disturbance on nesting raptors that could occur as a result of Project-related traffic.

Conservation measures to be implemented around nests identified during these surveys are described below. Upon completion of surveys and marking of active nests and associated

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buffers as discussed below, the surveyed area found free of active nests will be available for construction.

5.4 Activity Restriction Buffers

Varying activity restriction buffers around active nests will be utilized as conservation measures for the Plan. The buffers that will be implemented based on the species of bird or class of bird are described within the following sections.

5.4.1 Birds of Conservation Concern

For nests of BCC, a buffer will be placed 25 feet around active nests. Construction activities within the buffer will be avoided where feasible. If necessary to meet key Project objectives, ONEOK may authorize limited activity within the buffer to move equipment within the construction area and through a nest buffer in order to facilitate construction in adjacent areas. See Section 6.5, Nest Monitoring, for more information.

5.4.2 Raptor Species

For raptor nests, spatial buffers and seasonal timing restrictions will be placed around active nests in accordance with Table 1 on the following page. No eagle nest may be destroyed by Project activities without a permit from the FWS, regardless of whether the nest is inactive or active, per the BGEPA.

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Table 1

LITTLE MISSOURI LATERAL PIPELINE PROJECT

Raptor Species Active-Nest Buffer Distances and Dates [a]

Species Common Name	Species Latin Name	Spatial Buffer (miles)	Seasonal Timing Restrictions
American Kestrel	*Falco sparverius*	0.125	April 1 - August 31
Bald Eagle [b]	*Haliaeetus leucocephalus*	0.5	January 1 - August 15
Boreal Owl	*Aegolius funereus*	0.25	February 1 - July 31
Burrowing Owl	*Athene cunicularia*	0.25	April 1 - September 15
Common Barn Owl	*Tyto alba*	0.125	February 1 - September 15
Cooper's Hawk	*Accipiter cooperii*	0.25	March 15 - August 31
Eastern Screech -owl	*Megascops asio*	0.125	March 1 - August 15
Ferruginous Hawk	*Buteo regalis*	1.0	March 15 - July 31
Golden Eagle	*Aquila chrysaetos*	0.5	January 15 - July 31
Great Gray Owl	*Strix nebulosa*	0.25	March 15 - August 31
Great Horned Owl	*Bubo virginianus*	0.125	December 1 - September 31
Long-eared Owl	*Asio otus*	0.25	February 1 - August 15
Merlin	*Falco columbarius*	0.5	April 1 - August 31
Northern Goshawk	*Accipiter gentilis*	0.5	March 1- August 15
Northern Harrier	*Circus cyaneus*	0.25	April 1 - August 15
Northern Pygmy-Owl	*Glaucidium gnoma*	0.25	April 1 - August 1
Northern Saw-whet Owl	*Aegolius acadicus*	0.25	March 1 - August 31
Osprey	*Pandion haliaetus*	0.25	April 1 - August 31
Peregrine Falcon	*Falco peregrinus*	0.5	March 1 - August 15
Prairie Falcon	*Falco mexicanus*	0.5	April 1 - August 31
Red-tailed Hawk	*Buteo jamaicensis*	0.25	March 15 - August 15
Sharp-shinned Hawk	*Accipiter striatus*	0.25	March 15 - August 31
Short-eared Owl	*Asio flammeus*	0.25	March15 - August 1
Swainson's Hawk	*Buteo swainsoni*	0.25	May 1 - August 31
Western Screech-owl	*Megascops kennicottii*	0.125	March 1 - August 15

[a] Adopted Stewart, R. E. 1975. Breeding Birds of North Dakota. Tri-College Center for Environmental Studies, Fargo, North Dakota.

[b] The National Bald Eagle Management Guidelines (FWS 2007) call for a 660-foot-radius buffer around bald eagle nests. However, the Guidelines stipulate that in open areas without forest or topographic buffers, as is the case in many western states, the buffer may be increased to protect eagle nests. The 0.5-mile buffer distance in the table is adopted from the FWS' North Dakota Ecological Services Field Office which would also apply to winter roosts for construction activity outside the nesting season.

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5.4.3 Other Migratory Bird Buffer Restrictions

For nests of other bird species not described in the preceding sections, a buffer will be placed 5 feet around active nests. In instances where this buffer cannot be implemented, ONEOK will attempt to reconfigure the workspace to leave the vegetation containing the nest undisturbed.

5.5 Nest Monitoring

Active nests will be monitored by Avian Biologists and buffers will be maintained until the young fledge. Nests will generally be visited every 7 to 10 days once identified. Once a nest has been determined to be inactive by the Avian Biologist, the nest buffer will be removed, and construction activities may continue without restriction.

If a nest buffer and its associated restrictions pose a substantial risk to key Project objectives, ONEOK may determine that construction activities can proceed through a buffer (i.e., pass-

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through), avoiding direct impact to the nest. Where ONEOK authorizes a pass-through of a non-eagle raptor buffer or BCC buffer, the Avian Biologist will first attempt to determine the stage of development of the young in the nest. If young are near fledging, ONEOK may choose to maintain the buffer until the young fledge upon evaluation of alternatives. If the nest is at an earlier stage of development (e.g., eggs just laid, young just hatched), construction equipment will be allowed through the buffer in an escalating frequency and duration. As the disturbance in the buffer is escalated, the nest will be monitored by the Avian Biologist to determine if the adults or young are being disturbed by construction activities. If the Avian Biologist notes that bird activities appear to be such that the success of the nest is at risk, construction actions will be reduced to a point where nest success is not at risk from construction.

Nest monitoring may also include determining that construction activities are not visible from a non-eagle raptor nest location. On a case-by-case basis ONEOK, with input from the Avian Biologists, may determine that construction can proceed through the non-eagle raptor buffer without disturbing the nest. If this similar exception is to be applied to an eagle nest, vigilant monitoring of the nest must occur in order to ensure the eagles are not disturbed.

If non-raptor nests are identified adjacent to the construction workspace after ground clearing activities have commenced in an area, ONEOK will attempt to limit extensive disturbance in the area, but will assume that because the birds initiated nesting after construction began in an area that the nesting individuals are acclimated to construction-related noise and disturbance and, therefore, additional protections will not be implemented.

6. CONCLUSION

ONEOK is committed to implementing the pre-construction survey program, environmental training for key construction personnel, appropriate spatial buffers, seasonal timing restrictions, and nest monitoring. ONEOK expects its Project team to take reasonable, prudent, and effective measures towards protection of migratory birds. While the MBTA is the responsibility of all members of the Project team, ONEOK has designated key staff (identified in Appendix B) to oversee and help implement this Plan. Please contact these individuals if you have questions regarding implementation of the Plan.

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7. LITERATURE CITED

U.S. Fish and Wildlife Service (FWS). 2008. Birds of Conservation Concern 2008. U.S. Fish and Wildlife Service, Division of Migratory Bird Management. 87 pp.

U.S. Fish and Wildlife Service (FWS). 2007. National Bald Eagle Management Guidelines.

U.S. NABCI Committee. 2000. North American Bird Conservation Initiative Bird Conservation Regions map. U.S. Fish and Wildlife Service, Arlington, Virginia. http://nabci-us.org/resources/bird-conservation-regions-map/

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APPENDIX A

Project Description

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PROJECT DESCRIPTION

ONEOK Bakken Pipeline, L.L.C. (ONEOK) a wholly owned subsidiary of ONEOK Partners, L.P., owns and operates natural gas liquids (NGL) assets in North Dakota. ONEOK is proposing the Little Missouri Lateral Pipeline Project (Project), which is an approximately 11.1-mile, 12-inch-diameter steel natural gas liquids (NGL) pipeline. The Project will originate in McKenzie County, North Dakota, and the eastern (southern) terminus of the Project will connect into Targa's existing Little Missouri Natural Gas Processing Plant, while the western (northern) terminus will connect into ONEOK's proposed Demicks Lake Pipeline and ONEOK's existing Garden Creek 10-inch NGL Pipeline.

Construction activities are currently proposed to begin in April 2019 and be completed in the third quarter of 2019. Restoration activities may extend through 2022, if needed.

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APPENDIX B

Key Points of Contact

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KEY POINTS OF CONTACT

Position	Name	Phone #	Responsibility
ONEOK Project Manager	Blake Holland	(918) 732-4888 (office) (918) 557-8442 (cell)	Responsible party for implementing the Plan
ONEOK Environmental Manager	Eddie Zedaker	(918) 595-1783 (office) (256) 872-5818 (cell)	Primary Point of Contact
ONEOK Construction Manager	TBD	(office) (cell)	Key point of contact in the field during construction
Environmental Inspector	TBD	(office) (cell)	Key point of contact in the field during construction

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G.3 Stormwater Pollution Prevention Plan

Little Missouri Lateral Pipeline Project

STORMWATER POLLUTION PREVENTION PLAN

DRAFT

Prepared by

January 2019

REVISION INDEX

Revision	Date	Affected Pages	Description
Initial	September 2018	Global	Development of new SWPPP
1	January 2019	Global	General revisions/edits post ONEOK review

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LIST OF ACRONYMS AND ABBREVIATIONS

ATWS	Additional Temporary Workspace
BMP	Best Management Practices
CMRP	Construction Mitigation and Restoration Plan
EI	Environmental Inspectors
General Permit	North Dakota National Pollutant Discharge Elimination System Stormwater Discharge from Construction Activities General Permit
NDDH	North Dakota Department of Health
NGL	Natural Gas Liquids
ONEOK	ONEOK Bakken Pipeline, L.L.C.
NOI	Notice of Intent
Project	Little Missouri Lateral Pipeline Project
SDS	Safety Data Sheets
SPCC Plan	Spill Prevention, Control, and Countermeasure Plan
SWPPP/Plan	Stormwater Pollution Prevention Plan

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PLANS INCORPORATED BY REFERENCE

The following plans are incorporated by reference. Refer to most recent version of the plan for implementation.	
Construction Mitigation and Restoration Plan (CMRP)	This plan describes construction practices and Best Management Practices (BMPs) to be implemented to contain sediment, minimize runoff and erosion, and restore areas disturbed by construction activities. The Environmental Inspector (EI) will verify that the appropriate CMRP is implemented.
Spill Prevention, Control, and Countermeasure Plan (SPCC)	This plan identifies specific preventive measures and practices that will be employed during construction of the project to reduce the likelihood of an accidental release of a hazardous or regulated material. This includes the details for the project's protocols and procedures related to training, release response equipment, equipment storage and inspection, regulated materials storage and handling, refueling area restrictions, equipment maintenance restrictions, spill response, chain of communication, as well as notification and reporting requirements.
Dust Control Plan	This plan identifies requirements associated with the application of dust suppressants along the right-of-way (ROW) and access roads, limitations associated with dust-generating activities during high winds, implementation of speed limits and vehicle access limitations on access roads and along the ROW and use of best management practices along the ROW to control fugitive dust emissions.
Revegetation Plan	This plan describes procedures to be followed during the revegetation of areas disturbed as a result of constructing the project and specifically applies to all areas of perennial vegetation disturbed by construction.
Horizontal Directional Drill Release Plan	This plan describes procedures to be followed during an inadvertent release of drilling material. This includes the details for the project's protocols and procedures related to training and appropriate response and notifications to an inadvertent release.
Weed Management Plan	This plan describes procedures and requirements associated with known noxious weed locations. Environmental Inspectors and ONEOK will work with the contractor to determine when appropriate measures will be implemented at known and newly discovered locations.

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1 INTRODUCTION

ONEOK Bakken Pipeline, L.L.C. (ONEOK) is committed to meeting or exceeding applicable federal, state, and local environmental requirements during the planning, construction, and operation of the Little Missouri Lateral Pipeline Project (Project).

ONEOK has prepared this *Stormwater Pollution Prevention Plan (SWPPP)* based on the requirements of the North Dakota Department of Health and Environment (NDDH) National Pollutant Discharge Elimination System (NPDES) Authorization to Discharge Stormwater Associated with Construction Activities General Permit (General Permit/Permit), located in Appendix A. At this time, ONEOK has not submitted a Notice of Intent (NOI) to obtain coverage from the NDDH to obtain coverage under the NPDES program for construction stormwater.

North Dakota acknowledges the exemption for uncontaminated stormwater runoff from oil and gas exploration, production, and transmission construction projects. Oil and gas construction activities are exempt from the requirement to obtain NPDES Permit coverage unless the facility meets one of the conditions in 40 Code of Federal Regulations (CFR) 122.26 (c)(1)(iii) noted below.

In the EPA's regulations at 40 CFR 122.26(c)(1)(iii), the operator of an existing or new discharge composed entirely of stormwater from an oil or gas exploration, production, processing, or treatment operation, or transmission facility is not required to submit a Permit application in accordance with paragraph (c)(1)(i) of this section, unless the facility:

(A) Has had a discharge of stormwater resulting in the discharge of a reportable quantity for which notification is or was required pursuant to 40 CFR 117.21 or 40 CFR 302.6 at any time since November 16, 1987; or

(B) Has had a discharge of stormwater resulting in the discharge of a reportable quantity for which notification is or was required pursuant to 40 CFR 110.6 at any time since November 16, 1987; or

(C) Contributes to a violation of a water quality standard.

By implementing the industry best management practices (BMPs) described in this *SWPPP* to control erosion and prevent sediment from violating surface water quality standards, construction stormwater discharges from the construction site are not anticipated to be contaminated with substances that could result in discharge of a reportable quantity (e.g., oil sheen) and are not anticipated to violate a water quality standard (e.g., sediment discharges violating a water quality criteria or causing loss of fishing resources). Procedures for reportable quantities are detailed in project *Spill Prevention, Control, and Countermeasure (SPCC) Plan*.

The Project is an approximately 11.1-mile, 12-inch-diameter steel natural gas liquids (NGL) pipeline. The Project will originate in McKenzie County, North Dakota, and the eastern (southern) terminus of the Project will connect into Targa's existing Little Missouri Natural Gas Processing Plant, while the western (northern) terminus will connect into ONEOK's proposed Demicks Lake Pipeline (slated for construction in 2019 and ONEOK's existing Garden Creek 10-inch NGL Pipeline.

Construction activities are currently proposed to begin in April 2019 and be completed in the third quarter of 2019. Restoration activities may extend through 2022, if needed.

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This *SWPPP* details relevant site information and the implementation sequence for construction activities that require BMPs for the purpose of minimizing erosion and sediment loss from the area of ground disturbance as a result of construction activities. In addition, the *SWPPP* describes general construction practices and BMPs to be implemented by ONEOK or its contractor(s) during construction of the pipeline to minimize impacts on the environment. Thereby providing an extensive description of the various BMPs to be implemented during installation of the pipeline to contain sediment and minimize runoff and erosion during installation of the pipeline and restoration of areas disturbed by construction activities. This *SWPPP* will be implemented during the entire construction phase of the Project, beginning with initial ground disturbance through restoration and final stabilization of disturbed areas. This document will be kept on-site during active construction activities

Construction of the pipeline facilities will generally use 75-foot-wide construction ROW, which consists of a 50-foot-wide permanent easement and an additional 25 feet of temporary worksspace. During construction, temporary work areas alongside the permanent easement will be necessary to accommodate temporary storage of trench spoil; areas needed to string, weld, and install the pipeline; and movement and operation of construction equipment. Additional workspaces may be required in areas of rocky soils, steep slopes, and rugged terrain and for staging areas, truck turnarounds, utility crossovers, and utility, road, railroad, waterbody, and wetland crossings. Only the permanent easement will be required for the operation of the pipeline.

ONEOK has also developed a comprehensive and Project-specific *Construction, Mitigation, and Restoration Plan (CMRP)* to be implemented during construction of the Project. The Environmental Inspector (EI) will verify that the appropriate *CMRP* is implemented. This plan describes general construction practices and BMPs to be implemented by ONEOK or its contractor(s) during construction of the pipeline to minimize impacts on the environment. This plan will be included as part of Project specifications and contracts to ensure implementation during construction activities. The *CMRP* includes an extensive description of the various BMPs to be implemented during installation of the pipeline to contain sediment and minimize runoff and erosion during installation of the pipeline and restoration of areas disturbed by construction activities. Typical drawings from the *CMRP* relevant to this *SWPPP* are included as Appendix B.

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1.1 SWPPP ADMINISTRATION

Copies of ONEOK's *SWPPP* will be available at ONEOK's construction management field offices located along the pipeline route. The official *SWPPP* and inspection records will be maintained at ONEOK's corporate office located in Tulsa, Oklahoma. ONEOK and its contractors will be responsible for implementation of the *SWPPP* including installation, inspection, maintenance, and repair of BMPs. ONEOK will provide copies of the *SWPPP* upon request from the federal, state, or local government officials.

ONEOK will employ one or more full-time EIs to ensure that the appropriate BMPs are employed throughout construction where necessary to minimize erosion. The EI(s) will be on-site during construction activities to document compliance with the *SWPPP*. These individuals will be on-site during construction activities to document compliance with the *SWPPP*. All inspections will be documented and recorded to demonstrate compliance with the Project *SWPPP*. Inspection related documents may be stored in an electronic database or similar method due to the scope of the Project and the number of anticipated inspectors. ONEOK and its contractor are responsible for developing, implementing, maintaining, and revising the *SWPPP*. ONEOK will be responsible for ensuring the *SWPPP* and related plans and drawings are available at the Project field offices throughout

construction; providing EIs to monitor performance and ensure compliance with this *SWPPP* and related plans; and providing training to construction personnel about Project sediment and pollution control measures. The *SWPPP* Administrator is identified in Table 2.0-1.

TABLE 2.0-1
Little Missouri Lateral Pipeline Project
Administrator Contact Information

Title	Company	Contact Information
Project Manager	ONEOK, LLC	Name: Blake Holland Phone: 918-732-4888 E-mail: Blake.Holland@onoeok.com
Environmental Project Manager	ONEOK, L.L.C.	Name: Eddie Zedaker Phone: 918-595-1873 E-mail: Edwin.Zedaker@oneok.com
Environmental Consultant	Merjent, Inc.	Name: Maddy Krumwiede Phone: 612-924-3973 E-mail: mkrumwiede@merjent.com
Environmental Inspector	To Be Determined	To Be Determined

The contractor will be responsible for committing all necessary labor and equipment to implement and maintain the BMPs identified in this *SWPPP* and related plans; conducting additional workforce training as necessary; and performing regular inspection, maintenance, and repair of BMPs. ONEOK's EI(s) will be responsible for training staff on sediment and pollution control measures, conducting regular inspections of BMPs, and ensuring that the contractor is aware of BMP's necessitating repair or maintenance.

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2 SITE DESCRIPTION

2.1 SITE LOCATION

TABLE 2.1-1 Legal Description of the Project		
McKenzie County, North Dakota		
Township	**Range**	**Section(s) Crossed by Route**
149 North	98 West	30
149 North	99 West	17-18, 20-21, 25-28
149 North	100 West	1, 12-13

2.2 AREA OF DISTURBANCE

Workspace associated with the construction and installation of pipelines requires careful planning to provide sufficient space and proper configuration to allow a safe work environment while satisfying regulatory obligations. ONEOK plans to use a 75-foot-wide construction ROW for the majority of the pipeline route, with 50 feet to be retained as permanent ROW for operation of the new pipeline. The actual breakdown of workspace within the construction ROW (e.g., spoil storage areas, equipment travel lanes) will vary depending on site-specific conditions. The workspace configuration is generally comprised of three major elements: spoil storage, trenchline, and work area. A diagram portraying the typical ROW configuration is included in Appendix B.

Spoil Storage – Construction of pipelines requires management of spoils. Several factors ranging from soil type, depth of cover requirements, and land use must be accounted for when evaluating how much workspace will be reserved for spoil management. Topsoil will generally be stored along the outer boundary of the construction workspace. Subsoil originating from trenchline excavation will generally be stored between the topsoil and the excavated trench. A minimum of 25 feet of construction ROW is typically allocated for spoil storage.

Trenchline – A portion of the workspace will be dedicated to the trenchline. Several factors including depth of cover requirements and soil types will influence the amount of space required for the trenchline. Buried pipelines that are 12 inches in diameter typically require a minimum of 15 feet of construction workspace to facilitate excavation. In order to meet standard industry safety requirements and construction BMPs, the trench for this pipe diameter may be 3 feet wide at the base and over 20 feet wide at the top of the trench. The balance of the remaining space remains available to heavy equipment to excavate the trench while minimizing trench wall failure.

Work Area – The work area is the largest portion of the construction workspace. This space must accommodate equipment and various construction activities. A portion of this space is dedicated to pipeline fabrication activities associated with field layout, welding, bending, coating, and testing. In addition to the space allocated to pipeline fabrication, this space is sized to allow for equipment operation and a travel lane for construction equipment and personnel to pass safely and unimpeded.

In addition to the construction ROW, ONEOK will use additional temporary workspaces (ATWS) for staging areas; truck turnarounds; and utility, road, railroad, waterbody, and wetland crossings; and in areas of rocky soils, steep slopes, and rugged terrain. These temporary workspaces will be located adjacent and contiguous to the construction ROW. These areas are shown on the Project maps included in Appendix C.

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ONEOK will primarily use public roadways and private access roads to access the construction ROW. Use of private access roads may require improvements or maintenance to provide access for construction personnel and/or delivery of construction materials and equipment. Previously unimproved access roads likely to be used during construction activities are shown on the maps included in Appendix C. These access roads include new roads to be developed during construction of the Project and previously unimproved access roads (i.e., existing two-track roads) which will likely require improvements prior to use or extensive restoration following installation of the pipeline. Prior to the commencement of Project activities, ONEOK will clearly mark the boundaries of approved work areas. Construction activities are not planned outside these areas.

The total estimated areas to be disturbed, as well as the location and approximate size of new impervious areas as a result of the Project, are summarized in Table 3.2-2. The locations of these facilities are identified on the maps provided in Appendix C.

TABLE 3.2-1
Little Missouri Lateral Pipeline Project
Estimated Area of Disturbance

	Land Disturbed by Construction (acres)	
	Temporary Workspace	**Permanent Land Disturbance**
Pipeline Right-of-Way	67.3	0
Additional Temporary Workspaces	33.6	0
Access Roads	NA	NA
Valve Sites	0.8	0.8
Total	**100.9**	**0.8**

*acreages to be updated based on final alignment.

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ONEOK will site these facilities in such a manner to minimize potential impacts on nearby wetlands and waterbodies. In general, the planned impervious areas associated with these facilities are small and not located near surface waters of the state. ONEOK does not anticipate discharge of construction stormwater from these facilities will result in a new point source to surface waters of the state. ONEOK does not plan to install permanent stormwater management systems (i.e., permanent sediment basins) within the facilities to treat stormwater which may be discharged from the sites.

Minor modifications to the pipeline route, location or size of temporary workspaces, or additional access roads may occur. These changes may result from negotiations with the landowner or the need for additional or modified workspace necessary due to site-specific factors encountered during installation of the pipeline. ONEOK will periodically update the maps located in Appendix C of the *SWPPP* to reflect the current footprint of the Project.

2.3 NATURE OF CONSTRUCTION ACTIVITIES

Conventional pipeline construction is composed of specific activities that make up a linear construction sequence (see Figure 2.4-1). These operations collectively include survey and staking of the ROW; clearing and grading; trenching; pipe stringing, bending, and welding; lowering the pipeline into the trench; backfilling the trench; hydrostatic testing; final tie-ins; commissioning; and ROW cleanup and restoration.

Pipeline construction activities such as clearing, grading, trench excavation, and backfilling, as well as the movement of construction equipment along the ROW will result in soil disturbance. Clearing removes protective cover and exposes soil to the effects of wind and precipitation, which may

increase the potential for soil erosion and movement of sediments into sensitive environmental areas (such as waterbodies and wetlands). Grading and equipment traffic may compact soil, reducing porosity and percolation rates, which could result in increased runoff potential.

Grading of the construction workspace and ATWS may be required in areas where the planned pipeline route crosses steep slopes. Steep slopes often need to be graded down to a gentler slope to accommodate pipe bending limitations and provide level working areas to safely operate construction equipment. In such areas, the slopes will be cut away, and, after the pipeline is installed, reconstructed as near as practicable to their original contours during restoration.

ONEOK has sized its construction workspace and ATWS to accommodate safe installation of the pipeline while minimizing the area resulting soil disturbance and ultimately requiring restoration. ONEOK assumes that the majority of the areas identified within the construction area and depicted on the maps in Appendix C will be disturbed by construction activities.

2.4 SEQUENCE OF ACTIVITIES

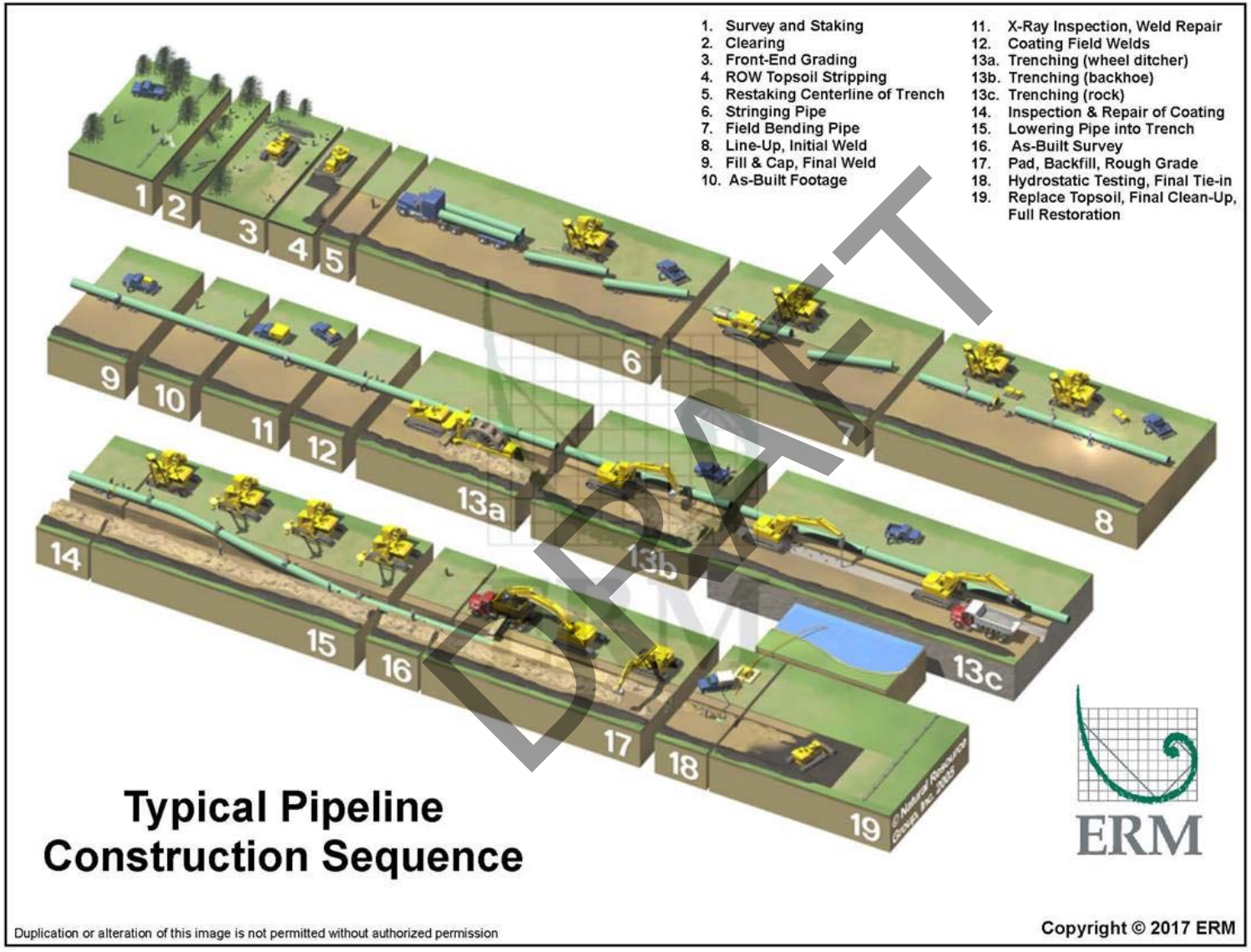
Construction of the new pipeline will occur in the following sequence:

- Stake the workspace boundaries and utilities;
- Clearing of construction area;
- Install temporary erosion and sediment controls;
- Grade and stump removal, if necessary;
- Segregation of topsoil, where necessary;
- Pipe delivery, bending, and welding;
- Trenching;
- Pipe installation;
- Backfilling excavations;
- Cleanup and final grading;
- Soil compaction treatment, where necessary;
- Stone removal, where necessary;
- Final restoration; and
- Final stabilization.

The general sequence of construction activities is shown on Figure 2.3-1. The *CMRP* provides a detailed description of the above referenced construction activities. Installation of soil erosion and sedimentation control devices will occur after clearing and before grading activities commence.

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Figure 2.4-1 – Typical Pipeline Construction Sequence



2.5 SCHEDULE

Construction of the pipeline is scheduled to begin in April 2019. Construction of the pipeline may commence simultaneously at several locations. Construction of the segments of pipeline (referred to as a construction spreads) will proceed in a linear fashion as described in Sections 3.3 and 3.4. Installation of the pipeline at select locations (e.g., valve sites) may occur separately from mainline construction spreads. In general, ONEOK anticipates the entire pipeline will be installed by the third quarter 2019. Restoration of the construction ROW will commence immediately following the installation of the pipeline. ONEOK estimates that areas disturbed by the Project will reach final stabilization by the end of 2022.

2.6 EXISTING VEGETATION AND GROUND COVER

The predominant vegetation communities crossed by the pipeline route consists of cultivated lands and rangeland. Cultivated land includes areas that are actively involved in farming operations resulting in tilling of the soils. Such land along the pipeline route is likely to include corn, beans, sugar beets, alfalfa, and wheat. Rangeland consists of lands involved in the production of hay, those that are actively being grazed by livestock, and shortgrass and tallgrass prairies. Following completion of construction activities, actively cultivated areas and rangeland will be restored to pre-construction land use, unless otherwise requested by the landowner.

STORMWATER DISCHARGE

2.7 RECEIVING WATERS

The pipeline crosses numerous drainage basins. The pipeline route crosses 8 waterbodies (6 intermittent, 1 perennial, and 1 ephemeral), and 4 wetlands (all Palustrine Emergent). Appendix D contains the complete table of waterbodies and wetlands that will be crossed by the Project and are expected to receive stormwater discharges. Construction activities and grading of the right- of-way are generally considered temporary. Areas graded as a result of construction activities will be returned to their previous contours to the extent practicable following installation of the pipeline. Construction of the pipeline will not result in distinguishable point source discharges or new outfalls to state surface waters.

2.8 MUNICIPAL SEPARATE STORM SEWER SYSTEMS

No areas serviced by Municipal Separate Storm Sewer Systems (MS4s) are crossed by the pipeline route.

2.9 IMPARIED WATERS

There are no waterbodies in the Project area listed as impaired under 303(d) of the federal Clean Water Act.

3 EROSION PREVENTION AND SEDIMENT CONTROL PRACTICES

3.1 BEST MANAGEMENT PRACTICES

ONEOK requires that erosion and sediment transport is minimized. ONEOK will implement BMPs for erosion and sediment control as described in the *CMRP* and the *SWPPP* to minimize run-off of sediments from the pipeline construction ROW. BMPs are intended to reduce or eliminate any possible water quality impacts from stormwater flowing through the construction site. BMPs will be used to minimize erosion and sediment transport during construction and restoration of the Project.

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BMPs will be selected and properly installed and maintained in accordance with specifications provided in the *CMRP*. BMPs are to be installed in accordance with manufacturer specifications.

Specific BMPs to be implemented are discussed in the following sections. ONEOK's *CMRP* contains additional detail regarding the installation and maintenance of BMPs to be implemented during construction of the pipeline. BMPs will be designed to divert flows from exposed soils, filter runoff, or otherwise reduce sediment-laden runoff from entering surface water or stormwater conveyance systems (e.g., road ditches, grassed waterways). As stated, ONEOK plans to use a combination of BMPs during the course of the Project to provide the best prevention and control of sediment erosion during construction related activities.

ONEOK will install and maintain all structural and non-structural BMPs as outlined in the CMRP. ONEOK and the EIs will track the location of all structural and non-structural BMPs on the inspection reports (Appendix E) and the BMP tracking table (Appendix F).

Deficient BMPs noted during required site inspections will be addressed as soon as possible. It is the responsibility of the contractor to select best management practices appropriate to the location of the installation.

3.2 EROSION PREVENTION PRACTICES

3.3 VEGETATIVE BUFFERS

The most effective erosion control BMP is the minimization of soil disturbance. Therefore, removal of existing vegetation within the Project footprint will be avoided to the extent practicable. ONEOK will also minimize soil disturbance immediately adjacent to waterbodies until the pipeline is installed under the feature. In general, ONEOK will leave a 20-foot buffer of undisturbed herbaceous vegetation at waterbody crossings except where grading is necessary for bridge installation. The use of vegetated buffers is further described in the *CMRP*.

3.4 EROSION CONTROL BLANKETS AND MATS

ONEOK will install erosion control blankets or mats on slopes greater than 30 percent or where necessary to minimize erosion upslope of sensitive areas (e.g., surface waters of the state). Erosion control blankets, matting, and/or rip rap appropriately designed for the expected flows will also be installed on stream banks disturbed during construction and within defined stormwater conveyances (e.g., road ditches). The contractor will select erosion control blanket products suitable to the location of installation and the duration which the product is intended to perform. Installation of erosion control mats will be in accordance with the manufacture's specifications. Figure 13 of Appendix B identifies the intended use of erosion control blankets. Installation of rip rap must be above the ordinary high water mark (OHWM) and approved by ONEOK in advance.

3.5 DUST SUPPRESSION

ONEOK's contractors will implement dust suppression BMP's as necessary to prevent nuisance conditions and to prevent significant particle or dust generation resulting from construction activities, as described in ONEOK's *Dust Control Plan.*

ONEOK's planned dust suppression methods include stabilization of temporary stockpiles, spraying of water on the construction ROW in areas of active construction, use of chemical suppressants (e.g., calcium chloride) on public or private roads, and enforcing a 25-mile-per-hour speed limit on unimproved roads. When opacity along dirt roads and the ROW exceeds 20 percent (objects partially

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obscured), construction activity will cease until dust control measures are employed. Earthwork activities will cease when sustained wind speed exceeds 30 miles per hour.

3.6 SEDIMENT CONTROL PRACTICES

Sediment Barriers

ONEOK and/or its contractors will install temporary sediment barriers during clearing and before grading where necessary and as defined by the *CMRP* and *SWPPP*. In general, temporary sediment barriers will be installed at the edge of the ROW as needed, and/or in other areas determined by ONEOK to prevent sediments from entering waterbodies and wetlands crossed by the pipeline route or located downslope of the construction ROW. Figures in Appendix B identify the general configuration of temporary sediment barriers to be installed at waterbodies and wetlands crossed by the pipeline route. The actual layout of the silt fence to be installed in the field by the contractor will vary in accordance with the site-specific conditions present at each waterbody location. Installation of BMPs will be overseen by ONEOK's environmental inspection staff to ensure that wetlands and waterbodies crossed by the route are adequately protected from runoff based upon the conditions present on either side of the crossing (e.g., slope, soil types).

Use of silt fence is preferred as the primary sediment barrier unless site-specific conditions (e.g., rock or stony soil, sustained winds) prevent proper installation or reasonable maintenance. Temporary sediment barriers will typically be installed and maintained at side slope and downslope boundaries of the construction area adjacent to wetlands and waterbodies and at other locations as directed by ONEOK's inspection staff. These locations may include the base of slopes adjacent to road ditches, stormwater conveyance systems (e.g., road ditches, grass waterways, inlets), along the edge of the approved work area, or other stormwater conveyances that are directly adjacent to the approved work area. Heavy duty silt fence is available for locations which are subject to high stormwater flows. Velocity dissipation devices (e.g., riprap, straw bales) must be installed at discharge locations as necessary to provide a non-erosive flow velocity between the structure and receiving waterbody.

The contractor will choose and install sediment barriers in areas with high potential for sediment transport. Installation of other devices such as straw bales, fiber roles, or wattles may be approved by ONEOK where the potential for erosion is minimal.

Sediment barriers will be cleaned, repaired, and/or replaced when functionality begins to decrease (e.g., sediment reaches intolerable levels, fabric begins to tear, and/or the silt fence begins to become undermined). Repairs and/or maintenance of sediment control devices within active construction areas will be completed as soon as possible after identification. Additional sediment barriers will be considered for locations prone to failure.

Temporary sediment barriers will be maintained until final stabilization is reached or the site has been returned to its previous function (i.e., cultivated agriculture). Final stabilization is defined as all soil disturbing activities at the site have been completed and a uniform perennial vegetative cover with a density of 70% of the cover which is typical for undisturbed areas, unpaved areas, or areas not covered by permanent structures, in the geographic location of the construction site, has been established, or equivalent permanent stabilization measures (such as the use of riprap, gabions, or geotextiles) have been employed (as defined by the General Permit). Once the site has reached final stabilization, the barriers will be removed and disposed of properly.

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Temporary and Permanent Slope breakers

ONEOK will install temporary and permanent earthen slope breakers within the construction ROW to direct stormwater runoff to adjacent stabilized areas. Slope breakers will be constructed with appropriate energy-dissipation devices (e.g., temporary sediment barriers, rip-rap) to prevent erosion at their outfall. During construction, ONEOK will install temporary slope breakers on slopes greater than 5 percent in accordance with the spacing provided in the *CMRP*. In order to maintain sheet flow and minimize rills and/or gullies, there will be no unbroken slope length of greater than 75 feet for slopes with a grade of 3:1 or greater.

Temporary slope breakers will be maintained throughout construction and will be replaced at the end of each day if disturbed by construction activities. Permanent slope breakers will be constructed in accordance with the *CMRP*. In general, permanent slope breakers will be constructed in all non-cultivated areas except where agreements with landowners prevent installation. Refer to the Figures in Appendix B for typical drawings of slope breakers.

Vehicle Tracking

Sediment control BMPs will be installed to minimize soil disturbance and any sediment leaving the construction site. If necessary, a combination of crushed stone access pads, matting, and culverts will also be installed at ingresses and egresses to the construction site to minimize the tracking of sediments onto paved roads. If sediment is tracked onto a paved road, street sweeping, or scraping will be performed immediately to minimize sediment leaving the construction site. Sediment must be returned to the ROW.

4 STABILIZATION PRACTICES

Stabilization practices include temporary and permanent measures designed to prevent erosion and sediment from leaving the construction site. This includes revegetation, installation of mulch and/or erosion control blankets, and preserving natural vegetation within the construction ROW to the extent possible.

ONEOK's contractors will permanently stabilize, by revegetating non-cultivated areas disturbed by construction activities to prevent and minimize erosion with the exception of sites where impervious areas will be installed, such as pump station and valve sites. ONEOK's contractor will initiate revegetation of disturbed areas as soon as soil conditions permit seedbed preparation and seed germination following installation of the pipeline, per the requirements in the *CMRP* and *Revegetation Plan*.

ONEOK will also initiate temporary stabilization measures where necessary to minimize erosion. Temporary stabilization measures consist of temporary seeding and/or mulching or surface roughening. Temporary stabilization measures will be employed where erosion is likely to occur, including locations such as stream banks, road ditches, steep slopes, and areas subject to stormwater flow. Temporary stabilization measures will also be employed where completion of construction activities or where final stabilization may be delayed. ONEOK's specification for installation of mulch and temporary stabilization measures are discussed in the *CMRP* and *Revegetation Plan*.

5 CONSTRUCTION SITE DEWATERING

As noted previously, ONEOK is planning to utilize the stormwater permitting exemption. As such, coverage under NDDH NDPES Permit NDG07-0000 will be obtained to cover trench dewatering

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activities. Site dewatering conditions will be defined in that permit and are summarized below:

In the event that dewatering activities are necessary, the water will be discharged to a well-vegetated upland area or suitable BMP (e.g., geotextile filter bag or straw bale dewatering structure) in a manner that does not cause erosion and does not result in heavily silt laden water flowing into any waterbody, wetland or stormwater sewer system (including drain tile inlets or irrigation systems). The discharged water cannot (1) be in violation of the water quality standards as defined by the NDDH; (2) adversely affect downstream landowners; and (3) cause erosion or scouring at the outlet or in the receiving waterbody.

6 POLLUTION PREVENTION MANAGEMENT MEASURES

6.1 SOLID WASTE DISPOSAL AND GOOD HOUSEKEEPING

Non-hazardous wastes generated during construction will be containerized and properly disposed of off-site in compliance with state and federal requirements. Non-hazardous pipeline construction wastes include human waste, trash, pipe banding and spacers, waste from coating products, welding rods, timber skids, cleared vegetation, stumps, and rock. All wastes not native to the construction site will be disposed off-site at a licensed waste disposal facility.

Site inspections will include surveying the site for refuse, which will be disposed of as soon as possible. The contractor will not permit paper from wrapping or coating products or lightweight items to be scattered by the wind. Upon final stabilization, all existing erosion and sediment control structures will be removed from the Project area.

The contractor will provide portable, self-contained toilets during construction operations. Wastes from these units shall be collected for disposal at licensed and approved facilities. Portable toilets must be properly secured to prevent tipping by vandals or blowing over in wind events.

6.2 HAZARDOUS MATERIALS HANDLING

Secondary containment will be provided for any hazardous materials, including oil, fuels, coolants, and paint temporarily stored on the construction ROW. Safety Data Sheets (SDS) for all hazardous materials will be maintained on site. All employees dealing with hazardous materials will be informed of proper handling procedures.

In the event that hazardous wastes are generated during construction activities, such wastes will be stored and disposed of in compliance with state and federal regulations. ONEOK will follow the procedures in its *SPCC Plan* for handling of hazardous materials such as fuels and lubricants. ONEOK does not anticipate that significant volumes of hazardous materials (e.g., fuels, lubricants, fertilizer) will be stored overnight within the construction ROW.

6.3 CONCRETE WASHOUT AND RELATED WASTE

Concrete wash water has a high pH and contains high-levels of chromium which could pollute surface waters and/or groundwater. Concrete wash waters, grindings, slurry, or other related wastes may be produced as a result of construction activities. ONEOK does not anticipate that concrete coating of pipeline joints or the manufacturing of concrete set-on weights will be conducted within the construction ROW.

The discharge of concrete washout or uncured concrete wastes to surface waters of the state (i.e., wetlands, waterbodies, or storm drains) is prohibited. ONEOK's contractor will designate concrete washout facilities where pouring of concrete is planned. The contractor must post signs to identify the

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washout facilities. Washout facilities may include prefabricated watertight containers or facilities constructed on site such as bermed earthen structures or sumps lined with plastic sheeting. Concrete washout facilities will be sized to accommodate the amount of concrete wastes both liquid and solid to be generated at the site. The structure will also be sized with adequate freeboard to prevent overflow during discharge or following precipitation events.

Concrete washout facilities will be designed and sized to promote evaporation of liquids and curing of the concrete wastes prior to disposal. Facilities constructed on site will be constructed of multiple layers of thick plastic sheeting to prevent leaks and puncturing of the barrier. Washout facilities will be covered when precipitation is imminent to prevent precipitation collecting and intermingling with wastes or prolonging the curing of solids. Concrete washout and associated wastes are to be treated as a hazardous waste until all solids have cured. Once cured, concrete solids may be disposed of as solid waste. Concrete washout facilities must be located at least 100 feet away from wetlands and waterbodies unless approved by ONEOK.

6.4 VEHICLE AND EQUIPMENT MAINTENANCE AND WASHING

Maintenance of vehicles and equipment will be conducted at contractor yards to the extent practicable. ONEOK does not anticipate that vehicle or equipment maintenance will be conducted along the construction ROW, except in situations where the equipment is immobile and cannot be transported to a yard for maintenance or repairs. All repairs or maintenance will be conducted in accordance with ONEOK's *SPCC plan* which requires maintenance or repairs to be conducted at least 100 feet from waters of the state unless an exception is approved by ONEOK. ONEOK's approval of each exception would be after consideration of the site conditions and additional measures or precautions that could be taken to contain potential pollutants. No wastes from vehicle or equipment repair or maintenance will be stored on the construction ROW.

No vehicle or equipment washing using detergents or degreasers will be performed on the construction ROW. Cleaning of equipment and vehicles may be required on the construction ROW to prevent the spread of undesirable or invasive species, as described in ONEOK's *Weed Management Plan*. These areas will be marked by ONEOK's EIs. ONEOK will construct equipment cleaning stations away from waters of the State. In no event will runoff from vehicle and equipment washing be allowed to enter waters of the State. ONEOK will dispose of wastes resulting from equipment washing stations in accordance with its *CMRP*.

7 CONSTRUCTION SPILL PREVENTION AND REPORTING

In the event of a spill, ONEOK will follow procedures outlined in its *SPCC Plan*. ONEOK will perform any necessary notifications to federal and state agencies following construction related spills as required by permits or applicable regulations. Soils contaminated by construction related spills will be removed from the construction site in accordance with federal and state regulations. If temporary storage of contaminated soils is required on-site, stockpiled soil will be covered with plastic sheeting to prevent potential contact with stormwater.

Bulk storage of fuels and lubricants and other hazardous liquids are not expected to occur on the construction ROW. Small volumes of fuel or extra fuel tanks may occur on the ROW to support stationary pumps such as those used for dewatering and hydrostatic testing. All fuel stored on the ROW will be placed in secondary containment or be housed in dual-wall storage tanks. Stormwater that collects in secondary containment suitable for waste will be visually inspected for signs of contamination or visible sheen prior to drainage. If contamination is suspected, the stormwater will

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be disposed of in compliance with state and federal regulations.

The following practices will be followed during the course of the Project for spill prevention. To protect against accidental release of a lubricant, coolant, or fuel, equipment will have catch pans and absorbing pads. The contractor will have equipment and materials on site needed to prevent and/or contain an accidental spill. Equipment will be inspected each morning before work starts and during the workday to check for leaks and to repair or replace hoses or connections that are in danger of failure. ONEOK will follow the procedures in its *SPCC Plan* when refueling equipment and storing hazardous liquids on the ROW.

Fuels and Hazardous Materials Handling

- Refueling of equipment or hazardous material transfer will occur in designated areas only.
- No refueling or hazardous material transfer will occur within 100 feet of a water of the state, spring, or well.
- Hazardous materials, including oils, fuels, and lubricants, will be stored 100 feet away from waters of the State. Construction equipment will also be staged 100 feet away from waters of the State when parked/stored overnight.
- ONEOK's approval of each exception would be after consideration of site conditions and additional measures or precautions that could be taken to contain potential pollutants. For example, where conditions require that construction equipment (e.g., pumps used in trench dewatering) be refueled within 100 feet of waters of the state, sufficient oil and fuel containment booms and absorbent materials will be on-hand to allow for rapid containment and recovery of a spill.

8 INSPECTIONS AND MAINTENANCE

An inspection report will be prepared after each inspection (Appendix E). Records of each inspection and maintenance activities will include:

- Date of inspection;
- Name and title of person(s) conducting inspections;
- Construction phase and type of inspection being conducted;
- Scope and findings of inspections, including:
    - Locations of sediment or other pollutant discharges from the site;
    - Locations of BMPs that need to be maintained;
    - Locations of BMPs that failed to operate as designed or proved inadequate at controlling pollutants;
    - Locations where additional BMPs are needed or that were not in place at the time of the inspection; and
    - Locations where BMP's are no longer necessary and have been removed;
    - Description of corrective actions taken; and
    - Documentation of any changes made to the *SWPPP* as a result of the inspection, including any deviation from the minimum inspection schedule as in this *SWPPP*.

Where an inspection does not identify any incidents of non-compliance, the report shall contain a signed statement indicating that the site is in compliance with the *SWPPP* to the best of the signer's knowledge and belief.

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8.1 INSPECTION SCHEDULES

Inspections will be conducted at least once every 14 days within areas of active construction and at least once every month for areas of the construction ROW where activities are no longer active and the ROW is temporarily stabilized. Inspections must also be completed in active construction areas within 24 hours after the end of any precipitation event of 0.5 inches or greater. Post-storm event construction inspections may be postponed up to 72 hours if construction activities are idle (e.g., wet weather shut down or non-working weekends/federal holidays). However, inspections must be completed before construction activities recommence. Regular inspection of inactive construction areas is not required where snow cover or frozen ground conditions exist over the ROW for an extended period and melting conditions posing a risk of erosion do not exist. Winter conditions inspections exclusions will be documented in the inspection records (Appendix E); documentation will include dates when snow cover occurred, date when construction activities ceased, and date melting conditions began.

8.2 MAINTENANCE

ONEOK or its contractors are responsible for maintaining all erosion control measures including replacement or modification of BMPs as necessary to prevent or minimize sediments from entering waterbodies or wetlands or from leaving the construction site. All sediment control devices (e.g., silt fences, fiber rolls) must be repaired, replaced, or supplemented when they become nonfunctional or have retained sediment in amounts exceeding the manufacturer's specifications.

If a sediment control device has failed or is determined to be no longer effective the contractor will perform maintenance or replace the device as soon as possible, or immediately in most cases, to minimize the discharge of pollutants from the construction ROW.

8.3 EROSION AND RETRIEVAL OF SEDIMENTS

Visible or measurable erosion associated with the construction of the Project, which leaves the construction ROW as a result of ineffective BMPs, is prohibited by ONEOK. If inspections identify sediment that has escaped the construction site, the off-site accumulations of sediment will be removed in a manner and at a frequency sufficient to minimize off-site impacts. Under no condition shall the sediment be washed into surface waters of the State. Where a determination is made that sediment must be removed to prevent deposition within surface waters or stormwater conveyances, the sediment must be removed as soon as practicable. Recovery of sediment from sensitive resources must be approved by ONEOK prior to entry.

8.4 NON-COMPLIANCE REPORTING

ONEOK will complete inspections to ensure and document compliance with this *SWPPP*. Inspections documenting implementation and effectiveness of erosion and sediment control measures will be conducted in accordance with the requirements outlined in Section 7.1. If inspections identify any non-compliance that may endanger human health or the environment or exceed North Dakota water quality rules and regulations, ONEOK is responsible for verbally notifying the NDDH within 24 hours of becoming aware of the noncompliance. Within 5 days after becoming aware of a noncompliance, the NDDH must receive the following information in writing:

- A description of the noncompliance and its cause;
- The period of noncompliance, including exact dates and times; or if not identified, the anticipated time the noncompliance is expected to continue; and
- Additional measures being taken to reduce, eliminate, and prevent recurrences of the non-complying discharge or other cause of noncompliance.

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8.5 UPDATING THE SWPPP

ONEOK will maintain and update the *SWPPP* to reflect current conditions whenever there is a change in site design or construction methods, which require the implementation of new or revised BMPs, or may have a significant effect on the potential for the discharge of pollutants. The Plan will also be amended to improve observed deficiencies associated with treatment of stormwater discharges.

Changes to the *SWPPP* will be made prior to changes in site conditions or for responsive *SWPPP* changes (e.g., changes to BMP's made in the field) within 72 hours after the change in BMP installation and/or implementation occur at the site. Access to an electronic copy of the *SWPPP* and General Permit will be readily available to applicable personnel at the Project site. Updates to the *SWPPP* will be provided to construction personnel as needed.

9 EMPLOYEE TRAINING

All ONEOK and construction personnel working on the Project will receive an environmental orientation session prior to accessing the construction ROW. The environmental orientation will provide an overview of the erosion and sediment control measures to be implemented during construction activities, construction related spill prevention, clean-up, and reporting and good housekeeping practices to implement on the construction ROW. Supervisory personnel (e.g., construction foremen, craft inspectors) will attend a more thorough environmental training session which will provide a detailed overview of the regulatory permits required for the Project and specific erosion and sediment control measures to be implemented during construction. A training log will be maintained as Appendix G.

ONEOK's EIs will oversee compliance with ONEOK's *CMRP* and environmental permits and regulations specific to the Project. The EIs will be experienced in the application of erosion and sediment control BMPs and knowledgeable of the contents and requirements of the *SWPPP* and other environmental procedures applicable to the Project. The EIs will conduct additional training sessions with specific construction crew as necessary to properly implement the *SWPPP.* These additional training sessions will focus on maintaining compliance with permits and regulations and will be conducted prior to construction activities in sensitive areas or changing of seasons, etc. when use of erosion and sediment control measures may be modified.

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10 CONSTRUCTION STORMWATER NOTICE OF TERMINATION

This section is not applicable unless ONEOK submits an NOI for permit coverage.

11 RETENTION OF RECORDS

ONEOK will retain copies of all inspection forms, all records and information resulting from the monitoring activities required by the *SWPPP*. In addition to inspection and maintenance reports, ONEOK will keep records of the construction activities conducted at the site, including the dates when major grading activities occurred. Additionally, the dates when the site was temporarily or permanently seeded and when temporary or permanent stabilization was reached will be recorded and maintained as part of the *SWPPP*.

APPENDIX A

North Dakota NPDES Storm Water Authorization to Discharge Stormwater Associated with Construction Activities General Permit (NDR10-0000)

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Permit No: NDR10-0000
Effective Date: April 01, 2015
Expiration Date: March 31, 2020

AUTHORIZATION TO DISCHARGE UNDER THE

NORTH DAKOTA POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with Chapter 33-16-01 of the North Dakota Department of Health rules as promulgated under Chapter 61-28 (North Dakota Water Pollution Control Act) of the North Dakota Century Code,

Facilities both qualifying for and satisfying the requirements identified in Part I of the permit

are authorized to discharge stormwater associated with **construction activity**

to waters of the state

in accordance with conditions set forth in this permit.

This permit and the authorization to discharge shall expire at midnight,

March 31, 2020.

Signed this 31 day of March, 2015.

Karl H. Rockeman, P.E.
Director
Division of Water Quality

BP 2014.06.12

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I. PERMIT COVERAGE AND LIMITATIONS

A. Discharges Covered

1. This permit applies to all areas within the state of North Dakota, except for those areas defined as Indian Country. Construction activity located within Indian Country within the state of North Dakota must obtain a permit through the United States Environmental Protection Agency. If the construction activity is located with the jurisdiction of the state of North Dakota, and the United States Environmental Protection Agency, a permit must be obtained from both regulatory entities.

2. This permit applies to stormwater discharges associated with construction activity and small construction activity as defined in Title 40 of the Code of Federal Regulations (CFR), Parts 122.26(b)(14)(x) and (b)(15), respectively. The reference to construction activity in this permit includes both large construction activity and small construction activity as described below.

   a. Large construction activity includes clearing, grading and excavation, that disturbs land of equal to or greater than five (5) acres and includes the disturbance of less than five (5) acres of total land area that is a part of a larger common plan of development or sale if the larger common plan will ultimately disturb five (5) acres or more.

   b. Small construction activity includes clearing, grading and excavation, that disturbs land of equal to or greater than one (1) acre, and includes the disturbance of less than one (1) acre of total land area that is part of a larger common plan of development or sale if the larger common plan will ultimately disturb equal to or greater that one (1) and less than five (5) acres.

   c. Discharges of stormwater from oil and gas exploration, production, processing or treatment operations, or transmission facilities composed of contaminated runoff by contact with or that has come into contact with, any overburden, raw material, intermediate products, finished product, byproduct, or waste products located on the site of such operations.

3. Stormwater discharges from support activities (e.g., equipment staging yards, material storage areas, excavated material disposal areas, borrow areas) may be covered by this permit as part of a related construction site. The support activities may only be in association with one project. If the support activity is associated with more than one project, a separate stormwater permit (Industrial or mining, extraction or paving material preparation) is required.

4. Certain non-stormwater discharges from facilities covered by this permit and meeting the requirements specified in Part II(A).

5. Stormwater discharges from construction activity covered by the previous permit, issued October 12, 2009, where a notice has been submitted to obtain coverage under this permit.

6. Projects which have obtained coverage under this permit shall amend and implement a Stormwater Pollution Prevention Plan (SWPPP) that meets the requirements of this permit within ninety (90) days of the effective date of this permit.

7. Discharges from dewatering activities related to construction activities (discharges of uncontaminated stormwater).

8. Local Authority. This permit does not preempt or supersede the authority of local agencies or operators of municipal separate storm sewer systems to prohibit, restrict, or control discharges of stormwater to storm sewer systems or other water courses within their jurisdiction.

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B. Discharges Not Covered

1. Stormwater discharges associated with industrial activity from any source other than construction activities described in Part I(A).

2. Post-construction discharges from industrial activity that originate from the site after construction activities have been completed at the site. Industrial and post-construction stormwater discharges may need to be covered by a separate stormwater permit.

3. The placement of fill into waters of the state requiring local, state, or federal authorizations (such as U.S. Army Corps of Engineers Section 404 permits).

4. This permit does not substitute for obligations under the National Environmental Policy Act (NEPA), Endangered Species Act (ESA), Wild and Scenic Rivers Act, or National Historic Preservation Act (NHPA), it is your responsibility to ensure the project and resulting discharges comply with the respective requirements.

5. Discharges to waters for which there is a total maximum daily load (TMDL) allocation for sediment and/or parameters associated with sediment transport are not covered unless you develop a Stormwater Pollution Prevention plan (SWPPP) that is consistent with the assumptions and requirements in the approved TMDL. To be eligible for coverage under this general permit, the SWPPP must incorporate the conditions applicable to the discharge necessary for consistency with the assumptions, allocations and requirements of the TMDL. If a specific numeric wasteload allocation has been established that would apply to discharges from construction activity, the permittee must incorporate that allocation into the SWPPP and implement necessary steps to meet that allocation. Information about TMDL allocations may be found at the following website: www.ndhealth.gov/WQ/SW/Z2_TMDL/default.htm.

6. Stormwater discharges that the department determines will cause, or have the reasonable potential to cause or contribute to a violation of the standards for quality for waters of the state (North Dakota Administrative Code (N.D.A.C.) 33-16-02.1).

7. Discharges from hydrostatic testing, well points, water line disinfection and treatment of gasoline or diesel contaminated groundwater.

8. Discharges of wash water using detergents, wastewater, or sanitary waste.

C. Obtaining Coverage and Authorization Effective Date

1. To obtain authorization under this general permit for stormwater discharges you must submit a complete application and develop a SWPPP in accordance with Part II(C) of this permit. A SWPPP must be in place as a condition of the permit and a copy of the SWPPP must be retained by the permittee.

2. Permit coverage will become effective seven (7) days after you submit a complete application unless otherwise notified by the department (based on the department receipt date).

3. Upon the effective date of permit coverage you, as the permit applicant, are authorized to discharge stormwater from eligible activities under the terms and conditions of this permit.

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D. Application (Notice of Intent) Process

1. You must use a Notice of Intent (NOI) to complete your application. An NOI form (or a replacement application form) is available at the following website: www.ndhealth.gov/WQ/Storm/Construction/ConstructionHome.htm.

2. Application Content and Conditions.

   a. The owner, or owner jointly with the operator (usually the general contractor), shall submit a completed application for this permit. The owner is responsible for compliance with all terms and conditions of this permit. The operator has day to day supervision of construction activities and is jointly responsible with the owner for compliance with the permit conditions as they pertain to the construction activities delegated to the operator.

   b. The application (Notice of Intent) shall contain, at a minimum, the following information:

      (1) Owner name, mailing address and phone number;
      (2) Project contact name and phone number;
      (3) Project/site name;
      (4) Project/site location (street address; section, township, range; or latitude and longitude) and county;
      (5) A brief description of the construction activity;
      (6) The anticipated start date and the anticipated completion date for the project (if known);
      (7) The estimated total area of the site and the total area of disturbance in acres;
      (8) The name of receiving water(s), or the name of the municipal storm sewer system and receiving water(s);
      (9) The signature of the applicant(s), owner (and operator if co-applicants) signed in accordance with the signatory requirements in Part IV(A)(6) of this permit.

   c. A SWPPP (Part II(C)) for the project must be prepared and available for review, upon request, by the department at the time of application. A partially complete plan is acceptable when it clearly identifies the item(s) to be completed, the person(s) responsible for completing the item(s) and the deadline for completing the item(s). The SWPPP must be completed prior to the start of construction (or the applicable construction phase). You are not required to submit the SWPPP with the application unless otherwise notified by the department.

3. For residential construction activity occurring within a common plan of development (such as a subdivision) subject to the permit requirements, coverage may be obtained by the following:

   a. The owner of the lot(s) shall submit one (1) NOI for all of the owner's construction activity within the common plan of development, or

   b. The operator, such as a homebuilder who may represent one (1) or more lot owners, shall submit one (1) NOI for all of the operator's construction activity within each addition of the common plan of development.

      In addition, a SWPPP must be developed and implemented for the permittee's activities within the common plan of development. Additional phases of the common plan of development may be included under the initial application and permit coverage provided the SWPPP is amended to include the additional area or phases.

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4. For oil and gas exploration, production, processing, treatment operations, or transmission facilities, which discharge contaminated stormwater, permit applications may be submitted for individual project sites or for an area of operations such as well field or by county.

5. Completed applications and any reports required by this permit shall be submitted to:

North Dakota Department of Health
Division of Water Quality
918 East Divide Avenue
Bismarck, ND 58501-1947

E. Notice of Termination (NOT)

1. Permittees wishing to terminate coverage under this permit must submit a Notice of Termination (NOT) or other written request identifying the facility, reason why the permit is no longer needed and signed in accordance with Part IV(A)(6) of this permit. Compliance with the conditions of this permit is required until a NOT is submitted to the department.

2. Permittees may only submit a NOT after one of the following conditions have been met:

   a. Final stabilization (Part II(E)) has been achieved on all portions of the site for which the permittee is responsible.

   b. Another owner/operator/permittee has assumed control, in accordance with the transfer provisions (Part I(F)), over all areas of the site that have not achieved final stabilization.

   c. For residential construction only, a NOT is not required for each lot that is sold, transferred, or has achieved final stabilization. The permittee must modify their SWPPP to indicate that permit coverage is no longer required for that lot. The SWPPP shall indicate the reason why coverage is no longer needed and the date the lot was sold, transferred, or achieved final stabilization. In order to terminate coverage, all lots under the control of the owner or operator must be sold, transferred, or achieved final stabilization (Part II(E)).

F. Transfer of Ownership or Control

1. When the owner or operator of a construction project changes, the new owner or operator must submit a written request for permit transfer/modification within fourteen (14) days of assuming control of the site or commencing work on-site, or of the legal transfer, sale or closing on the property; except as provided in Part I(F)(2). Late submittals will not be rejected; however the department reserves the right to take enforcement for any unpermitted discharges or permit noncompliance. For stormwater discharges from construction activities where the owner or operator changes, the new owner or operator can implement the original SWPPP created for the project or develop and implement their own SWPPP. Permittee(s) shall ensure either directly or through coordination with other operators that their SWPPP meets all terms and conditions of this permit and that their activities do not interfere with another party's erosion and sediment control practices.

2. A permit transfer/modification request is not required for the legal transfer, sale or closing on a property between permittees covered by this permit. Examples include the sale of a property parcel from a developer to a builder, or the transfer of an easement from a developer to a local government authority. If the new party is not covered by this permit at the time of transfer or sale, then the new owner/operator must submit a completed application/NOI within 14 days of assuming control of the site.

