Application for Certificate of Site Compatibility

Provided Separately

APPLICATION FOR A CERTIFICATE OF SITE COMPATIBILITY

Submitted to:

NORTH DAKOTA PUBLIC SERVICE COMMISSION

Submitted by:

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LOGAN AND MCINTOSH COUNTIES, NORTH DAKOTA

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ACRONYM LIST

ADLS	Aircraft Detection Lighting System
AGL	above ground level
Am	amplitude modulation
ANSI	American National Standards Institute
APE	area of potential effects
Application	Application for a Certificate of Site Compatibility
Badger Wind	Badger Wind, LLC
BBCS	Bird and Bat Conservation Strategy
BCC	Birds of Conservation Concern
BCR	Bird Conservation Region
BGEPA	Bald and Golden Eagle Protection Act
BLM	Bureau of Land Management
BMP	best management practices
BOP	Balance of Plant
C&I	Commercial and industrial
Certificate	Certificate of Site Compatibility
CFR	Code of Federal Regulations
Commission	North Dakota Public Service Commission
CR Project Area	cultural resources Project Area
CRP	Conservation Reserve Program
CWA, Act	Clean Water Act
dB	decibels
dBA	A-weighted decibels
DoD	Department of Defense
EMF	electromagnetic field

EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
EVT	Existing Vegetation Type
FAA	Federal Aviation Administration
FCC	Federal Communications Commission
FEMA	Federal Emergency Management Agency
FM	frequency modulation
FRS	Facility Registry Service
FSA	Farm Service Agency
GE	General Electric
GW	gigawatts
ICBM	intercontinental ballistic missile
IPaC	Information for Planning and Consultation
kHz	kilohertz
km	kilometer
kV	kilovolt
kW	kilowatt
LIDAR	Light Detection and Ranging
LNTE	low-noise trailing edge
LUST	Leaking Underground Storage Tank
m	meter
MBTA	Migratory Bird Treaty Act
MDU	Montana-Dakota Utilities
MET towers	meteorological evaluation towers
MISO	Midcontinent Independent System Operator
MPC	Minnkota Power Cooperative

m/s	meters per second
MW	megawatts
ND	North Dakota
NDAC	North Dakota Administrative Code
NDCC	North Dakota Century Code
NDDEQ	North Dakota Department of Environmental Quality
NDDOT	North Dakota Department of Transportation
NDDTL	North Dakota Department of Trust Lands
ND DWR	North Dakota Department of Water Resource
NDGF	North Dakota Game and Fish
NDPDES	North Dakota Pollutant Discharge Elimination System
NDPR	North Dakota Parks and Recreation
NIEHS	National Institute of Environmental Health Sciences
NLEB	northern long-eared bats
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NTIA	U.S. Department of Commerce, National Telecommunications, and Information Administration
NWI	National Wetlands Inventory
NWR	National Wildlife Refuge
O&M	operations and maintenance
Ørsted	Ørsted Onshore North America, LLC
PCMM	Post-Construction Mortality Monitoring
PLOTS	Private Land Open to Sportsmen
PPA	power purchase agreement
Project	Badger Wind Project
Project Area	the 31,514-acre area of the Badger Wind Project

Q1, Q2, Q3, Q4	first, second, third, or fourth quarter of the year, respectively
RCRA	Resource Conservation and Recovery Act
REC	recognized environmental condition
ROW	right-of-way
RSZ	rotor-swept zone
SCADA	Supervisory Control and Data Acquisition
SCP	species of conservation priority
SHPO	State Historic Preservation Office
SHSND	State Historical Society of North Dakota
Siting Act	North Dakota Century Code Chapter 49-22
Siting Rules	North Dakota Administrative Code Article 69-06-08
SPCC	Spill Prevention, Control, and Countermeasure
SPP	Southwest Power Pool
Study Area	initial area assessed for project suitability, approximately 125,954 acres
SWPPP	Stormwater Pollution Prevention Plan
TV	television
USACE	U.S. Army Corps of Engineers
USC	U.S. Code
USDA	U.S. Department of Agriculture
USDOE	U.S. Department of Energy
USFWS	U.S. Fish and Wildlife Service
UST	Underground Storage Tank
VFR	Visual Flight Rules
WEG	Wind Energy Guidelines
WMA	Wildlife Management Area
WNS	white-nose syndrome

WOTUS	waters of the United States
WPA	Waterfowl Production Area

1. INTRODUCTION

Badger Wind, LLC, (Badger Wind) is submitting this Application (Application) for a Certificate of Site Compatibility (Certificate) to the North Dakota Public Service Commission (Commission) for the proposed Badger Wind Project (Project) in Logan County and McIntosh County, North Dakota.

Pursuant to the North Dakota Energy Conversion and Transmission Facility Siting Act, North Dakota Century Code (NDCC) Chapter 49-22 (Siting Act), the Project is designed to further the state policy of siting energy conversion projects and associated transmission facilities in an orderly manner compatible with environmental preservation and the efficient use of resources. In accordance with this policy, the Project has been sited and designed to minimize adverse human and environmental impacts.

The Project is in Logan and McIntosh Counties, in south-central North Dakota, adjacent to the western side of the City of Wishek (refer to **Figure 1: Project Location**). A Study Area of approximately 125,954 acres was studied, analyzed, and refined to create a 31,514-acre Project Area that allows for avoidance, or minimized impacts, to natural and human resources. The Project Area provides sufficient area for construction of all project infrastructure and integrates all required setbacks and buffering of sensitive features and resources. Project infrastructure includes up to 74 wind turbines, access roads, a collector substation, electrical collection and communication systems, a transmission line, up to three permanent meteorological evaluation towers (MET towers), an Aircraft Detection Lighting System (ADLS), and an operations and maintenance (O&M) facility.

The Project would have a nameplate capacity of up to 251.6 megawatts (MW), with up to 250 MW delivered to the grid. This would be accomplished by construction and operation of up to 74 wind turbines, described in detail in **Section 1.2.3**, below.

Badger Wind is in the process of identifying an offtaker for the Project's output. Potential offtakers include utilities and commercial or industrial customers seeking a physical or virtual power purchase agreement (PPA). Alternatively, the Project may run "merchant," selling its power directly into the Midcontinent Independent System Operator (MISO) market, or the Project may be sold to a utility that would use the power to directly supply its customer base.

Badger Wind is a wholly owned subsidiary of Ørsted Onshore North America, LLC (Ørsted). Ørsted is an independent renewable energy company based in Chicago, Illinois. Ørsted is one of the largest players in the North American onshore renewable energy market and has publicly announced plans to own and operate 17.5 gigawatts (GW) of onshore renewable energy capacity by 2030. Operating assets currently under Ørsted's ownership represent 3 GW, and a further 1.5 GW of projects to be owned and operated by Ørsted are currently under construction. Ørsted's development pipeline is rapidly expanding across all North American markets to meet its 2030 target.

1.1. Compliance with the Energy Conversion and Transmission Facility Siting Act, North Dakota Century Code Chapter 49-22

The Siting Act requires the proponent of a wind energy conversion facility exceeding 0.5 MW to obtain a Certificate from the Commission in order to locate, construct, and operate the facility in the state of North Dakota. An application for a Certificate must meet certain criteria set forth in the Siting Act, as well as in North Dakota Administrative Code (NDAC) Article 69-06-08 (Siting Rules). The siting of an energy conversion facility is to be made in an orderly manner compatible with environmental preservation and the efficient use of resources (NDCC Section 49-22-02).

As part of the Project, Badger Wind intends to construct a 230-kilovolt (kV) transmission line that will be less than one mile in length (approximately 0.75 miles) to facilitate the Project's interconnection (refer to **Figure 2: Project Facilities**). The proposed transmission line would extend from the project substation and interconnect to the Wishek Junction 230-kV substation owned and operated by Montana-Dakota Utilities Company (MDU), located approximately 1.2 miles west of Wishek, in Township 132 North, Range 71 West, Section 8. Per NDCC Section 49-22-03-6(b), the proposed transmission line is not considered an "electric transmission facility" because it is less than one mile in length. Therefore, the transmission line does not fall within the Commission's siting jurisdiction and is not described or analyzed in this Application.

In this Application, Badger Wind presents the information required by the Siting Act and the Commission's Siting Rules. Badger Wind has considered the exclusion and avoidance areas, the selection criteria, and the policy criteria in the design of the Project, in accordance with NDCC Chapter 49-22 and NDAC Section 69-06-08-01, and information regarding project design, wind resources, and technical information has been included in this Application to allow a thorough understanding of the Project and to aid in review by the Commission, regulatory agencies, and the public. **Table 1-1** provides a summary of information included in this Application and the section of the document in which each siting requirement is addressed.

Table 1-1: Certificate Completion Checklist

State Authority	Description	Section
NDAC Section 69-06-04-01 Certificate of Site Compatibility		
Subsection	**Contents**	
a. (1)	A description of the type of energy conversion facility proposed.	1.0, 4.1
a. (2)	A description of the gross design capacity.	1.2
a. (3)	A description of the net design capacity.	1.2.7
a. (4)	A description of the estimated thermal efficiency of the energy conversion process and the assumptions upon which the estimate is based.	N/A
a. (5)	A description of the number of acres that the proposed facility will occupy.	1.0, 1.2.2

State Authority	Description	Section
a. (6) a	A description of the anticipated time schedule for obtaining the certificate of site compatibility.	1.2.8
a. (6) b	A description of the anticipated time schedule for completing land acquisition.	1.2.8
a. (6) c	A description of the anticipated time schedule for starting construction.	1.2.8
a. (6) d	A description of the anticipated time schedule for completing construction.	1.2.8
a. (6) e	A description of the anticipated time schedule for testing operations.	1.2.8
a. (6) f	A description of the anticipated time schedule for commencing commercial production.	1.2.8
a. (6) g	A description of the anticipated time schedule for beginning any expansions or additions.	1.2.9
b.	Copies of any evaluative studies or assessments of the environmental impact of the proposed facility submitted to any federal, regional, state, or local agency.	**Appendix C, E, F, G, H, I, J**
c.	An analysis of the need for the proposed facility based on present and projected demand for the product or products to be produced by the proposed facility, including the most recent system studies supporting the analysis of the need.	2.1
d.	A description of any feasible alternative methods of serving the need.	2.2
e.	A study area that includes the proposed facility site, of sufficient size to enable the Commission to evaluate the factors addressed in NDCC Section 49-22-09.	1.2.1, 6.0–6.17, 8.0–8.10
f.	A discussion of the utility's policies and commitments to limit the environmental impact of its facilities, including copies of board resolutions and management directives.	**Appendix A**
g.	A map identifying the criteria that provide the basis for the specific location of the proposed facility within the Study Area.	**Figure 2: Project Facilities**
h.	A discussion of the criteria evaluated within the Study Area, including exclusion areas, avoidance areas, selection criteria, policy criteria, design and construction limitations, and economic considerations.	3.0–3.6
i.	A discussion of the mitigative measures that the applicant will take to minimize adverse impacts that result from the location, construction, and operation of the proposed facility.	6.1.2, 6.2.2, 6.3.2, 6.4.2, 6.5.2, 6.6.2, 6.7.2, 6.8.2, 6.9.2, 6.10.2, 6.11.2, 6.12.2, 6.13.2, 6.14.2, 6.15.2, 6.16.2, 6.17

State Authority	Description	Section
j.	The qualifications of each person involved in the facility site location study.	10.0
k.	A map of the study area showing the location of the proposed facility and the criteria evaluated.	**Figure 5: Project Setbacks**
l.	An 8.5-inch-by-11-inch black-and-white map suitable for newspaper publication depicting the study area.	**Figure 12: Newspaper Map**
m.	A discussion of present and future natural resource development in the area.	6.2, 6.8, 6.10–6.16
n.	Map and GIS requirements. The applicant shall provide information that is complete, current, presented clearly and concisely, and supported by appropriate references to technical and other written material available to the Commission. The information must provide the location of the proposed facilities, the proposed site, and the criteria evaluated.	**Figures 1–12**, USB submittal
NDCC Section 49-22-08 Description of Application Requirements		
Subsection 1:	**An application for a Certificate shall be in such form as the Commission may prescribe, containing the following information:**	
a.	A description of the size and type of facility.	1.0, 4.0
b.	A summary of any studies that have been made of the environmental impact of the facility.	1.2.3, 1.2.4, 6.0–6.17, **Appendix C, E, F, G, H, I, J**
c.	A statement explaining the need for the facility.	2.1
d.	An identification of the location of the preferred site for any energy conversion facility.	1.2, **Figure 1: Project Location**
e.	An identification of the location of the preferred corridor for any transmission facility.	N/A
f.	A description of the merits and detriments of any location identified and a comprehensive analysis with supporting data showing the reasons why the preferred location is best suited for the facility.	1.1, 1.2, 2.0–3.6, 6.0–6.17, 8.0–8.10
g.	A description of mitigative measures that will be taken to minimize all foreseen adverse impacts resulting from the location, construction, and operation of the proposed facility.	6.1.2, 6.2.2, 6.3.2, 6.4.2, 6.5.2, 6.6.2, 6.7.2, 6.8.2, 6.9.2, 6.10.2, 6.11.2, 6.12.2, 6.13.2, 6.14.2, 6.15.2, 6.16.2, 6.17
h.	An evaluation of the proposed site or corridor with regard to the applicable considerations set out in NDCC Section 49-22-09 and the criteria established pursuant to NDCC Section 49-22-05.1.	1.1, 3.0–3.6, 6.0–6.17, 8.0–8.10

State Authority	Description	Section
i.	Such other information as the applicant may consider relevant or the Commission may require.	Complete Application including Appendices and Figures
NDCC Section 49-22-09(1) Factors to be considered in evaluated applications and designation of sites, corridors, and routes		
a.	Available research and investigations relating to the effects of the location, construction, and operation of the proposed facility on public health and welfare, natural resources, and the environment.	6.0–6.17, 8.1
b.	The effects of new energy conversion and transmission technologies and systems designed to minimize adverse environmental effects.	8.2
c.	The potential for beneficial uses of waste energy from a proposed energy conversion facility.	8.3
d.	Adverse direct and indirect environmental effects that cannot be avoided should the proposed site or route be designated.	8.4
e.	Alternatives to the proposed site, corridor, or route that are developed during the hearing process and that minimize adverse effects.	8.5
f.	Irreversible and irretrievable commitments of natural resources should the proposed site, corridor, or route be designated.	8.6
g.	The direct and indirect economic impacts of the proposed facility.	8.7
h.	Existing plans of the state, local government, and private entities for other developments at or in the vicinity of the proposed site, corridor, or route.	6.2, 6.9, 8.8
i.	The effect of the proposed site or route on existing scenic areas, historic sites and structures, and paleontological or archaeological sites.	3.1, 3.2, 6.6, 6.7, 8.9
j.	The effect of the proposed site or route on areas that are unique because of biological wealth or because they are habitats for rare and endangered species.	6.16, 8.10
k.	Problems raised by federal agencies, other state agencies, and local entities.	9.0

1.2. Project Summary

The Project will be located in Logan and McIntosh Counties, in south-central North Dakota (see **Figure 1: Project Location)**. The Project's nameplate capacity is up to 251.6 MW of wind energy capacity. Badger Wind is proposing to use a General Electric (GE) turbine with an output of 3.4 MW. Permanent project facilities will include:

- up to 74 wind turbines and related equipment (79 potential turbine locations are shown in **Figure 2: Project Facilities,** which includes alternate turbine locations)
- new gravel access roads and improvements to existing roads, as necessary
- a collector substation
- buried electrical collection lines and communication lines, with aboveground junction boxes and/or underground splices
- up to three permanent MET towers (five potential permanent MET tower locations are shown in **Figure 2: Project Facilities**)
- an ADLS
- an O&M facility.

The Project will interconnect via an approximately 0.75-mile transmission line extending from the project substation to the Wishek Junction 230-kV substation owned and operated by MDU.

1.2.1. Study Area

The approximately 125,954-acre Study Area (approximately 197 square miles) comprises 230 sections of primarily agricultural and livestock rangeland in Logan and McIntosh Counties (see **Figure 1: Project Location**). **Table 1-2** summarizes the townships, sections, and ranges included in the Study Area.

