

July 3, 2018

VIA E-MAIL AND FEDERAL EXPRESS

Mr. Darrell Nitschke
Executive Secretary
North Dakota Public Service Commission
600 E. Boulevard, Dept. 408
Bismarck, ND 58505-0480

**RE: Meadowlark Wind I LLC's Application for a Certificate of Site Compatibility
for the New Frontier Wind Energy Project in McHenry County, North Dakota
Case No. PU-11-69**

Dear Mr. Nitschke:

In accordance with Certification Relating to Order Provisions ("Certification") attached to the North Dakota Public Service Commission's ("Commission") May 10, 2017 Order of Continuing Suitability for the New Frontier Wind Energy Project ("Project"), Meadowlark Wind I LLC ("Meadowlark") provides two (2) copies of the following documents:

1. Certification Regarding Layout Modifications, with Exhibits (per Certification Provision No. 38).

A copy of this letter is also enclosed. Electronic copies of this letter and the above-referenced documents were filed with the Commission today via e-mail.

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136 PU-11-69 Filed 07/03/2018 Pages: 55
Certification Regarding Layout Modifications, with Exhibits
Meadowlark Wind I LLC
Mollie Smith, Fredrikson&Byron, P.A.

Mr. Darrell Nitschke
July 3, 2018
Page 2

If you have any questions, please let me know.

Sincerely,

A handwritten signature in cursive script that reads "Mollie M. Smith". The signature is written in black ink and is positioned to the right of the word "Sincerely,".

MOLLIE M. SMITH

MMS/ms
Enclosures

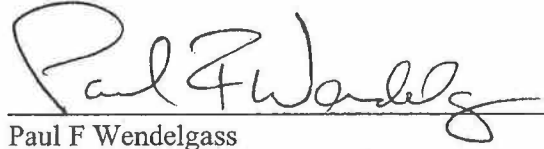
cc: Jerry Lein (via e-mail – w/o encl.)
Todd Hartleben (via e-mail – w/o encl.)
Chad Tucker (via e-mail – w/o encl.)
Bill Behling (via e-mail – w/o encl.)
Joe Griffiths (via email – w/o encl.)

64316422.1

- a. Minor changes to access roads and collection lines have been made due to engineering design requirements.
 - b. Two temporary meteorological towers and associated access roads to the meteorological towers have been added to the final design.
 - c. Crane walks/paths have been added to the final design.
6. The Project layout complies with all requirements set forth in the Commission's Order.
7. A total of 37.03 acres of the proposed modifications fell outside of the areas surveyed for cultural resources and wetlands. In accordance with Order Paragraph Nos. 5 and 6, Meadowlark completed Class III cultural resource field surveys and wetland delineations of any previously unsurveyed areas that will be impacted by Project construction activities.
8. The Cultural Resources Addendum IV Report for the New Frontier Wind Energy Project, McHenry County, North Dakota is attached hereto as **Exhibit B**. No cultural resources were identified within the newly surveyed areas, and no cultural resources will be impacted by the layout modifications. The cultural resource reports have been reviewed by the North Dakota State Historical Society, and a copy of their responses are attached as **Exhibit C**.
9. The Evaluation of Wetlands Within Previously Un-Surveyed Areas of Project Layout (report dated June 25, 2018) is attached hereto as **Exhibit D**. One U.S. Army Corps of Engineers jurisdictional wetland area was identified during the field survey that will be avoided during construction and flagged prior to construction to ensure no impacts to these features will occur.
10. The Project layout modifications and associated construction activities will not affect any known exclusion or avoidance areas within the designated Project site.


11. With respect to the Project, including the layout modifications, Meadowlark will comply with the Commission's Order, including applicable siting laws and rules.

FURTHER AFFIANT SAYETH NOT.



Paul F Wendelgass
Managing Director, Business Development

Subscribed and sworn to before me
this 3rd day of July, 2018.



Notary Public *Martin Sheehan*

64291903.1



MARTIN SHEEHAN
Notary Public
Commonwealth of Massachusetts
My Commission Expires March 15, 2024

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**Cultural Resources Addendum IV Report for the
New Frontier Wind Energy Project**

McHenry County, North Dakota

Negative Inventory Report

5. Report Date: **June 2018**

6. Number of Pages: 40

7. Type: I (**Class III CRI Supplemental**)

8. Acres: **37.03**

9. Legal Location(s)(no quarter sections) with Historic Context Study Unit(s):

County: **McHenry**

Township: **T151N**

Range: **R80W**

Section: **18-21, 28, 29, and 32-34**

Historic Context Study Unit:

County: **McHenry**

Township: **T151N**

Range: **R80W**

Section:

**Cultural Resources Addendum IV Report for the
New Frontier Wind Energy Project
McHenry County, North Dakota**

Negative Inventory Report



Prepared for:

Capital Power Corporation
155 Federal Street, Suite 1200
Boston, Massachusetts 02110

Prepared by:

Tetra Tech, Inc.
350 Indiana Street, Suite 500
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Authors:

Stephen R. Anderson, MA, RPA

June 2018

EXECUTIVE SUMMARY

In November of 2011, Kadrmas, Lee & Jackson completed a report detailing the results of the initial Class III inventory for the New Frontier Wind Energy Project (the Project). An addendum report was submitted in January 2012 to discuss changes to the facility layout including additional routes designed to avoid cultural resources and to provide for more appropriate access to six additional wind turbines. In October 2016, Tetra Tech was contracted to survey 43 additional locations (181.74 total acres) that would allow for 42 larger turning radii and one relocation of a collection line. In October 2017 Tetra Tech was contracted to survey 130 previously un-surveyed areas (170 total acres) for Project design in support of the construction of New Frontier Wind Energy Project in McHenry County, North Dakota. In April 2018, Tetra Tech was contracted to survey 186 previously un-surveyed areas (94.3 total acres) for Project design, a batch plant, and laydown yard. In June 2018, Tetra Tech was contracted to survey 22 previously un-surveyed areas (37.03 total acres) for Project design, three MET tower locations, additional access roads, and additional underground electric collection lines.

Since the Project is located on privately owned land and is privately funded, Section 106 is not required. However, the Project is subject to cultural resource surveys based on the North Dakota Public Service Commission permitting process.

This survey report documents the results of an intensive level pedestrian survey of the 22 previously un-surveyed areas within the Project. The survey was conducted on June 14 and 15, 2018 as part of the Public Service Commission permitting requirements and recommendations of the State Historic Society of North Dakota.

The pedestrian survey conducted for this Project did not identify any additional cultural resources.

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ABBREVIATIONS AND ACRONYMS

A.D.	Anno Domini
APE	area of potential effect
BLM	Bureau of Land Management
B.P.	before present
Capital Power	Capital Power Corporation
CFR	Code of Federal Regulations
CSC	Certificate of Site Compatibility
Element Power	Element Power US, LLC
GLO	General Land Office
IF	Isolated Find
KRF	Knife River flint
Meadowlark	Meadowlark Wind I, LLC
MW	megawatt
NDAC	North Dakota Administrative Code
NDCC	North Dakota Century Code
NHPA	National Historic Preservation Act
NRHP	National Register of Historic Places
Project	New Frontier Wind Energy Project
PSC	Public Service Commission
PSC Order	Certificate of Site Compatibility Number 29
SHPO	State Historic Preservation Office
SHSND	State Historic Society of North Dakota
Tetra Tech	Tetra Tech, Inc.

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1.0 INTRODUCTION

On April 26, 2012, the North Dakota Public Service Commission (PSC) issued Certificate of Site Compatibility (CSC) Number 29 (PSC Order) to Meadowlark Wind I LLC (Meadowlark) for the New Frontier Wind Energy Project (Project) in McHenry County, North Dakota. In December 2014, Capital Power Investments LLC, a subsidiary of Capital Power Corporation (Capital Power), completed the acquisition of Element Power US, LLC (Element Power), which included Meadowlark and the Project. The Project is located in McHenry County, North Dakota approximately one mile north of the Town of Ruso. The Project is currently under construction, and once completed would consist of 29 Vestas V126-3.45 wind turbines, with a generating capacity of 3.45 megawatts (MW), for a total nameplate generating capacity of up to 100.05 MW. In compliance with the North Dakota PSC requirements for the identification of historic properties, Capital Power contracted Tetra Tech, Inc. (Tetra Tech) to conduct a supplemental Class III Cultural Resource Inventory for 42 recently designed turning radii and one collection line location within the proposed Project in October 2016. In October of 2017, Tetra Tech was again contracted to conduct a supplemental Class III Cultural Resource Inventory for 130 previously un-surveyed areas to the Project layout (Project layout dated October 17, 2017). In April of 2018, Tetra Tech was again contracted to conduct a supplemental Class III Cultural Resource Inventory for 186 previously un-surveyed areas to the Project layout (Project layout dated April 26, 2018.) These areas included slight changes to the Project design, a batch plant, and laydown yard. In June 2018, Tetra Tech was contracted to survey 22 previously un-surveyed areas (37.03 total acres) for Project design, three MET tower locations, additional access roads, and additional underground electric collection lines.

1.1 OBJECTIVES OF THE CULTURAL RESOURCES SURVEY AND REPORT

The purpose of this cultural resources survey report is to review the proposed Project in sufficient detail and determine the extent that the Project may affect historic properties within or near the area of potential effect (APE; see Section 1.4). The goals of the pedestrian survey and report are to:

- Identify and describe archaeological and historic built environment resources within the APE;
- Provide a cultural context for the APE;
- Identify any adverse effects that may occur as a result of the proposed Project; and
- Develop recommendations to mitigate the possible significant impacts on cultural resources.

1.2 PROJECT BACKGROUND

In November of 2011, Kadrmaz, Lee & Jackson completed a report detailing the results of the initial Class III inventory for the Project. An addendum report was submitted in January 2012 to discuss changes to the facility layout including additional routes designed to avoid cultural resources and to provide for more appropriate access to six additional wind turbines. In October and November 2016, Tetra Tech was contracted to survey 43 additional locations (181.74 total acres) that would allow for 42 larger turning radii and one relocation of a collection line in support of the construction of the Project in McHenry County, North Dakota. Of the 42 radii; one measures 765 feet long by 400 feet wide, one measures 1,125 feet long by 400 feet wide, one measures 770 feet long by 400 feet wide, one measures 670 feet long by 400 feet wide, one measures 640 feet long by 400 feet wide, one measures 655 feet long by 400 feet wide, one measures 740 feet long by 400 feet wide, and each of the remaining 35 radii areas measure 400 feet by 400 feet and are located at proposed and existing intersections where a larger turning radius is necessary to transport the Project's heavy equipment and materials. The one collection line survey area measures 975 feet long by 100 feet long. The 2017 Class III surveyed areas are comprised of 130 previously un-surveyed areas to the Project design which total

170 acres. In April 2018, Tetra Tech was contracted to survey 186 additional previously un-surveyed locations (94.3 total acres) that would allow for slight shifts in the Project infrastructure and relocation of underground electric collection lines, a batch plant, and laydown yard in support of the construction of the Project in McHenry County, North Dakota. In June 2018, Tetra Tech was contracted to survey 22 previously un-surveyed areas (37.03 total acres) for Project design, three MET tower locations, additional access roads, and additional underground electric collection lines.