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II. STORMWATER DISCHARGE REQUIREMENTS

A. Prohibition of Non-Stormwater Discharges

The discharge of wastewater is not authorized by this permit. The following sources of non-stormwater discharges are allowed if they are not a significant source of pollution and are identified in the SWPPP: fire-fighting, fire hydrant flushing, potable water line flushing, equipment wash down without detergents or hazardous cleaning products, uncontaminated foundation drains, springs, surface water, lawn watering, chemical treatment of stormwater and air conditioning condensate. Impervious surface wash water may not be directed into any surface water or storm drain inlet unless appropriate pollution prevention measures have been implemented. Discharges may not come into contact with oil and grease deposits or any other toxic or hazardous materials (unless cleaned up using dry clean-up methods). The SWPPP must include a description of the pollution prevention measures to be implemented while non-stormwater discharges are occurring.

If chemical treatment for sediment removal is intended to be used on-site, the permittee shall provide the department with the information outlined in Appendix 1(A)(14) of this permit for approval prior to use. This information shall be provided to the department no later than sixty (60) days prior to use.

B. Releases in Excess of Reportable Quantities

This permit does not relieve the permittee of the reporting requirements of 40 CFR 110, 40 CFR 117, and 40 CFR 302, nor the reporting requirements found in Chapter 33-16-02.1 of the North Dakota Administrative Code. Any releases which meet any reporting requirement, must be reported to the agencies identified in Part IV(A)(7).

C. Stormwater Pollution Prevention Plans

All permittees shall implement a SWPPP for any construction activity requiring this permit until final stabilization is achieved. The SWPPP and revisions are subject to review by the department. The objectives of the SWPPP is to identify potential sources of sediment and other sources of pollution associated with construction activity, and to ensure practices are implemented and maintained to reduce the contribution of pollutants in stormwater discharges from the construction site to waters of the state and storm sewer systems. Stormwater management documents developed under other regulatory programs may be included or incorporated by reference in the SWPPP, or used in whole as a SWPPP if it meets the requirements of this part.

The SWPPP may identify more than one permittee and may specify the responsibilities of each permittee by task, area, and/or timing. Permittees may coordinate and prepare more than one SWPPP to accomplish this. However, in the event there is a requirement under the SWPPP for which responsibility is ambiguous or is not included in the SWPPP, each permittee shall be responsible for implementation of that requirement. Each permittee is responsible for assuring that their activities do not render another permittee's controls ineffective.

The SWPPP must incorporate the requirements provided in Appendix 1 and shall include the following information.

1. **Site Description**. Each plan shall provide a description of the construction activity and potential sources of pollution as indicated below:

    a. A description of the overall project and the type of construction activity;

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b. Estimates of the total area of the site and the total area that is expected to be disturbed by excavation, grading, grubbing, or other activities during the life of the project;

c. A proposed timetable/schedule, or chart, of activities that includes major phases/stages, BMP implementation, BMP removal, disturbances, and stabilization for major portions of the site;

d. A description of the soil within the disturbed area(s);

e. The name of the surface water(s) and municipal storm sewer system at or near the disturbed area that will receive stormwater runoff from the project site; and

f. A site map which indicates the following items as applicable (more than one (1) map may be needed). If an item is not applicable, provide rationale describing why the item is not applicable to the construction activity:

1) Project boundaries;
2) Areas of ground disturbance during each phase/stage of the project;
3) Areas where disturbance will not occur, such as avoidance areas (e.g. wetlands, critical habitat, Threatened and Endangered Species, etc);
4) Drainage patterns including: flow direction (run-on and runoff);
5) Dividing lines, discharge points, and storm sewer system inlets which the site drains to or may be affected by the activity;
6) Pre-existing and final grades;
7) Location of all temporary and permanent sediment and erosion controls during each particular phase;
8) Location of any stormwater conveyances such as: retention ponds, detention ponds, ditches, pipes, swales, stormwater diversions, culverts, and ditch blocks;
9) Location of potential sources of pollution (e.g. portable toilets, trash receptacles, etc.);
10) Location of soil stockpiles;
11) Identify steep slopes;
12) Surface waters, including an aerial extent of wetland acreage;
13) Location of surface water crossings;
14) Locations where stormwater is discharged to surface waters;
15) Location of dewatering discharge points;
16) Locations of where chemical treatment of stormwater will be performed, including discharge points;
17) Fueling locations, vehicle and equipment maintenance areas, designated wash water collection site, lubricant and chemical storage, paint storage, material storage, staging areas, and debris collection area;
18) Location of any impervious surfaces upon completion of construction; and
19) Where included as part of the project, the site maps for off-site concrete/asphalt batch plants, equipment staging areas, borrow sites or excavated fill material disposal sites. Site maps must show items 1 through 18 of this section.

g. Projects that discharge stormwater which flows to a water body listed as impaired under section 303(d) of the Federal Clean Water Act due to sediment, suspended solids or turbidity must identify the water body and impairment in the SWPPP. The Department's 303(d) list may be found at the following website under Integrated Reports: www.ndhealth.gov/WQ/SW/Z2_TMDL/Integrated_Reports/B_Integrated_Reports.htm.

h. For water bodies which have a TMDL, the SWPPP must describe and conform to the Waste Load Allocations (WLA) of the water body as per Part II(C)(4)(g) of this permit. Information about TMDL allocations may be found at the following website: www.ndhealth.gov/WQ/SW/Z2_TMDL/default.htm.

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2. **Narrative.** The SWPPP must include a narrative description of the selected operational controls and sediment and erosion controls as outlined in Part II(C)(3), Part II(C)(4), and Appendix 1 of this permit. When applicable, a description of the requirements for any additional environmental regulations (federal) and local requirements related to the project, as it relates to waters of the state, must also be included or incorporated by reference (e.g. The Wild and Scenic Rivers Act, The National Historic Preservation Act, The Endangered Species Act, Fish and Wildlife Coordination Act, National Environmental Policy Act, Section 404 of the Clean Water Act, etc.).

   The narrative shall describe at a minimum:

   a. The installation, removal (if applicable), and maintenance requirements of selected Best Management Practices (BMPs) for each phase/stage of construction activity;
   b. The rationale for the selection of all BMPs (calculations should be included if appropriate);
   c. Whether selected BMPs are temporary or permanent;
   d. Any descriptions of infeasibility or explanations as required in Part II, Part III(A), and Appendix 1 of this permit.

3. **Operational Controls**. The SWPPP shall describe the BMPs used in day to day operations on the project site that reduce the contribution of pollutants in stormwater runoff.

   a. The SWPPP must identify a person knowledgeable and experienced in the application of erosion and sediment control BMPs who will oversee the implementation of the SWPPP, and the installation, inspection and maintenance of the erosion and sediment control BMPs before and during construction, until a NOT is filed or the permit is transferred. A knowledgeable and experienced person is someone who meets the requirements of Part II(C)(3)(e) of this permit.

      The owner shall develop a chain of responsibility with all operators on the site to ensure that the SWPPP will be implemented and stay in effect until the construction project is complete, the entire site has undergone final stabilization, and a NOT has been submitted to the department.

   b. The SWPPP must include a description of good housekeeping practices used to maintain a clean and orderly site. The SWPPP shall describe how litter, debris, chemicals and parts will be handled to minimize exposure to stormwater. The SWPPP also shall describe what measures will be used to reduce and remove sediment tracked off-site by vehicles or equipment. In addition, the SWPPP shall describe methods which will be used to reduce the generation of dust.

   c. The SWPPP shall describe preventative maintenance practices used to ensure the proper operation of erosion and sediment control devices (e.g., fiber rolls, erosion control blankets and silt fences) and equipment used or stored on site. The SWPPP shall describe proper inspection procedures for ensuring proper operation of erosion and sediment control devices.

   d. The SWPPP shall describe spill prevention and response procedures where potential spills can occur. Specific handling procedures, storage requirements, spill containment, cleanup procedures, and disposal must be identified. Storage structures for petroleum products and other chemicals shall have adequate leak and spill protection to prevent any spilled materials from entering waters of the state or storm sewer systems.

      The potential discharge of hazardous substances in stormwater discharges shall be minimized by including measures onsite, detailed in the SWPPP to prevent and respond to releases of hazardous substances. If a reportable quantity release occurs, the SWPPP shall be revised to prevent the reoccurrence of such a release.

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e. The SWPP shall outline how employees and responsible parties shall be trained on the implementation of the SWPPP. Training must be provided at least annually, as new employees or responsible parties are hired or as necessary to ensure compliance with the SWPPP and the general permit. Employees and responsible parties include individuals who are responsible for design, installation, maintenance and repair of stormwater controls and conducting inspections.

   1) On-site personnel must understand the requirements of this permit as it pertains to their role in implementing the SWPPP. On-site personnel must know:

      a. The purpose of the SWPPP, requirements of the SWPPP, and how the SWPPP will be implemented;

      b. The location of all BMPs identified in the SWPPP; and

      c. Correct installation, function, maintenance and removal (if applicable) of BMPs identified in the SWPPP.

   2) Personnel responsible for performing site inspections must understand when inspections must be conducted (Part III(A)), what must be inspected (Part II(C)(7), how to record findings, when to initiate corrective actions, and properly document corrective actions.

   3) Maintenance personnel must understand when maintenance must be performed on BMPs in order to maintain properly functioning BMPs and what needs to be recorded for corrective actions/maintenance records in accordance with Part III(A)(5) of this permit.

f. The SWPPP must describe how concrete grindings and slurry will be managed. Wastewater from concrete washout, cleanout or washout from: stucco, paint, joint compound, and other building materials shall not be discharged to waters of the state, storm sewer systems or curb and gutter systems.

   1) Wash water must be collected in leak-proof containers or leak-proof pits. Containers or pits must be designed and maintained so that overflows cannot occur due to inadequate sizing, precipitation events, or snowmelt.

g. The SWPPP shall describe any dewatering activities planned at the site. Dewatering or basin draining (e.g., pumped discharges, trench/ditch cuts for drainage) related to the permitted activity must be managed with appropriate BMPs, such that the discharge does not adversely affect the receiving water. The following conditions apply to dewatering activities:

   1) Dewatering is limited to un-contaminated stormwater, surface water, and groundwater that may collect on-site and those sources identified in Part II(A), if they are not a significant source of pollution. A separate permit must be obtained to discharge water from other sources such as hydrostatic testing of pipes, tanks, or other similar vessels; disinfection of potable water lines; pump testing of water wells; and the treatment of gasoline or diesel contaminated groundwater or surface water.

   2) The permittee(s) must operate the discharge to minimize the release of sediment and provide adequate BMPs where necessary to minimize erosion due to the discharge. Discharges must not lead to the deposition of sediment within stormwater conveyance systems or surface waters. Discharges must not cause or potentially cause a visible plume within a surface water body.

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3) When dewatering, utilize structures or BMPs which allow for draw down to occur from the surface of the water, unless infeasible. If infeasible, documentation must be provided in the SWPPP. In addition, you must describe what BMP(s) will be used in its place.

4) In addition to the inspection requirements in Part III, dewatering activities shall be inspected daily. The inspection must include the dewatering site, areas where BMPs are being implemented and the discharge location. A record shall be maintained to document the inspections of the dewatering operation and actions taken to correct any problems that may be identified.

   a. Records shall contain at a minimum:

      i. Date and time of the inspection,
      ii. Inspector name,
      iii. Approximate volume of water discharged,
      iv. Findings of the inspection, including recommendations and schedule for corrective actions;
      v. Corrective actions taken (including dates, times, and party completing maintenance activities); and
      vi. Documentation that the SWPPP has been amended when changes are made to the dewatering activity in response to inspections.

5) Local authorities may require specific BMPs for discharges affecting their storm sewer system.

4. **Erosion and Sediment Controls**. Erosion and sediment controls and stabilization requirements must be implemented for each major phase of site activity (e.g., clearing, grading, building, and landscaping phases). A description of the erosion and sediment controls and site stabilization methods must be provided in accordance with Part II(C)(2) of this permit. Erosion and sediment controls, and site stabilization must conform to the requirements provided in Appendix 1. The description and implementation of controls shall address the following minimum components:

   a. The selection of erosion and sediment controls, and site stabilization shall consider the following:

      1. The expected amount, frequency, intensity, and duration of precipitation events;

      2. The nature of stormwater run-on and runoff from the site as well as changes during, and as a result of, construction activity. This includes changes to impervious surfaces, slopes, seasonal changes, and drainage features on-site;

      3. Channelized flow, must be handled in order to minimize erosion at outlets and to minimize impacts to downstream receiving waters;

      4. Soil types (wind and water erodibility, and settling time); and

      5. Seasonal conditions.

   b. Sediment basins, or an appropriate combination of equivalent sediment controls such as smaller sediment basins and/or sediment traps, silt fences, fiber logs, vegetative buffer strips, berms, etc., are required for all down slope boundaries of the disturbance area and for those side slope boundaries as may be appropriate for site conditions.

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c. Temporary or permanent erosion protection and stabilization (such as cover crop planting or mulching) must be initiated immediately, as described in Appendix 1(A), for all exposed soil areas where activities have been completed or temporarily ceased.

d. All control measures must be properly selected, installed and maintained in accordance with the manufacturer's specifications and good engineering practices. If periodic inspections or other information indicates a control has been used inappropriately or incorrectly, the permittee must replace or modify the control for site situations. Corrective actions must be made prior to the next anticipated rainfall event of within 24 hours of discovery (whichever comes first) or as soon as field conditions allow. Documentation must be provided in the maintenance records if field conditions do not allow access along with a plan of action for performing maintenance activities.

   The permittee may deviate from the manufacturer's specifications and erosion and sediment control requirements in Appendix 1 if they provide justification for the deviation and document the rationale for the deviation in the SWPPP. Any deviation must provide equivalent erosion and sediment control.

e. If sediment escapes from the site, off-site accumulations of sediment must be removed in a manner and frequency sufficient to minimize off-site impacts as outlined in Appendix 1(B). The SWPPP must be modified to prevent further sediment deposition off-site.

f. Stormwater controls are expected to withstand and function properly during precipitation events of up to the 2-year, 24-hour storm event. Visible erosion and/or off-site sediment deposition from such storm events should be minimal. The 2-year, 24-hour rainfall event in North Dakota ranges from about 1.9 inches in the west to 2.3 inches in the east.

g. For projects that discharge stormwater which flows to a water body for which there is a TMDL allocation for sediment and/or parameters associated with sediment transport, the SWPPP must be consistent with the assumptions, allocations, and requirements in the approved TMDL. If a TMDL specifies certain BMPs or controls to meet a WLA applicable to the project's discharges, the BMPs or controls must be incorporated into the SWPPP. Information about TMDL allocations may be found at the following website: www.ndhealth.gov/WQ/SW/Z2_TMDL/default.htm.

5. **Stormwater Management**. The SWPPP must identify permanent practices incorporated into the project to control pollutants in stormwater discharges occurring after construction operations have been completed.

   a. Identify stormwater ponds; flow reduction methods; infiltration of runoff on-site; sequential systems which combine several practices or other post-construction stormwater management features.

   b. Identify velocity / energy dissipation devices placed at discharge locations and appropriate erosion protection for outfall channels and ditches.

   c. Maintenance for on-site stormwater management features is the responsibility of the permittee until the NOT is submitted or the feature is accepted by the party responsible for long term maintenance.

   d. The design, installation and use of stormwater management features must comply with applicable local, state or federal requirements.

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6. **Maintenance**. All erosion and sediment control measures and other protective measures identified in the SWPPP must be maintained in effective operating condition. The SWPPP must indicate, as appropriate, the maintenance or clean out interval for sediment controls. If site inspections, required in Part III of this permit, identify BMPs that are not operating effectively, maintenance shall be arranged and accomplished in accordance to Appendix 1 or as soon as practicable.

7. **Inspections**. The SWPPP must provide for site inspections as outlined in Part III. The permittee shall ensure that personnel conducting site inspections are familiar with permit conditions and the proper installation and operation of control measures. Inspectors must be knowledgeable in their role of the SWPPP, as outlined in Part II(C)(3)(e) of this permit. The erosion and sediment control measures and stabilized areas identified in the SWPPP shall be observed to ensure they are operating correctly and in serviceable condition. Inspections shall include areas used for storage of materials, permanent stormwater control measures and vehicle maintenance areas. These areas shall be inspected for evidence of, or the potential for, pollutants entering a drainage system. If necessary, the plan shall be revised based on the observations and deficiencies noted during the inspection.

8. **SWPPP Review and Revisions**.

   a. The SWPPP shall be signed in accordance with the Signatory Requirements, Part IV(A)(6), and retained on-site for the duration of activity as outlined in Part III(B).

   b. The permittee shall make the SWPPP available upon request to the department, EPA, or, in the case of discharges to a municipal storm sewer system, the operator of the municipal system.

   c. The permittee shall amend the SWPPP whenever there is a change in design, construction, operation, maintenance, or BMPs. The SWPPP shall be amended if the plan is found to be ineffective in controlling pollutants present in stormwater. The SWPPP shall be amended as soon as practicable.

D. Local Requirements

All stormwater discharges must comply with the requirements, policies, or guidelines of municipalities and other local agencies as applicable to the construction site. Any discharges to a storm sewer, ditch or other water course under the jurisdiction of a municipality must comply with any specific conditions or BMPs required by the municipality or agency.

E. Final Stabilization

The permittee(s) must ensure final stabilization of the site. The permittee(s) should submit a NOT within 30 days after final stabilization has been achieved, or another owner/operator (permittee) has assumed control according to Part I(F) for all areas of the site that have not undergone final stabilization. Final stabilization can be achieved in one of the following ways.

1. All soil disturbing activities at the site have been completed and all soils must be stabilized by a uniform perennial vegetative cover with a density of 70 percent of the pre-existing cover over the entire pervious surface area, or other equivalent means necessary to prevent soil failure under erosive conditions and;

   a. All drainage ditches, constructed to drain water from the site after construction is complete, must be stabilized to preclude erosion;

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b. All temporary erosion prevention and sediment control BMPs (such as silt fence) must be removed as part of the site final stabilization; and

c. The permittee(s) must remove all sediment from conveyances and temporary sedimentation basins that will be used as permanent water quality management basins. Sediment must be stabilized to prevent it from being washed into basins, conveyances or drainage ways discharging off-site or to surface waters. The cleanout of permanent basins must be sufficient to return the basin to design capacity.

2. For areas of the state where the average annual rainfall is less than 20 inches, all soil disturbing activities at the site have been completed and erosion control measures (e.g., degradable rolled erosion control product) and stabilization methods are selected, designed, and installed along with an appropriate seed base to provide erosion control for at least three years and achieve 70 percent of the pre-existing vegetative cover within three (3) years without active maintenance. Sites must meet the criteria outlined in items 1(a), (b), and (c) above.

3. Disturbed areas on land used for agricultural purposes that are restored to their pre-construction agricultural use are not subject to these final stabilization criteria. If the construction activity removed standing crop, the area must be restored in accordance with the landowner.

   Areas disturbed that were not previously used for agricultural activities, such as buffer strips immediately adjacent to waters of the state, and areas which are not being returned to their pre-disturbance use must meet the final stabilization criteria in (1) or (2) above.

4. For residential construction only, final stabilization may be achieved when soil is stabilized (see Appendix 1(A)(3)) and down gradient perimeter control for individual lots has been implemented and the residence has been transferred to the homeowner. Additionally, the permittee must distribute a “homeowner fact sheet” to the homeowner to inform the homeowner of the need for, and benefits of, final stabilization. The permittee also must demonstrate that the homeowner received the fact sheet.

III. SELF MONITORING AND REPORTING

A. Inspection and Maintenance Requirements

1. Inspections shall be performed by or under the direction of the permittee at least once every 14 calendar days and within 24 hours after any storm event of greater than 0.25 inches of rain per 24-hour period. Inspections are only required during normal working hours. The permittee shall use a rain gauge on-site or utilize the nearest National Weather Service precipitation gauge station. Rain gauge locations or stations must be representative of the site.

   a. “Within 24 hours after any storm event greater than 0.25 inches rain per 24-hour period” means that you are required to conduct an inspection within 24 hours once a storm event has produced 0.25 inches, even if the storm event is still continuing. If there is a storm event at your site that continues for multiple days, and each day of the storm produces 0.25 inches or more rain, you are required to conduct an inspection within 24 hours of the first day of the storm and within 24 hours after the end of the storm.

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2. There may be times when a site inspection may not be practical at the specified time. Adverse climatic conditions, such as flooding, high winds, tornadoes, electrical storms, site access constraints, etc., may prohibit inspections. The permittee must include a description of why the inspection(s) could not be performed at the designated time in the next inspection record. If an inspection is delayed due to adverse weather conditions or rain events outside normal working hours, an inspection must be conducted during the next working day, or as conditions allow.

3. Some erosion and sediment control measures may require more frequent inspection based on location (e.g., sensitive areas or waters of the state) or as a result of recurring maintenance issues. Erosion or sediment control measures found in need of maintenance between inspections must be repaired or supplemented with appropriate measures as soon as practicable. Erosion and sediment control measures which require more frequent inspection based on location or as a result of recurring maintenance issues must be identified in the SWPPP.

4. All inspections conducted during construction must be recorded in writing and these records must be retained in accordance with Part III(B). Records of each inspection activity shall include:

    a. Date and time of inspections;

    b. Name of person(s) conducting inspections;

    c. Findings of inspections, including recommendations and schedule for corrective actions;

    d. Date and amount of all rainfall events greater than 1/4 inch (0.25 inches) in 24 hours; and

    e. Documentation that the SWPPP has been amended when changes are made to BMPs in response to inspections.

    f. All inspection reports shall be signed in accordance with Part IV(A)(6) of this permit.

5. Corrective actions (maintenance activities) performed during construction must be recorded in writing and these records must be retained in accordance with Part III(B). Records for maintenance activity shall include:

    a. Best Management Practice corrected;

    b. Date and time of corrective action;

    c. Name of person(s) performing corrective actions;

    d. Corrective actions taken; and

    e. Corrective actions/maintenance records shall be signed in accordance with Part IV(A)(6) of this permit.

6. Completed areas that have been stabilized but do not meet the 70 percent perennial vegetative cover criteria for final stabilization may be inspected once per month. Inspections may be suspended for parts of the construction site that meet final stabilization requirements of Part II(E) of this permit. The SWPPP must update to identify any areas which meet this condition.

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7. Inspections may be suspended where earthwork has been suspended due to frozen ground conditions. The required inspections and maintenance must resume as soon as runoff occurs or the ground begins to thaw at the site. The permittee must record freeze/thaw and runoff dates as part of the inspection records.

B. Records Location

A copy of the completed and signed NOI, coverage letter from the department, SWPPP, site inspection records, and this general permit shall be kept at the site of the construction activity in a field office, trailer, shed, or in a vehicle that is on-site during normal working hours. If the site does not have a reasonable on-site location, then the documents must be retained at a readily available alternative location; preferably with the individual responsible for overseeing the implementation of the SWPPP. Electronic copies of records are acceptable if the records can be accessed on-site. If the site is inactive, then the documents may be stored at a local office. Permittees should avoid using personal electronic devices for storing electronic records.

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IV. STANDARD CONDITIONS

A. COMPLIANCE RESPONSIBILITIES BP 2014.12.08

1. Duty to Comply
The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.

2. Proper Operation and Maintenance
The permittee shall at all times maintain in good working order and operate as efficiently as possible all treatment or control facilities or systems installed or used by the permittee to achieve compliance with the terms and conditions of this permit. If necessary to achieve compliance with the conditions of this permit, this shall include the operation and maintenance of backup or auxiliary systems.

3. Planned Changes
The department shall be given advance notice of any planned changes at the permitted facility or of an activity which may result in permit noncompliance. Any anticipated facility expansions, production increase, or process modifications which might result in new, different, or increased discharges of pollutants shall be reported to the department as soon as possible. Changes which may result in a facility being designated a "new source" as determined in 40 CFR 122.29(b) shall also be reported.

4. Duty to Provide Information
The permittee shall furnish to the department, within a reasonable time, any information which the department may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the department, upon request, copies of records required to be kept by this permit. When a permittee becomes aware that it failed to submit any relevant facts or submitted incorrect information in a permit application or any report, it shall promptly submit such facts or information.

5. Records Retention
All records and information (including calibration and maintenance) required by this permit shall be kept for at least three years or longer if requested by the department or EPA.

6. Signatory Requirements
All applications, reports, or information submitted to the department shall be signed and certified.

All permit applications shall be signed by a responsible corporate officer, a general partner, or a principal executive officer or ranking elected official.

All reports required by the permit and other information requested by the department shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:

a. The authorization is made in writing by a person described above and submitted to the department; and

b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility, such as the position of plant manager, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters.

If an authorization under 6. Signatory Requirements is no longer accurate for any reason, a new authorization satisfying the above requirements must be submitted to the department prior to or together with any reports, information, or applications to be signed by an authorized representative.

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Any person signing a document under this section shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

7. Twenty-four Hour Notice of Noncompliance Reporting

1. The permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally as soon as possible, but no later than twenty-four (24) hours from the time the permittee first became aware of the circumstances. The following occurrences of noncompliance shall be included in the oral report to the department at 701.328.5210:

    a. Any lagoon cell overflow or any unanticipated bypass which exceeds any effluent limitation in the permit under 8. Bypass of Treatment Facilities;

    b. Any upset which exceeds any effluent limitation in the permit under 9. Upset Conditions; or

    c. Violation of any daily maximum effluent or instantaneous discharge limitation for any of the pollutants listed in the permit.

2. A written submission shall also be provided within five days of the time that the permittee became aware of the circumstances. The written submission shall contain:

    a. A description of the noncompliance and its cause;

    b. The period of noncompliance, including exact dates and times;

    c. The estimated time noncompliance is expected to continue if it has not been corrected; and

    d. Steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.

    Reports shall be submitted to the address in **Part I(D) Application (Notice of Intent) Process**. The department may waive the written report on a case by case basis if the oral report has been received within 24 hours by the department at 701.328.5210 as identified above.

    All other instances of noncompliance shall be reported no later than at the time of the next Discharge Monitoring Report submittal. The report shall include the four items listed in this subsection.

8. Bypass of Treatment Facilities

1. Bypass not exceeding limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to any of the following provisions in this section.

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Bypass exceeding limitations-notification requirements.

a. Anticipated Bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten (10) days before the date of bypass.

b. Unanticipated Bypass. The permittee shall submit notice of an unanticipated bypass as required under 7. Twenty-four Hour Notice of Noncompliance Reporting.

2. Prohibition of Bypass. Bypass is prohibited, and the department may take enforcement action against a permittee for bypass, unless:

a. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

b. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and

c. The permittee submitted notices as required under the 8(a). Anticipated Bypass subsection of this section.

The department may approve an anticipated bypass, after considering its adverse effects, if the department determines that it will meet the three (3) conditions listed above.

9. Upset Conditions

An upset constitutes an affirmative defense to an action brought for noncompliance with erosion and sediment or site stabilization methods if the requirements of the following paragraph are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

1. An upset occurred and the permittee can identify its cause(s);

2. The permitted facility was, at the time being, properly operated;

3. The permittee submitted notice of the upset as required under 7. Twenty-four Hour Notice of Noncompliance Reporting and

4. The permittee complied with any remedial measures required under 10. Duty to Mitigate.

In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.

10. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment. The permittee, at the department's request, shall provide accelerated or additional monitoring as necessary to determine the nature and impact of any discharge.

11. Removed Materials

Collected screenings, grit, solids, sludges, or other pollutants removed in the course of treatment shall be buried or disposed of in such a manner to prevent any pollutant from entering any waters of the state or creating a health hazard.

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12. Duty to Reapply
Any request to have this permit renewed should be made 15 days prior to its expiration date.

B. GENERAL REQUIREMENTS

1. Inspection and Entry
The permittee shall allow department and EPA representatives, at reasonable times and upon the presentation of credentials if requested, to enter the permittee's premises to inspect the construction activity and monitoring equipment, to sample any discharges, and to have access to and copy any records required to be kept by this permit.

2. Availability of Reports
Except for data determined to be confidential under 40 CFR Part 2, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the department and EPA. As required by the Act, permit applications, permits, and effluent data shall not be considered confidential.

3. Transfers
This permit is not transferable except upon the filing of a Transfer/Modification request (Part I(F)) by the new party. The current permit holder should inform the new controller, operator, or owner of the existence of this permit and also notify the Department of the possible change.

4. New Limitations or Prohibitions
The permittee shall comply with any effluent standards or prohibitions established under Section 306(a), Section 307(a), or Section 405 of the Act for any pollutant (toxic or conventional) present in the discharge or removed substances within the time identified in the regulations even if the permit has not yet been modified to incorporate the requirements.

5. Permit Actions
This permit may be modified, revoked and reissued, or terminated for cause. This includes the establishment of limitations or prohibitions based on changes to Water Quality Standards, the development and approval of waste load allocation plans, the development or revision to water quality management plans, or the establishment of prohibitions or more stringent limitations for toxic or conventional pollutants and/or sewage sludges. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

6. Need to Halt or Reduce Activity Not a Defense
It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

7. State Laws
Nothing in this permit shall be construed to preclude the institution of legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable state law or regulation preserved under Section 510 of the Act.

8. Oil and Hazardous Substance Liability
Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under Section 311 of the Act.

9. Property Rights
The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations.

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10. Severability

The provisions of this permit are severable, and if any provision of this permit or the application of any provision of this permit to any circumstance is held invalid, the application of such provision to other circumstances and the remainder of this permit shall not be affected thereby.

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V. DEFINITIONS Permit Specific BP 2009.02.05

"303(d) List" or "Section 303(d) List" means a list of North Dakota's water quality-limited waters needing total maximum daily loads or TMDLs developed to comply with section 303(d) of the Clean Water Act. A copy of the latest integrated report is available on the state's web site at: www.ndhealth.gov/WQ/SW/Z2_TMDL/Integrated_Reports/B_Integrated_Reports.htm.

"Act" means the Clean Water Act.

"Bankfull" means the channel is filled to the top of one or both of its banks.

"BMP" or "Best Management Practices" means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the state. BMPs also include treatment requirements, operating procedures and practices to control construction site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

"Bypass" means the intentional diversion of waste streams from any portion of a treatment facility.

"Common Plan of Development or Sale" means a contiguous area where multiple separate and distinct land disturbing activities may be taking place at different times, on different schedules, but under one proposed plan. One plan is broadly defined to include design, permit application, advertisement or physical demarcation indicating that land-disturbing activities may occur.

"Construction Activity" means construction activity as defined in 40 CFR part 122.26(b)(14)(x) and small construction activity as defined in 40 CFR part 122.26(b)(15). This includes a disturbance to the land that results in a change in topography, existing soil cover (both vegetative and non-vegetative), or the existing soil topography that may result in accelerated stormwater runoff, leading to soil erosion and movement of sediment into surface waters or drainage systems. Examples of construction activity may include clearing, grading, filling and excavating. Construction activity includes the disturbance of less than one acre of total land area that is part of a larger common plan of development or sale if the larger common plan will ultimately disturb one (1) acre or more. Construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of the facility.

"Department" means the North Dakota Department of Health, Division of Water Quality.

"Energy Dissipation" means methods employed at pipe outlets to prevent erosion. Examples include, but are not limited to: concrete aprons, riprap, splash pads, and gabions that are designed to prevent erosion.

"Indian Country" means (1) All land within the limits of any Indian reservation under the jurisdiction of the United States Government, notwithstanding the issuance of any patent, and including rights-of-way running through the reservations; (2) All dependent Indian communities within the borders of the United States whether within the originally or subsequently acquired territory thereof, and whether within or without the limits of a state; and (3) All Indian allotments, the Indian titles to which have not been extinguished, including rights-of-way running through the same.

"Infeasible" means not technologically possible or not economically practicable and achievable in light of best industry practices.

"Immediately" means as soon as practicable, but no later than the end of the next work day, following the day when the earth-disturbing activities have temporarily or permanently ceased.

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“Large Construction Activity” means land disturbance of equal to or greater than five (5) acres. Large construction activity also includes the disturbance of less than one acre of total land area that is part of a larger common plan of development or sale, if the larger common plan will ultimately disturb equal to or greater that five acres.

“Normal Wetted Perimeter” means the area of a conveyance, such as a ditch, channel, or pipe that is in contact with water during flow events that are expected to occur once every year.

“Non-Stormwater Discharges” means discharges other than stormwater. The term includes both process and non-process sources. Process wastewater sources that require a separate NDPDES permit include, but are not limited to industrial processes, domestic facilities and cooling water. Non-stormwater sources that may be addressed in this permit include, but are not limited to: fire-fighting, fire hydrant flushing, potable water line flushing, equipment wash down without detergents or hazardous cleaning products, uncontaminated foundation drains, springs, surface water, lawn watering, chemical treatment of stormwater and air conditioning condensate.

“Operator” means the person (usually the general contractor) designated by the owner who has day to day operational control and/or the ability to modify project plans and specifications related to the SWPPP. The person must be knowledgeable in those areas of the permit for which the operator is responsible and must perform those responsibilities in a workmanlike manner.

“Owner” means the person or party possessing the title of the land on which the construction activities will occur; or if the construction activity is for a lease holder, the party or individual identified as the lease holder; or the contracting government agency responsible for the construction activity.

“Permanently Ceased” means clearing and excavation within any area of your construction site that will not include permanent structures has been completed.

“Permanent Cover” means final stabilization. Examples include grass, gravel, asphalt, and concrete.

"Severe Property Damage" means substantial physical damage to property, damage to best management practices which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in construction.

"Significant Materials" includes, but is not limited to: raw materials; fuels; materials such as solvents, detergents, and plastic pellets; finished materials such as metallic products; hazardous substances designated under Section 101(14) of CERCLA; any chemical the facility is required to report pursuant to Section 313 of Title III of SARA; fertilizers; pesticides; and waste products such as ashes, slag and sludge that have the potential to be released with stormwater discharges.

"Significant Spills" includes, but is not limited to: releases of oil or hazardous substances in excess of reportable quantities under Section 311 of the Clean Water Act (see 40 CFR 110.10 and CFR 117.21) or Section 102 of CERCLA (see 40 CFR 302.4).

“Small Construction Activity” means land disturbance of equal to or greater than one acre and less than five acres. Small construction activity also includes the disturbance of less than one acre of total land area that is part of a larger common plan of development or sale, if the larger common plan will ultimately disturb equal to or greater than one and less than five acres

"Stabilized" means the exposed ground surface has been covered by appropriate materials such as mulch, staked sod, riprap, erosion control blanket, or other material that prevents erosion from occurring. Grass seeding alone is not stabilization. Snow cover and frozen ground conditions are not considered stabilized.

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“Steep Slopes” means slopes which are fifteen (15) percent or greater in grade.

"Stormwater" means stormwater runoff, snow melt runoff, and surface runoff and drainage.

“Stormwater Associated with Industrial Activity” means stormwater runoff, snow melt runoff, or surface runoff and drainage from industrial activities as defined in 40 CFR 122.26(b)(14).

“Stormwater Associated with Small Construction Activity” means the discharge of stormwater from:

(i) Construction activities including clearing, grading, and excavating that result in land disturbance of equal to or greater than once acre and less than five acres. Small construction activity also includes the disturbance of less than one acre of total land area that is part of a larger common plan of development or sale if the larger common plan will ultimately disturb equal to or greater than one and less than five acres. Small construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of the facility.

(ii) Any other construction activity designated by EPA or the department, based on the potential for contribution to a violation of a water quality standard or for significant contribution of pollutants to waters of the state.

“Temporarily Ceased” means clearing, grading, and excavation within any area of the site that will not include permanent structures, will not resume (i.e., the land will be idle) for a period of 14 or more calendar days, but such activities will resume in the future.

"Temporary Erosion Protection" means methods employed to prevent erosion. Examples of temporary cover include; mulch, straw, erosion control blanket, wood chips, tackifiers, and erosion netting.

"Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with permit requirements because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed erosion and sediment controls or site stabilization methods, inadequate erosion and sediment controls or site stabilization methods, lack of preventive maintenance, or careless or improper operation.

“Waters of the State” means any and all surface waters that are contained in or flow in or through the state of North Dakota as defined in NDCC 61-28-02. This definition includes all water courses, even if they are usually dry.

“You” means the owner, operator or permittee as appropriate.

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Appendix 1 – Erosion and Sediment Control Requirements

Requirements for designing, implementing and maintaining erosion and sediment controls.

A. Erosion and Sediment Control Practices

1. Sites using temporary (or permanent) sediment basins must meet the following requirements:

    a. Sediment basins shall be designed for a calculated volume of runoff from a 2-year, 24-hour storm per acre drained to the basin and provides not less than 1,800 cubic feet of sediment storage below the invert of the outlet pipe from each acre drained to the basin; or

    b. Basins shall be sized to provide 3,600 cubic feet of sediment storage below the invert of the outlet pipe per acre drained to the basin if calculations are not performed.

    c. Basin outlets must be designed to avoid short-circuiting and the discharge of floating debris. Basins must be designed with the ability to allow complete basin drawdown for maintenance activities. Basins must release the storage volume in at least 24 hours. Outlet structures must be designed to withdraw water from the surface, unless not practicable. If not practicable, rationale must be provided in the SWPPP. The basin must have a stabilized emergency overflow to prevent failure of pond integrity. Energy dissipation must be provided for the basin outlet.

2. Erosion, sediment, and stabilization practices shall be provided. Erosion, sediment and stabilization practices include such things as: silt fences, fiber logs, vegetative buffer strips, erosion control blankets, mulch, hydro-seeding combined with mulch or tackifiers, etc.

3. All exposed soil areas must be stabilized (see definitions). Stabilization must be initiated immediately where activities have been permanently or temporarily ceased on any portion of the site and will not resume for a period exceeding fourteen (14) calendar days. Stabilization must be completed as soon as practicable, but no later than fourteen (14) calendar days after the initiation of soil stabilization. Temporary stockpiles without significant silt, clay or organic components (e.g., clean aggregate stockpiles, demolition concrete stockpiles, sand stockpiles) are exempt from this requirement.

    a. For slopes with a grade of 3:1 or greater, stabilization must be initiated immediately once activities have been completed or temporarily ceased. Stabilization must be completed as soon as practicable, but no later than seven (7) calendar days after the initiation of soil stabilization.

4. Temporary soil stockpiles must have effective sediment controls, and cannot be placed in surface waters, including stormwater conveyances such as curb and gutter systems, or conduits and ditches.

5. The normal wetted perimeter of any temporary or permanent drainage ditch that drains water from a construction site, or diverts water around a site, must be stabilized at least 200 linear feet from the property edge, or from the point of discharge to any surface water. Stabilization shall be completed prior to connection with a surface water. Any remaining portion of the temporary or permanent drainage ditch must be stabilized within fourteen (14) calendar days for portions which construction activities have temporarily or permanently ceased.

6. If stabilization requirements cannot be met due to circumstances beyond the control of the permittee, the permittee may comply with following:

    a. If vegetative stabilization is to be used, immediately initiate, and within 14 calendars days complete, the installation of temporary non-vegetated stabilization; or

    b. Complete all methods of initiating stabilization as soon as conditions or circumstances allow.

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If any conditions in parts a or b above are encountered, the permittee must document the circumstances which prevented you from meeting the stabilization requirements in the SWPPP of this paragraph and provide a schedule in the SWPPP which will be followed in order to meet the stabilization requirements.

Permittees are responsible for implementing winter stabilization methods during frozen ground conditions if the site was not stabilized prior to the ground freezing.

7. Stream diversions or any temporary or permanent drainage ditch or trench, which will have continuous flow, shall be stabilized with appropriate controls prior to connection with any surface water. The entire area (channel and bank) of the stream diversion or temporary or permanent drainage ditch, or trench, must be appropriately stabilized to bankfull height.

8. While working in or around surface waters, sediment and erosion controls must be used above the anticipated level of the surface water. Floating silt curtain does not satisfy the down slope and side slope boundary requirements in Part II(C)(4)(b) of this permit, unless the construction activity is on or below the elevation of the surface water. The floating silt curtain must be placed as close to shore as possible. Sediment control must be installed where exposed soils drain to the surface water immediately after construction activity along the waterline has been completed.

9. Pipe and culvert outlets must be provided with energy dissipation within 24 hours of connection to a surface water.

10. Splash pads and/or downspout extensions must be provided for roof drains to prevent erosion from roof runoff.

11. All storm drain inlets in the immediate vicinity of the construction site must be protected by appropriate BMPs during construction until all disturbed areas and stockpiles with the potential to discharge to the inlet have been stabilized. This includes storm drain inlets which may be affected by sediment tracked onto paved surfaces by vehicles or equipment.

12. Inlet protection devices are a last line of control – erosion and sediment control practices must be used on-site. Inlet protection devices must conform to local ordinances or regulations. In general, inlet protection devices need to provide for adequate drainage to prevent excessive roadway flooding. Inlet protection may be removed for a particular inlet if a specific concern (i.e., street flooding/freezing, snow removal) has been identified and documented in the SWPPP. In this situation, additional erosion and sediment control practices, or stabilization methods must be used to supplement the loss of the inlet protection device to prevent sediment from entering the storm sewer system.

13. Vegetated buffers must have a minimum width of 1 foot for every 5 feet of disturbed area that drains to the buffer. The width of the buffer shall have a slope of 5 percent or less and the area draining to the buffer shall have a slope of 6 percent or less. Concentrated flows should be minimized throughout the buffer.

    Buffers shall consist of dense grassy vegetation, 3 to 12 inches tall with uniform coverage over 90 percent of the buffer. Woody vegetation shall not be counted for the 90 percent coverage. No more than 10 percent of the overall buffer may be comprised of woody vegetation.

14. A 50 foot natural buffer or equivalent erosion and sediment controls must be provided when a project is within 50 feet of a surface water and stormwater flows to the surface water. If equivalent erosion and sediment controls are used, rationale for using equivalent controls must be provided in the SWPPP.

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If working within 100 feet of a surface water listed as impaired for sediment, suspended solids or turbidity, a 100 foot natural buffer or equivalent sediment and erosion controls must be provided. If equivalent erosion and sediment controls are to be used, rationale for using equivalent controls must be provided in the SWPPP.

15. If the permittee(s) intend to use chemical treatment for sediment removal, they must be used in accordance with the manufacturer's specifications. Treatment chemicals must be selected appropriately for the anticipated soil particle size and characteristics of the stormwater (pH, turbidity, flow rate of stormwater flowing into the chemical treatment system, etc.). A description of the chemical treatment process must be included in the SWPPP.

    a. To ensure selection and management of chemicals minimize the potential for harmful effects in the discharge, the permittee shall provide a written request to the department for review and approval. Additional monitoring and reporting may be required as a condition for the approval to discharge.

       A request to discharge chemically treated water shall include all of the following information and be provided sixty (60) days prior to use:

       i. Material Safety Data Sheet/Safety Data Sheet (MSDS/SDS);
       ii. Proposed water additive discharge concentration;
       iii. Discharge frequency (i.e., number of hours per day and number of days per year);
       iv. Monitoring point for product discharge;
       v. Type of removal treatment, if any, that the water additive receives prior to discharge;
       vi. Product function (e.g., coagulant, flocculant, etc.);
       vii. A 48-hour LC_{50} or EC_{50} for a North American freshwater planktonic crustacean (*Ceriodaphnia* sp., *Daphnia* sp., or *Simocephalus* sp.); and
       viii. Results for a toxicity test for one other North American freshwater aquatic species (other than a planktonic crustacean).

    b. Discharges from the chemical treatment of stormwater must not cause a violation of the standards of quality for waters of the state (N.D.A.C. § 33-16-02.1). The discharge must meet the dewatering or basin draining requirements provided in Part II(C)(3)(g) of this permit.

16. Minimize the duration of exposed soils on steep slopes.

B. Maintenance Requirements for Erosion and Sediment Controls

1. All erosion prevention and sediment control BMPs must be inspected to ensure integrity and effectiveness. All nonfunctional BMPs must be repaired, replaced, maintained or supplemented with functional BMPs. If a nonfunctioning BMP is supplemented, the nonfunctional BMP shall be removed. Corrective actions must be made prior to the next anticipated rainfall event or within 24 hours of discovery (whichever comes first), or as soon as field conditions allow access. Documentation must be provided in the maintenance records if field conditions do not allow access along with a plan of action for performing maintenance activities.

   Permittee(s) must investigate and comply with the following inspection and maintenance requirements:

   a. All control devices similar to, and including, silt fence or fiber rolls must be repaired, replaced, maintained or supplemented when they become nonfunctional (torn from posts, visible tears, etc.). Collected sediment must be removed as it approaches 1/2 of the above ground capacity of the control device.

   b. Fiber rolls must be replaced when 1/2 of the original above ground height of the device when it was installed has been lost as a result of flattening or other damage.

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c. Sedimentation basins must be drained and the sediment removed when the depth of sediment collected in the basin reaches 1/2 the storage volume. Drainage and removal must be completed within 72 hours of discovery, or as soon as field conditions allow access. Documentation must be provided in the maintenance records if field conditions do not allow access along with a plan of action for performing maintenance activities.

d. Maintenance and cleaning of inlet protection devices must be performed when sediment accumulates, the filter becomes clogged, and/or performance is compromised.

2. Surface waters, including drainage ditches and conveyance systems, must be inspected for evidence of sediment deposited by erosion. Permittees must remove all deltas and sediment deposits in surface waters, drainage ways, catch basins, and other drainage systems. Areas where sediment removal results in exposed soil must be stabilized. Removal and stabilization must take place immediately, but no more than, seven (7) calendar days after the discovery unless precluded by legal, regulatory or physical access constraints. Permittees shall use all reasonable efforts to obtain access. If precluded, removal and stabilization shall take place immediately, but no more than, seven (7) calendar days after obtaining access. Permittees are responsible for contacting all local, regional, state, and federal authorities, and receiving any applicable permits prior to conducting any work.

3. Vehicle tracking of sediment from the site must be minimized by BMPs. This may include having a designated egress with aggregate surfacing from the site or by designating off-site parking. Permittees are responsible for (or making the arrangements for) street sweeping and/or scraping if BMPs are not adequate to prevent sediment from being tracked onto the street from the site.

   Construction site egress locations must be inspected for evidence of sediment being tracked offsite by vehicles or equipment onto paved surfaces. Accumulations of tracked and deposited sediment must be removed from all off-site paved surfaces by the end of the work day, shift or if applicable, within a shorter time specified by local authorities or the department.

4. If sediment escapes the construction site, off-site accumulations of sediment must be removed in a manner and at a frequency sufficient to minimize off-site impacts (e.g., fugitive sediment in streets could be washed into storm sewers by the next rain event and/or pose a safety hazard to users of public streets).

5. Vegetative buffers must be inspected for proper distribution of flows, sediment accumulation and signs of rill formation. If a buffer becomes silt covered, contains rills, or is otherwise rendered ineffective, other control measures shall be implemented. Eroded areas shall be repaired and stabilized within 24 hours of discovery, or as soon as conditions allow access. Documentation must be provided in the maintenance records if field conditions do not allow access along with a plan of action for performing maintenance activities.

C. Operational Controls

1. Properly handle construction debris and waste materials.

   a. Debris and waste must be handled appropriately until disposal. Litter and debris shall be collected and stored to reduce the potential for wind and water to carry the materials off-site or leachate discharging from a site. Collected material shall be taken to the appropriate facility for disposal or recycling.

   b. Liquid or soluble materials including oil, fuel, paint and any other hazardous substances must be properly stored, to prevent spills, leaks or other discharges. Restricted access to storage areas must be provided to prevent vandalism. Storage and disposal of liquid or soluble material must be in compliance with applicable regulations.

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2. Wash water containments must be cleaned out (solids and liquid) before 80 percent of storage capacity is attained.

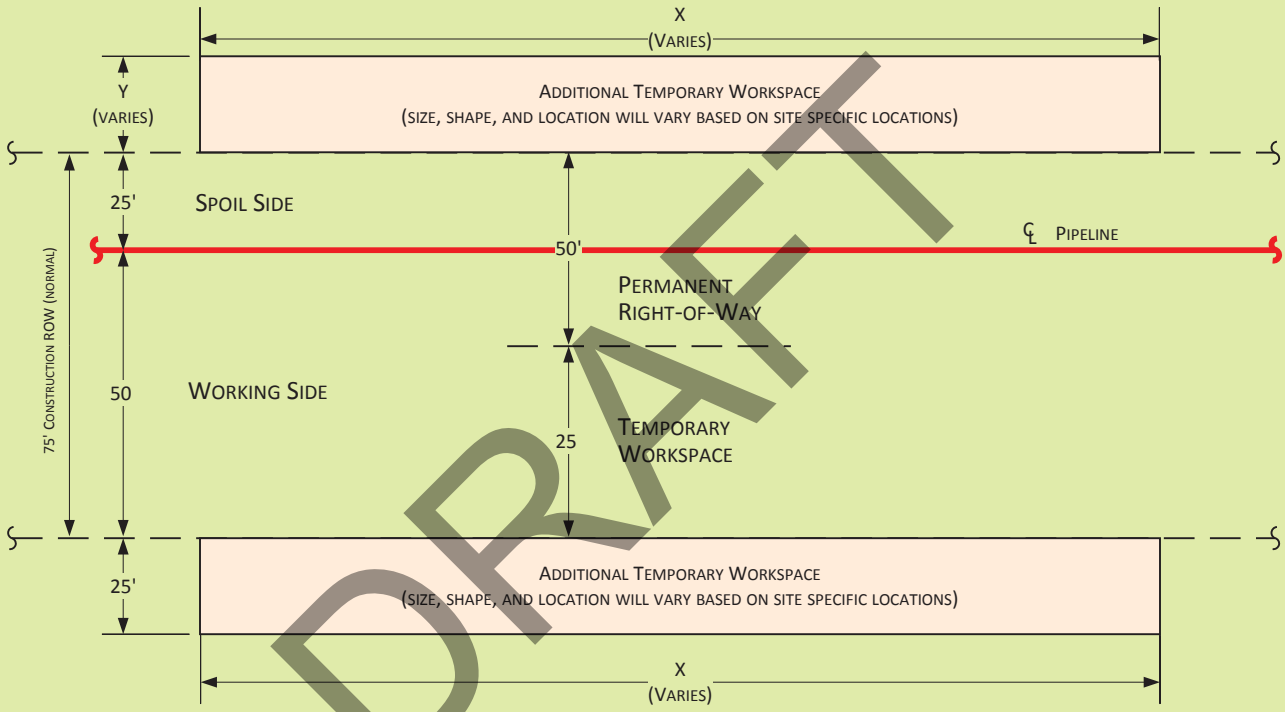
3. Best management practices used in surface waters must be cleaned immediately upon removal from surface waters to prevent the transfer of aquatic nuisance species.

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APPENDIX B

Construction, Mitigation, and Restoration Typicals

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*not to scale

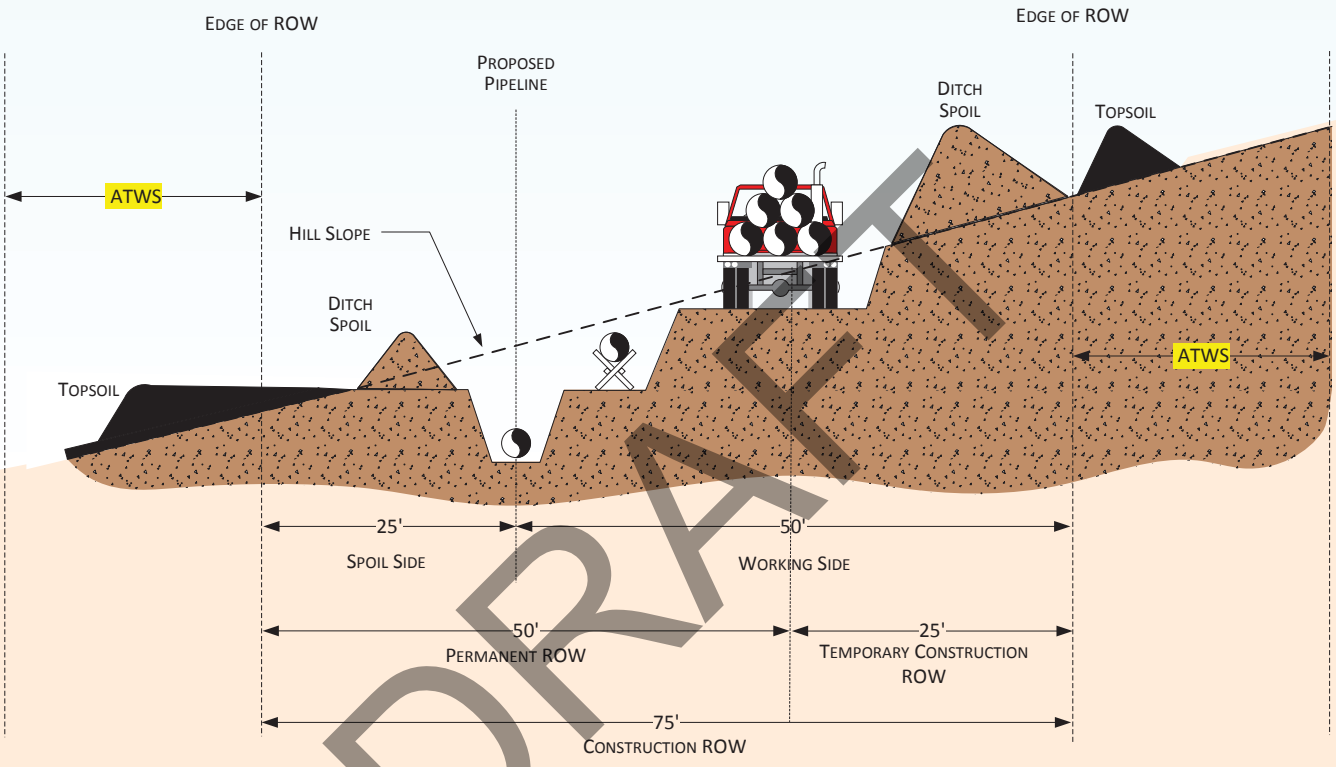
For environmental review purposes only.

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Figure 1
Typical Construction Layout

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MPLS: M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\	Fig_1_Construction_ROW.vsd	Scale: NTS	Revised: 8/20/2018	Drawn By: GIS



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NOTES:

1. GRADE TO BE RESTORED AS NEAR AS PRACTICABLE TO PRECONSTRUCTION CONDITIONS DURING RESTORATION.

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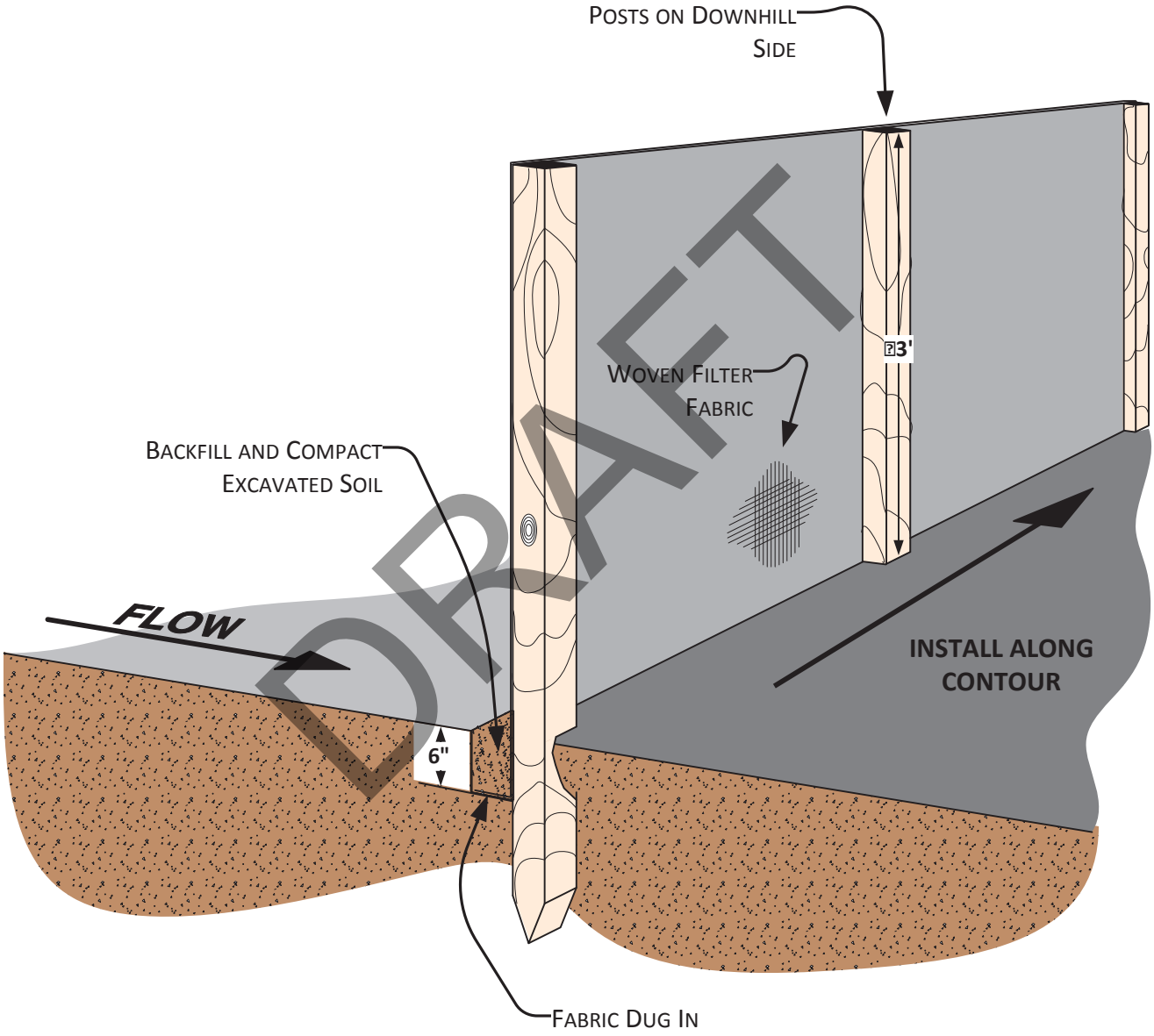
ONEOK

Figure 2

Typical Construction ROW
on Sloping Terrain

ERM

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_2_Typical_Construction_ROW_Sloping Terrain.vsd	Scale: NTS	Revised: 08/17/2018	Drawn By: RGCutting



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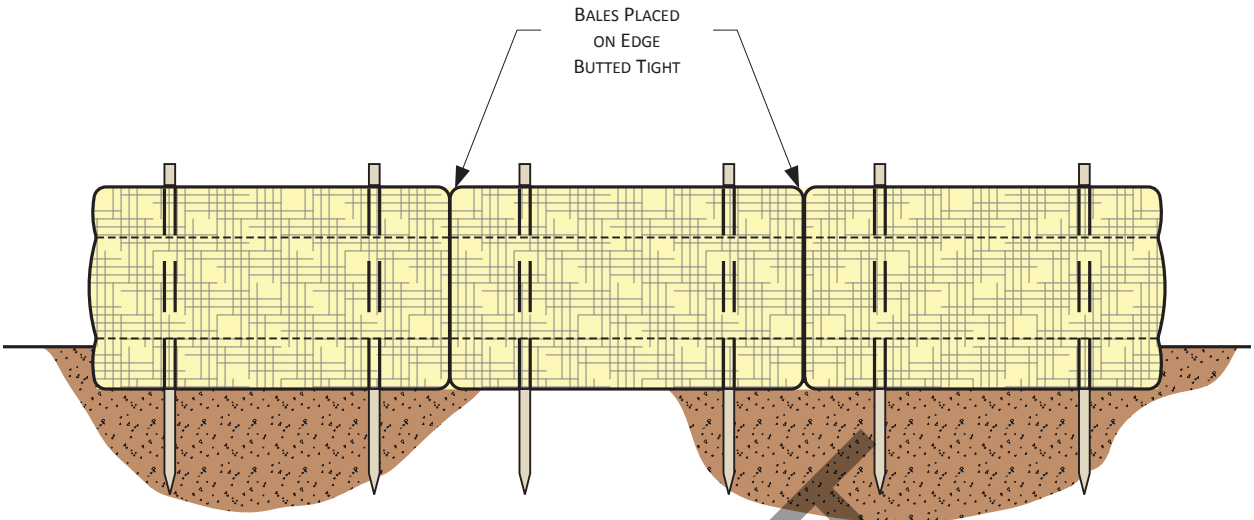
For environmental review purposes only.