Table 1-2: Study Area Location

Township Name	County	Township	Range	Section(s)
Unorganized Territory	McIntosh	130N	71W	2–6
Unorganized Territory	McIntosh	130N	72W	1–6
Unorganized Territory	McIntosh	131N	71W	2–36
Unorganized Territory	McIntosh	131N	72W	1–5, 7, 9–36
Unorganized Territory	McIntosh	131N	73W	13–14, 23–26, 35–36
Unorganized Territory	McIntosh	132N	70W	4–8
Unorganized Territory	McIntosh	132N	71W	1, 4-9, 12, 16–22, 26–35
Unorganized Territory	McIntosh	132N	72W	1–3, 10–15, 22–29, 32–36
Unorganized Territory	Logan	133N	70W	6–9, 15–22, 27–34
Unorganized Territory	Logan	133N	71W	1–36
Unorganized Territory	Logan	133N	72W	1–5, 8-12, 15-22, 24-25, 36

Township Name	County	Township	Range	Section(s)
Red Lake	Logan	134N	71W	29–33
Starkey	Logan	134N	72W	25–29, 32–36

1.2.2. Project Area

The approximately 31,514-acre Project Area (approximately 49 square miles) comprises 69 sections of primarily agricultural and livestock rangeland in Logan and McIntosh Counties (see **Figure 1: Project Location**). **Table 1-3** summarizes the townships, sections, and ranges included in the Project Area.

Table 1-3: Project Area Location

Township Name	County	Township	Range	Section(s)
Unorganized Territory	McIntosh	132N	70W	5–7
Unorganized Territory	McIntosh	132N	71W	1, 4–8, 12, 17–21, 28–30
Unorganized Territory	McIntosh	132N	72W	1, 2, 12–14, 23
Unorganized Territory	Logan	133N	70W	6–8, 16–21, 28–33
Unorganized Territory	Logan	133N	71W	3–6, 8–10, 12, 14, 15, 18–23, 25–29, 31–36
Unorganized Territory	Logan	133N	72W	36
Red Lake	Logan	134N	71W	31–32

1.2.3. Project Layout

In this Application, Badger Wind provides the preliminary project layout, which includes all components described above. The project layout comprises 79 proposed turbine locations; this includes up to 74 locations that would be built, as illustrated in **Figure 2: Project Facilities**.

The project layout satisfies all North Dakota siting requirements, per the Siting Act and Siting Rules, while optimizing efficiency of space and electrical generation as well as avoiding or minimizing impacts to the environment, cultural resources, and local and state economies. Badger Wind has sited turbines and associated facilities in compliance with Commission and Logan County setback requirements. Once the Project is constructed, Badger Wind will file as-built drawings with the Commission and Logan and McIntosh Counties.

1.2.4. Selection of Project Area

The renewable energy produced by the proposed Project will be positioned to help meet regional and/or national demand for renewable energy, or commercial and industrial (C&I) customer demand. The Project Area was selected due to its excellent wind resource (refer to **Section 1.2.5**), proximity to an accessible point of interconnection to the electrical grid, strong landowner support, and compatibility with existing land uses and environmental features.

1.2.5. Project Development History

Badger Wind began evaluating the Study Area as a potentially suitable site for a wind project in early 2017. Over the course of the following five years, Badger Wind refined the Project Area as a result of numerous environmental studies and in consultation with environmental agencies and other stakeholders.

1.2.5.1. 2017

In early 2017, Badger Wind identified the Study Area, which comprises approximately 125,954 acres, as a potentially suitable site for a wind project. The Study Area was selected based on desktop analysis showing a likely low environmental impact, high wind resource, ample electrical transmission capacity, and suitable agricultural land for wind development. Badger Wind began its land control efforts in 2017 by engaging in community outreach as well as assigning land for placement of a temporary MET tower. This allowed Badger Wind to collect robust and accurate wind data over the course of four years.

1.2.5.2. 2018

Beginning in 2018, Badger Wind initiated a series of environmental studies as part of its site selection process. Throughout the year, Badger Wind engaged in land leasing efforts. In April and October, Badger Wind hosted public dinners in Wishek to introduce the wind Project to the community and provide interested landowners the opportunity to participate.

1.2.5.3. 2019

In spring of 2019, Badger Wind continued with its environmental studies. These included pre-construction avian use surveys, eagle and raptor nest surveys, acoustic monitoring for bats, and grouse lek monitoring. Badger Wind initiated coordination with Logan County in January 2019.

1.2.5.4. 2020

Initial agency coordination with North Dakota Game and Fish (NDGF) and U.S. Fish and Wildlife Service (USFWS) was also started in early 2020. Badger Wind completed a second year of avian use studies, eagle and raptor nest surveys, bat acoustic monitoring, and grouse lek monitoring in 2020. Additionally, grassland and bat habitat assessments took place in 2020. All these studies helped Badger Wind refine the Project Area to help avoid and minimize impacts to wildlife, wetlands, and sensitive habitats. Badger Wind initiated coordination with McIntosh County in January 2020.

1.2.5.5. 2021

In 2021, Badger Wind performed additional habitat assessments of grasslands and special status species. Micro-siting efforts took place on site in May, July, and October of 2021. In spring of 2021, Badger Wind met with Logan and McIntosh Commissioners to provide an overview of the Project and discuss requirements and expectations for the Project. In consultation with NDGF and USFWS, Badger Wind iteratively refined its layout to avoid unbroken grassland and minimize

impacts. In October 2021, Badger Wind hosted a community open house and landowner dinner; feedback on the proposed Project obtained from landowners during the event was overwhelmingly positive. Badger Wind has also been meeting with the Wishek Municipal Airport about the project. Coordination with the local airport has been positive and they have been accommodating towards the development of the project.

1.2.5.6. 2022

In 2022, Badger Wind continued working closely with participating landowners, the surrounding community, wildlife agencies, the interconnecting utility, potential project contractors, and other stakeholders to refine the proposed layout and further refine the Project Area. The Project Area Badger Wind is submitting as part of this Application includes participating and pending participating parcels. It excludes from its boundary all non-participating parcels.

1.2.6. Project Area Wind Characteristics

The U.S. Department of Energy (USDOE) and the North Dakota Division of Community Services have conducted wind resource assessment studies in North Dakota. According to the USDOE, annual average wind speeds of 6.5 meters per second (m/s) and above are suitable for wind power projects. The October 2010 USDOE wind map for the state of North Dakota indicates that the wind resources within the Project Area average 8.5 to 9.0 m/s at a height of 80 meters above the ground (NREL 2010).

Six temporary MET towers are currently located on site. Compilation and assessment of wind resource data has been ongoing since January 2017 when the first temporary MET tower was installed. The MET towers have collected data showing that long-term annual wind speeds across the site are at or above the upper end of the average range for North Dakota, indicating that the Project Area is an excellent resource for electrical generation.

To augment MET tower data, Badger Wind deployed a temporary trailer-mounted Light Detection and Ranging (LIDAR) unit. LIDAR measures wind speed and direction by emitting a laser light pulse and measuring the frequency shift of the reflected light wave. LIDAR units provide data up to and beyond hub height of the proposed turbines and help to supplement wind data collected from MET towers.

As discussed further in **Section 4.1.1.10** of this Application, Badger Wind will install up to three permanent MET towers as part of the Project. Five potential locations are shown in **Figure 2: Project Facilities**, but only three permanent MET towers will be built. The final locations of the three permanent MET towers will be selected with input from the turbine manufacturer and will meet applicable siting requirements.

1.2.7. Projected Output

The Project will have a nameplate capacity of up to 251.6 MW. The Project's interconnection request will permit up to 250 MW to be delivered to the grid. The Project has a projected average output ranging from 1,000,000 to 1,200,000 MW hours per year. Variations in the actual project output will depend upon final wind turbine selection and any additional changes to the final

design and layout of the facility. As a point of reference, this amount of electrical output is enough to power approximately 70,000 average American homes.

1.2.8. Project Schedule

The following list provides details of the proposed schedule for the design, permitting, and construction of the Project:

- Land Acquisition: All participating landowner agreements have been secured with the exception of one agreement, which is anticipated to be acquired in Q2 2022.
- Certificate of Site Compatibility: Badger Wind anticipates the Certificate will be issued by the Commission in Q3 2022.
- Conditional Use Permit with Logan County: Badger Wind expects to file this permit Q1 2022. Badger Wind anticipates Logan County will issue the Conditional Use Permit in Q2 2022.
- Other Permits: Badger Wind will acquire all other permits necessary for construction of the Project prior to conducting the work for which the permit is required.
- Construction: Project construction is anticipated to begin in September 2022 and be completed by the end of October 2023.
- Commissioning: Upon completion of the construction phase, the Project will undergo detailed inspection and testing procedures before being commissioned. Inspection and testing will occur for each individual component of the wind turbines, as well as the associated communication, meteorological, collection, and Supervisory Control and Data Acquisition (SCADA) system.
- Commercial Operations: Badger Wind anticipates full commercial operation to occur by the end of Q4 2023.

1.2.9. Expansion or Addition

Badger Wind does not propose any additions or expansions to the Project at this time. Should Badger Wind develop adjacent areas in the future, all necessary permits and approvals would be obtained to allow such an expansion.

1.2.10. Project Ownership

The Project will be developed, constructed, owned, and operated by Badger Wind.

1.2.11. Project Cost

The estimated total cost to construct Badger Wind is approximately USD 390M.

2. NEED FOR FACILITY

2.1. Need Analysis

Badger Wind is in the process of identifying an off taker for the project's output. As an independent power producer, Badger Wind is able to bid in a variety of markets and contractual structures. Badger Wind is actively marketing the Project to a number of potential offtakers who would enter into ten- to 20-year physical or virtual PPAs. Another option is for the Project to run "merchant," selling its power directly into the MISO market and earning the spot Locational Marginal Price. Alternatively, the Project may be sold to a utility that would use the power to directly supply its customer base.

Utilities and other customers seeking to diversify and build their energy generation portfolios are attracted to wind energy projects because of their ability to offer long-term contracts at a fixed and competitive price while providing the associated environmental benefits to meet existing and future renewable energy procurement and sustainability goals and mandates. In North Dakota, excellent wind resources create high-capacity factor generation, reducing the cost/megawatt hour (MWh). In general, alternative energy sources provide lower costs per megawatt hour than conventional sources (Lazard 2021).

In addition to traditional utility demand for renewable energy, a growing number of corporations are turning to renewable energy to save money on energy and meet their sustainability goals (CEBA 2021). Corporate customers either purchase renewable energy directly or obtain renewable benefits and cost savings through financially settled contracts, sometimes called virtual PPAs. In addition, many utilities are creating "green tariffs," which allow customers to purchase up to 100 percent renewable energy from the utility (EPA 2018). Corporations such as Apple, Google, and Facebook, along with many others, have recently set goals to obtain 100 percent of their energy from renewables.

These clean energy goals fuel the demand for corporate renewables procurement and subsequent PPAs. According to Wood Mackenzie's report titled an *Analysis of Commercial and Industrial Wind Energy Demand in the United States*, the United States is "at the beginning stage of a corporate renewables procurement boom," with approximately "85 gigawatts of renewable energy demand" from the "largest U.S. companies" alone through 2030 (Wood Mackenzie 2019). Another Wood Mackenzie report titled *US Corporate Procurement of Wind and Solar 2020* (Wood Mackenzie 2020) lists 2019 as "the largest year for megawatts of annual wind and solar C&I capacity additions and the largest year on record for new wind and solar C&I PPAs signed." These growth trends are expected to continue, and 2020 saw an immense demand for C&I renewable energy PPAs. Similarly, according to a 2019 research report, corporate contracts accounted for 22 percent of 2018 PPAs for renewables in the United States (Foehringer-Merchant 2019a). Further, the buyers are not just large corporations; smaller companies are entering into aggregated purchasing models and further driving additional market expansion (Foehringer-Merchant 2019b).

2.2. Alternatives

According to data published in Lazard's October 2021 Levelized Cost of Energy Analysis (Version 15.0), wind energy currently ranks among the most cost-effective sources of energy generation. In fact, in most cases, wind energy generation is considerably more cost effective than traditional generation technologies (Lazard 2021).

Due to the cost effectiveness of wind power, and the stated purpose of the Project to provide renewable energy, non-renewable energy generation sources were not considered as an alternative. In addition, other renewable energy resources would not likely be a practical alternative for the Project. As discussed in **Section 1.2.4**, the wind resource in the Project Area is ideal for wind energy generation. A ground-mounted solar facility capable of generating 251.6 MW would require large, contiguous tracts of land that would be taken out of production for the lifetime of the Project, as well as landowners willing to lease such acreage. Furthermore, as described in **Section 1.2.1**, Badger Wind has secured leasing agreements for an area large enough to support construction of a wind project exceeding 251.6 MW and is currently acquiring local permits necessary to begin construction of the Project. Other renewable energy sources, such as biomass and hydroelectric power, are not practicable in this location. There is not a reliable and sustainable fuel source in the area that would support a comparable biomass plant, nor are there sufficient hydrologic resources to support a hydroelectric plant capable of generating 251.6 MW.

2.3. Ten-Year Plan

Pursuant to NDCC Section 49-22-04 and NDAC Chapter 69-06-02, Badger Wind submitted a Ten-Year Plan for years 2022–2032 in February 2022. Badger Wind's Ten-Year Plan, included as **Appendix B**, is consistent with the contents of this Application.

3. SITE SELECTION CRITERIA

Badger Wind selected the Project Area based on a number of factors, including the excellent wind resource, support from landowners, regional demand for renewable energy, and compatibility with existing land uses and resources. In addition, site selection for the Project was based on the criteria outlined in NDAC Chapter 69-06-08. These criteria are discussed further below.

3.1. Exclusion Areas[1]

The geographical areas identified in Section 69-06-08-01(1) of the NDAC "must be excluded in the consideration of a site for an energy conversion facility." NDAC Section 69-06-08-01(2) also lists geographical areas that "must be excluded in the consideration of a site for a wind energy conversion facility."

Table 3-1 summarizes these Exclusion Areas and their presence or absence in the Project Area. Exclusion Areas within the Study Area and Project Area are depicted on **Figure 3: Exclusion Areas**.

Table 3-1: Summary of Exclusion Areas

General Exclusion Area	Present Within Project Area?	Description	Section Addressed
Designated or registered national: parks; memorial parks; historic sites and landmarks; natural landmarks; historic districts; monuments; wilderness areas; wildlife areas; wild, scenic, or recreational rivers; wildlife refuges; and grasslands.	None	N/A	6.2, 6.6, 6.7, 6.8, 6.12
Designated or registered state: parks; forests; forest management lands; historic sites; monuments; historical markers; archaeological sites; grasslands; wild, scenic, or recreational rivers; game refuges; game management areas; management areas; and nature preserves.	None	N/A	6.2, 6.6, 6.7, 6.8, 6.12
County parks and recreational areas; municipal parks; parks owned or administered by other governmental subdivisions; hardwood draws; and enrolled woodlands.	None	N/A	6.8, 6.9
Areas critical to the life stages of threatened or endangered animal or plant species.	None	N/A	6.16
Areas where animal or plant species that are unique or rare to this state would be irreversibly damaged.	None	N/A	6.16

[1] As defined in NDAC Section 69-06-01-01(8), exclusion criteria are "criteria that remove areas from consideration for energy conversion facility sites and transmission facility routes." Exclusion areas are characterized by one or more of these limiting criteria.

General Exclusion Area	Present Within Project Area?	Description	Section Addressed
Areas within 1,200 feet of the geographic center of an intercontinental ballistic missile (ICBM) launch or control facility.	None	No ICBMs are in Logan or McIntosh County.	4.2, 6.4
Areas within 30 feet [9.14 meters] on either side of a direct line between an ICBM launch facility and a missile alert or launch control facilities to avoid microwave interference. This restriction only applies to aboveground structures, not to surface features, such as roads, or belowground infrastructure.	None	No ICBMs are in Logan or McIntosh County.	4.2, 6.4
Additional Exclusion Areas for Wind Energy Conversion Facilities[2]			
1.1 times the turbine height from the nearest edge of an interstate or state roadway right-of-way (ROW).	Present	No turbines will be sited in these exclusion areas.	4.2
1.1 times the turbine height plus 75 feet from the centerline of any county or maintained township roadway.	Present	No turbines will be sited in these exclusion areas.	4.2
1.1 times the turbine height from the nearest edge of railroad ROW.	Present	No turbines will be sited in these exclusion areas.	4.2
1.1 times the turbine height from the nearest edge of a 115-kV or higher transmission line ROW	Present	No turbines will be sited in these exclusion areas.	4.2
1.1 times the turbine height from the property line of a non-participating landowner and three times the height of the turbine from an inhabited rural residence of a non-participating landowner unless a variance is granted. A variance may be granted if an authorized representative or agent of the permittee, the non-participating landowner, and affected parties with associated wind rights file a written agreement expressing all parties' support for a variance to reduce the setback requirement in this subsection. A non-participating landowner is a landowner that has not signed a wind option or an easement agreement with the permittee of the wind energy conversion facility as defined in NDCC Chapter 17-04.	Present	No turbines will be located in these exclusion areas.	4.2

[1]For the purposes of setbacks, Badger Wind assumed a turbine of up to 98 meters in hub height, with an up to 140-meter rotor diameter, and/or total tip height of 168 meters.