Since the Project is located on privately owned land and is privately funded, Section 106 is not required. However, the Project is subject to cultural resource surveys based on the PSC permitting process.

This survey report documents the results of an intensive level pedestrian survey of the Project that was conducted on June 14 and 15, 2018 as part of the PSC permitting process and recommendations of the State Historical Society of North Dakota (SHSND).

The pedestrian survey conducted for this Project in June of 2018 did not identify any additional cultural resources. The legal locations of the 2018 previously un-surveyed areas are listed in Table 1-1.

Table 1-1.

Legal Locations of the June, 2018 New Frontier Wind Energy Project Previously Un-Surveyed Areas.

Township	Range	Section(s)
151 North	80 West	18-21, 28, 29, and 32-34

1.3 REGULATORY CONTEXT

The Project is located on private land and no federal or state funding is required. However, the Project is subject to review under the PSC guidelines. This report serves as a record that PSC guidelines were followed to assess the potential effects of the Project on cultural resources. As such, National Historic Preservation Act (NHPA) Section 106 is utilized as a guideline to assess those impacts. In addition, any finds of Native American human remains, even on private lands, would be required to comply with the North Dakota Century Code (NDCC; 23-06-27) and accompanying administrative rules (North Dakota Administrative Code [NDAC] 40-02-03) which protects human remains in unmarked graves on private lands.

1.3.1 National Historic Preservation Act, Section 106

The principal federal law addressing cultural resources is the NHPA of 1966, as amended (16 United States Code, Section 470), and its implementing regulations (36 Code of Federal Regulations [CFR], Part 800), that primarily address compliance with Section 106 of the NHPA. Section 106 of the NHPA (16 United States Code §40 et seq.) requires federal agencies to take into account the effects of their proposed actions on properties eligible for inclusion in the NRHP. The regulations describe the process for identifying and evaluating historic properties, for assessing the effects of federal actions on historic properties, and for consulting with interested parties, including the State Historic Preservation Office (SHPO) and Indian tribes, to develop measures that would avoid, reduce, or minimize adverse effects. The term “historic properties” refers to cultural resources that are listed on, or meet specific criteria of eligibility for listing on, the NRHP (See Section 6.1).

Section 106 of the NHPA describes the procedures for identifying and evaluating eligible properties, for assessing the effects of federal actions on eligible properties, and for consulting to avoid, reduce, or minimize adverse effects. Eligible properties need not be formally listed on the NRHP. As part of the Section 106 process, federal agencies are required to consult with the SHPO. Section 106 does not require the preservation of historic properties, but it ensures that the decisions of federal agencies concerning the treatment of these places result from meaningful considerations of cultural and historic values and of the options available to protect the properties. If a project is an undertaking, as defined by 36 CFR 800.3, it is subject to Section 106 and consideration under other federal requirements.

1.3.2 The NDCC 23-06-27 and Accompanying Administrative Rules NDAC 40-02-03

NDCC 23-06-27 - This law provides for protection of any human burial sites, human remains, and burial goods on both state and privately-owned land.

NDAC 40-02-03 - This law provides protection of prehistoric and historic human burial sites, human remains, and burial goods in unmarked graves on both state and privately-owned land. In essence, it is illegal to knowingly disturb, buy, sell, or barter human skeletal remains or associated items from unmarked graves. Also, these items may not be displayed for profit or in any commercial enterprise. People who encounter or discover unmarked graves and their contents should stop any further disturbance activities and report the find to an appropriate law enforcement officer in the county where the remains are found as well as the SHSND. Violators of this law may be guilty of a class C felony. All efforts will be made to establish the tribal affiliation of remains from unmarked graves and to see that these remains are reburied in a timely, appropriate fashion.

1.4 DEFINITION OF AREA OF POTENTIAL EFFECT AND SURVEY AREA

The June 2018 APE is based on the 22 previously un-surveyed areas (37.03 total acres) for Project design in support of the construction of the Project in McHenry County, North Dakota (see Figures 1-1 and 1-2).

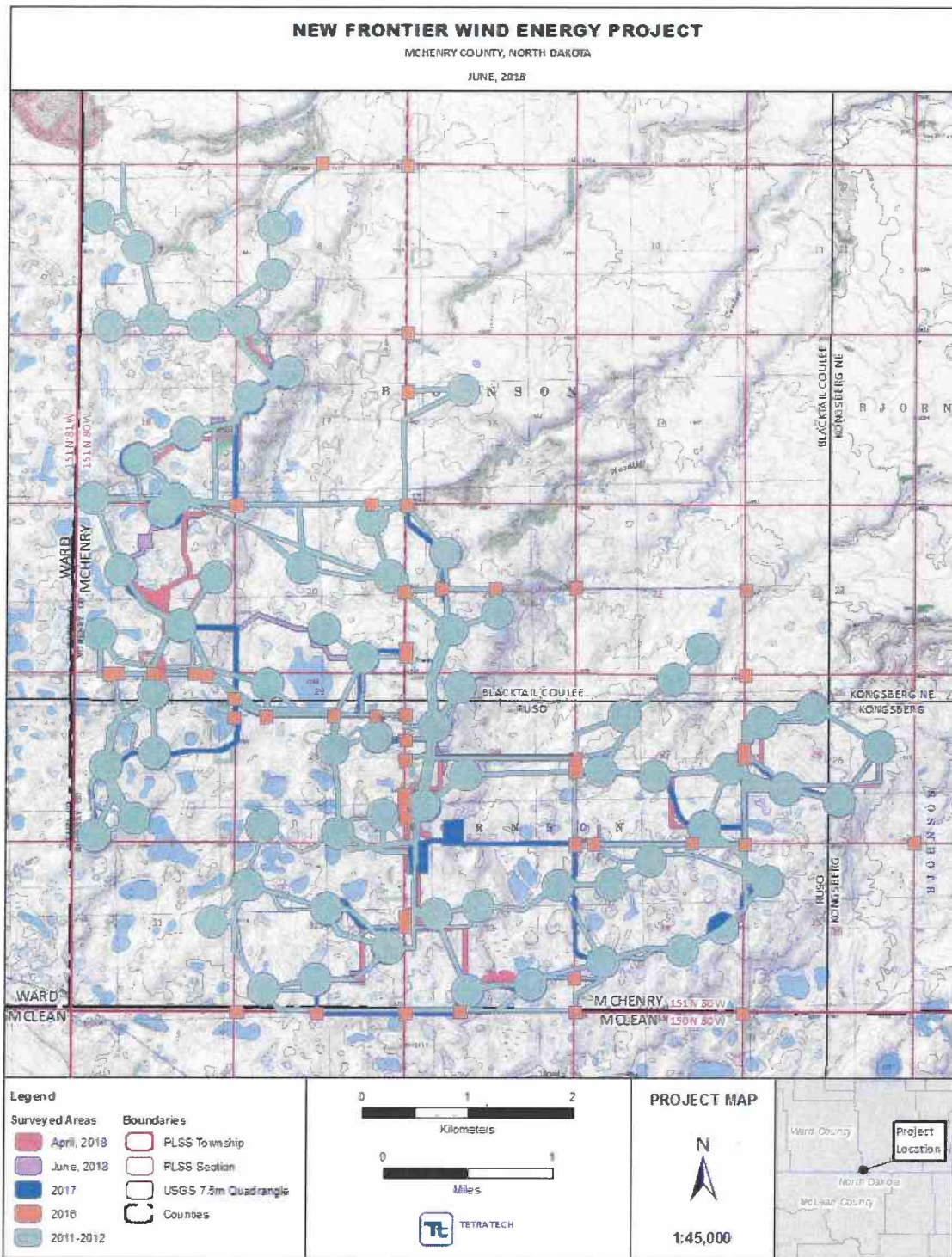


Figure 1-1. Project Overview Map–Topographic Map

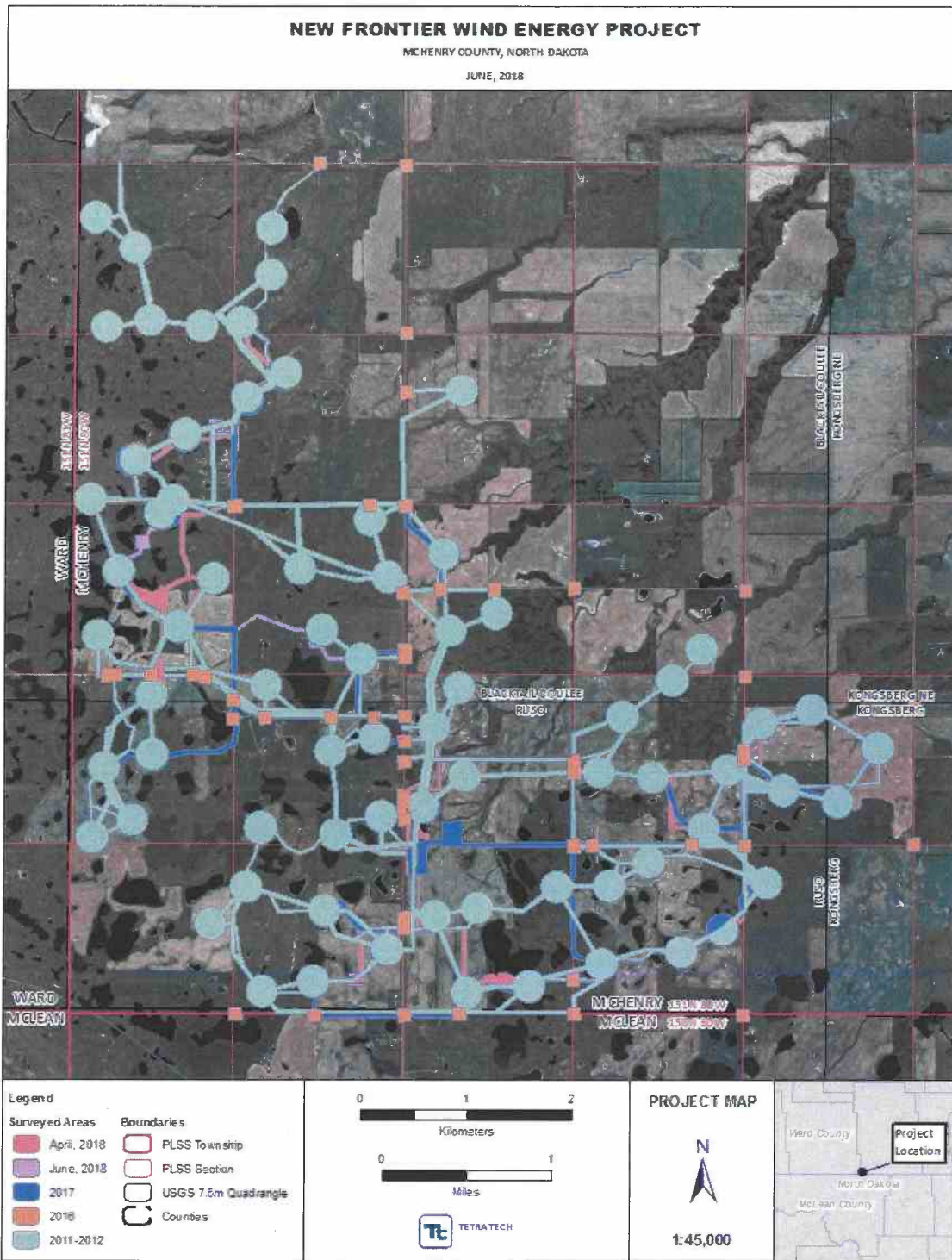


Figure 1-2. Project Overview Map–Aerial Imagery Map

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2.0 ENVIRONMENTAL BACKGROUND

A brief overview of environmental conditions (past and present) within the Project area is necessary to provide a foundation for understanding past human subsistence and settlement patterns in the region. Understanding how environmental variables (i.e., availability of food, water, fuel, and tool materials) affected past decision-making processes can lead to a greater awareness of a region's cultural resources. Below we summarize the broader regional environment and provide a description of specific environmental conditions in the Project area.

