APPENDIX 2B WETLANDS/WATERBODY DELINEATION REPORT



WBI Energy Transmission, Inc.

Wahpeton Expansion Project

Wetland and Waterbody Delineation Report

February 2022

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Acronyms and Abbreviations

Name	Definition
CFR	Code of Federal Regulations
ERM	ERM-West, Inc.
GIS	geographic information system
GPS	Global Positioning System
HUC	hydrologic unit code
MLRA	major land resource area
NHD	National Hydrography Dataset
NRCS	Natural Resource Conservation Service
NWI	National Wetlands Inventory
OHWM	ordinary high water mark
PEM	palustrine emergent wetland class
PFO	palustrine forested wetland class
Project	Wahpeton Expansion Project
PSS	palustrine scrub-shrub wetland class
USACE	US Army Corps of Engineers
USGS	US Geological Survey
WBI Energy	WBI Energy Transmission, Inc.

1. INTRODUCTION

WBI Energy Transmission, Inc. (WBI Energy), proposes to construct and operate the Wahpeton Expansion Project (Project) in Cass and Richland counties, North Dakota. The Project will consist of approximately 60.6 miles of new natural gas pipeline, minor modifications to the Mapleton Compressor Station, new delivery stations near Kindred and Wahpeton, block valve settings, and pig launcher/receiver settings. The Project may also include newly constructed lateral taps along the pipeline route, the locations of which have yet to be determined.

ERM-West, Inc. (ERM), on behalf of WBI Energy, completed a comprehensive delineation and assessment of wetlands and waterbodies included within the proposed pipeline construction corridor and other work areas. This report will be used to support permitting efforts for impacts to jurisdictional features regulated by the US Army Corps of Engineers (USACE) under Section 404 of the Clean Water Act.

ERM performed the field delineation work in October and November 2021. Additional fieldwork will be conducted as needed in 2022 to complete survey of the currently proposed workspace.

1.1 **Project Setting**

1.1.1 Physiography, Geology, and Geomorphology

The Project will be located in the Red River Valley physiographic region of eastern North Dakota (Bluemle and Biek 2007), which lies within the broader Great Plains physiographic region of the United States. Elevations along the Project route range from 800 feet above sea level in the south to 1,000 feet above sea level in the north (Esri 2021). The landscape consists of rolling till plains occupied by farms and ranches dominated by dry-farmed, cash-grain crops, and livestock production. Dominant vegetation types in the region consist of agricultural row crops and grain, such as alfalfa, hay, beets, canola, soybeans, corn, and sunflowers. Isolated forested areas are present within the area, typically associated with riparian corridors along streams and rivers.

The bedrock underlying surficial deposits in the Project area consists of the Cretaceous Belle Fourche, Mowry, Newcastle, and Skull Creek formation (Klausing 1968). These formations consist primarily of gray to dark gray silty to sandy shale that was deposited in a marine offshore or shoreline setting. In addition to the marine offshore Cretaceous formations, the Cretaceous-age Inyan Kara fine to coarse-grained sandstone with interbedded shale formation underlies portions of the Project area and represents a nearshore marine or river/lake deposition setting. Pre-Cambrian igneous and metamorphic rocks underlie some of the surficial sediments.

1.1.2 Hydrology

The Project lies within the Devil's Lake-Sheyenne and Upper Red River watersheds. Two sub-basins within the Project area are crossed within the Devil's Lake-Sheyenne basin: Maple River (hydrologic unit code [HUC] 09020205) and Lower Sheyenne River (HUC 09020204). Three sub-basins are crossed within the Upper Red River watershed: the Western Wild Rice River (HUC 09020105), the Bois De Sioux River (HUC 090201101), and the Upper Red River (HUC 09020104) (NDDEQ 2021). All drainage patterns in the survey area flow east into the Red River, which flows north into Canada, terminating at Lake Winnipeg.