3.2. Avoidance Areas[2]

Pursuant to Section 69-06-08-01(3) of the NDAC, certain geographical areas "may not be approved as a site for an energy conversion facility unless the applicant shows that under the circumstances there is no reasonable alternative. In determining whether an avoidance area should be designated for a facility the Commission may consider, among other things, the proposed management of adverse impacts; the orderly siting of facilities; system reliability and integrity; the efficient use of resources; and alternative sites. Economic considerations alone will not justify approval of these areas. A buffer zone of a reasonable width to protect the integrity of the area must be included. Natural screening may be considered in determining the width of the buffer zone." Additional avoidance area for wind energy conversion facilities is set forth in NDAC Section 69-06-08-01(4).

Table 3-2 summarizes avoidance areas and their applicability to the Project. Avoidance areas within the Study and Project Areas are shown on **Figure 4: Avoidance Areas**.

Table 3-2: Summary of Avoidance Areas

Avoidance Area	Present Within Project Area?	Description	Section Addressed
Historical resources which are not designated as exclusion areas.	Present	Identified eligible cultural and architectural resources will be avoided.	6.7
Areas within the city limits of a city or the boundaries of a military installation.	None	No project infrastructure will be sited within city limits or the boundaries of a military installation.	6.4, 6.4
Areas within known floodplains as defined by the geographical boundaries of the 100-year flood.	No mapped floodplain data	N/A	6.12
Areas that are geologically unstable.	None	N/A	6.11

[2] As defined in NDAC 69-06-01-01(2), avoidance criteria are "criteria that remove areas from consideration for energy conversion facility sites and transmission facility routes unless it is shown that under the circumstances there are no reasonable alternatives." Avoidance areas have one or more of these limiting criteria.

Avoidance Area	Present Within Project Area?	Description	Section Addressed
Woodlands and wetlands.	Present	Wetlands and small woodlands and shelterbelts are present within the Project Area. Permanent impacts to wetlands have been avoided to the extent feasible. As currently designed, up to approximately 13.4 acres of temporary impacts, and less than 0.01 acres of permanent impacts to wetlands could occur as a result of project construction. Impacts to woodlands will be avoided to the extent practicable. As currently designed, the Project may impact approximately 0.03 acres of trees/shrubs. Where unavoidable, impacts have been minimized to the extent feasible. If impacts to trees and/or shrubs occur, Badger Wind will adhere to the Commission's tree and shrub mitigation specifications.	6.9, 6.13, 6.14
Areas of recreational significance that are not designated as exclusion areas.	None	N/A	6.8
Additional Avoidance Areas for Wind Energy Conversion Facilities			
A geographic area where, due to the operation of the facility, the sound levels within 100 feet of an inhabited residence or community building will exceed 45 A-weighted decibels (dBA). The sound level avoidance area criteria may be waived in writing by the owner of the occupied residence or the community building.	Present	A noise study was completed for the Project using GE 3.4-MW turbines at all potential turbine locations (**Appendices E and J**). With the exception of 9 receptors, modeled sound levels comply with the sound level requirement. For the 9 receptors with exceedances, Badger Wind has obtained or is in the process of obtaining written waivers. In the event waivers are not obtained, Badger Wind will take steps to ensure compliance with the sound level requirement.	6.5, **Appendix E Appendix J**

3.3. Selection Criteria[3]

Section 69-06-08-01(5) states that a "site may be approved in an area only when it is demonstrated to the Commission by the applicant that any significant adverse effects resulting from the location, construction, and operation of the facility in that area, as they relate to the following, will be at an acceptable minimum, or that those effects will be managed and maintained at an acceptable minimum." A summary of the selection criteria set forth in NDAC Section 69-06-08-01(5) is included in **Table 3-3**.

Table 3-3: Summary of Project Selection Criteria

Selection Criteria	Potential Adverse Effects from Project	Section Addressed
The Impact Upon Agriculture:		
(1) Agricultural production	Approximately 14,375 acres (about 45.6 percent) of the Project Area is identified as cultivated croplands or hay/pasture lands (refer to **Table 6-2**). The Project would result in permanent impacts to less than one percent of the total land cover within the Project Area.	6.2, 6.10
(2) Family farms and ranches	While some areas of agricultural production will be converted to a renewable energy generation resource during the life of the Project, the Project will provide additional income to these landowners in the form of lease income. Any economic losses are anticipated to be minor in comparison. Additionally, the Project has been designed to minimize impacts to family farms and ranches to the extent possible, and turbines have been set back from occupied dwellings in accordance with Commission requirements.	6.5, 6.9
(3) Land which the owner demonstrates has soil topography, drainage, and an available water supply that cause the land to be economically suitable for irrigation	Landowners have not expressed concerns relating to irrigation of their lands. No known irrigation system is present within the Project Area.	NA
(4) Surface drainage patterns and ground water flow patterns	The Project is not anticipated to result in adverse impacts to surface drainage or groundwater flow patterns.	6.11, 6.12

[3] As defined in NDAC 69-06-01-01 (14), selection criteria is defined as "criteria that guide and govern the selection of energy conversion facility sites and transmission facility corridors and routes in order to minimize adverse human and environmental impact after the exclusion and avoidance criteria have been applied."

Selection Criteria	Potential Adverse Effects from Project	Section Addressed
(5) The agricultural quality of cropland	Landowners will be compensated for project facilities sited on their properties and shall be reimbursed for lost revenues due to temporary construction impacts to crops. No adverse impacts to the agricultural quality of croplands are anticipated.	6.2, 6.10
The Impact Upon the Availability and Adequacy of the Following Categories:		
(1) Law enforcement	No adverse impacts anticipated.	6.3
(2) School systems and education programs	No adverse impacts anticipated.	6.3
(3) Governmental services and facilities	No adverse impacts anticipated.	6.3
(4) General and mental health care facilities	No adverse impacts anticipated.	6.3
(5) Recreational programs and facilities	No adverse impacts anticipated.	6.3
(6) Transportation facilities and networks	A temporary increase in vehicular traffic will occur within the Project Area during construction. Badger Wind will coordinate with local road authorities regarding haul routes. During operations, road use will generally be similar to other area traffic.	6.3
(7) Retail service facilities	No adverse impacts anticipated.	6.3
(8) Utility services	No adverse impacts to utility services are expected. Badger Wind will coordinate with KEM Electric Cooperative, Inc., and the MDU Company for electricity for the O&M facility and the South-Central Regional Water District for rural water or will drill a well.	6.3
The Impact Upon:		
(1) Local institutions	No adverse impacts anticipated.	6.3
(2) Noise-sensitive land uses	Noise-sensitive land uses within the Project Area include residences in proximity to turbine sites. However, Badger Wind has sited turbines to comply with applicable setbacks, and the Project will comply with the Commission's sound level requirement. With the exception of nine receptors modeled sound levels comply with the sound level requirement for the nine receptors with exceedances, Badger Wind has obtained or is in the process of obtaining written waivers (**Appendix J**)	6.5 **Appendix J**

Selection Criteria	Potential Adverse Effects from Project	Section Addressed
(3) Light-sensitive land uses	Turbine and MET tower lighting will be in accordance with FAA minimum standards, and, subject to FAA approval, Badger Wind will use commercially reasonable efforts to install a light-mitigating technology that is consistent with applicable requirements. Lighting of ancillary structures will be downward shielded.	5.2, 6.6
(3) Rural residences and businesses	No adverse impacts anticipated. Badger Wind has sited turbines to comply with applicable setbacks, and the Project will comply with the Commission's sound level requirement. With the exception of nine receptors modeled sound levels comply with the sound level requirement for the nine receptors with exceedances, Badger Wind has obtained or is in the process of obtaining written waivers (**Appendix J**)	6.5, 6.6 **Appendix J**
(4) Aquifers	No adverse impacts anticipated. The Wishek and Lower Wishek aquifers are at depths greater than proposed construction activities.	6.11
(5) Human health and safety	No adverse impacts anticipated.	6.4
(6) Animal health and safety	No adverse impacts to domestic animal health and safety are anticipated, and measures will be implemented to ensure construction impacts to livestock are avoided. Coordination is ongoing with NDGF and USFWS regarding minimization of impacts to wildlife.	6.9, 6.15, 6.16
(7) Plant life	Temporary and permanent impacts to vegetation will occur as a result of project development. Following construction, temporarily disturbed non-agricultural lands will be revegetated using a seed mix approved by the Natural Resources Conservation Service (NRCS) in accordance with the project reclamation plan. Agricultural lands will be reclaimed to landowner specifications, to the extent practical. In addition, a noxious weed management plan (**Appendix I**) will be implemented.	6.14, **Appendix I**
(8) Temporary and permanent housing	No adverse impacts anticipated. Temporary lodging needs will be filled in the form of rental housing or the use of hotels, which could provide short-term economic benefits.	6.1

Selection Criteria	Potential Adverse Effects from Project	Section Addressed
(9) Temporary and permanent skilled and unskilled labor	Badger Wind will encourage its Balance-of-Plant (BOP) contractor to source materials and the construction labor force from within North Dakota and/or areas near the Project, as commercially reasonable. Badger Wind anticipates its BOP contractor to develop a sourcing and workforce plan that seeks to achieve this goal within the parameters of the Project's requirements for safety, quality, schedule, and budget.	3.6
Cumulative Impact:		
The cumulative effects of the location of the facility in relation to existing and planned facilities and other industrial development	Development of the Project would not conflict with existing development plans of state, local, or private businesses. Cumulative impacts from the Project will be minimized by siting project infrastructure within areas of existing development to the extent practicable, including utilizing existing public and farm access roads as possible. The North Dakota Wind (I and II) facilities are located approximately 27 miles east of the Project Area.	6.2, 8.8

3.4. Policy Criteria[4]

In accordance with Section 69-06-08-01(6), "[t]he [C]ommission may give preference to an applicant that will maximize benefits that result from the adoption of the following policies and practices, and in a proper case may require the adoption of such policies and practices. The [C]ommission may also give preference to an applicant that will maximize interstate benefits." Policy Criteria considered by the Commission are summarized in **Table 3-4**, below.

Table 3-4: Summary of Policy Criteria

Policy Criteria	Applicant's Policies and Practices	Section Addressed
Recycling of the conversion byproducts and effluents	N/A	N/A
Energy conversion through location, process, and design	The Project has been sited and designed to maximize energy conversion efficiency.	1.2, 3.5
Training and utilization of available labor in this state for the general and specialized skills required	The Project will use skilled and trained laborers from North Dakota, to the extent feasible, within the parameters of the Project's safety, quality, budget, and schedule requirements.	6.1

[4] As defined in NDAC 69-06-01-01(12), policy criteria are "criteria that guide and govern the selection of energy conversion facility sites and transmission facility corridors and routes in order to maximize benefits during the construction and operation of a facility."

Policy Criteria	Applicant's Policies and Practices	Section Addressed
Use of a primary energy source or raw material located within the state	Energy generated by the Project will come from the wind resource within North Dakota. In addition, the Project, to the extent commercially reasonable, will utilize local sources for construction materials such as gravel for roads and turbine pads and aggregate for concrete.	1.2.4
Not relocating residents	The Project will not result in the relocation of residents.	6.1
The dedication of an area adjacent to the facility to land uses such as recreation, agriculture, or wildlife management	The Project will not interfere with adjacent land uses. As such, Badger Wind does not currently anticipate dedicating any adjacent areas for land uses such as recreation, agriculture, or wildlife management.	6.2, 6.15
Economies of construction and operation	With a nameplate capacity of 251.6 MW, Badger Wind will benefit from the economies of scale associated with project construction and operation. Because wind energy projects typically incur one-time costs that do not differ substantially with the scale of the project, larger-scale projects benefit from economies-of-scale advantages as they provide greater output with similar fixed costs. Examples of such fixed costs include procurement and construction of the project substation, crane mobilization, and on-site office space.	3.6
Secondary uses of appropriate or associated facilities for recreation and the enhancement of wildlife	None. The Project is compatible with existing wildlife and recreational uses.	N/A
Use of citizen coordinating committees	Badger Wind has coordinated and will continue to coordinate with landowners, local businesses, and organizations in the vicinity of the Project Area.	9.0
A commitment of a portion of the energy produced for use in this state	Energy generated by the Project will interconnect to the power grid at the Wishek Junction substation. The energy provided by the Project will be positioned to meet the local, regional, or national demand for renewable energy, and/or corporate or government renewable energy goals.	2.1
Labor relations.	No adverse impacts are anticipated.	N/A
The coordination of facilities	The Project has been sited with the consideration of existing facilities and facility corridors.	3.5, 3.6, 6.3, 6.4

Policy Criteria	Applicant's Policies and Practices	Section Addressed
Monitoring of impacts	Badger Wind will monitor construction activities and use appropriate best management practices (BMPs) during project construction. During project operation and reclamation activities, Badger Wind will monitor the Project to assess impacts and to achieve compliance with all requirements set forth in the Certificate. The Project's Bird and Bat Conservation Strategy (BBCS) (**Appendix H**) and Reclamation and Weed Management Plan (**Appendix I**) outline wildlife and revegetation monitoring measures, respectively.	5.1, 5.2, 6.14, 6.15, **Appendix H**, **Appendix I**
A commitment to install lighting mitigation technology for wind energy conversion facilities subject to commercial availability and FAA approval	The Project will utilize a light-mitigating technology system that is consistent with applicable requirements, subject to FAA approval.	5.2, 6.6

3.5. Design and Construction Limitations

In siting the Project, Badger Wind considered design and construction limitations related to the Project Area's wind resource, environmental constraints, setback requirements, interconnection to the transmission grid, and local landowner input. Badger Wind evaluated meteorological conditions within and around the Project Area to confirm that a 251.6-MW wind energy project would be economically viable at this location (refer to **Section 1.2.6**).

Interconnection capacity to the existing electrical grid was also considered in the design of the Project. Badger Wind has a generation interconnection queue position in MISO's DPP-2018-APR-West cluster and is currently under Generation Interconnection Agreement negotiations. Affected system studies with Minnkota Power Cooperative (MPC) and the Southwest Power Pool (SPP) are currently underway. Badger Wind is in the process of identifying an offtaker for the Project's energy output.

Site control has also been critical to the design of the Project. Badger Wind has secured or is in the process of finalizing voluntary wind energy lease agreements and easements with landowners for the Project Area.

Furthermore, site-specific constraints were considered in the design and siting of the Project. Badger Wind sited the Project to avoid or minimize impacts to sensitive environmental resources to the extent possible. Setbacks from occupied residences, non-participating landowner properties, and existing infrastructure, as required by the Commission and Logan County, were also considered in the design and siting of the Project. **Section 6.0** includes a more detailed discussion of site-specific resources and the BMPs and mitigation measures that will be implemented to avoid or minimize impacts to these resources.

3.6. Economic Considerations

The wind resource in a given area is the primary driver of the economic viability of wind energy projects. As discussed in **Section 1.2.6**, the meteorologic conditions within the Project Area are ideal for the development and operation of a wind energy project.

The Project would utilize the excellent wind resource within the Project Area to generate and supply renewable energy. Once operational, the Project would provide approximately USD 1.2M annually in direct economic benefits in the form of production taxes, in addition to direct payments to participating landowners. Furthermore, during construction, the Project would also result in indirect economic benefits to the area, including increased demand at local gas stations, hotels, and restaurants, and local purchases of construction supplies and materials including gravel, concrete, aggregate, and/or fuel.

4. DESCRIPTION OF THE PROPOSED FACILITY

4.1. Project Components

Project components, including turbines, associated facilities, and temporary facilities, are described in the following subsections. The project layout and estimated project facility impacts are also described. **Figure 2: Facilities Layout** shows the locations of the proposed project infrastructure described below.

4.1.1. Wind Turbines

The following subsections describe characteristics of the wind turbines that would be used for the Project.

4.1.1.1. Wind Turbine Technology and Characteristics

Wind turbines generate electricity by converting the kinetic energy of wind into rotational energy of the rotor. A hub connects the rotor and main shaft to a system of gears connected to a generator. The rotor utilizes blade pitch regulation and other technologies to optimize power output under various wind speeds and site conditions. Most modern wind turbines generate electricity in conditions ranging from approximately 2.7 to 24.6 m/s (about six to 55 miles per hour) (ACP 2021). Power electronics will convert generator output to the necessary output voltage and frequency, and an integrated wind speed and direction monitoring system will control "yaw" motion, maintaining the appropriate position of the turbine given current wind conditions. Each turbine will have low-noise trailing edge (LNTE) serrations on the turbine blades to reduce sound impacts. LNTE serrations will be the same color as the blades and will cover 20 to 30 percent of the trailing edge of the outboard blade length.