2.1 PHYSIOGRAPHY AND TOPOGRAPHY

The Project area is located at the intersection of two major physiographic provinces. Much of McHenry County is within the Glaciated Plains or Drift Prairie of the Central Lowlands physiographic province (Bluemle 2000). The Drift Prairie is a rolling plain covered with glacial deposits, or drift, with low relief and abundant potholes. The northwest portion of McHenry County is within the flat, gently sloping Souris Lake Plain, which was created by sedimentation of the floor of glacial Lake Souris (Bluemle 2000). In the southwestern most corner of McHenry County, where the Project area is located, is about 30 square miles of terrain that is on the Missouri Coteau (DesLauriers 1990). The Missouri Coteau is a subcontinental divide within the Great Plains physiographic province, rising in elevation above the Central Lowlands. The Missouri Coteau is hilly, with knob-and-kettle terrain shaped by millennia of glacial processes (Picha et al. 2008). Elevation in this area ranges from 1,600 to 2,150 feet (485 to 655 meters) above mean sea level.

2.2 HYDROLOGY

The Missouri Coteau has well developed drainage networks that drain west towards the Missouri River (Bluemle 2000). East of the Missouri Coteau, however, the landscape is poorly drained with stream systems that are not well developed. The Project area is within the Souris River drainage system. The Souris is a glacial meltwater channel that originates in Saskatchewan, forms a loop into North Dakota just north of the Project area, and eventually flows back northward into Canada (Bluemle 2000). Poor drainage characterizes the Project area. Spring Coulee, a minor drainage located at the Project area's northeast corner, eventually meets the Wintering River to the east. Numerous potholes, sloughs and depressions in the area hold rainfall and snowmelt, which would have attracted both game and prehistoric hunter-gatherer groups (Picha et al. 2008).

2.3 GEOLOGY AND SOILS

During the Pleistocene Epoch (1 million to about 10,000 years ago [B.P.]), glaciers repeatedly advanced and retreated over much of North Dakota. In the Project area, Coleharbor Group glacial deposits occur. These include unsorted clays, silt, sand, and pebbles (Bluemle 2000). Soils in the Project area are deep, and today are suitable for cultivation and grazing (DesLauriers 1990).

Those soils present in the APE that formed in alluvial or colluvial settings (e.g., depositional settings) are the most likely to contain buried paleosols and surfaces and thusly have a higher potential to contain intact or stratified archaeological deposits. Although some soils in the Project area were formed in depositional settings, the Project area is mainly located on upland settings. The occurrence of intermittent drainages so close to their sources reduces the potential that these soils will contain deeply buried archaeological materials, in contrast to landforms adjacent to larger permanent drainages.

Archaeological sites may also be present in non-alluvial settings such as on upland tables and buttes. At such locations, artifacts would be buried through natural soil formation, which is a relatively slow process compared to a more dynamic setting such as a floodplain. In the uplands, artifacts would be encountered shallow to the surface either within the organic horizon or in the horizon immediately below. Unlike the depositional setting, there will likely not be deeply buried sites due to the shallow nature of the bedrock in the area.

2.4 CLIMATE

Much of what is known about the postglacial climate and associated vegetation regimes of North Dakota has been derived by examining pollen in sediment layers from post-glacial sloughs in Stutsman County in east-central North Dakota (Bluemle 2000). Within North Dakota, the last glacial advance never reached the southwestern corner of the state where the Project area is located. Prior to the retreat of glaciers in North Dakota approximately 16,000 years ago, the Project area likely resembled tundra. The cool moist climate that followed the end of the Wisconsinan period of the Pleistocene epoch (12,000 to 10,000 B.P.) allowed for the growth of spruce dominated boreal forests in North Dakota, roughly correlating the arrival of the first people in the area (Bluemle 2000).

Between 10,500 and 8,500 years ago, climatic trends began to shift towards a warmer and drier environment which initially allowed for the spread of hardwood forest throughout North Dakota (Bluemle 2000). The Des Lacs-Souris basin was forested during this time, initially by spruce forest and later by deciduous forest (Picha et al. 2008). However, the warming, drying trend that fostered the development of the deciduous forest on the plains eventually led to their demise as prairies soon began to dominate the upland areas and deciduous forest became confined to areas along the water's edge. These warmer and drier conditions throughout the Midwest led to the development of tall-grass and short-grass prairie ecosystems on the Great Plains and in North Dakota. Prior to 9,000 B.P., no broad area of prairie vegetation existed in the Midwest (Benchley et al. 1997).

From 8,500 to 4,000 B.P., drier and warmer conditions persisted throughout the northern Great Plains in what is generally called the Altithermal. These conditions allowed drought-tolerant grasslands similar to those found in Wyoming and eastern Montana to spread across North Dakota, outcompeting forest plains margins (Kay 1998). A shift in the Pacific Westerlies during this period likely helped to bring about milder winters, windier springs, and warm, windy summers with sudden and irregular abrupt episodes of warm, moist conditions. Such unstable climatic conditions reduced water levels in deeper lakes and totally eliminated water in shallower lakes and basins, but more importantly, it altered middle Holocene landscapes by providing the catalyst to spur massive sediment erosion and deposition. In the Des Lacs-Souris basin vegetation cover was reduced and the land became prone to erosion (Picha et al. 2008). Climatic variation during the Altithermal would have likely led to the deflation and erosion of many older archaeological sites (11,500-4,000 B.P.) on upland landforms through erosion, and the deep burial of such sites on lowland landforms through sedimentation.

Between 4,000 and 3,000 B.P., the climate of the Northern Plains became cooler and wetter and by 3,000 B.P. the climate was similar to modern times. This climatic shift allowed for more stabilized vegetation regimes which in turn led to the stabilization of the landscape of the plains. During the past 4,000 years, landforms have changed very little compared to early periods and it is likely that the oldest intact cultural deposits on upland landforms may correspond with the beginning of this relative stability. The overall trend during the past 2,000 to 4,000 years has been towards long-term cooling interspersed with a warming period known as the Neo-Atlantic episode between 1,000 and

1,200 B.P. (Kay 1998). The last major cooling event is known as the Little Ice Age and lasted from approximately A.D. 1550 to 1850 and is well documented in Europe and to a lesser extent in North America (Bryson and Murray 1977). These warming and cooling episodes impacted local flora and fauna, which in turn influenced human use of the Des Lacs-Souris basin (Picha et al. 2008).

Contemporary climatic trends for west-central North Dakota include a continental-type climate subject to frequent surges of continental polar air during the winter (DesLauriers 1990, Picha et al. 2008). Seasonal extremes in temperature fluctuation are quite common, with summers being generally very hot when warm air pushes northward from the Gulf of Mexico and the southwestern United States and winters being long and very cold. In winter the average temperature for McHenry County is 10 degrees Fahrenheit, and average summer temperature is 67 degrees Fahrenheit. Total annual precipitation is about 13 inches, with the majority of precipitation occurring in spring and summer (DesLauriers 1990). Despite seasonal temperature fluctuations, prehistoric hunter-gatherers probably lived in the area on a year-round basis. Families overwintered in sheltered valley bottoms close to water and fuel wood, subsisting on stored food (Picha et al. 2008).

2.5 ECOLOGICAL RESOURCES

As the regional climate shifted during the late Pleistocene and throughout the Holocene, so did the faunal and floral resources available for human exploitation. At the end of the last ice age, early inhabitants may have encountered mammoth, mastodon, stag-moose, caribou, shrub oxen, musk oxen, giant bison, short-faced bear, giant beaver, and ground sloth. Most of these animals became extinct at the end of the Wisconsinan period, while others such as caribou and musk oxen progressively moved north out of North Dakota and into present-day Canada.

As conditions became warmer and drier during the middle Holocene, bison became the dominant species on the plains. The role of bison as a central source of subsistence for prehistoric and historic Native American peoples on the Northern Plains has been well documented and spans nearly the entire period of human habitation in the region, beginning as far back as 10,000 years ago and continuing into the nineteenth century of the current era. As climatic conditions became cooler and moister around 4,000 year ago, other animal species such as moose, elk, grizzly and black bears, pronghorn, white-tailed and mule deer, gray wolf, mountain lions, coyote, fox, beaver, jackrabbits, and cottontail rabbits began to expand across the Northern Plains, finding niches in the many diverse habitats. These species were all present at the time of early human occupation of the area and are still found in the state with the exception of the grizzly bear and gray wolf. Other animal resources available to prehistoric and historic peoples would have included waterfowl, fish, turtles, and mussels found in the Missouri River and its tributaries.

Prior to agricultural development, vegetation within the Project area was part of the Temperate North American Grasslands Biome (Odum 1971). The following information is drawn from Picha et al. (2008). In the past, mixed prairie grasses were dominant and included needle grasses (*Stipa* sp.), slender wheat grass (*Agropyron trachycaulum*), needle and thread (*Stipa comata*), and grama grasses (*Bouteloua* sp.). Scattered stands of bur oak (*Quercus* sp.) and bluestem (*Andropogon* sp.) grasses could be found at valley heads and coulees draining to the Souris River. Bur oak acorns would have been available as a food resource. Communities of cottonwood (*Populus* sp.), willow (*Salix* sp.) and elm (*Ulmus* sp.), as well as chokecherries (*Prunus* sp.), juneberry (*Amelanchier alnifolia*), buffaloberry (*Sheperdia argentia*), and wild rose (*Rosa* sp.), occurred along drainages. Locally available grassland fauna prior to agricultural development likely included elk (*Cervus canadensis*), mule deer (*Odecoileus hemionus*), white-tailed deer (*Odecoileus virginianus*), pronghorn (*Antilo-capra americana*), and bison (*Bison bison*). Coyote (*Canis latrans*),

red fox (*Vulpes vulpes*), long-tailed weasel (*Mustela frenata*), and grizzly bear (*Ursus horribilis*) may have been found in or near the Project area. Rivers, streams, potholes, and marshes would have been home to fish, amphibians and waterfowl species in addition to beaver (*Castor canadensis*), muskrat (*Ondatra zibethicus*), and mink (*Mustela vison*).

