BW Exhibit 16

JURISDICTIONAL DETERMINATION REPORT
for the
Proposed Bowman Wind Energy Center
Bowman County, North Dakota

Submitted by:

TETRA TECH

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Acronyms and Abbreviations

1987 Manual	1987 USACE Wetland Delineation Manual
CWA	Clean Water Act
DWR	Division of Water Resources
EA	Environmental Assessment
ESRI	Environmental Systems Research Institute
FEMA	Federal Emergency Management Agency
GIS	Geographic Information System
GPS	Global Positioning System
ID	Identification Number
IP	Individual Permit
Great Plains Regional Supplement	Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region, Version 2.0
MLRA	Major Land Resource Area
NAD	North American Datum
NDDoH	North Dakota Department of Health
NHD	National Hydrography Dataset
NRCS	Natural Resource Conservation Service
NWI	National Wetlands Inventory
NWP	Nationwide Permit
OHWM	Ordinary High-Water Mark
PCN	Preconstruction Notification
PLI	Private Land Initiative
PLOTS	North Dakota Private Lands Open to Sportsmen
Project	Bowman Wind Project
RHA	Rivers and Harbors Act
Tetra Tech	Tetra Tech, Inc.
TNW	Traditional Navigable Water
T-Line	Transmission Line
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency

Acronyms and Abbreviations (Cont.)

USFWS	United States Fish & Wildlife Service
USGS	United States Geological Survey
WAAS	Wide Area Augmentation System
WOUS	Waters of the United States
WQC	Water Quality Certification

1.0 INTRODUCTION

Tetra Tech, Inc. (Tetra Tech) was retained by Bowman Wind, LLC to perform routine delineations of wetlands and other waters of the United States (WOUS) at the Bowman Wind Project (Project) in 2019 and 2020. Tetra Tech performed the wetland delineations in the Project during fall 2019. In 2020, the Project was further developed, and delineations occurred in the new areas proposed for development. QSI was also retained by Bowman Wind and similarly performed wetland delineations in 2019 and 2020. The purpose of this delineation was to determine the extent of potentially jurisdictional wetlands or other WOTUS within the Project area.

The Project is located in Bowman County, North Dakota, as shown in **Figure 1**. The Project is expected to consist of wind turbines and other associated infrastructures such as access roads, underground electrical collector circuits, collection substation(s), a laydown yard, an operations and maintenance building, and transmission line.

Included within this report is a description of the Project, methods used to delineate WOUS, field survey results, and references used to support the conclusions.

2.0 SITE DESCRIPTIONS AND LOCATION

The proposed Project will be located near Bowman, North Dakota. The Project Area is set forth in Figure 2 below. Table 1 below lists the Township, Range, and Sections in which the Project is located.

Table 1. Township, Range and Sections Within Project Boundary

Township	Range	Sections
T131N	R103W	1*, 2, 4*, 5, 6*, 7, 8, 10, 11, 13*, 14*, 15, 16*, 18*, 19, 20, 21, 22, 23, 25, 26, 28, 29, 30, 31, 32, 34*, 35, and 36
T132N	R103W	19*, 29, 30, 31, 32, 33, 34*, 35, and 36
T132N	R104W	24*
T131N	R102W	6*, 7*
T131N	R104W	1*, 12*, 14*, 15*, 20*, 21, 22, 23, 24, 26*, 27, 28, 29*, 31*, 32, 33, and 34
T130N	R103W	1*, 2, 3*, 4*, 5*, 6, 7, 8, 9*, 10*, 11*, 12*, 16*, 17, 18, 19*, 20, 21, 22, and 28
T130N	R104W	1, 2*, 3, 4*, 5*, 6*, 7*, 8*, 9*, 10, 11, 12, 13, 14*, 15, 16*, 17*, 18*, 20, 21, 22, 23*, 24*, 27*, 28*, and 29*

*Sections that are within the Project boundary with no parcels to be developed

The Project site is located within two Major Land Resource Areas (MLRA). The first MLRA is known as the Rolling Soft Shale Plains, in the Missouri Plateau, Unglaciated, and Missouri Plateau, Glaciated, Sections of the Great Plains Province of the Interior Plains. Elevations range from approximately 1,650 feet to 3,600 feet above mean sea level. Land within this MLRA is largely unglaciated and is underlain by soft, calcareous shales, siltstones, and sandstones. This region consists of rolling plains with some local badlands, buttes, and isolated hills and most drainages have terraces that are adjacent to broad floodplains (USDA 2006).

The second MLRA is known as the Northern Rolling High Plains, Eastern Part, in the Missouri Plateau, Unglaciated, Section of the Great Plains Province of the Interior Plain. Elevation ranges from 2,300 to 4,000 feet above mean sea level. Land within this MLRA contains slopes generally rolling to steep with flat topped, steep-sided buttes in some places. This area is underlain with cretaceous marine and continental sediments of shale, siltstone, and sandstone.

Land at the Project site is primarily rural agricultural land in private fee land ownership. The current Project site consists of Conservation Reserve Program planted grasslands and cultivated fields planted with wheat (*Triticum aestivum*), barley (*Hordeum vulgare*), oats (*Avena sativa*), rye (*Secale cereal*), flax (*Linum usitatissimum*), corn (*Zea mays*), sunflowers (*Helianthus annuus*), and alfalfa (*Medicago sativa*). Ranching is a common practice in this area and grassland communities are subject to sporadic grazing. Nearly all the drainages in this area have remained in a relatively natural state, barring any stream impoundments. Ranching is a common practice on these grasslands.

Property improvements include underground utilities, natural gas and oil pipelines, petroleum production facilities including oil and gas wells, communications towers, overhead transmission lines, confined animal feed operations, agricultural services facilities, large cattle confinement pastures, grain elevators, and various small businesses. Rural residences, farm buildings, and associated outbuildings are also present. Several transportation corridors occur within the Project boundary including state highway and county dirt and paved roads.

3.0 REGULATORY FRAMEWORK

The investigations described in this report were completed to identify potential wetlands and other WOUS to inform preliminary siting of facilities and assess the potential regulatory requirements for construction and operation of the proposed Project. The following provide a summary of each regulatory program.

3.1 Wetlands and Other Waters Permitting

Section 404 of the Clean Water Act (CWA) establishes a program to regulate the discharge of dredged or fill material into jurisdictional WOUS which includes certain wetlands. Activities in jurisdictional WOUS regulated under this program include fill for development, water resource projects (such as dams and levees), infrastructure and energy-related development and mining projects. Section 404 requires a permit before dredged or fill material may be discharged into WOUS, unless the activity is exempt from regulation (e.g. certain farming and forestry activities).