For analyses completed within this Application, Badger Wind utilized the GE 3.4-MW (3,400-kilowatt [kW]) turbine, the model currently being considered for the Project. **Table 4-1** describes the characteristics of the GE 3.4-MW turbine. However, wind turbine technology is rapidly evolving to become more efficient in converting wind energy to electricity. As a result, the turbine model ultimately selected for the Project may be different, depending on the technology available. Badger Wind plans to select the most appropriate technology in terms of cost effectiveness and optimization of land and wind resources. Regardless of the model selected, Badger Wind has sited the Project so that all proposed turbine locations meet exclusion and avoidance area criteria, as well as setbacks required by the Commission and Logan and McIntosh Counties for a turbine with an up to 98-meter (approximately 322.5-foot) hub height, an up to 140-meter (approximately 459.3-foot) rotor, and a total tip height of 168 meters (approximately 551.2 feet), thus providing flexibility in the selection of the turbine model. In addition, if the Project will utilize a model other than the GE 3.4-MW turbine, Badger Wind will provide the updated turbine specifications, sound modeling, and shadow flicker modeling to the Commission to demonstrate compliance with applicable requirements.

Table 4-1: Wind Turbine Characteristics

Characteristic	GE 3.4 MW
Nameplate capacity	3,400 kW
Hub height[1]	98 m (322.5 ft)
Rotor Diameter	140 m (459.3 ft)
Total height[2]	168 m (551.2 ft)
Cut-in wind speed[3]	3 m/s
Rated capacity wind speed[4]	13 m/s
Cut-out wind speed (sustained)[5]	26 m/s
Cut-out wind speed (gust)	35 m/s
Rotor Swept Area	15,394 m^2
Primary Turbine Positions	74
Alternate Turbine Positions	5

[1] Hub height = the turbine height from the ground to the top of the nacelle
[2] Total height = the total turbine height from the ground to the tip of the blade in an upright position
[3] Cut-in wind speed = wind speed at which the turbine begins operation
[4] Rated capacity wind speed = wind speed at which the turbine reaches its rated capacity
[5] Cut-out wind speed = wind speed at which the turbine shuts down operation

The Project nameplate capacity will be up to 251.6 MW. The Project's interconnection request will permit up to 250 MW to be delivered to the grid.

4.1.1.2. Rotor

The rotor diameter associated with the turbine model currently being considered is 140 meters (approximately 459.3 feet). The rotor consists of three blades mounted to a hub, which is then connected to the nacelle. The nacelle houses the generator, brake, and cooling systems, as well as other mechanical and electrical components.

4.1.1.3. Towers

Turbine towers will be composed of cylindrical tapered steel and typically will include three to four sections joined together by factory-fabricated welds. Welds are automatically controlled and inspected ultrasonically according to American National Standards Institute (ANSI) specifications. Tower surfaces are also sandblasted and coated by the manufacturer for protection against corrosion, generally in non-glare white, off-white, or gray. Tower sections within which the nacelle is mounted will be manufactured from steel plate and will have a hub height up to 98 meters (322.5 feet). Service platforms are provided at each level to allow access up the tower to the nacelle.

Each tower contains a control panel that houses electronic and communications equipment, including a wind speed and direction sensor that signals when winds are sufficient for operation of the turbine. An automated SCADA system will be located at the project substation to provide local and remote monitoring and control of turbine equipment and performance.

4.1.1.4. Lightning and Ground Protection

Lightning and ground protection for all project equipment is designed and constructed in accordance with prudent industry standards to maintain safety and reliability. Grounding and shielding components will be integrated into the foundation and structure of all equipment and conductor lines. Each turbine will contain conductive elements within the blades and a complete network of grounding and shielding components within each foundation, tower, and turbine.

4.1.1.5. Lighting

Turbines will be lit to satisfy the minimum requirements set forth by the FAA. The Project will also adhere to the light-mitigating technology requirements specified in NDCC Section 49-22-16.4. Subject to FAA approval, Badger Wind plans to use an ADLS. ADLS is a sensor-based system designed to detect aircraft as they approach an obstruction or group of obstructions. The system will function by monitoring the area near the Project (typically within three nautical miles) for aircraft. When an aircraft is detected in proximity to the Project, the FAA lights will automatically turn on until they are no longer needed by the aircraft (e.g., the aircraft clears the area). The components and specific locations of the ADLS system will be dependent on FAA's review of turbine technology, terrain, and other factors. The ADLS currently contemplated for the Project includes one ADLS tower that will be up to 90 meters high and will be set within a 50-square-foot enclosed area. Lighting of ancillary structures will be minimized, and downward-facing lights and/or motion-sensing lights will be installed, as practicable.

4.1.1.6. Foundation

Each turbine will be bolted to a concrete foundation. Foundation size and design will be finalized once a geotechnical analysis is complete, and the turbine model has been selected. For the purposes of this Application, Badger Wind estimates that the foundation will be approximately 65 feet in diameter and seven to 13 feet in depth.

4.1.1.7. Associated Facilities

Associated facilities include access roads, an underground electrical collection and communication system, permanent MET towers, an O&M facility, a project substation, and a temporary laydown yard.

4.1.1.8. Access Roads

Access roads will service each turbine location and will consist of compacted gravel roads. Locations of access roads will be selected in consultation with landowners to avoid or minimize impacts to existing land uses and the environment, to the extent practical. The temporary disturbance area for access roads may be up to 100 feet wide, and permanent road width will be approximately 16 feet wide. Access roads will be constructed with locally sourced material, if available. The access roads are designed to support the size and weight of large component trucks and maintenance vehicles. Following construction, temporary impact areas will be restored, as practicable, to pre-construction conditions, pursuant to landowner agreements.

4.1.1.9. Electrical Collection System and Communication System

An underground electrical collection system consisting of buried cables will interconnect all turbines to the project substation. The underground collection system will operate at a voltage up to 34.5 kV, and its location has been selected to minimize land impacts. A small number of aboveground junction boxes will be placed throughout the Project and will be marked with bollards or other markings. A temporary disturbance width of 75 feet will be used during construction to allow for the installation of the underground cable. No permanent impacts are anticipated aside from minor impacts associated with aboveground junction boxes, as land will be restored to pre-construction conditions, to the extent possible, following installation.

4.1.1.10. Meteorological Towers

Up to three permanent MET towers with ADLS will be constructed and will remain for the lifetime of the Project. The MET towers will provide data critical to assessing performance via instruments such as anemometers, wind vanes, temperature probes, and other atmospheric monitoring sensors that will be installed at several elevations on each project permanent MET tower. MET towers will also include data loggers and communication systems that provide remote reporting of the data being collected.

Currently, five potential permanent MET tower locations are being considered and are shown on **Figure 2: Project Facilities**; permanent MET towers will be constructed at only three of these locations. Permanent MET tower locations will be selected depending on the final layout of the Project; each MET tower will have sensors up to 98 meters above ground level (AGL) with a total height of approximately 101 meters AGL to allow a lighting protection system to extend above the upper-level sensor. If guy wires are required for MET towers, these will be marked with avian flight diverters. Temporary impacts required for MET tower construction will cover approximately 0.5 acres, and MET towers are anticipated to have a permanent impact footprint of 50 × 50 square feet.

4.1.1.11. O&M Facility

An O&M facility will be sited adjacent to the project substation and will serve as the operational offices for project staff and serve as a storage area for parts, equipment, and materials for the Project. The building at the O&M facility will be up to 5,000 square feet and will be sited within a one-acre enclosed parking lot. During construction, the approximate temporary impact area will be up to four acres. The permanent area of disturbance will be up to two acres, with the remaining acreage reclaimed following construction.

4.1.1.12. Project Substation

The project substation will be sited adjacent to the O&M facility and will be designed to step up voltage from the 34.5-kV collection system to the 230-kV transmission line voltage. The two-acre permanently enclosed substation area will include a control house, transformers, and steel for the high-voltage transmission line. The approximate area of temporary impacts will be up to five acres.

4.1.1.13. Temporary Facilities

Temporary facilities required for the construction of the Project include a three-acre temporary batch plant, as well as one 15-acre laydown yard for construction offices and an additional seven-acre multi-purpose laydown area to support the Project's construction activities. In addition, the Project may require a temporary ten-acre marshaling yard to assist with logistics during turbine component deliveries. Temporary crane paths have been sited to follow proposed access roads, collection line and existing grade when traveling between turbines. A temporary area, up to 100 feet wide, will be cleared of vegetation and large debris for use when cranes are traveling between turbines. Temporarily impacted areas will be restored to pre-construction conditions to the extent practicable, pursuant to landowner agreements.

4.2. Project Layout

As described in **Section 1.2.3**, the project layout consists of 79 potential wind turbine locations; this number includes five alternate turbine locations. In addition to turbines, the project layout includes proposed locations for collection and communication lines, access roads, the O&M facility, project substation, ADLS, and five potential locations for permanent MET towers (of which three will be constructed). The project layout is designed to accommodate the selected turbine model, as well as other turbines up to 98 meters in height, with an up to 140-meter rotor diameter and a total tip height of 168 meters.

Badger Wind has designed the Project to optimize electrical generation and efficiency while minimizing potential impacts to existing resources, infrastructure, and land use. Badger Wind has coordinated with landowners regarding infrastructure placement and has utilized existing roads, driveways, field edges, and other previously disturbed areas for access roads to the extent practicable. Badger Wind has worked and will continue to work diligently with its landowner partners throughout project development.

The Project has been sited to comply with the setback requirements of the Commission, as well as Logan County. Where setback requirements differ, the Project will adhere to the more stringent requirement. McIntosh County has not enacted zoning and, therefore, does not have setback requirements for wind energy projects; in these cases the Commission setback requirements have been used for the Project. Applicable setback requirements, as well as the Project's voluntary setback commitments, are identified in **Table 4-2**. Setbacks are measured from the closest edge of the turbine tower base to the closest edge of the referenced feature.

Table 4-2: North Dakota Public Service Commission and County Setback Requirements

Entity	Turbine Setback[1]
North Dakota Public Service Commission	
The geographic center of an ICBM launch facility or launch control facility	Areas within 1,200 feet of the geographic center
Direct line between an ICBM launch facility and a missile alert or launch control facilities to avoid microwave interference	Areas within 30 feet (9.14 meters) on either side of a direct line between an ICBM launch facility and a missile alert or launch control facility

Entity	Turbine Setback[1]
Nearest edge of an interstate highway or state roadway ROW	1.1 times turbine height
County or maintained township roadway	1.1 times the height of the turbine plus 75 feet from the centerline of the roadway
Nearest edge of a railroad ROW	1.1 times the height of the turbine
Nearest edge of a 115-kV or higher-voltage transmission line ROW	1.1 times the height of the turbine
Property line of a non-participating landowner	1.1 times the height of the turbine[2]
Inhabited rural residence of a non-participating landowner	3 times the height of the turbine[3]
Inhabited residence or community building	A wind energy conversion site must not include a geographic area where, due to the operation of the facility, the sound levels within 100 feet of an inhabited residence or a community building will exceed 45 dBA[4]
Logan County	
Turbine setback from the center of the existing ROW of the nearest public road	200 feet
Turbine setback from the center of the existing ROW of the nearest aboveground communication and electrical lines	200 feet
Wind Energy Facility Perimeter	2.5 times the rotor diameter of the turbine
Turbine setback from the nearest occupied dwelling, commercial building, or publicly used structure or facility	1.25 times the turbine total height or 750 feet, whichever is greater
Building and structure setback from county and state highway ROW	200 feet from county and state highway ROW
Building and structure setback from county road ROW	200 feet from the county road ROW
Tree plantings and shelterbelts planting setback from center of all roads (north, south, west, and east)	200 feet from center of all roads (north, south, west, and east), unless the guidelines set forth by the USDA-NRCS offices allow for a lesser setback
Non-farm structure setback from any public road ROW and 50 feet from any lot line of any lot of record	200 feet
Non-farm structure setback from any lot line of any lot of record	50 feet

Entity	Turbine Setback[1]

[1] Setbacks are based on a turbine up to 98 meters in hub height with an up to 140-meter rotor diameter and/or a total tip height of 168 meters. Required setback distances were converted and rounded to the next meter to ensure compliance.
[2] As set forth in NDAC Section 69-06-08-01(2), a variance may be granted if an authorized representative or agent of the permittee and affected parties with associated wind rights file a written agreement expressing all parties' support for a variance to reduce the setback requirement in this subsection. A non-participating landowner is a landowner who has not signed a wind option agreement or a wind easement, as defined in NDCC Chapter 17-04, with the permittee of the wind energy conversion facility.
[3] As set forth in NDAC Section 49-22-05.1(4), a variance from this setback requirement may be granted if an authorized representative or agent of the permittee, the non-participating landowner, and affected parties with associated wind rights file a written agreement expressing the support of all parties for a variance to reduce a setback requirement. A non-participating landowner is a landowner who has not signed a wind option or an easement agreement with the permittee of the wind energy conversion facility as defined in NDCC Chapter 17-04.
[4] The sound level avoidance area criteria may be waived in writing by the owner of the occupied residence or community building, as provided in NDAC Section 69-06-08-01(4).

4.3. Estimated Project Facility Impacts

As stated above, the project layout includes 79 potential turbine locations. Turbines and other project infrastructure have been sited to meet applicable Commission and Logan County setbacks; minimize environmental, cultural resource, and economic impacts; and optimize use of the wind resource. Of these locations, 74 turbines would be constructed. **Table 4-3** presents the approximate area of temporary and permanent impacts associated with all project infrastructure. Although only 74 turbines will be constructed, all 79 potential turbine locations and associated infrastructure (e.g., collection lines, access roads, etc.) have been included for calculations of potential impacts. Additionally, although only three permanent MET towers will be constructed, all five potential MET tower locations have been included for calculations of potential impacts. Furthermore, conservative temporary construction disturbance areas are assumed for these analyses. Thus, the actual area that will be disturbed is expected to be smaller than those reported herein.

Table 4-3: Summary of Temporary and Permanent Footprints from Project Facilities (acres)[1]

Project Facility	Description of Footprint	Temporary[2]	Permanent[2]
Turbines	79 turbines (includes five alternates), 50-foot radius turbine pad, 250-foot radius temporary construction workspace	272.45	14.24
Access Roads	16-foot-wide road, 100-foot-wide temporary construction workspace	388.12	73.95
Crane Paths	100-foot-wide temporary disturbance area	34.24	0.00
Electrical Collection and Communication Lines	75-foot-wide corridor for collection lines	575.96	0.00
ADLS	0.5-acre ADLS tower site	0.47	0.06

Project Facility	Description of Footprint	Temporary[2]	Permanent[2]
MET Towers	Five possible locations are included, but only three permanent MET towers will be constructed (the current project layout includes two alternate sites); each MET tower location has a 50-square-foot permanent disturbance area	0.00	0.27
Project Facilities	Includes laydown/staging areas, O&M facility, and substation footprints	90.20	3.73 (2.05 project substation; 1.68 O&M facility)
Total		1,361.44	92.26

[1] Because the Project has collocated facilities, double counting of potential impacts has been accounted for by first calculating permanent impacts, then calculating temporary impacts from electrical collection and communication lines (ground disturbance), then turbine workspace, crane paths, access roads, and facility footprints.

[2] Rounding has been applied to all values.

5. PROJECT CONSTRUCTION, OPERATION, AND DECOMMISSIONING

5.1. Project Construction

Numerous activities must be completed prior to commercial operation of the Project. A preliminary list of required pre-construction, construction, and post-construction activities for the Project includes the following:

5.1.1. Construction Activities

- Pre-construction:
  - Geotechnical analysis
  - On-site micro-sighting field visits to review all proposed infrastructure
  - Design of high-voltage electrical system, overhead transmission line, underground collection system, and project substation
  - Design of turbine foundations, access roads, temporary facilities, and permanent associated facilities
  - Underground utility and oil and gas facility discovery
  - Procurement of all necessary turbine and associated facility components (towers, nacelles, blades, foundation materials, and transformers)
- Construction:
  - Construct temporary laydown yards and construction management facility
  - Construct temporary intersection modifications to facilitate turbine component delivery
  - Construct access roads and install underground collection lines
  - Construct permanent MET towers
  - Construct project substation
  - Install tower foundations and associated turbine electrical transformers
  - Erect tower components and set turbines
- Post-Construction:
  - Restore temporarily disturbed areas not intended for permanent aboveground facilities
  - Test facility

- Begin commercial production

Badger Wind will continue to coordinate with townships, McIntosh and Logan Counties, and/or the North Dakota Department of Transportation (NDDOT) to obtain necessary haul route permits. Badger Wind will also obtain necessary permits to cross or bore under state, county, and township roads for the installation of collection lines and will negotiate road use and maintenance agreements with the applicable county and township road authorities, as required. As needed, drainage systems and culverts will be installed or modified in accordance with all federal, state, and local regulations.