Farming and ranching are the main economic enterprises in McHenry County today (DesLauriers 1990), and the Project area reflects this. Most of the Project area has been plowed, with scattered small rises and knobs standing fallow and serving as collection points for field clearing piles. Local fauna today consists mainly of mule and white-tailed deer, pronghorn, and domestic cattle.

The local environment also provided raw materials needed during prehistoric times. Glacial outwash gravel deposits on the Missouri Coteau contain granite cobbles that could be used for construction and as a heat source for food preparation (i.e., stone boiling and baking) (Picha et al. 2008). Preferred materials for chipped stone tools were Swan River chert, Knife River flint (KRF), and Tongue River Silicates, all of which occur in surface-exposed glacial sediments. Oil and gas are important economic resources in more recent times (Bluemle 1988).

3.0 CULTURAL BACKGROUND

This section provides a brief summary of cultural traditions and known cultural resources with the region. Similar to Section 2.0 Environmental Background, a general understanding of the region's cultural resources is necessary for interpretations of Project area sites. The following overview was compiled mainly from the *North Dakota Comprehensive Plan for Historic Preservation: Archaeological Component* (Gregg et al. 2008), *The Souris River Study Unit* (Picha et al. 2008), and *Historic Preservation in North Dakota, 2016-2021: A Statewide Comprehensive Plan* (SHSND 2015).

The Project area is in the extreme southwest corner of McHenry County within the Northeastern Plains subarea of the Northern Plains as it has traditionally been defined (Gregg et al. 2008: Figure B.7). It also falls within the Souris River Study Unit of northern North Dakota as defined in Gregg et al. (2008: Figure B.2). The Study Unit (drainage basin) is used for prehistoric and proto-historic archeological site studies and management in the state. The Souris River Study Unit is bordered by Saskatchewan and Manitoba on the north, the Northern Red River and Sheyenne River study units on the east, and the Garrison and Southern Missouri River study units on the west and south. It covers 9,118 square miles in Benson, Bottineau, Burke, Divide, McHenry, McLean, Mountrail, Pierce, Renville, Rolette, Sheridan, and Ward counties (Picha et al. 2008). Major themes in the history of this region, as defined in North Dakota's statewide plan (SHSND 2015), include rural settlement, farming, ranching, mining, railroads, and petroleum operations.

3.1 PRECONTACT PERIOD

Prehistoric cultures within North Dakota are divided into five major traditions: Paleoindian; Plains Archaic; Plains Woodland; Plains Village; and Equestrian Nomadic. These traditions are divided into stages based largely on technical innovations that can be observed in the archaeological record. This includes changes in the forms of projectile point styles or the decoration of pottery. Behavioral adaptations such as changing subsistence and mobility patterns also serve as points of reference when determining the transition from one tradition to another.

3.1.1 Paleoindian Tradition (11,500–7,500 B.P.)

Opinions vary as to the timing of the first human occupations in North America; pre-Paleoindian groups could have arrived near the Last Glacial Maximum, around 16,500-13,000 years ago (Goebel et al. 2008). At the time of this report, no pre-Paleoindian sites have been discovered in North Dakota. The Paleoindian Tradition covers the time from the first evidence of Clovis groups in North Dakota until the transition into Plains Archaic lifeways. In general, the Paleoindian Tradition is characterized by hunting and gathering adaptations with a notable concentration on now-extinct big game animals. The beginning of the Paleoindian Tradition focused attention on Pleistocene fauna such as mammoths and camels; later, species of bison intermediate in size between late Pleistocene and modern forms became important. Other characteristics of the Paleoindian Tradition include geographically extensive interaction networks (Hayden 1981) and distinctive lanceolate projectile point styles by which the various Paleoindian cultural complexes are identified. Cultural complexes represented in North Dakota from oldest to youngest include Clovis, Goshen, Folsom, Hell Gap-Agate Basin, Cody, Parallel-Oblique Flaked, Pryor Stemmed, and Caribou Lake.

While there is no official record of Paleoindian sites in the Project vicinity, the SHSND collections contain a number of Paleoindian points, as do private collections examined by Miller (1992). Paleoindian artifacts appear to be fairly common in the Souris River Study Unit compared with other parts of North Dakota outside the KRF quarry heartland (Picha et al. 2008). Complete and

fragmentary projectile points of various styles have been found in northern McHenry County, attesting to the regular presence of people from about 10,000-7,500 B.P. in the vicinity of the Project area.

3.1.2 Plains Archaic Tradition (7,500–2,400 B.P.)

Spanning five thousand years, the Plains Archaic is divided into Early (7,500 - 4,500 B.P.), Middle (4,500 - 3,000 B.P.), and Late (3,000 – 2,400 B.P.) periods. This tradition continued the hunting and gathering adaptation of the Paleoindian Tradition but with a focus on bison procurement. The Plains Archaic period appears to have been marked by other cultural changes such as (1) further regionalization in projectile point styles, (2) a decline in the quality of flint knapping craftsmanship, and (3) reduction in the degree and extent of interactions between human populations in different regions. Hayden (1981) proposed that these changes point to more reliable access to subsistence resources to the extent that extensive alliance networks – maintained as “insurance” in times of resource failure - were no longer necessary. It seems equally likely that the negative environmental effects of the Altithermal led to a decline in the human carrying capacity on the Great Plains, which in turn led to population reduction and the disruption of existing social networks (Frison 1991).

Plains Archaic complexes recognized in North Dakota include Oxbow, McKean Lanceolate, Duncan, Hanna, Pelican Lake, and Yonkee. In the Souris River Study Unit, known Plains Archaic sites are not very common (Picha et al. 2008). Projectile points from the Des Lacs-Souris basin appear to span all of the Plains Archaic periods, although early styles are poorly represented. This may be because much of the Souris basin was likely uninhabitable during most of the Atlantic and Sub-Boreal episodes due to severe drought conditions. Middle Plains Archaic projectile points are more common, attesting to a likely increase in occupational intensity during this time. Late Plains Archaic points are even better represented. Thus, Middle and Late Plains Archaic groups appear to have used the Souris River Study Unit on a fairly regular basis. Settlement types included residential bases, temporary camps, and burial locations.

3.1.3 Plains Woodland Tradition (2,400–800 B.P.)

Like the preceding Plains Archaic Tradition, the Plains Woodland Tradition is also divided into three periods: Early (2,400–2,100 B.P.), Middle (2,100–1,400 B.P.), and Late (1,400–800 B.P.). Plains Woodland lifeways are thought to have been similar in many ways to those of the preceding Plains Archaic Tradition. Notable changes, however, include the practice of mound burial mortuary ceremonialism, the production and use of ceramic vessels, and possibly intensified use of native seedy plants and grasses for food (Gregg 1994; Gregg et al. 1996). Plains Woodland complexes recognized in North Dakota include Sonota/Besant, Laurel, Avonlea, Brainerd, Blackduck, Mortlach, Old Women's, and Sandy Lake.

There is variability in the occurrence of Plains Woodland components throughout the state. In general, early Plains Woodland components (which have not been given a complex name) are not very frequent, including in the vicinity of the Project area. The earliest production and use of ceramic vessels in the Northern Plains occurred during the Early Plains Woodland period (Picha et al. 2008).

Middle Plains Woodland period subsistence probably included some gardening as well as hunting and gathering. Eventually during this period, the bow and arrow largely replaced the atlatl and dart.

Interaction and exchange among different groups appears to have been more extensive during the Middle Plains Woodland compared with the Early Plains Woodland period. For example, artifacts made of KRF probably originating in North Dakota have been recovered from Middle Plains

Woodland components in western Iowa (Benn 1983). Obsidian was also exchanged over vast regions of North America during this period (Anderson et al. 1986; Griffin et al. 1969). In addition to materials, long-distance interaction likely also transmitted knowledge about new cultigens and gardening practices. Burial mortuary ceremonialism appears to have begun early in the Middle Plains Woodland period in North Dakota, and people in some parts of the state clearly were connected with the Hopewell Interaction Sphere (Picha et al. 2008).

During the Late Plains Woodland period, use of the bow and arrow was well established and ceramic vessels were generally thinner walled, better made, and probably larger than earlier periods. Like the Middle Plains Woodland, Late Plains Woodland people subsisted mainly by hunting and gathering supplemented by horticulture. Conical mounds - initially constructed and used during the Middle Woodland period - sometimes continued to be used into the Late Woodland period. Linear mound construction was likely an early Late Woodland development in the Northeastern Plains and Middle Missouri subareas of North Dakota (Chomko and Wood 1973:15). Most mounds occur in the eastern one-third of the state (Picha et al. 2008). Six Late Plains Woodland ceramic wares signal the presence of the Avonlea, Brainerd, Blackduck, Mortlach, Old Women's, and Sandy Lake complexes. While these are regarded by most as Woodland ceramics, the latter four of the six were made largely within the subsequent Plains Village period.

Sites associated with the Plains Woodland Tradition period are more common than sites from any other cultural-temporal tradition within the Souris River Study Unit (Picha et al. 2008: Table 11.3). This may be due in part to population increases and concomitant increase in the number of occupied sites during this period. According to Picha and colleagues (2008), stone circle sites are perhaps the most common site type in the Souris basin, and the majority of these may well be from the Plains Woodland Sonota/Besant, Laurel, Avonlea, Blackduck, or Mortlach complexes. In addition, the occurrence of a few burial mounds in the Souris River Study Unit indicates that at least some Woodland peoples used the southern part of the Souris basin. Information is lacking about Plains Woodland ceramic and other technological developments in the Souris basin, although Middle Woodland Besant/Sonota sherds were found at the Buffalo Lodge Lake and Towner localities near the Souris River in McHenry County (Wood 1962).

3.1.4 Plains Village Tradition (A.D. 1200-1780)

Unlike earlier cultural traditions, the Plains Village Tradition relied heavily upon maize horticulture, bison hunting, and gathering (Ahler and Kay 2007). The production of a dependable, storable surplus food supply primarily in the form of dried corn is thought to be the key element in Plains Village society (Lovick and Ahler 1982:55). Stored food surpluses facilitated the formation of larger, more permanently situated residential earthlodge village communities. It has been suggested that Plains Villagers were culturally dominant in North Dakota over other groups who continued living Plains Woodland or Plains Archaic lifeways.

The Plains Village Tradition endured until the late 1800s along the Missouri River in western North Dakota. Most earthlodge village townsites are situated in the Middle Missouri archeological subarea and this is where most Plains Village archaeology has taken place. There are presently no earthlodge villages documented in the vicinity of the Project (Picha et al. 2008: Table 11.3). According to Picha and colleagues (2008) most Plains Village sites in the Souris River Study Unit may present a blend of cultural elements derived from Villagers and northern Woodland groups. Moreover, Plains Villagers may have left behind relatively "weak" archaeological signatures - temporary hunting camps and other

briefly occupied settlement types – as they crossed the Des Lacs-Souris basin while hunting, gathering, and trading.