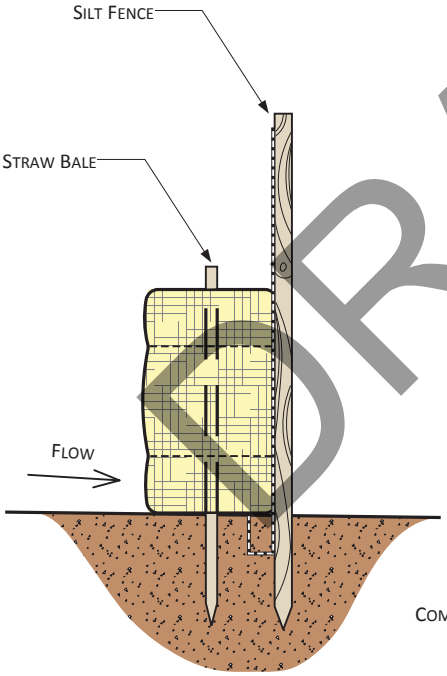
ONEOK

Figure 3
Typical Silt Fence Installation
(OKS-7901-ENV-01)

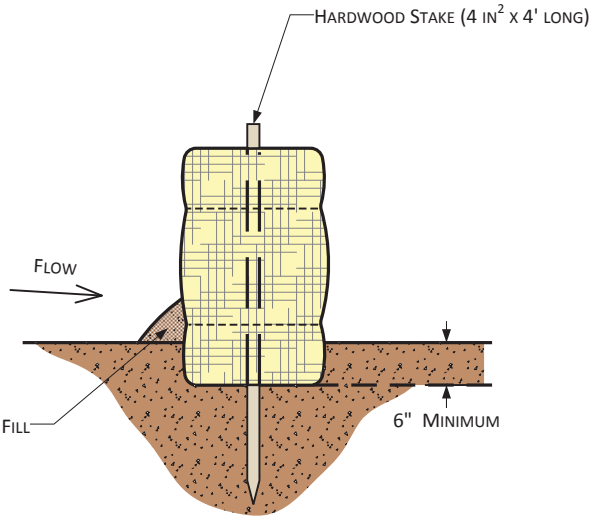
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M:Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_3_Silt_Fence_Installation.vsd	Scale: NTS	Date: 5/20/2007	Revised: 08/17/2018	Drawn By: AGPeterson





Straw Bales & Silt Fence



Straw Bales Only

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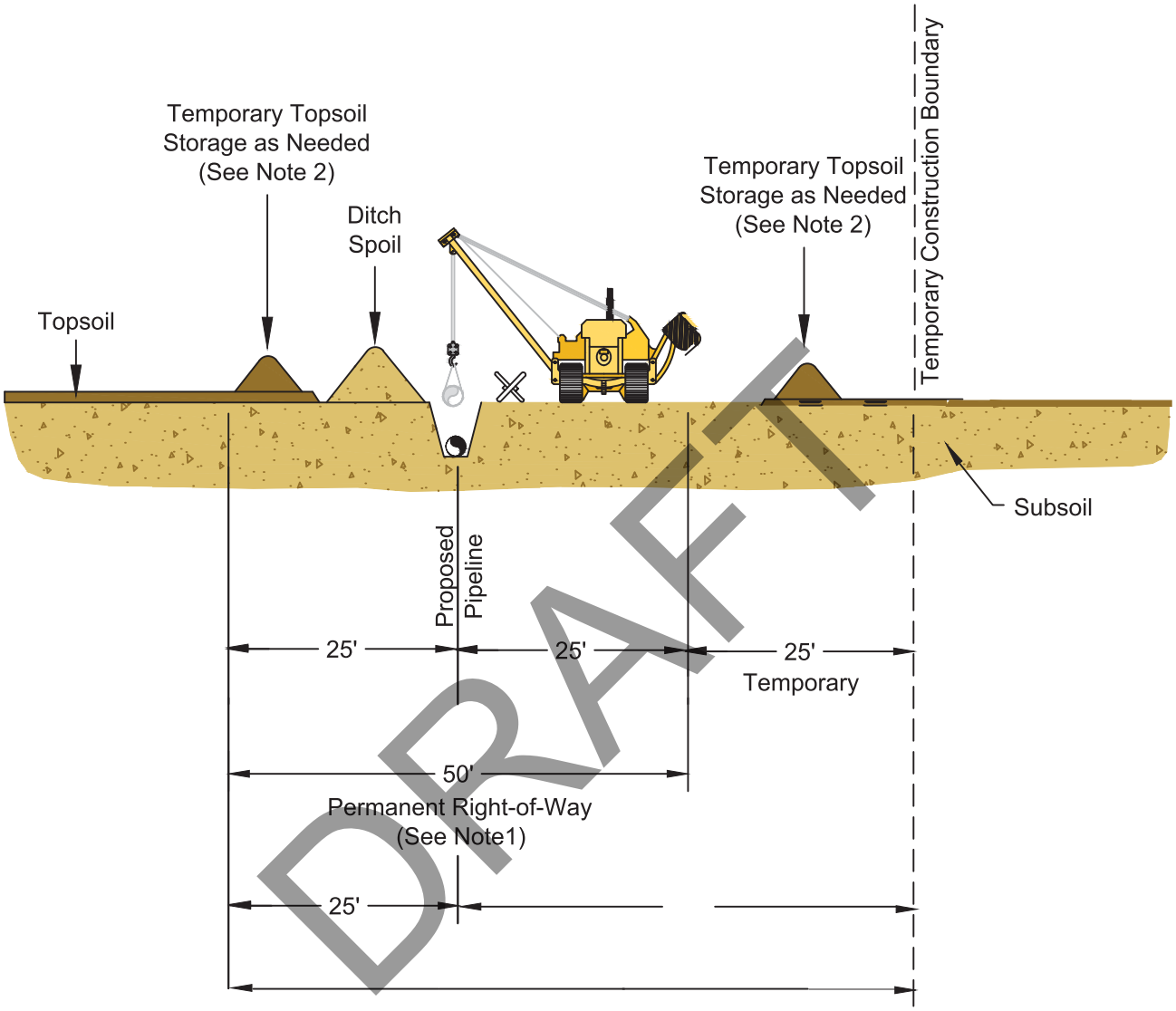
For environmental review purposes only.

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Figure 4
Typical Straw Bale Installation
(OKS-7901-ENV-02)

ERM

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_4_Typical_Straw_Bale.vsd	Scale: NTS	Date: 5/20/2007	Revised: 08/17/2018	Drawn By: AGPeterson



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Notes:

1. Construction right-of-way will typically be 75 feet wide. The spoil side will be approximately 25 feet wide. The working side will be 50 feet wide.

2. This drawing reflects "Full Right of Way " topsoil stripping procedure. Stockpile topsoil separately from ditch spoil as shown or in other configurations approved by the company.

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Figure 5
Typical Topsoil Segregation Trench
Right-of-Way
(OKS-7901-CONST-01c)

ERM

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_5_Typical_Topsoil_Segregation.vsd	Scale: NTS	Revised: 08/20/2018	Drawn By: RGCutting

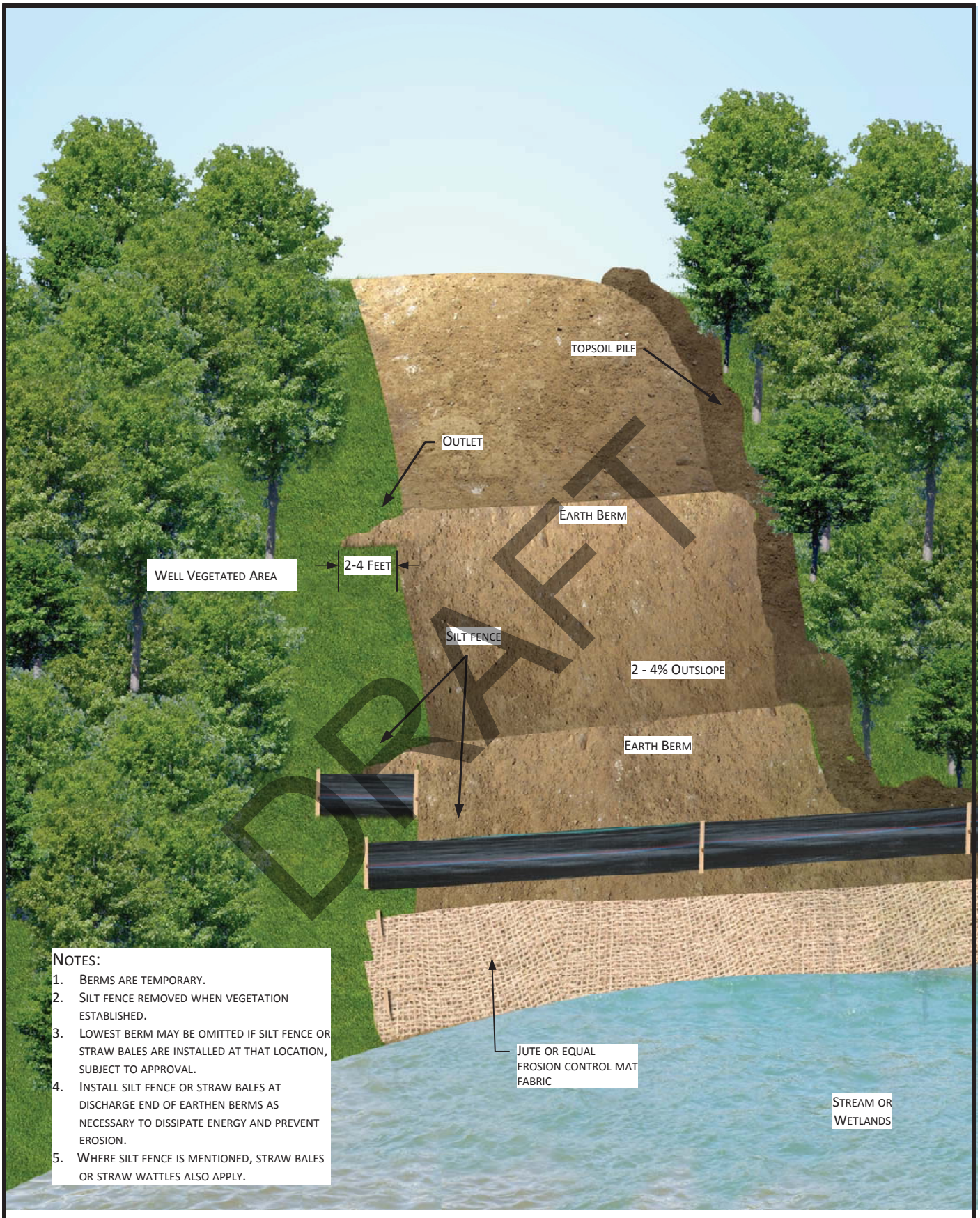


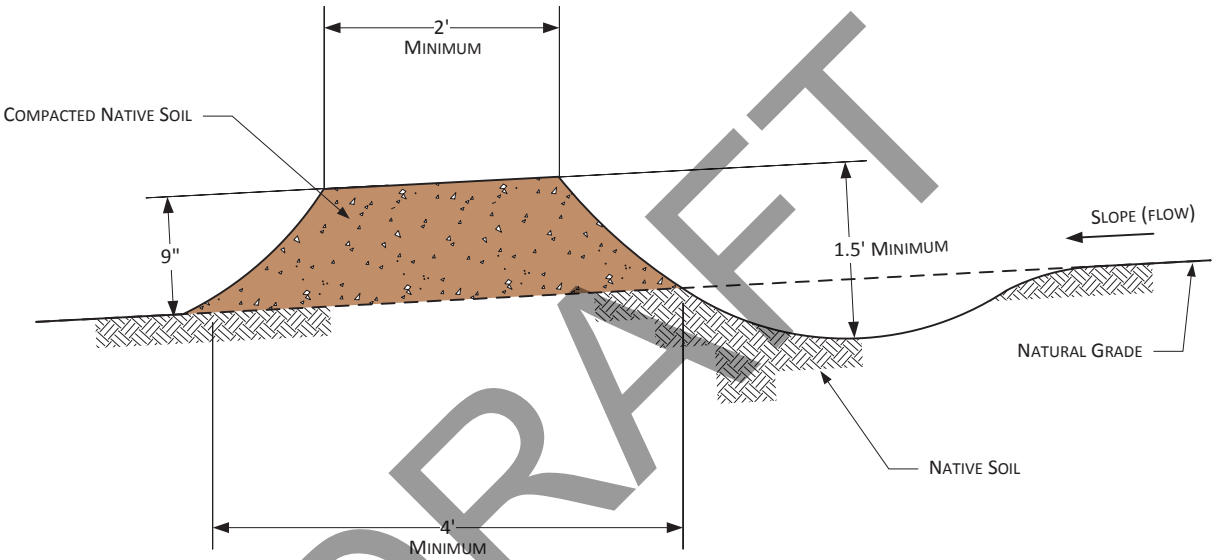
Figure 6

Typical Temporary Berms
Perspective View

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M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_8_Berms_Perspective_View.vsd	Scale: NTS	Revised: 08/20/2018	Drawn By: RGCutting



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NOTES

1. BERMS SHALL BE CONSTRUCTED WITH 2 TO 4 PERCENT OUTSLOPE.
2. BERMS SHALL BE OUTLETED TO WELL VEGETATED STABLE AREAS, SILT FENCES, STRAW BALES OR ROCK APRONS.
3. BERMS SHALL BE SPACED AS DESCRIBED IN CONSTRUCTION SPECIFICATIONS.
4. ADDITIONAL INFORMATION INCLUDED ON OTHER DRAWINGS.

For environmental review purposes only.

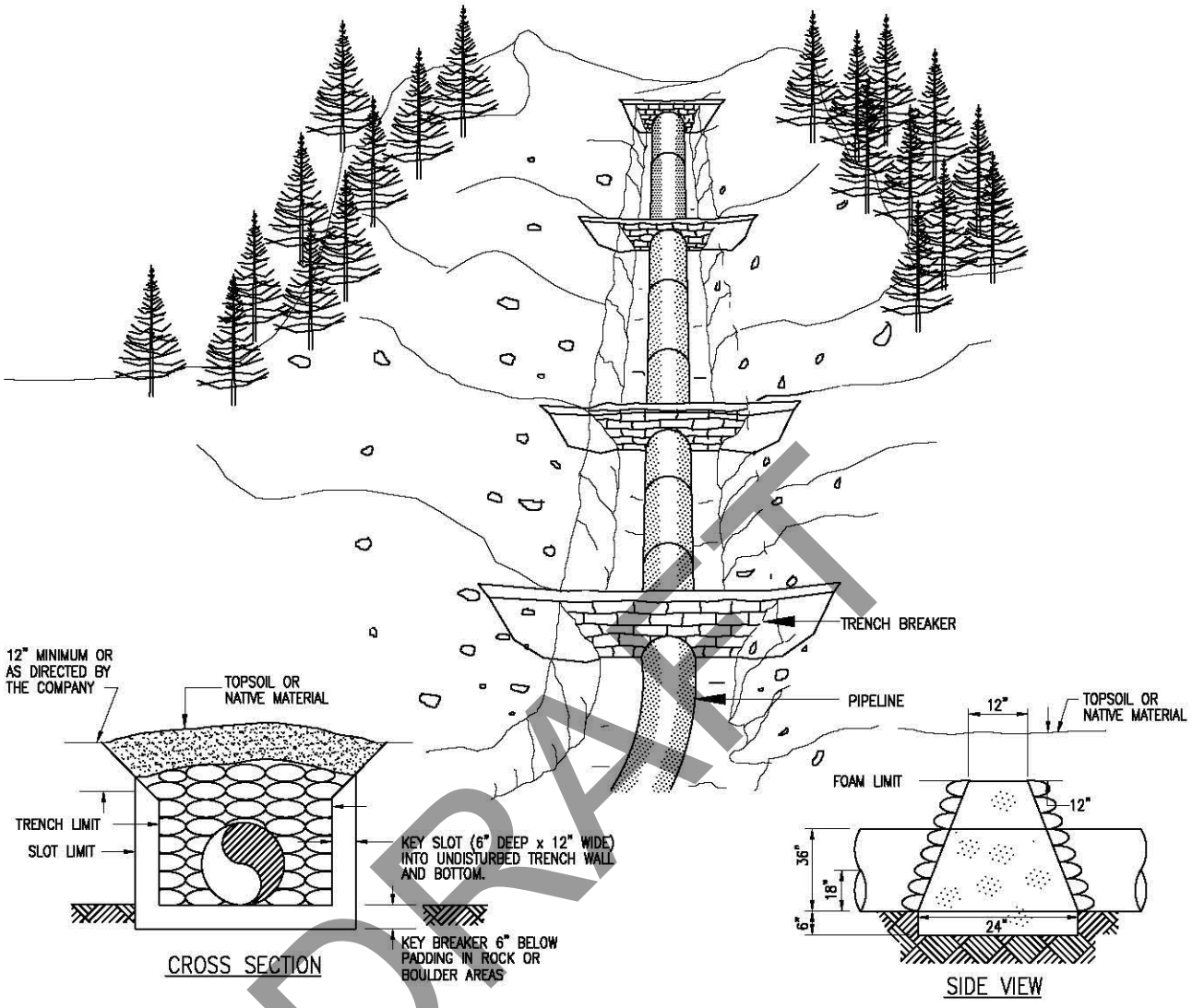
Figure 7

Typical Temporary or Permanent Berms
Elevation View

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ERM

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_9_Berms_Elevation_View.vsd	Scale: NTS	Revised: 08/20/2018	Drawn By: RGCutting



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NOTES:

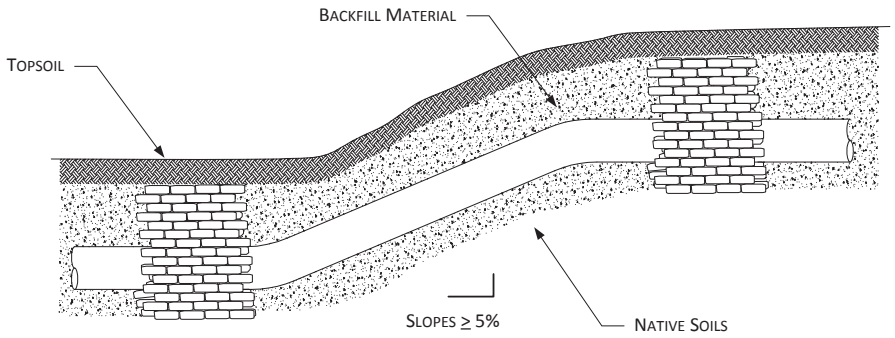
1. TRENCH BREAKERS SHALL BE INSTALLED:
   - ON SLOPES ALONG THE TRENCH LINE WHERE THE NATURAL DRAINAGE PATTERN, PROFILE, AND TYPE OF BACKFILL MATERIAL MAY RESULT IN LOSS OF BACKFILL MATERIAL OR ALTERATION OF THE NATURAL PATTERN;
   - AT THE BASE OF SLOPES ADJACENT TO WATERBODIES AND WETLANDS;
   - WHERE NEEDED TO AVOID DRAINING A WETLAND;
   - ON UPLAND SLOPES, AT THE SAME SPACING AS SLOPE BREAKERS AND UP SLOPE OF SLOPE BREAKERS;
   - IN CULTIVATED LAND AND RESIDENTIAL AREAS WHERE PERMANENT SLOPE BREAKERS ARE NOT TYP. INSTALLED, AT THE SAME SPACING AS IF PERMANENT SLOPE BREAKERS WERE REQUIRED.
2. EACH SAND BAG SHALL BE OF DIMENSION 14"X26" AND SHALL BE WOVEN POLY SPECIFICATION. EACH BAG SHALL BE FILLED TO 20" HIGH WITH 3/8" CLEAN, WASHED, AND SCREENED SAND AND FILLED TO A MINIMUM OF 55LBS.
3. BREAKER SPACING AND CONFIGURATION MAY CHANGE AS DETERMINED BY COMPANY OR SIMILARLY QUALIFIED PROFESSIONAL.
4. ALL MATERIALS SHALL BE SUPPLIED BY CONTRACTOR.
5. INSTALL ONE TRENCH BREAKER UNDER EVERY SLOPE BREAKER.

Figure 8

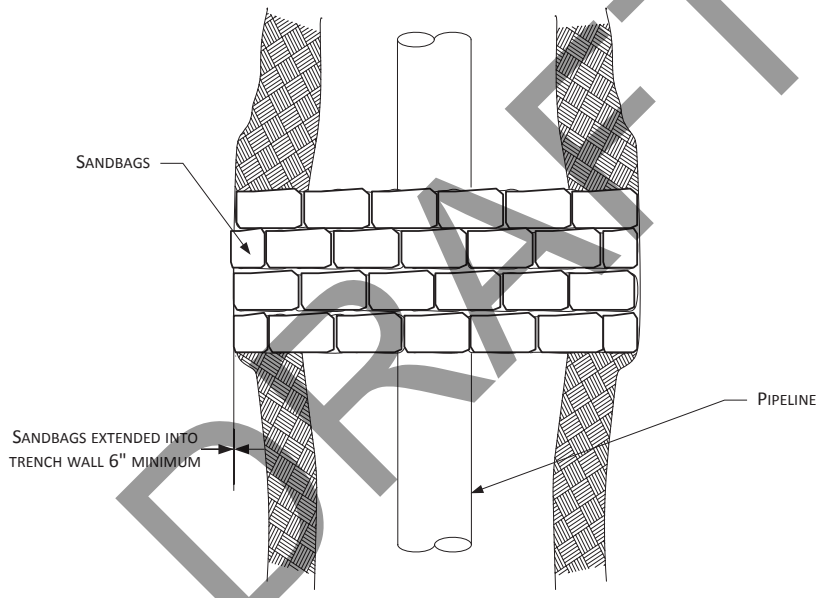
Typical Trench Breaker Perspective View

(OKS-7901-CONST-07)

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_5_Typical_Topsoil_Segregation.vsd	Scale: NTS	Revised: 08/20/2018	Drawn By: RGCutting

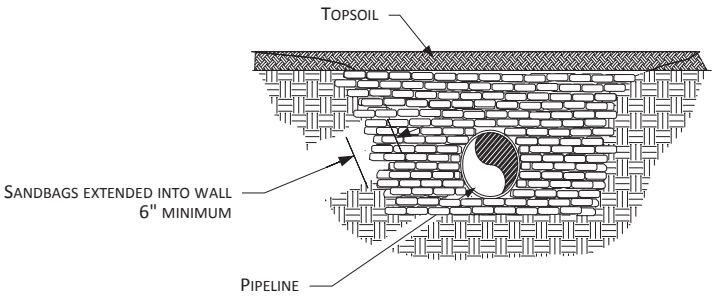


PROFILE VIEW
(NOT TO SCALE)



PLAN VIEW
(NOT TO SCALE)

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FACE VIEW
(NOT TO SCALE)

NOTES

1. BAGS WILL NOT BE FILLED WITH TOPSOIL
2. ADDITIONAL INFORMATION INCLUDED ON OTHER DRAWINGS
3. STAGGER COURSES OF BAGS

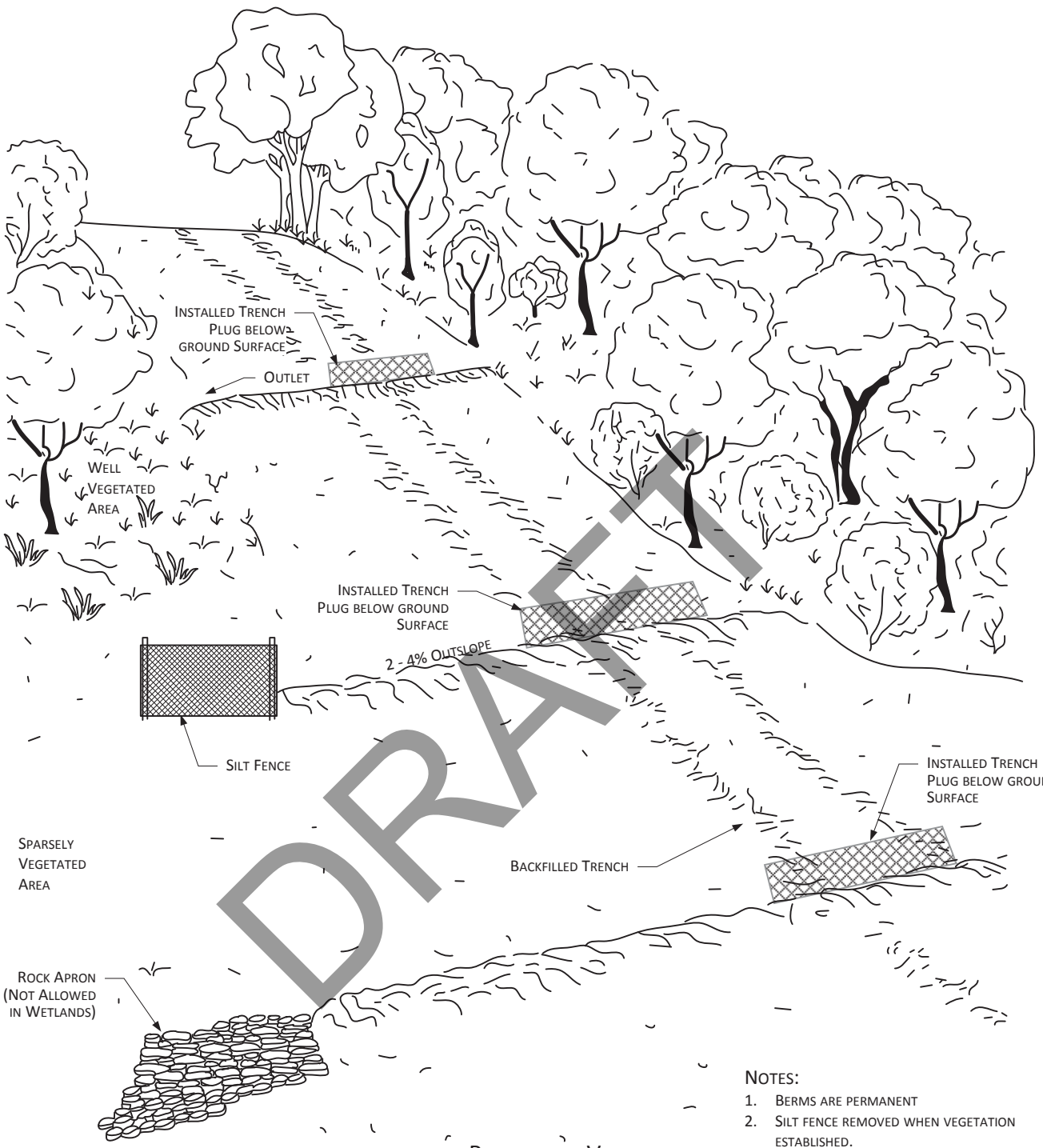
For environmental review purposes only.

Figure 9
Typical Trench Breakers
Plan & Profile Views

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M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMPLLC_CMRP\Fig_11_Trench_Breaker_Plan_Profile_View.vsd	Scale: NTS	Revised: 08/17/2018	Drawn By: RGCutting



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Perspective View
(not to scale)

Slope %	Approximate Spacing (ft)
5-15	300
15-30	200
>30	<100

Notes:

1. Berms are permanent
2. Silt fence removed when vegetation established.
3. Lowest berm may be omitted if silt fence or straw bales are installed at that location, subject to approval.
4. Install silt fence or straw bales at discharge end of earthen berms as necessary to dissipate energy and prevent erosion.

For environmental review purposes only.

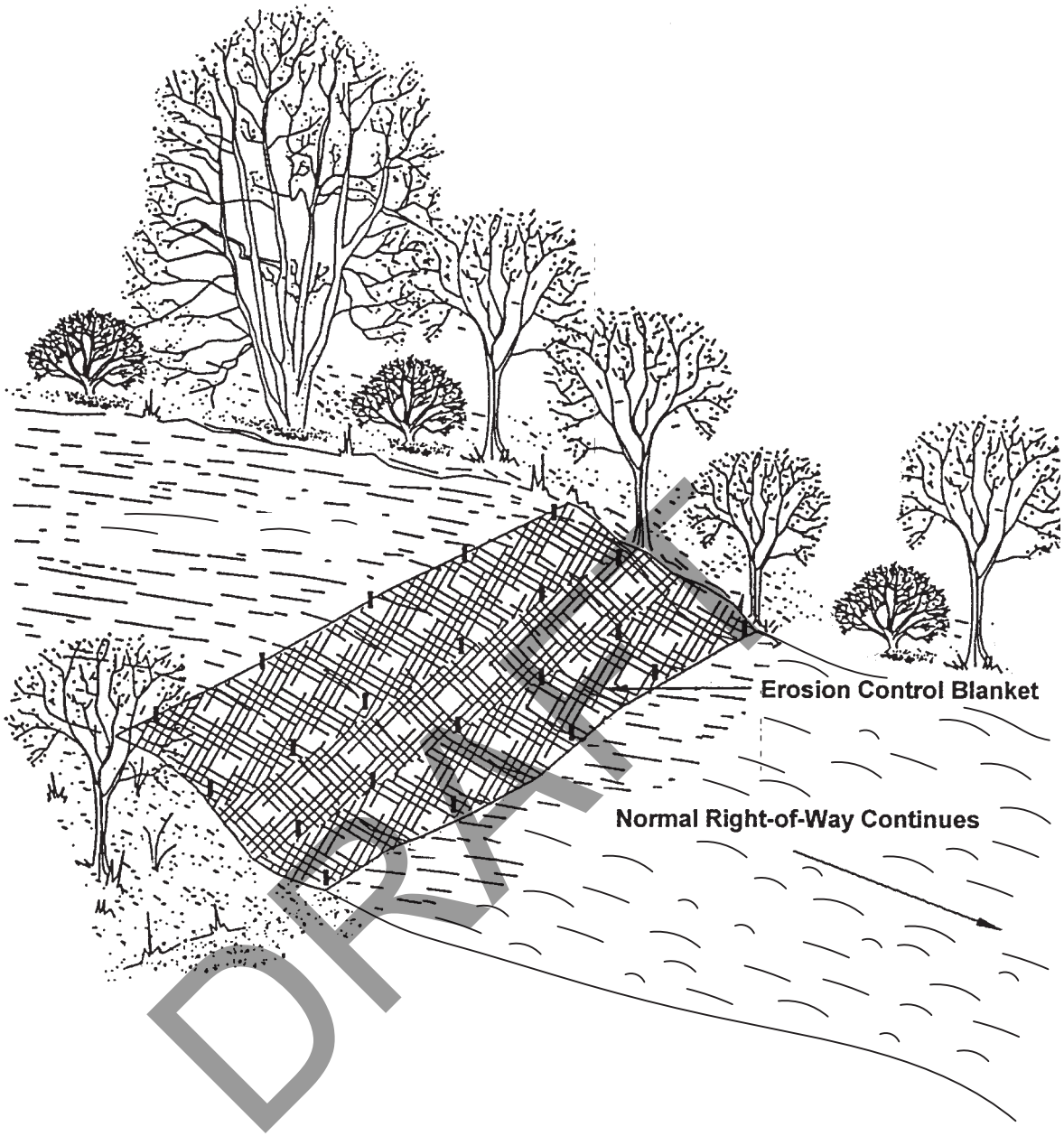
Figure 10

Permanent Slope Breakers
Perspective View

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M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_12_Slope_Breakers_Perspective_View.vsd	Scale: NTS	Revised: 08/20/2018	Drawn By: RGCutting



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NOTES

1. INSTALL EROSION CONTROL BLANKET AS PER MANUFACTURER'S SPECIFICATIONS.
2. ADDITIONAL INFORMATION INCLUDED ON OTHER DRAWINGS.

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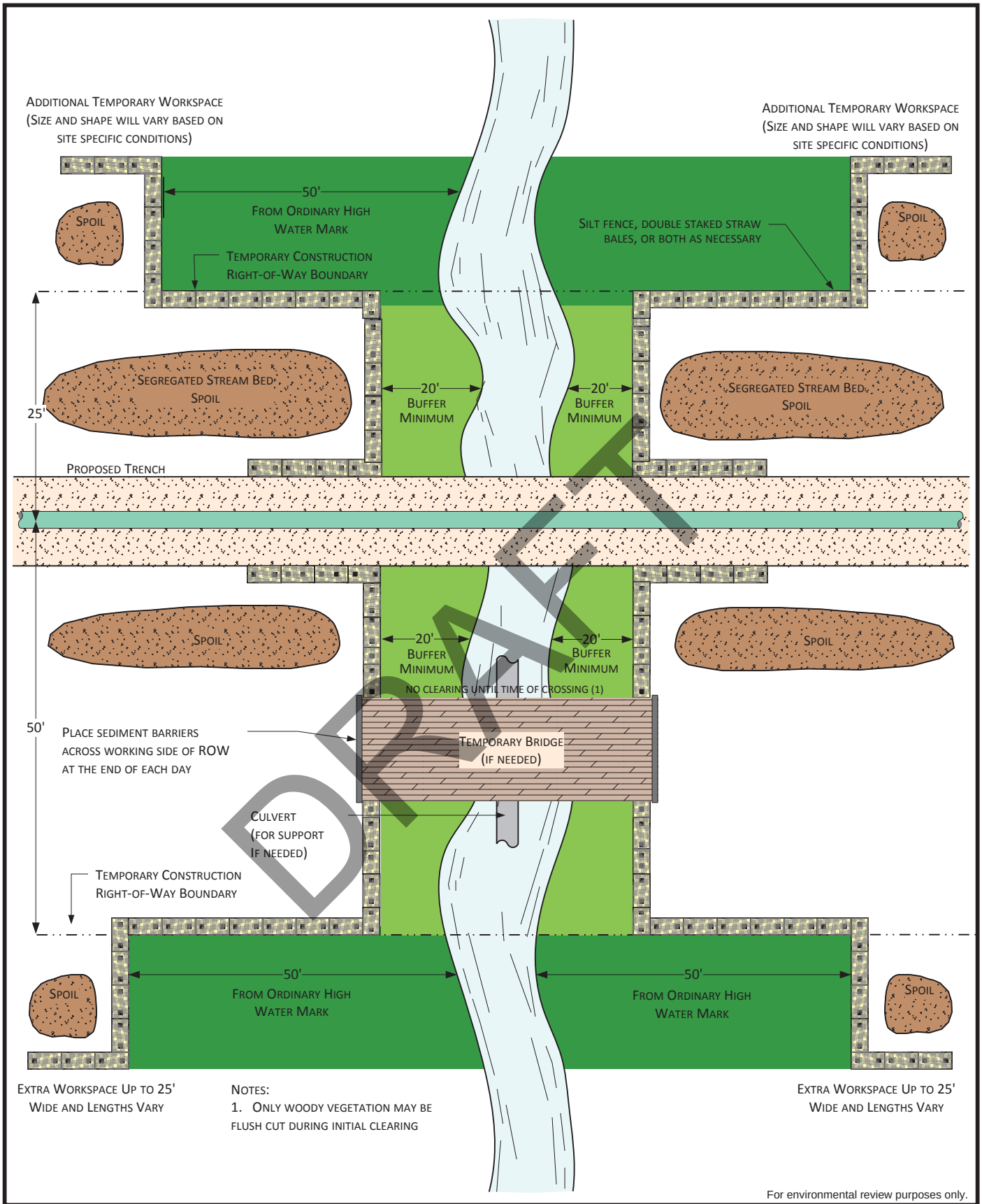
ONEOK

Figure 11

Erosion Control Blanket - Steep Slopes (≥30%)

ERM

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_13_Erosion_Control_Blanket.vsd	Scale: NTS	Revised: 08/20/2018	Drawn By: RGCutting



For environmental review purposes only.

Figure 12

Typical Waterbody Crossing
Open Cut - Wet Trench Method

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M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_14_Waterbody_Wet_Trench.vsd	Scale: NTS	Revised: 08/20/2018	Drawn By: RGCutting

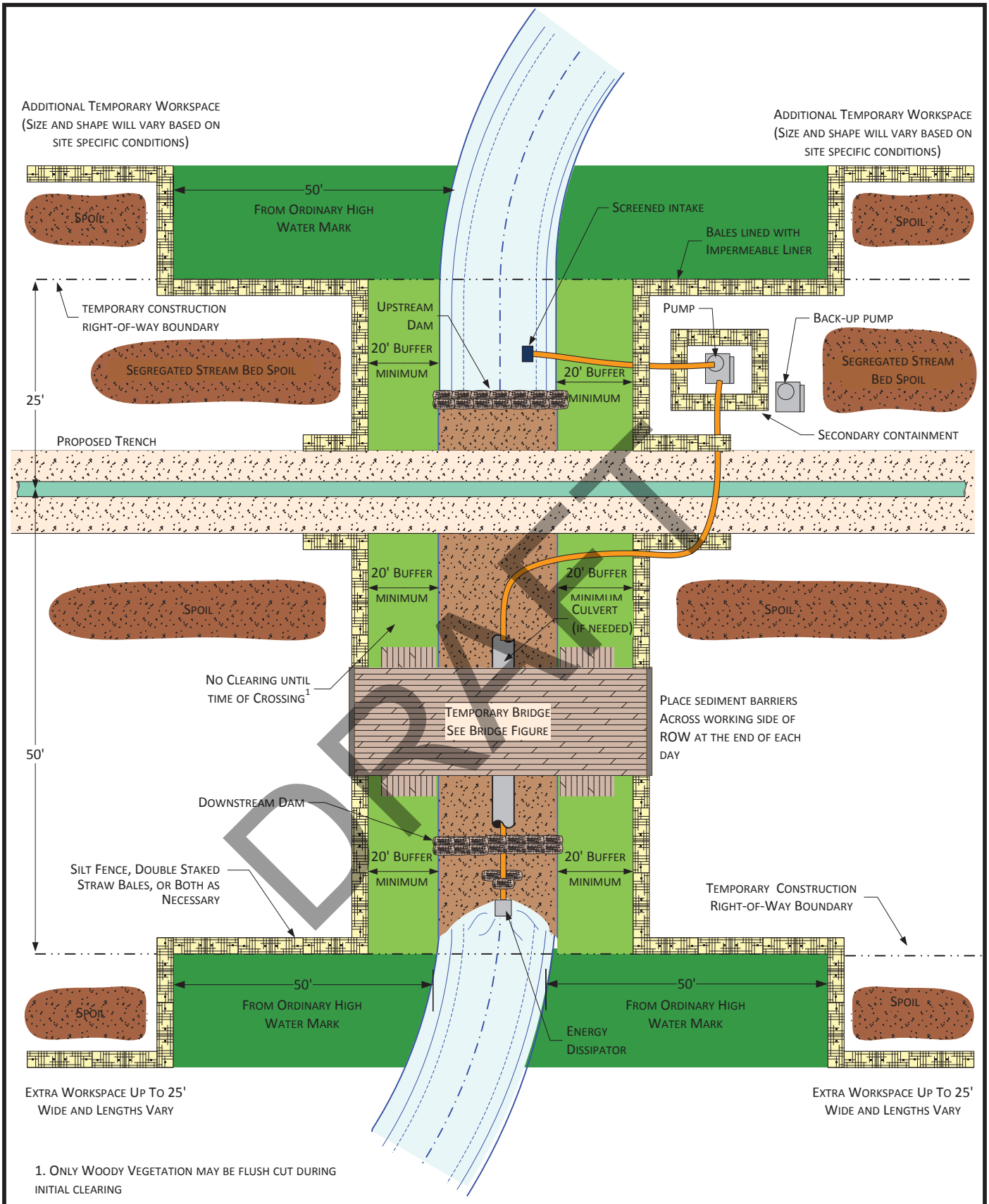


Figure 13
Typical Waterbody Crossing
Dam and Pump Method

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M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_15_Waterbody_Dam_Pump.vsd	Scale: NTS	Revised: 08/20/2018	Drawn By: RGCutting

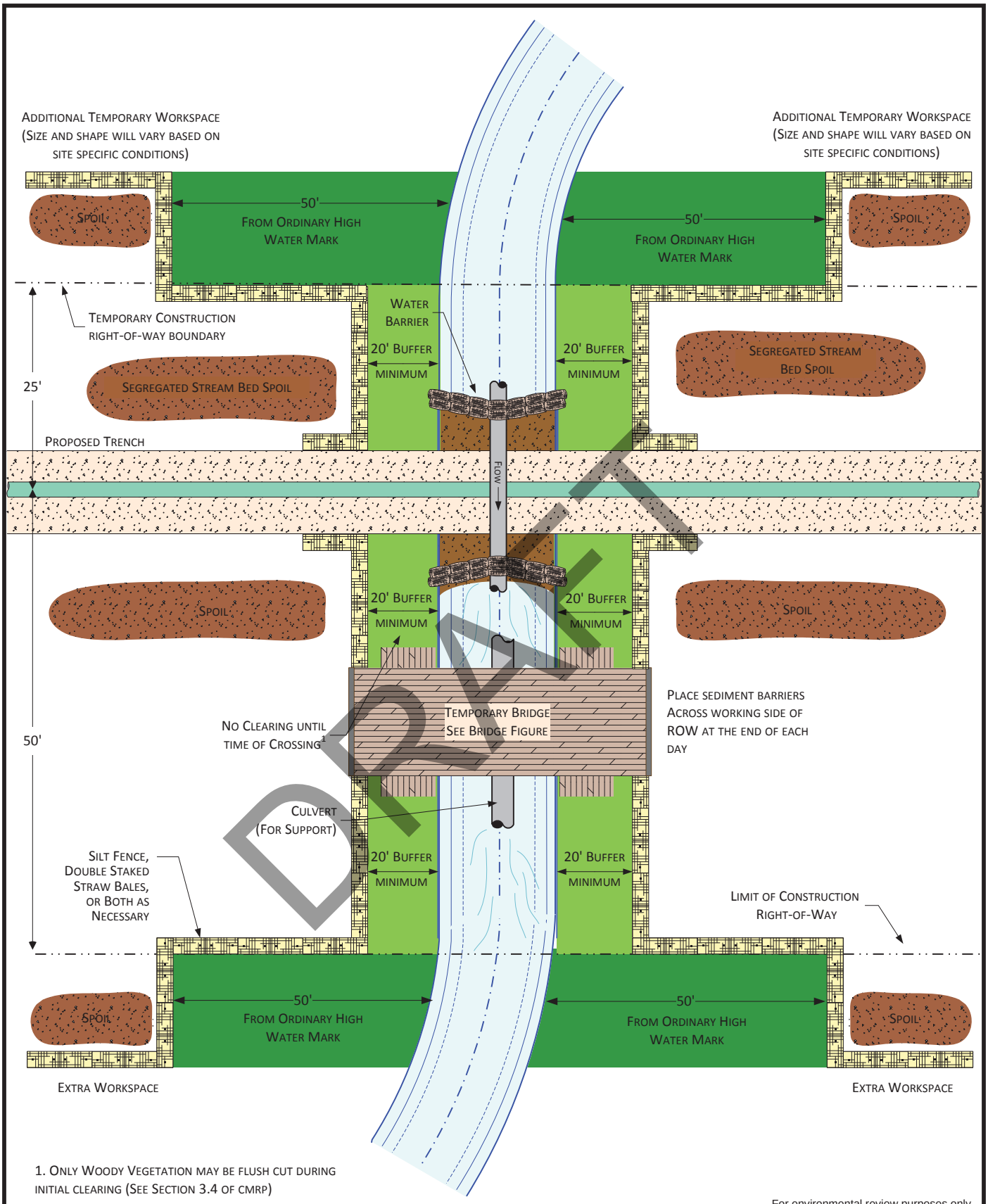
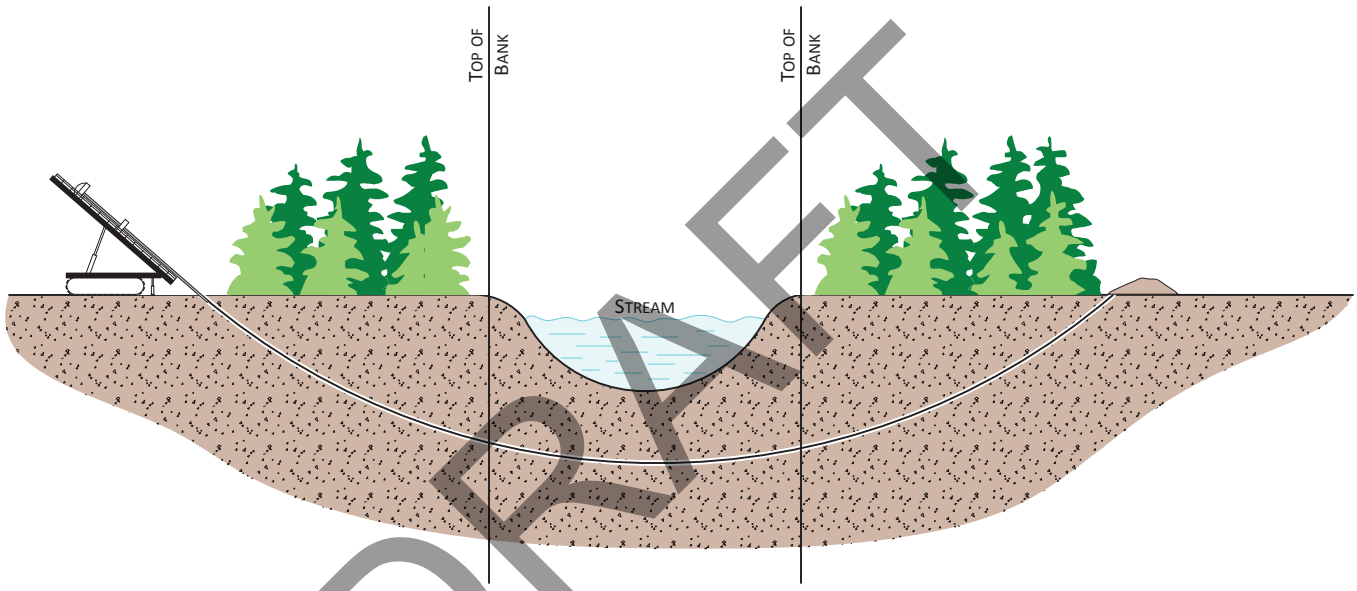


Figure 14
Typical Waterbody Crossing
Flume Method

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M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMPR\Fig_16_Waterbody_Flume.vsd	Scale: NTS	Revised: 08/20/2018	Drawn By: RGCutting



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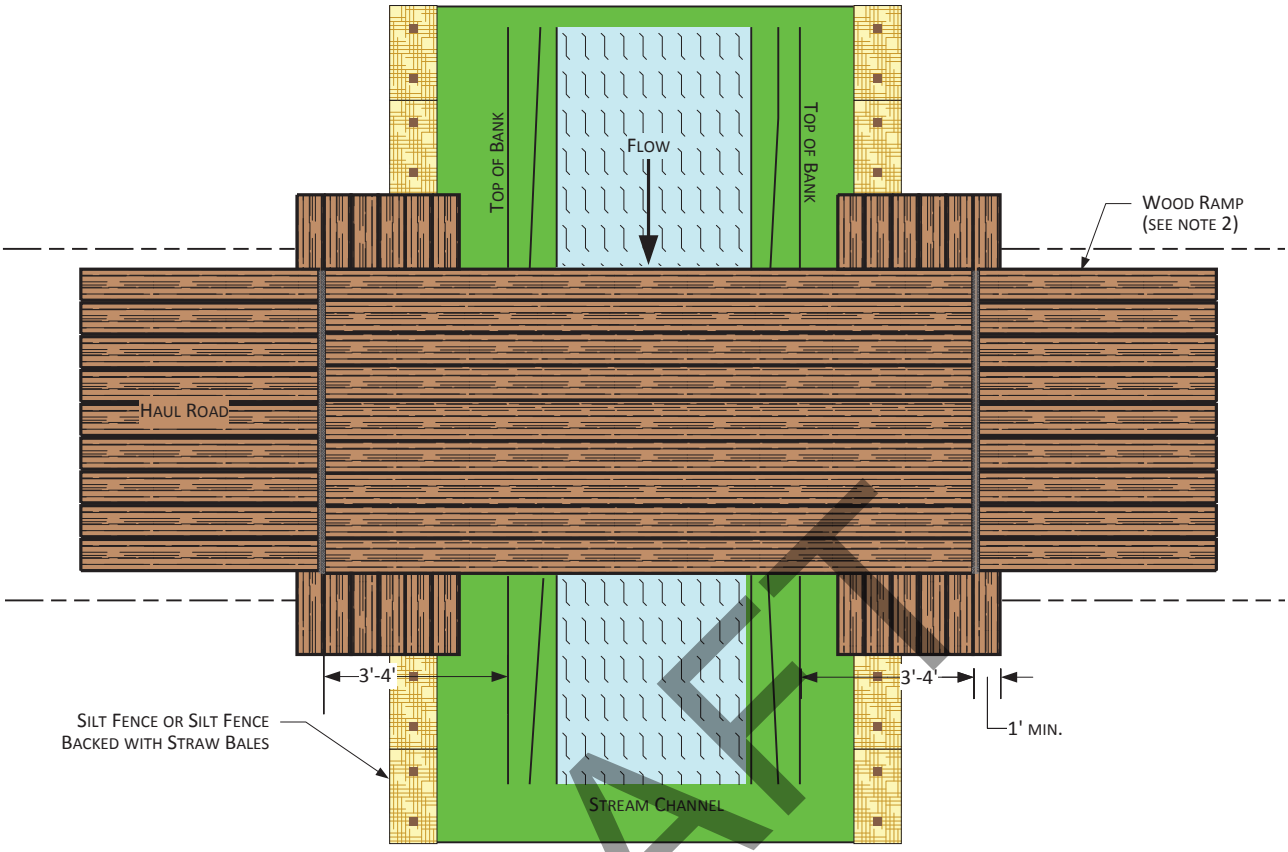
Figure 15
Typical Waterbody Crossing
Directional Drill Method

ONEOK

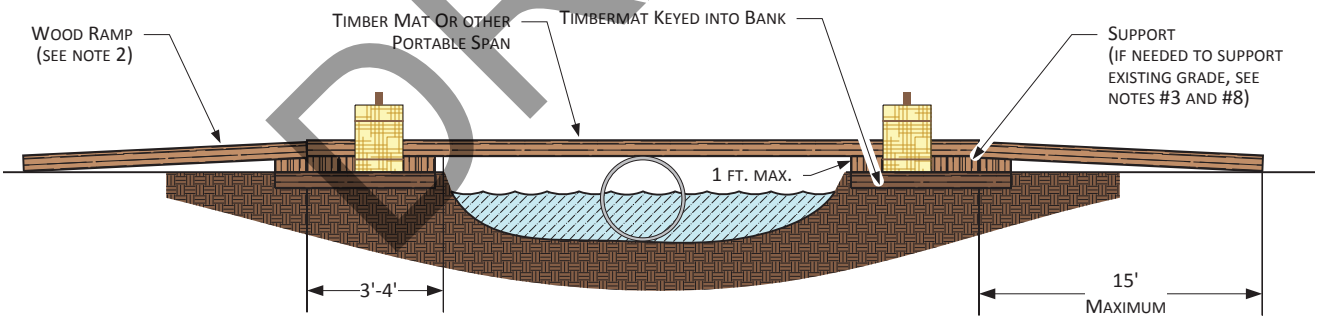
ERM

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_17_Waterbody_Directional_Drill.vsd	Scale: NTS	Revised: 08/20/2018	Drawn By: RGCutting

Plan View



Profile View



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Notes:

1. Inspect bridge opening periodically and following rainfalls of over ½". Remove any debris restricting flow and deposit it at an upland site outside of floodplain.
2. If physical circumstances prohibit wood or metal ramps, earthen ramps may be used as approved.
3. Inspect bridge elevation so bridge remains supported above high bank and does not sink into bank.
4. The culvert support must be anchored to the stream bottom and may not be supported with fill.
5. The bridge must span from top of bank to top of bank.
6. Additional support must be added on top of bank and under span if initial support starts to settle.
7. Erosion and sedimentation control measures shall be inspected and maintained in accordance with the company's Environmental Mitigation Plan

For environmental review purposes only.

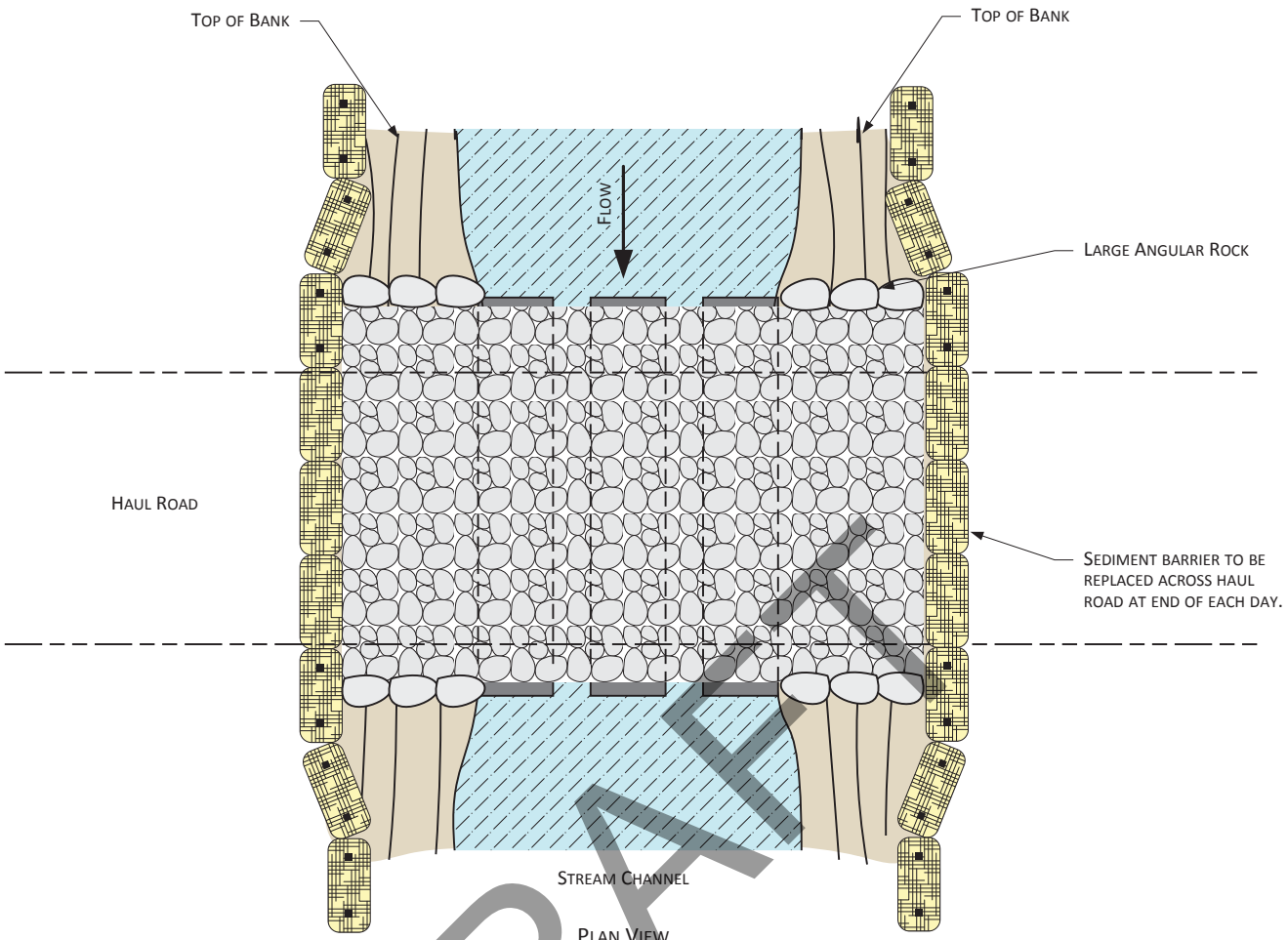
Figure 16

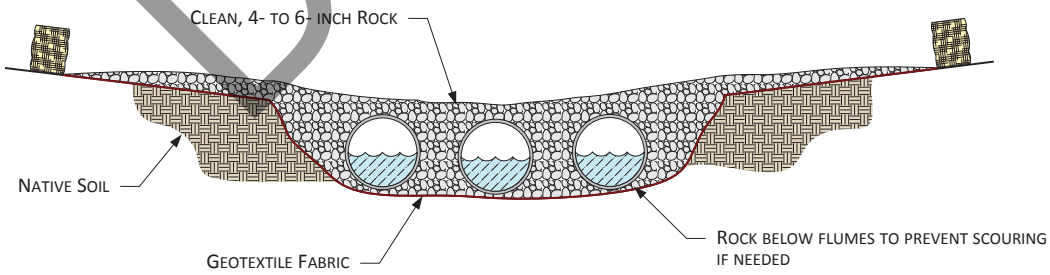
Typical Span Type Bridge
With or Without Instream Support
(OKS-7901-ENV-04)

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M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_18_Span_Type_Bridge.vsd	Scale: NTS	Date: 5/20/2007	Revised: 08/17/2018	Drawn By: AGPeterson





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NOTES:

1. STEEL FLUME PIPE(S) SIZED TO ALLOW FOR STREAM FLOW AND EQUIPMENT LOAD.
2. STRAW BALES (OR EQUIVALENT) SHALL BE PLACED ACROSS BRIDGE ENTRANCE EVERY NIGHT.
3. ADDITIONAL INFORMATION INCLUDED ON OTHER DRAWINGS.

For environmental review purposes only.

Figure 17

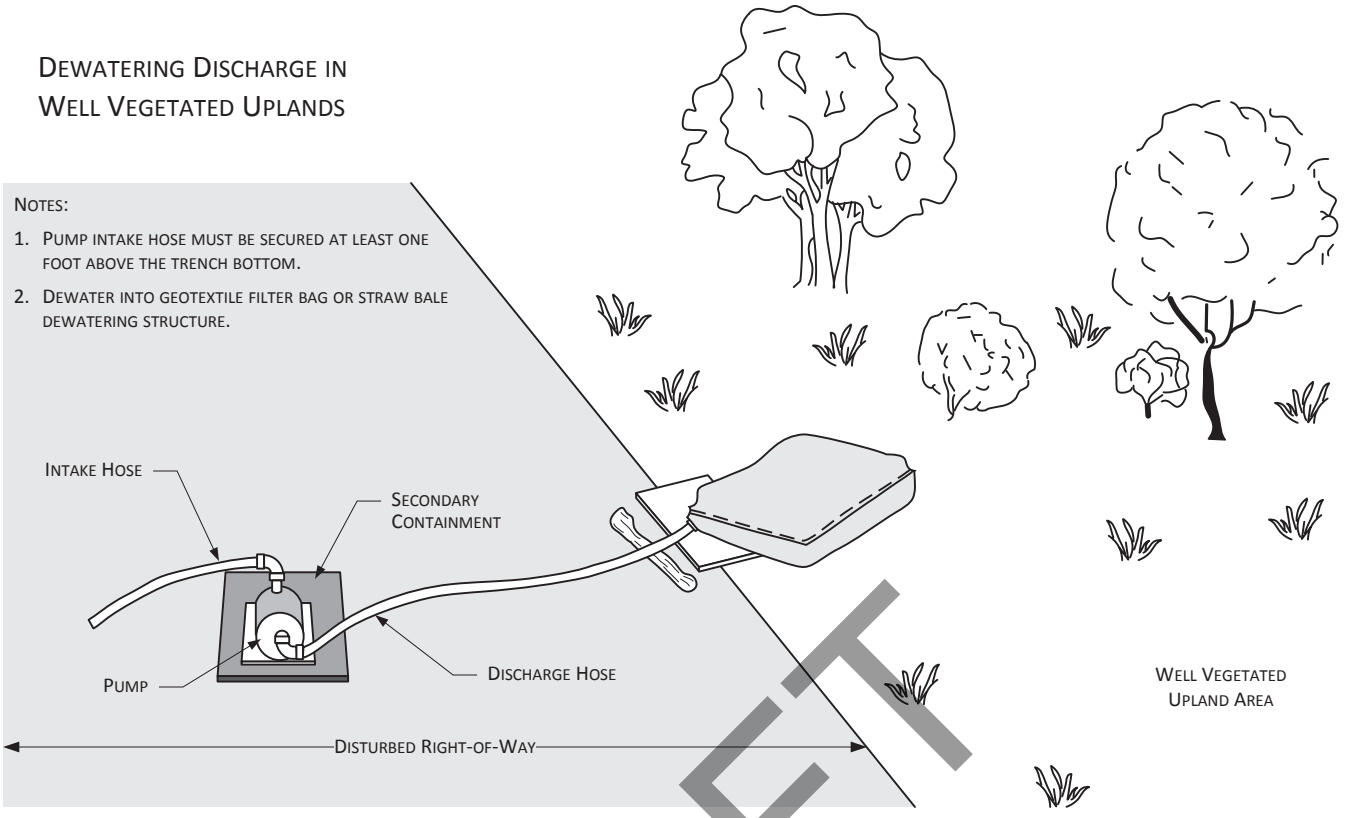
Typical Rock Flume Bridge
Method 4
(OKS-7901-ENV-03d)

ONEOK

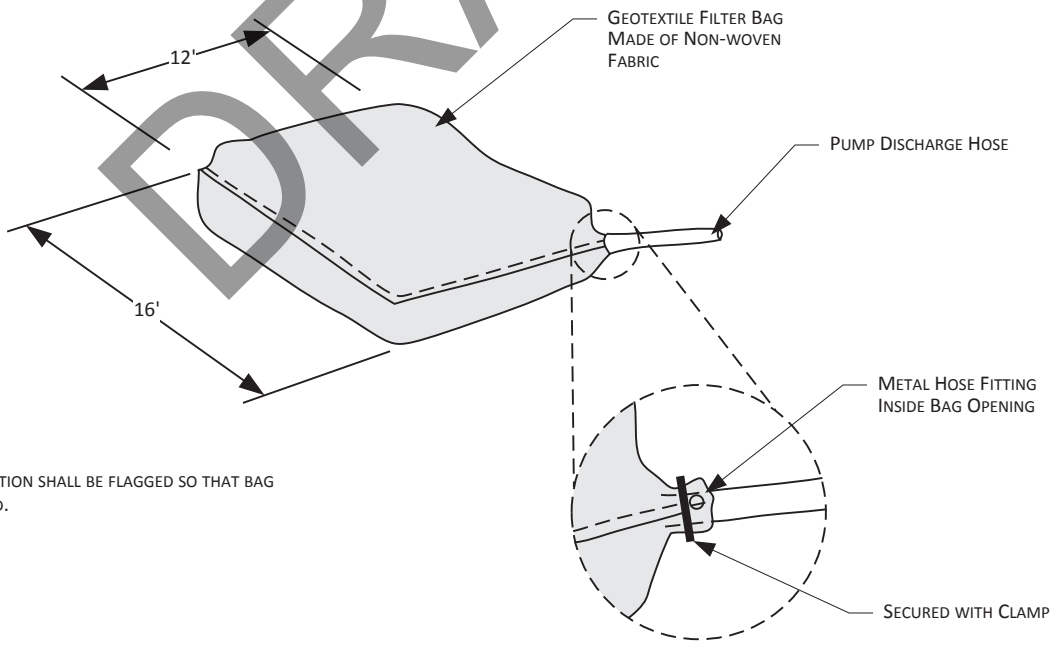
ERM

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_19_Rock_Flume_Bridge.vsd	Scale: NTS	Date: 5/20/2007	Revised: 08/17/2018	Drawn By: AGPeterson

Dewatering Discharge in Well Vegetated Uplands



Geotextile Filter Bag



Note:

1. Filter bag location shall be flagged so that bag can be removed.

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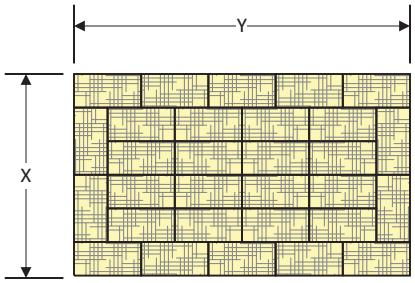
For environmental review purposes only.

Figure 18
Typical Dewatering Measures

ONEOK

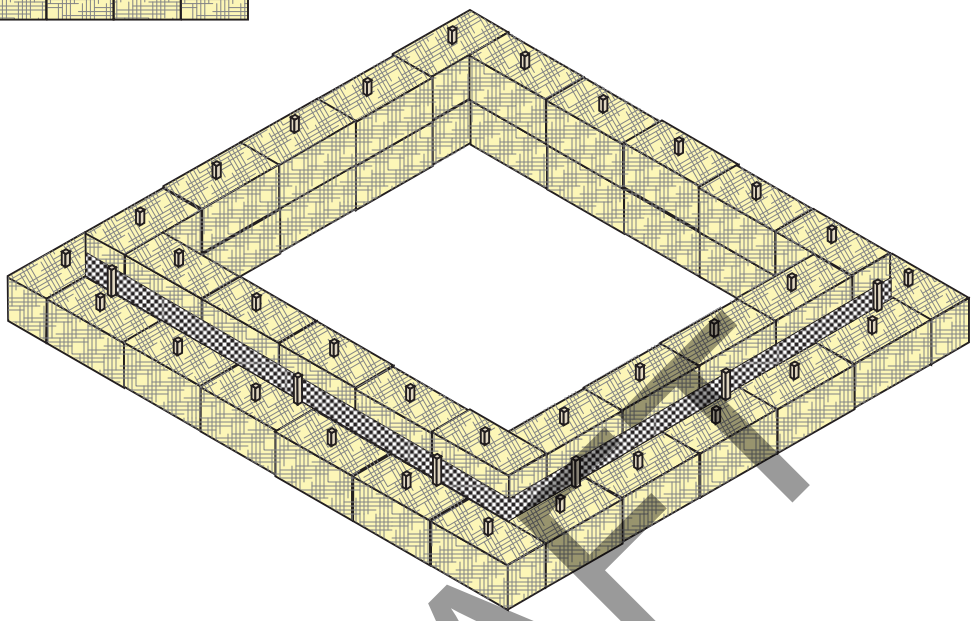
ERM

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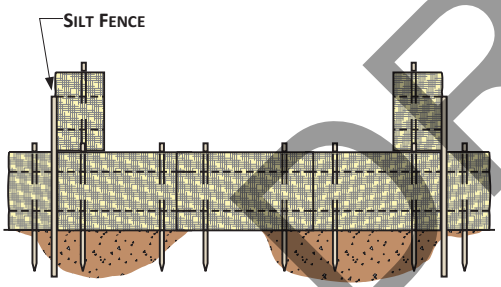


NOTES

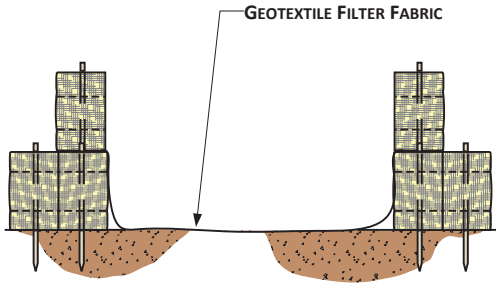
1. ARRANGE THE STRAW BALES TO THE X AND Y DIMENSIONS AS SPECIFICIED BELOW.
2. IF BOTTOM OF STRUCTURE IS NOT LINED WITH STRAW BALES (OPTION 1), LINE ENTIRE STRUCTURE WITH GEOTEXTILE FILTER FABRIC.