During construction, equipment and work vehicles will travel to and from the site. Peak construction is anticipated to be in summer during installation activities and early fall when the majority of the foundations, access roads, electrical, and substation work is taking place. Upon completion of construction, heavy equipment will be removed from the Project.

5.1.2. Construction Management

Badger Wind will be responsible for the coordination and scheduling of the following project construction activities:

- Obtaining necessary building, electrical, grading, road, and utility permits
- Project civil, structural, and electrical engineering
- Conducting surveying and geotechnical analysis
- Forecasting and planning project labor needs
- Facilitating subcontractor involvement
- Securing construction materials
- Scheduling and coordinating delivery of construction materials
- Overseeing construction tasks, including site and access road development, foundation excavation and pouring, electrical and communications installation, turbine and MET tower erection, substation installation, system testing, and ADLS installation
- Managing the project budget

Coordination between Badger Wind and construction teams will be ongoing throughout construction. Likewise, the construction manager will correspond with local authorities and landowners throughout the construction phase.

5.2. Commissioning

Once project construction has been completed, the Project will be comprehensively inspected and tested prior to commissioning. Each wind turbine component, as well as project electrical, meteorological, communication, and SCADA systems, will undergo testing and inspection.

5.3. Project Operation and Maintenance

Prior to commencement of project operation, O&M staff will be integrated into project construction, as appropriate for project coordination. Staff will work with construction management to facilitate transition from the construction phase to commissioning and commercial operation of the Project.

5.3.1. Supervisory Control and Data Acquisition System

Each wind turbine will be equipped with SCADA controller hardware, software, and database storage capability. This system will provide information on the generation, availability, meteorological conditions, and communications for each turbine, allowing for remote monitoring, reporting, troubleshooting, and control of turbine equipment and performance. The SCADA system enables constant monitoring of the Project and transmission of alerts of communication errors to a remote operations center. Permanent O&M staff will perform maintenance and service for the Project with the aid of this system.

5.3.2. Light-Mitigating Technology

Light-mitigating technology (ADLS) will be installed in accordance with applicable requirements and subject to FAA approval. See **Section 4.1.1.5** for additional details.

5.3.3. Maintenance Schedule

Badger Wind anticipates the following schedule for proposed maintenance activities:

- **First Service Inspection —** The first service inspection will occur one to three months following commissioning of the Project. The inspection will focus on oil filtering, greasing, and bolt tightening.
- **Semi-Annual Service Inspection —** Semi-annual inspections will begin six months after the first service inspection. These will primarily consist of lubrication and safety testing.
- **Annual Service Inspection —** The annual inspection will include lubrication, safety testing, bolt tightening, and a full check of components.
- **Two-Year Service Inspection —** The two-year inspection will include lubrication, safety testing, bolt tightening, a full component check, and terminal connector tightening.

- **Five-Year Service Inspection —** The five-year inspection will include lubrication, safety testing, bolt tightening, a full component check, inspection of the braking system, oil and grease testing, terminal connector tightening, and a balance check.

5.4. Decommissioning and Restoration

Once the Project has reached the end of its operational life, Badger Wind will decommission the Project per North Dakota Wind Turbine Decommissioning Guidelines (NDAC Article 69-09-09) and the Logan County Zoning Ordinance Section 6.11.4.4 (Restoration of Property). Unless waived by the Commission in accordance with NDAC Section 69-09-09-05(2), these actions will include the following:

- Dismantling and removal of all towers, turbine generators, transformers, fencing, overhead cables, inverters, substations, and other equipment
- Removal of underground cables to a depth of 24 inches, cables buried deeper than 24 inches will remain in place
- Removal of foundations, structures, and ancillary equipment to a depth of four feet
- Site restoration and reclamation to the approximate original topography that existed prior to construction of the facility with topsoil respread over the disturbed areas at a depth similar to that in existence prior to the disturbance
- Grading and restoring topsoil of areas disturbed by the facility and reseeding according to NRCS recommendations, unless the Commission approves an owner request signed by the applicable landowner identifying the surface features the landowner would like to keep in place and the reason the landowner prefers to keep those features

Pursuant to NDAC Section 69-09-09-06, Badger Wind will submit a decommissioning plan to the Commission prior to project operation. Badger Wind will comply with all applicable financial assurance requirements.

6. ENVIRONMENTAL ANALYSIS

6.1. Demographics

The following sections describe existing demographics, potential impacts, and proposed avoidance/minimization measures.

6.1.1. Existing Conditions

The Project is located in south-central North Dakota, in a predominantly rural agricultural region in Logan and McIntosh Counties. The Project Area overlaps portions of Red Lake and Starkey Townships and 11 unorganized territories. The closest incorporated community is the City of Wishek, which is near the eastern Project Area boundary. Demographic data for the Project Area was obtained from the U.S. Census Bureau Quickfacts website. Badger Wind has opted to use census data from 2019 because the COVID-19 pandemic significantly disrupted the U.S. Census Bureau's data collection efforts for the American Community Survey in 2020 (Villa Ross et al. 2021). Data are presented at the state and county levels in **Table 6-1**.

Table 6-1: Demographics in the Project Area

Counties and Townships	North Dakota	Logan County	McIntosh County
American Community Survey Population Estimates 1 July 2019	762,062	1,850	2,497
2019 Estimated Total Vacant Housing Units	56,455	287	527
Per Capita Income 2015–2019 (U.S. 2019 Dollars)	USD 36,062	USD 32,619	USD 32,131
Unemployment Rate (%)	1.8	0.5	0.2
Persons Living Below the Poverty Level (%)	10.6	13.2	13.9
Top Three Industries	1. Health care and social assistance 2. Retail trade 3. Manufacturing	1. Agriculture, forestry, fishing, and hunting 2. Health care and social assistance 3. Educational services	1. Agriculture, forestry, fishing, and hunting 2. Health care and social assistance 3. Construction

Sources: (U.S. Census Bureau 2019a; U.S. Census Bureau 2019b; U.S. Census Bureau 2019c)

According to the 2019 census, the population of Logan County was 1,850 people, showing a decrease of 6.9 percent from 2010. The county seat of Logan County is Napoleon, located approximately 8.9 miles northwest of the Project Area. The population of McIntosh County was 2,497 people in 2019, which represents a decrease of 11.2 percent from 2010 (U.S. Census Bureau 2019a). The county seat of McIntosh County is Ashley.

As shown in **Table 6-1**, the per capita annual incomes in Logan and McIntosh Counties are slightly lower than in North Dakota as a whole (U.S. Census Bureau 2019b). The unemployment rates in Logan and McIntosh Counties are 0.5 and 0.2 percent, respectively; those rates are lower than the state unemployment rate of 1.8 percent. The proportion of people living below the poverty line is moderately lower for the entire state, at 10.6 percent, compared to Logan and McIntosh Counties, at 13.2 and 13.9 percent, respectively. The top three industries in Logan County are agriculture, forestry, fishing, and hunting; health and social assistance; and educational services. McIntosh County has the same top two industries as Logan County, but construction is the third largest industry. Statewide, the health care and social assistance services industry employs the majority of workers, followed by retail trade and manufacturing (U.S. Census Bureau 2019b).

6.1.2. Demographic Impacts and Avoidance/Minimization Measures

The Project is expected to result in socioeconomic benefits for the local population and will not impact long-term population trends. The Project will be socioeconomically beneficial to landowners, local governments, and communities because it will provide additional income in the form of lease payments to landowners, which could raise the per capita income in Logan and McIntosh Counties. Badger Wind has designed the Project to minimize impacts to family farms and ranches to the extent practicable, and any economic losses are anticipated to be minor in comparison to additional income provided by the Project. Furthermore, the Project will increase the local tax base, thereby benefitting local governments and communities. Additionally, multiple studies have shown that property values are not impacted by the presence of a wind energy conversion facility.[5]

Approximately 400 temporary personnel, both skilled and unskilled, would be required for project construction. Badger Wind will employ up to ten full-time workers during operations. In 2022, prior to construction, Badger Wind will host an event to procure local workers. Badger Wind will encourage its BOP contractor to source materials and the construction labor force from within North Dakota and/or areas near the Project, to the extent commercially reasonable. Badger Wind anticipates its BOP contractor to develop a sourcing and workforce plan that seeks to achieve this goal within the parameters of the Project's requirements for safety, quality, schedule, and budget.

Non-local temporary workers would need temporary housing during the period of construction, which is expected to occur from September 2022 through October 2023. Although the Project may increase demand for housing during the construction phase, according to the U.S. Census Bureau's 2019: Community Survey 5-year Estimates, 887 vacant housing units may be present within Logan and McIntosh Counties. This number of potentially vacant housing units would be enough to house non-local workers throughout project construction. Furthermore, demand for lodging could provide a temporary increase in revenue in the area.

[5] See Hoen, Brown, and colleagues (2013); Hoen, Wiser, and colleagues (2009); and Atkinson-Palombo and Hoen (2014). Furthermore, in two 2018 rulings relevant to this Application, the Commission concluded that there is "no record evidence that property values will be adversely affected," (2018a: paragraph 55) and "There was no credible showing that there will be quantifiable or qualitative effect on property value" (2018b: paragraph 60).

Construction of the Project could also provide temporary revenue increases in the area through increased demand for food services, fuel, goods, and services. Personal income could also be generated by circulation and recirculation of dollars paid out by the Project as business expenditures and state and local taxes.

Long-term beneficial impacts to the tax bases of Logan and McIntosh Counties, as a result of the construction and operation of the Project, will have an additional positive impact on the local economy in this area of North Dakota. In addition to the creation of jobs and personal income, the Project would pay an Electric Generation Tax of USD 2.50 per kilowatt times the rated capacity of the turbine, as well as one-half of one mill per kilowatt-hour of generated electricity (NDCC Section 57-33.2-04). Thus, Badger Wind would pay approximately USD 23.5M in taxes to Logan and McIntosh Counties over 30 years and would pay approximately USD 11.6M in state taxes to the State General Fund over the operational life of the Project.

The proposed Project could increase demand on the labor force in Logan and McIntosh Counties and for local housing during construction; however, the construction period is only temporary. Overall, Badger Wind anticipates that the Project will be socioeconomically beneficial to the local population and will not impact long-term population trends. Further, the Project would not result in relocation of residences, and turbine placement complies with applicable setbacks from occupied residences. The Project will also comply with the Commission's sound avoidance requirement outlined in NDAC Section 69-06-08-01. Thus, no additional mitigation measures are anticipated to be required.

6.2. Land Cover, Land Use, and Zoning

The following sections describe the existing land cover, land uses, and zoning within the Study Area and Project Area, potential impacts from construction and operation of the Project, and proposed mitigation measures.

6.2.1. Existing Conditions

6.2.1.1. Land Cover

The Study Area is in a rural and predominately agricultural area. Existing landcover within the Study Area and Project Area is characterized using LANDFIRE's Existing Vegetation Type (EVT) dataset (USGS 2020). Some cover types were grouped into appropriate broader categories to define the land cover types within the Study Area and the Project Area, as summarized in **Table 6-2.** The majority of the Study Area is cropland (57.6 percent), with mixed-grass prairie and planted grassland as the second and third most dominant land cover types, respectively. The Project Area is composed of the same dominant cover types with some slight variability in percentages. As detailed in **Table 6-2**, 14 other cover types compose less than 20 percent of the land cover within both the Study Area and the Project Area.

Table 6-2: Land Cover Types and their Relative Abundance in the Project Area

Land Cover	Study Area		Project Area	
	Acres	Percent	Acres	Percent
Badlands	6.2	<0.1	0.0	0.0
Cropland	72,543.8	57.6	12,382.5	39.3
Developed	76.2	0.1	7.8	<0.1
Herbaceous Wetland	6.4	<0.1	0.9	<0.1
Mixed-grass Prairie	22,528.6	17.9	9,206.0	29.2
Open Water	178.0	0.1	19.3	0.1
Pasture/Hayland	5,253.3	4.2	1,992.3	6.3
Planted Grassland	13,387.9	10.6	4,629.1	14.7
Planted Herbaceous	564.5	0.4	100.4	0.3
Planted Woodland	534.8	0.4	136.9	0.4
Prairie Pothole	285.0	0.2	100.8	0.3
Riparian Herbaceous	6,856.9	5.4	2,104.7	6.7
Riparian Woodland	30.3	<0.1	10.0	<0.1
Roads	3,507.8	2.8	776.0	2.5
Shrubland	35.2	<0.1	7.3	<0.1
Tallgrass Prairie	4.4	<0.1	1.6	<0.1
Wooded Draw/Ravine Woodland	154.8	0.1	38.1	0.1
Total	**125,954.2**	**100**	**31,513.8**	**100**

Source: (USGS 2020)

6.2.1.2. Land Use and Ownership

Land within the Study Area and Project Area is used primarily for agricultural production (crops and livestock). Smaller portions of the site are used for residential purposes (isolated farmsteads). Federal and state ownership interests are present in the Study Area and the Project Area, as shown in **Table 6-3**. **Figure 7: Existing Public Lands and Easements** shows the locations of public lands and easements in relation to the Study Area and Project Area.

Table 6-3: Land Ownership in the Study Area and Project Area

Agency	Acres in Study Area	Acres in Project Area
Bureau of Land Management	**0**	**0**
Grazing Allotments	0	0
U.S. Fish and Wildlife Service	**7,001.5**	**2,418.0**
Fee Owned Waterfowl Production Areas	101.5	0
Easements (grassland)	1,559	276
Easements (wetlands)	5,341	2,142

Agency	Acres in Study Area	Acres in Project Area
National Wildlife Refuges	0	0
U.S. Department of Agriculture	**0**	**0**
Conservation Reserve Program	0	0
State of North Dakota	**20,201.23**	**4,819.01**
Private Lands Open to Sportsmen	384.89	0
Wildlife Management Areas	0	0
North Dakota State Lands	19,816.34	4,819.01
Surface Trust Lands	692.85	14.62
Mineral Rights Trust Lands	19,123.49	4,804.39

Source: (North Dakota GIS Technical Committee 2021)

In North Dakota, the Bureau of Land Management (BLM) designates and manages livestock grazing allotments on public lands owned by the BLM, private lands, state lands, and lands under the jurisdiction of other federal agencies (BLM 2021). No BLM-managed grazing allotments are present within the Project Area or Study Area.

The Conservation Reserve Program (CRP) is a land conservation program administered by the U.S. Department of Agriculture (USDA) Farm Service Agency (FSA) with technical support provided by the USDA NRCS. Landowners can agree to enroll their land in the CRP, essentially taking the land out of agricultural production for a period of ten to 15 years, in exchange for annual payments. Most often, lands enrolled in the CRP are not identifiable using publicly available data. Badger Wind has coordinated with the state and local FSA and NRCS offices, as well as landowners, to identify any areas of CRP-enrolled land within the Project Area. At the time of submitting this Application, no CRP parcels have been identified.

The U.S. Fish and Wildlife Service (USFWS) manages fee-owned Waterfowl Production Areas (WPAs) to protect breeding, forage, shelter, and migratory habitat for waterfowl or wading birds, such as ducks, geese, herons, and egrets. WPAs provide opportunities for viewing wildlife and intact ecosystems. One fee-owned WPA is present in the Study Area, and none are present within the Project Area.

The USFWS also manages National Wildlife Refuges (NWRs) with the purpose of creating a network of lands and waters to conserve, manage, and restore the nation's wildlife, fish, and plant resources. No NWRs are within the Study Area or Project Area. The nearest NWR, Appert Lake, is located approximately 26 miles north of the Project Area.

USFWS grassland and wetland easements are present within the Study Area and Project Area. Although USFWS grassland easements protect the entirety of the parcel(s) subject to a given easement, only a wetland easement protects the wetland basin(s) present. In all, 1,559 acres and 5,341 acres of grassland and wetland easements, respectively, are within the Study Area. In all, 276 acres and 2,142 acres of grassland and wetland easements, respectively, are within the

Project Area. In some instances, these easements overlap; therefore, the total adjusted acreages for easements within the Study Area and Project Area are 5,422 and 2,228 acres, respectively.