3.1.5 Proto-Historic Period (A.D. 1650–1800) and Equestrian Nomadic Tradition (ca. 1780–1880)

The Proto-historic period in North Dakota (1650–1800) was a time of Euro-American cultural impact on Native cultures and came first from the north in the form of French and English trade goods. Trace amounts of European materials may have been available as early as 1613 when they could have been scavenged from the ships and stores abandoned by Hudson Bay exploration expeditions of 1612 and 1619 (Russell 1982). Goods may have also been acquired later from trading posts along the Saskatchewan River in southern Manitoba and Saskatchewan in the York Factory area of Hudson Bay in the fall of 1682 (Russell 1982).

The first Europeans to visit what is now North Dakota were the French missionaries of the Roman Catholic Church. In 1630, Father Le Caron, a priest of the order of St. Francis, was likely the first missionary to meet with the Indians in the Red River Valley. Missionaries continued to have a presence in the area into the late 1800's, meeting with various tribes and establishing missions across the territory. The first known Euro-American expedition into what is now North Dakota was conducted by the French explorer and fur trader, Pierre Gaultier de la Vérendrye. In 1738 he visited Mandan villages near present-day Bismarck. During the time of contact, the region was also home to the Ojibwa, Yanktonai, and Teton Sioux. By the 1790's the Canadian North West Company and Hudson's Bay Company erected trading posts on the Red River of the North and in the northeastern corner of the state.

The Equestrian Nomadic Tradition includes lifeways dependent upon horses during proto-historic and early historic times in the Northern Plains. Native peoples in North Dakota probably acquired horses in the early-1700s from adjacent areas to the south. Lehmer (1971:32) suggested 1720 as a date for the “beginning of the florescence of the horse culture” in the Northern Plains. Horses were a considerable improvement over dogs as beasts of burden (Fredlund 1973), and they greatly increased the capacity of groups who adopted them to acquire and transport food (Beardsley et al. 1956). The introduction of horses into the Native American cultures of the Plains produced significant changes in subsistence economies, demographics, social organization, and settlement patterns. These lifeways were taken up by diverse groups who had their origins in various cultural traditions: Plains Archaic (e.g., the Algonkian Blackfeet), Plains Village (the Siouan Crow), and Woodland (the Siouan Middle Dakota). Intensive interactions facilitated by horse travel acted to level cultural differences amongst these groups.

Proto-historic use of the Souris River Study Unit is poorly documented (Picha et al. 2008: Table 11.3). Picha and colleagues (2008) state that horses were probably rare to nonexistent in the Study Unit until sometime between A.D. 1725 and 1750. However, they also propose that some Equestrian peoples, such as the Assiniboine, had core territories somewhere within the Souris basin. Further, they argue that many stone circle sites were occupied by Equestrian peoples, despite the lack of diagnostic artifacts such as gun flints, glass beads, or actual horse bones at stone circle sites.

3.2 HISTORIC PERIOD

The following descriptions for the Historic Period were compiled from Early History of North Dakota: Essential Outlines of American History (Lounsbury 1919), Out Where the West Begins:

Early and Romantic History of North Dakota (Trinka 1920), Soil Survey of McHenry County, North Dakota (DesLauriers 1990), and from McHenry County, North Dakota (McHenry County 2016).

In 1803, the United States purchased the Louisiana Territory which included present-day North Dakota, although the northern boundary with Canada was not decided until 1818. In 1804, the Lewis and Clark Expedition reached North Dakota during their Corp of Discovery Expedition to the Pacific Coast. In November of 1804, Lewis and Clark wintered in North Dakota with the Hidatsa and Arahami tribes and established Fort Mandan six miles below the mouth of the Knife River.

In 1861, the Dakota Territory was created and included North Dakota, South Dakota, Wyoming and Montana. When warfare broke out between the Sioux and white settlers in neighboring Minnesota the following year, the Sioux sought refuge in the Dakota Territory, but were mostly confined to the area west of the Missouri River. By 1872, the Northern Pacific Railroad was built as far as Bismarck, which led to an influx of immigrants including many Norwegians and Germans. The "bonanza farm" craze of the 1870s-80s attracted many settlers and North Dakota entered the Union on November 2, 1889, as the 39th state. In 1900, the Bismarck, Washburn, and Great Falls Railroad Company extended a track from Bismarck to Wilton, which aided in the development of coal mining in the area (Schmidt and Vermeer 2009). In the 1920s, prices for farm crops dropped, and many banks failed.

During the Great Depression of the 1930s, many people left the state, and many businesses collapsed, including the Bismarck, Washburn, and Great Falls Railroad Company, which filed for bankruptcy in 1937 (Schmidt and Vermeer 2009). Prosperity returned during World War II and by 1944, the once bankrupt Bismarck, Washburn, and Great Falls Railroad was purchased and renamed the Minneapolis, St. Paul, and Sault Ste. Marie Railroad (Soo Line), a subsidiary of the Canadian Pacific Railway. The presence of this railroad in the region has been instrumental for the transportation of coal and grain to markets outside the region.

McHenry County was formed in 1873 from part of Bottineau County by an act of the Dakota Territorial Legislature. It was named for James McHenry, an early settler of Vermillion, South Dakota. The county's first seat was Villard (1884-1885), followed by Scriptown (1885-1886), and then Towner (originally named Newport). Towner was located on the west side of the Souris River, but when the railroad came it was moved about 4 miles to the east along the railroad. It remains the county seat today.

The first settlers in the county were ranchers, who arrived in 1882. These ranchers initially settled mostly in the Towner area. Farmers began to settle in the county by about 1901, and by 1905 most of the land had been claimed. With the settlement by farmers, the original ranching declined. By 1900 there were over a thousand farms and ranches in the county. The number peaked at 2,329 in 1910, and then it gradually decreased to below a thousand in the late 20th century.

Farming and ranching continue to be the most important industries in McHenry County. About 30 percent of the county is rangeland and about 60 percent is cultivated. Important crops are several varieties of wheat, sunflowers, barley, flax, oats, rye, and alfalfa. Wildlife refuges are another important feature of the county and include the J. Clark Salyer National Wildlife refuge, Cottonwood Lake National Wildlife Refuge and Wintering River National Wildlife Refuge.

In 1880 there were virtually no settlers in McHenry County, but by 1890 the population was nearly 1,600. In 1910 the population peaked at 17,637, only to decline dramatically through the 20th Century.

By 1980 it had decreased to 7,850 and today the county is home to around 5,400 people (McHenry County 2016).

4.0 RESEARCH DESIGN

The objective of this survey investigation was to conduct a Class III archaeological survey for any additional facility locations as recommended by the SHSND in their September 2, 2016 letter. Depending on the type of resource(s) encountered, a wide range of research topics could potentially be addressed by cultural resources identified by the investigation (or subsequently in the event of an unanticipated discovery). Pre-survey research efforts involved archival research to determine if cultural resources have been previously recorded within 1 mile of the Project area and what past land uses may have impacted the APE or left archaeological remains (see Section 5.1). The 2018 pedestrian survey of the APE was based upon the June 20, 2018 project design GIS data provided by Capital Power. No new cultural resources were identified during the June 2018 survey. Since the ground surface visibility exceeded 30 percent throughout the June 2018 previously un-surveyed areas no subsurface testing was performed during the pedestrian survey.

4.1 EXPECTED SITE TYPES

The cultural and archaeological contexts of the Project area, as well as the archival research described in Section 5.1 have revealed that the Project and surrounding areas have been minimally surveyed; consisting of 17 surveys having been conducted in the APE. The surveys were conducted for road and highway improvements, industrial and commercial development, abandoned mine lands, fiber optic, cell tower, wind energy development, gas pipeline, and water pipeline projects.

The anticipated site types described in Table 4-1 are based upon the cultural, natural, and archaeological context of the APE.

Table 4-1.
Expected Site Types within the Project Previously Un-Surveyed Areas

Chronological Context	Expected Site Types
Prehistoric	Lithic Scatters or Deposits Temporary Camp Sites IFs
Historic	Refuse Scatters, Deposits, or IFs Homestead/Farmstead Buildings and Remnants Historic Roads or Trails

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5.0 METHODOLOGY

Identification efforts for this cultural resource investigation in 2016 included a review of existing site records, previously conducted surveys in the area, and historic maps, as well as an intensive level pedestrian survey. The Research area included a 1-mile buffer around the Project corridor. No consultations with or inquiries of Native American individuals or tribes have been conducted at this time. A letter describing the Project was submitted to the SHSND for comment in 2016 and the SHSND recommended that a records search and pedestrian survey of the APE be conducted. The June 2018 cultural resource investigation was limited to a pedestrian survey of the 22 previously un-surveyed areas.

5.1 RECORDS SEARCH AND ARCHIVAL RESEARCH RESULTS

A records search (Anderson 2016) was conducted through at the SHSND office in July 2016. The search included the Project area and a 1-mile buffer (Research area) surrounding the wind facility and the associated transmission line. The transmission line findings are included in a separate report. As part of this record search, the SHSND database of survey reports and overviews as well as documented archaeological resources and ethnic resources were consulted. Additionally, the search included a review of the following publications and lists: the NRHP, ethnographic information, historical literature, historical maps and GLO plats, and local historic resource inventories.

5.1.1 Previously Conducted Surveys

Within the Research area, the records search revealed that 17 prior investigations have been undertaken (Table 5-1). These 17 surveys consist of road and highway improvements, industrial and commercial development, abandoned mine lands, fiber optic, cell tower, wind energy development, gas pipeline, and water pipeline projects.

Table 5-1.
Previous Surveys and Overviews Identified by the Project Records Search

Manuscript Number	Author(s)	Title	Year
9507	Amy Belier	Archer Daniels Midland Facility Expansion; A Class III Cultural Resource Inventory	2005
7309	Thomas K. Larson	Results of a Class II and Class III Cultural Resource Inventory for NDDOT Project Area NH-4-052(031)112 McHenry County, ND	1998
0136	F. Schneider	Preliminary Field Reconnaissance and Literature Search of Cultural Resources in the Burlington Dam Project; Preliminary Cultural Resource Investigation of the Upper Souris River Basin, North Dakota.	1977
0306	Woolworth Research Associates	A Report on an Archeological and Historical Reconnaissance Survey of the Great Lakes Gas Transmission Company Pipeline Route in North Dakota and Minnesota.	1978
1007	Michael Gregg	Class III Intensive Inventory for all Cultural Resource at a Proposed Industrial Park Development, Town of Velva, McHenry County, North Dakota.	1980
3000	Bruce Rippeteau	A Cultural Resource Survey for Wold Engineering, CAP-2542(81), Survey of County Road Improvement, McHenry County, North Dakota; Dickinson Bureau of Land Management District Office.	1981
3024	Richard A. Fox, Jr.	Class III Intensive Inventory for all Cultural Resources at a Proposed Industrial Park Sewage Lagoon Town of Velva, McHenry County, North Dakota.	1980

Table 5-1.
Previous Surveys and Overviews Identified by the Project Records Search