PERSPECTIVE VIEW



OPTION 1



OPTION 2

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MINIMUM SUMP DIMENSIONS (FEET)		MAXIMUM PUMPING RATE
X	Y	GALLONS PER MINUTE
10	20	300
15	20	350
20	20	400
20	25	450
25	25	500
25	30	550
30	30	660

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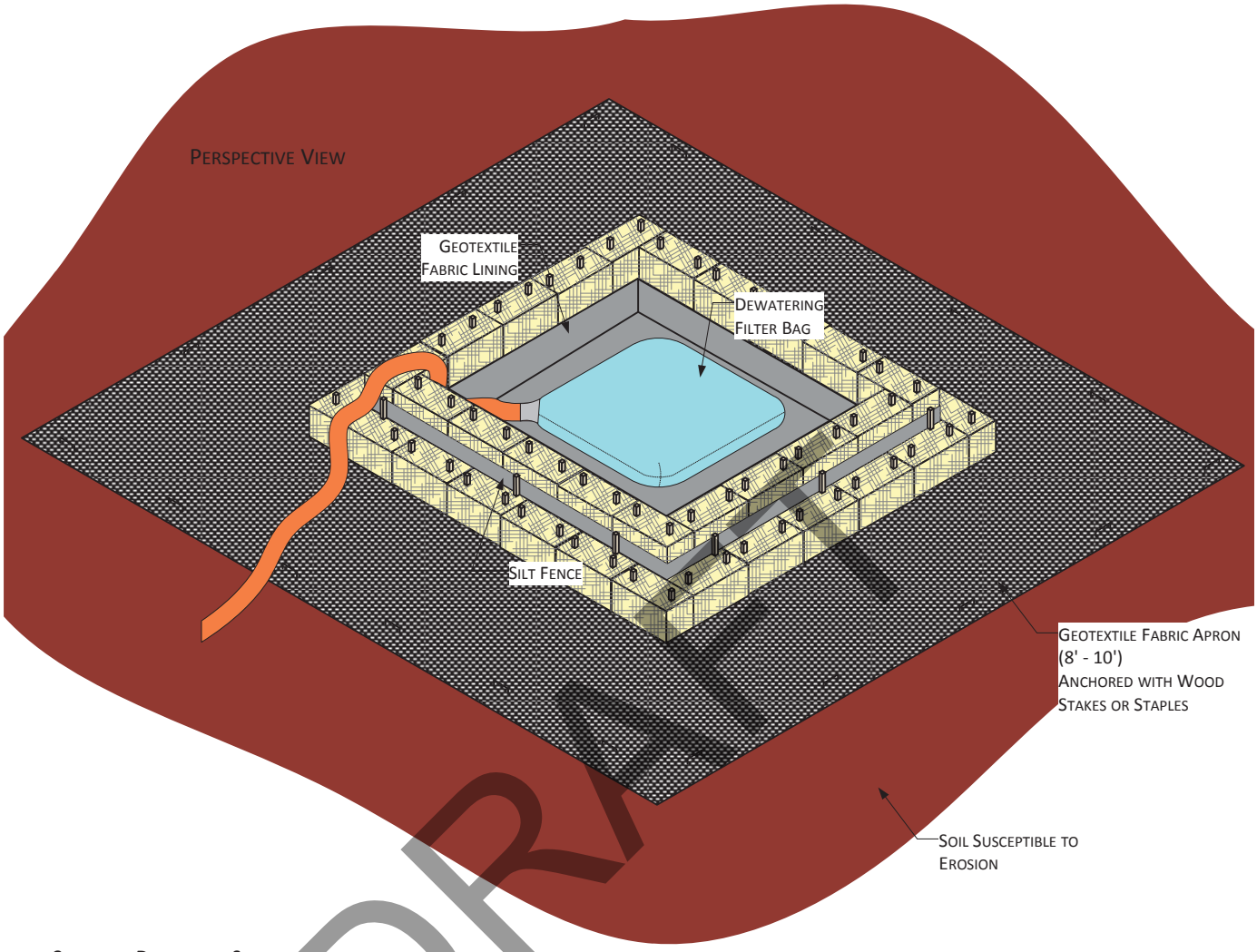
Figure 19

Straw Bale Dewatering Structure
(OKS-7901-ENV-05)

ONEOK

ERM

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_21_Straw_Bale_Dewatering.vsd	Scale: NTS	Revised: 08/17/2018	Drawn By: RGCutting



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Construct Dewatering Structure to accommodate anticipated pumping rates. See example below.

Example Pumping rate = 200 g.p.m.
Storage volume (c.f.) = 16 x 200 g.p.m. = 3200 c.f.
Height of straw bale structure = 3 feet (2 bales stacked) (based on height of bales, not silt fence)
Inside dimensions of structure = 33 x 33 feet square

Notes:

1. Silt fence ends must be wrapped to join two sections.
2. Install silt fence 2 inches above top of straw bales, and anchor a minimum of 8 inches straight down.
3. Spacing between silt fence post stakes must be 4 feet or less.
4. Dewatering intake hose supported at least 1 foot from bottom of trench being dewatered.
5. Erosion and sedimentation control measures shall be inspected and maintained in accordance with the company's upland erosion control, revegetation, and maintenance plan.

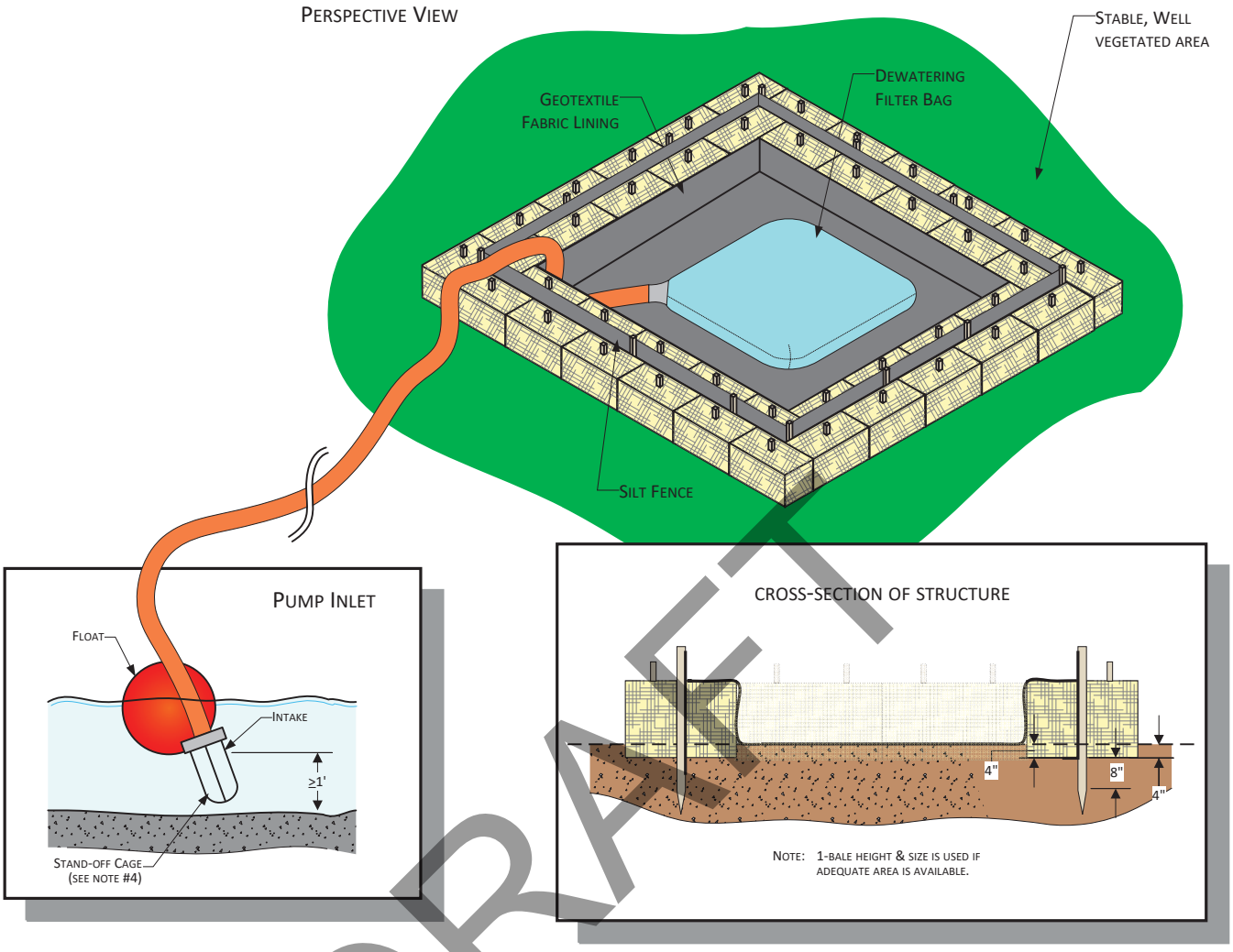
For environmental review purposes only.

Figure 20
Straw Bale Dewatering Structure (OKS-7901-ENV-06a)

ONEOK

ERM

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_22_Straw_Bale_Dewatering.vsd	Scale: NTS	Revised: 08/17/2018	Drawn By: RGCutting



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Construct Dewatering Structure to accommodate anticipated pumping rates. See example below.

Example Pumping rate = 200 g.p.m.
Storage volume (c.f.) = 16 x 200 g.p.m. = 3200 c.f.
Height of straw bale structure = 1.5 feet (1 bale) (based on height of bales, not silt fence)
Inside dimensions of structure = 46 x 46 feet square

Notes:

1. Silt fence ends must be wrapped to join two sections.
2. Install silt fence 2 inches above top of straw bale, and anchor a minimum of 8 inches straight down.
3. Silt fence post staking must be 4 feet or less.
4. Dewatering intake hose supported at least 1 foot from bottom of trench being dewatered.
5. Use a filter bag at the discharge hose end.
6. Erosion and sedimentation control measures shall be inspected and maintained in accordance with the company's CMRP.

For environmental review purposes only.

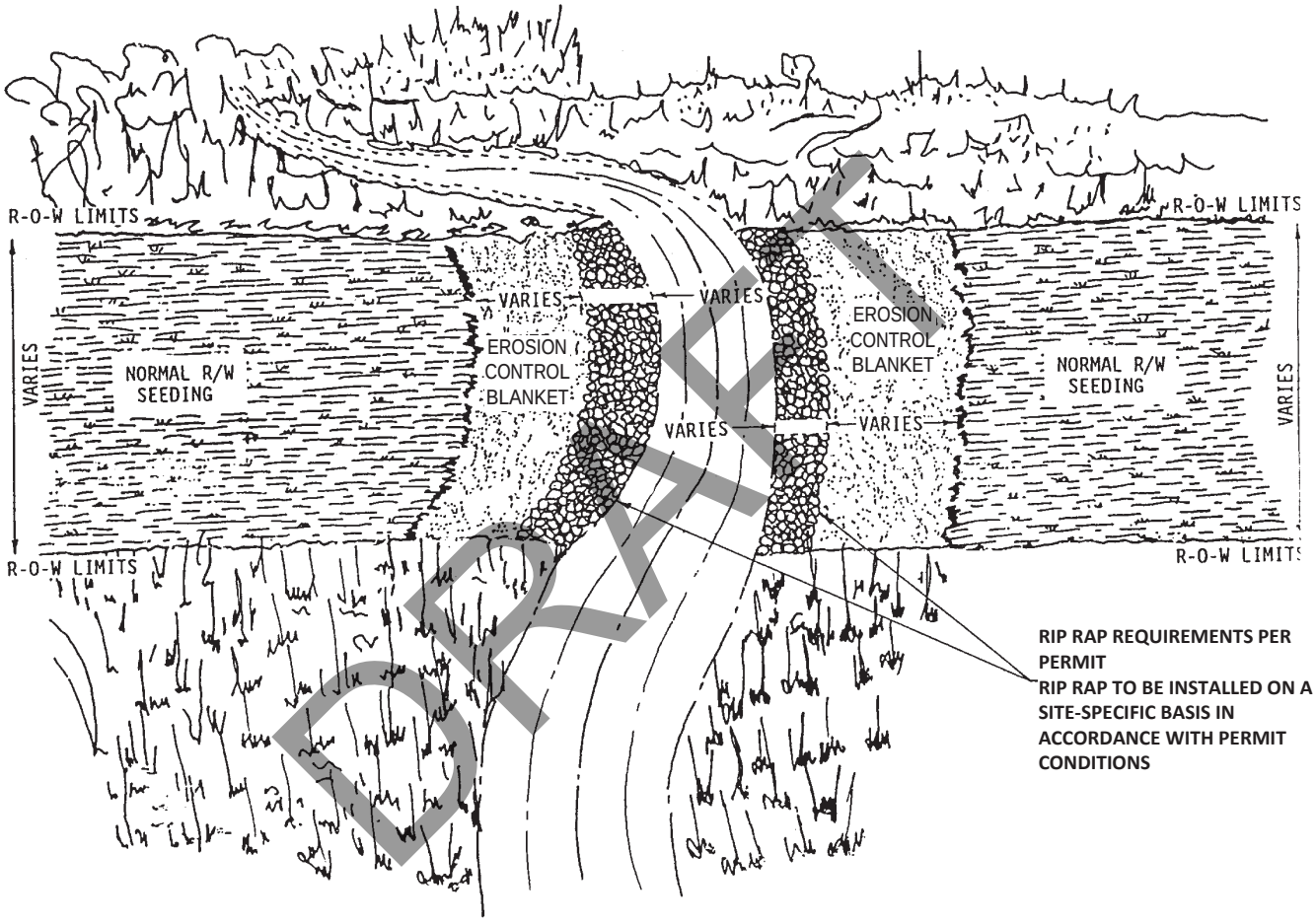
ONEOK

Figure 21
Straw Bale Dewatering Structure
(OKS-7901-ENV-06b)

ERM

K:_Client_Projects\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_23_Straw_Bale_Dewatering.vsd	Scale: NTS	Revised: 08/17/2018	Drawn By: RGCutting

NOTE: PLACE EROSION CONTROL BLANKET A MINIMUM OF ONE (1) FOOT UNDER RIP RAP. EXTEND JUTE BLANKET FROM MEAN HIGH WATER LEVEL TO SEVERAL FEET BEHIND HIGH BANK.



RIP RAP REQUIREMENTS PER PERMIT
RIP RAP TO BE INSTALLED ON A SITE-SPECIFIC BASIS IN ACCORDANCE WITH PERMIT CONDITIONS

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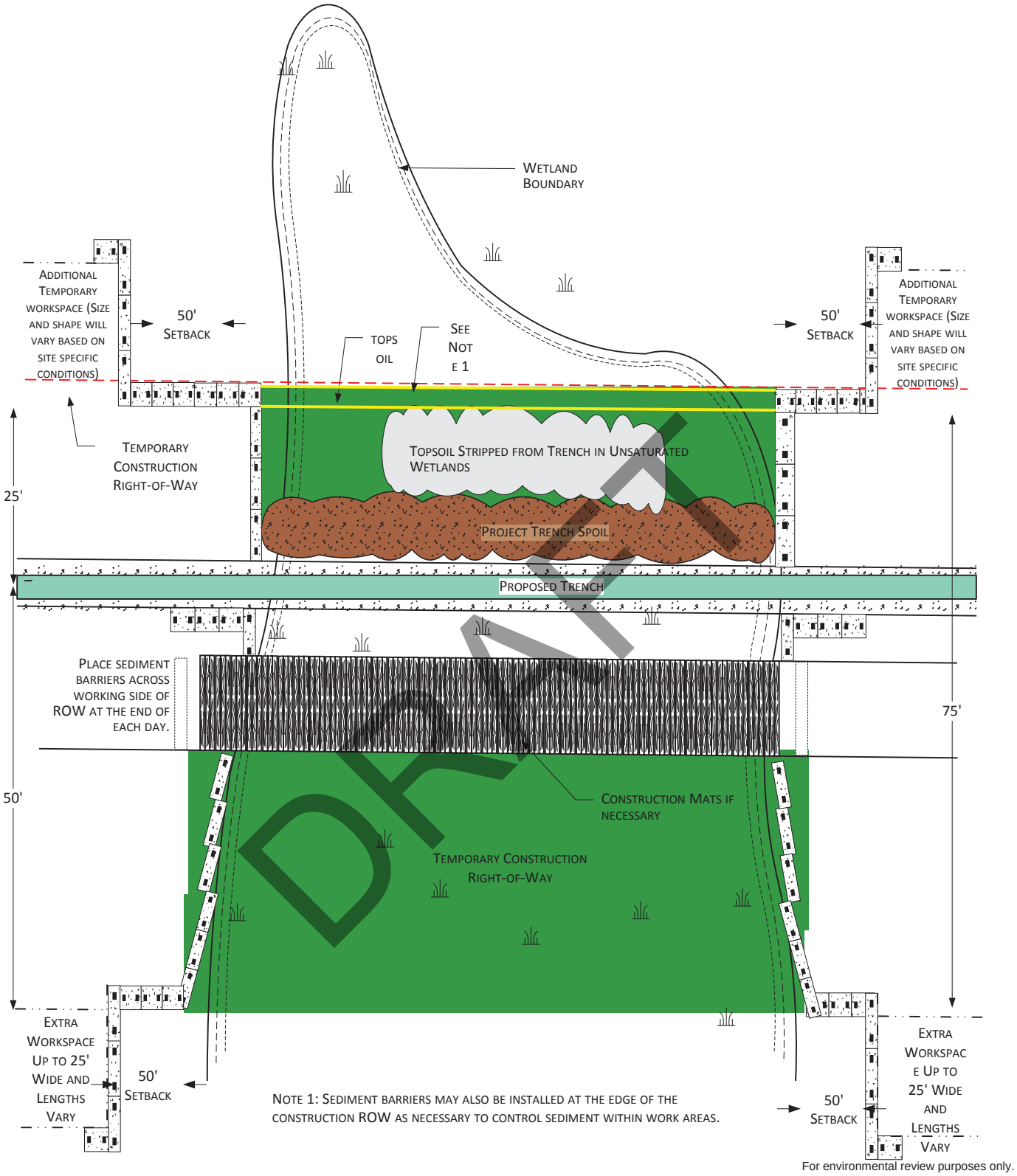
ONEOK

Figure 22

Typical Final Stream Bank Stabilization
Rip Rap & Erosion Control
(OKS-7901-ENV-07)

ERM

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_24_Stream_Bank_Stabilization.vsd	Scale: NTS	Revised: 08/17/2018	Drawn By: RGCutting



NOTE 1: SEDIMENT BARRIERS MAY ALSO BE INSTALLED AT THE EDGE OF THE CONSTRUCTION ROW AS NECESSARY TO CONTROL SEDIMENT WITHIN WORK AREAS.

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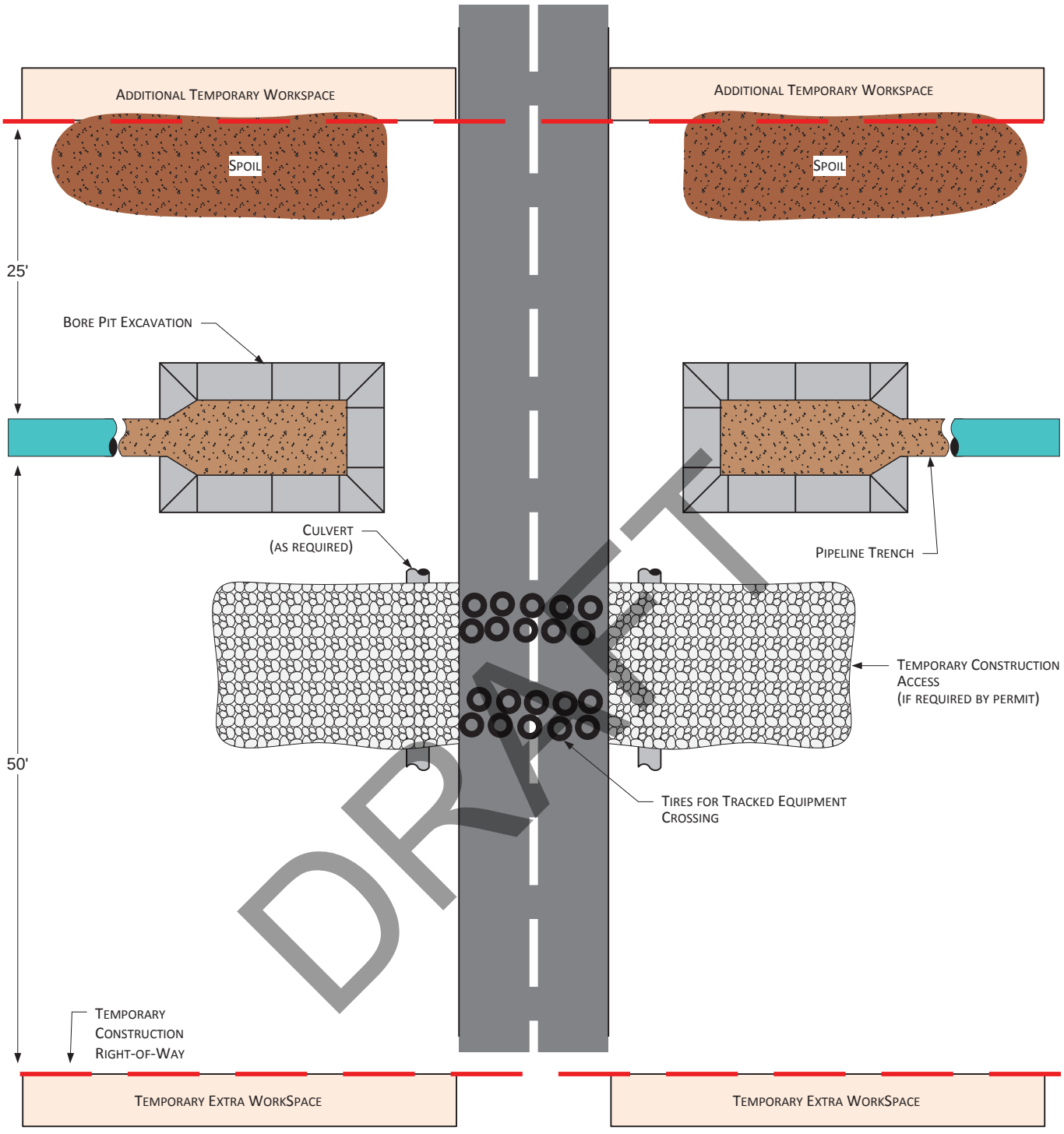
For environmental review purposes only.

Figure 23
Typical Wetland Crossing Method
Method 5
(OKS-7901-ENV-03e)

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K:_Client_Projects\M-O\ONE\Niobrara\EMP\Fig_24_Wetland_Crossing.vsd	Scale: NTS	Revised: 0820/2018	Drawn By: RGCutting



PLAN VIEW

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NOTES

1. PROCEDURES SHOWN IN THIS DRAWING APPLY TO IMPROVED ROADS.
2. ROADS MUST BE CLEANED AFTER EQUIPMENT CROSSES AND DIRT PLACED IN SPOIL CONTAINMENT AREAS.
3. TEMPORARY ACCESS MATERIALS MUST BE REMOVED UPON PROJECT COMPLETION.
4. ADDITIONAL INFORMATION INCLUDED ON OTHER DRAWINGS OR PERMITS.
5. CONSTRUCTION AREAS LOCATED OUTSIDE ROAD ROW.
6. INSTALL EROSION AND SEDIMENT CONTROLS AS NEEDED BASED ON SITE SPECIFIC CONDITIONS

For environmental review purposes only.

ONEOK

Figure 24
Typical Improved Road Crossing
Directional Bore Method

ERM

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_26_Improved_Road_Crossing.vsd	Scale: NTS	Revised: 08/20/2018	Drawn By: RGCutting

APPENDIX C

Project Maps

FINAL DRAWINGS/MAPS TO BE INCLUDED PRIOR TO CONSTRUCTION

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APPENDIX D

Receiving Waters

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To be updated upon route finalization

ONEOK Little Missouri Lateral Pipeline Project Wetland Crossing Summary Table					
Feature ID	Cowardin	Approx. MP	Anticipated Crossing Method	Centerline Crossing Length (ft)	NWP 12 Applicability
W_A-11	PEMA	1.5	OCM 5	15	OCM5 – NWP Not Applicable
W_A-07	PEMA	7.2	OCM 5	Not directly crossed - in workspace	OCM5 – NWP Not Applicable
W_A-05	PEMA	7.4	OCM 5	TBD	OCM5 – NWP Not Applicable
W_A-01	PEMH	7.9	Bore or HDD	440	Bore/HDD – NWP Not Applicable

ONEOK Little Missouri Lateral Pipeline Project Waterbody Crossing Summary Table					
Feature ID	Regime	Approx. MP	Anticipated Crossing Method	Centerline Crossing Length (ft)	NWP 12 Applicability
S_A-06	Intermittent	0.29	Bore or OCM2	16	Bore/OCM2 – NWP Not Applicable
S_A-06	Intermittent	0.35	Bore or OCM2	16	Bore/OCM2 – NWP Not Applicable
TBD	Intermittent	0.51	Bore or OCM2	60	Bore/OCM2 – NWP Not Applicable
SA-04	Ephemeral	7.3	Bore or OCM2	5	Bore/OCM2 – NWP Not Applicable
SA-03	Perennial	7.3	Bore or HDD	25	Bore/HDD – NWP Not Applicable
SA-02	Intermittent	7.5	Bore or OCM2	15	Bore/OCM2 – NWP Not Applicable
SA-01	Ephemeral	9.8	OCM5	1	OCM5 – NWP Not Applicable

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APPENDIX E

Stormwater Inspection Form and Reports

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Site Inspection Record Template
Construction
(07-2010)

Project Name: _____

Coverage Number: _____

Inspector: _____ Date: _____ Time: _____

Precipitation Amount: _____ Date: _____

Areas Inspected (Choose Applicable): ☐ Active areas

☐ Stabilized areas with less than 70% cover

☐ Areas that have achieved final stabilization

Is there evidence of, or the potential for, pollutants entering drainage systems or waters of the state from:

- Material Storage Areas ☐ Y ☐ N
- Vehicle Maintenance Areas ☐ Y ☐ N

Observations / Corrective Actions:

_____

_____

_____

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☐ Y ☐ N	Have all erosion and sediment controls and best management practices identified in the plan been installed or implemented?
☐ Y ☐ N	Are erosion and sediment controls operating correctly and in serviceable condition?
☐ Y ☐ N	Are erosion and sediment controls operating consistently and effectively?
☐ Y ☐ N	Are there any devices similar to silt fence or fiber rolls where sediment has reached more than 1/3 the height of the device? (Removal and repairs must be made within 24 hours.)
☐ Y ☐ N	Are there any sediment basins where collected sediment has reduced the storage capacity by 1/2? (Drainage and removal must be completed within 72 hours.)
☐ Y ☐ N	Is there evidence of sediment deposits in surface waters, drainage ditches or other stormwater conveyance systems? (Removal and stabilization must be completed within 7 days unless prohibited by legal, regulatory or physical access constrains. All reasonable efforts must be made to obtain access. Once permission is granted, removal must take place within 7 days.)
☐ Y ☐ N ☐ NA	Is there evidence of sediment being tracked off-site by vehicles or equipment? (Sediment tracked or deposited on paved surfaces must be removed within 24 hours.)
☐ Y ☐ N	Is there evidence of sediment depositing off-site other than in surface waters, drainage ditches and stormwater conveyance systems? (Sediment must be recovered in a manner and frequency sufficient to minimize off-site impacts – for example, sediment could wash away during the next precipitation event.)
☐ Y ☐ N ☐ NA	Is stormwater flow distributed evenly over vegetative buffers?
☐ Y ☐ N ☐ NA	Is sediment accumulating in vegetative buffers?
☐ Y ☐ N ☐ NA	Are rills forming within vegetative buffers? (If vegetative buffers are silted covered, contain rills or are otherwise rendered ineffective, other erosion and sediment controls must be implemented. Eroded areas must be repaired and stabilized.)
☐ Y ☐ N	Are litter, debris, chemicals and parts being managed properly to minimize stormwater pollution?
☐ Y ☐ N	Are liquid or soluble materials like oil, fuel, paint, etc., properly stored to prevent spills, leaks or other discharges?

☐ Y ☐ N	Is there evidence of concrete wash water discharging to waters of the state, storm sewer systems or onto adjacent properties?
☐ Y ☐ N	Is there evidence of wastewater from processing operations or sanitary facilities (i.e., portable toilets) discharging from the site? (These types of discharges are not covered by the construction general permit, NDR10-0000. They must be stopped immediately if they are not covered by another type of permit. The following non-stormwater discharges are allowable if the appropriate prevention measures are in place: fire-fighting, fire hydrant flushing, potable water line flushing, infrequent building and equipment wash down without detergents, uncontaminated foundation drains, springs, lawn watering and air conditioning condensate. Please note that discharges from temporary dewatering activities, such as hydrostatic testing or disinfection of new pipelines may require coverage under the temporary dewatering general permit, NDG07-0000.)
☐ Y ☐ N	Is there evidence of wash water from tools or equipment draining to waters of the state, drainage ditches or storm sewer systems?
☐ Y ☐ N ☐ NA	Are permanent stormwater management measures (e.g., oil-water separators, rain gardens) functioning properly?

Corrective Actions and Schedule:

_____

_____

_____

- Are best management practices effective to minimize the discharge of sediment from the site? ☐ Y ☐ N
- Do best management practices need to be adjusted? ☐ Y ☐ N
- Are additional best management practices needed? ☐ Y ☐ N

Comments:

_____

_____

_____

List all spills, leaks or hose-breaks that have occurred since the last inspection:

-Size	-Location	-Was it reportable?	-Was it reported?
_____	_____	☐ Y ☐ N	☐ Y ☐ N
_____	_____	☐ Y ☐ N	☐ Y ☐ N
_____	_____	☐ Y ☐ N	☐ Y ☐ N

- Were Spill Prevention Procedures adequate? ☐ Y ☐ N
- What Spill Response Procedures were used?

Comments

_____

_____

_____

- Has the SWPP Plan been updated as a result of this inspection? ☐ Y ☐ N
- Has the Site Map been updated as a result of this inspection? ☐ Y ☐ N

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APPENDIX F

Best Management Practice Tracking Table

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Appendix F – Erosion and Sediment Controls Checklist

Prior to commencing and throughout construction activities, please review and ensure the following are completed in accordance with the SWPPP and with the General Permit. On the following page is a table in which all ECDs installed onsite will be recorded.

1. Access Drives and Tracking. Provide access drive(s) for construction vehicles that minimize tracking of soil off site using BMPs such as stone tracking pads, tire washing or grates. Minimize runoff and sediment from adjacent areas from flowing down or eroding access drive.
2. Diversion of Upslope Runoff. Divert excess runoff from upslope land, rooftops, or other surfaces, if practicable, using BMPs such as earthen diversion berms, silt fence and downspout extenders. Prevent erosion of the flow path and the outlet.
3. Inlet Protection. Protect inlets to storm drains, culverts and other stormwater conveyance systems from siltation until the site is stabilized.
4. Soil Stockpiles. Locate soil stockpiles away from channelized flow and no closer than 50 feet from roads, ditches, lakes, streams, ponds, wetlands, or environmental corridors. Control sediment from soil stockpiles. Any soil stockpile that remains for more than 7 days must be stabilized.
5. Cut and Fill Slopes. Minimize the length and steepness of proposed cut and fill slopes and stabilize them as soon as practicable.
6. Channel Flow. During construction, trap sediment in channelized flow before discharge from the site using BMPS such as sediment traps and sediment basins. Complete final grading and stabilize open channels in accordance with Permit standards.
7. Outlet Protection. Protect outlets from erosion during site dewatering and stormwater conveyance, including velocity dissipation at pipe outfalls or open channels entering or leaving a stormwater management facility.
8. Overland Flow. Trap sediment in overland flow before discharge from the site using BMPs such as silt fence and vegetative filter strips.
9. Site Dewatering. Treat pumped water to remove sediment prior to discharge from the site, using BMPs such as sediment basins and portable sediment tanks. Discharge to well-vegetated upland sites only.
10. Dust Control. Prevent excessive dust from leaving the construction site though construction phasing and timely stabilization or the use of BMPs such as site watering and mulch – especially with very dry or fine sandy soils.
11. Topsoil Application. Save existing topsoil and reapply a minimum of 4 inches to all disturbed areas for final stabilization, such as for temporary seeding or stormwater infiltration BMPs.
12. Waste Material. Recycle or properly dispose all waste and unused building materials in a timely manner. Control runoff from waste materials until they are removed or reused.
13. Sediment Cleanup. By the end of each workday, clean up all off-site sediment deposits or tracked soil that originated from the permitted site.
14. Final Site Stabilization. Stabilize all other disturbed areas within 7 days of final grading and topsoil application. Any soil erosion that occurs after final grading or the application of stabilization measures must be repaired, and the stabilization work redone.
15. Temporary Site Stabilization. Any disturbed site that remains inactive for greater than 7 days shall be stabilized with temporary stabilization measures such as soil treatment, temporary seeding, or mulching. For purposes of this subsection, “inactive” means that no site grading, landscaping, or utility work is occurring on the site and that precipitation events are not limiting these activities. Frozen soils do not exclude the site from this requirement.
16. Removal of Practices. Remove all temporary BMPs such as silt fences, ditch checks and sediment traps as soon as all disturbed areas have been stabilized.

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Erosion and Sediment Controls Installed Onsite

ECD Type[1]	Location Installed[2]	Date Installed

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[1] e.g., silt fence, fiber log, inlet protection (include type).

[2] Use one line for each location an ECD is installed.

APPENDIX G

Training Log

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Appendix G: Training Log

Training Date	Name	Title	Signature

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G.4 Spill Prevention, Control, and Countermeasure Plan



Little Missouri Lateral Pipeline Project

SPILL PREVENTION, CONTROL, AND COUNTERMEASURE PLAN

DRAFT

Prepared by



January 2019

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APPENDIX B Federal Spill Reporting Requirements
APPENDIX C State Spill Reporting Requirements
APPENDIX D DOT-Approved Containers
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APPENDIX F Inspection of Waste Drums and Containers
APPENDIX G Typical Petroleum Storage and Handling Volumes on a Construction Spread
APPENDIX H Emergency Response Contractors; Disposal and Treatment Facilities

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1.0 INTRODUCTION

ONEOK Bakken Pipeline, L.L.C. (ONEOK) is committed to meeting or exceeding applicable federal, state, and local environmental requirements during the planning, construction, and operation of the Little Missouri Lateral Pipeline Project (hereby collectively referred to as the Project). This *Spill Prevention, Control, and Countermeasure (SPCC) Plan* was developed to establish basic procedures to prevent the discharge of hazardous or regulated materials during construction of the Project. The *SPCC Plan* is a guideline that sets forth minimum standards for the prevention of spills (handling and storing regulated substances) and for the minimization of impacts resulting from spills of fuels, petroleum products, or other regulated substances as a result of pipeline construction should a spill occur. This document is not a complete summary of all requirements.

The provisions of this *SPCC Plan* will be implemented by Project personnel during the construction of Project. The Contractor (i.e. pipeline construction general contractor) is responsible for understanding and complying with all applicable federal, state, and local requirements related to all aspects of work on the Project, including the transportation, storage, and disposal of polluting and hazardous materials. Other contractors (i.e. the reclamation contractor) are responsible for understanding and complying with applicable federal, state, and local requirements relating to their work on the Project, including the transportation, storage, and disposal of polluting and hazardous materials.

2.0 PLANNING AND PREVENTION

ONEOK's goal is to prevent spills and/or exposure to hazardous or dangerous substances during construction of the Project. The *SPCC Plan* is designed to reduce the likelihood of a spill, provide for prompt containment, and clean up if a spill does occur, comply with applicable state and federal laws as well, as other Project permit conditions throughout construction and restoration of the Project, and protect human health and the environment.

ONEOK requires its Contractors to implement proper planning and preventive measures to minimize the potential of spilling regulated substances such as fuels and petroleum products and to quickly and successfully clean up a spill should one occur. Potential sources of construction-related spills include (but are not limited to) storage tank leaks, machinery and equipment failure, and fuel handling and transfer accidents. The Contractor will be responsible for implementing, at a minimum, the planning and prevention measures contained in this document.

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2.1 ROLES AND RESPONSIBILITIES

The following roles and responsibilities have been developed by ONEOK for the Project.

2.1.1 Environmental Manager

The Environmental Manager will be a designated ONEOK Employee or a third-party Designee.

Eddie Zedaker
Telephone: (918) 595-1783
Email: Edwin.Zedaker@oneok.com

- The Environmental Manager will have a Lead Environmental Inspector (EI) located on each construction spread. The Lead EI may act on the behalf of the Environmental Manager on certain issues that will be defined before construction is started.
- The Environmental Manager will promptly report spills to appropriate federal, state, and local agencies when required.

- The Environmental Manager will coordinate with these agencies regarding contacting additional parties or agencies. The Environmental Manager may request that the Contractor's Spill Coordinator assist with these additional notifications.
- The Environmental Manager will help direct further response actions in accordance with the U.S. Environmental Policy Agency (EPA) guidelines and assist throughout the cleanup and disposal of wastes.
- All spills defined as "Reportable Spills" (Appendix B and C) must be reported immediately to the Field Construction Manager, Environmental Manager, and Lead EI.

2.1.2 Lead Environmental Inspector

- The Lead EI will monitor the Contractor's compliance with the provisions of this *SPCC Plan*.
- The Lead EI may act on the behalf of the Environmental Manager on certain issues that will be defined before construction is started.
- The Lead EI is an initial point of contact of the Spill Coordinator (in addition to the Field Construction Manager) when a spill occurs and will verify information is correctly reported on the spill form and conduct a follow up inspection, if required, to ensure that the spill was properly cleaned up.

2.1.3 Field Construction Manager

- The Field Construction Manager referred to in this plan will be a designated ONEOK employee or a third-party designee who is responsible for the management of construction activities on this Project (representing the Construction Manager for ONEOK).
- The Field Construction Manager is the initial point of contact of the Spill Coordinator (in addition to the Lead EI) when a spill occurs and determines the containment measures that may be required.
- The Field Construction Manager is responsible for documenting the general information regarding any spills such as work stoppages, injuries, fires, and the extent of exposure to workers on the site.
- The Field Construction Manager is responsible for overseeing the Contractor's response to a spill to ensure that appropriate notifications are completed, spill response resources are allocated, and cleanup is accomplished in accordance with the *SPCC Plan* and applicable agency requirements.
- The Field Construction Manager is responsible for coordinating any emergency response services that may be required such as the Fire Department, the Sheriff Department, or for contacting Emergency Response Contractors.

2.1.4 Contractor Construction Superintendent

- The Contractor's Construction Superintendent is responsible for designating the Spill Coordinator and communicating who that person is to the Environmental Manager, Lead EI, and Field Construction manager.

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2.1.5 Contractor Spill Coordinator

- A Spill Coordinator will be designated by Contractor's Construction Superintendent and employed by the Contractor.
- The Spill Coordinator is responsible for completing a Spill Report Form (Appendix A) for every spill event, regardless of the size/volume of material spilled. The completed Spill Report Form must be submitted to the Lead EI within 24 hours of the occurrence of the spill. The Spill Coordinator must then upload the spill information to ONEOK's various data management systems (e.g., STOMP).
- The Spill Coordinator will notify the Field Construction Manager and Lead EI immediately of any spill. All spills defined as "Reportable Spills" must be reported immediately to the Field Construction Manager, Environmental Manager, and Lead EI. Reportable spills will be defined by federal- and state-specific guidelines. (See Appendices B and C).
- The Spill Coordinator will mobilize on-site personnel, equipment, and materials for containment and/or cleanup commensurate with the extent of the spill.
- Prior to the start of construction, the Spill Coordinator must identify Emergency Response Contractors located in the area of the Project. The list of identified Emergency Response Contractors must be submitted to ONEOK for review and approval.
- The Spill Coordinator is responsible for coordinating the proper transport and disposal of contaminated media associated with the cleanup of a spill. Media will be disposed of at a state- and ONEOK-approved facility.
- The Spill Coordinator will assist the appropriate Emergency Response Contractor (Appendix H) and monitor containment activities to ensure that the actions are consistent with the requirements of this *SPCC Plan*.
- The Spill Coordinator will coordinate with the Environmental Manager regarding the need to contact additional parties or agencies. The Spill Coordinator should not contact an agency regarding a spill without authorization from the Environmental Manager and/or Lead EI.
- The Spill Coordinator and/or Lead EI or the Field Construction Manager, in consultation with appropriate agencies, will determine when it is necessary to evacuate spill sites to safeguard human health.

2.1.6 Authorized Personnel

- Authorized Personnel are representatives of the Contractor who are designated and properly trained to handle fuel, lubricants, or other regulated substances.
- Authorized Personnel will be familiar with the requirements of the *SPCC Plan* and the consequences of non-compliance.

2.1.7 Construction Personnel

- Construction Personnel are representatives of the Contractor involved with the pipeline Project.
- Construction Personnel will notify the crew foreman or Spill Coordinator immediately of any spill of a petroleum product or hazardous liquid, regardless of volume.

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2.2 TRAINING

- The Contractor will instruct construction personnel in the operation and maintenance of equipment to prevent an accidental discharge or spill of fuel, oil, and lubricants. Personnel will also be made aware of the pollution control laws, rules, and regulations applicable to their work.
- The Contractor will train construction personnel who handle fuels and other regulated substances on the proper methods to quickly and effectively contain and clean up spills that may occur, in accordance with applicable regulations.
- A spill prevention briefing will be scheduled and conducted by Contractor prior to the initiation of construction to assure adequate understanding of this *SPCC Plan*. The topics to be addressed at the briefing will include the following:
    - *SPCC Plan* contents;
    - Possible equipment failure and malfunction;
    - Precautionary measures;
    - Standard operating procedures in case of a spill;
    - Location of emergency response materials;
    - Refueling and maintenance restriction areas; and
    - Equipment, materials, and supplies to be maintained by Contractor and available for cleanup of a spill.

3.0 GENERAL BEST MANAGEMENT PRACTICES

The following general preventive actions and procedures will be implemented prior to and throughout construction.

3.1 TYPICAL FUELS, LUBRICANTS, AND HAZARDOUS MATERIALS MANAGEMENT

The table in Appendix G identifies fuels, lubricants, coolants, and other hazardous materials generally present on pipeline construction spreads and identifies typical total volumes, storage and transportation methods. The Contractor must provide ONEOK with a list of fuels, lubricants, and hazardous materials and the expected quantities that will be stored and/or maintained on each construction spread. Contractors must also have appropriate Safety Data Sheets (SDS) on-site for each product, as required by the Occupational Safety and Health Administration (OSHA).

3.1.1 Fuel, Lubricants, and Hazardous Material Storage Areas

- All petroleum products used by Contractor necessary for fueling and maintenance of construction equipment will be stored at a designated, well maintained, and secured/supervised location to minimize the environmental and safety impacts associated with releases of fuel, lubricants, or hazardous substances.
- Fuel, lubricant, or hazardous materials will be stored only in the designated staging areas and equipment storage yards, and will be at least 100 feet from all waterbodies, wetlands, environmentally sensitive areas, or municipal watersheds.
- Storage of potentially hazardous materials will not occur within a 150-foot radius of a private well or within a 400-foot radius of a municipal or community water supply well.

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- Fuels, lubricants, waste oil, and any other regulated substances will be stored in aboveground tanks only. Storage tanks and containers must conform to all applicable industry codes (National Fire Protection Association [NFPA], Unified Facilities Criteria [UFC], etc.).
- A suitable secondary containment structure must be utilized at each fuel, lubricant, and waste oil storage site. These structures must be lined with suitable plastic sheeting (seamless); provide a minimum containment volume equal to 150 percent of the volume of the largest storage vessel; and provide at least 1 foot of freeboard.
- Secondary containment areas must not have drains. Precipitation may be drawn off as necessary. If visual inspection indicates that no spillage has occurred in the secondary containment structure, accumulated water may be drawn off and sprayed on the surrounding upland areas. If spillage has occurred in the structure, accumulated waste will be drawn off and pumped into drum storage for proper disposal.
- If earthen containment dikes are used, they will be constructed with slopes no steeper than 3:1 (horizontal to vertical) to limit erosion and provide structural stability.
- Tools and materials to stop the flow of leaking tanks and pipes will be kept on-site. Such equipment may include, but not be limited to, plugs of various sizes, tank patches, hammer, screwdriver, plastic tape, and assorted sizes of metal screws with rubber washers. Fully furbished spill kits must be located at all fuel storage areas.
- Proper signage must be installed at and adjacent to fuel storage areas to include “Fuel Storage Area – No smoking within 50 feet.”
- No hazardous or potentially hazardous materials, other than essential materials (coating, sandblasting media, etc.), essential equipment fuel (gasoline, diesel, etc.), or standard lubricants (engine oils, grease, etc.) will be transported onto the right-of-way (ROW) or construction area without Environmental Manager coordination and approval.
- Construction equipment will be removed from wetlands and parked a minimum of 100 feet away from streams, wetlands, ditches, and other waterbodies at the end of each work day. Stationary equipment (e.g., pumps) or mainline construction equipment located within the 100-foot restriction zone must be placed within proper secondary containment upon approval from the Lead EI, if there are no practical upland areas available.

3.1.2 Equipment Maintenance and Lubrication Areas

- The Contractor will ensure that all equipment is free of leaks prior to use on the Project, and prior to entering or working in or near waterbodies or wetlands. The Contractor will perform and provide documentation to ONEOK of a pre-construction inspection and test of all equipment to ensure that it is in good repair prior to the equipment reaching the ROW.
- During construction, the Contractor will regularly (minimum of once daily) inspect hoses, pipes, valves, and tanks to ensure equipment is free of leaks. Any equipment that is leaking or in need of repair will be immediately removed from service and repaired, prior to resuming use of the equipment. Buckets/containment materials and absorbent materials (as necessary) will be placed under the equipment until the leak can be repaired.

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- Equipment that requires extensive repairs will be removed from the ROW until the repairs are completed or a protection plan will be developed by the Spill Coordinator and the Lead EI if the equipment cannot be moved.
- Precautionary measures will be implemented when performing equipment maintenance or repair activities including placing absorbent pads (or equivalent materials) on the ground beneath the equipment when changing crankcase oil, repairing hydraulic lines, or adding coolant to construction equipment and when appropriate for other repair activities.
- Maintenance, refueling, and lubrication of construction equipment is not allowed within 100 feet of a waterbody, wetland boundary, environmentally sensitive area, or within a municipal watershed, except as specified in Section 3.2.
- Equipment maintenance wastes, including used oils and other fluids, will be handled and managed by properly trained personnel. All equipment maintenance waste (e.g., oils and lubricants) will be collected in proper containers within the designated storage, refueling and lubrication areas and disposed of in accordance with Section 7.0 of this *SPCC Plan*. All equipment maintenance wastes will be properly disposed of at facilities permitted to receive hydrocarbon waste.

3.2 REFUELING

- Fuels will be dispensed by Authorized Personnel during daylight hours only unless otherwise approved by the Lead EI.
- Fuel dispensing operations will be attended by Authorized Personnel at all times. Personnel must be stationed at both ends of the hose during fueling unless both ends are visible and are readily accessible by one person.
- During refueling, the Contractor will take appropriate measures to reduce the risk of a spill, including not overfilling fuel tanks and placing an absorbent pad under the fuel nozzle while fueling equipment. Contractor personnel will observe and control refueling at all times to prevent overfilling.
- Fuel dispensing equipment (i.e., portable gas cans, nozzles, hoses, etc.) will be of the appropriate type.
- Refueling within 100 feet of waterbodies, wetland boundaries, environmentally sensitive areas, or within a municipal watershed is not allowed without approval from the Lead EI.
- In large wetlands where no upland site is available for refueling, auxiliary fuel tanks on construction equipment are recommended.
- Refueling will not occur within a 150-foot radius of all private wells and a 400-foot radius of all municipal or community water supply wells.
- When unique conditions require refueling within the restricted zones listed above the Contractor will consult with the Lead EI to determine necessary emergency equipment that will be in place and emergency response actions that will be conducted prior to refueling activities. At a minimum, the determination will consider the environmental and/or safety risks of relocating equipment to a refuel/lubrication area verses risks involved with refuel/lubrication in place. If requested by the Contractor, the Lead EI will evaluate site-specific conditions within the restricted zone and may require implementation of additional precautionary measures prior to approval of refueling within the restricted zones. In addition,

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absorbent materials or other spill containment materials will be available for immediate deployment prior to commencing refueling activities.

3.3 SPILL RESPONSE EQUIPMENT

- The Contractor must maintain spill kits containing a sufficient quantity of absorbent and barrier materials to adequately contain and recover foreseeable spills. These kits may include, but are not limited to absorbent pads, commercial absorbent materials, spill containment barriers, plastic bags and/or sheeting, skimmer pumps, holding tanks, and shovels. This equipment will be located near fuel storage areas and other locations as necessary to be readily available to control foreseeable spills.
- Each construction crew will have on hand sufficient supplies of absorbent materials, barrier material, and the U.S. Department of Transportation (DOT) approved containers to allow for rapid containment and recovery of any spill which may occur.
- All fuel, and where necessary, service vehicles, will carry spill containment materials adequate to control foreseeable spills.
- The Spill Coordinator will identify the locations of spill control equipment and materials and have them readily accessible during construction activity.
- All fuel nozzles will be equipped with functional automatic shut-offs and over-flow alarms.
- Fuel trucks transporting fuel to on-site construction equipment will travel only on approved access roads.
- Suitable plastic lining materials will be available for placement below and on top of temporarily-stored contaminated soils and materials.

4.0 GENERAL SPILL RESPONSE

The following guidelines specify the procedures used to control a release, notify appropriate Project personnel, complete site cleanup activities, and document corrective actions. In the event of a spill, the Contractor will abide by all applicable federal, state, and local regulations for cleaning up the spill. Refer to the following appendices for federal and state reporting requirements:

Appendix B - Federal spill reporting requirements

Appendix C - State of North Dakota spill reporting requirements

All spills, regardless of size, must be reported to the Spill Coordinator and Lead EI. All spills will also be recorded in ONEOK's data management system.

4.1 IMMEDIATE CONTAINMENT AND CLEANUP RESPONSE

Controlling spills and releases will be accomplished by stopping or segregating the source of the release, using the required stockpiled materials to contain the spill and, if warranted, stopping operations within the affected areas.

Immediately upon learning of any fuel, oil, hazardous material, or other regulated substance spill, the person discovering the situation will:

- Identify the source of the spill.
- Deploy absorbent materials and initiate actions to contain the fluid that has spilled.

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- Initiate action to eliminate the source of the spill (e.g., shut off valves, upright containers, stop pumps, etc.) to the maximum extent that is safely possible.
- Notify the crew foreman and/or the Spill Coordinator and provide them with the following information:
    - Location and cause of the spill;
    - The type of material that has spilled; and,
    - Whether the spill has reached or is likely to reach any surface water

Personnel should only respond to a spill if they have adequate training to do so safely. Upon learning of a spill or a potential spill the Spill Coordinator will:

- Accumulate as much information as possible as to the nature and size of the spill. This information will be recorded using the Construction Spill Report Form (see Appendix A) for documentation of the spill.
- Assess the situation and determine the need for further action which may include mobilizing additional personnel, equipment, and materials for containment and/or cleanup commensurate with the extent of the spill.
- Direct subsequent activities and/or further assign responsibilities to other personnel.
- Notify Project individuals as outlined in Section 2.1.5.
- If the Spill Coordinator determines that a spill is beyond the scope of on-site equipment and personnel, the Spill Coordinator will immediately notify the Environmental Manager and the Field Construction Manager that an Emergency Response Contractor is needed to contain and/or clean up the spill. Available Emergency Response Contractors are identified in Appendix H.
- The Spill Coordinator will assist the Emergency Response Contractor and monitor containment procedures to ensure that the actions are consistent with the requirements of this *SPCC Plan*.

4.1.1 Spills Occurring in Uplands

- In addition to the above measures, the following procedures will be followed for any spill occurring in an upland area.
- The source of the spill must be identified and contained immediately to the maximum extent that is safely possible.
- If a spill should occur during refueling operations, STOP the refueling operation until the spill can be controlled and the situation corrected.
- Absorbent material(s) will be placed over spills to minimize spreading and to reduce its penetration into the soil.
- If free-standing fluid is present, actions can be taken to skim fluids and place into DOT-approved containers.
- It is the responsibility of the contractor to ensure that spilled material, contaminated soil, and other materials associated with these releases is treated, collected, and/or disposed of in

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accordance with all applicable federal, state, and local agency requirements (see Sections 6.0 and 7.0 of this *SPCC Plan*).

- Flowing spills must be contained and/or absorbed before reaching sensitive resource areas such as surface waters or wetlands.
    - Plug all storm drains the spill may gain access to; and
    - Construct terrace dam or ditch to stop the spill's flow.

4.2 SPILLS OCCURRING IN WETLANDS OR WATERBODIES

In addition to the above measures, the following conditions will apply if a spill occurs near or into a stream, wetland, or other waterbody, regardless of the size of the spill:

- For spills into streams, lakes, or other waterbodies containing standing or flowing water, regardless of size, the Spill Coordinator must apprise the Field Construction Manager, Environmental Manager, and Lead EI of the incident immediately.
- For spills in standing water, sorbent booms, and pads will be on hand and used by the Contractor to contain and recover released materials. In addition, other spill response materials and equipment will be on hand as appropriate for each waterbody and used to contain and recover foreseeable spills. This may include containment booms, skimmer pumps, holding tanks, boats, and other equipment.
- If contaminated soils are present in wetlands contain as much of the spill as possible and contact the appropriate agencies before excavating the soil. Unless the agency deems otherwise, the contaminated soil must be excavated and temporarily placed on plastic sheeting in a bermed area, a minimum of 100 feet away from the wetland. Contaminated soils will be covered with plastic sheeting while being stored temporarily (5 days unless otherwise approved by ONEOK) and properly disposed of as soon as possible, in accordance with this *SPCC Plan* (see Sections 6.0 and 7.0).

4.3 NOTIFICATIONS

- Notify the Field Construction Manager and Lead EI of any spill and provide the necessary information by using the Construction Spill Report Form (Appendix A).
- All agency notifications will be accomplished at the direction of the Environmental Manager.
- If the situation warrants, the Field Construction Manager will notify appropriate local police, fire department, and/or area residents.
- Make other Contractor and ONEOK and agency notifications per the *SPCC Plan*, or as instructed by the Environmental Manager.
- The Contractor will have designated employees on-call 24 hours per day for notification of the emergency response companies referenced in Appendix H.

4.4 RECORDS

The Contractor will maintain written records of all actions taken during the course of a spill event.

5.0 REPORTABLE QUANTITY SPILL RESPONSE

The reporting, disposal, and pre-cleanup sampling requirements in this section apply to all spills of reportable quantities (Appendices B and C).

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5.1 IMMEDIATE SPILL RESPONSE ACTIONS

In addition to the responses listed above, the Contractor will implement the following steps in response to any spill of fuel, oil, hazardous materials, or other regulated substance of a reportable quantity:

- Stop operation of affected equipment/area, if warranted.
- Turn off utilities to the area, if necessary.
- Cordon the area to prevent entry of unnecessary personnel or equipment. Establish a single point of ingress and egress to control access to the spill area.
- Accumulate as much information as possible as to the nature and size of the spill. Use the Construction Spill Report Form (see Appendix A) for the type of information required.
- The Spill Coordinator and/or Field Construction Manager, in consultation with appropriate agencies, will determine when spill sites should be evacuated as necessary to safeguard human health. Evacuation parameters will include consideration for the potential of fire, explosion, and hazardous gases.

5.2 SPILL EVENT LOG ESTABLISHMENT

In addition to the Construction Spill Report Form, the Spill Coordinator will complete a Spill Event Log for reportable spills that documents all spill-related events and clean-up activities. The Spill Event Log will include the following information in the log:

- Time and date of initial notification of spill and approximate time the spill occurred.
- Start and completion time of all key activities.
- A detailed description of all activities undertaken and identification of personnel accomplishing these activities.
- Note time of all correspondence, personnel involved with the correspondence, and nature of the correspondence.

The log will be maintained by the Spill Coordinator until actions to clean up the spill are complete (within approximately 24 hours unless conditions extend the response to the emergency).

5.3 NOTIFICATIONS

The Spill Coordinator will:

- Notify the Environmental Manager, Lead EI, and the Field Construction Manager immediately of any reportable quantity spill and provide the necessary information by using the Construction Spill Report Form (Appendix A).
- Make other Contractor, ONEOK, and agency notifications per the *SPCC Plan*, or as instructed by the Environmental Manager. The Spill Coordinator should not contact an agency regarding a spill without authorization from the Environmental Manager and/or Lead EI.
- Notify local police or fire department if assistance is necessary.

5.4 REPORTABLE SPILL CONTAINMENT

In addition to the requirements listed in Section 4.0, the following procedures will also be implemented.

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- Ensure that all possible efforts are made to limit the migration of the surface spill until properly equipped cleanup teams can arrive.
    - Construct terrace dam or ditch to stop the spill's flow, as needed.
    - Scatter hay, straw, sand, or other similar materials to absorb the spill.
- Flowing spills must be contained and/or absorbed before reaching sensitive resource areas such as surface waters or wetlands.
- If free-standing fluid is present, actions can be taken to skim fluids and place into DOT-approved containers or pump into tank trucks.
- Use skimmers, pumps, or available absorbent materials to remove spill from water.
- If possible, create a back current to limit out-flow of material into open or flowing water.

6.0 CLEANUP REQUIREMENTS

6.1 GENERAL REQUIREMENTS

- Wipe down equipment with absorbent pads (or equivalent) where fuel, lubricants, or other materials have spilled.
- All soil within the spill area (e.g., visible traces of soil and a lateral and vertical buffer around the visible traces) must be excavated.
- All excavated material will be stored and disposed of in accordance with local, state, and federal regulations.
    - All cleanup soil and wastes will be collected in DOT-approved containers. See Appendix D for a listing of approved containers.
    - Appendix E contains guidance on how to manage the area used to temporarily store waste containers.
    - Appendix F contains guidance on inspection procedures for stored waste containers required by EPA Regulations.
- The ground will be restored to its original configuration by back-filling with clean soil.
- Cleanup requirements of a spill area will be completed within 48 hours after notification or knowledge of the spill.

6.1.1 Determination of Spill Boundaries in the Absence of Visible Traces

For spills where there are insufficient visible traces, yet there is evidence of a leak or spill, the boundaries of the spill will be determined using a statistically based sampling scheme. The Environmental Manager will provide sampling assistance.

6.1.2 Effect of Emergency or Adverse Weather:

Completion of cleanup may be delayed beyond 48 hours in case of circumstances including, but not limited to:

- Civil emergency;
- Adverse weather conditions;
- Lack of access to the site; and/or,

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- Emergency operating conditions.

The occurrence of a spill on a weekend, after hours overtime costs, or that the spill would require the shutdown of construction activities are not acceptable reasons to delay response.

Completion of cleanup may be delayed only for the duration of the adverse conditions. If the adverse weather conditions or time lapse due to other emergencies has left insufficient visible traces, a statistically based sampling scheme to determine the spill boundaries will be developed and implemented.

6.2 REPORTABLE SPILL RECORDS

All records that document reportable spill events and corrective actions taken will be maintained in the Project files for three (3) years from the date the corrective actions were completed. Documentation and certification of area decontamination will be conducted upon completion of and during all cleanup operations. The records and certifications will be completed, as follows:

- Identification of the source of the spill (e.g., type of equipment or container).
- Location and estimated area of spill.
- Estimated quantity of material spilled.
- Estimated or actual date and time of the spill occurrence.
- The date and time cleanup was completed or terminated (if cleanup was delayed by emergency or adverse weather, the nature, and duration of the delay).
- A brief description of the spill location.
- Pre-cleanup sampling data used to establish the spill boundaries if required due to insufficient visible traces, and a brief description of the sampling methodology used to establish the spill boundaries.
- A brief description of the solid surfaces cleaned and of the wash/rinse method used.
- Approximate depth of soil excavation and the amount of soil removed.
- A certification statement signed by the Construction Director, Spill Coordinator, and the Environmental Manager stating the cleanup requirements have been met and the information contained in the record is true to the best of his/her knowledge.
- The estimated cost of pre- or post-cleanup and sampling by man-hours, dollars, or both.

7.0 WASTE STORAGE AND DISPOSAL

7.1 STORAGE OF CONTAMINATED MATERIALS

- All contaminated soils, solvents, rags, and other materials generated during construction will be stored in DOT-approved containers in accordance with the applicable state and federal regulations. See Appendix D for a list of approved containers.
- Containers will be labeled with required waste label(s), dated, and inventoried.
- Spent oils, lubricants, filters, etc. will be collected and disposed of, or recycled, at an approved location in accordance with state and federal regulations.
- Containers will be placed in a designated accumulation point for disposal.

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- Containers may be stored at the construction site in the identified staging areas for up to 90 days from the date waste accumulation begins.
    - Appendix E contains guidance on how to manage the area used to temporarily store waste containers.
    - Appendix F contains guidance on inspection procedures for stored waste containers required by EPA Regulations.
- If it is necessary to temporarily store excavated soils on site, these materials will be placed on, and covered by, plastic sheeting, or placed in properly labeled ring-top 55-gallon drums and the storage area bermed to prevent and contain runoff.
- Any hazardous or contaminated material stored on ONEOK property or the ROW will be properly labeled in accordance with state and federal labeling requirements.