3.1.2 Federal Permitting Requirements

Section 404 of the CWA and Section 10 of the Rivers and Harbors Act (RHA) established programs to regulate the discharge of dredged or fill material and other work in jurisdictional WOUS, including wetlands and other special aquatic sites. These two federal laws are both administered by the USACE, with United States Environmental Protection Agency (USEPA) oversight. The laws regulate different types of WOUS, but certain features are regulated by both statutes.

Wetlands with "jurisdictional status" are WOUS as defined by Section 404 of the CWA. These types of wetlands are regulated by the USACE and the USEPA. On April 21, 2020, the USEPA and the Department of the Army finalized the Navigable Waters Protection Rule (NWPR) (USEPA 2020). This new rule replaces the 2015 Waters of the United States Rule. The new rule interprets the term "waters of the United States" to encompass the following four categories of waters that are federally regulated under the CWA:

1. Territorial seas and TNWs;
2. Perennial and intermittent tributaries to territorial seas and navigable waters;
3. Certain lakes, ponds and impoundments of jurisdictional waters; and,
4. Wetlands adjacent to other jurisdictional waters.

The NWPR identifies 12 categories that are not WOUS and therefore, not federally regulated under the CWA, including ephemeral features that flow only in response to rainfall, groundwater, many farm and roadside ditches, artificial lakes and ponds, and waste treatment systems. Wetlands within the project area include isolated wetlands that are not federally jurisdictional and federally jurisdictional wetlands that are adjacent or directly connected to USACE jurisdictional streams.

The "discharge" of dredged and fill material is defined as follows:

- Discharge of Dredged Material – Any addition of dredged material (including the redeposit of dredged or excavated material other than incidental fallback) into a WOUS. The USACE and USEPA regard the use of mechanized earth-moving equipment to conduct land clearing, ditching, channelization, in-stream mining, side-casting, temporary stockpiling, and other ground-disturbing activities within a jurisdictional wetland and/or WOUS as resulting in a discharge of dredged material.

- Discharge of Fill Material – Any addition of fill material into a jurisdictional wetland and/or WOUS. An example of a discharge of fill material would be the placement of clean soil into a wetland to create dry land so that a road could be built on the site. Another example would be placing or extending a culvert within a streambed.

Discharges of dredged or fill material may be permanent or temporary. Permanent discharges include those that will permanently affect a WOUS by filling, flooding, excavation, or drainage. Permanent effects to WOUS are considered a "loss of WOUS" if the discharges change an aquatic area to dry land, increase the bottom elevation of a WOUS, or change the use of a water body. In addition to losses of physical areas of WOUS as a result of discharges, the USACE regulates the loss of functions or values of WOUS in some circumstances when actual permanent discharges are not involved, such as clearing a forested wetland or changing the hydrology of a WOUS upstream or downstream of a permitted activity.

Examples of temporary discharges include the placement of fill within WOUS for temporary project components such as cofferdams or temporary access roads (including crane paths), where the fill will be removed in its entirety and the area will be restored to its pre-construction contours upon project completion. Note that, in some cases, the USACE considers temporary project components as causing a permanent loss of WOUS. An example is when fill for a temporary access road will remain within a wetland for such a long period of time that it impacts the potential for the wetland to reestablish after the

fill is removed.

Discharges of dredged or fill material and other work in jurisdictional wetlands and/or WOUS subject to CWA regulation under Section 404 or Section 10 typically require permit authorization before it occurs unless the activity is exempt from regulation. CWA Section 404 and Section 10 permits that are commonly issued by the USACE include Standard Individual Permits and General Permits including Nationwide Permits (NWPs) and Regional General Permits.

3.1.3 Nationwide Permits

3.1.3.1 2017 Nationwide Permits

NWPs are a series of general permits issued by the USACE that authorize work in jurisdictional wetlands and/or WOUS for minor projects in certain areas. All NWPs have General, Regional and Section 401 Water Quality Certification (WQC) conditions which must be met for a project to qualify for each NWP. Some NWPs also require a Preconstruction Notification (PCN) to the USACE prior to the initiation of any activities, regardless of the level of impact to jurisdictional wetlands or other WOUS. The Project occurs within the regulatory boundary of the USACE – Omaha District and impacts to jurisdictional wetlands and other WOUS associated with wind energy projects are typically authorized using one or more of the following USACE NWPs:

1) NWP #12 Utility Line Activities - Activities required for the construction, maintenance, repair, and removal of utility lines and associated facilities in WOUS, provided the activity does not result in the loss of greater than 0.5 acres of WOUS for each single and complete project. A PCN must be submitted if any of the following criteria are met:
    a. the activity involves mechanized land clearing in a forested wetland for the utility line right-of-way;
    b. a Section 10 permit is required;
    c. the utility line in WOUS, excluding overhead lines, exceeds 500 feet;
    d. the utility line is placed within a jurisdictional area (*i.e.,* WOUS), and it runs parallel to or along a stream bed that is within that jurisdictional area;
    e. discharges that result in the loss of greater than 0.1 acre of WOUS;
    f. permanent access roads are constructed above grade in WOUS for a distance of more than 500 feet; or,
    g. permanent access roads are constructed in WOUS with impervious materials.

2) NWP #14 Linear Transport Projects – NWP #14 authorizes activities required for crossings of WOUS associated with the construction, expansion, modification, or improvement of linear transportation projects (e.g., roads, highways, railways, trails, airport runways, and taxiways) in WOUS. In jurisdictional non-tidal streams and wetlands, the discharge cannot cause the loss of greater than 0.5 acres of WOUS. For linear transportation projects in tidal waters, the discharge cannot cause the loss of greater than 0.33 acres of WOUS. Any stream channel modification, including bank stabilization, is limited to the minimum necessary to construct or protect the linear transportation project; such modifications must be in the immediate vicinity of the project. The loss of stream bed plus any other losses of jurisdictional wetlands and WOUS caused by the NWP

activity cannot exceed 0.5 acres. A PCN must be submitted if the discharge results in the loss of greater than 0.1 acres of WOUS.

This NWP also authorizes temporary structures, fills, and work, including the use of temporary mats, necessary to construct the linear transportation project. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The areas affected by temporary fills must be revegetated, as appropriate.

3) NWP #33 Temporary Construction Access and Dewatering - NWP #33 is routinely utilized in cases involving temporary fills for construction access without permanent impacts. A PCN must be submitted if the activity is conducted in navigable WOUS (Section 10 waters).

If a PCN is required, the PCN must include a wetland delineation completed using the procedures established in the 1987 USACE Wetland Delineation Manual (1987 Manual) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region, Version 2.0 (Great Plains Regional Supplement) (USACE 2010).