In North Dakota, Private Land Open to Sportsmen (PLOTS) lands are private lands open to public use for hunting and bird watching. The PLOTS program offers rental payments to landowners in exchange for walk-in access for hunters during the state's hunting seasons. PLOTS lands are administered through an agreement between the NDGF and individual landowners and are managed by NDGF. Approximately 384.89 acres of PLOTS lands are present within the Study Area, and no PLOTS lands are in the Project Area. Three PLOTS parcels are located on the western side of the Study Area: one in a northwestern section inside the Study Area and two parcels in the southwestern section immediately adjacent to the Project Area. More information about the public use of these sites can be found in **Section 6.8**.

The NDGF also manages Wildlife Management Areas (WMAs) across the state. These areas are open to hunting, fishing, trapping, hiking, camping, and other forms of recreation. No WMAs are present in the Study Area or the Project Area. The nearest WMA is located 2.24 miles to the northeast in Logan County.

Badger Wind reviewed publicly available information to identify North Dakota Department of Trust Lands (NDDTL) within the Study Area and Project Area. NDDTL manages trust lands on behalf of the Board of University and School Lands. Surface trust lands generate income through leases for grazing or agricultural use. Mineral rights trust lands generate income through leases for oil and gas, coal, potash, and other mineral extraction. In all, 692.85 acres of surface trust lands and 19,123.49 acres of mineral rights trust lands are within the Study Area. Of these, 14.62 acres of surface trust lands and 4,804.39 acres of mineral rights trust lands are within the Project Area.

Water wells and oil and gas wells are within the Study Area and Project Area. In all, 74 domestic, stock, industrial, or observational water wells are in the Study Area. Of these, 21 are located within the Project Area (ND State Water Commission 2021). Ten dry oil and gas wells are within the Study Area; two of these are within the Project Area. No active oil and gas wells were identified (ND DMR 2022).

No concentrated residential developments are present within the Study Area or Project Area, though residences and farmsteads are present in both areas. In total, 61 residences or farmsteads are in the Study Area; of these, 23 are located within the Project Area.

6.2.1.3. Zoning

According to Section 6.11.3 of the amended Logan County Zoning Regulations (Logan County 2018), construction and operation of a wind energy facility in Logan County requires a Wind Energy Facility Siting Permit from Logan County. Badger Wind is coordinating closely with Logan County and plans to submit its Wind Energy Facility Siting Permit application in March 2022.

McIntosh County has not enacted a zoning ordinance; as such, the Project will not require any zoning permits/approvals from McIntosh County. According to a letter from the Chair of the

Board of Commissioners for McIntosh County, the Project is not located within any townships in McIntosh County that have their own zoning ordinances (**Appendix D**).

6.2.2. Land Cover, Land Use, and Zoning Impacts and Avoidance/Minimization

Construction of the Project will result in the conversion of a portion of the land within the Project Area from existing land uses to a renewable energy resource for the life of the Project. In addition, temporary land use impacts associated with construction of the Project may result in short-term changes to existing land use. Temporary land use impacts would be associated with marshaling and laydown areas, the temporary batch plant, crane paths, and installation of underground collection and communication lines. Following construction, these temporarily disturbed areas will be restored to their pre-construction land use. Temporarily disturbed areas will be reclaimed, fertilized, and reseeded according to NRCS recommendations, unless otherwise specified by the landowner and approved by the Commission, as detailed in **Appendix I**.

Table 6-4 presents the anticipated impacts on land cover categories as a result of construction and operation of the Project.

Table 6-4: Project Summary of Land Cover Impacts

Land Cover Type	Impacts	
	Temporary (acres)[1]	Permanent (acres)[1]
Cropland	907.58	65.34
Developed	0.87	0.02
Mixed-grass Prairie	184.12	9.28
Pasture/Hayland	67.88	4.15
Planted Grassland	62.20	2.61
Planted Herbaceous	10.90	0.43
Planted Woodland	12.22	0.75
Prairie Pothole	0.48	0.00
Riparian Herbaceous	27.96	0.74
Riparian Woodland		0.00
Roads	87.23	8.94
Tallgrass Prairie		0.00
Wooded Draw/Ravine Woodland	0.01	0.00
Total	**1,361.45**	**92.26**

Source: (USGS 2020)

[1] Rounding has been applied to all values.

Construction of the Project will temporarily impact approximately 1,361.45 acres of land. Approximately 66 percent of the temporary impacts will occur on land categorized as cropland, and 14 percent of the impacts will occur on land categorized as mixed-grass prairie, with the remaining temporary impacts occurring on other land cover types. Impacts related to construction workspaces at turbine sites and access roads, the temporary batch plant,

installation of underground collection and communication lines, and use of crane paths and laydown yards will be temporary and will terminate with the completion of construction.

Impacts from turbines, access roads, the O&M facility, permanent MET towers, the ADLS tower, and the project substation will be long term and will convert existing land uses to a renewable energy source for the life of the Project. In total, the Project will impact approximately 92.26 acres of land during the life of the Project. Approximately 71 percent of this permanent impact will occur on land categorized as cropland, 10 percent will occur on land categorized as mixed-grass prairie, and the remaining permanent impacts will occur on other land cover types. Badger Wind designed the Project to minimize impacts to land use and land cover by collocating linear facilities (i.e., access roads, crane paths, and collection lines) to the extent practicable. In some cases, siting linear facilities in previously disturbed areas and minimizing siting in unbroken grasslands means the facilities will traverse longer distances.

Badger Wind does not expect that the permanent conversion of 92.26 acres of land to a renewable energy source will impact broader existing land use patterns. Agricultural activities, including grazing and cultivation, may continue in the Project Area during the life of the Project. The Project also does not conflict with the existing development plans of state, local, or private entities within the Project Area because the Project generally avoids developed areas. Lease payments will be paid to landowners for placement of project facilities to offset loss of income from permanent impacts to land used for agriculture.

As there are no BLM-managed grazing allotments present within the Project Area or Study Area, the Project will not impact these resources, and no mitigation is necessary.

Badger Wind is coordinating with the state and local FSA and NRCS offices, as well as landowners, to identify CRP areas within the Project Area and Study Area. To date, no parcels enrolled in the CRP have been identified in the Project Area; however, if identified in further coordination with landowners, Badger Wind will coordinate with the landowners and these agencies to determine appropriate reclamation programs for temporarily disturbed land or offset payment requirements for any land that is permanently impacted by the Project.

No USFWS-managed NWRs were identified within the Project Area or Study Area. USFWS grassland, waterfowl, and wetland easements are present in the Project Area. Underground collection lines are sited on USFWS grassland easements in two areas. Badger Wind will bore under these USFWS grassland easements to avoid impacts when installing the underground collection lines; accordingly, no impacts to these easements are anticipated. Impacts are anticipated to occur within USFWS wetland easements in the northeastern portion of the Project Area; however, the Project obtained leases for these parcels prior to the USFWS obtaining the easements. As such, there is no regulatory requirement to avoid impacts to these easements; nevertheless, Badger Wind will avoid impacts to wetlands within these parcels, as feasible. Badger Wind has been coordinating regularly with the USFWS Kulm office to determine best approaches for construction to minimize or avoid impacts to the USFWS easement areas and will obtain any required USFWS authorizations.

No PLOTS lands are present within the Project Area. Because no PLOTS lands are within the Project Area, the Project will not impact PLOTS lands. Additionally, because no WMA are within the Project Area, the Project will not impact these resources.

Badger Wind has designed the Project to avoid permanent impacts to state-managed land, including NDDTL-managed surface and mineral trust lands to the extent practicable; nevertheless, temporary and permanent impacts totaling 249 acres and 19 acres, respectively, will occur. These impacts are associated with construction of access roads, crane paths, electric fiber, turbines, and MET towers.

Impacts to water wells will be avoided. Badger Wind may potentially use existing wells or create new wells, as necessary. Badger Wind has voluntarily sited turbines 168 meters (approximately 551 feet) (turbine tip height) away from inactive oil and gas wells in the Project Area; no active oil and gas wells were identified within the Project Area. Further discussion of potential impacts and mitigation strategies for inactive oil and gas wells within the Project Area are discussed in **Section 6.11**.

As noted above, Badger Wind is coordinating with Logan County and plans to file its Wind Energy Facility Siting Permit application in March 2022. Badger Wind has designed the Project to comply with the applicable Logan County permitting requirements. McIntosh County does not currently have a zoning ordinance; therefore, no impacts to zoning are anticipated.

Following decommissioning, the Project Area will be restored to natural topography contours to the extent possible.

6.3. Public Services

The following sections describe existing public services in the Study Area and Project Area, potential impacts, and proposed avoidance/minimization measures.

6.3.1. Existing Conditions

Data identifying public services and infrastructure in the Project Area, including transportation ROWs, known transmission lines, and telecommunication facilities, were analyzed to assess potential project impacts. No missile silos were identified within the Project Area or Study Area. Specific categories of public infrastructure are discussed below. **Figure 8: Existing Infrastructure** depicts existing public infrastructure in the Study Area.

6.3.1.1. Local Services

The Project is located in rural south-central North Dakota. A network of roads and utility infrastructure provides access, electricity, water supply, and telephone service to rural residences, farmsteads, small industry, and unincorporated areas. Water wells and septic systems are typically used in the Project Area. The nearest city, Wishek, borders the Project Area and has its own police department, which will service the southern portion of the Project Area within McIntosh County. Napoleon, a city located 8.7 miles northwest of the Project Area,

maintains a police department that will service the northern portion of the Project Area within Logan County. The entire Project Area is within the Wishek Rural Fire and Ambulance Districts.

6.3.1.2. Electrical Services

Electrical service in the Project Area is provided by KEM Electric Cooperative, Inc., and the MDU. Electrical infrastructure includes distribution and transmission lines. According to the publicly available U.S. Energy Mapping System, two high-voltage transmission lines (230 kV and 345 kV) transect the Project Area (EIA 2019). Additionally, small underground and overhead distribution lines are present, which serve nearby farmsteads, residential properties, and commercial areas. One existing substation was identified within one mile of the northeast boundary of the Project Area.

6.3.1.3. Roads

Existing road infrastructure in the Study Area and Project Area includes county and township roads that typically follow section lines, as well as farmstead driveways and farming access roads. No federal highways go through the Project Area. North Dakota State Highways 13 and 3 are the main access routes to the Project Area and to nearby communities. County roads and township roads are either two-lane paved roads or gravel roads and will abut private access roads to the proposed turbine locations. Existing roads will also be improved in coordination with Logan and McIntosh Counties.

According to NDDOT data, the average daily traffic of Highway 13 and Highway 3 was 350–749 vehicles in 2019. The section of Highway 13 that crosses the city of Wishek recorded an average usage of 750–1,999 vehicles in 2019 (NDDOT 2020).

6.3.1.4. Railroads

The Soo Line Railroad runs north–south through approximately 7.1 miles of the northern portion of the Project Area. The railroad travels through the City of Napoleon and the City of Wishek.

6.3.1.5. Water Supply

Rural water is supplied to the Project Area by the South Central Regional Water District (ND DWR 2021a). Rural residences in the area also commonly utilize private wells for household and agricultural purposes. According to data from the North Dakota Department of Water Resources (ND DWR), 74 domestic/irrigation/observational water wells are in the Study Area; of these, 21 are within the Project Area (ND DWR 2021b).

6.3.1.6. Telephone, Microwave, Radio, and Television Communications

A Communication Tower Study was conducted within the Project Area to identify communication towers and antennas licensed by the Federal Communications Commission (FCC) in the Project Area (**Appendix C**). Twenty-three FCC-licensed antennas were identified in the Project Area, 11 of which are located on communication towers located in the Project Area; the other antennas are likely affixed to other structures, such as silos, rooftops, and monopoles. Six communication

tower structures are in the Project Area; four of the towers are land mobile towers, one is a cellular tower, and one contains land mobile, cellular, and microwave antennas. No amplitude modulation/frequency modulation (AM/FM) radio towers are in the Project Area.

Five towers in the Project Area provide land mobile service. Additionally, a Land Mobile and Emergency Services Report completed for the Project identified 243 mobile licenses with radii that overlap the Project Area (**Appendix C**).

One microwave tower is in the Project Area. The Microwave Path Analysis conducted for the Project identified two microwave beam paths between the City of Forbes and City of Wishek that overlap the Project Area (**Appendix C**).

No AM or FM radio towers were identified within 30 kilometers (km) of the Project Area. The nearest AM station is KSJB, which is 80.51 km northeast of the Project Area. The nearest FM station is K263AP, which is 65.03 km west of the Project Area.

The Off-air TV Analysis conducted for the Project concluded that no television (TV) stations are located within the Project Area (**Appendix C**). Nineteen licensed and operating TV stations were identified within 150 km of the Project Area (TV stations within 150 km are most likely to provide off-air coverage that could overlap with the Project Area). The nearest TV station is KJRE, which is 48 km east of the nearest proposed turbine. Summary tables of FCC-licensed communication towers and antennae, regional emergency mobile service licenses, microwave beam paths, and licensed and operated TV stations that can be found within or in proximity to the Project Area can be found in **Appendix C.**

6.3.2. Public Services Impacts and Avoidance/Minimization Measures

The following subsections discuss potential impacts and proposed avoidance/minimization measures.

6.3.2.1. Local Services

Impacts to local services in and around the Project Area are not anticipated; therefore, no mitigation is required.

Construction and operation of the Project is not expected to impact the availability of emergency services. If emergency services are required during construction or operation of the Project, the nearby emergency services infrastructure (e.g., law enforcement, fire departments, etc.) is suitable to address project-related emergencies without negatively impacting the availability of these services for the local populace.

Badger Wind will coordinate with emergency service providers to determine appropriate safety precautions and standards and to develop an Emergency Response Plan to implement these precautions and standards. Turbines will be clearly numbered for identification and emergency response, and Badger Wind will provide a map identifying turbine locations and numbers to local emergency response coordinators.

6.3.2.2. Electrical Services

The Project will help meet regional demand for electricity, and as a result the Project is anticipated to have a positive effect on the electrical services in the region. Badger Wind will utilize North Dakota One Call prior to construction to identify existing utilities and will coordinate with facility owners to minimize potential impacts to existing infrastructure. Badger Wind anticipates that electrical services for routine operations will be provided by a local utility.

6.3.2.3. Roads

Existing roadways within the Project Area will be utilized to the extent feasible; however, construction of new access roads will be required to provide access to the proposed turbine locations. Newly constructed permanent access roads will be approximately 16 feet wide. Access roads will be constructed in locations that minimize impacts to the environment and existing land uses and will support the size and weight of maintenance vehicles. Following construction, the temporarily affected areas will be restored to pre-constructions conditions, to the extent practicable.

During the construction phase, temporary impacts are anticipated on some public roads. Roads will be used to transport equipment and personnel to and from the Project Area and between project facilities. Construction traffic will use the existing county, state, and federal roadway system to access the Project Area and deliver construction materials and personnel. State Highways 13 and 3 are the main access routes into the Project Area and will likely be used as routes to transport materials and equipment; however, the exact routes will be determined closer to construction and in coordination with local roadway authorities, as appropriate.

Construction activities will increase the amount of traffic using local roadways, and may temporarily affect traffic numbers in the area, but such use is not anticipated to result in adverse traffic impacts. Minor, short-term traffic delays within and near the Project Area may occur during turbine and equipment delivery and construction activities.

Badger Wind's road use is expected to have a minimal effect on existing road infrastructure and will comply with all applicable federal, state, and local requirements. Industry construction and operation standards and prudent utility practices will also be followed. Badger Wind will coordinate with applicable local and state road authorities so that all applicable permits are obtained, delivery plans are communicated, and traffic management plans are implemented where necessary. Badger Wind will negotiate road use and maintenance agreements with Logan County, McIntosh County, and the townships, if needed. If necessary, Badger Wind will work with local governments to develop construction traffic plans and adhere to recommended avoidance/minimization strategies. Development of a Road Use Agreement for the Project is currently underway.

After construction is complete, traffic impacts during the operations phase of the Project will be minimal. Operation and maintenance activities will not noticeably increase traffic in the Project Area, as these activities tend to be sporadic and spread out within the Project Area. A small maintenance crew driving through the area in pickup trucks on a regular basis will monitor and

maintain the wind turbines as needed. There would be a slight increase in traffic for occasional turbine and substation repair, but traffic function will not be impacted as a result. Furthermore, the availability of existing roadways throughout the Project Area will allow access roads to turbines to extend from existing public roads directly to the turbines, thereby minimizing impacts on adjacent agricultural land.

Following completion of construction, per the terms of the Road Use Agreements with Logan and McIntosh Counties, affected roadways will be repaired or restored to a condition at least equal to the condition prior to construction of the Project. The temporarily affected areas will be restored to pre-constructions conditions, to the extent practicable.

6.3.2.4. Railroads

Badger Wind will coordinate with Canadian Pacific Railroad for a crossing agreement for each crossing. Direct impacts to the Soo Line Railroad are not anticipated; therefore, mitigation measures for impacts to railroads are not required.