7.2 DISPOSAL OF CONTAMINATED MATERIALS

- All contaminated soils, solvents, rags, and other materials resulting from the cleanup actions will also be properly disposed of in accordance with the applicable state and federal regulations using permitted transporters and permitted disposal facilities.
- Only licensed carriers may be used to transport contaminated material from the site to a disposal facility.
- The Contractor will recycle those wastes, such as motor oil, where there is an established recycling program available.
- All hazardous waste containers will be properly manifested prior to departure from the construction area. The Contractor will be listed as the waste generator on the waste manifest. The Contractor and ONEOK will maintain all manifest records with the Project file for at least three years after the containers were shipped for disposal.
- Appendix H of this *SPCC Plan* lists potential treatment and disposal facilities for contaminated materials, petroleum products, and other construction-related wastes.

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APPENDIX A

CONSTRUCTION SPILL REPORT FORM

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APPENDIX A
CONSTRUCTION SPILL REPORT FORM

If a spill is below the reportable quantity complete only Section 1.

If the spill exceeds the reportable quantity complete both Sections 1 and 2.

Section 1 (All Spills)

Facility Name:_____ District/Region:_____

Facility Phone Number:_____

Facility Address:_____

Date of Spill:_____ Date of Spill Discovery:_____

Time of Spill:_____ Time of Spill Discovery:_____

Location of release: _____ County/State_____

Type of material spilled and manufacturer's name:_____

Substance released to (Check all that apply): Land__ Air__ Water__ Secondary Containment__

Estimated volume of spill: _____ Estimated volume recovered:_____

Brief description of the incident including cause and corrective action:_____

_____

_____

Person Completing Form (Contact):_____ Date:_____

Contact's Phone Number:_____

Section 2 (Reportable Spills)

Facility Type (well, tank, flow line, pit):_____

Spill Location: Address:_____

County:_____ Coordinates: Latitude_____ Longitude_____

PLSS: Township_____Range_____ Section_____

Additional Location Details:_____

_____

Spill medium (pavement, sandy soil, water, etc.):_____

Topography and surface conditions of spill site:_____

Soil/Geology Description:_____

Weather Conditions: Wind Direction ___ Wind Speed___ Temperature___ Precipitation_____

Proximity of spill to surface waters: _____

Did the spill reach Ground Water? _____ Yes _____ No

Did the spill reach Surface Water? _____ Yes _____ No

If so, was a sheen present? _____ Yes _____ No

Current Land Use:_____

Distance to nearest…

Spill Coordinator must complete this for any spill, regardless of size, and submit the form to the Company Environmental Manager and Chief Environmental Inspector within 24 hours of the occurrence.

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APPENDIX A
CONSTRUCTION SPILL REPORT FORM

Surface Water _____Wetland _____Building _____Livestock_____Water Wells_____

Depth to shallowest groundwater _____

Was there a fire associated with the release? ___Yes _____ No

Did the incident result in death or injury? ___Yes _____ No

Was there any immediate damage observed to plants or animals? ___Yes _____ No

Describe the extent of observed contamination, both horizontal and vertical (i.e., spill-stained soil in a 5-foot radius to a depth of 1 inch):

_____

_____

How was the extent of the spill determined?_____

Current status of cleanup actions:_____

Proposed Remediation Activities:_____

Describe measures to prevent reoccurrence:_____

Did the spill occur while in transit?_____

Duration of spill occurrence?_____

Directions from nearest community:_____

Name and Title of Discoverer:_____

Name of Operator:_____

Address of Operator:_____

Operator Contact Person:_____

Is the Operator the responsible party? _____Yes _____No

If no, what is the responsible party's name and contact information? _____

_____

List all parties and agencies notified (Counties, BLM, EPA, DOT, Local, etc.)

Date	Agency	Contact	Phone Number	Response

Spill Coordinator must complete this for any spill, regardless of size, and submit the form to the Company Environmental Manager and Chief Environmental Inspector within 24 hours of the occurrence.

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APPENDIX A
CONSTRUCTION SPILL REPORT FORM

Any additional information:_____

_____

_____

_____

_____

_____

Name/Company/Address/Phone Number for the following:

Construction Superintendent:_____

_____

Spill Coordinator:_____

_____

Environmental Manager:_____

_____

Person Who Reported the Spill:_____

_____

Environmental Inspector:_____

_____

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Spill Coordinator must complete this for any spill, regardless of size, and submit the form to the Company Environmental Manager and Chief Environmental Inspector within 24 hours of the occurrence.

APPENDIX B

FEDERAL SPILL REPORTING REQUIREMENTS

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APPENDIX B
FEDERAL SPILL REPORTING REQUIREMENTS

PURPOSE:

This procedure identifies reportable quantities for releases of oil or hazardous substances in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, Emergency Planning and Community Right-to-Know Act (EPCRA) Section 304, the Clean Water Act (CWA), the Oil Pollution Act of 1990 (OPA 90), and the Toxic Substances Control Act (TSCA).

RESPONSIBILITY FOR ADMINISTRATION:

Contractor's Spill Coordinator is responsible for administration of this procedure.

GENERAL:

I. Reportable quantity is the quantity of a release which requires agency notification.

II. A list of Reportable Quantities (RQs) for chemicals subject to spill reporting specified by the EPA can accessed at: http://www2.epa.gov/epcra/consolidated-list-lists.

III. RQs for materials are based on the chemical's constituents and concentrations. Please refer to a Data Safety Sheet (SDS) to determine the constituents and concentrations of the material that has been spilled. If the concentration of all of the constituents of a material are known, notification is required where an RQ of any constituent is exceeded. If the concentration of the constituents of a mixture is unknown, notification is required where the total amount of mixture released exceeds the RQ for the constituent with the lowest RQ.

IV. Any amount of oil spill into navigable waters is reportable. Oil spills onto land may be required to be reported, depending upon quantity spilled and state regulations. State spill requirements are detailed in Appendix C.

V. Typical materials stored on a construction spread are detailed in Appendix G.

REPORTING REQUIREMENTS:

I. If any quantity of oil or a hazardous substance is discharged into or upon the navigable waters of the United States, or adjoining shorelines; or the spill causes a sheen on a waterway (pond, lake, river, wetland, etc.) report the spill to the National Response Center (NRC) (800-424-8802). The NRC may determine that a spill report, as described in Section II below, be completed and submitted.

II. If oil is discharged in an amount greater than 1,000 gallons in one spill or if there are two discharges of 42 gallons or more of oil within a 12-month period.

A. Report the spill to the NRC (800) 424-8802.

B. Submit a written report within 60 days to the U.S. Environmental Policy Agency (EPA) Regional Administrator (Region 8) and the state agency.

C. The report to the EPA Regional Administrator and the state agency will include:

1. Name of facility;

Spill Coordinator must complete this for any spill, regardless of size, and submit the form to the Company Environmental Manager and Chief Environmental Inspector within 24 hours of the occurrence.

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2. Name(s) of the owner or operator of the facility;
3. Location of the facility;
4. Date and year of initial facility operation;
5. Maximum storage or handling capacity of the facility and normal daily throughput;
6. Description of facility, including maps, flow diagrams, and topographical maps;
7. A complete copy of the *Spill Prevention, Control, and Countermeasure (SPCC) Plan* with amendments;
8. The cause of the spill, including a failure analysis of the system or subsystem in which the failure occurred;
9. The corrective actions and/or countermeasures taken, including description of equipment repairs and replacements;
10. Additional preventive measures taken or contemplated to minimize the possibility of recurrence; and,
11. Any additional information the EPA Regional Administrator may require pertinent to the *SPCC Plan* or spill event.

III. If a release of hazardous substance or extremely hazardous substance in excess of RQs listed in 40 Code of Federal Regulations 302 or a hazardous waste spill has been released into the environment the National Response Center (NRC) ((800) 424-8802), State Emergency Planning Commission (SERC) and Local Emergency Planning Commission (LEPC) must be notified.

A. Contact the required agencies with the pertinent spill information.

B. Provide verbal notification of the following information:

1. Name and telephone number of reporter;
2. Name and address of facility;
3. Type of substance discharged;
4. Quantity of substance discharged;
5. Location of discharge;
6. Actions the person reporting the discharge proposes to take to contain, cleanup and remove the substances, if any; and,
7. Any other information concerning the discharge which may be requested by the Agency at the time of notification.

Spill Coordinator must complete this for any spill, regardless of size, and submit the form to the Company Environmental Manager and Chief Environmental Inspector within 24 hours of the occurrence.

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C. Submit a written report on the incident to the appropriate state and local agency. The report will include the following:

1. Name, address, and telephone number of the owner or operator;
2. Name, address, and telephone number of the facility and a detailed location of the spill;
3. Date, time, and type of incident;
4. Name and quantity of material(s) involved;
5. The extent of injuries, if any;
6. An assessment of actual or potential hazards to human health or the environment, where this is applicable;
7. Assessment of the scope and magnitude of the spill;
8. Description of the immediate actions that have been taken and the estimated quantity and disposition of recovered material that resulted from the incident; and,
9. Provide an implementation schedule for undertaking suggested measures to eliminate the spill.

Spill incident reports will be maintained in the Project files for a minimum period of three (3) years.

RESPONSIBILITY FOR PROCEDURE:

Address any questions to the Environmental Manager:

Eddie Zedaker
Telephone: (918) 595-1783
Email: Edwin.Zedaker@oneok.com

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Spill Coordinator must complete this for any spill, regardless of size, and submit the form to the Company Environmental Manager and Chief Environmental Inspector within 24 hours of the occurrence.

APPENDIX C

STATE SPILL REPORTING REQUIREMENTS

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These guidelines are intended to help the Environmental Manager determine reportable spills in each state through which the Project passes. In addition to the guidelines listed below, any substantial natural gas release which could cause an agency to initiate an unneeded emergency response should be considered reportable. The Environmental Manager and Spill Coordinator will maintain a copy of the latest edition of the TITLE III List of Lists.

NORTH DAKOTA

NORTH DAKOTA DEPARTMENT OF HEALTH (NDDH) EMERGENCY RESPONSE at (701) 328-8100 or (800) 472-2121 (State Radio 24-Hour Hotline - valid only in North Dakota).

All releases or spills of hazardous or deleterious substances or other wastes, regardless of size, must be properly and expeditiously managed, contained, and removed to protect public health and the environment.

NDDH must be notified of a spill of any size that could enter a waterway (stream, river, pond, lake, shoreline, wetland, ditch) must be reported. You should consider reporting any spill that cannot be cleaned up immediately or that has entered or is likely to enter a storm drain at your facility.

All releases and spills should be reported immediately to NDDH-Environmental Incident Reporting at:

- (800) 472-2121 or (701) 328-9921 (emergency, 24 hours)
- (800) 773-3259 or (701) 328-8100 (non-emergency, M-F 9-5:00)

The following types of spills must be reported:

- Releases or spills of hazardous substances in amounts that meet or exceed the reportable quantities in 40 Code of Federal Regulations (CFR) Part 302.
- Spills, overfills, and suspected releases from underground storage tanks and petroleum storage tanks. ARM 17.56.501, et seq.
- Releases or spills of any materials that would lower the quality of groundwater below water quality standards. ARM 17.30.1045.
- Any spill or discharge of liquid or solid (not gaseous) waste which may cause pollution of waters of the state **must be reported immediately**.

Online Incident Report Form: http://www.ndhealth.gov/ehs/eir/eirform.htm

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APPENDIX D

DOT-APPROVED CONTAINERS

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APPENDIX D
DOT-APPROVED CONTAINERS

PURPOSE:

This procedure provides a listing of containers which have been approved by the U.S. Environmental Policy Agency for storage of contaminated materials or wastes. These drums may be ordered from drum suppliers by specification number:

I. Specification 5 - steel barrel or drum with removable head:

- A. Body seams welded;
- B. Chime (reinforced rim) reinforced;
- C. Heads closed by 12 gauge bolted ring with drop forged lugs;
- D. Marked “DOT-5.”

II. Specification 5B - steel barrel or drum with removable head:

- A. Body seams welded;
- B. Chime (reinforced rim) reinforced;
- C. Heads closed by 12 gauge bolted ring with drop forged lugs;
- D. Marked “DOT-5B.”

III. Specification 6D Overpack; cylindrical steel overpack, straight sided, for inside plastic container. Specification 6D Overpack must be used with the specification 2S of 2SL plastic container.

IV. Specification 2S - polyethylene container:

- A. No removable heads;
- B. Constructed with new polyethylene resin;
- C. Marked “DOT-2S;”

V. Must fit snugly in overpack container (Spec. 6D). Specification 2SL - molded or thermoformed polyethylene container:

- A. No removable heads;
- B. Constructed with new polyethylene resin;
- C. Marked “DOT-2SL;”
- D. Must fit snugly in overpack container (Spec. 6D).

VI. Specification 17C - single trip container, steel drum:

- A. Removable heads are authorized;
- B. Crowned head;
- C. Heads closed by 12 gauge bolted ring with drop forged lugs;
- D. Marked “DOT-17C.”

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APPENDIX E

HANDLING CONTAINERS AND DRUMS

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APPENDIX E
HANDLING CONTAINERS AND DRUMS

PURPOSE:

This procedure provides general requirements for the design of areas used to store containers and drums, in accordance with U.S. Environmental Policy Agency regulations 40 Code of Federal Regulations (CFR) Part 112 and 40 CFR Part 265.170.

RESPONSIBILITY FOR ADMINISTRATION:

The Contractor's Spill Coordinator will be responsible for this procedure.

GENERAL:

I. This procedure covers container and drum storage areas storing oils and petroleum distillates and non-permitted Hazardous Waste container and drum storage areas.

II. It is not necessary to permit Hazardous Waste container and storage areas if the waste is stored for less than 90 days. Secondary containment is not required for non-permitted Hazardous Waste container and drum storage areas.

PROCEDURE:

I. All containers and drums must be stored to avoid contact with the ground and standing water and protected to prevent rupture or leakage and to facilitate inspection.

II. The areas with containers and drums in which oil and petroleum distillate are stored and have the potential to be spilled off site must be designed to contain spills and releases. Appropriate secondary containment may include dikes, berms or retaining walls sufficiently impermeable (10^{-5} centimeters per second) to contain spill oils.

III. The following applies to hazardous waste containers and drums:

A. Containers and drums holding ignitable or reactive Hazardous Waste must be stored at least 50 feet from the property line of boundary. Follow manufacturer's instructions regarding appropriate storage of product containers and drums.

B. Hazardous Waste containers and drums must be separated and protected from incompatible materials by means of dike, berm, retaining wall or other approved means. Incompatible materials are wastes which, when mixed, can produce effects which are harmful to human health and the environment, such as (1) heat and pressure, (2) fire or explosion, (3) violent reaction, (4) toxic fumes or, (5) flammable fumes.

C. Hazardous Waste containers and drums must be inspected weekly. That inspection will be documented, as per requirements listed in Appendix F.

IV. The Contractor will comply with all rules for Hazardous Waste Generators for satellite accumulation under 40 CFR 262.24(c)(1)(ii):

A. Mark each container with the words "Hazardous Waste."

B. Containers must be in good condition and kept closed except when adding or emptying waste. In addition, containers must not contain waste that is incompatible with the containers.

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V. Conditionally Exempt Small Quantity Generators and Small Quantity Generators of Hazardous Waste must comply with the following:

A. Meet all conditions outlined in Procedure Section II.

B. Mark each drum or container with the words “Hazardous Waste.”

C. Label each drum or container with the date it is first used and the date it is last used.

RECORDS:

Storage area inspection records must be kept with the Project files for a minimum period of three (3) years.

RESPONSIBILITY FOR PROCEDURES:

Address any questions to the:

Environmental Manager
Eddie Zedaker
Telephone: (918) 595-1783
Email: Edwin.Zedaker@oneok.com

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APPENDIX F

INSPECTION OF WASTE DRUMS AND CONTAINERS

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APPENDIX F
INSPECTION OF WASTE DRUMS AND CONTAINERS

PURPOSE:

This procedure outlines inspection requirements for waste drums and containers as required by Federal Regulations 40 Code of Federal Regulations (CFR) 262 - 265 and 40 CFR 761.

RESPONSIBILITY:

The Contractor's Spill Coordinator is responsible for implementation of this procedure.

GENERAL:

I. Drums and containers used to store hazardous substances and wastes will be inspected for leaks, malfunctions, deterioration, operator errors, and discharges which may lead to a release into the environment or a threat to human health.

II. If problems are discovered during the inspection, remedial action will be taken immediately. The action taken will be noted on the inspection report form.

PROCEDURE:

I. Each waste drum and container will be inspected, and records maintained on a Waste Container Inspection Form. Inspection records will include the date and time of the inspection, the name of the inspector, observations, and the date and nature of any problems, repairs, and remedial action.

A. Waste drum and container storage areas will be inspected weekly for the following:

1. Leaking containers, deterioration of containers, and deterioration of the spill containment system.

2. Drums and containers will be properly labeled and dated.

3. Drums and containers will be stored on pallets or drum racks.

B. If a drum or container is leaking, the incident will be recorded on the inspection form and immediately cleaned up according to the Spill Prevention, Control, and Countermeasure Plan.

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APPENDIX F
INSPECTION OF WASTE DRUMS AND CONTAINERS

RECORDS:

I. Inspection records will be maintained in the Project files for three (3) years from the date of inspection.

II. A report of the remedial action taken for leaks will be prepared and kept with either the original inspection forms, inspection log or in the records of the Project. These records will be maintained for three (3) years with the Project files.

RESPONSIBILITY FOR PROCEDURE:

Address any questions to the:

Environmental Manager
Eddie Zedaker
Telephone: (918) 595-1783
Email: Edwin.Zedaker@oneok.com

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APPENDIX F
INSPECTION OF WASTE DRUMS AND CONTAINERS

WASTE CONTAINER INSPECTION FORM		
Facility: _____	Type of Container: _____	
Date	**Deficiencies Noted**	**Inspected By**

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APPENDIX G

TYPICAL PETROLEUM STORAGE AND HANDLING VOLUMES ON A CONSTRUCTION SPREAD

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APPENDIX G
TYPICAL PETROLEUM STORAGE AND HANDLING VOLUMES ON A CONSTRUCTION SPREAD

	Fluids	Typical Amounts	Storage	Typical Transport Mode
Fuels	Diesel	6,000-12,000 Gallons	1-3 Tanks or Tankers stored at Contractor locations 5-gallon cans, 100-gallon storage in pickups, etc.	1-3 Fuel Trucks, 1-3 "Fuel Skids"
	Military Aviation Kerosene [1]	6,000-12,000 Gallons		
	Kerosene [1]	6,000-12,000 Gallons		
	Gasoline	5,000 Gallons		
Lubricant	Engine Oil	< 500 Gallons	Bulk Storage or Retail Packaging at Contractor Yard Warehouse	1-3 "Grease" Trucks
	Transmission/ Drive Train Oil	< 500 Gallons		
	Hydraulic Oil	< 500 Gallons		
	Gear Oil	< 500 Gallons		
	Lubricating Grease	20-30 cases of 24 cans per case		
Coolants	Ethylene Glycol	100 Gallons		
	Propylene Glycol	100 Gallons		

[1] Used straight or as additives only in extremely cold weather.

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APPENDIX H

EMERGENCY RESPONSE CONTRACTORS; DISPOSAL AND TREATMENT FACILITIES

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APPENDIX H
EMERGENCY RESPONSE CONTRACTORS; DISPOSAL AND TREATMENT FACILITIES

The Contractor must dispose of all wastes according to applicable state and local requirements and is responsible for complying with all interstate requirements for transporting hazardous materials across state lines. A listing of potential Emergency Spill Response Contractors and waste disposal facilities is provided below. This list was developed from state-wide databases. This list represents firms operating at the time the data base was produced. These firms are not necessarily endorsed by ONEOK. The Contractor is responsible for verifying if a contractor or facility is currently operating under appropriate permits or licenses. Selection of an Emergency Response Contractor or disposal facility is subject to approval by ONEOK. The Contractor is responsible for ensuring wastes are disposed of properly.

Spill Response Contractors

Name/ Company	Under Contract	Phone Number(s)	Location	Services Provided
Clean Harbors Environmental Services	☐ Yes ☐ No	(800) 645-8265	Locations Nationwide	24-hour Emergency Response
SWAT Consulting	☐ Yes ☐ No	(866) 610-7928	12 Sunrise Estates Rd, Watford City, ND 58854	24-hour Emergency Response
JMAC Resources	☐ Yes ☐ No	(701) 774-8511	121 48th Ave. SW Williston, ND 58801	Emergency Spill Response Hazardous Waste Transport

Waste Handling/Disposal Contractors

Name/ Company	Under Contract	Phone Number(s)	Location	Services Provided
Nuverra Environmental Solutions	☐ Yes ☐ No	(701) 580-0336	13195 26th St NW Arnegard, ND 58835	Petroleum Contaminated Soil disposal facility
IHD Environmental	☐ Yes ☐ No	(701) 774-8514	14070 43rd St NW, Alexander, ND 58831	Petroleum Contaminated Soil disposal facility

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G.5 Horizontal Direction Drilling Inadvertent Release Control Plan

Little Missouri Lateral Pipeline Project

HORIZONTAL DIRECTIONAL DRILLING INADVERTENT RELEASE CONTROL PLAN

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Prepared by:

merjent

January 2019

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LIST OF ACRONYMS AND ABBREVIATIONS

EI	Environmental Inspector
ESA	Environmentally Sensitive Area
HDD	Horizontal Directional Drill
SDS	Safety Data Sheet
ONEOK	ONEOK Bakken Pipeline, L.L.C..
PCN	Preconstruction Notification
Project	Littler Missouri Lateral Pipeline Project

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1.0 PURPOSE AND NEED

ONEOK Bakken Pipeline, L.L.C. (ONEOK) has developed this *Horizontal Directional Drilling Inadvertent Release Control Plan* for the Little Missouri Lateral Pipeline Project (Project). The horizontal directional drill (HDD) method will be used to install the pipeline at selected waterbody crossings and certain other features that will not be open cut/trenched and are not suitable for conducting a bore. Under optimal conditions, the HDD method involves no disturbance to the bed or bank of the waterbody being crossed or allows the highway, steep slope, or environmentally sensitive area (ESA) to be crossed without excavating between the HDD entry and exit points. However, if a natural fracture or unconsolidated area in the ground is encountered, an unexpected release of drilling fluid to the environment could occur. The objective of this *HDD Inadvertent Release Control Plan* is to provide procedures that will minimize the potential for release of drilling fluid into sensitive resource areas such as wetlands, waterbodies, and ESAs, or onto the adjacent surface soils, and should a release occur, prescribe measures to control the extent of the release and cleanup and dispose of the drilling fluid.

2.0 DRILLING BASICS

The HDD method is a technically advanced process involving specialized equipment and skilled operators. The method involves placing a drill unit on one side of the feature to be avoided (e.g., a stream) and drilling a small-diameter pilot hole under the feature along a prescribed profile. After the pilot hole has been completed, specialized reaming tools are used to enlarge the pilot hole to accommodate the desired diameter for the pipeline. Once the properly-sized hole is established, the pipe section is pulled through the hole by the drilling rig and welded to the adjoining sections of pipe on each side of the feature.

3.0 DRILLING FLUID AND DRILLING FLUID SYSTEM

The directional drilling process uses drilling fluid consisting primarily of water and bentonite, a naturally occurring clay. Drilling fluid removes the cuttings from the bore hole, stabilizes the walls of the bore hole and acts as a coolant and lubricant to the drill bit during the drilling process. The drilling fluid mixture consists of a small percentage of bentonite clay and inert solids generated during the drilling process from the bore hole cuttings with the remainder being water. Under certain conditions an additive may need to be mixed with the drilling fluids/mud for viscosity or lubricating reasons. Only non-hazardous additives will be used and a Safety Data Sheet (SDS) for all additives will be maintained on-site.

The drilling fluid is prepared in the mixing tank using both new and clean recycled drilling fluid. The fluid is pumped through the center of the drill pipe to the drilling tools. Return flow is through the annulus created between the wall of the drilled hole and the drill pipe. During pilot hole drilling the cuttings are returned to a small excavation at the entry point called the entry pit. From the entry pit, the returned fluid is pumped to the fluid processing equipment. Typically, shaker screens, desanders, desilters, and centrifuges process and remove increasingly finer cuttings from the drilling fluid. The cleaned fluid is recycled to the mixing tank for reuse in the borehole. The cuttings removed by the cleaning process are disposed of at a site approved to accept this type of material.

4.0 DRILLING FLUID RELEASE

The primary environmental risk associated with the HDD crossing method comes from the potential for inadvertent release (IR) of drilling fluid into a waterbody, wetland, or ESA. A drilling fluid release is indicated when pressure in the drill hole is not maintained and/or a loss of circulation of drilling fluids occurs. Minimal, consistent losses of drilling fluid are common during the drilling process due to the fluid filling natural voids in layers of loose sand, gravel, or fractured rock encountered along the drilling

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path. Larger losses of circulating drilling fluid and a reduction in drilling pressure indicate that seepage is occurring outside of the hole.

4.1 PREVENTION

Drilling fluid releases can occur when the drilling path encounters naturally occurring fractures in bedrock or other voids in the strata that allow the pressurized drilling fluid a less resistant path to the surface. Drilling fluid releases may also be caused by blockage of the return flow path around the drill pipe where pressurization of the drilling fluid rises above the containment capability of the overburden soil material. The following will be implemented as preventive measures to reduce the potential for a release of drilling fluid.

4.1.1 Suitable Material and Adequate Overburden

Prevention of drilling fluid seepage is a major consideration in determining the profile of the HDD crossing. A minimum 15-foot depth of cover below the bottom of a waterbody is required to provide a margin of safety against drilling fluid seepage.

The areas that present the highest potential for drilling fluid seepage are the drill entry and exit points where the overburden depth is minimal. Appropriate containment materials will be staged near the entrance and exit locations for quick deployment should an inadvertent return occur within these areas.

4.1.2 Pipeline Geometry

The geometry of the pipeline profile can affect the potential for drilling fluid seepage. In a profile which forces the pipe to make compound or excessively tight radius turns, key-seating of the drill pipe may develop, blocking the return flow to surface, allowing down-hole pressures to build up, thereby increasing the potential for drilling fluid seepage. The profiles for ONEOK's pipeline crossings minimize this potential, with very smooth and gradual vertical curves in the crossing profile, therefore affording consistent cover under the waterbody. Therefore, the potential for pressure buildup caused by pipeline geometry has been minimized.

4.1.3 Pre-construction Planning

Prior to initiating the drill, IR response equipment required by this Plan will be staged on site. All personnel working the drill site will be trained on the requirements of this Plan and, where applicable, on-site briefings about the sensitive nature of the feature being crossed will be conducted.

4.1.4 Pre-construction Measures for Environmentally Sensitive Areas

ONEOK will avoid all streams and wetlands that would trigger a Preconstruction Notification (PCN) with the U.S. Army Corps of Engineers (USACE/Corps). ONEOK will accomplish this by either routing around PCNs or by using an HDD or conventional bore methods to avoid the features. Locations on or immediately adjacent to the right-of-way (ROW) will have specific mitigation measures on the ESA plans.

The Little Missouri Lateral Pipeline will cross ESAs using the HDD or conventional bore method. Instructions for ESA crossings are given throughout this *HDD Inadvertent Release Control Plan*. Refer to site-specific ESA plans for further information.

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Prior to construction in an ESA, the following measures will be implemented:

- ESAs will be marked with signage, exclusion fencing, or both;
- Cultural and Biological surveys will be conducted of the drilling entry and exit areas, surrounding work areas, and the drilling route to ensure that there are no cultural materials present on the surface;
- Excavation of all entry and exit points will receive full-time monitoring where required by ONEOK;
- Barriers will be installed between the bore site and the sensitive resource(s) to prevent released mud from reaching the sensitive resources;
- Ensure that all personnel understand their responsibility for timely reporting of IRs of drilling mud by conducting on-site briefings;
- Maintain necessary response equipment at an accessible location; for each wetland or waterbody crossed equipment will be available on both sides of the feature outside of the ESA; and
- Mats will only be allowed at some ESAs. The contractor will need to review the ESA plans prior to construction for restrictions.

4.1.5 Responsibility of HDD Contractor and Operator

ONEOK's HDD contactor is responsible for execution of the HDD, including actions for detecting and controlling drilling fluid seepage as well as containment and cleanup of inadvertent returns.

4.2 DETECTION AND MONITORING PROCEDURES

To determine if an IR has occurred, HDD activities will be constantly monitored on this project. Monitoring procedures will include:

- Continuous inspection along the drill path during active drilling with mud circulation. Construction observers will be briefed on what to watch for and will be made aware of the importance of timely detection and response actions to any release of drilling mud.
- Construction observers will have appropriate operational communication equipment (e.g., radio and/or cell phone) available at all times during installation of the HDD crossing, with the ability to communicate directly with the HDD operations control center.
- Continuous examination of drilling mud pressure gauges and return flows to the surface pits. If the HDD operator realizes a sustained loss in fluid pressure or loss of circulation, the operator will immediately notify the construction observers of the assumed position of the drill head who will attempt to locate the potential release. The environmental and construction inspectors will be immediately notified of a release or potential release.
- If a release occurs in a wetland, containment of the drilling fluids and continued inspection to determine any potential for movement of released drilling mud within the wetland, and collection of drilling mud returns at the location for future analysis, as required.
- If a release occurs in a wetland or waterbody, monitoring of the release will be documented by ONEOK. Access to edge of waterbody will be necessary so that ONEOK will keep photographs of release events on record.

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5.0 NOTIFICATION PROCEDURES

Corrective action will begin immediately when monitoring indicates a release is occurring or has occurred. The Construction Inspector or ONEOK will immediately notify ONEOK's construction management personnel and Lead Environmental Inspector (EI). In the case of an IR during the crossing of a designated ESA, wetland or waterbody, the contactor will notify the Spill Coordinator, the Environmental Manager, Lead EI, and the designated Cultural Resources Specialist (in the case of a release within an ESA).

ONEOK will notify the appropriate agencies upon discovery of an IR to an ESA, waterbody, or wetland, detailing the location and nature of the release, corrective actions being taken, and whether the release poses any threat to public health and safety.

6.0 CORRECTIVE ACTION

In the event an inadvertent drilling mud release is observed during an HDD crossing, the release will be assessed to determine the amount of drilling mud being released and potential for the release to reach sensitive resource areas (e.g., wetlands, waterbodies, or environmentally sensitive areas). Response measures will vary based on location of IR as discussed below.

As discussed above, the greatest potential for drilling fluid seepage is during drill entry and exit where the overburden is reduced for entry and exit of drilling tools at the low approach angle. In the contingency planning for the pipeline crossings, drilling fluid seepage containment will be incorporated into the drill plan. The entry or exit locations will generally be located in upland areas on a dry land segment where drilling fluid seepage can be readily detected and contained. Containment response and clean-up equipment is required to be available at both sides of the HDD crossing location prior to the commencement of the HDD to assure a timely response in the event of an IR of drilling fluid.

Containment and response equipment may include but is not limited to:

- Silt fence;
- Plastic sheeting;
- Shovels and other appropriate hand tools;
- Squeegees;
- Pails;
- Push brooms;
- Pumps and sufficient hose;
- Mud storage tanks;
- Vacuum truck on 24-hour call (arrange for this service before drilling begins);
- Pre-filled sandbags;
- Geotextile fabric;
- One small boat (for larger rivers and open water wetlands);
- Steel box or large-diameter pipe section (or the equivalent) that, under appropriate conditions, could be used to contain an IR of drilling mud; and
- Light plant/generator.

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ONEOK will address an IR immediately upon discovery. The following measures will be implemented to minimize or prevent further release, contain the release, and clean up the affected area:

Upland Release:

These measures apply to upland releases unless the release occurs adjacent to a wetland, waterbody, or ESA such as a stream bank or steep slope, where drilling mud releases could quickly reach a resource. If the release occurs adjacent to a wetland, waterbody, or ESA use the measures listed below that apply:

- Determine and implement any modifications to the drilling technique or composition of drilling fluid (e.g., thickening of mud by increasing bentonite content, temporary lowering of the downhole pressures) to minimize or prevent further releases of drilling mud.
- Place containment structures at the accessible affected area to prevent migration of the release.
- If the amount of the release is large enough to allow collection, the drilling mud will be collected and returned to either the drilling operations or a disposal site by hose or tanker.
- If the amount of the release is not large enough to allow collection, the released drilling fluid will be swept, shoveled, or mixed with sand and temporarily left in place to dry. If the amount of the release is not large enough to allow for the practical physical collection from the affected area, it will be diluted with clean water.
- If not in a designated ESA, reduce drilling operations if the mud release cannot be effectively contained within accessible containment areas. Within designated an ESA, drilling operations will be suspended if drilling mud cannot be effectively contained.
- If public health and safety are threatened by an IR, drilling operations will be shut down until the threat is eliminated. This measure will be taken as a last resort because of the potential for drill hole collapse resulting from loss of down-hole pressure.

Waterbody Release:

- If a release occurs within a waterbody, the Environmental Manager will contact the appropriate agency as soon as possible to inform them if there is a potential threat to public health and safety and explain whether the release can be corrected without incurring additional environmental impact. If necessary, drilling operations will be reduced to assess the extent of the release and to implement corrective actions.
- Continuously review and adjust drill pressures and pump volume rates to minimize the extent of the release.
- If the release is a single-point release, accessible with a hose and truck, attempt to ‘cap’ the release, if possible, by placing a section of pipe over the release to contain the fluid within the pipe section. With a larger release, attempt to place a water-filled bladder around the release in order to isolate it from the waterbody prior to removal. After the release is contained, the fluid will be pumped into trucks and reused or disposed of at an appropriate facility.
- If public health and safety are threatened, drilling fluid circulation pumps will be turned off. This measure will be taken as a last resort because of the potential for drill hole collapse resulting from loss of down-hole pressure.

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- ONEOK will assist agencies by collecting water samples, if required.
- If monitoring indicates that the intake water quality at downstream user locations is impacted to the extent that it is no longer suitable for treatment, alternative water sources (i.e., trucked or bottled water) will be provided to impacted users.

Wetland/Riparian Area Release:

- Evaluate the release to determine if containment structures are warranted and can effectively contain the release. When making this determination, ONEOK will also consider if placement of containment structures will cause additional adverse environmental impact.
- If a release occurs within the wetland, reasonable measures, within the limitation of directional drilling technology and Contractor's capability, will be taken to re-establish drilling mud circulation.
- Determine and implement any modifications to the drilling technique or composition of drilling fluid (e.g., thickening of mud by increasing bentonite content, temporary lowering of the downhole pressures) to minimize or prevent further releases of drilling mud.
- Upon completion of the drilling operations, ONEOK will consult with applicable regulatory agencies to determine any final clean-up requirements for the IR.
- If public health and safety are threatened by the IR, drilling operations will be shut down until the threat is eliminated. This measure will be taken as a last resort because of the potential for drill hole collapse resulting from loss of down-hole pressure.
- ONEOK will assist regulatory agencies with any sampling they may require.

ESA Release:

- If a release occurs within an ESA, contact the Lead EI immediately so that they may assess the situation. The EI will contact the Environmental manager who will notify the appropriate agency as soon as possible to inform them of a release. The Environmental Manager will communicate whether the release can be corrected without incurring additional environmental impact. If necessary, drilling operations will be reduced to assess the extent of the release and to implement corrective actions. Depending on circumstances, federal, state, and/or local agencies may require further action.
- Continuously monitor the release.
- Evaluate the release to determine if containment structures are warranted and can effectively contain the release. When making this determination, ONEOK will also consider if placement of containment structures will cause additional adverse environmental impact.
- Continuously review and adjust drill pressures and pump volume rates to minimize the extent of the release.
- If public health and safety are threatened, drilling fluid circulation pumps will be turned off. This measure will be taken as a last resort because of the potential for drill hole collapse resulting from loss of down-hole pressure.
- All mitigation measures employed for releases within ESAs will be closely documented to assist with ONEOK's agency notification process.

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7.0 ABANDONMENT

If corrective actions do not prevent the threat to public health and safety, or if the pipeline installation is unsuccessful, ONEOK may opt to re-drill the hole along a different alignment after receiving appropriate regulatory approvals. In this case, the following procedures will be implemented to abandon the previous drill hole.

- To seal the abandoned drill hole, thickened drilling mud and cuttings will be pumped into the hole as the drill assembly is extracted.
- Within approximately 10 vertical feet of the surface, remove drilling mud and cuttings, then fill the drill end points and any mud pits with soil, and grade the location to the original contour.
- In the case of an ESA crossing, no alternative crossing methods would be implemented without the proper notification and approvals from ONEOK.

8.0 FOLLOW-UP

After the drilling fluid seepage has been contained, the drilling contractor will try to determine the cause of the seepage. After the cause has been determined, measures will be implemented to control the factors causing the seepage and to minimize the chance of recurrence.

In some cases, the corrective measure may involve a determination that the existing hole encountered a void, which could be bypassed with a slight change in the profile. In other cases, it may be determined that the existing hole encountered a zone of unsatisfactory soil material and the hole may have to be abandoned. If the hole is abandoned, it will be filled with cuttings and drilling fluid, as described in Section 7.0.

9.0 CLEAN UP

Clean-up measures following mud releases in uplands, wetlands, and waterbodies will be implemented as determined by this Plan and in consultation with the appropriate regulatory agencies. The following measures are to be considered as appropriate:

- Drilling mud will be cleaned up by hand using hand shovels, buckets, and soft-bristled brooms as possible without causing extensive ancillary damage to existing vegetation. Clean water washes may also be employed if deemed beneficial and feasible by the Lead EI and monitor.
- Backhoes or other mechanized earth-moving equipment will not be used to clean up drilling fluid seepage within ESAs, waterbodies, or wetlands.
- Containment structures will be pumped out and the ground surface scraped to bare topsoil without causing undue loss of topsoil or ancillary damage to existing and adjacent vegetation.
- Material will be collected in containers for temporary storage prior to removal from the site.
- Potential for secondary impact from the clean-up process is to be regularly evaluated and clean-up activities terminated if physical damage to the site is deemed to exceed the benefits of removal activities in consultation with the appropriate regulatory agencies and/or field representatives.

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G.6 Unanticipated Discoveries Plan

Little Missouri Lateral Pipeline Project

UNANTICIPATED DISCOVERIES PLAN

DRAFT

Prepared by:

January 2019

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1.0 INTRODUCTION

ONEOK Bakken Pipeline, L.L.C. (ONEOK) has established procedures to be followed by ONEOK personnel and their contractors in the event previously unreported and unanticipated cultural resources or human remains are found during construction of the Little Missouri Lateral Pipeline Project (Project).

The identification of possibly significant cultural materials is addressed in Sections 2.0 and 3.0 of this *Unanticipated Discoveries Plan (UDP or Plan)*. The discovery of possible human remains is addressed in Section 4.0.

Prior to the commencement of construction, Environmental Inspectors (EIs) and Contractor personnel will receive environmental training, which will include guidance on identifying potential cultural materials and human remains. The orientation will consist of two parts. The first part will provide training in the recognition of both prehistoric and historic cultural resources and human remains as briefly described below. The second part will provide the chain of communication and protocols that must be followed if unanticipated cultural resources or human remains are discovered during construction.

A cultural resource discovery could consist of, but is not limited to:

- Prehistoric features such as stone circles or cairns, storage pit features, postmolds, hearths, occupational surfaces, middens, and anthropogenic soil horizons;
- Prehistoric artifact concentrations such as projectile points, waste flakes/debitage, and clay pottery;
- Historic features such as trails, roads, canals, wells, cisterns, foundations, and trash pits at least 50 years in age; and,
- Historic artifact concentrations such as glass bottles, tin cans (e.g., hole-in-top cans) tableware, dishware, architectural debris (e.g., bricks, mortar, window glass), hardware (e.g., square nails), and farm implements at least 50 years in age.

Evidence of a burial site could consist of, but is not limited to:

- Any human remains including articulated or disarticulated bones, teeth, hair, preserved soft tissue, etc.;
- Burial pit or grave shaft outlines in the soil;
- Headstones or footstones; and,
- Coffin wood fragments and coffin hardware.

Archaeological discoveries may be classified as simple or complex. Simple archaeological discoveries consist of isolated artifacts or isolated features with minimal artifacts or diagnostic characteristics. Complex discoveries are those that entail a significant number of artifacts or features, or sensitive or unique finds such as housepits, bone beds, or human remains.

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2.0 UNANTICIPATED DISCOVERY OF CULTURAL MATERIALS

If a contractor believes that he or she has uncovered any cultural resources during construction the following steps will be taken.

1. The Contractor will cease work immediately within the area of the find to avoid disturbing the find and will immediately notify the on-site EI. No cultural material will be transported from its original location.

   Environmental Inspector: TBD
   Cell Phone Number: TBD
   Email: TBD

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2. The EI will immediately notify ONEOK's Environmental Manager of the find. The call will be followed up by an email notification summary to ONEOK's Environmental Manager.

ONEOK Environmental Mgr:	Edwin Zedaker
Phone:	(918) 595-1783
Cell Phone:	(256) 872-5818
Email:	Edwin.Zedaker@oneok.com
Address:	ONEOK, Inc. 100 W. Fifth Street Tulsa, OK 74103

If the find is within the U.S. Army Corps of Engineers (USACE) area of jurisdiction (i.e., within a delineated wetland or waterbody) ONEOK's Environmental Manager will notify the appropriate USACE's Omaha District Office:

North Dakota USACE Regulatory Office

Contact:	Patricia McQuery
Phone:	(701) 255-0015
Email:	Patricia.L.Mcquery@usace.army.mil

3. Cessation of ground-disturbing activity will encompass a sufficient area to protect the discovery itself and provide a buffer zone for adequate and safe investigation of the discovery and any other features or artifacts that may be associated with the discovery. The buffer zone will be fenced or delineated with signage by the on-site EI to prevent further disturbance by vehicle and foot traffic. A general guideline is to create a buffer of at least 100 feet around the discovery. The fenced or signed area can be larger or smaller depending on the width of the ROW in order to protect the discovery adequately without unnecessary hindrance to construction and to allow for a passing lane, if appropriate. No fencing or signage will be installed outside of the construction workspace without prior approval from the landowner.

4. The on-site EI will take photographs of the find, including photographs of artifacts, features, and general landscape in the vicinity of the find. **NOTE: DO NOT TAKE PHOTOGRAPHS OF HUMAN REMAINS.** Additionally, the EI will provide a description of the discovery and note the location by tract, milepost, and/or stationing. This information will be provided by email to ONEOK's Environmental Manager and the Cultural Resources Manager at Merjent, Inc. (Merjent). The consulting archaeologist will meet the Secretary of Interior's Professional Qualification Standards as described in 36 CFR 61. Following notification, construction may resume outside of the 100-foot (or greater as necessary) buffer surrounding the find.

Archaeological Consultant:	Merjent, Inc.
Cultural Resources Manager:	Kari Krause
Phone:	(612) 643-5248
Cell Phone:	(612) 961-7479
Email:	kkrause@merjent.com
Address:	Merjent, Inc. 800 Washington Ave. N, Suite 315 Minneapolis, MN

5. The Archaeological Consultant will determine whether the find was recorded during a previous survey. If the find is determined to be within a previously identified site area that has been determined as not eligible for listing in the National Register of Historic Places (NRHP), the EI will notify the construction contractor that construction activities may resume after the fencing or signage is removed.

6. If the find is discovered in an area where a site was not previously recorded, the Consulting Archaeologist/Cultural Resource Manager, will review the location and type of discovered material. If the discovery is determined to be non-cultural, the EI will notify the Contractor that construction may resume. The Archaeological Consultant/Cultural Resource Manager will submit a letter report regarding the discovery and findings to ONEOK's Environmental Manager within 5 business days. ONEOK's Environmental Manager will submit the letter report to the lead federal agency, if appropriate.

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7. If on-site assessment is necessary to determine the find's significance, the Cultural Resource Manager will arrange for an Archaeologist to travel from their home office to the discovery. Mobilization will occur within one (1) day of notification.

8. If the find is determined to lack integrity or not be significant, the Archaeologist will document the find and notify the Cultural Resource Manager and ONEOK's Environment Manager who will consult with the State Historic Preservation Office of North Dakota (SHSND) or the USACE, as appropriate, and will request approval to resume construction. ONEOK's Environmental Manager will inform the EI that construction can proceed. The Archaeologist will submit a letter report regarding the discovery and findings to the Cultural Resources Manager within 5 business days for submittal to ONEOK's Environmental Manager. Additionally, the Archaeologist will submit a site form for the non-significant cultural site to the SHSND or the MTSHPO, as appropriate, for their records. ONEOK's Environmental Manager will provide the summary to the USACE, as appropriate.

Contact:	Susan Quinnell, Review and Compliance Coordinator State Historical Society of North Dakota Historic Preservation Office
Telephone:	(701) 328-3576
Email:	squinnell@nd.gov

9. If the Archaeologist determines that the discovery represents a significant find, the Archaeologist will notify the Cultural Resources Manager the same day and the procedures in Section 3.0 of this Plan will be followed. Merjent's Cultural Resources Manager will notify ONEOK's Environmental Manager of any significant discoveries by telephone and follow up email.

10. ONEOK or its representative will notify the landowner of the significant find as appropriate.

11. If the Archaeologist determines the discovery constitutes human remains, the procedures described in Section 4.0 of this Plan will be followed.

3.0 DISCOVERY OF POTENTIALLY SIGNIFICANT CULTURAL MATERIALS

As discussed in Section 2.0, the on-site EI will ensure appropriate measures have been taken to protect the discovery from further disturbance. The Cultural Resources Manager will promptly notify the ONEOK Environmental Project Manager of significant finds by telephone and will follow up with an email.

1. If upon evaluation, and in consultation with the SHSND, the find is recommended to be significant and continuing construction may damage more of the site, ONEOK may authorize the Archaeological Consultant to develop a Treatment Plan for finds outside federal jurisdiction to avoid, minimize, or mitigate the adverse effect within the construction right-of-way.

   For all finds on federal lands or within federal jurisdiction, ONEOK's Environmental Manager will consult with the appropriate federal agency (i.e., USACE) and will request approval to resume construction, subject to any mitigation or avoidance measures required by the federal agency. These measures may include:

   - Preparation of a treatment plan;
   - Visits to the site by the USACE or other parties;
   - Implementation of the treatment plan through avoidance, monitoring, or data recovery; and
   - Approval to resume construction following completion of the fieldwork component of the treatment plan.

   The lead federal agency will initiate federal, state, and tribal consultation required to determine if the find is potentially eligible for listing on the NRHP, and if mitigation is required.

2. The Archaeological Consultant will carry out the fieldwork component of the Treatment Plan prior to construction activities resuming.

3. Construction will resume following the completion of the fieldwork component of the Treatment Plan. ONEOK will notify the EI who will grant clearance for the Contractor to resume construction.

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4. The Archaeological Consultant will prepare a report within six (6) weeks of resuming construction describing the results of the treatment. The report will be provided to the SHSND and, if appropriate, a copy of the report will be provided to the landowner and to the lead federal agency.

4.0 DISCOVERY OF HUMAN REMAINS

ONEOK will treat all human remains in accordance with federal and state law as it applies to all lands in North Dakota crossed by the Little Missouri Lateral Pipeline Project, taking into account North Dakota NDAC 40-02-03, which provide for the protection of human burial sites, human remains, and burial goods. As discussed above in Section 2.0, the on-site EI will ensure that appropriate measures have been taken to protect the discovery from further disturbance. All human remains regardless of ancestry will be treated with dignity and respect. No photographs will be taken, nothing will be moved, and the find will be covered. The EI will make notifications of the discovery to the ONEOK Environmental Manager and the Cultural Resources Manager.

If it is immediately obvious that the skeletal remains found are non-human and are in association with cultural material, the procedures described in Sections 2.0 and 3.0 of this Plan will be followed.

If the remains might be human, the following steps will be taken:

1. The appropriate county sheriff's office will be contacted immediately. As stipulated by NDAC 40-02-03-03, upon receiving notification of the discovery of human remains, a human burial, or burial goods, the local law enforcement agency will, as soon as practicable, report the receipt of such notification to the SHSND and North Dakota State Department of Health (NDDH) and Consolidated Laboratories.

   McKenzie County, North Dakota, Contacts:

Contact:	Gary Schwartzenberger, McKenzie County Sheriff
Telephone:	(701) 444-3654
Email:	gschwartzernberger@co.mckenzie.nd.us
Contact:	Calvin Parrish, McKenzie County Coroner
Telephone:	(701) 770-4522

2. If local authorities determine the remains are not modern or do not reflect a crime scene and/or if they otherwise relinquish their jurisdiction over the remains, the SHSND will be contacted to assist in identifying the appropriate parties to notify and to determine additional steps to be followed. The Archaeological Consultant will assist as needed with identification efforts of the human remains. A forensic expert may be required to determine whether the remains are Native American. If in North Dakota, and the SHSND and the consulting experts determine the unanticipated discovery consists of Native American human remains, the SHSND, as stipulated by NDCC 23-06-27 will contact the North Dakota Intertribal Reinterment Committee.

Contact**:**	Susan Quinnell, Review and Compliance Coordinator State Historical Society of North Dakota Historic Preservation Office
Telephone:	(701) 328-3576
Email:	squinnell@nd.gov

3. ONEOK's Environmental Manager and Merjent's Cultural Resources Manager will work with the SHSND or USACE, as applicable, and American Indian tribes to determine the appropriate treatment or other measures to resolve the discovery of human remains or burial goods.

ONEOK Environmental Mgr:	Edwin Zedaker
Phone:	(918) 595-1783
Cell Phone:	(256) 872-5818
Email:	Edwin.Zedaker@oneok.com
Address:	ONEOK, Inc. 100 W. Fifth Street Tulsa, OK 74103

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Archaeological Consultant:	Merjent, Inc.
Cultural Resources Manager:	Kari Krause
Phone:	(612) 643-5248
Cell Phone:	(612) 961-7479
Email:	kkrause@merjent.com
Address:	Merjent, Inc. 800 Washington Ave. N, Suite 315 Minneapolis, MN

4 If the unanticipated discovery of human remains is located within a wetland or waterbody, ONEOK will consult immediately with the USACE regarding the appropriate measures to handle such a discovery.

Omaha District North Dakota Regulatory Office

Contact:	Patricia McQuery
Phone:	(701) 255-0015
Email:	Patricia.L.McQuery@usace.army.mil

4. ONEOK or its representative will contact the landowner to keep them apprised of parties that will inspect the find in order to determine the disposition of the remains.
5. The measures to protect the remains and any associated artifacts will remain in effect until they have been fully evaluated and the appropriate treatment of the discovery (if applicable) has been completed.
6. ONEOK will notify the EI who will grant clearance for the Contractor to start work upon completion of the treatment of the discovery, and resolution of all issues.

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G.7 Revegetation Plan

Little Missouri Lateral Pipeline Project

REVEGETATION PLAN

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Prepared by:

January 2019

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Appendix A Ecozone Reclamation Plan

Appendix B NRCS Herbaceous Vegetation Establishment Guide

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1.0 INTRODUCTION

This *Revegetation Plan* (Plan) was created to provide procedures to be followed during the revegetation of areas disturbed as a result of constructing the ONEOK Bakken Pipeline, L.L.C. (ONEOK) Little Missouri Lateral Pipeline Project (Project). This Plan incorporates comments from the Natural Resource Conservation Service (NRCS) and/or county conservation offices in McKenzie County, North Dakota, a; applicable agency permit conditions; the contractor's ONEOK-approved *Ecozone Reclamation Plan* (Appendix A), and ONEOK's *Construction and Mitigation Restoration Plan (CMRP)*. Permit conditions, environmental and civil, or landowner agreements will take precedence over the requirements of this Plan.

1.1 Revegetation

This Plan applies to all areas of perennial vegetation disturbed by construction. ONEOK will not seed active or rotated croplands unless specifically requested to do so by the landowner or land management agency. ONEOK will coordinate with landowners to discourage livestock grazing of the construction right-of-way (ROW) during the first growing season by utilization of temporary fencing, deferred grazing (see Section 1.4), or increased grazing rotation frequency, especially in critical areas, such as sandy sites with blow-out potential.

1.1.1 Wetlands and Stream Banks

Temporary Revegetation

ONEOK's contractor will seed wetlands, excluding those inundated or farmed, and stream banks with an appropriate cover crop where necessary to prevent erosion (see Appendix A, Contractor *Ecozone Reclamation* Plan). No fertilizer, lime, or mulch will be applied in wetlands.

Permanent Restoration

Stream banks will be seeded with the same seed mix as the adjacent upland area, except where a specific streambank seed mix was requested by a county NRCS or conservation district (see Appendix A and Appendix B, NRCS Herbaceous Vegetation Establishment Guide). ONEOK does not propose permanent planting or seeding in wetlands. In wetlands, the root mat/vegetative layer should be left in place during construction, except directly over the trench line. By leaving the root mat/vegetative layer intact, revegetation of the wetland to its pre-construction composition will occur naturally through native recruitment.

1.1.2 Uplands

Temporary Revegetation and Stabilization

If final grading and installation of permanent erosion control measures will not be completed in an area within 10 days after the trench is backfilled, then temporary stabilization measures will be employed. Temporary stabilization measures will also be employed where construction activity is interupted for extended periods and when seeding cannot be completed, e.g. due to seeding period restrictions.

Temporary stabilization measures consist of surface roughening (e.g. plowing or discing to achieve a rough surface), temporary seeding, or temporary mulching. Surface roughening will predominantly be used for temporary stabilization of the soils until soil conditions permit seedbed preparation and seed germination. Surface roughening may include equipment tracking, scarifying, imprinting, or tilling a disturbed area. These techniques are only adequate when the soils have a significant organic component. If the soils are sandy the surface roughening technique will be ineffective and will contribute

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to fugitive dust emissions. ONEOK's Enivironmental Inspection Team and Construction Management team must approve the use of surface roughening.

Temporary seeding and/or mulching will be employed where erosion is likely to occur, including locations such as stream banks, road ditches, steep slopes, and areas subject to storm water flow, as described in ONEOK's *Storm Water Pollution Prevention Plan (SWPPP).* ONEOK's specification for installation of mulch and temporary stabilization is discussed in Section 1.7.5 of ONEOK's *CMRP*. The contractor will consult with ONEOK and the Lead Environmental Inspector (EI) if there is a need for temporary stabiliation measures.

Permanent Revegetation

All upland areas disturbed by construction activities, excluding active and rotated cropland, will be seeded within 10 days of completion of final clean up. Ideally, seeding will be done before the ground freezes. Fertilizer and pH-modifying agents (e.g., lime) may be used and will be based on local soil moisture conditions, germination requirements of selected species, and adaptation of seed soil temperature.

1.1.3 Seedbed Preparation

Seeding will follow cleanup and topsoil replacement as closely as practicable. The contractor will scarify, till, disk, or harrow the seedbed as needed in order to enhance seed germination. Soil compact treatment will be applicable as described in the *CMRP*. Sites where this method is not practical (e.g., steep slopes, rocky areas, etc.) will be dozer-tracked perpendicular to the slope or otherwise left with adequate roughness, following topsoil placement, to provide micro-sites for seed germination and to reduce soil movement. If mulch was applied prior to seeding for temporary erosion control, the contractor will remove and dispose of the mulch prior to seedbed preparation to ensure that seedbed preparation equipment and seed drills do not become plugged with excess mulch; to support an adequate seedbed; and to ensure that seed incorporation or soil packing equipment can operate without becoming plugged with mulch.

1.1.4 Seeding Method

Based on site-specific conditions, seeding will be accomplished by drilling or broadcasting. A range-type drill, or similar device, will be employed on level to gently sloping areas where rock fragment content allows drilling operations. The seeder will be followed with a drag packer or roller to ensure uniform coverage of the seed and adequate compaction. Drill seeding will be done along contour lines where practical, not up and down the slope. The drill seeder will apply seed mixes with mechanisms such as seed box agitators to allow even distribution of all species in each seed mix, with an adjustable metering mechanism to accurately deliver the specified seeding rate, and with a mechanism such as depth bands to accurately place the seed at the specified depth. Planting depth will not exceed local and regional agriculture practices. Seeders will be calibrated and operated at an appropriate speed so that the specified seeding rate is planted. The row spacing on drill seeders will not exceed 8 inches, unless otherwise recommended due to growth characteristics of a certain species.

Broadcast seeding will be employed on steep (> 15 % slope) and/or rocky areas where drill seeding is not practical. Seed will be broadcast using manually-operated, cyclone-type bucket spreaders, mechanical seed spreaders or blowers, or hydroseeders. Broadcast seeding will be performed at 2 times the rate for drill seeding. Seeds will be mixed frequently in spreader hoppers to discourage settling. Broadcast seeding may be delayed during high wind conditions if even distribution of seed is impeded.

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Where possible, broadcast areas will be chained or harrowed to cover seed. On small or inaccessible areas, hand raking will be used to cover seed. On steeper slopes where tilling or harrowing are not feasible, the areas will be dozer-tracked perpendicular to the slope prior to seeding, or-otherwise left in a roughened state, to provide micro-sites for seed germination.

Hydro seeding may be used, on a limited basis, where the slope is too steep, or soil conditions do not warrant conventional seeding methods. Fertilizer, where specified, may be included in the seed, virgin wood fiber, tackifier, and water mixture. When hydro-seeding, virgin wood fiber will be applied at the rate of approximately 3,000 pounds per acre on an air-dry weight basis as necessary to provide at least seventy-five (75) percent ground cover. Tackifier will consist of biodegradable, vegetable-based material and will be applied at the rate recommended by the manufacturer. The seed, mulch, and tackifier slurry will be applied so that it forms a uniform, mat-like covering of the ground.

1.1.5 Revegetation Mixtures and Rates

In cooperation with the applicable agencies and private landowners, seed mixtures have been developed for the soil types within the Project area (see Appendices A and B). Disturbed areas (with the exception of cultivated fields and wetlands) will be seeded in accordance with written recommendations for seed species, rates, techniques, and planting dates from the NRCS or county conservation districts (unless otherwise specified in landowner agreements) as outlined in the contractor's *Ecozone Reclamation Plan* in Appendix A or the NRCS Herbaceous Vegetation Establishment Guide, Appendix B. Seed included in mixtures developed in collaboration with agencies assume use of local strains or cultivars to assure seeds. Seed will be acquired from local sources that can verify appropriate cultivars are used.

Conservation Reserve Program (CRP) seed mixture will be applied to CRP lands (if identified). The property owner is responsible for identifying CRP lands crossed by the Project. All disturbed areas will be re-seeded in accordance with the specifications outlined below. The ROW would be re-seeded at the end of construction.

In some instances, seed mixtures may need to be modified as a result of limited species availability, poor seed quality, or site differences. With ONEOK approval, these modifications will be made based on site-specific conditions and requirements.

1.1.6 Seed Installation Timing

Seeding of permanent native seed mixes should not occur outside of the dormant seeding windows listed in Table 1.1.7-1. to prevent premature germination of vunerable native seedlings during the hottest and driest time of the year. Temporary stablization measures should be utilized during the summer period and prior to the winter dormant seeding date for each respective state. These dates are subject to annual and local variability across the project, but should be used as a general rule of thumb and deviation of more than a week from these dates should only be considered on a case by case basis, with the EI team's recommendations and ONEOK's approval. Replanting of alfalfa fields requires two growing season and communciation with the landowner will take place during this timeframe.

1.1.7 Dormant Seeding

Dormant seeding is most effective in restoration of disturbed areas because early spring is the most reliable period for moist soil conditions. Low temperatures and dormant vegetation during the winter months help soils retain beneficial amounts of moisture into the spring (WYRRC, 2010). Dormant seeding is conducted after soil temperatures are cool enough to prevent seed germination; generally

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when soil temperature at two inches below the soil surface is 40 degrees or less for a minimum of five consecutive days (NRCS, 2018). The dormant seeding timeframe in North Dakota occurs after November 1. Dormant seeding is only practicable if the soil is not frozen and snow is not present. Procedures for applying soil amendments, seedbed preparation, seeding, and mulching are the same as outlined for permanent revegetation in this Plan.

Where dormant seeding is conducted, one or more of the following temporary erosion and sediment controls will be put in place over the freshly seeded area unless the local soil conservation authority, landowner, or land managing agency specifies otherwise. The temporary measures are as follows:

- Straw mulch, at 4,000 lbs/acre, anchored;
- Hydromulch, at 1,500 to 2,000 lbs/acre;
- Erosion control blanket, 1 layer on soil surface

Additional erosion control measures will be applied as outlined in ONEOK's *CMRP*.

1.2 Weed Control

Weed control practices will be implemented to limit the growth and spread of weeds and to ensure that revegetation is successful with the proposed seed mixtures in accordance with ONEOK's project-specific *Weed Management Plan*.

1.3 Seed Inspection

Seed Tag Inspection

Restoration contractors will collect tags from the seed used to document compliance with agency and landowner seeding requirements and provide the tags and associated records to the appropriate EI. The restoration contractor will be responsible for inspecting seed and seed tags to ensure compliance with the above requirements. Seed purchased by the contractor will be on a "Pure Live Seed" (PLS) basis. The restoration contractor will inspect seed prior to use. Seed tags will identify:

- Purity;
- Germination;
- Date tested;
- Total weight and PLS weight;
- Weed seed content; and
- Suppliers name and business information.

Seed Purity

The germination and purity tests conducted by the vendor will be completed within 12 months of seed utilization. The seed tags on the seed sacks will also certify that the seed is "Noxious Weed Free". Seed rates used on the Project will be based on PLS rate, not actual weight basis.

1.4 Grazing Deferment

Excessive livestock grazing is detrimental to the germination of permanent vegetative cover over the ROW. In order to ensure that the ROW is properly restored with sufficient vegetative cover, ONEOK will develop grazing deferment plans with landowners, tenants, or other grazing permit holders that address construction timing, fence cutting and bracing, temporary fencing, cattle guard locations, and water requirements for livestock.

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The NRCS recommends all range plantings are not grazed until the stand is fully established, which is a minimum of one full growing season. If, after one full growing season, the stand has not adequately established, or seedlings do not have well-developed root systems with adventitious roots above the sown seed, grazing should be deferred for a second growing season (NRCS, 2018; Appendix B).

1.5 Revegetation Monitoring

Monitoring will be conducted in compliance with the *SWPPP* during the construction phase as well as the post construction phase of the project to verify adequate vegetation establishment to stabilize the soil and satisfy permit conditions.

2.0 REFERENCES

U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS). April 2018. Herbaceous Vegetation Establishment Guide. Available online at: https://efotg.sc.egov.usda.gov/references/Public/ND/Herbaceous_Veg_Est_Guide.pdf. Accessed December 20, 2018.

Wyoming Reclamation and Restoration Center (WYRRC). 2010. Successful Restoration of Severely Disturbed Lands: Seeding Essentials for Reclaiming Disturbed Lands

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APPENDIX A

Ecozone Reclamation Plan

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Ecozone Reclamation Plans

Little Missouri Lateral

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Prepared for:
ONEOK, Inc.

Prepared by:
Duraroot, LLC

Date:
December 27, 2018

Reclamation Guidelines for the Little Missouri Lateral

The Little Missouri Lateral (LML) is a pipeline project in McKenzie County, North Dakota. Land use along the LML right-of-way (ROW) includes cultivated cropland, hay/tame pasture, and native range/grassland. Vegetation consists predominantly of cereal grain crops, alfalfa/grass hay, and native/introduced grasses. Soils vary in chemical and physical composition, depth, drainage capability, and reclamation potential. Ecozone delineations along the LML ROW considered dominant soil types, soil chemical characteristics, dominant vegetation, land use, and topography.