Manuscript Number	Author(s)	Title	Year
3249	Michael L. Gregg	Consolidation Coal Company's Velva Mine, Ward County, North Dakota: Class III Intensive Inventory for all Cultural Resources in Noncontiguous Parcels Totaling ca. 150 Acres.	1984
9946	Damita Hiemstra	Velva Sunflower Road: A Class III Cultural Resource Survey for Road Improvements Along State Route 97 South of Velva in McHenry County, North Dakota.	2006
10035	Damita Hiemstra and Andrea Kulevsky	Northern Prairie Rural Waterline: A Class II and Class III Cultural Resource Inventory in McHenry County, North Dakota.	2007
10046	David W. Kluth	A Cultural Resource Inventory of Three Proposed Fiber Duct Installations in North Central North Dakota.	2007
12995	Jennifer L. Harty and Sophia L. Asbury; Jennifer L. Harty and Jennifer N. Macy	New Frontier Wind Project: A Class III Cultural Resource Investigation in McHenry County, North Dakota. And Addendum.	2011, 2012
13859	Damita Engel	North Central Rural Water Consortium Anamoose/Benedict Area Segment B: A Class II and Class III Cultural Resource Inventory of a Proposed Waterline in McHenry, McLean and Ward Counties, North Dakota.	2010
14964	John F. Hoffecker	Class III Cultural Resources Inventory ND006 Ruso 29th Street NW, Ruso McLean County, North Dakota Section 1, T 150 N R 80 W.	2014
15254	John G. Hodgson	Results of a Class I and Class III Archaeological and Cultural Resources Investigation: Proposed ND006 Ruso 404' Cellular Telecommunications Tower Location, Section 1, Township 150 North, Range 80 West, McLean County, North Dakota.	2014
15503	Amie Meade, Caitlin Carlson, and William Bluemle	SRT Communications' Butte Exchange: A Class II and Class III Cultural Resource Inventory in McHenry, McLean, and Sheridan Counties, North Dakota.	2014
	Stephen R. Anderson, and Deborah Huntley	Cultural Resources Addendum Report for the New Frontier Wind Energy Project McHenry County, North Dakota (Addendum I and II)	2016

5.1.2 Previously Recorded Cultural Resources

Twenty-four previously recorded cultural resources were identified by the records search within the Research area. Of the 24 cultural resources located within the Research area, 19 consist of archaeological resources (Table 5-2) (prehistoric, historic, and multicomponent) and five are architectural resources (Table 5-3). Of the 19 archaeological resources, four are historic and 15 are prehistoric. The historic sites consist of two mines, a stone wall, and a trash dump. The prehistoric sites include three cairn sites and 12 lithic scatter site leads. The five architectural resources consist of a stone homestead, a farmstead, a livestock structure, a collapsed barn, and the First Lutheran Church of Ruso.

Of the 24 cultural resources (archaeological and architectural) two sites (32MH406 and 32MH407) are assessed as not eligible, and the remaining 22 sites and site leads have not been assessed for eligibility.

Table 5-2.

Records Search Data: Previously Recorded Archaeological Resources within the New Frontier Wind Energy Project Class I Research Area.

Site Number	Record Type	Time Period	Site Type	NRHP Eligibility
32MH406	Archeological	Historical	Dump	Not Eligible
32MH407	Archeological	Historical	Stone Wall	Not Eligible
32MH408	Archeological	Prehistoric	Cairn	Unevaluated
32MH409	Archeological	Prehistoric	Cairns	Unevaluated
32MH410	Archeological	Prehistoric	Cairn	Unevaluated
32MHX063	Archeological	Prehistoric	Lithic Scatter	Unevaluated
32MHX064	Archeological	Prehistoric	Lithic Scatter	Unevaluated
32MHX065	Archeological	Prehistoric	Lithic Scatter	Unevaluated
32MHX066	Archeological	Prehistoric	Lithic Scatter	Unevaluated
32MHX067	Archeological	Prehistoric	Lithic Scatter	Unevaluated
32MHX068	Archeological	Prehistoric	Lithic Scatter	Unevaluated
32MHX069	Archeological	Prehistoric	Lithic Scatter	Unevaluated
32MHX070	Archeological	Prehistoric	Lithic Scatter	Unevaluated
32MHX071	Archeological	Prehistoric	Lithic Scatter	Unevaluated
32MHX072	Archeological	Prehistoric	Lithic Scatter	Unevaluated
32MHX073	Archeological	Prehistoric	Lithic Scatter	Unevaluated
32MHX085	Archeological	Prehistoric	Lithic Scatter	Unevaluated
32WDX588	Archeological	Historical	Truax-Traer Mine	Unevaluated
32WDX589	Archeological	Historical	Quist Mine	Unevaluated

Table 5-3.

Site File Search Data: Previously Recorded Architectural Resources within the New Frontier Wind Energy Project Class I Research Area.

Site Number	Record Type	Site Type	Site Type or Name	NRHP Eligibility
32MH402	Architectural	Historical	Stone Homestead	Unevaluated
32MH403	Architectural	Historical	Farmstead	Unevaluated
32MH404	Architectural	Historical	Livestock Structure	Unevaluated
32MH405	Architectural	Historical	Collapsed Barn	Unevaluated
32ML945	Architectural	Historical	First Lutheran Church of Ruso	Unevaluated

5.1.3 Historic Map Review

Review of historic cartographic resources can help determine whether vestiges of trails, transportation routes, homesteads, or other historic resources may be present within the APE. In addition to the records search, BLM GLO records, the National Park Service's National Historic Trails Map, and U.S. Geological Survey quadrangles were reviewed. A review of the North Dakota GLO Original Survey Plats 1884, 1889, 1892, and 1895 identified six potential historic resources located within the Research area. The potential resources consist of two historic structures and four historic road segments. (Table 5-4). The potential resources have not been recorded or assessed for eligibility for inclusion into the NRHP and should be avoided.

Table 5-4.

Records Search Data: Potential Historic Resources noted on GLO Plats within the New Frontier Wind Energy Project Class I Research Area.

Potential Resource	Plat Date	Township and Range	Section
Structure	1892	T151N R80W	5 SE, SW
Structure	1892	T151N R80W	16 SW, SE
East to West Trending Road Segment	1892	T151N R80W	16, 17
East to West Trending Road Segment	1896	T151N R81W	1
North to South Trending Road Segment	1892	T151N R80W	4, 9, 16, 20, 21, 29, 32
Northwest to Southeast Trending Road Segment	1892	T151N R80W	21, 22

5.2 PEDESTRIAN ARCHAEOLOGICAL SURVEY

The June 2018 pedestrian survey covered 22 previously un-surveyed areas. Fieldwork was conducted by Tetra Tech cultural resources staff Stephen Anderson, RPA, over two 10-hour days on June 14-15, 2018. Mr. Anderson was the Principal Investigator for this Project.

The survey was conducted using one archaeologist walking 10-meter transect intervals within the APE. If a cultural resource would have been located, crew members would have walked concentric and/or closely-spaced linear transects to determine the presence of any additional surface artifacts. Locations of artifacts and/or feature(s) would have been marked with pin flags to aid in determining the surface extent of the sites and to aid in mapping them. For the purposes of this survey and in conjunction with the SHSND definitions, isolated finds were defined as resources consisting of five or fewer artifacts and sites were defined as six or more artifacts or any feature. Identified resources would have been assigned a unique temporary identification number in the format of NFR-SA-01. A digital site datum would have been established using a handheld Trimble 2008 Geo XH Global Positioning System unit. All features would have been mapped, photographed, and described. All features, and any geographical points of reference, such as tree lines, drainages or roads, would have been recorded using the Global Positioning System unit. A North Dakota Cultural Resource Archaeological Site Form would have been completed in the field and finalized in the office. No artifacts were collected during the survey.

6.0 REPORT OF FINDINGS

The pedestrian surveys did not identify any cultural resources within the June 2018 previously un-surveyed APE. No previously recorded resources or architectural resources were identified within the June 2018 previously un-surveyed APE. Few historic buildings and farms were noted in the surrounding area during the survey. These were not formally recorded during the survey and are located outside the APE. However, the Project may be visible from these locations.

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7.0 DISCUSSION AND INTERPRETATIONS

Archival research and this survey effort for the proposed Project did not identify any cultural resources within the 22 previously un-surveyed areas.

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8.0 MANAGEMENT CONSIDERATIONS

Several factors have been considered in evaluating the impact of the proposed Project on cultural resources within the previously un-surveyed areas as well as the appropriate mitigation measures to lessen or prevent those impacts. These factors are summarized in this section.

This addendum report was prepared as Meadowlark's compliance with the PSC requirements to assess potential impacts on cultural resources. Archival research included a records search, review of previously conducted survey reports, and review of historic maps. This research indicated 24 previously recorded cultural resources were identified within one-mile of the APE. The pedestrian survey conducted for this Project did not identify any additional cultural resources.

8.1 IMPACT SIGNIFICANCE CRITERIA

The Project is located on private land and does not require federal or state funding. However, the Project is subject to PSC permitting that would trigger consultation with SHSND under PSC guidelines. This impact analysis utilizes the Section 106 of NHPA as a proxy to assess the potential impacts of the Project. Section 800.5(2) of 36 CFR 800, "Protection of Historic Resources," includes a discussion of potential adverse effects on historic properties. Examples that would be applicable to the potential impacts of the Project include physical destruction of or damage to all or part of the property; change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance; and introduction of visual, atmospheric or audible elements that diminish the integrity of the property's significant historic features. Impacts on cultural resources are normally considered permanent as these resources are finite and disturbance of them, particularly archeological sites, cannot be reversed. However, impacts on historic landscapes or the viewsheds of historic or other significant areas can be temporary if projects do not permanently impact associated resources and are removed at a future date.

Direct effects from the Project could result from: vegetation clearing; grading of access roads; excavation and modification of the Project site; trenching for electrical collection lines, and drainage diversions; auguring for foundations for turbines; and any other earth-moving activity that disturbs historical resources or historic properties, previously undisturbed cultural resources, or cultural resources unevaluated for NRHP eligibility.

8.2 IDENTIFIED PROJECT IMPACTS ON CULTURAL RESOURCES

The following impacts on cultural resources may occur as a result of the proposed Project. Based on the analyses presented below, the Project is unlikely to have an adverse effect on archaeological historic properties, but may adversely affect the visual landscape/setting of architectural historic properties. The presence or absence of human remains as well as Native American resources is unknown. However, by implementing recommended mitigation measures, the impacts may be reduced.

8.2.1 Archaeological Resources

The June 2018 pedestrian survey of the 22 previously un-surveyed areas did not identify any additional cultural resources. Typically, archaeological sites are assessed for NRHP eligibility based on their untapped data potential.

Given the low site density and inferred moderate archaeological sensitivity areas within proximity to permanent water sources within the APE, the potential to encounter additional resources within the

subsurface of these areas is considered moderate. However, to reduce any impact on unanticipated archaeological resources, the measures listed below in Section 8.3 should be incorporated into the Project.

8.2.2 Native American Resources

In August of 2016, a notification letter was sent to the North Dakota Indian Affairs Commission. At the time of this report no responses had been received. No known Traditional Cultural Properties are in the APE or in the area surrounding the Project.