3.1.3.2 2021 New and Revised Nationwide Permits

The USACE recently reissued and modified 12 existing NWPs and issued four new NWPs. For these 16 NWPs, the USACE is also reissued and modified the NWP general conditions and definitions. The 16 revised and new NWPs went into effect on March 15, 2021. Revisions to existing NWPs that could affect the authorization of this Project occurred to NWP 12 and 51. NWP 12 is now used to only authorize oil and gas pipeline projects and will not be used for a renewable energy project after March 15, 2021. The newly created NWP 57 (Electric Utility Line and Telecommunications Activities) could also authorize work in jurisdictional wetlands and/or WOUS. Specific changes to the NWPs are noted below:

1) NWP 12 Oil or Natural Gas Pipeline Activities should no longer be considered an appropriate Permit for this Project.

2) NWP 51 Land-Based Renewable Energy Generation Facilities has been revised to remove the 300-linear-foot limit for losses of stream bed; the limit for losses of WOUS for NWP 51 remains at 0.5 acres. A PCN must still be submitted if the discharge results in the loss of greater than 0.1 acre of WOUS.

3) NWP 57 Electric Utility Line and Telecommunications Activities is a new NWP that authorizes discharges of dredged or fill material into WOUS and structures or work in navigable waters for crossings of those waters associated with the construction, maintenance, or repair of electric utility lines and telecommunication lines. There are reporting requirements for certain activities authorized by this NWP and it has a 0.5 acre limit for losses of WOUS for each single and complete project. Temporary fills must be removed in their entirety and the affected areas

returned to preconstruction contours. The permittee must submit a PCN to the district engineer prior to commencing the activity if: (1) a section 10 permit is required; or (2) the discharge will result in the loss of greater than 1/10-acre of WOUS.

3.1.3.3 General and Regional Conditions

North Dakota Regional Conditions for the NWPs have been drafted by the USACE - Omaha District in coordination with state and federal agencies. These conditions provide a general statewide framework for requirements for permitted activities considered by the USACE - Omaha District to have minimal impacts on the aquatic ecosystem. In the State of North Dakota, if impacts to jurisdictional wetlands and/or other WOUS exceed the pre-construction notification (PCN) threshold of 1/10 of an acre set by the USACE, then a permit application must be submitted. Conversely, if impacts to jurisdictional wetlands and/or other WOUS do not exceed the PCN notification threshold or do not trigger any other PCN triggers contained in the regional or Section 401 Water Quality Certification (WQC) Conditions, then the Project meets the requirements for self-certification under the NWP Program and a PCN is not required.

Mechanized clearing of forested wetlands for transmission lines or buried underground electrical collection lines is considered a permanent impact as it relates to evaluating compliance for the above permit processes, Whereas these impacts would be considered temporary in non-forested wetlands.

3.1.4 Individual Permit

Impacts to USACE jurisdictional areas in excess of the maximum 0.5 acre upper threshold of selected NWPs would require authorization of project impacts by a Department of the Army Individual Permit (IP). The IP process would require a more stringent review of the project by the USACE, USEPA, United States Fish and Wildlife Service (USFWS), North Dakota State Water Commission, North Dakota Game and Fish Department, Native American tribes, and the general public. This would include a public notice and a public comment period of at least 30 days and could extend the process. If the USACE, as the lead federal agency, determines that a more stringent environmental assessment of a project is needed, the preparation of either an Environmental Assessment (EA) or an Environmental Impact Statement (EIS) may be required. The decision would be made by the USACE – Omaha District.

3.2 State Regulations and Guidelines

The State of North Dakota regulatory programs for wetlands and designated waters include the following:

1) State-administered Clean Water Act 401 WQC.
2) North Dakota State Water Commission
3) North Dakota Private Lands Open to Sportsmen (PLOTS) program

3.2.1 Water Quality Certification

The State of North Dakota oversees the Section 401 WQC process. Any proposed project in North Dakota that will impact a jurisdictional wetland or other WOUS requires the North Dakota Department of Health (NDDoH) to issue a Section 401 Water Quality Certification (WQC) or waiver before a federal permit or

license can be granted unless it is a NWP which have been granted conditional WQC waiver. The State of North Dakota does not exert jurisdiction over geographically isolated wetlands which are not determined to be jurisdictional under the current federal regulations. Before they are available for use, new Section 401 WQCs will need to be issued by NDDoH for the revised and newly created NWP permits.

3.2.2 North Dakota State Water Commission

The North Dakota State Water Commission – Office of the State Engineer (Commission) is the regulatory body that permits actions in wetlands in the State of North Dakota. The Commission issues three types of permits: a Drain Permit, a Wetland Restoration Permit, and a Wetland Creation Permit.

The Drain Permit is issued for projects that drain ponds, sloughs, lakes, wetlands, or any similar series which has a watershed greater than 80 acres. The Wetland Restoration Permit is required for projects that restore wetlands less than the size of the original wetland. A Wetland Creation Permit is required for projects creating wetlands capable of storing more than 25 acre-feet.

Of note, the Project does not meet the criteria for any of the three permits. Therefore, no State Water Commission permit for wetlands is required for this Project.

4.0 METHODS

4.1 Desktop Review

The desktop analysis included review of recent aerial photographs, the United States Geological Survey (USGS) National Hydrography Dataset (NHD), USFWS National Wetlands Inventory (NWI) data, and soil survey data for Bowman County, North Dakota.

4.1.1 Aerial Photograph Review

The Project boundary was reviewed using Google™ Earth Pro to analyze areas of potential wetlands and streams prior to field survey. For the purposes of this report, the proposed Project boundary was applied to aerial photographs using Environmental Systems Research Institute (ESRI) Geographic Information System (GIS) software (**Figures 2**).

4.1.2 United States Geographical Survey National Hydrography Dataset

The NHD was downloaded from the USGS NHD website (USGS 2020). The proposed Project boundary along with the privately-owned properties to be developed for the Project were overlain onto digital versions of aerial photographic maps using GIS software. Perennial, intermittent, and ephemeral streams identified within the Project were investigated during field delineation. According to the USGS NHD, the Project site is primarily actively managed agricultural land.

4.1.3 Topographic/National Wetlands Inventory Map Review

The proposed Project boundary along with the privately-owned properties to be developed for the Project were overlain onto digital versions of USGS 7.5-minute topographic maps using GIS software (**Figures**

2). The NWI data for the Project Site was downloaded from the USFWS website (USFWS 2020). The NWI identified 1,065 freshwater wetlands and 906 riverine wetlands within the Project boundary. Additionally, 316 farm or stock ponds and/or lakes were identified within the Project boundary.

4.1.4 Soil Survey Review

Soil survey data for Bowman County, North Dakota was obtained from the United States Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) website (USDA NRCS 2020). These maps depict the distribution of soil series, their boundaries, properties, and features. This information was used to review the presence of hydric soil series within the Project boundary.