The ecozones present along the LML are: Cultivated Cropland Ecozone, Saline Ecozone, and Loamy Ecozone. Characteristics of each ecozone, along with associated reclamation techniques and recommendations, are detailed in each ecozone report. Fertility recommendations and seed mixes were developed based on soil sample analytical data and vegetation field surveys performed during the fall of 2018. Soil sample analytical data were used to make amendment recommendations based on the soil chemistry for most of the ROW. Recommendations are based on sample data analysis and Duraroot's interpretation of the soils along the alignment. All soil samples were collected by or under the supervision of a Certified Professional Soil Scientist (CPSS). A summary of all soil fertility data for the LML can be found in Attachment A.

Due to the nature and scale of the project, these reclamation guidelines have been developed using a broad-based approach to address reclamation across the project disturbance and to facilitate construction activities. Site-specific plans are recommended in areas with soil characteristics that could negatively impact revegetation, such as shallow soil resources or high/low pH and elevated salt concentrations. NRCS soil survey data indicate that potentially challenging sites, in terms of reclamation success, are present along the pipeline route. It is likely that additional areas are present, but further sampling would be needed to more accurately delineate boundaries. Duraroot can provide site-specific reclamation plans for these locations at a small additional cost of $500 per plan.

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RECLAMATION PLAN
CULTIVATED CROP ECOZONE SITES

SITE DESCRIPTION

The Cultivated Crop Ecozone is comprised of managed row crops, hayfields and tame pastures. The Cultivated Crop Ecozone makes up approximately fifty-six (55.9) percent of the land use on Little Missouri Lateral. Following construction, the land will be returned to productive cropland. The Cultivated Crop Ecozone contains primarily medium textured loam soils, with grades less than 10 percent. Soil pH is predominately slightly alkaline (pH 7.4 to 7.8) to moderately alkaline (pH 7.9 to 8.4). One key factor in reclaiming the Cultivated Crop Ecozone sites will be the preservation of topsoil, which has the soil properties necessary for agricultural production. This ecozone should present minimal challenges for reclamation due to desirable ecozone characteristics.

Due to reclamation timing, a cover crop seed mix for the Cultivated Crop Ecozone is provided in Table 1. A cover crop should be seeded on all cultivated cropland when establishment of the crop will not occur within 45 days or less of reclamation activities. A cover crop will protect the soil from wind and water erosion, increase soil stabilization, improve soil structure, suppress weed establishment, and improve overall reclamation success. The cover crop seed mix below was developed to provide quick cover due to a rapid germination rate and to aid in accelerated soil stabilization by helping to prevent the migration of topsoil during periods of freeze/thaw and rain events. A cover crop seed mix recommendation for immediate vegetation cover is provided in Table 1. Landowner preferences should be identified prior to seeding to develop appropriate seed mixes for hayfields and tame pastures. The reclamation plan is provided on Page 2.

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Table 1. Little Missouri Lateral Cultivated Crop Ecozone Site Cover Crop Seed Mix Recommendation.

Common Name	Scientific Name	# PLS/acre	PLS/sq ft	% of Mix
Quickguard-Sterile Triticale	*Triticum aestivum x Secale cereal*	60	18	90%
Nitro Radish	*Raphanus sativus*	3.5	2.0	10%
Total	**--**	**64**	**20**	**100%**

RECLAMATION PLAN
CULTIVATED CROP ECOZONE SITES

(1) SOIL AMENDMENTS

Soil and nutrient amendments within cultivated areas should be based on surface owner requests. If the surface owner does not have any tract specific requests, it is recommended that approximately 20 pounds of nitrogen and 50 pounds of phosphorus per acre be applied.

(2) SEEDBED PREPARATION

These recommended seedbed preparation steps will aid in successful reclamation. Steps may be omitted, conducted in different order, or changed to optimize success and efficiency depending on field conditions, sub-soil properties, and local terrain.

- Rip subsurface soil, prior to topsoil spreading, to a minimum depth of 16 inches to reduce soil compaction and improve drainage. Ripping should be conducted using a double pass with a straight-shank agricultural ripper or parabolic ripper. The shanks on the back of a grader or dozer should NOT be used to alleviate soil compaction. Do not smooth the ROW with a dozer once ripped. It is beneficial to have an irregular surface to help tie the topsoil and subsoil horizons together. Tillage can be used to break soil clods apart prior to topsoil application.
- Apply topsoil and requested soil amendments, discussed above, to improve the soil's physical and chemical characteristics and to supplement soil nutrients.
- Finally, till the site to a depth of 4.0 to 6.0 inches to incorporate applied soil amendments and to create a seedbed conducive to seedling establishment (disk and harrow, field cultivator, vibra-shank, or other alternative suitable to site conditions).

(3) OPTIONAL COVER CROP SEEDING

Cover crop seeding should be conducted using a drill seeder suitable for the location's soils and capable of direct seed placement. Drill seeding should occur on the contour using a drill equipped with a double disc opener, wheel press, and depth bands to ensure proper seeding depth. Seed should be planted to the depth specified by the vendor to ensure proper germination and emergence. It is recommended that grain seed be placed 0.5 to 1.0 inches deep. The Cultivated Crop Ecozone recommended cover crop seed mix and rate is provided in Table 1.

(4) STRAW MULCHING

Application of straw mulch is recommended to reduce potential water and wind erosion when establishment of the crop will not occur within 45 days of reclamation activities and a cover crop will not be planted. Recommended straw mulch application rates are between 1.5 to 2.0 tons per acre. This will provide ground coverage of approximately 80 to 90 percent of the ground surface prior to crimping. Once applied the straw mulch should be crimped into the soil using a straight disc crimper with approximate 8.0-inch spaced tines. Upon successful crimping the straw mulch should be standing vertically with approximately 40 to 60 percent of the ground surface covered. Straw mulch should be at least 6.0 inches in length. Straw mulch should be crimped sufficiently to cause vertical cover that will not be dislodged by light breezes. Straw mulch should be applied based on surface owner preference in crop areas.

(5) WEED MANAGEMENT

A site-specific Integrated Weed Management Plan (IWMP) should be developed once weedy species can be identified and regular crop rotation has begun. Sites could be mowed prior to flowering and seed head production of weedy species. Mowing will reduce competition with desirable species and allow greater opportunity for reclamation success. In addition to mowing, herbicides appropriate for the identified weedy species could be implemented into the weed management plan to eradicate any problematic species. If herbicides are intended to be used, they should be applied in consultation with the surface owner to ensure that the application of herbicides is appropriate for the subsequent agricultural crop. Application timing and rates should follow the manufacturer's recommendations.

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RECLAMATION PLAN
LOAMY ECOZONE SITES

SITE DESCRIPTION

The Loamy Ecozone consists primarily of grassland used for livestock grazing, forage production, and wildlife. This ecozone covers approximately twenty-seven (26.5) percent of the Little Missouri Lateral. The Loamy Ecozone is composed of tall and short/mid grasslands. Fine to medium soil textures characterize the Loamy Ecozone, which consists predominantly of clay loams, loams, silt loams, and silty clay loams over varying topography. Vegetation within this ecozone consists of diverse herbaceous plant communities where the dominant vegetation is grass. Pastures consist primarily of an alfalfa/grass mix and native range is primarily native and introduced grasses and forbs. These sites will be returned to a similar pre-disturbance land use following construction.

A recommended seed mix is provided for the Loamy Ecozone sites in Table 1. The native grass seed mix was developed using 60 pure live seed (PLS) per square foot, respectively. The Loamy Ecozone seed mix considers seed availability, original site composition, and the ability of species to thrive in this specific ecozone.

The Loamy Ecozone should present minimal challenges for reclamation due to desirable ecozone characteristics. Appropriate seedbed preparation methods, seeding practices, a suitable seed mix, and a site specific Integrated Weed Management Plan (IWMP) should help expedite reclamation success. The reclamation plan is provided on Page 2.

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Table 1. Little Missouri Lateral Loamy Ecozone Site Seed Mix Recommendation.

Common Name	Scientific Name	# PLS/acre	PLS/sq ft	% of Mix
Western Wheatgrass	*Pascopyrum smithii*	4.8	12	20%
Needle-and-Thread	*Hesperostipa comata*	3.4	9.0	15%
Blue Grama	*Bouteloua gracilis*	0.48	9.0	15%
Green Needlegrass	*Nassella viridula*	2.2	9.0	15%
Sideoats Grama	*Bouteloua curtipendula*	2.1	9.0	15%
Little Bluestem	*Schizachyrium scoparium*	1.0	6.0	10%
Slender Wheatgrass	*Elymus trachycaulus*	1.6	6.0	10%
Total	**--**	**16**	**60**	**100%**

Notes:
1. Seed mix was developed for loamy soil conditions and fine to medium soil textures based on vegetation data. Seed mix may be adjusted based landowner preferences.

RECLAMATION PLAN
LOAMY ECOZONE SITES

(1) SOIL AMENDMENTS

Soil amendment recommendations are based on recent soil chemical analysis. It is recommended that the following fertilizer amounts be applied to areas within the Loamy Ecozone:

- Nitrogen – 20 pounds per acre
- P_2O_5 – 50 pounds per acre
- K_2O – 0 pounds per acre

(2) SEEDBED PREPARATION

These recommended seedbed preparation steps will aid in successful reclamation. Steps may be omitted, conducted in different order, or changed to optimize success and efficiency depending on field conditions, sub-soil properties, and local terrain.

- Rip subsurface soil, prior to topsoil application, to a minimum of 16 inches to reduce soil compaction and improve drainage. Ripping should be conducted using a double pass with a straight-shank agricultural ripper or parabolic ripper. The shanks on the back of a grader or dozer should NOT be used to alleviate soil compaction. Do not smooth the ROW with a dozer once ripped it is beneficial to have an irregular surface to help tie the topsoil and subsoil horizons together. Tillage can be used to break soil clods apart prior to topsoil application.
- Apply topsoil and soil amendments, discussed above, to improve the soil chemical characteristics and to supplement soil nutrients.
- Finally, till the site to a depth of 4.0 to 6.0 inches to incorporate soil amendments and to create a seedbed conducive to seedling establishment (disk and harrow, field cultivator, vibra-shank, or other alternative suitable to site conditions).

(3) SEEDING

Seeding should be conducted using a drill seeder suitable for the location's soils and capable of direct seed placement. Drill seeding should occur on the contour using a drill equipped with an agitator, double disc opener, wheel press, and depth bands to mix seed and ensure proper seeding depths. Seeds should be planted to the depth specified by the vendor to ensure proper germination and emergence. It is recommended that the seed be placed ⅛ to ½ inch deep. The Loamy Ecozone seed mix and rate are provided in Table 1.

(4) STRAW MULCHING

Application of straw mulch is recommended to reduce potential water and wind erosion. Recommended straw mulch application rates are between 1.5 to 2.0 tons per acre. This will provide ground coverage of approximately 80 to 90 percent of the ground surface prior to crimping. Once applied the straw mulch should be crimped into the soil using a straight disc crimper with approximate 8.0-inch spaced tines. Upon successful crimping the straw mulch should be standing vertically with approximately 40 to 60 percent of the ground surface covered. Straw mulch should be at least 6.0 inches in length. Straw mulch should be crimped sufficiently to cause vertical cover that will not be dislodged by light breezes.

(5) WEED MANAGEMENT

A site-specific IWMP should be developed once weedy species can be identified. Sites could be mowed prior to flowering and seed head production of weedy species. Mowing will reduce competition with desirable species and allow greater opportunity for reclamation success. In addition to mowing, herbicides appropriate for the identified weedy species should be implemented into the weed management plan to eradicate any problematic species. Application timing and rates should follow the manufacturer's recommendations. Herbicide applications should be selective and avoid desirable native grass, forb, and shrub species. It is recommended to avoid overgrazing during the establishment period to minimize competitive weedy species establishment.

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RECLAMATION PLAN
SALINE ECOZONE SITES

SITE DESCRIPTION

The Saline Ecozone consists of land used primarily for forage production and grazing. The Saline Ecozone makes up approximately eighteen (17.6) percent of the Little Missouri Lateral. This ecozone occurs in topographically low areas, including alluvial fans and stream terraces, as well as on hillsides. This ecozone consists of fine textured soils (clay loams and clays) with characteristically elevated soil electrical conductivity (EC) and soil sodium adsorption ratio (SAR). Soils are moderately deep to deep (> 20 inches) and slope typically ranges from 0 to 8 percent. Vegetation of the Saline Ecozone is predominantly native/introduced rangeland grasses. These sites will be returned to a similar pre-disturbance land use following construction.

A recommended seed mix is provided for the Saline Ecozone in Table 1. The seed mix was developed using 80 pure live seeds (PLS) per square foot. This seed mix considers inherent soil properties and includes saline tolerant grass species to improve reclamation success.

One key obstacle in reclaiming the Saline Ecozone sites will be the elevated soil salinity and potential soil attributes associated with sodic soils (soil dispersion, poor soil structure, hard surface crust formation, and reduced infiltration). Additionally, fine textured soils with elevated soil clay contents can contribute to greater potential soil erosion and deteriorated soil structure. Deteriorated soil structure may result in hard, compacted soils that will limit infiltration and root growth. Ecozone appropriate soil amendments, seedbed preparation methods, seeding practices, a suitable seed mix, and a site specific Integrated Weed Management Plan (IWMP) should help expedite reclamation success. The reclamation plan is provided on Page 2.

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Table 1. Little Missouri Lateral Saline Ecozone Sites Seed Mix Recommendation.

Common Name	Scientific Name	# PLS/acre	PLS/sq ft	% of Mix
Beardless Wildrye	*Leymus triticoides*	3.4	12	15%
Inland Saltgrass	*Distichlis spicata*	1.3	16	20%
Western Wheatgrass	*Pascopyrum smithii*	6.3	16	20%
Nuttall's Alkaligrass	*Puccinellia nuttalliana*	0.33	16	20%
Green Needlegrass	*Nassella viridula*	2.0	8.0	10%
Slender Wheatgrass	*Elymus trachycaulus*	3.3	12	15%
Total	**--**	**17**	**80**	**100%**

Notes:
1. Seed mix was developed for saline and fine textured soil conditions based on vegetation data. Seed mix may be adjusted based on landowner preferences.

RECLAMATION PLAN
SALINE ECOZONE SITES

(1) SOIL AMENDMENTS

Soil amendments are recommended to expedite reclamation success and create conditions that can better support seed germination and plant growth. Gypsum ($CaSO_4 \cdot 2H_2O$) is recommended to improve potential saline/sodic soil conditions within the Saline Ecozone and to reduce potential soil dispersion. It is recommended that 1.5 tons per acre gypsum be applied to soils within the Saline Ecozone. In addition, 5.0 tons per acre of cornstalks should be applied to the Saline Ecozone sites to improve soil structure and reduce potential soil dispersion of saline/sodic soils. To offset nitrogen immobilization due to the organic carbon additions, it is recommended that 75 pounds per acre of nitrogen be applied. Soil amendments should be incorporated post topsoil application to a depth of 4.0 to 6.0 inches.

- Gypsum – 1.5 tons per acre
- Cornstalks – 5.0 tons per acre
- Nitrogen – 75 pounds per acre
- P_2O_5 – 50 pounds per acre

(2) SEEDBED PREPARATION

These recommended seedbed preparation steps will aid in successful reclamation. Steps may be omitted, conducted in different order, or changed to optimize success and efficiency depending on field conditions, sub-soil properties, and local terrain.

- Rip subsurface soil, prior to topsoil application, to a minimum of 16 inches to reduce soil compaction and improve drainage. Ripping should be conducted using a double pass with a straight-shank agricultural ripper or parabolic ripper. The shanks on the back of a grader or dozer should NOT be used to alleviate soil compaction. Do not smooth the ROW with a dozer once ripped. It is beneficial to have an irregular surface to help tie the topsoil and subsoil horizons together. Tillage can be used to break soil clods apart prior to topsoil application.
- Apply topsoil and soil amendments, discussed above, to improve the soil physical and chemical characteristics and to supplement soil nutrients.
- Finally, till the site to a depth of 4.0 to 6.0 inches to incorporate soil amendments and to create a seedbed conducive to seedling establishment (disk and harrow, field cultivator, vibra-shank, or other alternative suitable to site conditions).

(3) SEEDING

Seeding should be conducted using a drill seeder suitable for the location's soils and capable of direct seed placement into fine textured soils. Drill seeding should occur on the contour using a drill equipped with an agitator, double disc opener, wheel press, and depth bands to mix seed and ensure proper seeding depths. Seeds should be planted to the depth specified by the vendor to ensure proper germination and emergence. It is recommended that the seed be placed ⅛ to ½ inch deep. The Saline Ecozone seed mix and rate are provided in Table 1.

(4) STRAW MULCHING

Application of straw mulch is recommended to reduce potential water and wind erosion. Recommended straw mulch application rates are between 1.5 to 2.0 tons per acre. This will provide ground coverage of approximately 80 to 90 percent of the ground surface prior to crimping. Once applied the straw mulch should be crimped into the soil using a straight disc crimper with approximate 8.0-inch spaced tines. Upon successful crimping, the straw mulch should be standing vertically with approximately 40 to 60 percent of the ground surface covered. Straw mulch should be at least 6.0 inches in length. Straw mulch should be crimped sufficiently to cause vertical cover that will not be dislodged by light breezes.

(5) WEED MANAGEMENT

A site-specific IWMP should be developed once weedy species can be identified. Sites could be mowed prior to flowering and seed head production of weedy species. Mowing will reduce competition with desirable species and allow greater opportunity for reclamation success. In addition to mowing, herbicides appropriate for the identified weedy species should be implemented into the weed management plan to eradicate any problematic species. Application timing and rates should follow the manufacturer's recommendations. Herbicide applications should be selective and avoid desirable native grass, forb, and shrub species. It is recommended to avoid overgrazing during the establishment period to minimize competitive weedy species establishment.

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ATTACHMENT A

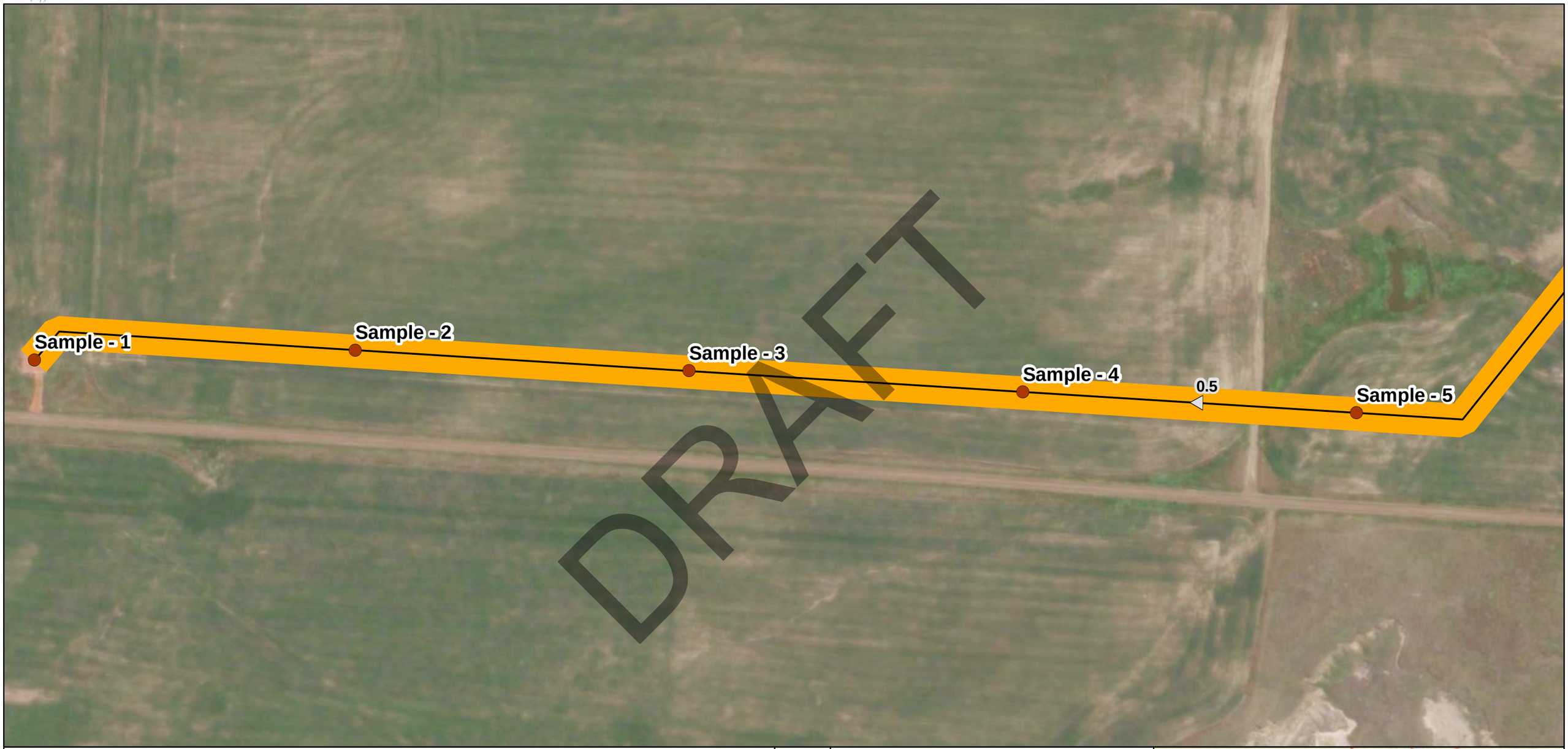
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Soil Data Little Missouri Lateral

Sample ID	pH	Ec_e	SAR	N	P	K	OM
		dS/m		lb/acre	ppm		%
0007	6.7	0.28	0.28	18	8	315	3.0
0014	8.1	0.86	0	2	2	179	2.1
0021	7.6	0.83	0.65	16	4	397	4.6
0035	8.0	0.49	0	11	2	258	3.3
0040	8.1	0.61	0	6	2	298	2.4
0046	8.0	0.67	0	21	9	126	0.5
0054	8.2	0.55	0	10	3	101	1.3
0061	8.0	0.80	0	20	10	252	2.9
0069	8.0	0.67	0	24	8	130	0.5
0075	8.0	0.67	0	27	8	129	0.5
0080	8.1	0.61	0	8	3	112	1.6

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Little Missouri Lateral - Ecozone



Legend

- **Sample Points**
- **Milepost**
- **Centerline**

Ecozone

- Crop
- Loamy
- Saline

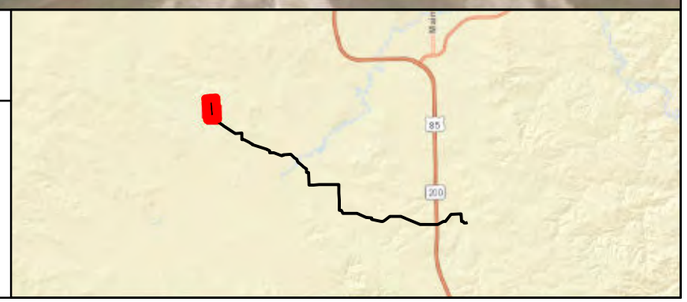
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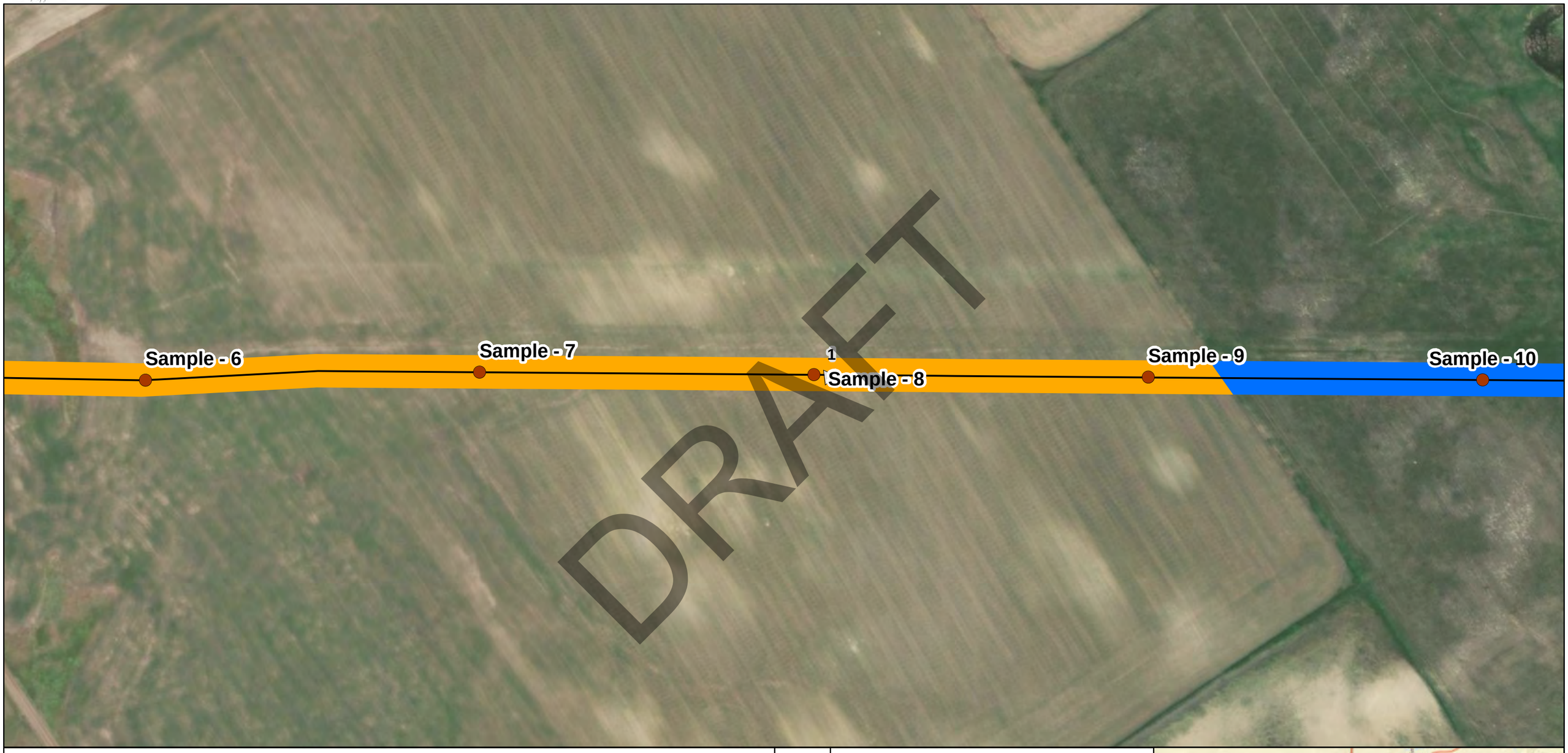
Little Missouri Lateral

Date: 12/20/2018

Projection: NAD 1983, UTM Zone 13N



Little Missouri Lateral - Ecozone



Legend

- Sample Points
- Milepost
- Centerline

Ecozone

- Crop
- Loamy
- Saline

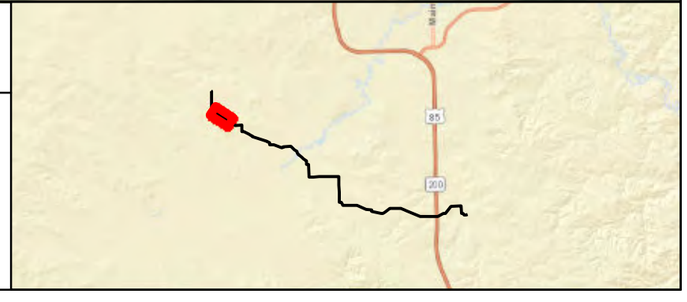
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Little Missouri Lateral - Ecozone



Legend

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Ecozone

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- Saline

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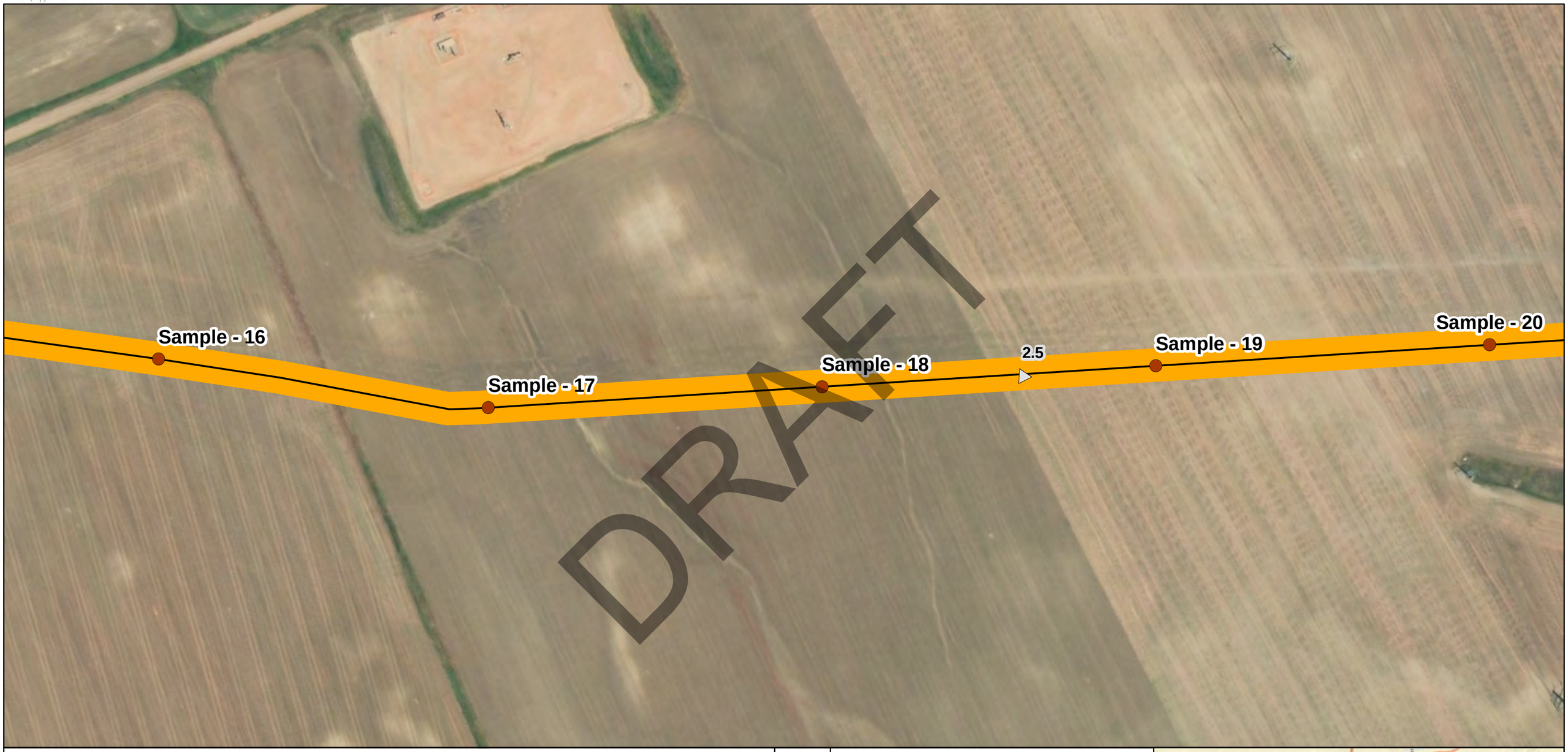
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Little Missouri Lateral - Ecozone



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- Centerline

Ecozone

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- Loamy
- Saline

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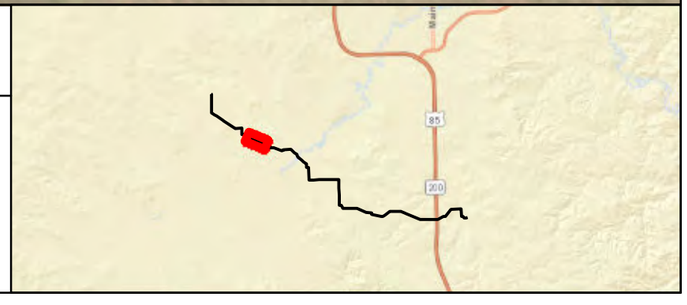
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Little Missouri Lateral

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Little Missouri Lateral - Ecozone



Legend

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Ecozone

- Crop
- Loamy
- Saline

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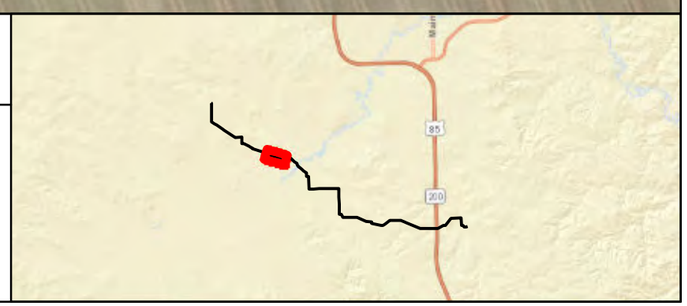
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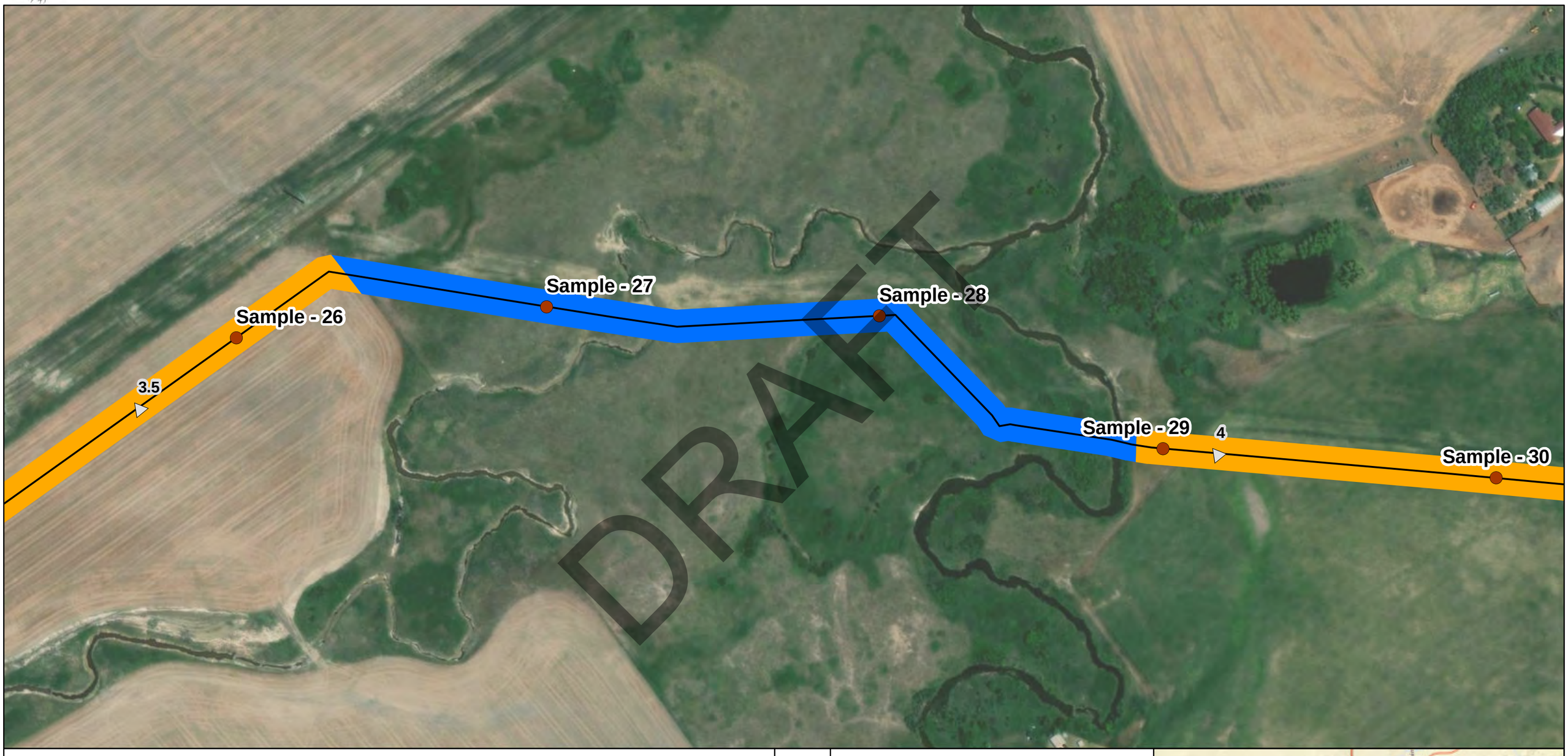
Little Missouri Lateral

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Projection: NAD 1983, UTM Zone 13N



Little Missouri Lateral - Ecozone



Legend

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Ecozone

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- Saline

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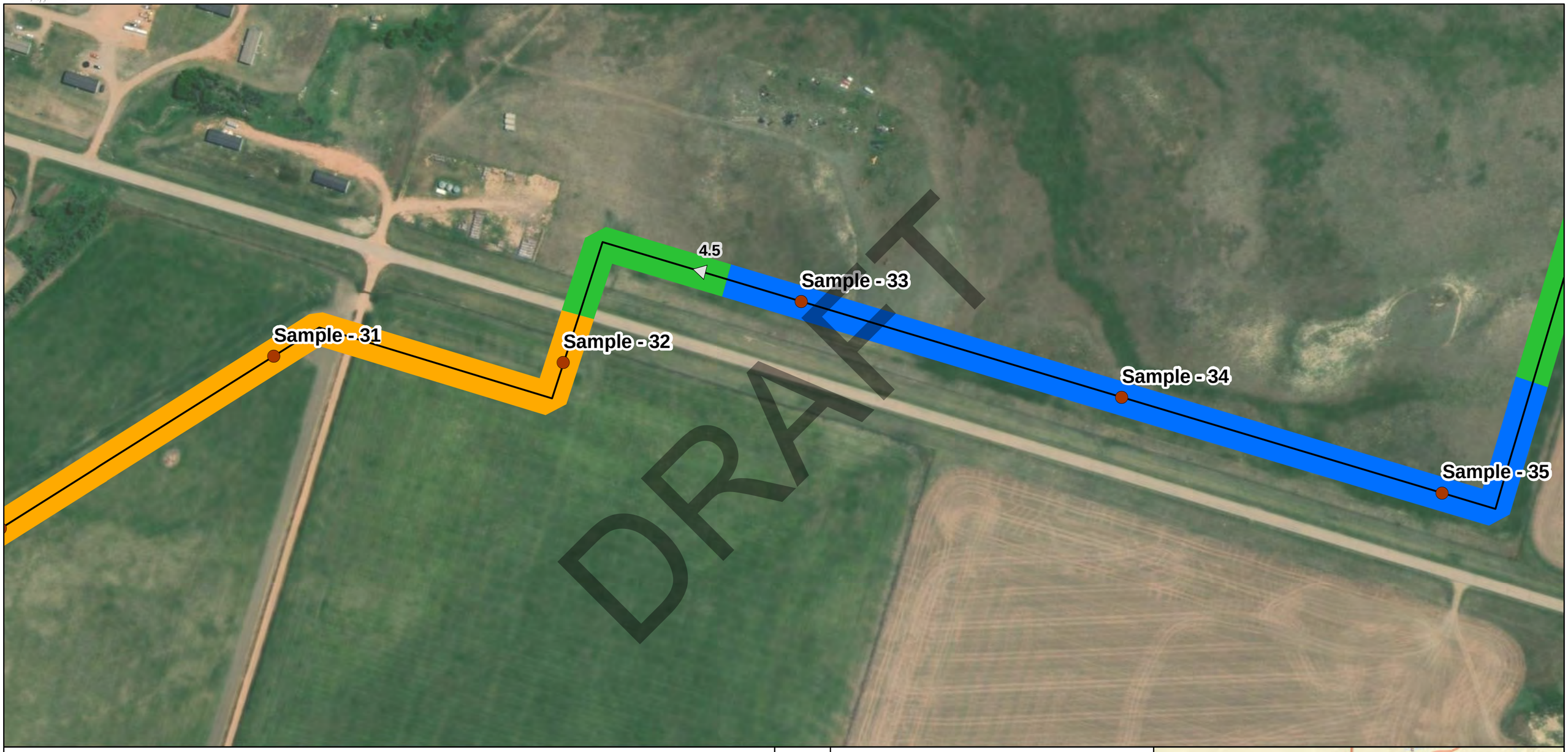
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Little Missouri Lateral

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Projection: NAD 1983, UTM Zone 13N

Little Missouri Lateral - Ecozone



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Ecozone

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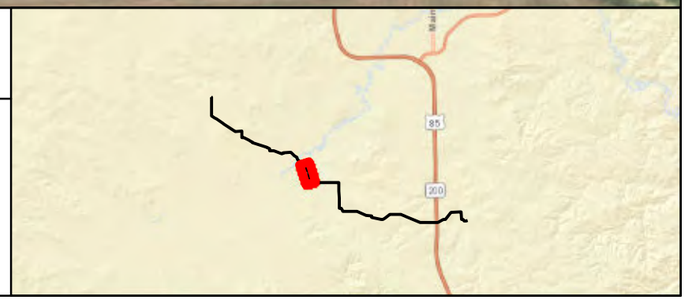
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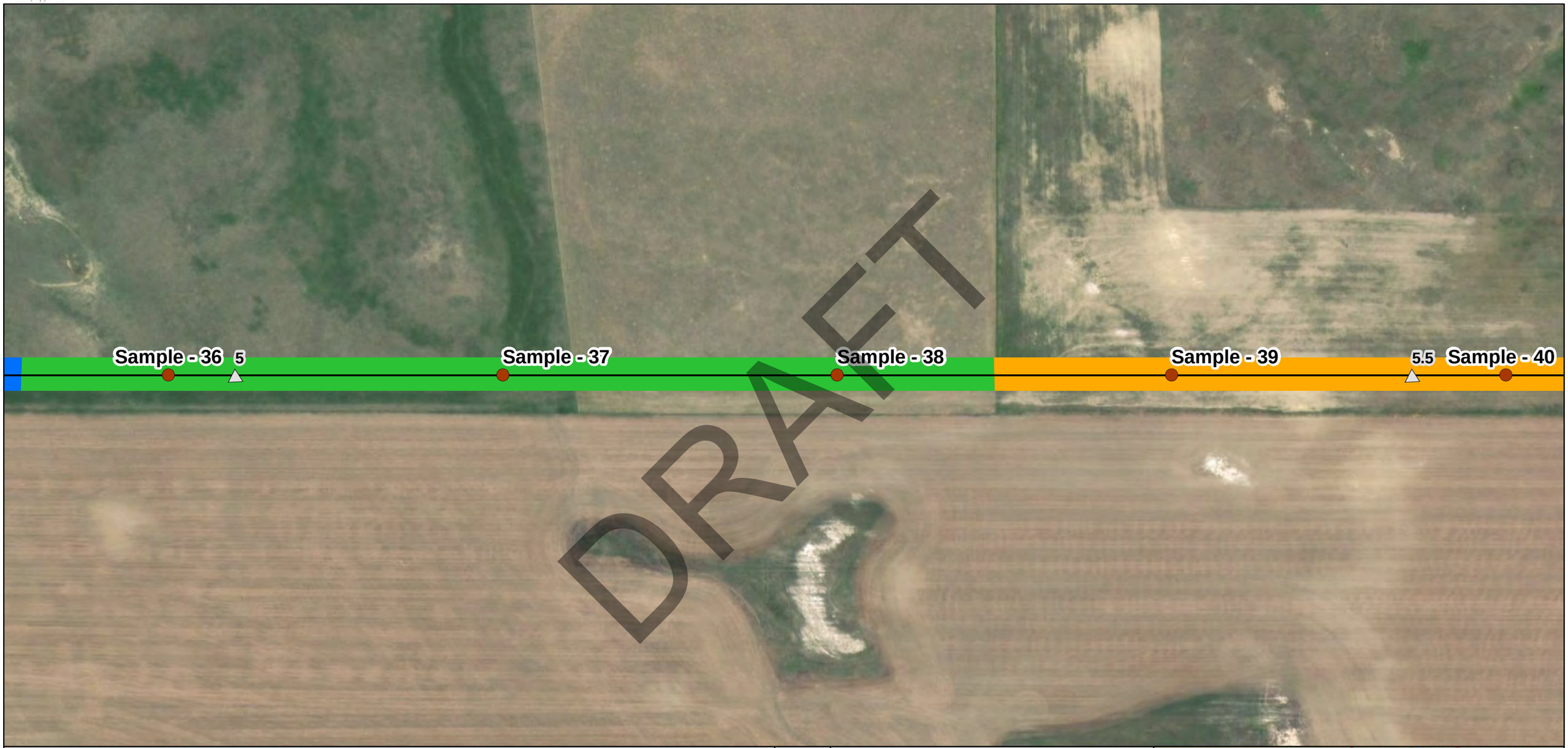
Little Missouri Lateral

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Projection: NAD 1983, UTM Zone 13N



Little Missouri Lateral - Ecozone



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Ecozone

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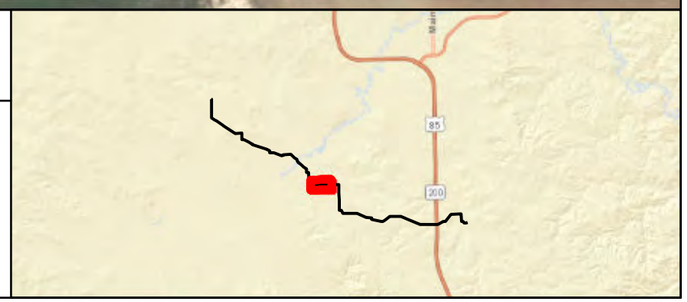
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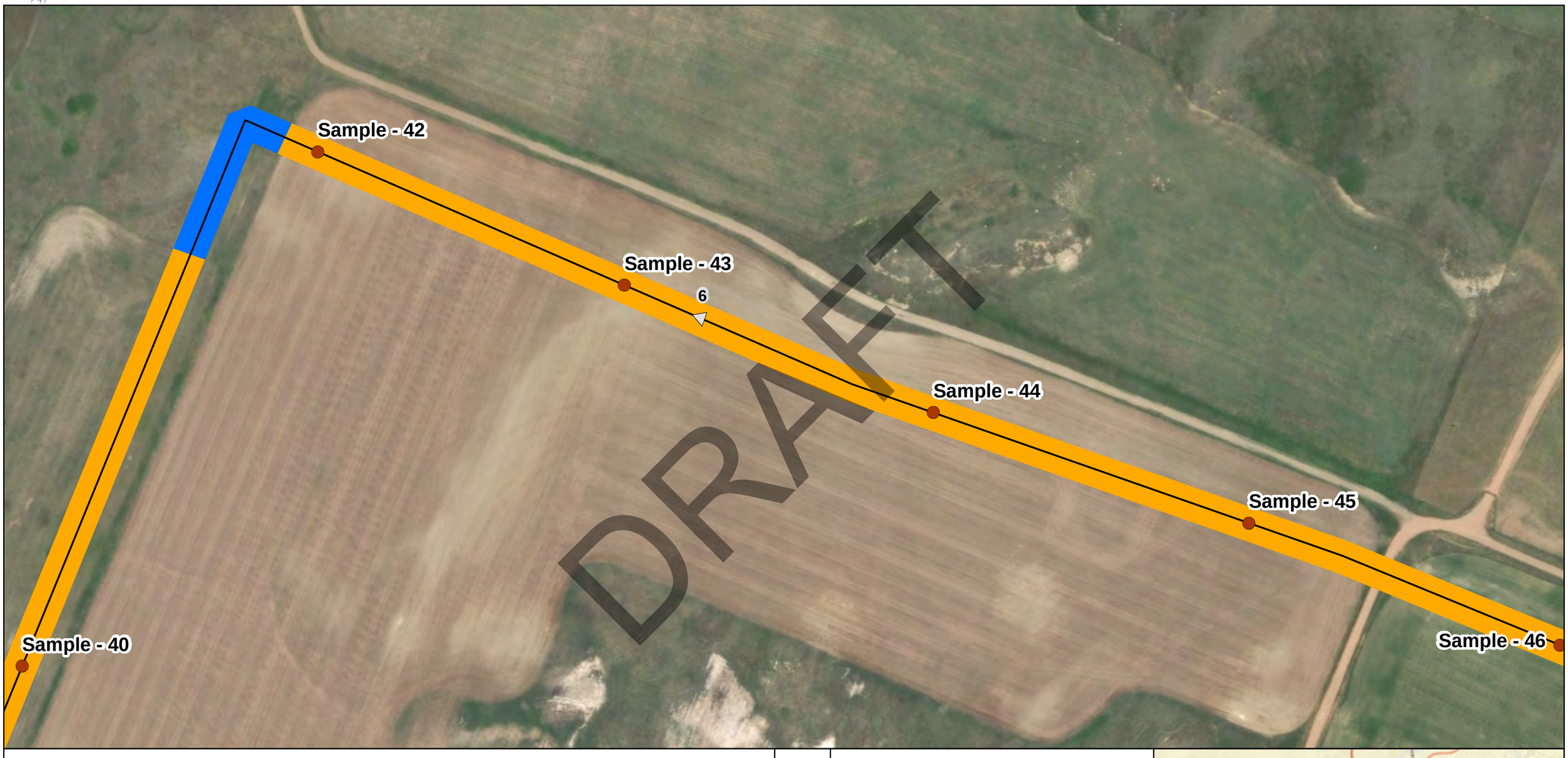
Little Missouri Lateral

Date: 12/20/2018

Projection: NAD 1983, UTM Zone 13N



Little Missouri Lateral - Ecozone



Legend

- Sample Points
- Milepost
- Centerline

Ecozone

- Crop
- Loamy
- Saline

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Little Missouri Lateral

Date: 12/20/2018

Projection: NAD 1983, UTM Zone 13N

Little Missouri Lateral - Ecozone



Legend

- Sample Points
- Milepost
- Centerline

Ecozone

- Crop
- Loamy
- Saline

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Little Missouri Lateral

Date: 12/20/2018

Projection: NAD 1983, UTM Zone 13N

Little Missouri Lateral - Ecozone



Legend

- Sample Points
- Milepost
- Centerline

Ecozone

- Crop
- Loamy
- Saline

1:2,500

0 125 250 500 Feet

Little Missouri Lateral

Date: 12/20/2018

Projection: NAD 1983, UTM Zone 13N



Little Missouri Lateral - Ecozone



Legend

- Sample Points
- Milepost
- Centerline

Ecozone

- Crop
- Loamy
- Saline

1:2,500

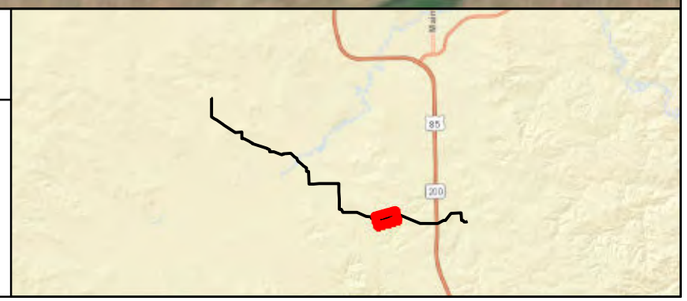
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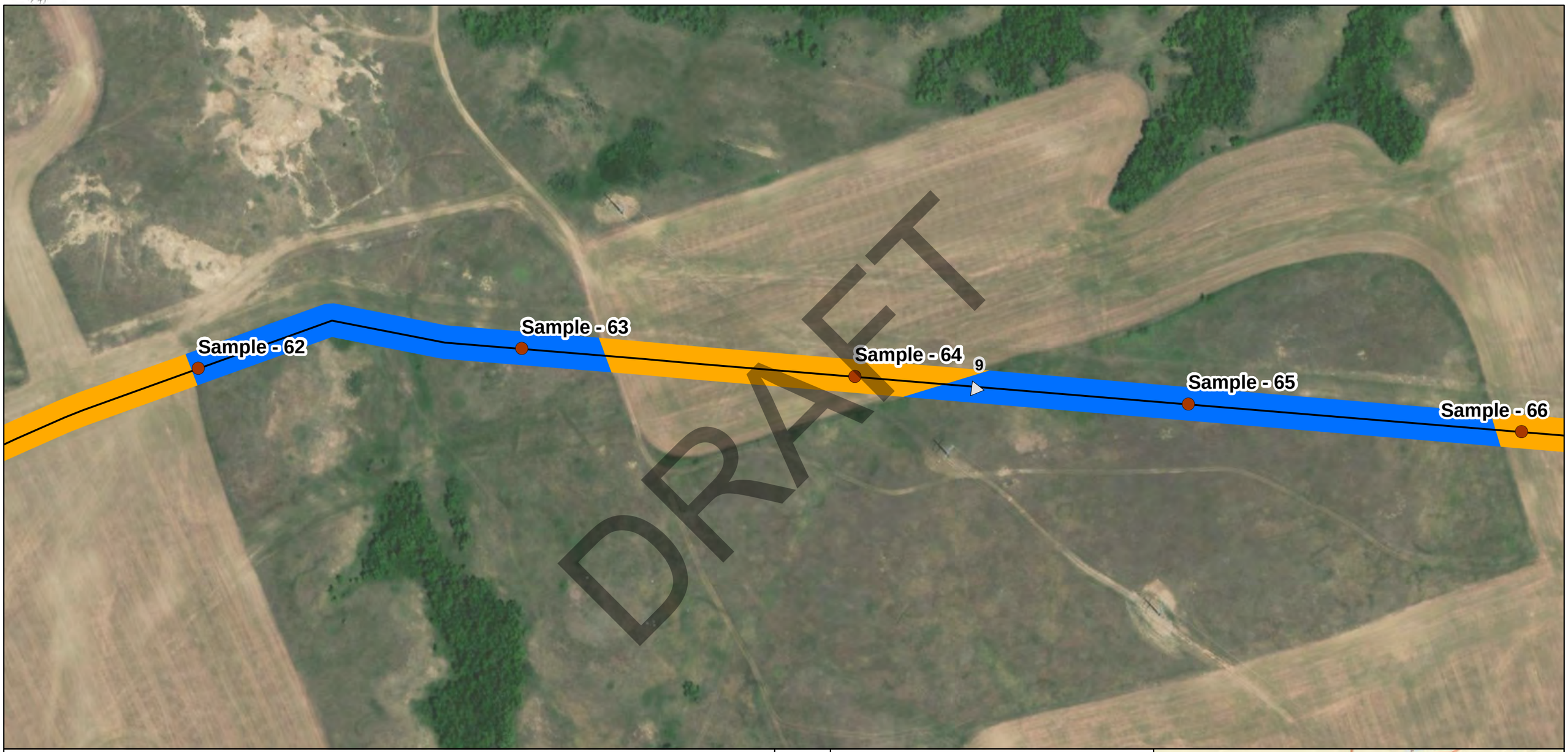
Little Missouri Lateral

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Little Missouri Lateral - Ecozone



Legend

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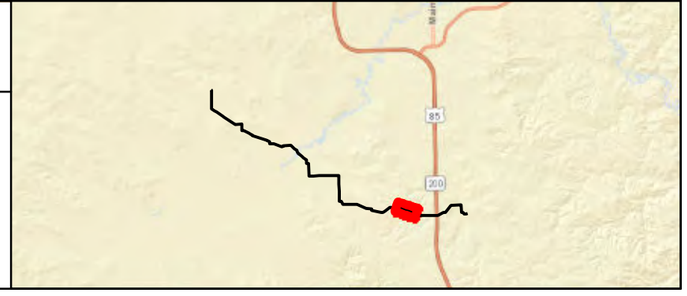
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N E S W

Little Missouri Lateral

Date: 12/20/2018

Projection: NAD 1983, UTM Zone 13N



Little Missouri Lateral - Ecozone



Legend

- **Sample Points**
- **Milepost**
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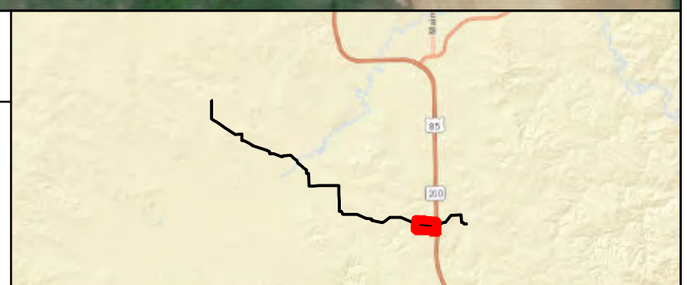
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N E S W

Little Missouri Lateral

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Projection: NAD 1983, UTM Zone 13N



Little Missouri Lateral - Ecozone



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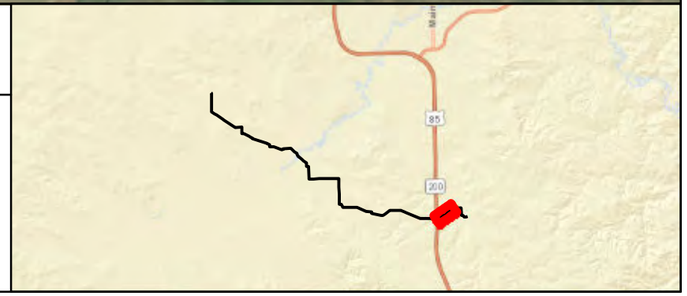
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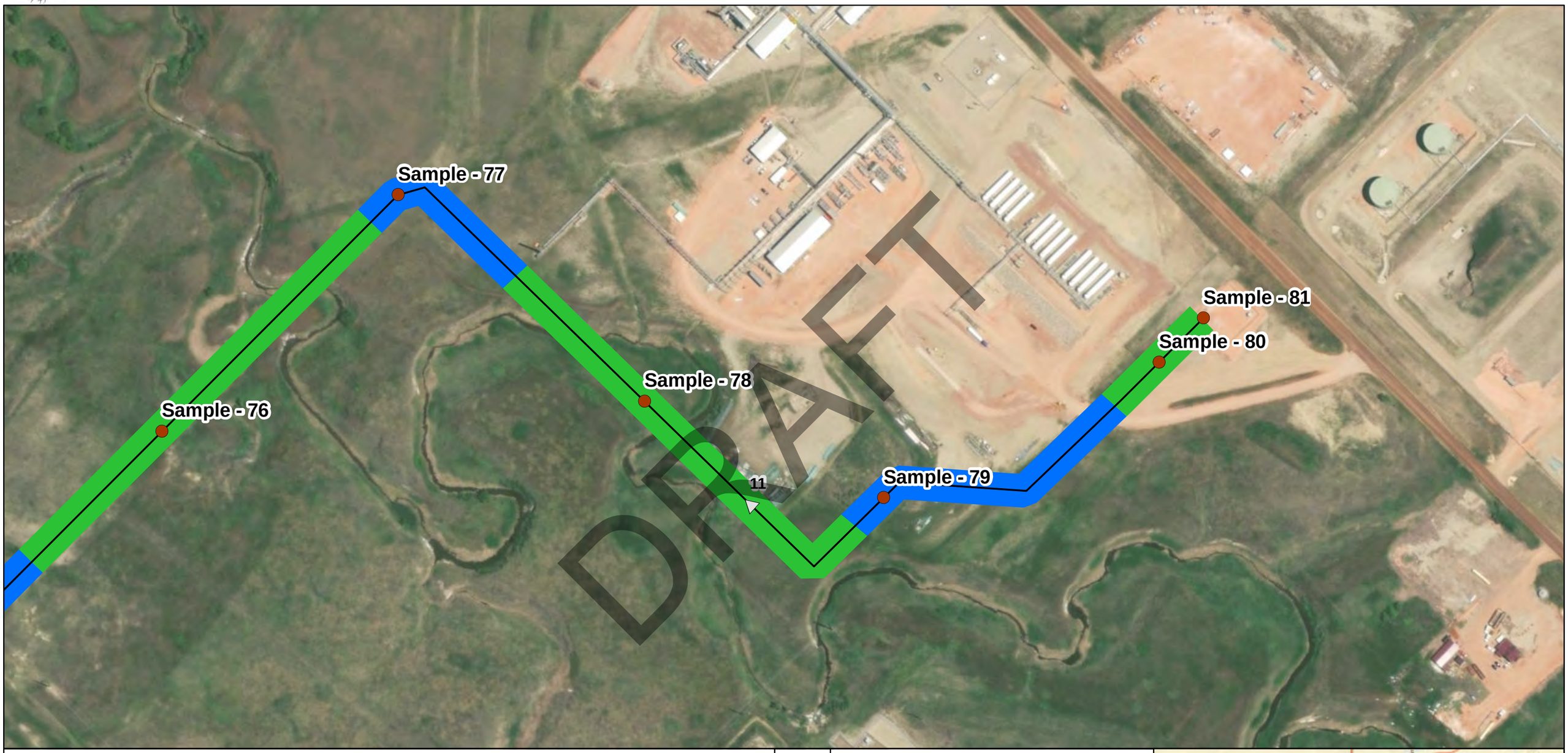
Little Missouri Lateral

Date: 12/20/2018

Projection: NAD 1983, UTM Zone 13N



Little Missouri Lateral - Ecozone



Legend

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Ecozone

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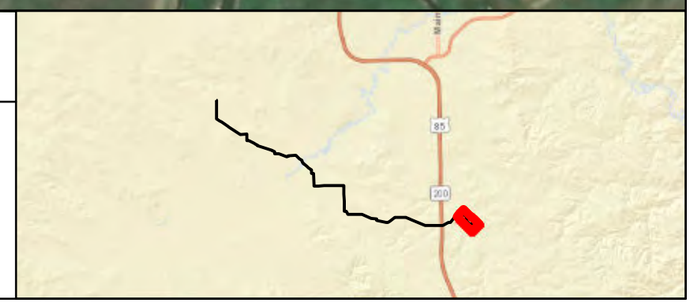
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Projection: NAD 1983, UTM Zone 13N



APPENDIX B

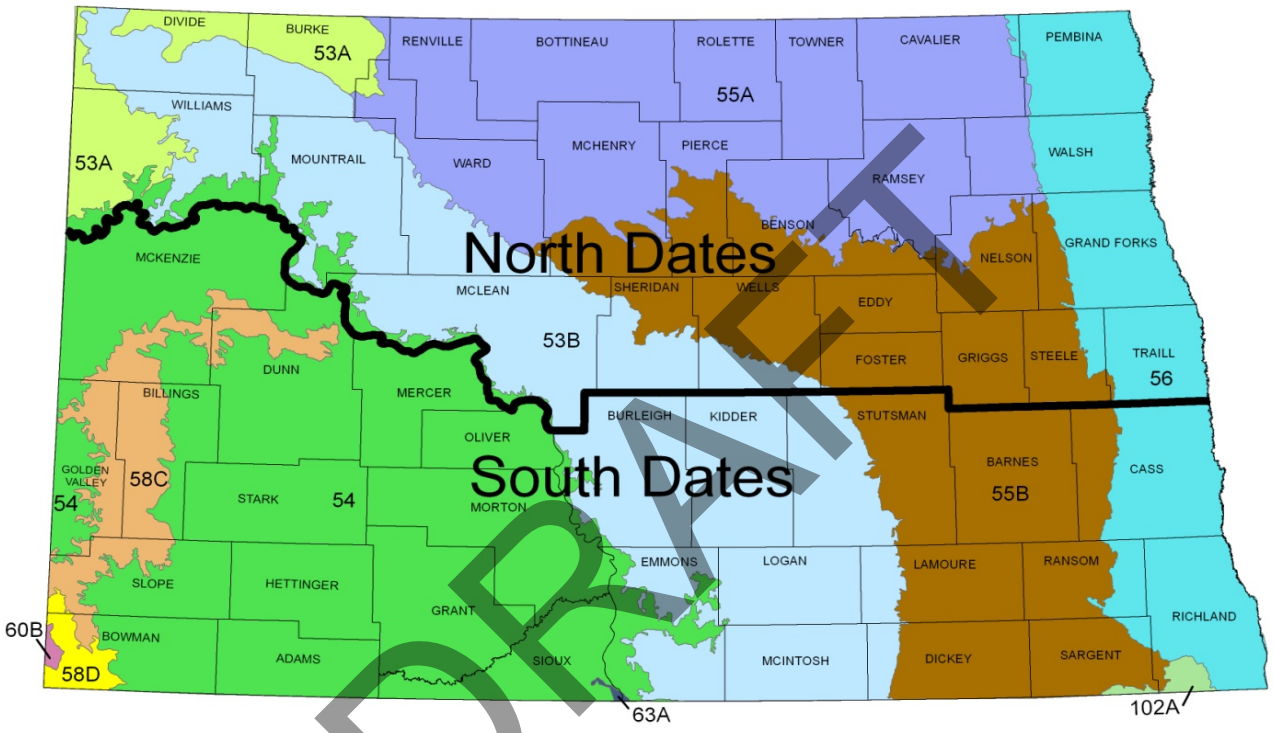
NRCS Herbaceous Vegetation Establishment Guide

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Herbaceous Vegetation Establishment Guide

Seeding Dates:

Seeding dates are based on climatic records, research, and experience; and represent optimum periods for grass and legume establishment. These dates should provide for adequate development of adventitious roots prior to stressful periods, such as hot, dry summers and cold, open winters. The following table shows recommended seeding dates by Major Land Resource Areas (MLRAs). Variation from these dates plus or minus 5 days may be made if justified by moisture and temperature conditions.