8.2.3 Historic Built Environment Resources

During the June 2018 pedestrian survey, no eligible historic built environment resources were identified within the APE. Therefore, no direct impacts on historic built environment resources are expected from construction of the Project. However, the Project may be visible from undetermined historic buildings in the surrounding landscape or the towns of Ruso or Kongsberg. Visual impacts on these buildings may constitute an adverse effect should the rural setting of the region play a role in any significance the building may have. Therefore, there is potential for the Project to cause an adverse effect. An historic architecture survey of historic buildings from which the Project would be fully or partially visible has been conducted for the Project; results of this survey is provided in a separate report.

8.3 RECOMMENDED MANAGEMENT AND MITIGATION MEASURES

It is recommended that the protective measures outlined below be considered prior to and during Project implementation in order to reduce potential impacts on cultural resources.

Unanticipated and Inadvertent Discoveries—If construction staff or others observe previously unidentified archaeological resources during construction, work in the vicinity of the find(s) will halt and the Project Archaeologist will be notified immediately so that the resource value may be assessed as soon as possible and appropriate next steps determined in coordination with the land owner. Such finds will be formally recorded and evaluated for NRHP eligibility, as appropriate. The resource will be protected from further disturbance or looting pending evaluation and agreement from the SHSND regarding the resource's eligibility status. Should the unanticipated discovery be determined to be a historic property and cannot be avoided, Capital Power will provide justification as to why the resource cannot be avoided and recommend treatment options (i.e., data recovery) to the SHSND and interested Native American tribes for agreement.

As per the North Dakota Burial Laws (NDCC 23-06-27 and accompanying administrative rules NDAC 40-02-03), if human remains are inadvertently discovered during construction activities, all work in the vicinity of the find will cease and the appropriate law enforcement office will be contacted immediately.

9.0 REFERENCES

- Ahler, S. A., and M. Kay (editors)
2007 Plains Village Archaeology: Bison-hunting Farmers in the Central and Northern Plains. University of Utah Press, Salt Lake City.
- Anderson, D. C., J. A. Tiffany, and F. W. Nelson
1986 Recent Research on Obsidian from Iowa Archeological Sites. *American Antiquity* 51:837-852.
- Anderson, Stephen
2016 Class I Cultural Resource Site File Search and Literature Review for the New Frontier Wind Energy Project, McHenry County, North Dakota – Cultural Resources Records Search. Letter Report, August 1, 2016, to Bill Behling, Capital Power Corporation, Boston, MA. Tetra Tech, Inc., Golden, CO.
- Beardsley, R. K., P. Holder, A. D. Krieger, B. J. Meggers, J. B. Rinaldo, and P. Kutsche
1956 Functional and Evolutionary Implications of Community Patterning. *Society for American Archaeology, Memoir* 11:129-157.
- Benchley, E. D., B. Nansel, C. A. Dobbs, S. M. T. Myster, and B. H. O'Connell
1997 *Archaeology and Bioarchaeology of the Northern Woodlands: A Volume in the Central and Northern Plains Archaeological Overview*. Arkansas Archaeological Survey Research Series No. 52, Arkansas Archaeological Survey, Fayetteville.
- Benn, D. W.
1983 Diffusion and Acculturation in Woodland Cultures on the Western Prairie Peninsula. In *Prairie Archaeology: Papers in Honor of David A. Baerreis*, edited by G. E. Gibbon, pp. 75-85. Publications in Anthropology, No. 3. University of Minnesota, Minneapolis.
- Bluemle, J.
1988 *Guide to the Geology of North-Central North Dakota, revised*. Educational Series 19. North Dakota Geological Survey, Bismarck, North Dakota.
2000 *The Face of North Dakota*. 3rd ed. Educational Series 26. North Dakota Geological Survey, Bismarck, North Dakota.
- Bryson, R. A., and T. J. Murray
1977 *Climates of Hunger*. University of Wisconsin Press, Madison, Wisconsin.
- Chomko, S. A., and W. R. Wood
1973 Linear Mounds in the Northeastern Plains. *Archaeology in Montana* 14(2):1-19.
- DesLauriers, L. L.
1990 *Soil Survey of McHenry County, North Dakota*. United States Department of Agriculture Soil Conservation Service. Online resource:
http://www.nrcs.usda.gov/Internet/FSE_MANUSCRIPTS/north_dakota/ND049/0/mchenry.pdf.
- Fredlund, D.
1973 *1971 Archaeological Survey, Western Energy Coal Company Lands, Rosebud County, Montana*. Montana Statewide Archaeological Survey, University of Montana. Submitted to Western Energy Coal Company, Butte, Montana.

- Frison, G.C.
1991 *Prehistoric Hunters of the High Plains*, 2nd Edition. Academic Press, New York.
- Goebel, T., M. R. Waters, and D. H. O'Rourke
2008 The Late Pleistocene Dispersal of Modern Humans in the Americas. *Science* 319 (5869):1497-1502.
- Gregg, M. L.
1994 *Horner-Kane Site (32RY77) Archeological Excavations, Grahams Island State Park, Ramsey County, North Dakota, 1991 Field Season*. Department of Anthropology, University of North Dakota, Grand Forks. Submitted to the Bureau of Reclamation, Bismarck.
- Gregg, M. L., D. Meyer, P. R. Picha, and D. G. Stanley
1996 Archeology of the Northern Plains. In *Archeological and Bioarcheological Resources of the Northern Plains*, edited by G. C. Frison and R. C. Mainfort, pp. 77-90. A Volume in the Central and Northern Plains Archeological Overview, Arkansas Archeological Survey Research Series No. 47. Fayetteville, Arkansas.
- Gregg, M. L., P. R. Picha, F. E. Swenson, and A. Bleier
2008 Appendix B: Archeological Component. In *The North Dakota Comprehensive Plan for Historic Preservation: Archaeological Component*, pp. B.1-B.87. State Historical Society of North Dakota, Historical Preservation Division, Bismarck, North Dakota.
- Griffin, J. B., A. A. Gordus, and G. A. Wright
1969 Identification of the Sources of Hopewellian Obsidian in the Middle West. *American Antiquity* 34:1-14.
- Hayden, B.
1981 Research and Development in the Stone Age: Technological Transitions among Hunter-gatherers. *Current Anthropology* 22:519-548.
- Kay, M.
1998 The Great Plains Setting. In *Archaeology on the Great Plains*, edited by W. R. Wood, pp. 16-47. University Press of Kansas, Lawrence.
- Lehmer, D. J.
1971 *Introduction to Middle Missouri Archeology*. Anthropological Papers 1. National Park Service.
- Lounsberry, C. A.
1919 *Early History of North Dakota: Essential Outlines of American History*. Liberty Press, Washington, D.C.
- Lovick, S. K., and S. A. Ahler
1982 *Cultural Resource Reconnaissance in the Knife River Indian Villages National Historic Site*. Department of Anthropology, University of North Dakota, Grand Forks. Submitted to the National Park Service, Lincoln.
- McHenry County, North Dakota
2016 McHenry County. <http://www.mchenrycountynd.com/about/>.

- Miller, W. P.
1992 *A Survey and Analysis of Surface Collected Paleo-Indian Points from Bottineau County, North Dakota*. Honors thesis, University of North Dakota, Grand Forks. Manuscript on file, State Historical Society of North Dakota, Bismarck.
- Odum, E. P.
1971 *Fundamentals of Ecology*. W. B. Saunders, Philadelphia.
- Picha, P. R., M. L. Gregg, and A. Bleier
2008 The Souris River Study Unit. In *The North Dakota Comprehensive Plan for Historic Preservation: Archaeological Component*, pp. 11.1-11.72. State Historical Society of North Dakota, Historical Preservation Division, Bismarck, North Dakota.
- Russell, D.
1982 Initial European Contacts and the Fur Trade to 1767 on the Saskatchewan River. In *Nipawin Reservoir Heritage Study, vol. 3*, edited by D. Burley and D. Meyer, pp. 88-115. Saskatchewan Research Council Publication No. C-805-25-E-82, Saskatoon.
- Schmidt, A., and A. Vermeer
2009 *Railroads in North Dakota, 1872-1956*. Manuscript on file at the State Historical Society of North Dakota, Bismarck.
- State Historical Society of North Dakota (SHSND)
2015 *Historic Preservation in North Dakota, 2016-2021: A Statewide Comprehensive Plan*. State Historical Society of North Dakota, Historical Preservation Division, Bismarck, North Dakota.
- Trinka, Z. I.
1920 *Out Where the West Begins: Early and Romantic History of North Dakota*. The Pioneer Company, St. Paul, Minnesota.
- Wood, W. R.
1962 Cord-roughened Pottery in North Central North America. *Plains Anthropologist* 7:232-236.

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June 27, 2018

Stephen Anderson
Principal Archaeologist
Tetra Tech, Inc.
350 Indiana Street, Suite 500
Golden, CO 80401

ND SHPO Ref: 11-2377F PSC, PU-11-069 "Cultural Resources Addendum IV Report for the New Frontier Wind Energy Project, McHenry County, North Dakota, Negative Inventory Report"

Dear Mr. Anderson:

We reviewed ND SHPO Ref: 11-2377F PSC, PU-11-069 "Cultural Resources Addendum IV Report for the New Frontier Wind Energy Project, McHenry County, North Dakota, Negative Inventory Report," and find it acceptable. It is a good faith effort to identify and avoid impacts to "Significant Sites."

We concur with a "No Significant Sites Affected" determination provided the project is of the nature stated and it takes place in locations described in the project documentation.

Thank you for the opportunity to review this project and we look forward to further consultation on it. Please include the ND SHPO reference number listed above in any further correspondence for this specific project. If you have any questions, please contact Susan Quinnell at (701) 328-3574 or squinnell@nd.gov.

Sincerely,

Claudia J. Berg
Director, State Historical Society of North Dakota

11-2377F
18-1054



Memorandum

To: Bill Behling, Joe Griffiths, Bob Evans, Capital Power Corporation, Inc.
From: Steve Yarbrough, Sarah McCall, Tetra Tech, Inc.
Date: June 25, 2018
Project: New Frontier Wind Energy Project
Subject: Evaluation of Wetlands within Previously Un-Surveyed Areas of Project Layout

Introduction

On May 10, 2017, the North Dakota Public Service Commission (PSC or Commission) issued the Order on Continuing Suitability (PSC Order) to Meadowlark Wind I, LLC (Meadowlark) for the New Frontier Wind Energy Project (Project) in McHenry County, North Dakota (Figure 1). Order Number 6 of the PSC Order states "If modifications are made to the Project layout, Meadowlark shall complete a wetland delineation of any previously un-surveyed areas affected by Project-related activities, as necessary, and file the report with the Commission".

The Project layout was modified and Tetra Tech, Inc. (Tetra Tech), as requested by Meadowlark, has previously conducted follow-up wetlands and other waters of the United States (WOTUS) surveys to determine whether potential jurisdictional wetlands occurred within the portions of the revised Project layout that had not previously been surveyed:

- Project layout dated October 17, 2017, letter report was filed with the PSC on November 27, 2017.
- Project layout provided April 24th, 2018, letter report was filed with the PSC on May 2, 2018.

Meadowlark made minor modifications to the Project layout again in June 2018, and Tetra Tech has completed a third survey for potential jurisdictional wetlands and other WOTUS in previously un-surveyed areas of the Project. These wetland surveys were conducted on June 15 and June 16, 2018. This memorandum documents WOTUS surveys conducted on June 15 and June 16, 2018 for the modifications to the Project layout, as requested in the PSC Order.