Features mapped by the National Hydrography Dataset (NHD) are presented on figures in Appendix A. The Project crosses several named waterbodies, including the Maple, Sheyenne, and Wild Rice rivers, and Pitcairn and Antelope creeks. In addition, numerous unnamed NHD features are located in the survey area, most of which are either small tributaries to the named waterbodies or ephemeral drainage ditches in roadside areas and active agricultural fields. Groundwater occurs in sedimentary bedrock within the Great Plains region, composed of sandstone bedrock aquifers and unconsolidated alluvial and glacial deposits. While drain tiles are prevalent along the Project route, to date, no sprinkler irrigation systems or irrigation ditches have been identified within the Project area.

1.1.3 National Wetlands Inventory

Features mapped by the National Wetlands Inventory (NWI) are presented on figures in Appendix A. NWI-mapped wetlands in the survey area are predominantly palustrine emergent wetlands, followed by riverine upper perennial wetlands. Less common wetlands include lacustrine limnetic, palustrine aquatic bed, and palustrine forested wetlands.

1.1.4 Mapped Soil Survey

The Project will be located in the Red River of the North major land resource area (MLRA) 56 (USDA-NRCS 2006). The dominant soil orders in MLRA 56 are Mollisols and Vertisols. The soils in this MLRA are characterized as very deep, somewhat poorly drained to very poorly drained, and loamy to clayey in texture. The majority of land use within MLRA 56 is private dry-farming cropland, accounting for almost 80 percent of land use in the MLRA.

The Natural Resource Conservation Service (NRCS) Web Soil Survey was used to obtain the most current soil survey information available electronically for each county crossed by the Project.

The NRCS soil mapping figure set is presented in Appendix A. Table 1 in Appendix B provides an overview of all mapped hydric, predominantly hydric, and partially hydric soil units (EPA 2013) in the Project construction area.

2. METHODS

Wetlands and waters were identified and delineated within the approximately 769-acre survey area. The survey area included a 300-foot-wide corridor centered on the proposed pipeline centerline, as well as the footprint of all aboveground facilities, access roads, and contractor yards. In addition, the survey area included portions of the Project corridor where route realignment occurred after initiation of the field survey. These new segments of corridor were incorporated into the survey area with a narrower 10-foot buffer, and as of the writing of this report, were only assessed using desktop methods (but will be reassessed in the field in 2022, as described below).

Wetlands are a subset of waters of the United States, defined for regulatory purposes under the Clean Water Act as "Those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support...a prevalence of vegetation typically adapted for life in saturated soil conditions..." (33 CFR Section 328.3(c)). ERM delineated the wetlands following the protocol outlined in the USACE 1987 *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987; 1987 Manual) and the USACE *Regional Supplement to the Corps of Engineers Wetland Delineation Manual*: *Great Plains Region* (USACE 2012a; Regional Supplement).

In contrast to wetlands, waters (or "waterbodies") are typically non-vegetated, have a bed, bank, and ordinary high water mark (OHWM), and include intermittent, ephemeral, or perennial streams, rivers, or deeper standing water (Cowardin et al. 1979). ERM delineated waterbodies using the protocol outlined in the USACE *Regulatory Guidance Letter No. 05-05: Ordinary High Water Mark Identification* (USACE 2005).

Further details on the desktop and field components of the delineation method are described in the following sections.

2.1 Desktop Review

Prior to conducting field surveys, ERM completed a desktop review, including a broad overview of the environmental setting of the survey area, as well as a desktop evaluation of potential wetland and water features within the survey area to allow for further targeted assessment during field survey. The following data sources were reviewed in ArcGIS to identify areas that should be targeted in the field: high-resolution aerial photography, US Fish and Wildlife Service NWI data, US Geological Survey (USGS) NHD, NRCS Web Soil Survey data, and USGS topographic maps. These data are illustrated within Figure Sets 1 through 3 within Appendix A: Figure Set 1 - Topographic Map Set, Figure Set 2 - SSURGO Soils Map Set, and Figure Set 3 - Aerial Photo Background, Aquatic Resources Delineation Map Set.