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Seeding Dates		
Species Type and Season of Planting	**NORTH** (53A, N.1/2 53B, 55A, N. ½ 56, N. 1/3 55B)	**SOUTH** (58C, 58D, 54, S. ½ 53B, S. 2/3 55B, S. 56)
Cool Season Species		
Spring[3]	Prior to May 20	Prior to May 10
Late summer [1]	August 10 to September 1	August 10 to September 15
Late fall (dormant) [2, 3]	See footnote [2]	See footnote [2]
Warm Season Species		
Spring	May 10 to June 25	May 10 to June 25
Warm/Cool Season Mix		
Spring	May 1 to June 15	April 20 to June 1

[1] If legumes are part of a mixture, seed by August 25th. For winter survival, it is essential that alfalfa plants reach the 6-leaf stage prior to fall dormancy. Alfalfa requires 6-8 weeks growth after emergence to develop the 6-leaf stage.

[2] Seeding may occur once soil temperatures drop to 40º Fahrenheit for a minimum of 5 consecutive days (usually after November 1) based upon North Dakota Agriculture Weather Network http://ndawn.ndsu.nodak.edu/index.html or actual field measurements at a depth of 2 inches.

[3] Pollinator plantings consisting of forbs only (no grasses) will be seeded during the spring or dormant seeding windows. Pollinator plantings consisting of forbs and grass mixtures will be seeded during the appropriate seeding window for the grass component of the mixture.

Seedbed Preparation:

A seedbed will be prepared that is free of competing vegetation and is not subject to excessive erosion. A firm seedbed will be provided so the seed is placed at the designed depth. **IT SHOULD BE FIRM ENOUGH SO THAT ADULT FOOTPRINTS ARE HARDLY VISIBLE**.

The presence or absence of weed populations, especially noxious weeds, will impact seedbed preparations. Each field should be evaluated for weed pressure. Seeding on fields with significant weed populations will be delayed until weeds are controlled. This may mean a protective cover crop may need to be planted.

When planning a seeding, the previous two years of herbicide application should be considered. Any potential carryover problems should be addressed by delaying seeding, establishing a cover crop, and/or changing species to be planted. If a cover crop is necessary, refer to part 6 of this tech note.

Seedbed alternatives:

No-Till Method - Seeding into standing stubble of a previous crop without further seedbed preparation. Excess straw or chaff should be removed prior to seeding. Use of harvest equipment, which spreads straw along a minimum of 80 percent of the header width, will prevent excess chaff problems. If weeds or excessive volunteering of previous crop is present, control with appropriate herbicide(s) in accordance with product label directions and current recommendations from North Dakota State University Cooperative Extension Service, ND Weed Control Guide, Cir. W-253 Rev.

Rye produces an allelopathic agent that may inhibit germination in many grass species. If possible, avoid seeding into rye stubble or heavy rye residue. Other commonly grown crops provide good cover and do not inhibit germination.

Cover Crop Method - Plant a cover crop (high residue producing crop) of oats, barley, flax, grain sorghum, millet, or sudangrass during the growing season before seeding perennial forages if existing cover is insufficient to control erosion. If the cover crop method is to be used, see part 7.

Clean-Till Method - Seed into a new, clean tilled, firmly packed seedbed. If erosion or potential climatic factors are a potential concern, a cover crop may be used. See part 6 if a cover crop is to be used.

Seeding Equipment:

Seeding equipment that ensures proper seed placement and good seed-soil contact will be used. Modern grass seeding attachments that allow for proper seed flow, seed placement and soil packing are needed to ensure a successful seeding.

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Slower seeding speeds should be used for fluffy or rough-coated seed species. Three to five miles per hour should be the seeding speed for most types of grass drills. Seeding speeds in excess of 6 miles per hour may result in uneven or inconsistent grass and legume stands.

If a carrier is needed to help feed seed through the drill cracked corn or rolled oats may be added to the mixture.

Grass Drill

Grass drills are specifically designed and equipped to properly meter and place various grass, legume and/or forb seed and share the following design characteristics:

- Different seed boxes are normally required to handle the three types of grass seed commonly used. This includes the relatively clean, smooth seed characteristic of many cool-season grasses, the chaffy or trashy seed characteristic of many warm-season grasses, and fine, smooth seed, characteristic of legumes or grasses such as switchgrass, hard fescue, or reed canarygrass. Seed boxes having the capability of seeding chaffy or awned grasses (i.e. blue grama, bluestems, and indiangrass) are needed, only if such species are planned in the seeding mixture; likewise, fine-seed or legume seed boxes are needed, only if such species are to be seeded.
- Agitators or similar mechanisms that prevent bridging of chaffy or trashy seed and ensure a constant flow of seed at the desired rate with uniform mixing of the species in the mixture.
- Feeder mechanism (picker wheels, fluted feed, etc.) that ensures uniform flow of all types of grass seed either separately or in a mixture.
- Oversized feeder tubes that allow constant flow of chaffy or trashy type seed from boxes to placement point (if such seed is used).
- Individually mounted, adjustable, spring loaded, double-disc openers.
- Depth bands or other depth-control systems that provide positive seed placement for final planting depth of one-fourth to one inch over varying degrees of seedbed firmness.
- Press/packer wheels that provide adequate covering and firming of soil over and around the seed for necessary seed/soil contact after proper seed placement. They should be mounted individually on each furrow opener or independently to follow behind each opener. Press/packer wheels are not intended to provide the basic "firm seedbed." The firm seedbed must exist before the drilling operation begins.
- Drill calibration should be completed for both grass and grain drills prior to seeding. Refer to item 4 for guidance in completing drill calibration.

Small Grain Drill

Free-flowing grass seed (i.e., wheatgrasses) and legume seed can be successfully planted with a small grain drill provided proper seeding depth can be maintained throughout the field. Seeding depth is the most limiting factor to seeding success and contributes to most of the seeding failures when using a grain drill. It is extremely important to have a firm seedbed when using a grain drill. Periodic inspections should be done to check seeding depth especially when seeding across different soil types. Seeding depth will vary under actual planting conditions.

Checking the drill frequently and hand mixing the seed is essential to achieving a properly blended seed mix and helps ensure that seeds of different sizes are seeded evenly across the field. Periodic feeder

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mechanism adjustments are usually necessary to ensure proper seeding rates. A separate legume box is desirable for seeding small seeded species. (i.e. switchgrass, hard fescue, reed canarygrass, and alfalfa). Ensure that the grain drill's drop tubes are placed in front of the packer wheels to allow for proper seed-soil contact.

Chaffy or awned seeds (i.e. bluestems, indiangrass, and blue grama) are extremely difficult to plant with a grain drill. It is recommended that a grass drill be used for these types of grasses. Proper agitation is needed to prevent "bridging" of seed in the seedbox, and the feeder mechanism must be capable of metering a uniform flow of seed at the desired rate. Very few grain drills have this capability. Use of debearded seeds is strongly recommended when considering seeding chaffy or awned seeds in a grain drill.

Broadcast Seeder

Broadcasting may only be used when one or more of the following conditions apply to the planting area:

- Slope makes use of a drill impractical;
- Soil conditions prohibit effective use of a drill;
- Area is 5 acres or less;
- Seeding pure stands of alfalfa.

Broadcast plantings exceeding 5 acres require a variance approved by the State Resource Conservationist. All areas to be broadcast will have properly prepared seedbed (minimal residue cover with a smooth, firmly packed surface). Following the broadcast operation, an additional operation will incorporate the seed into the soil at the proper depth. This can include use of a drag or harrow, culti-packer, roller packer, or other suitable implement to cover and press the seed into the soil surface, to attain the goal of good seed to soil contact. All broadcast plantings will utilize 150% of full seeding rates listed in Table 1. Forbs planned for pollinator plantings which normally exceed 100% rates, will not exceed 150% of the full seeding rate.

Air-seeders

Some air-seeders and similar types of equipment may be used to seed free flowing grass seed (i.e., wheatgrasses) and legume seed if proper seeding depth can be obtained (as specified in part 6). However, seeding mixtures containing varying seed sizes may require an inert carrier to work properly in air-seeders. The shallow planting depths for grasses and legumes can be difficult to maintain with this type equipment. The equipment must be able to provide a uniform flow of seed at the desired rate. Use packer wheels or other suitable packing implement to press soil firmly around the seeds.

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Drill Calibration:

Grass or grain drills may be calibrated using the following methods.

Bulk Weight Method:

Raise the drill's drive wheel and measure its circumference in **feet**. Next, measure the distance between seed spouts or disc openers. Use Table A to determine the number of revolutions (R) to turn the drive wheel for the row spacing and wheel circumference in feet (C) for your drill.

Table A

Row spacing in inches	No. of seed spouts to use	Turns of drive wheel	Row spacing in inches	No. of seed spouts to use	Turns of drive wheel
6	4	96/C = R	24	1	96/C = R
7	4	82/C = R	30	1	77/C = R
8	3	96/C = R	36	1	64/C = R
10	3	77/C = R	42	1	55/C = R
12	2	96/C = R	48	1	48/C = R

Place enough seed in the box to cover spouts from which you will collect seed. Turn the drive wheel until all spouts are feeding. Place a container under the correct number of seed spouts (as determined from the Table A) and turn the drive wheel the number of revolutions previously determined. Weigh the sample in grams. Multiply this weight by 0.5. The result is the pounds per acre at that setting. Make adjustments in the drill setting and continue trials until the desired seeding rate is obtained.

Remember: Seeding rates as determined by this method are in terms of **bulk seed**. You need to convert your seeding rate from pure live seed per acre to bulk seed per acre when using this calibration method.

Example:

Row spacing = 7 inches
Number of seed spouts = 4
Circumference of drive wheel = 6.8 ft
Revolutions of drive wheel (R) = 82/C
R = 82/6.8 = 12 revolutions
Bulk seeding rate is 15.1 lbs/ac. The drill is properly set when the 4 seed spouts yield 30 grams of seed after 12 revolutions of the drive wheel.
30 grams x 0.5 = 15 lbs/ac

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Seeds Per Row Foot Method:

This method of determining the amount of seed being distributed by the seeding equipment is to count the number of seeds per foot of drill row while the machine is in operation.

Fill the drill with seed, make setting, and drive equipment over a hard ground surface or canvas. Count the number of seeds per foot of row and adjust until proper seeding rate is attained. Use Table B to determine the linear foot of row necessary to equal one square foot planted.

Table B

Row spacing in inches	Linear foot of row to equal one square foot
6	2.0 feet
7	1.8 feet
8	1.5 feet
10	1.2 feet
12	1.0 foot

To determine the proper number of seeds per foot of drill row for a specific seeding mixture; you will first need to calculate the bulk seeding rate for each species in the mix. From Table 1, calculate the number of seeds per square foot (ft^2) for each pound seeded (seeds per pound divided by 43,560ft^2/acre). Multiply the number of seeds per square foot for each pound seeded by the bulk seeding rate for each species. Total the resulting numbers to determine the number of seeds per square foot for the mixture.

For example: If you want to calibrate a drill for a mixture of 4.5 lbs. PLS/ac green needlegrass (80% purity and 70% germination) and 4.0 lbs. PLS/ac western wheatgrass (92% purity and 85% germination), we would calculate the bulk seeding rate for each species. Bulk seeding rate would be 8 lbs/ac for the green needlegrass and 5.1 lbs/ac for the western wheatgrass. Table 1 shows one pound of green needlegrass seed contains,

180,000 or 4.1 seeds/ft^2 for each pound seeded (180,000/43,560 ft^2/acre). Western wheatgrass has 112,000 seeds per pound or about 2.6 seeds/ft^2 for each pound seeded.

8 lbs/ac x 4.1 seeds/ft^2/lb. = 32.8 seeds/ft^2
5.1 lbs/ac x 2.6 seeds/ft^2/lb. = 13.3 seeds/ft^2

The total seeds per square foot for the mix would be 46. If the drill we are calibrating has 7-inch row spacing, the drill calibration would be 46 seeds per 1.8 feet of row length.

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Seed Requirements:

A. All seed must meet the requirements of North Dakota State Seed Laws and Regulations. Information on State seed law is available at Chapter 4.1-53 of the ND Century Code or ND Seed Labeling Requirements. All seed, including homegrown seed, must be officially tested for purity and germination to enable pure live seed (PLS) calculations for determining the proper seeding rate. Tests must be made within a 12-month period, exclusive of the test month, prior to seeding. Recommend re-testing of seed within the 12-month period if stored improperly (high humidity and/or high temperature).

B. Use certified seed when available.

C. Approved Varieties and Seed Selection:

   a. Origin of non-varietal ('common') grass seed (and for those varieties not listed in table 2) of both native and introduced species for Forage and Biomass Planting is limited to ND, SD, NE, MT, MN, WY, and the Canadian provinces of Alberta, Manitoba and Saskatchewan.

   b. Origin of non-varietal ('common') native forbs and legumes (and for those varieties not listed in table 2) will originate or be grown in ND, SD, NE, MT, WY, ID, WA, OR, MN, WI, IA, CO, and the Canadian provinces of Alberta, Manitoba and Saskatchewan.

   c. Approved named varieties are located in Table 2. All approved seed varieties must originate from the contiguous United States or Canada. If the origin is from someplace other than the contiguous United States or the Canadian provinces of Alberta, Manitoba and Saskatchewan the producer or vendor must provide a DNA analysis that proves the variety is bona fide.

   d. Alfalfa named varieties must have a Winter Survival Index (WSI) of 2 or less to meet specifications. The term winter hardiness rating is sometimes used synonymously with winter survival index, a number of 2 or less is acceptable. If the winter hardiness rating uses letters (e.g. EH, extremely hardy) those will not be acceptable, only a number of 2 or less will be accepted. Origin of **non-varietal** ('common') alfalfa types and introduced legumes is limited to ND, SD, MN, MT, and the Canadian provinces of Alberta, Manitoba and Saskatchewan.

   e. Organic grass seed. Grass seed produced in a manner which meets the requirements of the National Organic Program is presently limited by availability and species. If organic grass seed which meets the requirements of Section 5 of this document is not available for the species identified on the ND-CPA-9, substitution of non-organically raised grass seed of the same species is permitted under Section 205.204(a) of the Code of Federal Regulations – National Organic Program.

   f. Legume seed should be inoculated with the proper culture just prior to seeding in order to increase the potential for nitrogen fixation by the plant.

D. No noxious weed amounts are allowed on any seed tags.

E. All seeding rates will be based on pure live seed (PLS). PLS can be calculated from information on the seed tag. PLS is derived by multiplying percent pure seed by percent germination (plus

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percent hard and dormant seed, if present) and dividing by 100. See ND Extension Service Publication A-353 "Farmer's Guide for Seed Buying".

F. Additional information on seed tag interpretation can be found at:
http://www.nrcs.usda.gov/Internet/FSE_PLANTMATERIALS/publications/ndpmcnl11797.pdf

G. Seed coating is considered inert matter which is reflected in the purity and inert percentages on the seed tag. The extra weight of the coating reduces the number of pure live seeds per pound, resulting in need to use higher seeding rates to achieve a full stand. Seed coating is considered inert matter which is reflected in the purity and inert percentages on the seed tag. The extra weight of the coating reduces the number of pure live seeds per pound, resulting in need to use higher seeding rates to achieve a full stand.
http://www.nrcs.usda.gov/Internet/FSE_PLANTMATERIALS/publications/ndpmcnl12597.pdf

H. Total PLS pounds seeded must be within 10% of the planned design.

Seeding Depth:

Proper seeding depth is extremely important in successfully establishing native and introduced vegetation from seed. Native grasses, forbs, and shrubs need to be seeded at a shallow depth, as light plays a key role in the germination of many native species. Optimum seeding depths are ¼ to ¾ inch.

Cover and Companion Crops:

Cover Crops

A cover crop is an annual residue-producing crop, planted during the growing season(s) before seeding the perennial cover. Its purpose is to provide cover and residues to reduce evaporation, maintain cool soil temperatures, smother or reduce weeds, improve soil structure, enhance soil biology, trap snow, protect seedlings from extreme climatic conditions and control wind and water erosion.

See Practice 340 *Cover Crop* for guidance on selecting and managing cover crops. See Table 1: *Cover Crop – Common Species and Properties* for cover crop species characteristics, seeding rates, mycorrhizal association, etc.

Companion Crops

A companion crop is an annual that is planted with the perennial species. Seeding rates for companion crops are lower than normal seeding rates for those crops to reduce competition with the seeded perennial species.

Barley	10 lbs/acre
Oats	10 lbs/acre
Spring wheat	15 lbs/acre
Flax	7 lbs/acre

If used, the companion crop should be clipped above the new perennial seedlings and removed before it becomes competitive with the perennial species.

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Management and Protection During Establishment:

Grazing

Do not graze until stand is fully established. This period will be a minimum of one full growing season. If an adequate stand has not established during the first growing season, or if seedlings do not have well-developed root systems with adventitious roots above the sown seed, then deferment should be extended through the second growing season. Grazing during the deferment period for weed control will be handled on a case-by-case basis provided no damage will be done to the seeded species.

Weed Control

During the establishment period, excessive amounts of competitive weeds will be controlled. Control weeds that compete with seedlings for sunlight and/or moisture during the growing season of the species planted. The first weed control operation will be needed as recommended or prior to weed seed maturity. Repeated weed control operations may be needed. Competitive weeds can be controlled either mechanically or chemically, or by a combination of these methods.

Mechanical - When controlling competitive weeds by clipping or mowing, adjust the equipment to cut above the new seedlings, and clip before the weeds set seed or mature. If the clippings are dense enough to smother the new seedlings, promptly remove clippings from the field.

Mowing Height – Eight to ten inches is the preferred stubble height. This will be over the top of most 1- to 2-year old forb and legumes species in early summer. Certain species are especially sensitive to clipping height and removal of the basal leaves may result in death of the plant. Some grass species such as switchgrass have high growing points, and once established should not be mowed at a height less than 10 inches until after the growing season.

Equipment – Swathers generally work best because of operator visibility, maneuverability, and ease of height adjustment. The operator can quickly raise or lower the platform. If the windrows are heavy enough to smother new seedlings they should be promptly removed. Sickle bar mowers are good if an adequate, consistent stubble height can be maintained. Rotary mowers can work well if they are set at the highest wheel setting. This will usually result in about an 8-inch clipping height. A level mowing height should be maintained and travel speed as appropriate to disperse the clippings. A sharp blade is essential.

Timing – Mowing must be done early enough in the season before most of the weed seed become viable and so the seeded species can still benefit from the "opened canopy" and put on new growth before fall. Multiple mowings in a season may be necessary with high density/biomass weed competition. Mowing in late summer or early fall provides little benefit to the seeded species and probably causes more harm than good. Check local/state regulations of individual conservation practices for the earliest allowable mowing dates.

Whenever new seedings are mowed some injury occurs to the seeded species. Young forb and legume seedlings are especially vulnerable and may be killed by driving over them. If weeds are a competition problem to the new seeding, then mowing is probably justified. Spot mowing is encouraged whenever possbile. This eliminates damage to the seeded species in areas where you don't have to mow, and maintains the taller wildlife cover. Spot mowing also creates "edge" structure which enhances landscape diversity within the field and may provide additional wildlife benefits.

Chemical - To control competitive weeds with herbicides use the appropriate herbicide(s) applied according to the manufacturer's label. The best control will generally be obtained when weeds are in the early stages of growth. Precautions should be taken to ensure that grass or legume seedlings are not

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injured by the selected herbicide(s). Refer to North Dakota State University, ND Weed Control Guide (Cir. W-253 Rev.) for specific herbicide recommendations on forage crops in North Dakota. Noxious weeds must be controlled in accordance with State law.

Insect Control

Insects can be a threat to seedlings. Contact the County Extension Service for recommendations on control of specific insects affecting seeded species.

Cautions when using pesticides:

Some herbicides have residual activity that can adversely impact stand establishment of sensitive species or may have haying or grazing restrictions. Use of pesticides must be consistent with the manufacturer's label requirements and in accordance with State and Federal laws and regulations.

Guidelines for Stand Evaluation:

To determine adequacy of stands and to determine if reseeding or reinforcement seeding is required, use ND-CPA-9a, Stand Evaluation Worksheet, and the following guidelines:

It should be recognized that environmental factors, such as climate, insects, soils, and fertility affect time required for establishment of stands. Timeliness of precipitation, drought, extreme temperatures, severe winds, or late soil thaw can delay seedling emergence and/or development.

Seedling emergence should be relatively uniform over the area. The density of established plants required for an adequate stand will depend upon the planned purpose of the seeding and may vary from program-to-program. Consult program specific guidelines for additional information.

If specific practice or program guidelines are not available, stand counts should indicate a density of at least 3 to 5 seedlings per square foot of area. If at least 3 of the seedlings are rhizomatous species, the lower limit of 3 seedlings per square foot is adequate. The upper limit of 5 seedlings per square foot is necessary when all are bunch-type species or a mixture of rhizomatous and bunch-type species.

The adequacy of a stand will be based on density of established plants and stage of morphological development needed to ensure perenniality. To be considered established, a grass plant must have a well-developed adventitious root system and should exhibit signs of tillering or rhizome development. See Figure 1. An alfalfa plant must have a well-developed taproot with secondary and tertiary roots and a well-developed crown set below the soil surface and/or branch rhizome.

For more information on alfalfa seedling development, see these online publications:

University of Wisconsin, Alfalfa Germination & Growth, A-3681

NDSU, Time of Seeding for New Alfalfa Establishment, R648

Preliminary stand evaluation can be made 4 to 8 weeks after germination; evaluate for progress and management problems (i.e. weeds, insects, etc.) - not for final establishment.

All stands must go through at least one winter before making final stand evaluation.

Stands resulting from late fall (dormant) or spring seedings must go through the first growing season and subsequent winter; evaluation for final establishment can be made any time during the second growing season.

Stands resulting from late summer seeding cannot be evaluated for final establishment until the end of subsequent, full growing season.

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Most stands will require 2 growing seasons to become established; warm-season species may require 3 growing seasons for establishment.

Stand counts may either be done using a 1-square foot frame or the row count method. If a frame count is used, all plants rooted within the frame should be counted. If the row count method is used, 2 side-by-side rows should be counted, the length to be determined by the row spacing. 6-inch row spacing would require the observer to count all plants in 2 rows for a length of 12 inches; a 7-inch row spacing would require a 10.3-inch length of 2 rows; and an 8-inch row spacing would require a 9-inch length.

A predetermined number of steps should be taken diagonal or perpendicular to the drill rows and the frame dropped at the toe of the foot on the final step. The frame should be dropped in a consistent alignment to the drill rows. The same procedure would be used when making a row count. Instead of dropping the frame at the toe of the foot, this point would then mark the beginning of the row count.

The number of samples required depends on factors such as stand uniformity and the number of species to be counted. Generally, a minimum of 10 counts (or frames) per 10 acres or less of field size would result in a representative sample. End rows, turn around areas or other areas that may have been double seeded should be avoided. Ten counts per 10 acres of field size should only be used as a starting point. For example, a 70 to 80 acre pasture planting with a uniform stand may be sampled accurately using 40 counts or less. Whatever the situation, enough counts must be taken so that a representative sample is obtained.

ND-CPA-9A, Stand Evaluation Worksheet, may be used to document the stand counts.

If evaluation reveals a marginal stand, consideration should be given to allowing a second growing season for establishment. Seedings that contain a high percentage of "hard seed" are more likely to produce new seedlings during the second growing season.

The alternative of a partial reinforcement seeding, in lieu of the full seeding rate, should be considered during the evaluations.

"Spot" seeding weak areas may be a logical alternative in the case of spotty or intermittent stands, in lieu of whole field reseeding. Grazing deferment should follow spot seedings.

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Table 1. Full Seeding Rates [1,2]					
Species	**Seeds/Pound**	**MLRA 55 A/B & 56 [4]**		**MLRA 53 A/B, 54 & 58 C/D [4]**	
		Seed/SqFt	**#PLS/Ac**	**Seed/SqFt**	**#PLS/Ac**
Introduced Cool-Season Grasses					
Bromegrass					
Meadow (BRBI2)	80,000	30	16.5	25	13.5
Smooth (BRIN2)	135,000	25	8	20	6.5
Creeping foxtail (ALAR)	750,000	60	3.5	60	3.5
Hard fescue (FEBR7)	565,000	50	4	35	3
Timothy (PHPR3)	1,300,000	30	1	NR	NR
Wheatgrass					
Green (ELHO3)	135,000	46	14	33	10
Crested (AGCR)	175,000	28	7	25	6
Intermediate (THIN6)	88,000	20	10	17	8.5
Pubescent (THIN6)	88,000	20	10	17	8.5
Siberian (AGFR)	175,000	30	7.5	25	6
Tall (THPO7)	79,000	23	13.5	20	11
Wildrye					
Altai (LEAN3)	68,000	30	19	25	16
Dahurian (ELDA3)	86,000	20	10	17	8.5
Mammoth (LERA5)	55,000	30	24	25	20
Manystem (LEMU11)	150,000	30	8.5	25	7.5
Russian (PSJU3)	175,000	30	7.5	25	6
Native Cool-Season Grasses					
Bluejoint (CACA4)	4,480,000	50	0.5	50	0.5
Fowl bluegrass (POPA2)	2,080,000	48	1	48	1
Green needlegrass (NAVI4)	180,000	30	7.5	25	6
Mannagrass					
American (GLGR)	1,280,000	45	1.5	45	1.5
Fowl (GLST)	1,440,000	37	1	37	1
Needle and thread (HECO26)	115,000	25	9.5	25	9.5
Nutall alkaligrass (PUNU2)	2,108,000	50	1	50	1

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Table 1. Full Seeding Rates [1,2]					
Species	**Seeds/Pound**	**MLRA 55 A/B & 56 [4]**		**MLRA 53 A/B, 54 & 58 C/D [4]**	
		Seed/SqFt	**#PLS/Ac**	**Seed/SqFt**	**#PLS/Ac**
Native Cool-Season Grasses (cont.)					
Porcupine grass (HESP11)	57,000	25	19	25	19
Prairie junegrass (KOMA)	2,315,000	50	1	50	1
Reed canarygrass (PHAR3)	530,000	40	3.5	40	3.5
Wheatgrass					
Bluebunch (PSSP6)	140,000	NR	NR	25	8
Slender, awned & bearded (ELTR7)	155,000	25	5.5	17	5
Streambank/Thickspike (ELLAL)	155,000	NR	NR	25	7
Western (PASM)	112,000	25	10	20	8
Whitetop (Sprangletop) (SCFE)	191,000	11	2.4	NR	NR
Wildrye					
Basin (LECI4)	140,000	NR	NR	25	8
Beardless (LETR5)	150000	30	8.5	25	7.5
Canada (ELCA4)	115,000	20	7.5	17	6.5
Virginia (ELSU)	96,000	20	10	NR	NR
Native Warm-Season Grasses					
Alkali sacaton (SPAI)	1,758,000	NR	NR	40	6
American sloughgrass (BESY)	1,150,000	25	0.9	25	0.9
Bluestem					
Big (ANGE)	176,000	30	7.5	25	6
Little (SCSC)	286,000	30	4.5	25	4
Sand (ANHA)	113,000	30	12	25	9.5
Buffalograss (BODA2)	50,000	30	26	25	23
Grama					
Blue (BOGR2)	750,000	40	2.5	30	2
Sideoats (BOCU)	180,000	30	7.5	25	6
Inland saltgrass (DISP)	520,000	35	5.5	35	5.5
Indian ricegrass (ACHY)	235,000	30	5.5	25	4.5
Indiangrass (SONU2)	193,000	30	7	25	5.5
Prairie cordgrass (SPPE)	183,000	30	7	30	7

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Table 1. Full Seeding Rates [1,2]					
Species	**Seeds/Pound**	**MLRA 55 A/B & 56 [4]**		**MLRA 53 A/B, 54 & 58 C/D [4]**	
		Seed/SqFt	**#PLS/Ac**	**Seed/SqFt**	**#PLS/Ac**
Native Warm-Season Grasses (cont.)					
Prairie dropseed (SPHE)	224,000	25	5	25	5
Prairie sandreed (CALO)	275,000	30	5	25	4
Sand dropseed (SPCR)	5,680,000	70	0.5	70	0.5
Switchgrass (PAVI)	390,000	40	4.5	30	3.5
Native Grass-likes					
Fox sedge (CAVU2)	1,600,000	37	1	37	1
Slough sedge (CAAT2)	230,490	25	4.7	25	4.7
Native Forbs and Legumes					
American vetch (VIAM)	30,000	25	36	25	36
Aster					
Blue (SYLAL3)	880,000	30	1.5	30	1.5
Heath (SYER)	3,200,000	30	0.4	30	0.4
New England (SYNO2)	1,300,000	25	0.8	NR	NR
Black-eyed Susan (RUHI2)[3]	1,450,000	25	0.8	25	0.8
Black samson (ECAN2)	120,000	25	9	25	9
Blanket flower (GAAR)	157,000	25	7	25	7
Blue vervain (VEHA2)	1,488,000	34	1	34	1
Canada anemone (ANCA8)	128,000	29	10	29	10
Canada milkvetch (ASCAC6)	266,000	25	4	25	4
Canada tickclover (DECA7)	88,000	25	12.3	25	12.3
Columbine (AQCA)	362,000	25	3	25	3
Coneflower					
Grayhead (RAPI)	625,000	25	1.7	NR	NR
Prairie (Yellow) (RACO3)[3]	737,000	25	1.5	25	1.5
Cudweed sagewort (ARLU)[3]	4,000,000	25	0.3	25	0.3
Culver's root (VEVI4)	12,800,000	30	0.1	NR	NR
Cup plant (SIPE2)	22,400	10	9	NR	NR

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Table 1. Full Seeding Rates [1,2]					
Species	**Seeds/Pound**	**MLRA 55 A/B & 56 [4]**		**MLRA 53 A/B, 54 & 58 C/D [4]**	
		Seed/SqFt	**#PLS/Ac**	**Seed/SqFt**	**#PLS/Ac**
Native Forbs and Legumes (cont.)					
Evening primrose (OEBI)	1,376,000	25.3	0.8	25.3	0.8
Gayfeather					
Dotted (LIPU)	136,000	25	8	25	8
Thickspike (LIPY)	136,000	25	8	NR	NR
False boneset (EUPE3)	2,560,000	25	0.4	25	0.4
Giant blue hyssop (AGFO)	1,440,000	25	0.8	25	0.8
Golden Alexander (ZIAU)	176,000	25	6.2	25	6.2
Goldenrod					
Canada (SOCA6)	4,600,000	25	0.2	25	0.2
Missouri (SOMI2)	1,998,000	25	0.5	25	0.5
Stiff (SORI2)	772,000	25	1.4	25	1.4
Tall smooth (SOGI)	700,000	25	0.5	25	0.5
Hoary vervain (VEST)	450,000	25	2.4	25	2.4
Illinois bundleflower (DEIL)	60,000	25	18	25	18
Ironweed (VEFA2)	385,000	25	2.8	25	2.8
Joe Pye weed (EUMAB)	1,520,000	25	0.7	25	0.7
Lewis flax (LILE3)	287,000	25	3.8	25	3.8
Milkweed					
Butterfly (ASTU)	67,000	25	16.2	25	16.2
Showy (ASSP)	85,000	25	13	25	13
Swamp (ASIN)	72,000	25	15	25	15
Partridge pea (CHFAF)	43,000	10	10	10	10
Plains coreopsis (COTI3)	1,650,000	25	0.7	25	0.7
Prairieclover					
Purple (DAPU5)	290,000	25	3.8	25	3.8
White (DAAL)	278,000	25	3.9	25	3.9
Prairie onion (ALST)	176,000	25	6.2	25	6.2
Prairie phlox (PHAN4)	304,000	28	4	28	4

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Table 1. Full Seeding Rates [1,2]					
Species	**Seeds/Pound**	**MLRA 55 A/B & 56 [4]**		**MLRA 53 A/B, 54 & 58 C/D [4]**	
		Seed/SqFt	**#PLS/Ac**	**Seed/SqFt**	**#PLS/Ac**
Native Forbs and Legumes (cont.)					
Purple meadow rue (THDA)	176,000	25	6.2	25	6.2
Rocky Mountain Bee plant (CLSE)	64,000	29.6	20	29.6	20
Scarlet globemallow (SPCO)	500,000	25	2	25	2
Silvery lupine (LUAR3)	126,000	NR	NR	25	8
Shell-leaf penstemon (PEGR7)	273,000	25	4	25	4
Sneezeweed (HEAU)	2,100,000	25	0.4	25	0.4
Spiderwort					
Long bract (TRBR)	166,000	25	7	25	7
Prairie (TROC)	166,000	25	7	25	7
Sunflower					
False (HEHES)	60,000	25	18	25	18
Maximilian (HEMA2)	250,000	6	1	6	1
Sawtooth (HEGR)	630,000	25	1.7	NR	NR
Stiff (HEPAS)[3]	85,000	5	2.5	5	2.5
Western yarrow (ACMIO)[3]	2,800,000	25	0.4	25	0.4
Wild bergamot (MOFI)	1,200,000	25	0.9	25	0.9
Introduced Legumes					
Alfalfa (MESA)	210,000	30	6.5	25	5.5
Birdsfoot trefoil (LOCO6)	418,000	50	5	NR	NR
Cicer milkvetch (ASCI4)	134,000	30	10	25	8
Clover					
Alsike (TRHY)	680,000	50	3	50	3
Red (TRPR2)	275,000	30	5	NR	NR
Strawberry (TRFR2)	300,000	25	3.5	25	3.5
Sweet (MEOF)	260,000	25	4	20	3
White / Ladino (TRRE3)	800,000	25	1.5	25	1.5
Sainfoin (ONVI)	18,500	15	35 (hull)	15	35 (hull)

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Table 1. Full Seeding Rates [1,2]					
Species	**Seeds/Pound**	**MLRA 55 A/B & 56 [4]**		**MLRA 53 A/B, 54 & 58 C/D [4]**	
		Seed/SqFt	**#PLS/Ac**	**Seed/SqFt**	**#PLS/Ac**
Native Shrubs					
Buffaloberry (SHAR)	41,000	4	4.2	4	4.2
Chokecherry (PRVIV)	5,000	3	26	3	26
False indigo (AMNA)	52,000	30	25	25	21
Golden currant (RIAU)	240,000	30	5.5	25	4.5
Juneberry (AMAL2)	82,000	30	16	25	13
Leadplant (AMCA6)	200,000	30	6.5	25	5.4
Prairie rose (ROAR3)	45,000	30	29	25	24
Saltbush					
Fourwing (dewinged) (ATCA2)	52,000	7	6	7	6
Gardner (ATGA)	110,000	30	12	25	10
Western snowberry (SYOC)	74,400	30	17.5	25	14.6
Winterfat (KRLA2)	150,000	30	8.5	25	7
WY big sagebrush (ARTRW8)	2,466,000	NR	NR	28	0.5

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Footnotes for Table 1.

[1] See individual practice specifications (e.g. 550 Range Planting) for planning and application details and requirements.

[2] For additional information see http://plants.usda.gov/.

[3] These species are limited to no more than 2% of the seeding mix.

[4] See map on page 1 or Major Land Resource Areas (MLRA) of North Dakota in FOTG - Section I - Maps.

Table 2. Approved Named Varieties [1]		
Species	**Recommended Varieties for North Dakota**	
Introduced Cool-Season Grasses		
Bromegrass	Meadow	Fleet, Paddock, Regar, Montana, MacBeth, Cache
	Smooth[1]	Carlton, Signal, Magna, Manchar, Badger, Radisson, Rebound, Beacon, Barton, Baylor, Saratoga, Lincoln, AC Rocket, Bravo, Polar, Jubilee, Alpha, Cottonwood, York
Creeping foxtail		Retain, Garrison
Hard fescue		Discovery, Aurora, Reliant, Durar
Timothy		Climax, Itasca, Winmor, Comtal, Goliath, Timfor, Toro
Wheatgrass	Crested	
	Type: Standard	Nordan, RoadCrest, Summit
	Fairway	Ephraim, Ruff, Parkway, Fairway, Douglas
	Hybrid	HyCrest II, HyCrest, NU-ARS AC2
	Green	NewHy, AC Saltlander
	Intermediate	Reliant, Clarke, Slate, Chief, Oahe, Haymaker, Beefmaker, Manifest, Rush [4]
	Pubescent	Manska, Greenleaf, Luna
	Siberian	Vavilov, P-27
	Tall	Orbit, Platte, Jose, Alkar
Wildrye	Altai	Pearl, Eejay, Prairieland, Mustang
	Beardless	Shoshone
	Dahurian	Arthur, James
	Mammoth	Volga
	Manystem	Shoshone
	Russian	Mankota, Tetracan, Bozoisky Select, Swift, Bozoisky II, Cabree, Mayak
Native Cool-Season Grasses		
Bluejoint		Common
Fowl bluegrass		Common
Green needlegrass		Lodorm, AC Mallard, Fowler
Mannagrass	American	Common
	Fowl	Common
Needle and thread		Common, AC Sharptail
Nutall's alkaligrass		Common
Porcupine grass		Common
Prairie junegrass		Common
Reed canarygrass		Palaton, Venture, Vantage, Rise, Rival, Chiefton, Marathon
Wheatgrass	Bluebunch	Goldar, Secar, Anatone, P-7, Whitmax
	Slender awned, bearded	Adanac, Pryor, Revenue, Primar, Firststrike
	Streambank/ Thickspike	Bannock, Critana, Sodar, AC Polar, Elbee
	Western	Rodan, Walsh, Flintlock, Rosana, W.R.Poole, Recovery
Whitetop (Sprangletop)		Common
Wildrye	Basin	Trailhead, Magnar, Continental, Washoe
	Canada	Mandan
	Virginia	Omaha

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Table 2. Approved Named Varieties [1]		
Species	**Recommended Varieties for North Dakota**	
Native Warm-Season Grasses		
Alkali sacaton		Common
American sloughgrass		Common
Bluestem	Big	Sunnyview, Bison, Bonilla, Bounty, Champ
	Little	Badlands, Itasca
	Sand	Goldstrike, Garden
Buffalograss		Bowie, Cody
Grama	Blue	Bad Rivean
	Sideoats	Killdeer, Pierre, Butte
Inland saltgrass		Common
Indian ricegrass		Rimrock, Nezpar
Indiangrass		Tomahawk
Prairie cordgrass		Red River
Prairie sandreed		Goshen, Bowman, Koch
Prairie dropseed		Common
Sand dropseed		Common
Switchgrass		Dacotah, Forestburg, Sunburst, Summer
Native Grass-likes		
Fox sedge (*Carex vulpinoidea*)		Common
Slough sedge (*Carex atherodes*)		Common
Native Legumes and Forbs		
American vetch		Common
Aster	Blue	Common
	Heath	Common
	New England	Common
Black-eyed Susan		Common
Black Samson		Bismarck
Blanket flower		Meriwether
Blue vervain		Common
Canada anemone		Common
Canada milkvetch		Sunrise
Canada tickclover		Common
Columbine		Common
Coneflower	Grayhead	Common
	Prairie (yellow)	Stillwater
Cudweed sagewort		Summit
Culver's root		Common
Cup plant		Common
Evening primrose		Common
False boneset		Common
Giant blue hyssop		Common
Gayfeather	Dotted	Common
	Thickspike	Common

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Table 2. Approved Named Varieties [1]		
Species	**Recommended Varieties for North Dakota**	
Native Legumes and Forbs (cont.)		
Golden Alexander		Common
Goldenrod	Canada	Common
	Missouri	Common
	Stiff	Common
Hoary vervain		Common
Illinois bundleflower		Common
Ironweed		Common
Joe Pye weed		Common
Lewis flax		Appar, Maple Grove
Milkweed	Butterfly	Common
	Showy	Common
	Swamp	Common
	Tall smooth	Common
Partridge pea		Common
Plains coreopsis		Common
Prairie onion		Common
Prairie phlox		Common
Purple meadow rue		Common
Prairieclover	Purple	Bismarck
	White	Antelope
Rocky Mountain Bee plant		Common
Scarlet globemallow		Common
Shell-leaf penstemon		Common
Silvery lupine		Common
Sneezeweed		Common
Spiderwort	Long bract	Common
	Prairie	Common
False sunflower	False	Common
	Maximilian	Medicine Creek
	Sawtooth	Common
	Stiff	Bismarck
Western yarrow		Great Northern, Eagle
Wild bergamot (Monarda)		Common
Introduced Legumes		
Alfalfa [2]		Winter Survival Index (WSI) of 2 or less [3]
Birdsfoot trefoil		Leo, Empire, Viking
Cicer milkvetch		Lutana, Monarch, Windsor
Clover	Alsike	Common
	Red	Common
	Strawberry	Common
	Sweet	Common
	White / Ladino	Common
Sainfoin		Eski

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Table 2. Approved Named Varieties [1]		
Species	**Recommended Varieties for North Dakota**	
Native Shrubs		
Buffaloberry		Sakakawea
Chokecherry		Common
Currant	Golden	Common
False indigo		Survivor
Fourwing saltbush	Dewinged	Wytana, Snake River
Gardner saltbush		Common
Juneberry		Common
Leadplant		Common
Prairie rose		Common
Western snowberry		Trapper
Winterfat		Open Range
WY big sagebrush		Common

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Footnotes for Table 2.

[1] See individual practice specification (e.g. 512 – Forage and Biomass Planting) for planning and application details and requirements.

[2] A partial list of grazable type alfalfas can be found in the NDSU report, "Developing Alfalfa Adapted to Grazing in the Northern Great Plains".

[3] The following web sites are approved for use in determining alfalfa varieties that are acceptable and planners are strongly encouraged to use these web sites for selecting acceptable varieties: http://www.alfalfa.org/ or http://www.extension.umn.edu/agriculture/forages/variety-selection-and-genetics/#legumes . Alfalfa named varieties must have a Winter Survival Index (WSI) of 2 or less to meet specifications. The term winter hardiness rating is sometimes used synonymously with winter survival index, a number of 2 or less is acceptable. If the winter hardiness rating uses letters (e.g. EH, extremely hardy) those will not be acceptable, only a number of 2 or less will be accepted.

Generally, the higher the fall dormancy score, the greater the production potential of the alfalfa variety. However, the higher FDS, the shorter the life span/persistence of the alfalfa variety. Origin of non-varietal ('common') alfalfa types is limited to ND, SD, MN, MT, and the Canadian provinces of Alberta, Manitoba and Saskatchewan.

NOTE: Approved varieties which may not be shown on these web sites include Alogonquin, Anik, Blazer, Champ, Drylander, Grim, Ladak, Ladak 65, Prowler, Rambler, Rangelander, Ramsey, Ranger, Spredor 2, Teton, Travois, Vernal, and Wrangler. Alfalfa varieties not listed here or shown on these web sites will require documentation from the distributor or developer to determine suitability. Consult the appropriate area or state office specialist for assistance as needed.

[4] Limited ND production trials indicate Rush intermediate wheatgrass is less productive than other approved intermediate varieties; therefore, Rush will be used for conservation cover plantings only. In addition, Rush is a Protected Plant Variety (PPV) and should only be available as commercial certified seed as designated by blue seed tag.

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Table 3. Grass and Grass-like Species Characteristics									
Species	**Growth Characteristics** [1,10]	**Drought Tolerance** [2]	**Flood Tolerance** [3]	**Saline Tolerance (dS/m)** [4]	**Recovery After Harvest**	**Season Of Use** [6]	**Longevity** [7]	**Grazing Preference** [8]	**Stand Establishment** [9]
Introduced Grasses									
Bromegrass									
Meadow (BRBR14)	B/M	Fair	Fair	5-10	Good	Sp, F	Medium	High	Medium
Smooth (BRIN2)	R/M	Fair	Good	5-10	Good	Sp, F	Long	High	Rapid
Creeping foxtail (ALAR)	R/M	Poor	Good	10-15	Good	Sp, Su, F	Long	High	Medium
Hard fescue (FEBR7)	B/S	Good	Fair	NR	Good	Sp, F	Medium	Medium	Medium
Timothy (PHPR3)	B/M	Poor	Good	NR	Good	Sp, F	Short	Medium	Rapid
Wheatgrass									
Green (ELHO3)	B/M	Fair	Good	15-25	Good	Sp	Long	High	Medium
Crested (AGCR)	B/M	Good	Poor	10-15	Fair	Sp, F	Long	Medium	Rapid
Intermediate (THIN6)	R/M	Fair	Fair	10-15	Fair	Sp	Long	High	Medium
Pubescent (THIN6)	R/M	Fair	Fair	10-15	Fair	Sp	Long	High	Medium
Siberian (AGFR)	R/M	Good	Poor	NR	Fair	Sp, F	Long	Medium	Rapid
Tall (THPO7)	B/T	Fair	Good	15-25	Fair	Sp, F, W	Medium	Low	Medium
Wildrye									
Altai (LEAN3)	B/M	Fair	Good	15-25	Poor	Sp, F, W	Medium	Medium	Slow
Dahurian (ELDA3)	B/M	Fair	Fair	NR	Good	Sp	Short	Medium	Rapid
Mammoth (LERA5)	R/T	Good	Poor	NR	Fair	Sp	Long	Low	Slow
Manystem (LEMU11)	R/M	Fair	Fair	15-25	Poor	Su, F	Long	Medium	Slow
Russian (PSJU3)	B/M	Good	Fair	15-25	Good	Sp, F, W	Medium	High	Medium
Native Cool-Season Grasses									
Bluejoint fowlgrass (CACA4)	R/M	Poor	Good	NR	Fair	Sp,Su	Long	Medium	Medium
Fowl bluegrass(POPA2)	B/M	Poor	Good	Poor	Poor	Sp, F	Med	Low	Medium
Green needlegrass (NAVI4)	B/M	Good	Fair	NR	Good	Sp, F	Long	High	Medium
Mannagrass									
American (GLGR)	R/T	Poor	Good	NR	NR	NR	NR	NR	NR
Fowl (GLST)	R/T	Poor	Good	NR	Poor	NR	Short	High	Medium
Needle and thread (HECO26)	B/M	Good	Fair	NR	Fair	Sp	Long	Medium	Slow
Nutall's Alkaligrass (PUNU2)	B/S	Poor	Good	15-25	Fair	Sp	Long	High	Slow
Porcupinegrass (HESP11)	B/M	Good	Fair	NR	Good	Sp	Long	Medium	Slow
Prairie junegrass (KOMA)	B/S	Good	Poor	NR	Poor	Sp	Long	High	Slow
Reed canarygrass (PHAR3)	R/T	Fair	Good	5-10	Good	Sp, Su	Long	High	Medium
Wheatgrass									
Bluebunch (PSSP6)	B/M	Good	Poor	NR	Poor	Sp, Su, F	Long	High	Medium

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Table 3. Grass and Grass-like Species Characteristics									
Species	**Growth Characteristics [1,10]**	**Drought Tolerance [2]**	**Flood Tolerance [3]**	**Saline Tolerance (dS/m) [4]**	**Recovery After Harvest**	**Season Of Use [6]**	**Longevity [7]**	**Grazing Preference [8]**	**Stand Establishment [9]**
Native Cool-Season Grasses (cont.)									
Wheatgrass (cont.)									
Slender/Awned/Bearded (ELTR7)	B/M	Good	Good	15-25	Fair	Sp, Su, F	Short	Medium	Rapid
Streambank/Thickspike (ELLAL)	R/M	Good	Fair	10-15	Fair	Sp. F	Long	Medium	Medium
Western (PASM)	R/M	Good	Good	15-25	Fair	Sp, Su, F	Long	Medium	Medium
Whitetop (Sprangletop) (SCFE)	R/T	Poor	Good	NR	NR	NR	Medium	NR	NR
Wildrye									
Basin (LECI4)	B/T	Good	Fair	NR	Fair	Sp, F	Long	High	Slow
Beardless (LETR5)	R/M	Fair	Fair	15-25	Poor	Su, F	Long	Medium	Slow
Canada (ELCA4)	B/M	Fair	Good	10-15	Fair	Sp, F	Short	Medium	Rapid
Virginia (ELSU)	B/M	Fair	Good	Poor	Poor	Sp	Short	Medium	Rapid
Native Warm-Season Grasses									
Alkali sacaton									
American sloughgrass (BESY)	St/S	Poor	Good	NR	Poor	NR	NR	NR	NR
Bluestem									
Big (ANGE)	R/T	Fair	Good	NR	Good	Su	Long	High	Slow
Little (SCSC)	B/M	Good	Poor	NR	Fair	Su, F	Long	Medium	Medium
Sand (ANHA)	R/T	Good	Fair	NR	Fair	Su, F	Long	High	Slow
Buffalograss (BODA2)	St/S	Good	Poor	10-15	Fair	Su	Long	High	Medium
Grama									
Blue (BOGR2)	B/S	Good	Poor	NR	Poor	Su	Long	High	Medium
Sideoats (BOCU)	R/S	Good	Poor	NR	Fair	Su, F	Long	High	Medium
Inland saltgrass (DISP)									
Indian ricegrass (ACHY)	B/M	Good	Poor	NR	Fair	Su	Long	High	Slow
Indiangrass (SONU2)	R/T	Fair	Good	NR	Good	Su, F	Long	High	Medium
Prairie cordgrass (SPPE)	R/T	Poor	Good	10-15	Fair	Sp	Long	Medium	Slow
Prairie sandreed (CALO)	R/T	Good	Poor	NR	Fair	Su, F	Long	Medium	Slow
Prairie dropseed (SPHE)	B/M	Fair	Good	NR	Fair	Su	Long	Medium	Slow
Sand dropseed (SPCR)	B/M	Good	Poor	NR	Poor	Su	Short	Low	Rapid
Switchgrass (PAVI)	R/T	Fair	Good	5-10	Fair	Su, F	Long	Medium	Medium
Native Grass-likes									
Fox sedge (CAVU2)	B/S	Poor	Good	None	Poor	Sp	Long	Medium	Medium
Slough sedge (CAAT2)	R/M	Poor	Good	None	Poor	Sp, Su	Long	Low	Low

NR = Not Rated

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Table 4. Pollinator / Forb Species Characteristics											
Species	**Growth Character-istics[1,10]**	**Establish-ment List[12]**	**Drought Tolerance [2]**	**Flood Tolerance [3]**	**Saline Tolerance (dS/m) [4]**	**Recovery After Harvest**	**Season of Use [6]**	**Longevity[7]**	**Grazing Preference[8]**	**Stand Establish-ment[9]**	**Bloom Period[11]**
Native Forbs/Legumes											
American vetch (VIAM)	Pr/P	B	Good	Poor	Poor	NR	NR	Medium	NR	Medium	Er / Mi
Aster											
Blue (SYLAL3)	E/P	B	Fair	Poor	None	Poor	NR	Short	NR	NR	Mi / L
Heath (SYER)	E/P	B	Good	Fair	NR	NR	Su	Long	Low	NR	Mi / L
New England (SYNO2)	E/P/R	B	Poor	Good	NR	NR	NR	Long	NR	Medium	Mi / L
Black samson (ECAN2)	E/P	A	Good	Poor	Poor	NR	NR	Long	NR	Slow	Mi / L
Black-eyed susan (RUHI2)	E/P	A	Good	Good	Poor	NR	NR	Short	NR	Rapid	Mi / L
Blanketflower (GAAR)	E/P	A	Good	Fair	2-6	NR	NR	Medium	NR	Medium	Mi
Blue vervain (VEHA2)	E/P	B	NR	NR	NR	NR	NR	NR	NR	NR	Mi / L
Canada anemone (ANCA8)	P/R/M	B	Fair	NR	NR	Poor	NR	Medium	NR	NR	Er / Mi
Canada milkvetch (ASCAC6)	E/P	A	Fair	Good	2-6	NR	NR	Short	NR	Medium	Mi
Canada tickclover (DECA7)	E/P	B	Fair	Fair	NR	NR	Sp, Su	Medium	Medium	NR	Mi
Columbine (AQCA)	P/M	B	Fair	NR	NR	NR	NR	Medium	NR	Rapid	Er / Mi
Coneflower											
Grayhead (RAPI)	E/P/T	B	Good	Fair	NR	Poor	Sp, Su	Medium	Medium	Medium	L
Prairie (Yellow) (RACO3)	E/P	A	Good	Fair	2-6	NR	NR	Long	NR	Medium	Mi
Cudweed sagewort (ARLU)	E/P	B	Good	Poor	NR	NR	NR	Long	NR	Medium	L
Culver's root (VEVI4)	E/P	B	Fair	Fair	NR	NR	NR	Long	NR	NR	Mi
Cup plant (SIPE2)	E/P/T	B	Poor	Good	Poor	NR	NR	Long	NR	Medium	L
Evening primrose (OEBI)	Bi/M	B	Medium	NR	None	Slow	NR	Short	NR	Rapid	Mi / L
False boneset (EUPE3)	E/P	A	NR	NR	NR	NR	NR	NR	NR	NR	Mi /L
Gayfeather											
Dotted (LIPU)	E/P	A	Good	Poor	Poor	NR	NR	Long	NR	Slow	Mi / L
Thickspike (LIPY)	E/P	B	Poor	Fair	Poor	Poor	Su	Medium	NR	Medium	Mi / L
Giant blue hyssop (AGFO)	E/P/R	A	Poor	Fair	NR	NR	NR	Medium	NR	Rapid	Mi / L
Golden Alexander (ZIAU)	E/P	B	Poor	Fair	NR	NR	Sp, Su	Medium	NR	Medium	Er
Goldenrod											
Canada (SOCA6)	E/P	B	Fair	NR	NR	Fair	NR	Long	NR	NR	Mi / L
Missouri (SOMI2)	E/P	B	Good	NR	NR	Poor	NR	Short	NR	NR	Mi / L
Stiff (SORI2)	E/P/B	A	Good	NR	NR	Fair	NR	Medium	NR	NR	Er / Mi / L
Tall smooth (SOGI)	E/P/B	B	Medium	NR	NR	NR	NR	Medium	NR	NR	L
Hoary vervain (VEST)	E/P	B	NR	NR	NR	NR	NR	NR	NR	NR	Mi / L

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Table 4. Pollinator / Forb Species Characteristics											
Species	**Growth Characteristics[1,10]**	**Establishment List[12]**	**Drought Tolerance[2]**	**Flood Tolerance[3]**	**Saline Tolerance (dS/m)[4]**	**Recovery After Harvest**	**Season of Use[6]**	**Longevity[7]**	**Grazing Preference[8]**	**Stand Establishment[9]**	**Bloom Period[11]**
Native Forbs/Legumes (cont.)											
Illinois bundleflower (DEIL)	E/P	A	Fair	Good	Poor	Fair	Sp, Su	Short	High	Rapid	Mi / L
Ironweed (VEFA2)	E/P	B	Fair	Good	NR	Fair	Sp, Su	Short	High	Rapid	Mi / L
Joe Pye weed (EUMAB)	E/P	B	Fair	Good	NR	NR	NR	Medium	NR	NR	Mi / L
Lewis flax (LILE3)	E/P	A	Good	Fair	2-6	NR	NR	Medium	NR	Rapid	Er
Milkweed											
Butterfly (ASTU)	E/P	A	Good	Poor	None	Poor	Sp, Su	Medium	NR	NR	Er / Mi / L
Showy (ASSP)	E/P	B	Low	NR	NR	Poor	NR	Long	NR	NR	Er / Mi
Swamp (ASIN)	E/P	B	Poor	NR	NR	Poor	NR	Medium	NR	NR	Mi / L
Partridge pea (CHFAF)	E/P	B	NR	NR	NR	NR	NR	NR	NR	NR	L
Plains coreopsis (COTI3)	E/A	A	Good	Good	NR	NR	NR	Short	NR	Rapid	Er / Mi
Prairieclover											
Purple (DAPU5)	E/P	A	Good	Fair	2-6	NR	NR	Medium	NR	Medium	Mi
White (DAAL)	E/P	B	Good	Fair	NR	NR	NR	Medium	NR	Medium	Mi
Prairie onion (ALST)	E/P	B	Good	Poor	NR	NR	NR	NR	NR	NR	Mi
Prairie phlox (PHAN4)	P/R/M	B	NR	NR	NR	NR	Sp, Su	Long	Fair	Slow	Mi
Purple meadow rue (THDA)	E/P	B	Poor	Good	NR	NR	NR	NR	NR	NR	Mi
Rocky Mountain Bee plant (CLSE)	A/L/T	B	Low	NR	NR	Slow	NR	Short	Low	Rapid	Er
Scarlet globemallow (SPCO)	E/P	A	Good	Poor	NR	Good	NR	Short	Fair	NR	Mi
Shell-leaf penstemon (PEGR7)	E/P	A	Good	Poor	NR	NR	NR	Short	NR	Medium	Er
Silvery lupine (LUAR3)	E/P	B	Fair	NR	NR	Good	NR	Short	NR	NR	Er / Mi
Sneezeweed (HEAU)	E/P	B	Poor	NR	NR	Poor	Sp, Su	Medium	NR	NR	L
Spiderwort											
Long bract (TRBR)	E/P/R	B	NR	NR	NR	NR	NR	NR	NR	NR	Er / Mi
Prairie (TROCO)	E/P	B	Good	Good	NR	NR	NR	NR	NR	NR	Er / Mi / L
Sunflower											
False sunflower (HEHES)	E/R	B	Good	NR	None	Poor	NR	Short	NR	NR	Mi / L
Maximilian (HEMA2)	E/P/R	A	Poor	Good	2-6	NR	NR	Long	NR	Medium	Mi /L
Sawtooth (HEGR4)	E/P/R	B	Fair	NR	NR	Poor	NR	Medium	NR	NR	Mi / L
Stiff (HEPAS)	E/P/R	B	Fair	NR	NR	Poor	NR	Long	High	Slow	Mi / L
Western yarrow (ACMIO)	E/P	A	Good	Good	2-6	NR	NR	Long	NR	Medium	Er / Mi
Wild bergamot (MOFI)	R/P	A	Poor	Good	NR	Poor	Sp	Medium	Medium	Medium	Mi / L
Introduced Legumes											
Alfalfa (MESA)	E/P	A	Good	Poor	5-10	Good	Sp, Su	Medium	High	Rapid	Er / Mi

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Table 4. Pollinator / Forb Species Characteristics											
Species	**Growth Character-istics[1,10]**	**Establish-ment List[12]**	**Drought Tolerance [2]**	**Flood Tolerance [3]**	**Saline Tolerance (dS/m) [4]**	**Recovery After Harvest**	**Season of Use [6]**	**Longevity[7]**	**Grazing Preference[8]**	**Stand Establish-ment[9]**	**Bloom Period[11]**
Introduced Legumes (cont.)											
Birdsfoot trefoil (LOCO6)	Pr/P	A	Fair	Fair	5-10	Good	Sp, Su	Medium	High	Rapid	Er
Cicer milkvetch (ASCI4)	Pr/P	A	Good	Fair	5-10	Good	Sp	Long	High	Medium	Mi
Clover											
Alsike (TRHY)	Pr/P	A	Poor	Good	5-10	Good	Sp, Su	Short	High	Medium	Mi
Red (TRPR2)	Pr/P	A	Fair	Fair	5-10	Fair	Sp, Su	Short	High	Medium	Er / Mi
Strawberry (TRFR2)	E/P	A	Fair	Good	15-25	Fair	Sp, Su	Medium	Medium	Rapid	Er / Mi
Sweet (MEOF)	E/Bi	A	Good	Fair	5-10	Poor	Sp, Su	Medium	Medium	Rapid	Mi
White / Ladino (TRRE3)	Pr/P	A	Poor	Good	5-10	Fair	Sp, Su	Short	High	Medium	Er / Mi / L
Sainfoin (ONVI)	E/P	A	Good	Poor	NR	Fair	Sp, Su	Medium	High	Slow	Er
Native Shrubs											
Buffaloberry (SHAR)	E/P/R	A	Good	Poor	8-15	NR	NR	Long	NR	Slow	Er
Chokecherry (PRVIV)	E/P/R	A	Fair	Fair	4-8	NR	NR	Long	NR	Slow	Er
False indigo (AMFR)	E/P	A	Poor	Good	NR	NR	NR	Medium	NR	Slow	Mi
Golden currant (RIAU)	E/P	A	Good	Fair	8-15	NR	NR	Medium	NR	Slow	Er
Juneberry (AMAL2)	E/P/R	A	Poor	Good	4-8	NR	NR	Long	NR	Slow	Er
Leadplant (AMCA6)	E/P	A	Good	Poor	NR	NR	NR	Long	NR	Slow	Mi / L
Prairie rose (ROAR3)	E/P/R	A	Good	Fair	NR	NR	NR	Long	NR	Slow	Er / Mi
Saltbush											
Fourwing, dewinged (ATCA2)	E/P	A	Good	Poor	8-15	NR	NR	Long	NR	Slow	Mi
Gardner (ATGA)	E/P	A	Good	Poor	8-15	NR	NR	Long	NR	Slow	Mi
Western snowberry (SYOC)	E/P/R	A	Fair	Fair	NR	NR	NR	Long	NR	Slow	Er / Mi
Winterfat (KRLA2)	E/P	A	Good	Poor	NR	NR	NR	Long	NR	Slow	Er
WY big sagebrush (ARTRW8)	E/P	A	Good	NR	NR	NR	NR	Long	NR	NR	L

NR = Not Rated

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Footnotes for Table 3 and Table 4.