Numerous soil types are present within the Project boundary. Soil, as it relates to wetlands delineations, must be a hydric soil for the area to qualify as a wetland in accordance with the 1987 Manual and the Great Plains Regional Supplement (USACE 2010). Some of these mapping units have been designated "hydric soils." Hydric soils are defined as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions that favor the growth and regeneration of hydrophytic vegetation (Environmental Laboratory 1987). During the review of the soil survey data, seven hydric soils were identified within the Project boundary. **Table 2** lists these hydric soils along with profile descriptions.

Table 2. NRCS Hydric Soils Identified Within Project Boundary

Symbol	Soil Description	Hydric
Ae	Alluvial land, strongly saline	Yes
E4005A	Harriet loam	Yes
E4007A	Harriet-Lallie complex	Yes
E4184A	Korchea, saline-Fluvaquents	Yes
E4719A	McKenzie silty clay	Yes
E4729A	Heil silty clay loam	Yes
E4767A	Regan silt loam, saline	Yes

4.2 Field Delineation Surveys

Field delineations were completed by Tetra Tech on September 14 through September 26, 2019 and September 22 through September 28, 2020. Additional survey areas were completed by QSI on May 11 through May 15, 2020 using the methods described in the 1987 Manual (Environmental Laboratory 1987) and the Great Plains Regional Supplement (USACE 2010). Delineation data conducted by both Tetra Tech and QSI are included in this report. These methods incorporate a three-parameter approach using vegetation, soils, and hydrology to identify the presence of wetlands. USACE jurisdiction was originally evaluated using the methodologies prescribed in the USACE JD Form Instruction Guidebook (USACE 2007a). Following issuance of the NWPR, the jurisdictional classification of surveyed features was then updated to reflect the jurisdictional change outlined in the recently published NWPR (USEPA 2020). Delineations were performed on a parcel basis and all streams and wetland present within each parcel that was identified as being included within the project boundary were delineated. The entire Project area included 46,125 acres.

Location names for those areas that potentially could be affected by the Project are identified with a location identification number (ID) sequentially as features were identified with aerial imagery. Following this nomenclature system, a location with the ID of Site 100, for example, would be 100th feature identified from aerial imagery.

4.2.1 Wetlands

Point-specific field data on soils, vegetation, and hydrology were collected and documented during the field visit. Generally, if a linear feature such as a drainage or grass swale was being investigated, transects were placed perpendicular to the feature. Sampling plots were then placed along each transect. These plots were the points in the field at which wetland characteristics were studied in accordance with the 1987 Manual and the Great Plains Regional Supplement. Typically, Sample Plot "A" was oriented within the feature being investigated at a location determined to have the highest potential to exhibit wetland characteristics. This determination was based on local topography, presence of defined bed and bank, undercutting, sediment deposition, presence of standing or flowing water or the vegetation. If positive indicators of wetland vegetation, hydrology, and hydric soils as defined by the 1987 Manual were present at Plot "A", data was collected from additional sample plots to determine the transition from wetland to non-wetland habitats. The delineated boundary of each wetland was established at the location where at least one of the above three parameters failed to meet wetland criteria.

Vegetation within each sample plot was characterized to determine dominance of either hydrophytic or non-hydrophytic vegetation. Dominance was estimated based on the percent aerial coverage within the sample plot with a 5-foot radius for herbaceous vegetation, a 15-foot radius for saplings and shrubs, and a 30-foot radius for trees and woody vines. Wetland indicator status for all plant species follows the USACE National Wetland Plant List (Lichvar et al. 2016). Hydrology was assessed by evaluating each sample plot for field indicators of wetland hydrology such as inundation, depth to free water in soil pits, soil saturation, water marks, drift lines, oxidized root channels, drainage patterns, and topographic position.

At sample plot locations with a dominance and/or prevalence of hydrophytic vegetation, soils were characterized to a depth of 18 inches using a Munsell Soil Color Chart, visual observation and standard soil texturing methodology to identify hydric or non-hydric soil characteristics as defined in *Field Indicators of Hydric Soils in the United States, A Guide for Identifying and Delineating Hydric Soils, Version 8.1* (USDA NRCS 2017). For each sample, an approximate 18-inch deep (8-inch diameter) test pit was excavated and allowed to stand for a sufficient duration to allow the surficial ground water to stabilize. From each test pit, a 2x6x12-inch pedon was extracted from the observation pit wall, split in half, measured, compared to Munsell Soil Color Charts (Munsell Color 2012), and photographed. Soil logs and photographs were recorded on the field data form.

Plot location data was collected using a Trimble©, Geo7X™ Global Positioning System (GPS) surveying unit equipped with Terra Sync, Version 5.86 software and Trimble© Floodlight™ shadow reduction technology. This Trimble unit utilizes the Wide Area Augmentation System (WAAS) which employs a system of satellites and ground stations that provide GPS signal corrections, increasing positional accuracy an average of up to five times better than a non-WAAS enabled GPS receiver. During data collection activities the unit's internal antenna was used. The locations were collected in North Dakota State Plane South coordinates referenced to the North American Datum (NAD) 1983 datum.

4.2.2 Streams and Other Waters of the United States

In the absence of adjacent wetlands, the lateral limits of CWA jurisdiction over non-tidal waterbodies extend to the ordinary high-water mark (OHWM). When adjacent wetlands are present, CWA jurisdiction extends beyond the OHWM to the limits of the adjacent wetlands.

USACE regulations define the term "ordinary high-water mark" for purposes of the CWA lateral jurisdiction at 33 CFR 328.3(e), which states:

> "The term ordinary high water mark means that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas."

When delineating the jurisdictional boundary of streams without adjacent wetlands, the following physical characteristics were relied upon when determining the location of the OHWM, to the extent that they could be identified and deemed reasonably reliable:

Natural line impressed on the bank
Shelving
Changes in the character of soil
Destruction of terrestrial vegetation
Presence of litter and debris
Wracking
Vegetation matted down, bent, or absent
Sediment sorting
Leaf litter disturbed or washed away
Scour
Deposition
Multiple observed flow events
Bed and banks
Water staining
Change in plant community

There are no "required" physical characteristics that must be present to make an OHWM determination. Therefore, USACE guidance documents suggest that the investigator should generally try to identify two or more characteristics, unless there is particularly strong evidence of one. During the delineation activities, multiple physical characteristics were evident at all locations identified as streams.

5.0 RESULTS

Field delineations completed by Tetra Tech found that 270 locations exhibited wetland or stream characteristics from September 14 through September 26, 2019 and September 22 through September 28, 2020. Additional survey areas were completed by QSI on May 11 through May 15, 2020. Wetland and

streams delineated in the field by Tetra Tech and QSI are shown on **Figure 2**.