ERM reviewed high-resolution aerial photography and land cover data sets to identify areas with possible wetland signatures, and recent disturbances on the landscape that could influence the presence and extent of wetlands. For agricultural fields with potential farmed wetlands, the desktop review included reviewing the current year of aerial photography, as well as historic aerial photographs taken during notable wet years. Visual signatures noted during review included surface water, varying color changes in vegetation, and isolated areas within farmland that were not successfully farmed due to poor drainage. In addition to areas identified on the aerial imagery, the field assessment also targeted features mapped by NWI and NHD, and any areas of hydric or partially hydric soils. Results of the desktop assessment were utilized to verify potential water resources either were or were not wetlands or waterbodies during field survey.

Surveys could not be completed in 2021 for a small number of locations along the proposed route due to route changes that were adopted after the field survey was completed. These areas will be assessed in the field in 2022, and will be documented in an amendment to this report. Where surveys were unable to be completed during the fall of 2021 a more in-depth desktop review was conducted using high-resolution aerial photography from multiple years (historically wet and current), and the GIS resources described above (NWI, NHD, NRCS soils, and topographic maps). Results of this effort are illustrated on Figure Set 3 in Appendix A, with labels that identify desktop features as either DSK_WL for wetlands, or DSK_WB for waterbodies. Inclusion of these desktop features within areas that have not been able to be field surveyed provide a more accurate representation of water resources that occur within the survey area.

2.2 Field Survey

The field delineation was conducted October 4th through November 19th, 2021 by experienced delineators. The survey generally encompassed a 300-foot-wide corridor. Survey crews visited NWI and NHD mapped features, and probable wetlands/waterbodies observed on aerial photos. Where wetlands or waterbodies were not present at these locations in the field, staff documented "non-water" points, including observations and photographs at these locations. Wetland boundaries, waterbody thalweg or banks, data collection points, open waterbody boundaries, and non-water points were recorded using a Trimble® 7000 series GeoXH model GPS unit. The GPS data was typically 1-meter accuracy or better.

Each wetland or water feature documented within the survey limits was assigned a Project-specific unique identifier (Unique ID). Specific naming conventions were followed during field surveys in order to catalog each wetland and waterbody documented. Table 2-1 describes each part of the naming convention utilized to assign Unique IDs during field surveys.

Water Resource	Туре	County	Field Crew Letter	Feature Number Example	Special Designation	
Wetland	w = wetland	County initials (Cass = ca, Richland = ri)	Crew letter (e.g., a, b, c)	001, 002, 003,	f = PFO ^a e = PEM ^a s = PSS ^a u = Upland point	
Waterbody	s = stream o = open waterbody	County initials (Cass = ca, Richland = ri)	Crew letter (e.g., a, b, c)	001, 002, 003,	Perennial ^b Intermittent ^b Ephemeral ^b	
Desktop assessed	DSK_WB = waterbody DSK_WL = wetland	Used to denote areas that were not field surveyed in 2021 (due to inaccessibility, lack of permission, or re-alignment of the corridor) and were assessed only using desktop methods. These areas will be assessed during the 2022 field event.				
Non-water Point	no = non-water or non- wetland feature	County initials (Cass = ca, Richland = ri)	Crew letter (e.g., a, b, c)	001, 002, 003,	Not applicable	

Table 2-1: Wetland and Water Resource Naming Protocol for Unique IDs

Wetland Classification / acronym based on Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et al. 1979): PEM = Palustrine emergent; PFO = Palustrine forested; PSS = Palustrine scrub-shrub.

Flow regime was determined in accordance with 33 Code of Federal Regulations (CFR) 330.