6.3.2.5. Water Supply

Water will be used during construction to provide dust control and as a component of concrete mixes. One temporary batch plant will be constructed in the Project Area to supply concrete for construction of the Project. The batch plant may be able to use rural water service but is more likely to require well water.

The O&M facility will likely require a new private water well. Water usage during the operating period will be similar to household volume: less than five gallons per minute. Badger Wind will coordinate with the South Central Water Authority Water District with respect to use of a potable water supply, as necessary. All required permits will be obtained for installation of a water well for the O&M facility. Use of water for operations will be negligible, and the Project will not require water appropriations beyond those provided at the O&M facility.

Project facilities have been sited to avoid water wells. The water supply for local nearby communities is not anticipated to be affected by the Project. Therefore, mitigation measures for impacts to the water supply are not required.

6.3.2.6. Telephone, Microwave, Radio, and Television Communications

Badger Wind will coordinate with utility companies to determine utility locations and will comply with North Dakota One-Call requirements.

The Communication Tower Study conducted for the proposed Project indicates that interference with communication towers is not likely to occur due to the proposed placement of the turbines (**Appendix C**).

Construction and operation of the Project are also not expected to impact landline phone service.

According to the Land Mobile and Emergency Services Report conducted for the proposed Project, the nearby land mobile services used for public safety, emergency response, and local

government communications are typically unaffected by the presence of wind turbines; these networks are designed to operate reliably in a non-line-of-sight environment. Many land mobile systems are designed with various base transmitter stations covering a large area that overlap with other transmitter sites. Additionally, the FCC requires that turbines are setback at least 77.5 meters from land mobile stations. Therefore, impacts to these services in the Project Area are not anticipated. Badger Wind will follow the FCC setback requirements from land mobile towers as recommended by the Land Mobile and Emergency Services Report.

In the unlikely event that fixed land mobile stations experience impacts to coverage due to project turbine placement, Badger Wind will address these issues on a case-by-case basis.

Two microwave beam paths are within the Project Area (**Appendix C**). None of the proposed turbines overlap with the Fresnel zones associated with the beam paths. Because the proposed turbines do not overlap with the associated two-dimensional Fresnel zones, impacts to the microwave beam paths from the Project are not anticipated.

No AM or FM stations are within 30 km of the Project Area. Therefore, no impacts are anticipated.

Construction of wind turbines has the potential to impact TV reception as a result of an obstruction in the line of sight between digital antennas at residences and the TV station antennas. The Off-air TV Analysis conducted for the Project identified six full-powered, licensed, and operating digital TV stations (call signs KJRE, KJRR, KBME-TV, KXMB-TV, KYFR-TV, and KQSD-TV) that may be impacted by the Project (**Appendix C**). These stations provide high-power transmission and, therefore, could experience reception interference if project turbines impact clear line-of-sight between the stations and receiving antennas. However, modern digital TV receivers have undergone significant improvements to mitigate the effects of signal scattering, which limits the likelihood that disruptions to digital TV would occur. TV reception at residences relying on cable or satellite TV service will not be impacted by construction or operation of the Project. If residents who rely on antennas experience signal disruption, Badger Wind will coordinate with the resident to mitigate the disruption. Impacts to low-power stations and translator stations are not anticipated to occur because those stations have a limited range.

Project information was provided to the U.S. Department of Commerce, National Telecommunications, and Information Administration (NTIA) for the department's review of proposed turbine placement in the Project Area. On 2 November 2021, the NTIA provided the project information to the Interdepartmental Radio Advisory Committee, which includes 20 federal agency members. On 21 December 2021, Badger Wind received correspondence from NTIA indicating that no agencies had issues with the project layout and no concerns regarding radio frequency blockage had been identified (**Appendix D**).

6.4. Human Health and Safety

The following sections describe existing conditions, potential impacts, and proposed avoidance/minimization measures related to human health and safety.

6.4.1. Existing Conditions

6.4.1.1. Air Traffic

Federal airspace is regulated by the FAA. Due to their height, wind turbines have the potential to affect airports and navigable airspace, both public and military. The FAA evaluates proposed projects for aeronautical compatibility and identifies potential issues related to military training areas and routes.

The Wishek Municipal Airport is the nearest public-use airport to the Project Area and is located approximately 1.5 miles southeast of the Project Area. The Wishek Municipal Airport serves a variety of aviation users including general aviation, air taxi, and military (AirNav 2021). No private airstrips registered with the FAA or North Dakota Aeronautics Commission are located within or in close proximity to the Project Area.

6.4.1.2. Electromagnetic Fields

Electromagnetic fields (EMF) are electric and magnetic fields that are present around any electrical device. Electric fields result from the voltage or electrical charges, and magnetic fields result from the flow of electricity or current that passes through substation transformers, transmission lines, power collection (feeder) lines, house wiring, and electrical appliances. Electric field intensity is associated with the voltage of the line, and magnetic field intensity is related to the current flow through the conductors (wire). EMF can occur indoors and outdoors. No discernible health impacts result from EMF associated with power lines (NIEHS 2002).

The sources of EMF for the Project will be electrical collection lines, the project substation, and wind turbines. EMF from electrical collection lines, transmission lines, and transformers dissipates rapidly with distance from the source. Generally speaking, higher-voltage electrical lines produce higher levels of EMF at the source before dissipating with distance. There is no federal standard for transmission line electric fields. No current North Dakota regulations pertain to magnetic field exposure.

The published results of scientific review panels have consistently concluded that neither electric fields nor magnetic fields are a known or likely cause of any adverse health effect at the long-term, low-exposure levels found in the environment.

6.4.1.3. Hazardous Materials/Hazardous Waste

The land within the Project Area is rural and used for agriculture. Potential hazardous materials associated with agricultural activities include petroleum products (fuel and lubricants), pesticides, and herbicides. Older farmsteads may also have lead-based paints, asbestos shingles, and polychlorinated biphenyls in transformers. Trash and farm equipment dumps are common in rural settings. Potential hazardous materials associated with oil and gas wells can include, but are not limited to, releases of petroleum products and chemicals, which may potentially have adverse effects to human health or the environment.

A Phase I Environmental Site Assessment was conducted for Badger Wind in October 2021, which reviewed the U.S. Environmental Protection Agency's (EPA) Facility Registry Service (FRS); EPA's Resource Conservation and Recovery Act (RCRA) Treatment, Storage, and Disposal information; RCRA hazardous waste generators; the Department of Health's Leaking Underground Storage Tank (LUST) List database; the Environmental Data Resources Recovered Government Archive (RGA) LUST database; and the North Dakota Department of Environmental Quality (NDDEQ) Underground Storage Tank (UST) Program database to identify sites that are listed on the Comprehensive Environmental Response, Compensation, and Liability Information System (also known as Superfund sites). A review of the LUST, UST and RGA LUST lists, as provided by Environmental Data Resources, has revealed that two LUST sites, seven UST sites, and one RGA LUST site are within approximately three miles of the target property (KTA 2021). **Table 6-5** presents the FRS interests that were identified within the Study Area and Project Area as a result of this review. Most of the FRS interests that were identified are related to oil and gas production facilities in the Study Area and Project Area (e.g., gas plants, compressor stations) that are captured under multiple FRS categories (**Table 6-5**). Other facilities were identified in the FRS records that are not related to oil and gas production such as the Jahner Sanitation Landfill and Rohweder Dairy. No Superfund sites were identified within the Study Area or Project Area.

Table 6-5: U.S. Environmental Protection Agency Facility Registry Service Interests in the Study Area and Project Area

EPA FRS Interest Category	Study Area	Project Area
Department of Homeland Security—Chemical Security Assessment Tool Reporter	0	0
Enforcement/Compliance Activity	0	0
Risk Management Plan Reporter	1	0
Small-quantity Hazardous Materials Generator	0	0
State Master	12	2
Tier 2 Hazardous Materials Reporter	0	0
Toxic Substances Control Act Reporting	0	0
Not Currently Classified in any Hazardous Waste Universe	0	0
Air Major	2	0
Total	**15**	**2**

Source: (EPA 2021)

The Phase I Environmental Site Assessment conducted for the Project Area (KTA 2021) identified three recognized environmental conditions (RECs). These RECs have been avoided for turbine locations and all associated infrastructure.

6.4.1.4. Security

The Study Area and Project Area are in generally rural areas. The Project Area is located to the west of the City of Wishek. No cities or towns are located within the boundaries of the Study Area or Project Area.

6.4.2. Human Health and Safety Impacts and Avoidance/Minimization Measures

6.4.2.1. Air Traffic

Badger Wind has coordinated with the FAA, the Department of Defense (DoD) Siting Clearing House, Wishek Municipal Airport, and the North Dakota Aeronautics Commission regarding the Project.

Badger Wind conducted a Visual Flight Rules (VFR) Route Traffic Flow Analysis that indicated the Project is not anticipated to negatively affect VFR Routes. VFR are applicable during periods of adverse weather conditions when planes need to fly below the typical floor of controlled airspace. The basis for evaluating the effect of obstructions on operations along these routes is whether pilots would be able to visually observe and avoid obstructions during marginal VFR weather conditions. At least one mile of flight visibility is required for VFR operations beneath the floor of controlled airspace, meaning a surface reference used for VFR low-altitude flight must be horizontally visible to pilots for a minimum of one mile (FAA 2021). Badger Wind confirmed that only 129 flights flew over the Project Area over the course of one year. This is well below the FAA's threshold of significance, which is defined as 365 flights per year (**Appendix D**). Therefore, these results indicate that the Project should not have a negative effect on VFR Routes.

The Project was informally reviewed by the DoD Military Aviation and Installation Assurance Siting Clearinghouse in November 2021, and no concerns were raised (**Appendix D**).

Badger Wind also coordinated with the Wishek Municipal Airport and the North Dakota Aeronautics Commission regarding the proposed project layout. During those discussions, the Wishek Municipal Airport and the North Dakota Aeronautics Commission identified concerns with five potential turbine locations. As a result, Badger Wind removed those locations from further consideration (i.e., those turbines are not included in the project layout proposed in this Application), and the Wishek Municipal Airport and North Dakota Aeronautics Commission indicated that removal of those turbines addressed their concerns.

The FAA requires the submittal of a Notice of Proposed Construction (Form 7460-1) for any object that will extend more than 200 feet AGL. The FAA conducts aeronautical studies to determine whether the structures may be a hazard to air navigation and, if no issues are identified, issues Determinations of No Hazard. Badger Wind has submitted Notice of Proposed Construction (Form 7460-1) filings to the FAA for all turbine and permanent MET tower locations. Badger Wind received preliminary findings from the FAA regarding the locations, which included concerns regarding two of the proposed turbine locations (turbines 33 and 70). Badger Wind is in the process of coordinating with the FAA on minor shifts to those two turbine locations and will update the layout once those turbine adjustments have been finalized.

The FAA publishes Advisory Circulars that define the standards for marking and lighting structures to promote aviation safety. Chapter 13, Marking and Lighting Wind Turbines, in the regulations and policies document Advisory Circular 70/7460-1M, Obstruction Marking and Lighting, provides guidelines to mark and light wind farms (FAA 2020a). Wind turbine lighting will satisfy FAA requirements, as mentioned in **Section 4.1.1.5**. The permanent MET towers will be marked

and lighted as specified by the FAA. Additionally, the Project's permanent MET towers will comply with applicable state marking requirements (see NDCC Chapter 2-05).

The Project will comply with the light-mitigating technology system requirements set forth in NDCC Section 49-22-16.4. Subject to FAA approval, Badger Wind plans to use an ADLS. ADLS is a sensor-based system designed to detect aircraft as they approach an obstruction or group of obstructions. The system will automatically activate the appropriate obstruction lights until they are no longer needed by the aircraft (e.g., the aircraft clears the area). The ADLS structure will be freestanding.

If the permanent MET towers have guy wires, bird diverters will be installed. The permanent MET towers will not exceed 101 meters in height to allow a lighting protection system to extend above the upper-level sensor. The existing temporary MET towers will be removed shortly before construction commencement, depending on the construction schedule.

There are no ICBM sites in Logan or McIntosh counties.

6.4.2.2. Electromagnetic Fields

Levels of EMF from the Project will be considerably below accepted guidelines. Project-specific EMF levels were not modeled for the 34.5 kV electrical collection lines; however, several studies have documented EMF exposure levels for various higher voltage transmission lines.

The National Institute of Environmental Health Sciences (NIEHS) provides typical EMF levels for power transmission lines (NIEHS 2002). For 115-kV transmission lines, the lowest voltage with typical EMF levels reported in the study, electric fields directly below the transmission line were reported at 1.0 kV/m before dissipating to 0.5 kV/m at 50 feet (the approximate edge of ROW). A Canadian study of collection lines at a wind facility measured EMF (magnetic fields) of the Project's 27.5-kV collection lines, a slightly lower voltage than the electrical collection lines proposed for the Project. This study found magnetic fields associated with buried electrical collection lines to be within background levels at one meter AGL (McCallum et al. 2014). EMF from underground electrical collection lines dissipates very close to the lines because they are installed below ground within insulated shielding. The electrical fields are negligible, and the small magnetic field directly above the lines dissipates within 20 feet on either side of the installed cable, based on engineering analysis.

Research has been conducted on the potential influence of EMF on organisms and human health to understand the basic interactions of EMF with biological organisms and cells, and to investigate potential therapeutic applications. Over the past 40 years, considerable additional research has been conducted to address uncertainties in those studies and to determine whether there was any consistent pattern of results from humans, animals, and cells that would support such an association.[6] The large number of research studies conducted to date has led scientific

[6] The NIEHS assembled a 30-person Working Group to review the cumulative body of epidemiologic and experimental data and provide conclusions and recommendations to the U.S. government (Boorman et al. 1999). The International Agency for Research on Cancer completed a full carcinogenic evaluation of EMF in 2002 (WHO

and government health agencies to assemble multidisciplinary panels of scientists to conduct weight-of-evidence reviews and arrive at conclusions about the possible effects associated with EMFs. Overall, the published conclusions of these scientific review panels have been consistent. None of the panels concluded that either electric fields or magnetic fields are a known or likely cause of any adverse health effect at the long-term, low-exposure levels found in the environment. As a result, no standards or guidelines have been recommended to prevent this type of exposure. Thus, no impacts due to EMF are anticipated, and no mitigation specific to EMF is proposed.

6.4.2.3. Hazardous Materials / Hazardous Waste

Badger Wind does not anticipate that hazardous waste sites will be encountered within the Project Area during construction. As noted above, the Project has been sited to avoid RECs identified in the Phase I Environmental Site Assessment. If hazardous waste sites are encountered during construction, Badger Wind will contact the NDDEQ to determine appropriate next steps.

Badger Wind will obtain coverage under a North Dakota Pollutant Discharge Elimination System (NDPDES) General Construction Permit for the Project, which will require Badger Wind to develop a Storm Water Pollution Prevention Plan (SWPPP). Additionally, hazardous materials used for construction or operation of the Project will be stored according to applicable regulations.

On-site storage of turbine petroleum products in the O&M facility will be minimal, and these materials will be stored aboveground. If oil storage will exceed 1,320 gallons, Badger Wind will prepare a Spill Prevention, Control, and Countermeasures (SPCC) Plan for the Project. Any spills that occur will be immediately controlled and cleaned up in accordance with the SPCC plan.

Badger Wind will engage contractors who demonstrate a strong safety culture, including management commitment and engagement, safe work policies and programs, employee involvement, and historic safe work performance indicators. Contractors will be required to implement safe work requirements meeting or exceeding Occupational Safety and Health Administration requirements, applicable permits, equipment manufacture and technical work instructions, and any other prudent safety practices, methods, and/or standards generally engaged in, or observed by, the majority of construction contractors for similar work. Contactors are expected to exercise reasonable judgment and implement work consistent with applicable regulations and permits to achieve an accident- and injury-free workplace.

6.4.2.4. Security

Badger Wind does not anticipate that construction and operation of the Project will impact the security of surrounding residents or communities. An on-site O&M manual and health and safety training plan for the Project, including contacts, education and training materials, action plans, and procedures to reduce the potential for safety and security issues will be developed. As

2002). The International Commission on Non-Ionizing Radiation Protection (ICNIRP) published a review of the cumulative body of epidemiologic and experimental data on EMF in 2003 and released exposure guidelines in 2010 that updated their 1998 exposure guidelines (ICNIRP 2010).

discussed in **Section 6.3.2.1**, Badger Wind will coordinate with local emergency management offices and other relevant agencies to determine appropriate safety precautions and standards and to develop an Emergency Management Plan. Turbines will be clearly numbered for identification and emergency response, and Badger Wind will provide a map identifying turbine locations and numbers to local emergency response coordinators.