Of the 269 locations surveyed by Tetra Tech that met the definitive criteria for a wetland and/or an OHWM for a stream: 13 were classified as perennial streams; 141 were classified as intermittent streams; 34 were classified as ephemeral streams; 81 were classified as wetlands, ponds, or impoundments. Wetlands within the project area include isolated wetlands that are not federally jurisdictional and federally jurisdictional wetlands that are adjacent or directly connected to USACE jurisdictional streams. Much of the vegetation encountered at the Project Site consists of herbaceous species typical of fallow fields and pastures or traditional row crop. Areas identified as non-wetland grass swales are commonly vegetated with a mix of native and non-native grasses and forbs. Wetland areas are vegetated with a variety of wetland plants such as: sedge, grass, forb, shrub, and occasional tree species. The current Project Site consists almost entirely of ranching with cultivated fields planted with wheat (*Triticum aestivum*), barley (*Hordeum vulgare*), oats (*Avena sativa*), rye (*Secale cereal*), flax (*Linum usitatissimum*), corn (*Zea mays*), sunflowers (*Helianthus annuus*), and alfalfa (*Medicago sativa*). Ranching activities are primarily supported by remnant native grasses and shrubs that are grazed. Nearly all the drainages in the Project area have remained in a relatively natural state, except those with man-made stream impoundments. A summary of inventoried wetlands and waterbodies including Tetra Tech's jurisdictional opinion of the wetlands and streams are detailed in Table 3.

Table 3

Crossing Locations for the Bowman Wind Farm Project

Crossing Location	Stream ID	Surveyed By	Date of Field Work	Latitude	Longitude	Habitat Type	Flow Regime	USACE Jurisdictional	Top of Bank Width (Feet)	Depth of Bank (Feet)	Average Length of Side (Feet)	Wetland and Pond Field ID
1	181	Tera Tech	9/14/2019	46.221349°	-103.588659°	Stream	Intermittent	Yes	N/A	N/A	N/A	N/A
2	195	Tera Tech	9/15/2019	46.212511°	-103.596930°	Stream	Intermittent	Yes	N/A	N/A	N/A	N/A
								Yes	43.13	5	N/A	
								Yes	N/A	N/A	N/A	
								Yes	43.21	5	N/A	
								Yes	N/A	N/A	N/A	
3	174	Tera Tech	9/15/2019	46.208825°	-103.577287°	Stream	Intermittent	Yes	N/A	3	84.61	N/A
								Yes	N/A	N/A	N/A	
								Yes	N/A	3	84.61	
								Yes	N/A	N/A	N/A	
4	174	Tera Tech	9/15/2019	46.208823°	-103.577469°	Stream	Intermittent	Yes	N/A	N/A	N/A	N/A
								Yes	N/A	3	129.82	
5	169	Tera Tech	9/23/2019	46.198097°	-103.519224°	Stream	Ephemeral	No	N/A	N/A	N/A	N/A
								No	N/A	N/A	N/A	
6	162	Tera Tech	9/24/2019	46.188126°	-103.533090°	Stream	Intermittent	Yes	N/A	3	213.58	N/A
								Yes	N/A	N/A	N/A	
7	187	Tera Tech	9/16/2019	46.193598°	-103.587317°	Stream	Intermittent	Yes	N/A	N/A	N/A	N/A
8	N/A	QSI	Unknown	46.188891°	-103.595740°	Wetland	N/A	No	N/A	N/A	N/A	W-215
9	N/A	QSI	Unknown	46.188784°	-103.595906°	Wetland	N/A	No	N/A	N/A	N/A	W-214
10	S-44	QSI	Unknown	46.186384°	-103.598653°	Stream	Intermittent	Yes	N/A	N/A	N/A	N/A
11	161	Tera Tech	9/23/2019	46.182508°	-103.546989°	Stream	Ephemeral	No	N/A	N/A	N/A	N/A
12	S-20	QSI	Unknown	46.173950°	-103.545685°	Stream	Intermittent	Yes	N/A	N/A	N/A	N/A
13	S-13	QSI	Unknown	46.148046°	-103.539066°	Stream	Intermittent	Yes	20.6	2	N/A	N/A
								Yes	N/A	N/A	N/A	
14	N/A	QSI	Unknown	46.148002°	-103.547516°	Wetland	N/A	Yes	23.76	3	N/A	W-121
								Yes	N/A	N/A	N/A	
15	N/A	QSI	5/13/2020	46.134467°	-103.506625°	Wetland	N/A	Yes	N/A	1	126.53	W-210
								Yes	N/A	N/A	N/A	
16	N/A	QSI	5/12/2020	46.130689°	-103.509912°	Wetland	N/A	Yes	N/A	2	41.19	W-205
								Yes	N/A	N/A	N/A	
17	S-5	QSI	5/12/2020	46.125489°	-103.514310°	Wetland	N/A	Yes	75.63	2.2	N/A	W-23
								Yes	N/A	N/A	N/A	
18	N/A	QSI	Unknown	46.124927°	-103.514724°	Wetland	N/A	No	N/A	N/A	N/A	W-130
								No	N/A	N/A	N/A	
19	N/A	QSI	Unknown	46.123730°	-103.515811°	Wetland	N/A	No	N/A	N/A	N/A	W-202
								No	N/A	N/A	N/A	
20	233	Tetra Tech	9/23/2020	46.112010°	-103.521516°	Stream	Perennial	Yes	50.00	5	N/A	N/A
								Yes	N/A	N/A	N/A	
21	13	Tetra Tech	9/18/2019	46.139585°	-103.566107°	Stream	Intermittent	Yes	N/A	N/A	N/A	N/A
22	16	Tetra Tech	9/18/2019	46.141843°	-103.577160°	Stream	Intermittent	Yes	N/A	N/A	N/A	N/A
								Yes	41.75	3	N/A	
								Yes	N/A	N/A	N/A	
23	16	Tetra Tech	9/18/2019	46.142323°	-103.577324°	Stream	Intermittent	Yes	61.4	3	N/A	N/A
								Yes	61.4	3	N/A	
								Yes	61.4	3	N/A	
24	15	Tetra Tech	9/19/2019	46.147714°	-103.580672°	Stream	Intermittent	Yes	N/A	N/A	N/A	N/A
								Yes	N/A	3	95.5	
								Yes	N/A	3	89.4	
25	15	Tetra Tech	9/19/2019	46.147941°	-103.580779°	Stream	Intermittent	Yes	N/A	3	108.05	N/A
								Yes	N/A	N/A	N/A	
								Yes	N/A	3	104.29	
26	19	Tetra Tech	9/19/2019	46.156571°	-103.585744°	Stream	Intermittent	Yes	N/A	N/A	N/A	N/A
27	19	Tetra Tech	9/19/2019	46.156393°	-103.586117°	Stream	Intermittent	Yes	N/A	N/A	N/A	N/A
28	21	Tetra Tech	9/19/2019	46.150690°	-103.588977°	Stream	Intermittent	Yes	N/A	N/A	N/A	N/A
29	21	Tetra Tech	9/19/2019	46.147905°	-103.588293°	Stream	Intermittent	Yes	N/A	1	76.57	N/A
								Yes	N/A	N/A	N/A	
								Yes	N/A	1	91.69	
								Yes	N/A	N/A	N/A	
30	16	Tetra Tech	9/18/2019	46.147747°	-103.588289°	Stream	Intermittent	Yes	N/A	N/A	N/A	N/A
								Yes	N/A	N/A	N/A	
								Yes	N/A	N/A	N/A	
31	99	Tetra Tech	9/19/2019	46.151395°	-103.596018°	Stream	Intermittent	Yes	31.61	1	N/A	N/A
								Yes	31.61	N/A	N/A	
								Yes	31.61	1	N/A	
								Yes	N/A	N/A	N/A	
32	99	Tetra Tech	9/19/2019	46.151480°	-103.596830°	Stream	Intermittent	Yes	N/A	1	71.21	N/A
								Yes	N/A	N/A	N/A	
								Yes	N/A	1	99.5	
								Yes	N/A	N/A	N/A	
33	99	Tetra Tech	9/19/2019	46.154225°	-103.610713°	Stream	Intermittent	Yes	N/A	N/A	N/A	N/A
34	99	Tetra Tech	9/19/2019	46.153917°	-103.610493°	Stream	Intermittent	Yes	34.58	1	N/A	N/A
								Yes	34.58	N/A	N/A	
								Yes	34.58	1	N/A	
35	100	Tetra Tech	9/18/2019	46.154650°	-103.631611°	Stream	Intermittent	Yes	N/A	N/A	N/A	N/A
36	89	Tetra Tech	9/20/2019	46.159841°	-103.653497°	Stream	Intermittent	Yes	N/A	N/A	N/A	N/A
37	74	Tetra Tech	9/20/2019	46.145545°	-103.670687°	Stream	Intermittent	Yes	N/A	N/A	N/A	N/A
38	103	Tetra Tech	9/21/2019	46.141839°	-103.675154°	Stream	Intermittent	Yes	N/A	N/A	N/A	N/A
39	103	Tetra Tech	9/21/2019	46.140451°	-103.671353°	Stream	Intermittent	Yes	N/A	N/A	N/A	N/A