2.2.1 Wetlands

Documenting wetlands using the USACE 1987 Manual (USACE 1987) and the applicable Regional Supplement relies on three criteria that must be present for a feature to be identified as a wetland: a predominance of hydrophytic vegetation; primary and/or secondary indicators of wetland hydrology; and the presence of hydric soils under normal circumstances (i.e., where naturally problematic conditions or disturbances are absent). Delineators completed wetland determination datasheets at sample points within each wetland community type making up the wetland or wetland complex, along with a minimum of one corresponding upland community sample point. A shared upland sample point was used for wetlands that were within close proximity to one another and had the same upland community type.

At each wetland or upland community sample point delineators documented the physical location of the sample point using the GPS, and documented observations of hydrology, soils, and vegetation at the sample point. Examples of observations of hydrology included: presence of inundation above the ground surface, saturated soil identified within the upper 12 inches of the soil profile, high or seasonally high water table identified within 12 inches of the ground surface, water-stained leaves, drainage patterns, and the geomorphic position of the vegetation community. Existing soils maps were used as a guide to identify locations of potential hydric soils. Field investigations and associated soil profile descriptions were required to verify the presence of hydric soils, particularly given the disturbed conditions present throughout much of the Project. Soil profiles were documented to a depth to determine presence or absence of hydric soils at each sample point. Hydric soil indicators utilized to determine hydric soil presence included hydric soil indicators described in Field Indicators of Hydric Soils in the United States, Version 8.2 (USDA-NRCS 2018). Hydric soil indicators identified during surveys include: depleted below dark surface, thick dark surface, and histic epipedon. The soil profile descriptions were observed and documented on USACE datasheets at representative sample point locations in both wetland communities and adjacent upland communities to help establish the wetland boundary. Finally, observations of vegetation species and visual cover percentages were documented at each sample point. Hydrophytic vegetation indicator status was assigned using the 2020 National Wetland Plant List (USACE 2020), and following the requirements of the Regional Supplement.

Wetland and water features were also classified using the *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et. al. 1979; referred to as the "Cowardin classification"). The following Cowardin classification types were assigned: palustrine emergent (PEM), palustrine scrub-shrub wetland (PSS), and palustrine forested (PFO). For wetland complexes, or wetlands that include more than one wetland plant community, delineators established a sample point and recorded observations on corresponding data sheets to separately document each wetland community. Unique wetland IDs and separate polygons were established within the survey area based on the wetland community present within the complex.

2.2.2 Waterbodies

Waterbodies documented during field surveys were categorized according to their hydrology regimes. All waterbody data was documented on waterbody data sheets developed to document key physical and functional characteristics of waterbodies.

Linear or flowing waterbodies were identified as channelized landscape features possessing a bed and a bank in a concave landscape position where water flow resulted in a feature that possesses an OHWM. Based on indicators of flow regime observed at the time of survey, linear waterbodies were spatially recorded with channel width and OHWM location according to the definitions provided by the USACE in the *Regulatory Guidance Letter No. 05-05: Ordinary High Water Mark Identification* (USACE 2005), and assigned a hydrology regime of perennial, intermittent, or ephemeral.

Similarly, non-flowing, open waterbody features were assigned one of the four Cowardin hydrology regime modifiers based on evidence of inundation/saturation recorded at the time of survey: permanently flooded, semi-permanently flooded, seasonally flooded, or temporarily flooded.

2.2.3 Non-Water Points

Delineators collected non-water points to document NHD or NWI-mapped features that did not meet the required criteria of wetlands or waterbodies when assessed in the field (i.e., upland habitat). Non-water points were also used to document areas that were investigated as potentially meeting wetland criteria based on signatures observed during the desktop assessment, but were ultimately determined to be non-wetland areas during the field investigation. Delineators recorded observations, took photographs, and collected a GPS point at each non-water point to document that wetland biologists visited the point and determined that a wetland or waterbody was not present. USACE wetland delineation forms were used to record information for non-water points.