In October 2011, HDR Engineering, Inc. (HDR) performed wetland and other WOTUS surveys for the Project. The Wetland Delineation Report for those surveys (HDR 2011) was submitted to the U.S. Army Corps of Engineers (USACE) in November 2011 (HDR 2011). An approved jurisdictional determination (JD) from the USACE was received on February 24, 2012; this JD was set to expire February 24, 2017. Meadowlark submitted a request to the USACE to re-verify the JD for an additional 5 years and the new JD from the USACE was received on December 8, 2016.

Methods

Prior to conducting the field surveys, Tetra Tech conducted a desktop analysis of the portions of the revised Project layout that had not previously been surveyed to identify potential jurisdictional wetlands and other WOTUS. The desktop analysis reviewed the following sources of information: results of the previous wetland delineation conducted for the project in 2011 by HDR 2011, aerial imagery, the U.S. Geological Survey (USGS) National Hydrography Dataset (NHD), the National Wetlands Inventory (NWI), and the data from the October 2017 and April 2018 survey efforts by Tetra Tech.

During this most current field survey (June 15-16, 2018), a Tetra Tech wetland scientist evaluated the previously un-surveyed areas of the most current Project layout and made one of three determinations:

- Upland—no wetland or other WOTUS present
- USACE Non-Jurisdictional wetland present
- USACE Jurisdictional wetland present

During the field survey, wetland boundaries were determined based on observations of dominant hydrophytic vegetation and the presence of characteristic wetland hydrology. No formal delineations of wetlands according to USACE methodology were undertaken because no new potentially jurisdictional wetlands were encountered. Observations of each wetland that was identified during the survey were documented through mapping of an observation point (OB-B-01, -02, etc.).

A geographic information specialist (GIS) specialist designed a Project-specific geodatabase that was used to capture wetland and non-wetland feature location data in the field with Trimble GPS technology. To complete the field surveys, the geodatabase was loaded on a Trimble Geo 7X handheld GPS with sub-meter accuracy running ESRI's ArcPad 10.2 software.

Results

A total of 22 previously un-surveyed areas were evaluated during field surveys conducted on June 15 and 16, 2018 (Table 1). One previously un-surveyed area that could not be accessed in the field was evaluated via desktop analysis. Locational data was collected using a GPS at each observation point. Photographs were taken and notes were collected in a field logbook. Of these 23 observation points, 14 were identified as upland areas with no wetlands or other WOTUS present. Eight of the observation points came from portions of un-surveyed area that contained USACE non-jurisdictional wetlands, including one previously un-surveyed area that was evaluated via desktop analysis. One observation point was from a previously un-surveyed area that contains a USACE jurisdictional wetland.

The previously un-surveyed area that contains a USACE jurisdictional wetland is associated with a proposed crane walk location (Figure OB-JS-86). Meadowlark's construction contractor has committed to redesigning this crane walk to ensure no impacts to these USACE jurisdictional wetlands will occur.

Observation Point OB-JS-86— This previously un-surveyed area is near Turbine 24 and crosses approximately 160 feet of a USACE jurisdictional wetland at latitude 47.870319, longitude -100.912533 (Figure Observation Point OB-JS-86). The proposed crane walk in this area will be redesigned to avoid any impacts to the jurisdictional wetland feature.

Conclusions

A total of 22 previously un-surveyed areas were evaluated during field surveys conducted on June 15 and 16, 2018. One previously un-surveyed area that could not be accessed in the field was evaluated via desktop analysis. Of the 23 observation points, 14 were identified as upland areas with no wetlands or other WOTUS present, eight were identified as USACE non-jurisdictional wetlands, and one was identified as USACE jurisdictional wetlands.

Other than Observation Point OB-JS-86 noted above, there were no other wetlands or other WoUS identified during the field survey that would likely be considered jurisdictional wetlands or other WoUS. Based on these findings and the planned avoidance of jurisdictional wetland features, including the rerouting of a crane path that had been planned to cross a USACE jurisdictional wetland near Turbine 24 (see Figure Observation Point OB-JS-86), we do not anticipate a need to consult with the USACE nor obtain a permit under Section 404 of the Clean Water Act.

References

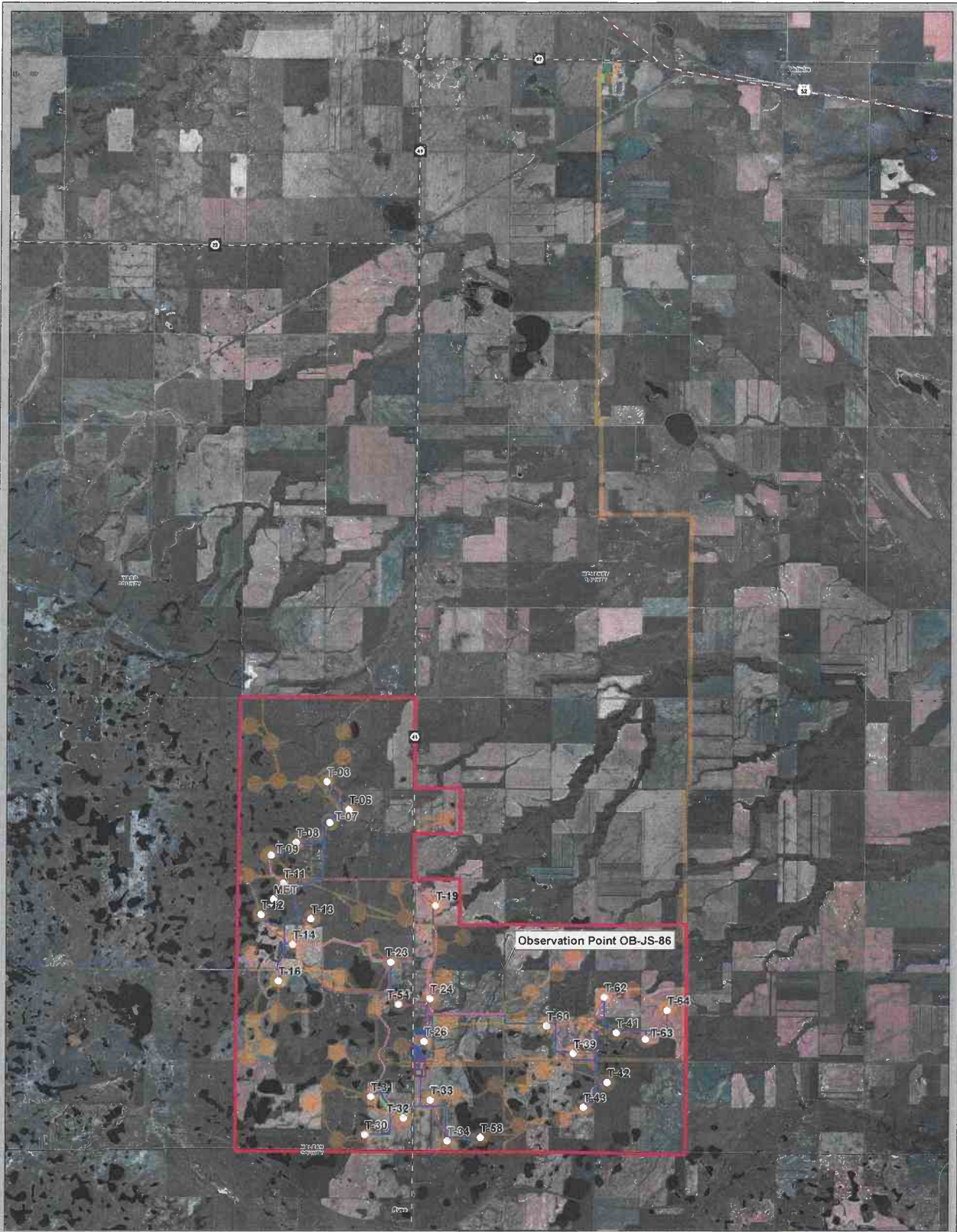
HDR (HDR Engineering, Inc.). 2011. Wetland Delineation Report for New Frontier Wind Farm McHenry County, North Dakota. November 2011. Prepared for Meadowlark Wind I LLC.

Table 1:
Field Observations for Wetlands in Previously Un-Surveyed Areas of the New Frontier Wind Energy Project

Observation Point ID	Upland—no wetland or other WOTUS present	USACE Non-Jurisdictional wetland present	USACE Jurisdictional wetland present	Notes
OB-JS-65	X			Vegetated slope- <i>Bromus inermis</i> , <i>Symphoricarpos occidentalis</i> , corn field, wheat field
OB-JS-66	X			Cultivated field
OB-JS-67		X		Cultivated field adjacent to non-JD wetland
OB-JS-68		X		Cultivated field adjacent to non-JD wetland
OB-JS-69		X		Isolated non-JD wetland, high water would exit through road culvert into another isolated wetland
OB-JS-70	X			Cultivated field
OB-JS-71	X			Cultivated field
OB-JS-72	X			Cultivated field
OB-JS-73	X			Hay field, <i>Bromus inermis</i> , <i>Medicago sativa</i>
OB-JS-74	X			Edge of road and hayfield
OB-JS-75		X		Edge of isolated non-JD wetland, efforts were made recently to drain partially
OB-JS-76		X		Hayfield, <i>Bromus inermis</i>
OB-JS-77		X		Hayfield, <i>Bromus inermis</i> , adjacent non-JD wetland
OB-JS-78	X			<i>Medicago sativa</i> , upland slope
OB-JS-79	X			<i>Medicago sativa</i> , upland slope
OB-JS-80	X			<i>Medicago sativa</i> , upland slope
OB-JS-81	X			<i>Medicago sativa</i> , upland slope
OB-JS-82	X			Hayfield, <i>Bromus inermis</i> , <i>Poa</i> spp., upland slope
OB-JS-83		X		Roadside area adjacent to non-JD wetland
OB-JS-84	X			Upland slope, <i>Glycine max</i>
OB-JS-85		X		Linear wetland within NHD flowline, WE-JS-1
OB-JS-86			X	Linear wetland within NHD flowline, WE-JS-2


Figures

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NEW FRONTIER WIND ENERGY PROJECT

Figure 1: Project Overview

-  Project Area
 -  Access Road
 -  Collector Line
 -  Crane Path
 -  Switchyard/O&M Leased Parcel
 -  Additional Area To Be Surveyed
 -  Previously Surveyed Area
- **Project layout provided June 13th - 15th, 2018

0 0.5 1 Miles
Scale is 64,000 when printed at 11"x17"



Vicinity Map





NEW FRONTIER WIND ENERGY PROJECT

Observation Point OB-JS-86

- Project Area
- Access Road
- Collector Line
- Crane Path

***Project layout provided June 13th - 15th, 2018*

- Additional Area To Be Surveyed
- Previously Surveyed Area

Hydrology

- Perennial Stream
- Intermittent Stream
- Canal Ditch
- USACE Jurisdictional Wetland

0 100 200 Feet
Scale is 2,400 when printed at 11"x17"



Vicinity Map