Table 3

Crossing Locations for the Bowman Wind Farm Project

Crossing Location	Stream ID	Surveyed By	Date of Field Work	Latitude	Longitude	Habitat Type	Flow Regime	USACE Jurisdictional	Top of Bank Width (Feet)	Depth of Bank (Feet)	Average Length of Side (Feet)	Wetland and Pond Field ID
40	27	Tetra Tech	9/19/2019	46.147277°	-103.618269°	Stream	Intermittent	Yes	N/A	N/A	N/A	N/A
41	29	Tetra Tech	9/19/2019	46.139742°	-103.618366°	Stream	Intermittent	Yes	N/A	N/A	N/A	N/A
42	32	Tetra Tech	9/19/2019	46.138060°	-103.618287°	Stream	Perennial	Yes	N/A	N/A	N/A	N/A
43	35	Tetra Tech	9/22/2019	46.132266°	-103.618377°	Stream	Intermittent	Yes	N/A	N/A	N/A	N/A
44	35	Tetra Tech	9/22/2019	46.132236°	-103.618164°	Stream	Intermittent	Yes	N/A	N/A	N/A	N/A
45	37	Tetra Tech	9/22/2019	46.122655°	-103.618356°	Stream	Intermittent	Yes	N/A	N/A	N/A	N/A
46	37	Tetra Tech	9/22/2019	46.122474°	-103.618042°	Stream	Intermittent	Yes	N/A	N/A	N/A	N/A
47	37	Tetra Tech	9/22/2019	46.121731°	-103.618238°	Stream	Intermittent	Yes	N/A	N/A	N/A	N/A
48	37	Tetra Tech	9/22/2019	46.121726°	-103.618030°	Stream	Intermittent	Yes	N/A	N/A	N/A	N/A
49	43	Tetra Tech	9/22/2019	46.114165°	-103.619103°	Stream	Intermittent	Yes	N/A	N/A	N/A	N/A
50	43	Tetra Tech	9/22/2019	46.111424°	-103.619157°	Stream	Intermittent	Yes	N/A	N/A	N/A	N/A
51	50	Tetra Tech	9/20/2019	46.106803°	-103.616920°	Stream	Intermittent	Yes	N/A	N/A	N/A	N/A
52	50	Tetra Tech	9/20/2019	46.104814°	-103.626077°	Stream	Intermittent	Yes	53.51	10	N/A	N/A
								Yes	N/A	N/A	N/A	
								Yes	N/A	10	55.19	
								Yes	N/A	N/A	N/A	
53	52	Tetra Tech	9/21/2019	46.099916°	-103.614513°	Stream	Intermittent	Yes	37.44	5	N/A	N/A
								Yes	37.44	N/A	N/A	
								Yes	34.91	5	N/A	
								Yes	N/A	N/A	N/A	
54	52	Tetra Tech	9/21/2019	46.098128°	-103.626674°	Stream	Intermittent	Yes	N/A	N/A	N/A	N/A
								Yes	N/A	5	48.69	
								Yes	N/A	N/A	N/A	
55	52	Tetra Tech	9/21/2019	46.096366°	-103.601645°	Stream	Intermittent	Yes	75.76	5	N/A	N/A
								Yes	75.76	N/A	N/A	
56	52	Tetra Tech	9/21/2019	46.096345°	-103.601318°	Stream	Intermittent	Yes	74.56	5	N/A	N/A
								Yes	N/A	N/A	N/A	
57	54	Tetra Tech	9/21/2019	46.076340°	-103.580799°	Stream	Perennial	Yes	N/A	5	10.36	N/A
								Yes	N/A	N/A	N/A	
58	272	Tetra Tech	9/26/2020	46.070513°	-103.542109°	Stream	Intermittent	Yes	43.75	3	N/A	N/A
								Yes	43.75	N/A	N/A	
59	272	Tetra Tech	9/26/2020	46.070579°	-103.542932°	Stream	Intermittent	Yes	N/A	N/A	N/A	N/A
60	280	Tetra Tech	9/26/2020	46.062784°	-103.560540°	Stream	Intermittent	Yes	24.29	4	N/A	N/A
								Yes	N/A	N/A	N/A	
61	54	Tetra Tech	9/21/2019	46.087893°	-103.628569°	Stream	Intermittent	Yes	N/A	N/A	N/A	N/A
62	54	Tetra Tech	9/21/2019	46.090508°	-103.633144°	Stream	Intermittent	Yes	40.93	5	N/A	N/A
								Yes	N/A	N/A	N/A	
63	54	Tetra Tech	9/21/2019	46.092618°	-103.639208°	Stream	Intermittent	Yes	N/A	N/A	N/A	N/A
64	54	Tetra Tech	9/21/2019	46.092403°	-103.639282°	Stream	Intermittent	Yes	23.34	5	N/A	N/A
								Yes	23.34	N/A	N/A	
65	108	Tetra Tech	9/23/2019	46.075696°	-103.663510°	Stream	Intermittent	Yes	N/A	N/A	N/A	N/A
66	TM4_STR19	Tetra Tech	9/25/2019	46.083480°	-103.680599°	Stream	Perennial	Yes	N/A	N/A	N/A	TM3_WT7
67	S-47	QSI	Unknown	46.075307°	-103.681261°	Stream	Intermittent	Yes	N/A	N/A	N/A	N/A
68	S-46	QSI	Unknown	46.075325°	-103.688377°	Stream	Intermittent	Yes	N/A	N/A	N/A	N/A
69	118	Tetra Tech	9/25/2019	46.075326°	-103.705519°	Stream	Intermittent	Yes	15.92	8	N/A	N/A
								Yes	15.92	N/A	N/A	
70	66	Tetra Tech	9/17/2019	46.122904°	-103.680810°	Stream	Intermittent	Yes	41.3	2	N/A	N/A
								Yes	N/A	N/A	N/A	
71	N/A	QSI	5/13/2020	46.128252°	-103.694146°	Wetland	N/A	Yes	99.23	2	N/A	W-118 and W-150
72	N/A	QSI	5/13/2020	46.128306°	-103.694664°	Wetland	N/A	Yes	N/A	N/A	N/A	W-118, W-150, and W-163
73	N/A	QSI	Unknown	46.127017°	-103.702650°	Wetland	N/A	Yes	108.36	3	N/A	W-66
								Yes	108.36	N/A	N/A	
74	N/A	QSI	Unknown	46.126345°	-103.702402°	Wetland	N/A	Yes	N/A	3	699.21	W-66
								Yes	N/A	N/A	N/A	
75	N/A	QSI	5/13/2020	46.129049°	-103.704179°	Wetland	N/A	Yes	147.76	3	N/A	W-111 and W-173
76	S-41	QSI	5/12/2020	46.132511°	-103.701188°	Stream, pond, and wetland	Intermittent	Yes	N/A	3	182.08	W-192 and P-9
77	66	Tetra Tech	9/17/2019	46.121288°	-103.668424°	Stream	Intermittent	Yes	N/A	N/A	N/A	N/A
78	66	Tetra Tech	9/17/2019	46.121235°	-103.667840°	Stream	Intermittent	Yes	N/A	N/A	N/A	N/A
79	174	Tetra Tech	9/25/2019	46.089029°	-103.680575°	Stream	Intermittent	Yes	N/A	3	117	N/A
								Yes	N/A	3	133.2	
								Yes	N/A	3	128.35	
								Yes	N/A	N/A	N/A	
80	190	Tetra Tech	9/26/2019	46.188877°	-103.595678°	Stream	Intermittent	Yes	N/A	N/A	N/A	N/A
81	54	Tetra Tech	9/21/2019	46.090094°	-103.680575°	Stream	Intermittent	Yes	100	5	N/A	N/A
82	54	Tetra Tech	9/21/2019	46.089872°	-103.631367°	Stream	Intermittent	Yes	N/A	5	82.3	N/A
83	54	Tetra Tech	9/21/2019	46.089872°	-103.629901°	Stream	Intermittent	Yes	N/A	5	143.8	N/A
								Yes	N/A	5	235.7	
84	54	Tetra Tech	9/21/2019	46.086827°	-103.628748°	Stream	Intermittent	Yes	N/A	5	37.6	N/A