3. RESULTS

ERM identified 74 wetlands and 25 waterbodies within the survey area along the currently proposed route. These wetlands and waterbodies are illustrated on Figure Set 3 in Appendix A and listed in Tables 2 and 3 in Appendix B, including Project-specific Unique ID, location (latitude/longitude), acreage (wetlands), linear feet (waterbodies) within the survey area, and Cowardin classification or hydrology regime. Data forms and photographs of wetlands or waterbodies are provided in Appendix C. Photos and datasheets for non-water points can be provided upon request but are not currently included in Appendix C. Field conditions were atypically dry during the survey.

3.1 Field Survey

Tables 2 and 3 in Appendix B list delineated wetlands and waterbodies within the survey area, including the location and acreage or linear feet within the survey area. Features assessed using desktop methods only are also included in Tables 2 and 3, and are denoted as either "DSK_WB" or "DSK_WL" for waterbody and wetland features, respectively. Categorization of these features is based on desktop

review of the NHD, NWI, and/or recent aerial photography. The location of surveyed features is illustrated in the figures in Appendix A. Data sheets and photographs of each sample point are provided in Appendix C.

3.1.1 Wetlands

A total of 74 wetland features (approximately 38.5 acres) were identified within the survey area, with most classified as palustrine emergent (herbaceous) wetlands, see Table 2 in Appendix B. Some of these wetlands are associated with intermittent and perennial steams, but the majority are found in depressions within agricultural fields or along roadside ditches and edges of agricultural fields. Dominant herbaceous wetland vegetation found in the survey area includes narrowleaf cattail (*Typha angustifolia*), reed canary grass (*Phalaris arundinacea*), needle spike-rush (*Eleocharis acicularis*), and prairie cordgrass (*Spartina pectinata*). Other hydrophytic vegetation species such as dark-green bulrush (*Scirpus atrovirens*), fox-tail barley (*Hordeum jubatum*), and swamp smartweed (*Persicaria hydropiperoides*) were also observed during the survey.

In addition to palustrine emergent wetlands, limited areas of scrub-shrub and forested wetlands were observed in the survey area. Dominant scrub-shrub hydrophytic were sandbar willow (*Salix interior*) and gray dogwood (*Cornus racemosa*), while dominant tree species observed at forested wetland sites were eastern cottonwood (*Populus deltoides*), black willow (*Salix nigra*), and boxelder (*Acer negundo*).

3.1.2 Waterbodies

The acreage and characteristics of waterbodies surveyed within the survey area are presented in Table 3 in Appendix B. A total of 25 waterbody features (5.01 acres) were identified within the survey area, consisting of 11 perennial rivers and streams and 14 ephemeral streams and ditches. All of the ditches, which were primarily roadside or agricultural ditches, were classified as ephemeral. All rivers were classified as perennial, while streams were classified as both ephemeral and perennial. No features were classified as intermittent.

The following named rivers and streams are crossed by the survey area: Maple River, Sheyenne River, Wild Rice River, Antelope Creek, and Pitcairn Creek. None of the waterbodies crossed by the Project is considered a Section 10 navigable water under the Rivers and Harbors Act (USACE 2012b).

4. CONCLUSIONS

Wetland and waterbody delineations for the Project were completed on accessible portions of the survey area during fall 2021. This report presents the results of these surveys documenting 74 wetlands and 25 waterbodies. Remaining survey areas identified within the report that have not been assessed in the field during the fall 2021 surveys will be assessed in spring 2022 and presented in an addendum to this report.

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APPENDIX A MAP SETS







- Joos-	6.5	900	6
O Milepost	Page 4 of 40	Aquatic Resources Topographic Map	
Survey Boundary - Complete		(5 ft Contours)	
Survey Boundary - Incomplete	1	Wahpeton Expansion Project	
Proposed Workspace	1:7,000	WBI Energy Transmission, Inc.	
0 50	0 1,000 Feet		ERM
MPLS M:\Clients\V-X\WBI\Mapleton_to_Wahpeton\ArcGIS\M2W_FERC_Filing_Report	M2W_FERC_Filing_Report.aprx REVISED: 05/17/2	022 SCALE: 1:7,000 when printed at 11x17	DRAWN BY: RJC


































































































