[1]For additional information refer to the USDA Plants Database at: http://plants.usda.gov/.
[2]**Drought Tolerance**: Based on species being on an adapted site.
[3]**Flood Tolerance**: Good = 28-42 days; Fair = 14-28 days; Poor = less than 14 days. Creeping foxtail and reed canarygrass can tolerate up to 60 days.
[4]**Plant salinity tolerance** ratings are based upon saturated paste measurements in decisiemens per meter (dS/m). USDA-NRCS March 2007. Plant Materials for Salt-Affected Sites in the Northern Great Plains. Soil surface layer salinity measurements may be taken in the field using a 1:1 solution and a handheld EC Meter. To convert EC Meter readings to dS/m, multiply meter reading by 0.5.
[5]**Recovery after Harvest**: Based on adequate soil moisture.
[6]**Season of Use**: Sp – spring; Su – summer; F – fall; W – winter.
[7]**Longevity**: Short 1-4 years; Medium 5-10 years; Long – longer than 10 years with proper management.
[8]**Grazing Preference**: Based on season of rapid growth. Palatability is relative, depending on quantity, quality, and availability of other species. Grazing preference shown is for cattle and will vary for other species of domestic livestock or wildlife.
[9]**Stand Establishment**: Rapid – usually 1 growing season after planting; Medium – usually 1-2 growing seasons after planting; Slow usually 2-3 growing seasons after planting.

10.

Growth Characteristics	
A	Annual
B	Bunch
Bi	Biennial
E	Erect
M	Mid 18" - 36"
P	Perennial
Pr	Prostrate
R	Rhizomatous
S	Short < 18"
St	Stoloniferous
T	Tall > 36"

.

11.

Bloom Period		
Er	Early bloom period	April - May
Mi	Mid-bloom period	May - July
L	Late bloom period	July - September

[12]**Establishment List:** Pollinator species listed as “A” have demonstrated consistent establishment and persistence on various sites state-wide, based on field reviews of pollinator plantings. At least 75% of native forbs must be “A” Establishment list species. Additional species to consider for pollinator plantings are noted as “B”. Grass species do not have a rating.

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G.8 Weed Management Plan

Little Missouri Lateral Pipeline Project

WEED MANAGEMENT PLAN

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Prepared by:

merjent

January 2019

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LIST OF ACRONYMS AND ABBREVIATIONS

EI	Environmental Inspector(s)
MP	Milepost
ONEOK	ONEOK Bakken Pipeline, L.L.C.
Plan	Weed Management Plan
Project	Little Missouri Lateral Pipeline Project
ROW	Right-of-Way
SPCC	Spill Prevention, Control, and Countermeasure Plan
USEPA	United States Environmental Protection Agency

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1.0 INTRODUCTION

Noxious weed control practices for the ONEOK Bakken Pipeline, L.L.C. (ONEOK) Little Missouri Lateral Pipeline Project (Project) described in the *Weed Management Plan (Plan)* are being developed in consultation with the McKenzie County Weed Board.

2.0 GOALS AND OBJECTIVES

This Plan prescribes methods to prevent and control the spread of noxious weeds during and following construction of the Project. ONEOK and its contractors will be responsible for implementing the methods described in this Plan.

This Plan is applicable to the construction and operation of the proposed pipeline facilities, including the pipeline right-of-way (ROW), the proposed aboveground facilities, and extra temporary workspaces (ETWS) disturbed during the construction and operation of the proposed facilities.

3.0 NOTIFICATION AND APPROVAL

ONEOK will execute the following notification procedure:

1. At least 15 days prior to ground-disturbing activity, submit this Plan and the Project *Revegetation Plan* to the McKenzie County Weed Board.
2. Allow the McKenzie County Weed Board to identify revisions to bring the Plan into compliance with the County's weed management plan.
3. Wait to commence ground-disturbing activity until the Plan is approved by the McKenzie County Weed Board and signed by the presiding officer of the Board and by the person or a representative of the agency responsible for the action. The Plan must be approved, with revisions if necessary, within 10 days of receipt by the Board.

4.0 NOXIOUS WEED SPECIES LISTS

A weed is commonly defined as a plant that grows out of place. A noxious weed is any plant officially designated by a federal, state, or county government as injurious to public health, agriculture, recreation, wildlife, or property (Sheley, Petroff, and Borman, 1999). Noxious weeds are opportunistic plant species that readily flourish in disturbed areas, thereby preventing native plant species from establishing successive communities.

Invasive species in North Dakota are controlled and regulated under North Dakota Law (NDCC § 4.1-47-02). Counties and cities have the option to add additional weeds for enforcement only in their jurisdiction.

The State of North Dakota has 11 state-listed noxious and invasive weeds:

Absinth wormwood	Leafy spurge	Saltcedar
Canada thistle	Musk thistle	Spotted knapweed
Dalmatian toadflax	Purple loosestrife	Yellow toadflax
Diffuse knapweed	Russian knapweed	

McKenzie County, North Dakota, recognizes the following as invasive weeds:

Baby's breath	Common burdock	Houndstongue
Black henbane	Halogeton	

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To comply with North Dakota Law (NDCC § 4.1-47-02), ONEOK has prepared this Plan specifying the weed management procedures to be implemented. Regulations also require that ONEOK reseed, plant, or otherwise manage the area to establish a beneficial plant cover. To this end, ONEOK has developed a *Revegetation Plan* that describes the methods to be used to accomplish revegetation, the time and method of seeding, fertilization practices, and recommended plant species. The Plan is subject to approval by the McKenzie County Weed Board.

5.0 NOXIOUS WEED SPECIES MANAGEMENT

This Plan is designed to:

- Treat specific infestation areas as recommended by weed districts prior to construction, pending landowner approval and seasonal limitations;
- Prevent the introduction and spread of weeds via construction equipment during construction;
- Contain weed seeds and propagules by preventing segregated topsoil from being spread to adjacent areas or along the construction right-of-way; and
- Treat infestations that may develop during operations.

5.1 IDENTIFICATION OF PROBLEM AREAS

ONEOK will work with the McKenzie County Weed Board and landowners to identify known locations of weed infestations in the Project area. In addition to infestation areas identified by the Board and landowners, additional areas containing noxious species may be identified prior to construction by the Environmental Inspectors (EI), which will be demarcated using color-coded flagging or signage on the construction ROW. Identification of existing noxious weed locations will alert environmental inspection and construction personnel to implement weed control measures during construction.

5.2 TREATMENT MEASURES

ONEOK will implement weed control measures, pending landowner approval of specific control measures, at identified infestation areas based on McKenzie County Weed Board input or by the EIs. Weed control measures may include the application of herbicide or mechanical, and/or alternative methods. The weed control measure chosen will be the best method available for the time, place, and species of weed as identified through consultation with the appropriate regulatory agencies. Should landowners not allow the use of herbicides, ONEOK will investigate potential alternative methods to be implemented, with approval by the landowners.

Herbicide application is an effective means of reducing the size of weed populations. Herbicide treatment methods will be based on species-specific and area-specific conditions (e.g., proximity to wetlands, open water, riparian areas or agricultural areas, and time of year) and will be coordinated with the local counties and regulatory agencies. Spot herbicide applications will be the preferred option. In areas of dense infestation, a broader application may be used. Pending the seasonal start of construction, preconstruction treatment of infestation areas may be conducted and will be controlled as described in section 7.1, to minimize the impacts on the surrounding vegetation. Preconstruction applications will be completed in accordance with applicable chemical contact times (as specified by the manufacturer) in advance of clearing and grading within the construction right-of-way. Treatment may be restricted in areas that are not readily accessible (e.g., difficult topography, saturated/inundated soils, etc.).

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Mechanical control (e.g., mowing) can also be an effective control measure specifically for annual species (i.e., not for perennial rhizomatous species). The efficacy of mechanical control measures is dependent upon proper timing to cut the vegetation prior to the maturation of seed and may require multiple treatments during the growing season.

5.3 PREVENTIVE MEASURES

The following measures will be implemented to prevent the spread of noxious weeds.

- Prior to the beginning of construction of the project, all contractor vehicles and equipment (including timber mats) will be cleaned of soil and debris capable of transporting weed propagules. The contractor will maintain logs documenting the cleaning history of each piece of equipment and will make logs available to ONEOK, upon request. Contractor vehicles and equipment will be inspected and may require additional cleaning if necessary prior to mobilization to the ROW. Cleaning will be conducted using high pressure washing equipment or compressed air, and/or manually remove excess soil from the tracks, tires, and blades of equipment.
- ONEOK will install cleaning stations where the project crosses state lines. Stations will be sited at least 0.25 mile from perennial waterbodies. Station design and post-construction removal will be included in the contract bid documents. Stations will utilize high pressure water or compressed air and/or manually remove excess soil and plant debris from the tracks, tires, and blades of equipment prior to movement of equipment out of weed infested areas.
- Areas of the ROW where weed infestations are identified will be clearly marked prior to construction. In these areas, the contractor may elect to conduct full ROW topsoil stripping and will stockpile cleared vegetation and segregated topsoil along the ROW. The stockpiles will be identified as noxious weed stockpiles with signs and be maintained adjacent to the areas from which they were obtained to eliminate the transport of soil-borne noxious weed propagules to other areas along the ROW. During reclamation, the contractor will return topsoil and vegetative material to the areas from which they were obtained. Alternately, for annual weed species the contractor may elect to mow the infested area before the species begins seeding, thus eliminating the threat of spreading seeds during topsoiling and construction.
- In areas where full ROW topsoil stripping is implemented, equipment required for initial vegetation clearing and topsoil segregation will be cleaned using one of the methods described above prior to leaving the area. Once the topsoil has been segregated, subsequent equipment will not require cleaning, as it will not come into contact with noxious weeds or the topsoil containing weed seeds and propagules. Equipment required for topsoil restoration will also be cleaned prior to moving out of an infested area identified by the McKenzie County Weed Board or ONEOK.
- The contractor will ensure straw bales used to construct sediment control devices or used as mulch applications are certified weed free and obtained from approved certified sources as recommended by the McKenzie County Weed Board.
- The contractor will ensure seed mixes and mulching materials used for revegetation are certified weed free and obtained from approved certified sources as recommended by the McKenzie County Weed Board.

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5.4 POST-CONSTRUCTION TREATMENT METHODS

ONEOK's objective is to comply with the requirements to prevent the spread of noxious weeds and treat areas of the ROW where weed species form a significant portion of the vegetation community in comparison to adjacent undisturbed areas. ONEOK will implement established reclamation practices to prevent the spread of noxious weeds in reclaimed construction areas and pipeline ROW.

The contractor will implement reclamation procedures immediately following construction. Rapid reclamation and revegetation will discourage the establishment of noxious weeds. In areas of severe weed infestation, as determined by ONEOK's EI(s), ONEOK may elect to delay reclamation efforts and conduct intensive weed control prior to implementing reclamation procedures where allowed by applicable laws.

The contractor will limit the use of fertilizer in reclaimed areas. Fertilizer will only be applied where specified by the jurisdictional land management agency or the property owner.

In the event noxious weed species become established in the ROW, ONEOK will make good faith efforts to control weeds within the ROW and to work with adjacent landowners to prevent the spread of the species to adjacent lands. Post-construction weed control measures may include the application of herbicide or mechanical methods, pending landowner approval. Should ONEOK receive calls from landowners concerning noxious weed on the ROW, ONEOK will work with the landowners to determine the appropriate action to control the spread of the weeds. The weed control measure chosen will be the best method available for the time, place, and species of weed as determined through consultation with the appropriate regulatory agencies. ONEOK will control noxious weed species at ONEOK-managed aboveground facility sites to prevent the spread onto adjacent properties.

Individuals wishing to report noxious weeds on the ROW should call ONEOK at (605) 642-2197, extension #5. ONEOK staff will work with the McKenzie County Weed Board or landowner(s) on an appropriate treatment method.

Post-construction herbicide applications will be conducted prior to seed maturation where possible. Applications will be controlled, as described in Section 7, to minimize the impacts on the surrounding vegetation. As discussed in Section 5.2, herbicide treatment methods will be based on species-specific and area-specific conditions (e.g., proximity to water, riparian areas or agricultural areas, and time of year) and will be coordinated with the local county and regulatory agencies. Spot herbicide applications will be the preferred option. In areas of dense infestation, a broader application will be used and a follow-up seeding program implemented according to the *Revegetation Plan*. The timing of subsequent revegetation efforts will be based on the persistence of the selected herbicide. ONEOK will communicate with a designated representative of each county to inform them of the location and type of treatment administered by ONEOK or its contractor.

Mechanical methods entail the use of equipment to mow weed populations for annual species (i.e., not for perennial rhizomatous species). Mechanical treatments will be conducted prior to seed maturation where required. If such a method is used, subsequent seeding will be conducted if necessary to re-establish a desirable vegetative cover that will stabilize the soils and slow the potential re-invasion of weeds.

During routine operations activities, if noxious weed species are identified that are not listed on the county or state weed lists, ONEOK will treat the affected area as quickly as possible.

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ONEOK will consult with local agencies regarding the use of biological and alternate noxious weed control methods, which may be implemented through agreements with private landowners.

6.0 MONITORING

Following construction, weed infestations reported by landowners will be monitored as part of ONEOK's operations and maintenance surveys. EIs will periodically monitor the ROW to capture revegetation growth. Should the EIs identify noxious weed populations in the ROW, they will report their findings to the ONEOK operations and maintenance division to determine the appropriate action to control the spread of the weeds. Noxious weed management will be conducted in accordance with state and county regulations.

7.0 HERBICIDE USE

7.1 HERBICIDE APPLICATION AND HANDLING

Herbicide application will be based on information gathered from consultations with local weed districts and state agencies as well as discussions with landowners. Before application, ONEOK or its contractor will obtain required permits from the local weed districts or the state agencies, and landowner approval. Herbicide application will be conducted in accordance with applicable laws and regulations by a state-licensed contractor, or via contract with the McKenzie County Weed Board, if requested by the landowner.

All herbicide applications will follow United States Environmental Protection Agency (USEPA) label instructions. Application of herbicides will be suspended when any of the following conditions exists:

- Wind velocity exceeds 6 miles per hour during application of liquid or granular herbicides;
- Snow or ice covers the foliage of noxious weeds; or
- Precipitation is occurring or is imminent.

Vehicle-mounted sprayers (e.g., handgun, boom, and injector) may be used mainly in open areas that are readily accessible by vehicle. Hand application methods (e.g., backpack spraying) that target individual plants may be used to treat small or scattered weed populations or in rough terrain. Calibration checks of equipment will be conducted at the beginning of spraying and periodically to ensure that proper application rates are achieved.

Herbicides will be transported to the project site daily with the following provisions:

- On-site herbicide quantities will be limited where practical;
- Concentrate will be transported in approved containers only, in a manner that will prevent tipping or spilling, and in a compartment that is isolated from food, clothing, and safety equipment;
- Mixing will be conducted in an upland area at a distance greater than 100 feet from open or flowing water and wetlands, greater than 200 feet from private wells, and greater than 400 feet from public wells. The property owner would be consulted about the presence and location of wells prior to herbicide application; and
- All herbicide equipment and containers will be maintained as needed and inspected for leaks daily.

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7.2 HERBICIDE SPILLS AND CLEANUP

ONEOK has developed a *Spill Prevention, Control, and Countermeasure (SPCC) Plan* that incorporates all reasonable precautions to be taken to avoid spills of all potentially hazardous materials. In the event of a spill, cleanup will be immediate and will be conducted in accordance with the *SPCC Plan*.

Herbicide contractors are responsible to keep spill kits in their vehicles and in herbicide storage areas to allow for quick and effective response to spills. Items to be included in the spill kit are:

- Protective clothing and gloves;
- A minimum of 20 pounds of suitable commercial adsorbent and barrier materials;
- Plastic bags and bucket;
- Shovel;
- Fiber brush and screw-in handle;
- Dust pan;
- Caution tape; and
- Detergent.

Response to an herbicide spill will vary depending on the material spilled and the size and location of the spill. The order of priorities after discovering a spill are to protect the safety of personnel and the public, minimize damage to the environment, and conduct cleanup and remediation activities.

7.3 WORKER SAFETY AND SPILL REPORTING

All herbicide contractors will obtain and have readily available copies of the appropriate safety data sheets and the herbicide labels for the herbicides used. All herbicide spills will be reported in accordance with applicable laws and requirements. Further information regarding spill response and reporting is detailed in the *SPCC Plan*.

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G.9 Dust Control Plan

Little Missouri Lateral Project

DUST CONTROL PLAN

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Prepared by:

January 2019

Introduction

ONEOK Bakken Pipeline, L.L.C. (ONEOK) proposes to construct the Little Missouri Lateral Pipeline Project (Project), an approximately 11.1-mile, 12-inch-diameter steel natural gas liquids (NGL) pipeline. The Project will originate in McKenzie County, North Dakota, and the eastern (southern) terminus of the Project will connect into Targa's existing Little Missouri Natural Gas Processing Plant, while the western (northern) terminus will connect into ONEOK's proposed Demicks Lake Pipeline and ONEOK's existing Garden Creek 10-inch NGL Pipeline. Construction activities are currently proposed to begin in April 2019 and be completed in the third quarter of 2019. Restoration activities may extend through 2022, if needed.

Construction of the Project will involve land-disturbing activities, which can increase the susceptibility of soils to erosion caused by wind and water. Wind erosion can damage the productivity of the land by reducing soil moisture, altering soil structure, and carrying away soil nutrients and topsoil. A small amount of soil loss from wind erosion occurs naturally; however, human activity, such as pipeline construction, can dramatically increase soil loss due to wind erosion (fugitive dust) and potentially create conditions that could be detrimental to air quality and safety. Fugitive dust is a type of non-point source air pollution that can cause respiratory distress for construction workers, as well as for nearby residents and wildlife. Additionally, fugitive dust can create a safety hazard by obscuring visibility for equipment operators, construction personnel, and traffic on public roads near the Project.

ONEOK has developed this *Dust Control Plan* as a guide for construction and field personnel on implementation of appropriate measures to minimize and control the generation of fugitive dust during construction activities associated with the Project. It will be the responsibility of the Project contractors, working with ONEOK's field representatives, to identify activities that are generating dust and to at all times control airborne dust levels during construction activities to acceptable levels that are in compliance with any applicable standards, including those established by the North Dakota Department of Health (NDDH) and other regulating agencies and local ordinances.

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Fugitive Dust Sources

ONEOK has attempted to identify the primary potential sources of fugitive dust, which include:

- Vegetation clearing activities;
- Initial grading of topsoil and subsoil, including cut-and-fill areas on steep sideslopes;
- Excavation, temporary side casting of spoil, and backfilling;
- Blasting;
- Grading associated with reestablishing contours and restoring segregated topsoil;
- Vehicle traffic down unimproved public and private access roads;
- Vehicle and equipment travel down the Project right-of-way (ROW);
- Open-bodied trucks hauling sand, soil, gravel, or other materials; and
- Activities at Project facilities such as material storage yards, contractor yards, parking areas, and aboveground facility locations.

ONEOK's Contractors and field representatives will identify activities that are generating fugitive dust, implement feasible dust abatement techniques or Best Management Practices (BMPs) to control dust, and maintain compliance with applicable fugitive dust regulations.

Fugitive Dust Control Measures

Dust suppression measures will be employed as necessary to control fugitive dust emissions where construction activities approach dwellings, farm buildings, commercial areas, and other areas occupied by people; where the pipeline parallels an existing road or highway; and where dust could compromise safety or become a public nuisance. This will also apply to access roads where dust raised by construction vehicles may irritate or inconvenience local residents. To minimize wind erosion and fugitive dust emissions during construction, ONEOK will implement the following reasonably available control measures:

- Disturb no more earth than required for construction to occur;
- Use dust abatement techniques (i.e., applying water or approved nontoxic chemical dust suppressants) on unpaved or un-vegetated areas or other areas susceptible to wind erosion, including the Project ROW, approved work areas, and unpaved roads, at least daily in areas of active construction. (Note: utilization of chloride-containing additives is limited to roads. Application of dust suppressants will be repeated as necessary and as determined by the Environmental Inspector (EI) or ONEOK representative);
- Water for dust control will be obtained from wells, municipal sources, and nearby rivers where the necessary water purchase agreements and permits required by federal, state, and local agencies for the procurement of water have been secured. No unapproved water sources will be used for Project activities, including dust control;
- Temporarily stockpiled soils (topsoil and spoil) will be sprayed with water or approved chemical dust suppressant to create a semi-hard protective layer to minimize wind erosion, if necessary, and as determined by the EI or ONEOK representative. (Note: utilization of chloride-containing additives is limited to roads and is not permitted on stockpiled soils);
- Appropriate precautions will be taken to prevent fugitive dust emissions caused by sand-blasting from reaching any residence or public building. Curtains of suitable material will be placed, as necessary, to prevent wind-blown particles from sand blasting operations from reaching any residence or public building;
- Emissions from construction equipment combustion, open burning, and temporary fuel transfer systems and associated tanks will be controlled to the extent required by state and local agencies through the permitting process;
- Project-related traffic speeds will be controlled on the construction ROW and within other Project facilities; where construction activities approach dwellings, farm buildings, commercial areas, and other areas occupied by people; where the pipeline parallels an existing road or highway; and on unpaved access roads. A speed limit of 25 mph will be followed on unimproved roads. Additional speed limit restrictions may be required by the property owner/tenant on private lands or by the county on public roads (e.g., posted speed limits);

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- Speed limits will be decreased when excessive winds prevail and where sensitive areas such as public roads are adjacent to access roads or the construction ROW;
- Open-bodied trucks carrying sand, soil, gravel, or other materials will be covered where necessary to prevent such materials from being expelled;
- Construction entrance/exit access locations onto paved roads will be cleaned at a minimum of once every 48 hours, or as needed or specified by the EI if materials are observed to be accumulating on the road surface;
- In construction areas adjacent to highways where dust could cause poor visibility, ONEOK will implement additional BMPs to minimize dust and potential safety issues. These additional BMPs may include applying water as close to earth-moving equipment as possible, slowing the speed of construction equipment, spacing equipment further apart, increased traffic control, or shutting down operations during high wind periods. ONEOK will coordinate with the appropriate highway authorities to ensure adequate traffic control measures are in place, including the possibility of using flaggers to control traffic if extreme low-visibility conditions develop;
- When opacity along dirt roads and the ROW exceeds 20 percent (objects partially obscured), construction activity will cease until dust control measures are employed; and
- Other dust control measures, such as the use of wind fences or berms, may also be implemented as needed.

The frequency of water application will largely depend on weather conditions. Additionally, ONEOK will attempt to begin cleanup and rough grading within 72 hours after backfilling and complete cleanup within 14 days after backfilling, weather and soil conditions permitting. If seasonal or other weather conditions prevent compliance with the time frames, the contractor will stabilize the ROW and maintain erosion and sediment control measures until cleanup can be conducted. Disturbed areas will be permanently revegetated in accordance with applicable permit conditions and landowner requirements.

Regulatory Applicability

The NDDH is responsible for air quality management in areas of Project construction activities. This Dust Control Plan has been developed to meet the regulatory requirements of North Dakota Administrative Code Article 33-15. While the state of North Dakota has no specific regulations in relation to construction dust control, ONEOK and its contractors will utilize measures outlined in this Plan to minimize dust during construction.

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G.10 Ecozone Reclamation Plan

Ecozone Reclamation Plans

Little Missouri Lateral

Prepared for:
ONEOK, Inc.

Prepared by:
Duraroot, LLC

Date:
December 27, 2018

Reclamation Guidelines for the Little Missouri Lateral

The Little Missouri Lateral (LML) is a pipeline project in McKenzie County, North Dakota. Land use along the LML right-of-way (ROW) includes cultivated cropland, hay/tame pasture, and native range/grassland. Vegetation consists predominantly of cereal grain crops, alfalfa/grass hay, and native/introduced grasses. Soils vary in chemical and physical composition, depth, drainage capability, and reclamation potential. Ecozone delineations along the LML ROW considered dominant soil types, soil chemical characteristics, dominant vegetation, land use, and topography.

The ecozones present along the LML are: Cultivated Cropland Ecozone, Saline Ecozone, and Loamy Ecozone. Characteristics of each ecozone, along with associated reclamation techniques and recommendations, are detailed in each ecozone report. Fertility recommendations and seed mixes were developed based on soil sample analytical data and vegetation field surveys performed during the fall of 2018. Soil sample analytical data were used to make amendment recommendations based on the soil chemistry for most of the ROW. Recommendations are based on sample data analysis and Duraroot's interpretation of the soils along the alignment. All soil samples were collected by or under the supervision of a Certified Professional Soil Scientist (CPSS). A summary of all soil fertility data for the LML can be found in Attachment A.

Due to the nature and scale of the project, these reclamation guidelines have been developed using a broad-based approach to address reclamation across the project disturbance and to facilitate construction activities. Site-specific plans are recommended in areas with soil characteristics that could negatively impact revegetation, such as shallow soil resources or high/low pH and elevated salt concentrations. NRCS soil survey data indicate that potentially challenging sites, in terms of reclamation success, are present along the pipeline route. It is likely that additional areas are present, but further sampling would be needed to more accurately delineate boundaries. Duraroot can provide site-specific reclamation plans for these locations at a small additional cost of $500 per plan.

RECLAMATION PLAN
CULTIVATED CROP ECOZONE SITES

SITE DESCRIPTION

The Cultivated Crop Ecozone is comprised of managed row crops, hayfields and tame pastures. The Cultivated Crop Ecozone makes up approximately fifty-six (55.9) percent of the land use on Little Missouri Lateral. Following construction, the land will be returned to productive cropland. The Cultivated Crop Ecozone contains primarily medium textured loam soils, with grades less than 10 percent. Soil pH is predominately slightly alkaline (pH 7.4 to 7.8) to moderately alkaline (pH 7.9 to 8.4). One key factor in reclaiming the Cultivated Crop Ecozone sites will be the preservation of topsoil, which has the soil properties necessary for agricultural production. This ecozone should present minimal challenges for reclamation due to desirable ecozone characteristics.

Due to reclamation timing, a cover crop seed mix for the Cultivated Crop Ecozone is provided in Table 1. A cover crop should be seeded on all cultivated cropland when establishment of the crop will not occur within 45 days or less of reclamation activities. A cover crop will protect the soil from wind and water erosion, increase soil stabilization, improve soil structure, suppress weed establishment, and improve overall reclamation success. The cover crop seed mix below was developed to provide quick cover due to a rapid germination rate and to aid in accelerated soil stabilization by helping to prevent the migration of topsoil during periods of freeze/thaw and rain events. A cover crop seed mix recommendation for immediate vegetation cover is provided in Table 1. Landowner preferences should be identified prior to seeding to develop appropriate seed mixes for hayfields and tame pastures. The reclamation plan is provided on Page 2.

Table 1. Little Missouri Lateral Cultivated Crop Ecozone Site Cover Crop Seed Mix Recommendation.

Common Name	Scientific Name	# PLS/acre	PLS/sq ft	% of Mix
Quickguard-Sterile Triticale	*Triticum aestivum x Secale cereal*	60	18	90%
Nitro Radish	*Raphanus sativus*	3.5	2.0	10%
Total	**--**	**64**	**20**	**100%**

RECLAMATION PLAN
CULTIVATED CROP ECOZONE SITES

(1) SOIL AMENDMENTS

Soil and nutrient amendments within cultivated areas should be based on surface owner requests. If the surface owner does not have any tract specific requests, it is recommended that approximately 20 pounds of nitrogen and 50 pounds of phosphorus per acre be applied.

(2) SEEDBED PREPARATION

These recommended seedbed preparation steps will aid in successful reclamation. Steps may be omitted, conducted in different order, or changed to optimize success and efficiency depending on field conditions, sub-soil properties, and local terrain.

- Rip subsurface soil, prior to topsoil spreading, to a minimum depth of 16 inches to reduce soil compaction and improve drainage. Ripping should be conducted using a double pass with a straight-shank agricultural ripper or parabolic ripper. The shanks on the back of a grader or dozer should NOT be used to alleviate soil compaction. Do not smooth the ROW with a dozer once ripped. It is beneficial to have an irregular surface to help tie the topsoil and subsoil horizons together. Tillage can be used to break soil clods apart prior to topsoil application.
- Apply topsoil and requested soil amendments, discussed above, to improve the soil's physical and chemical characteristics and to supplement soil nutrients.
- Finally, till the site to a depth of 4.0 to 6.0 inches to incorporate applied soil amendments and to create a seedbed conducive to seedling establishment (disk and harrow, field cultivator, vibra-shank, or other alternative suitable to site conditions).

(3) OPTIONAL COVER CROP SEEDING

Cover crop seeding should be conducted using a drill seeder suitable for the location's soils and capable of direct seed placement. Drill seeding should occur on the contour using a drill equipped with a double disc opener, wheel press, and depth bands to ensure proper seeding depth. Seed should be planted to the depth specified by the vendor to ensure proper germination and emergence. It is recommended that grain seed be placed 0.5 to 1.0 inches deep. The Cultivated Crop Ecozone recommended cover crop seed mix and rate is provided in Table 1.

(4) STRAW MULCHING

Application of straw mulch is recommended to reduce potential water and wind erosion when establishment of the crop will not occur within 45 days of reclamation activities and a cover crop will not be planted. Recommended straw mulch application rates are between 1.5 to 2.0 tons per acre. This will provide ground coverage of approximately 80 to 90 percent of the ground surface prior to crimping. Once applied the straw mulch should be crimped into the soil using a straight disc crimper with approximate 8.0-inch spaced tines. Upon successful crimping the straw mulch should be standing vertically with approximately 40 to 60 percent of the ground surface covered. Straw mulch should be at least 6.0 inches in length. Straw mulch should be crimped sufficiently to cause vertical cover that will not be dislodged by light breezes. Straw mulch should be applied based on surface owner preference in crop areas.

(5) WEED MANAGEMENT

A site-specific Integrated Weed Management Plan (IWMP) should be developed once weedy species can be identified and regular crop rotation has begun. Sites could be mowed prior to flowering and seed head production of weedy species. Mowing will reduce competition with desirable species and allow greater opportunity for reclamation success. In addition to mowing, herbicides appropriate for the identified weedy species could be implemented into the weed management plan to eradicate any problematic species. If herbicides are intended to be used, they should be applied in consultation with the surface owner to ensure that the application of herbicides is appropriate for the subsequent agricultural crop. Application timing and rates should follow the manufacturer's recommendations.

RECLAMATION PLAN
LOAMY ECOZONE SITES

SITE DESCRIPTION

The Loamy Ecozone consists primarily of grassland used for livestock grazing, forage production, and wildlife. This ecozone covers approximately twenty-seven (26.5) percent of the Little Missouri Lateral. The Loamy Ecozone is composed of tall and short/mid grasslands. Fine to medium soil textures characterize the Loamy Ecozone, which consists predominantly of clay loams, loams, silt loams, and silty clay loams over varying topography. Vegetation within this ecozone consists of diverse herbaceous plant communities where the dominant vegetation is grass. Pastures consist primarily of an alfalfa/grass mix and native range is primarily native and introduced grasses and forbs. These sites will be returned to a similar pre-disturbance land use following construction.

A recommended seed mix is provided for the Loamy Ecozone sites in Table 1. The native grass seed mix was developed using 60 pure live seed (PLS) per square foot, respectively. The Loamy Ecozone seed mix considers seed availability, original site composition, and the ability of species to thrive in this specific ecozone.

The Loamy Ecozone should present minimal challenges for reclamation due to desirable ecozone characteristics. Appropriate seedbed preparation methods, seeding practices, a suitable seed mix, and a site specific Integrated Weed Management Plan (IWMP) should help expedite reclamation success. The reclamation plan is provided on Page 2.

Table 1. Little Missouri Lateral Loamy Ecozone Site Seed Mix Recommendation.

Common Name	Scientific Name	# PLS/acre	PLS/sq ft	% of Mix
Western Wheatgrass	*Pascopyrum smithii*	4.8	12	20%
Needle-and-Thread	*Hesperostipa comata*	3.4	9.0	15%
Blue Grama	*Bouteloua gracilis*	0.48	9.0	15%
Green Needlegrass	*Nassella viridula*	2.2	9.0	15%
Sideoats Grama	*Bouteloua curtipendula*	2.1	9.0	15%
Little Bluestem	*Schizachyrium scoparium*	1.0	6.0	10%
Slender Wheatgrass	*Elymus trachycaulus*	1.6	6.0	10%
Total	**--**	**16**	**60**	**100%**

Notes:
1. Seed mix was developed for loamy soil conditions and fine to medium soil textures based on vegetation data. Seed mix may be adjusted based landowner preferences.

RECLAMATION PLAN
LOAMY ECOZONE SITES

(1) SOIL AMENDMENTS

Soil amendment recommendations are based on recent soil chemical analysis. It is recommended that the following fertilizer amounts be applied to areas within the Loamy Ecozone:

- Nitrogen – 20 pounds per acre
- P_2O_5 – 50 pounds per acre
- K_2O – 0 pounds per acre

(2) SEEDBED PREPARATION

These recommended seedbed preparation steps will aid in successful reclamation. Steps may be omitted, conducted in different order, or changed to optimize success and efficiency depending on field conditions, sub-soil properties, and local terrain.

- Rip subsurface soil, prior to topsoil application, to a minimum of 16 inches to reduce soil compaction and improve drainage. Ripping should be conducted using a double pass with a straight-shank agricultural ripper or parabolic ripper. The shanks on the back of a grader or dozer should NOT be used to alleviate soil compaction. Do not smooth the ROW with a dozer once ripped it is beneficial to have an irregular surface to help tie the topsoil and subsoil horizons together. Tillage can be used to break soil clods apart prior to topsoil application.
- Apply topsoil and soil amendments, discussed above, to improve the soil chemical characteristics and to supplement soil nutrients.
- Finally, till the site to a depth of 4.0 to 6.0 inches to incorporate soil amendments and to create a seedbed conducive to seedling establishment (disk and harrow, field cultivator, vibra-shank, or other alternative suitable to site conditions).

(3) SEEDING

Seeding should be conducted using a drill seeder suitable for the location's soils and capable of direct seed placement. Drill seeding should occur on the contour using a drill equipped with an agitator, double disc opener, wheel press, and depth bands to mix seed and ensure proper seeding depths. Seeds should be planted to the depth specified by the vendor to ensure proper germination and emergence. It is recommended that the seed be placed ⅛ to ½ inch deep. The Loamy Ecozone seed mix and rate are provided in Table 1.

(4) STRAW MULCHING

Application of straw mulch is recommended to reduce potential water and wind erosion. Recommended straw mulch application rates are between 1.5 to 2.0 tons per acre. This will provide ground coverage of approximately 80 to 90 percent of the ground surface prior to crimping. Once applied the straw mulch should be crimped into the soil using a straight disc crimper with approximate 8.0-inch spaced tines. Upon successful crimping the straw mulch should be standing vertically with approximately 40 to 60 percent of the ground surface covered. Straw mulch should be at least 6.0 inches in length. Straw mulch should be crimped sufficiently to cause vertical cover that will not be dislodged by light breezes.

(5) WEED MANAGEMENT

A site-specific IWMP should be developed once weedy species can be identified. Sites could be mowed prior to flowering and seed head production of weedy species. Mowing will reduce competition with desirable species and allow greater opportunity for reclamation success. In addition to mowing, herbicides appropriate for the identified weedy species should be implemented into the weed management plan to eradicate any problematic species. Application timing and rates should follow the manufacturer's recommendations. Herbicide applications should be selective and avoid desirable native grass, forb, and shrub species. It is recommended to avoid overgrazing during the establishment period to minimize competitive weedy species establishment.

RECLAMATION PLAN
SALINE ECOZONE SITES

SITE DESCRIPTION

The Saline Ecozone consists of land used primarily for forage production and grazing. The Saline Ecozone makes up approximately eighteen (17.6) percent of the Little Missouri Lateral. This ecozone occurs in topographically low areas, including alluvial fans and stream terraces, as well as on hillsides. This ecozone consists of fine textured soils (clay loams and clays) with characteristically elevated soil electrical conductivity (EC) and soil sodium adsorption ratio (SAR). Soils are moderately deep to deep (> 20 inches) and slope typically ranges from 0 to 8 percent. Vegetation of the Saline Ecozone is predominantly native/introduced rangeland grasses. These sites will be returned to a similar pre-disturbance land use following construction.

A recommended seed mix is provided for the Saline Ecozone in Table 1. The seed mix was developed using 80 pure live seeds (PLS) per square foot. This seed mix considers inherent soil properties and includes saline tolerant grass species to improve reclamation success.

One key obstacle in reclaiming the Saline Ecozone sites will be the elevated soil salinity and potential soil attributes associated with sodic soils (soil dispersion, poor soil structure, hard surface crust formation, and reduced infiltration). Additionally, fine textured soils with elevated soil clay contents can contribute to greater potential soil erosion and deteriorated soil structure. Deteriorated soil structure may result in hard, compacted soils that will limit infiltration and root growth. Ecozone appropriate soil amendments, seedbed preparation methods, seeding practices, a suitable seed mix, and a site specific Integrated Weed Management Plan (IWMP) should help expedite reclamation success. The reclamation plan is provided on Page 2.

Table 1. Little Missouri Lateral Saline Ecozone Sites Seed Mix Recommendation.

Common Name	Scientific Name	# PLS/acre	PLS/sq ft	% of Mix
Beardless Wildrye	*Leymus triticoides*	3.4	12	15%
Inland Saltgrass	*Distichlis spicata*	1.3	16	20%
Western Wheatgrass	*Pascopyrum smithii*	6.3	16	20%
Nuttall's Alkaligrass	*Puccinellia nuttalliana*	0.33	16	20%
Green Needlegrass	*Nassella viridula*	2.0	8.0	10%
Slender Wheatgrass	*Elymus trachycaulus*	3.3	12	15%
Total	**--**	**17**	**80**	**100%**

Notes:
1. Seed mix was developed for saline and fine textured soil conditions based on vegetation data. Seed mix may be adjusted based on landowner preferences.

RECLAMATION PLAN
SALINE ECOZONE SITES

(1) SOIL AMENDMENTS

Soil amendments are recommended to expedite reclamation success and create conditions that can better support seed germination and plant growth. Gypsum ($CaSO_4 \cdot 2H_2O$) is recommended to improve potential saline/sodic soil conditions within the Saline Ecozone and to reduce potential soil dispersion. It is recommended that 1.5 tons per acre gypsum be applied to soils within the Saline Ecozone. In addition, 5.0 tons per acre of cornstalks should be applied to the Saline Ecozone sites to improve soil structure and reduce potential soil dispersion of saline/sodic soils. To offset nitrogen immobilization due to the organic carbon additions, it is recommended that 75 pounds per acre of nitrogen be applied. Soil amendments should be incorporated post topsoil application to a depth of 4.0 to 6.0 inches.

- Gypsum – 1.5 tons per acre
- Cornstalks – 5.0 tons per acre
- Nitrogen – 75 pounds per acre
- P_2O_5 – 50 pounds per acre

(2) SEEDBED PREPARATION

These recommended seedbed preparation steps will aid in successful reclamation. Steps may be omitted, conducted in different order, or changed to optimize success and efficiency depending on field conditions, sub-soil properties, and local terrain.

- Rip subsurface soil, prior to topsoil application, to a minimum of 16 inches to reduce soil compaction and improve drainage. Ripping should be conducted using a double pass with a straight-shank agricultural ripper or parabolic ripper. The shanks on the back of a grader or dozer should NOT be used to alleviate soil compaction. Do not smooth the ROW with a dozer once ripped. It is beneficial to have an irregular surface to help tie the topsoil and subsoil horizons together. Tillage can be used to break soil clods apart prior to topsoil application.
- Apply topsoil and soil amendments, discussed above, to improve the soil physical and chemical characteristics and to supplement soil nutrients.
- Finally, till the site to a depth of 4.0 to 6.0 inches to incorporate soil amendments and to create a seedbed conducive to seedling establishment (disk and harrow, field cultivator, vibra-shank, or other alternative suitable to site conditions).

(3) SEEDING

Seeding should be conducted using a drill seeder suitable for the location's soils and capable of direct seed placement into fine textured soils. Drill seeding should occur on the contour using a drill equipped with an agitator, double disc opener, wheel press, and depth bands to mix seed and ensure proper seeding depths. Seeds should be planted to the depth specified by the vendor to ensure proper germination and emergence. It is recommended that the seed be placed ⅛ to ½ inch deep. The Saline Ecozone seed mix and rate are provided in Table 1.

(4) STRAW MULCHING

Application of straw mulch is recommended to reduce potential water and wind erosion. Recommended straw mulch application rates are between 1.5 to 2.0 tons per acre. This will provide ground coverage of approximately 80 to 90 percent of the ground surface prior to crimping. Once applied the straw mulch should be crimped into the soil using a straight disc crimper with approximate 8.0-inch spaced tines. Upon successful crimping, the straw mulch should be standing vertically with approximately 40 to 60 percent of the ground surface covered. Straw mulch should be at least 6.0 inches in length. Straw mulch should be crimped sufficiently to cause vertical cover that will not be dislodged by light breezes.

(5) WEED MANAGEMENT

A site-specific IWMP should be developed once weedy species can be identified. Sites could be mowed prior to flowering and seed head production of weedy species. Mowing will reduce competition with desirable species and allow greater opportunity for reclamation success. In addition to mowing, herbicides appropriate for the identified weedy species should be implemented into the weed management plan to eradicate any problematic species. Application timing and rates should follow the manufacturer's recommendations. Herbicide applications should be selective and avoid desirable native grass, forb, and shrub species. It is recommended to avoid overgrazing during the establishment period to minimize competitive weedy species establishment.

ATTACHMENT A

Soil Data Little Missouri Lateral

Sample ID	pH	Ec_e	SAR	N	P	K	OM
		dS/m		lb/acre	ppm		%
0007	6.7	0.28	0.28	18	8	315	3.0
0014	8.1	0.86	0	2	2	179	2.1
0021	7.6	0.83	0.65	16	4	397	4.6
0035	8.0	0.49	0	11	2	258	3.3
0040	8.1	0.61	0	6	2	298	2.4
0046	8.0	0.67	0	21	9	126	0.5
0054	8.2	0.55	0	10	3	101	1.3
0061	8.0	0.80	0	20	10	252	2.9
0069	8.0	0.67	0	24	8	130	0.5
0075	8.0	0.67	0	27	8	129	0.5
0080	8.1	0.61	0	8	3	112	1.6

Little Missouri Lateral - Ecozone

Sample - 1
Sample - 2
Sample - 3
Sample - 4
0.5
Sample - 5

Legend

- Sample Points
- Milepost
- Centerline

Ecozone

- Crop
- Loamy
- Saline

1:2,500

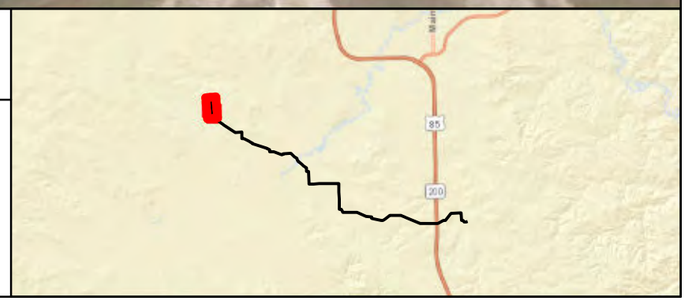
0 125 250 500 Feet

N E S W

Little Missouri Lateral

Date: 12/20/2018

Projection: NAD 1983, UTM Zone 13N



Little Missouri Lateral - Ecozone



Legend

- Sample Points
- Milepost
- Centerline

Ecozone

- Crop
- Loamy
- Saline

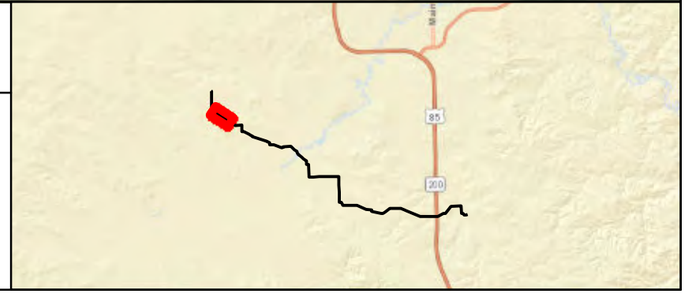
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0 125 250 500 Feet

Little Missouri Lateral

Date: 12/20/2018

Projection: NAD 1983, UTM Zone 13N



Little Missouri Lateral - Ecozone



Legend

- Sample Points
- Milepost
- Centerline

Ecozone

- Crop
- Loamy
- Saline

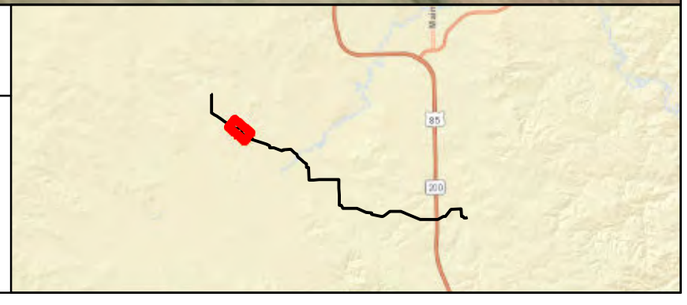
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Projection: NAD 1983, UTM Zone 13N



Little Missouri Lateral - Ecozone



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- Sample Points
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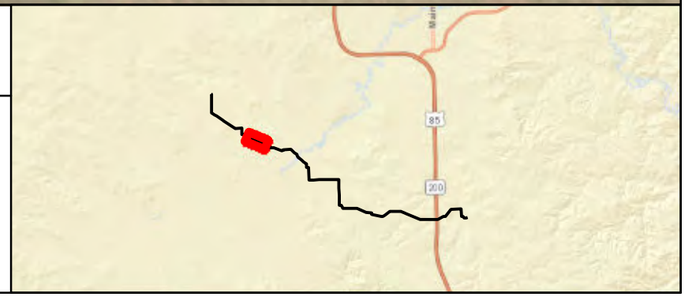
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Little Missouri Lateral - Ecozone



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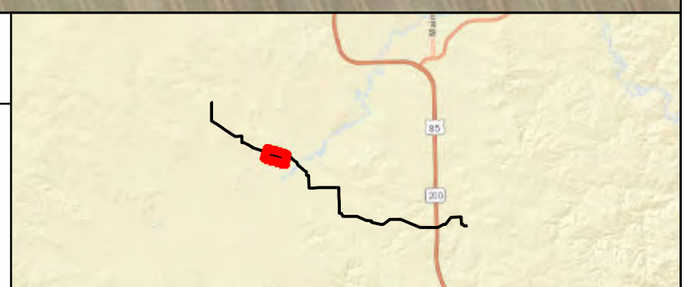
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N W E S

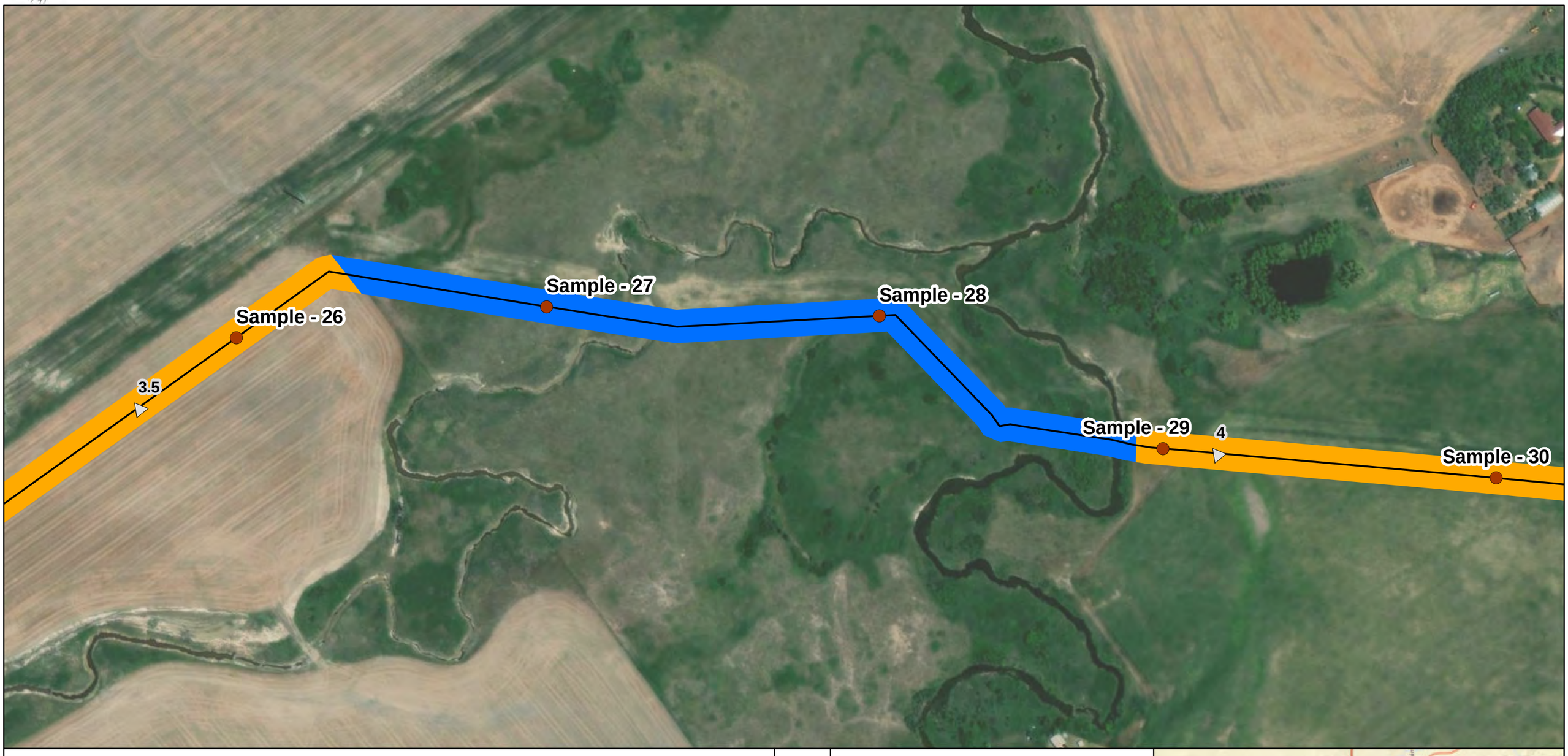
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Little Missouri Lateral - Ecozone



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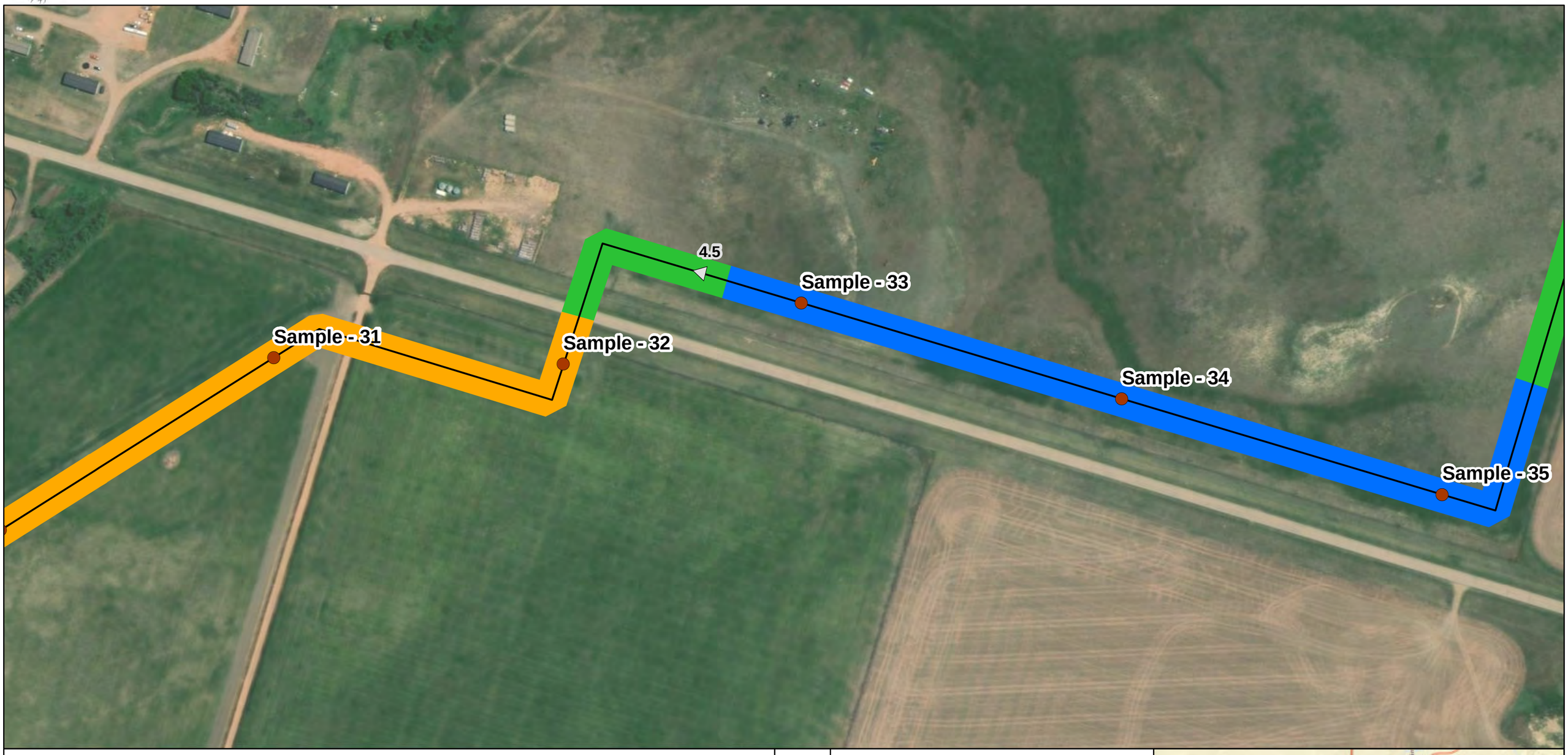
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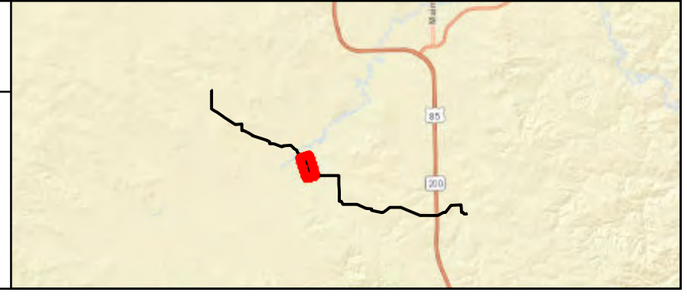
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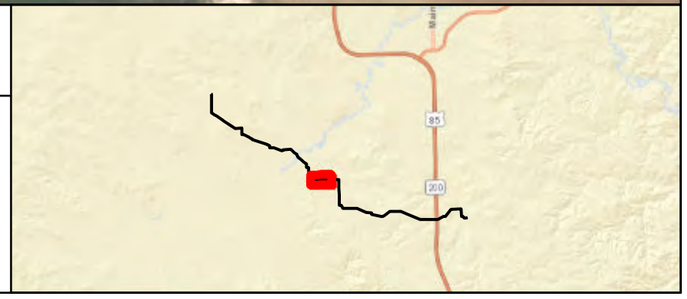
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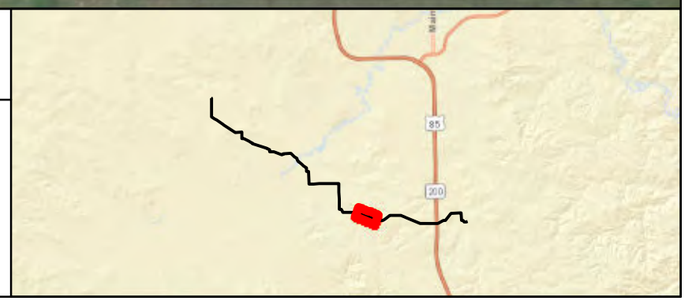
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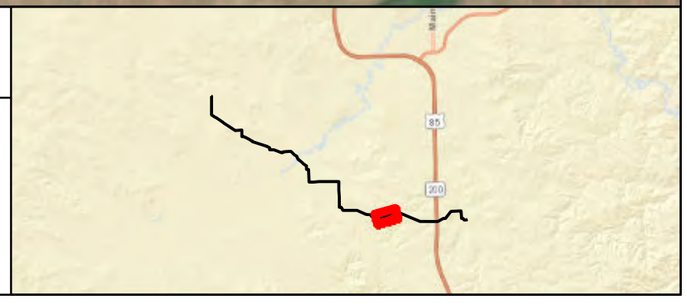
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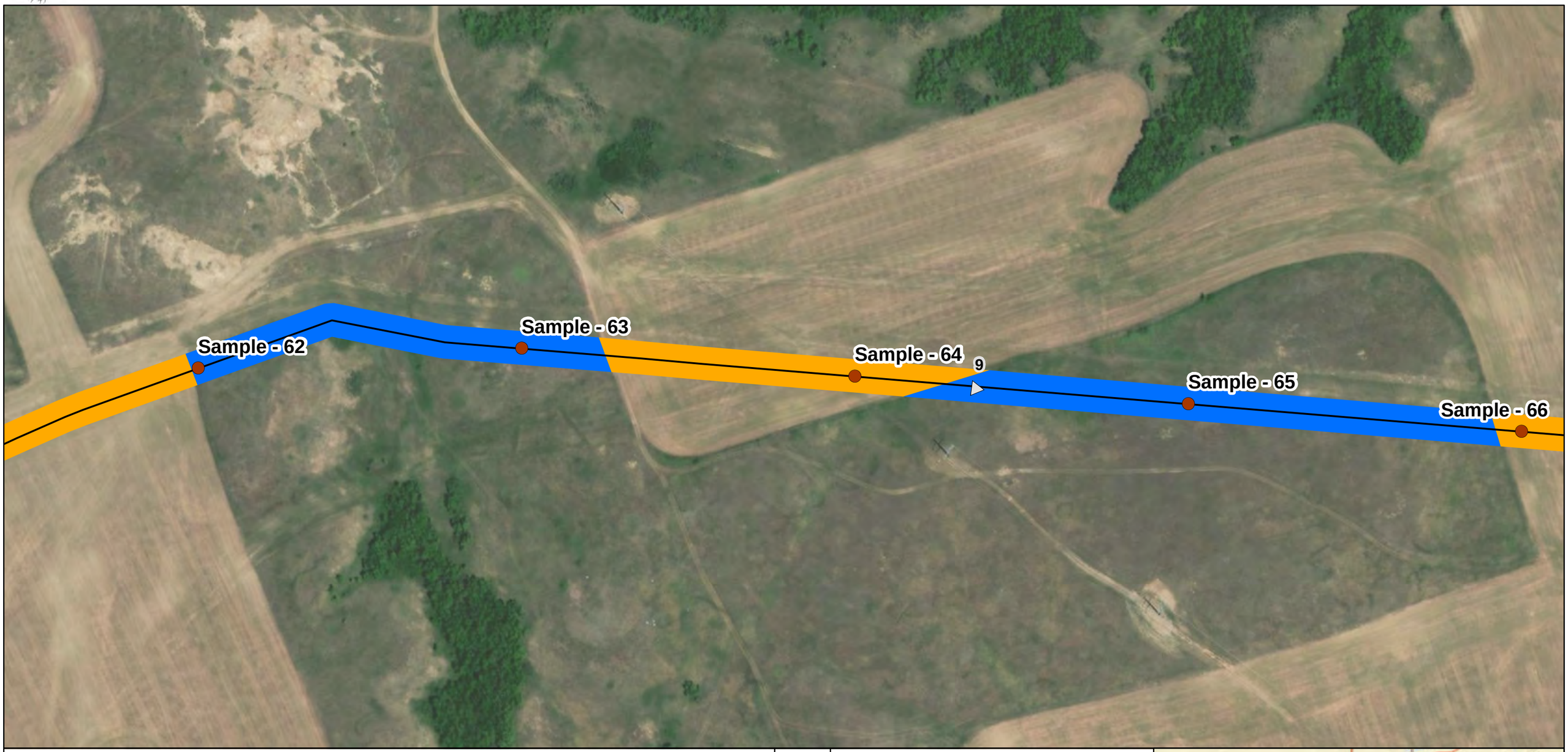
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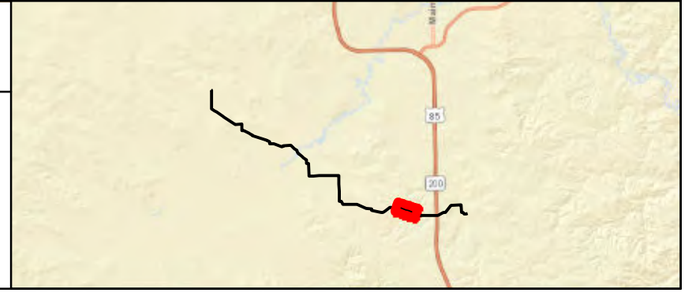
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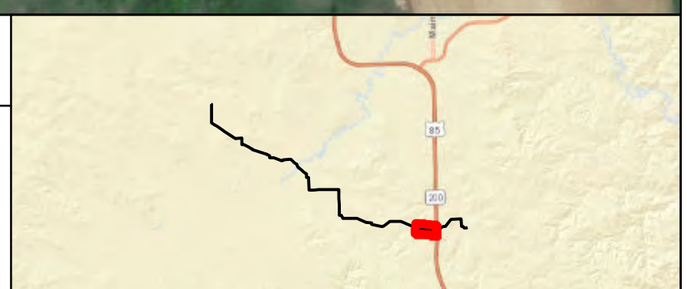
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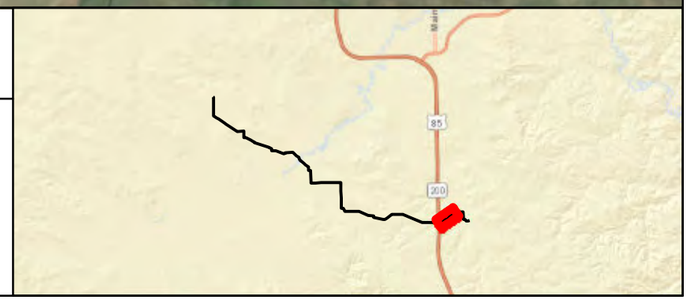
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0 125 250 500 Feet

Little Missouri Lateral

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Projection: NAD 1983, UTM Zone 13N



Little Missouri Lateral - Ecozone

Sample - 77
Sample - 76
Sample - 78
11
Sample - 79
Sample - 80
Sample - 81

Legend

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1:2,500

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