6.0 CONCLUSIONS

Based on the current regulations, impacts to wetlands and other waters of the U.S. can be authorized using NWP #14, #33, #51, #57 or a combination of these permits depending on the type of impacts that are proposed to occur.

Based on the current layout, the Project likely qualifies for authorization using a combination of NWPs 14, 33, 51 and 57. Ideally, facilities will be designed to stay below the NWPs 51 and 57 notification threshold of 1/10 of an acre of impacts which does not require submittal of a PCN. Conversely, if the 0.5-acre upper impact threshold is exceeded, a Section 404 Individual Permit from the USACE-Omaha District and a Section 401 Individual WQC from NDDoH would be required. If Project impacts remain below NWP and Regional Condition PCN notification thresholds or requirements, then no PCN or further consultation with the USACE and NDDoH is required assuming that all Project activities adhere to the General, Regional, and Section 401 WQC conditions that will be issued for NWPs 14, 33, 51 and/or 57 in the State of North Dakota. Tetra Tech recommends that impacts to jurisdictional WOUS identified during the field verification survey be avoided and minimized to the maximum extent possible.

7.0 References

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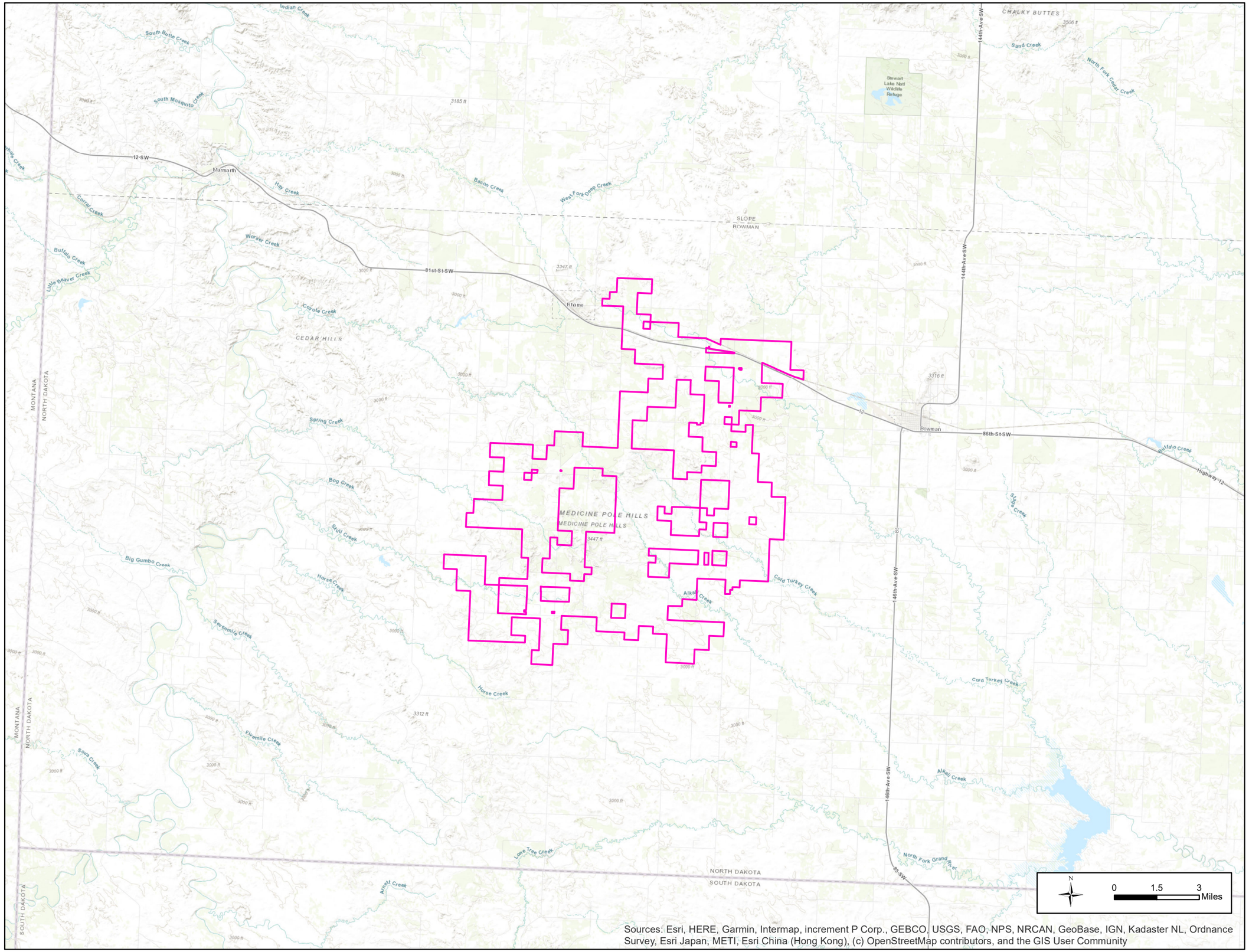
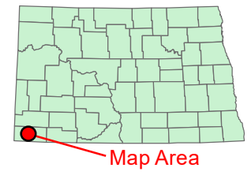
Figures

BW Exhibit 16



Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community



Legend

Project Boundary

TETRA TECH

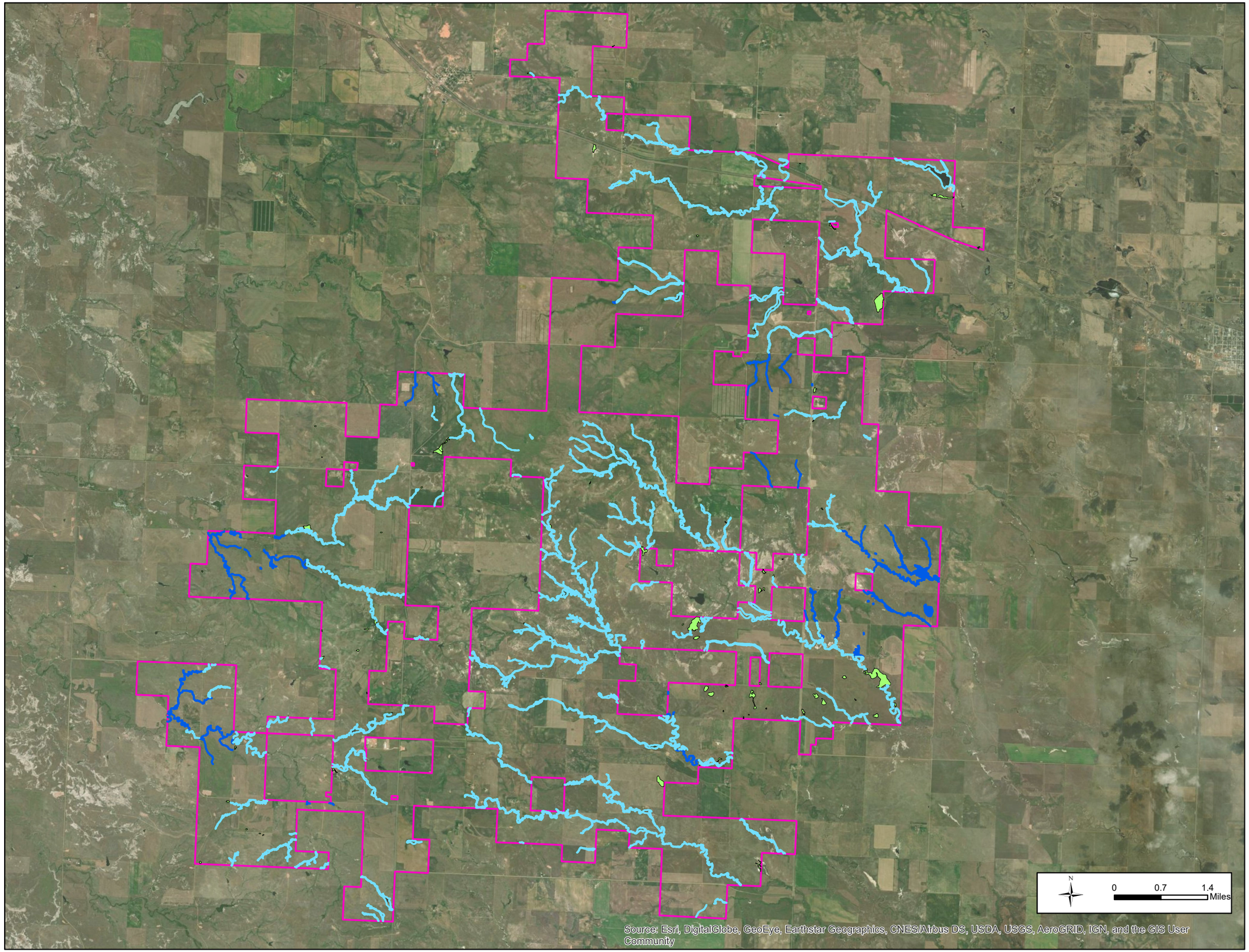
Project Vicinity Map

Bowman Wind Project
Bowman Co.
North Dakota

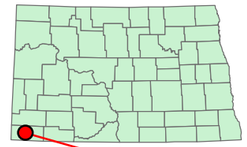
Figure 1

6/23/2021

BW Exhibit 16



North Dakota



Legend

- Tetra Tech Delineated Streams
- Tetra Tech Delineated Wetlands and Ponds
- QSI Delineated Streams and Wetlands
- BowmanWind

TETRA TECH

Delineated Wetlands and Waters

Bowman Wind Project
Bowman Co.
North Dakota

Figure 2

6/24/2021