During operation of the Project, all facilities, including turbine access doors, the O&M building, and the gate to the fence surrounding the project substation, will be locked when not in use and will have appropriate warning signage.

6.5. Sound Resources

The following sections describe the existing soundscape, potential impacts, and proposed avoidance and minimization measures.

6.5.1. Existing Conditions

The Project is located in a rural area in south-central North Dakota near the town of Wishek. The existing soundscape within the Project Area is likely to include road traffic, birds, insects, farming machinery, and general farming or recreational activities. Sound levels in rural areas typically range from 35 to 45 decibels (dB) using the A-weighting scale (dBA) at night but can exceed these levels based on temporary activity occurring in localized areas (FAA 2020b).

6.5.2. Sound Impacts and Avoidance/Minimization

Sound generated by wind turbines can be categorized as either aerodynamic sound or mechanical sound. Aerodynamic sound is produced by wind passing over the blades as they rotate, and mechanical sound refers to sound generated by other mechanical components inside or near the nacelle, such as the gearbox, main shaft, generator, yaw motor and, to a lesser extent, electrical systems within the turbine and at the base of the tower. Generally, sound emission levels increase with wind speed until a peak occurs near the knee of the power curve, after which the sound level may remain steady or decrease until cut-out.

Commission rules require that wind turbines be sited such that sound levels within 100 feet of an inhabited residence or community building do not exceed 45 dBA unless a waiver is obtained from the owner of the inhabited residence or community building (see NDAC Section 69-06-08-01(4)). Logan County and McIntosh County do not have sound level requirements for wind energy facilities.

Badger Wind conducted a Sound Assessment (**Appendix E**) for the Project. Sound levels were calculated using the ISO 9613-2 sound propagation model. The sound assessment assumed that: (i) all potential wind turbine locations will be used (i.e., all 79 turbine positions), (ii) the turbines will be operated at a wind speed resulting in the loudest noise possible being emitted, and (iii) a +2 dB uncertainty factor was applied to turbine sound power levels. Additionally, Badger Wind included the two substation step-up transformers in the sound modeling. For purposes of modeling, Badger Wind assumed LNTE blades on all 79 turbines. Badger Wind has not yet

selected the subset of 74 turbines to be constructed or the final turbine model. For purposes of modeling, the GE 3.4-140 turbine model with a hub height of 322 feet (98 meters) was used.

The results of the modeling showed that nine receptors (including six participating and three non-participating residents) exceeded the applicable 45 dBA sound limit. Badger Wind has obtained or is in the process of obtaining waivers for the receptors where the modeled sound level from the Project is above 45 dBA. These sound waivers can be found in **Appendix J**.

6.6. Visual Resources

The following sections describe existing conditions, potential impacts, and proposed minimization and avoidance measures for the visual environment of the Study Area and Project Area, including the potential effects of shadow flicker.

6.6.1. Existing Conditions

6.6.1.1. Aesthetics

The topography of the Project Area is generally flat with elevations ranging from approximately 1,963 to 2,263 feet (598 to 690 m) above sea level. Elevations are lowest along the stream crossing the center of the Project Area and highest in the western portion of the Project Area. The landscape can be classified as rural open space.

Viewsheds in and around the Project Area are generally broad and uninterrupted. Only a few small, scattered areas have obstructed views; the obstructions are trees and buildings. Aside from the City of Wishek, the development is composed primarily of residences and farm buildings scattered along rural county roads, as well as general service infrastructure such as electrical transmission lines, railroads, and communications towers/antennae. Horizontal elements, such as roads and railroads, are consistent with the long and open viewsheds in the area. Vertical elements such as electrical transmission lines and communications towers/antennae are the tallest and often the most visual features on the landscape; some reach 200 feet in height. No visually sensitive areas, such as National Parks, exist in or are directly adjacent to the Study Area.

6.6.1.2. Shadow Flicker

Shadow flicker occurs when the rotating blades of a wind turbine are directly between an observer and the sun, causing alternating light and shadow. Shadow flicker intensity and frequency at a given receptor are determined by a number of interacting factors including sun angle and sun path, turbine and receptor locations, cloud cover and degree of visibility, wind direction, wind speed, obstacles, contrast, and local topography. This effect decreases and ultimately disappears with distance from the turbine and is also eliminated by obstacles between the observer and the turbine, such as trees or terrain. Shadow flicker is predictable, and it can be minimized through turbine site selection. Shadow flicker is harmless to humans, though it may be considered by some to be an annoyance (**Appendix F**).

6.6.2. Visual and Aesthetic Impacts and Avoidance/Minimization Measures

Visual and aesthetic impacts that would result from construction of the proposed Project, as well as proposed avoidance/minimization measures, are discussed below.

6.6.2.1. Aesthetics

Measuring the aesthetic value of a specific landscape is difficult and may vary based on an individual's personal values, experiences, or preferences. The degree of visual contrast will vary based on the viewpoint distance and location in relation to the Project.

The introduction of project facilities has the potential to alter the existing aesthetics where they are most perceptible. During construction, visual impacts associated with the project facilities would include the removal of existing vegetation, if any, and the exposure of bare soils, as well as earthwork and grading scars associated with heavy equipment tracks, trenching, and machinery and tool storage. These impacts are mostly only noticeable in close proximity to the work areas and are temporary in nature, as the areas would be restored following construction.

During operation, visual impacts associated with the Project include the presence of the wind turbines, movement of the rotor blades, shadow flicker, turbine marker lights, lighting on control buildings, ancillary structures, roads, vehicles, and workers conducting maintenance activities. Generally, turbines will be noticeable from most locations within the Study Area due to the flat topography and absence of tall vegetation, structures, or other landscape features. Visual impacts will vary depending on the viewer's proximity and orientation to the turbines (i.e., within the Project Area vs. outside the Project Area and the direction the viewer faces relative to wind turbines), obstructions such as tree lines, the viewer's duration in the Project Area (i.e., a resident vs. a car passing through the Project Area), and the viewer's personal preferences.

The FAA requires obstruction lighting or marking of structures more than 200 feet AGL to provide safe air navigation; for wind turbines, this lighting is synchronized flashing of red lights. As described in **Section 6.4.2.1**, Badger Wind will coordinate with the FAA on implementation of ADLS, which is consistent with the Commission's light-mitigating technology requirements in NDAC Chapter 69-06-11. Furthermore, Badger Wind's layout complies with the Commission's minimum setback of three times tip height between turbines and non-participating inhabited residences, thereby distancing turbines from non-participating residences.

Additionally, wind turbines will exhibit visual cohesion in the shape, color, and size of rotor blades, nacelles, and towers. Collection lines on the site will be buried. For ancillary buildings and other structures, low-profile structures will be chosen whenever possible to reduce their visibility. Turbine foundations and roads have been designed to minimize and balance cuts and fills.

6.6.2.2. Shadow Flicker

No local, state, or federal requirements exist with respect to shadow flicker. However, Badger Wind has designed the Project to comply with the industry standard of 30 hours per year or less of shadow flicker at non-participating and participating occupied residences, absent a waiver. A

shadow flicker analysis was completed for all occupied residences (40 receptors) within ten times tip height (5,512 feet) using WindFarmer Analyst software. This distance was chosen because the shadow, at this distance, is sufficiently diffused. All 79 wind turbine locations were modeled, even though not all 79 turbine positions will be constructed.

The duration of shadow flicker experienced at a specific location can be determined using a purely geometric analysis that takes into account the relative positions of the sun throughout the year, the locations and dimensions of the wind turbines, and the location of the receptor. Additionally, the site-specific cloud coverage and wind direction statistics have been incorporated into the calculation. No other physical obstructions were modeled. Using this realistic (expected case) method, shadow flicker was modeled at the identified receptors (see **Appendix F**). The results of the analysis show that the highest expected shadow flicker at a participating receptor is 38 hours per year. All other receptors, including all non-participating receptors, have less than 30 hours per year of expected shadow flicker.

Receptors that experience shadow flicker will typically only experience it when the sun is low in the sky, and when certain meteorological and operational factors are present. If a receptor does experience shadow flicker, it most likely will be only during a few days per year from a given turbine, and for a total of only a fraction (typically less than one percent) of annual daylight hours. Badger Wind has sited turbines to minimize impacts to residences.

6.7. Cultural and Archaeological Resources

The Project has followed North Dakota guidelines for cultural (archaeological and architectural) assessment per the North Dakota State Historic Preservation Office (ND SHPO) and the State Historical Society of North Dakota (SHSND). Badger Wind has conducted a Class I archaeological literature search, Class I architectural literature review, Class II architectural and reconnaissance inventory, and Class III cultural resources inventory for the Project. Badger Wind had a meeting with the SHSND on 21 September 2021 to discuss the results and status of the architectural and archaeological assessments. Coordination with the SHSND is ongoing. The following sections describe existing known cultural and archaeological resources, potential impacts, and proposed avoidance and minimization measures.

Badger Wind engaged the SHSND during informal consultation in 2020. Badger Wind discussed moving forward with a Class I archaeological literature search and a Class III pedestrian archaeological survey; these efforts are discussed in **Section 6.7.1.1**. At the time of the meeting, SHSND also suggested that a Class II architectural windshield survey should be completed; this survey is discussed in **Section 6.7.1.2**.

At the time of the meeting with the SHSND and during the survey of archaeological and architectural history resources, the proposed Project Area (cultural resources Project Area [CR Project Area]) was larger than the current Project Area.

6.7.1. Existing Conditions

6.7.1.1. Archaeological Resources

A Class I archaeological literature search was completed for the CR Project Area plus a one-mile buffer in October 2020. The Class I archaeological literature search was completed through a review of the North Dakota Cultural Resources Survey data files maintained by the SHSND. The National Register of Historic Places (NRHP) database was also reviewed. The area of potential effects (APE) for the Project Area was defined in accordance with the ND SHPO Guidelines as a one-mile radius surrounding the proposed project infrastructure (e.g., turbines, electrical collection lines, substation). The Class I archaeological literature search identified 40 previously recorded archaeological resources within the CR Project Area and one-mile buffer.

A Class III cultural resources inventory was completed for the proposed Project in October and November 2020 and September and October 2021. In total, approximately 1,948 acres were surveyed. The methods for the Class III inventory followed the ND SHPO Guidelines Manual for Cultural Resource Inventory Projects (SHSND 2020). The Class III cultural resources inventory identified eight historic archaeological sites, two isolated finds, and two site leads within the CR Project Area. Of the resources identified, only one remains unevaluated and is recommended for avoidance (this site is within the current Project Area); the remaining resources are recommended not eligible for NRHP listing. To accommodate landowner requests and due to micrositing, small portions of the project layout will need to be surveyed for cultural resources in the spring of 2022. Badger Wind will update the Commission on the timing and results of these survey efforts.

6.7.1.2. Architectural Resources

A Class I literature review and Class II architectural reconnaissance inventory survey were completed for the Project in September and October 2021. The APE was defined in accordance with the ND SHPO Guidelines as a two-mile radius surrounding the proposed turbine locations. At the time the survey was conducted, Badger Wind was considering multiple turbine options within the larger CR Project Area. As a result, the APE covered a larger survey area than would be required for the current project layout. The purpose of the survey was to identify and document all historic architectural resources (aboveground resources 45 years of age or older) located within the APE; to evaluate their eligibility for listing in the NRHP; to recommend site boundaries, if eligible; and to evaluate the effects of the Project on any properties listed in, or eligible for listing in, the NRHP.

The Class I literature review identified 23 previously documented historic aboveground resources within the APE.

During the Class II architectural reconnaissance inventory field survey, 578 architectural resources were identified within the APE, 17 of which had been previously documented. The remaining six previously documented resources identified in the literature review were determined to be no longer extant. Following receipt of input from the SHSND, 13 sites were identified as warranting a detailed evaluation to assess potential eligibility for listing in the NRHP.

A full evaluation of these sites indicated that six resources are recommended eligible for NRHP listing. None of the evaluated resources are located with the current Project Area.

The SHSND reviewed the Class II architectural inventory report and requested modifications and further evaluation of two sites (which were included in the 13 sites discussed above). Badger Wind's consultant is in the process of completing the requested report revisions, and the updated report will be provided to the SHSND and the Commission upon completion.

6.7.2. Cultural Resources Impacts and Avoidance/Minimization Measures

Ground-disturbing activities during construction of the Project have the potential to impact known or unknown cultural resources. Because the Project involves the construction and operation of wind turbines, if historic architectural resources are present in or adjacent to the Project Area, the presence of wind turbines could affect the visual setting of these resources.

As designed, the project layout avoids impacts to the one unevaluated archeological resource identified. As a result, no impacts to archaeological resources are anticipated. Additionally, Badger Wind has developed an Unanticipated Discoveries Plan, which will be followed during construction in the event that potential cultural resources or human remains are encountered. A copy of the Unanticipated Discoveries Plan will be included as an appendix to the Class III cultural resource inventory report. Atwell is in the process of finalizing the Class III cultural resource inventory report, and a copy of the finalized report will be provided to the SHSND and the Commission upon completion.

One historic architecture resource potentially eligible for the NRHP is located within the Project Area; however, the Project will not directly impact this resource. Additionally, the Project is not anticipated to have an adverse indirect impact on this resource. The visual setting of this resource already includes modern infrastructure such as transmission lines and oil and gas production facilities; therefore, the wind turbines associated with the current Project will not intrude upon the resource's immediate setting or diminish any qualities that make it eligible for the NRHP. The qualities of the property that warrants its listing in the NRHP will not be diminished.

Badger Wind continues to coordinate with the SHSND on archaeological and architectural resources. As noted above, Badger Wind will provide both the SHSND and the Commission with copies of the finalized Class II and Class III reports and will provide the Commission with the SHSND's concurrences on the finalized reports once they are received. Additionally, Badger Wind will complete cultural resources surveys on a minimal number of unsurveyed areas, will report the findings to the SHSND, and will obtain and provide the Commission with the SHSND's concurrence prior to constructing in those areas.

6.8. Recreational Resources

The following sections describe existing recreational resources in the Study Area and Project Area, potential impacts, and proposed avoidance and minimization measures.

6.8.1. Existing Conditions

There are no designated recreation areas, public or private parks, or designated trails located in the Project Area or Study Area.

6.8.2. Recreational Resources Impacts and Avoidance/Minimization Measures

Because there are no designated recreation areas, public or private parks, or designated trails located in the Project Area, the Project will not impact recreational resources.

6.9. Effects on Land-Based Economies

The following sections describe existing conditions, potential impacts, and proposed mitigation for agriculture and woodlands.

6.9.1. Existing Conditions

The following sections describe existing agriculture and woodlands in the Study Area and Project Area.

6.9.1.1. Agriculture

The Project is located in south-central North Dakota, in a predominantly rural agricultural region in Logan and McIntosh Counties. According to USDA data for 2021, 351 farms are operating in Logan County with an average farm size of 1,800 acres, and 363 farms are operating in McIntosh County with an average farm size of 1,343 acres. In Logan County, livestock accounts for a larger percentage of total market value of agricultural products sold annually compared to crop sales, at USD 100M vs. USD 55M, respectively. In McIntosh County, crop sales accounts for a larger percentage of total market value of agricultural products sold annually compared to livestock, at USD 53M vs. USD 41M, respectively. In both Logan and McIntosh Counties, the dominant agricultural crop by acreage is soybeans, and the dominant livestock by number of head is cattle. Prime farmland within the Project Area is discussed in **Section 6.10**.

6.9.1.2. Woodlands

As noted in **Table 6-2**, areas classified as Planted Woodland, Riparian Woodland, and Wooded Draw/Ravine Woodland comprise approximately 719.9 acres and 185.1 acres within the Study Area and Project Area, respectively. Approximately 0.5 percent of the Study Area and Project Area fall into these categories. Trees are sparse within the Project Area and are not utilized for economic activities associated with woodlands, such as logging or timber trading. Shelterbelts, which are composed of planted trees or shrubs aligned in rows along the perimeter of crops or near farmsteads, are found within the Project Area. Shelterbelts provide wind protection to croplands or buildings. Other woodlands in the Project Area are adjacent to creeks and other water sources.

Badger Wind conducted a detailed analysis of satellite imagery to delineate woodland areas on a finer scale, including wooden stands, shelterbelts, and tree lines. Based on this detailed assessment, approximately 62.4 acres of woodland are in the Project Area. The Project will result

in 0.03 acres of impacts to these delineated woodlands, which are related to access road and turning radius construction workspaces. If impacts do occur, they will be minimal and mitigated by implementing the Project Tree and Shrub Mitigation Plan

6.9.2. Land Based Economies Impacts and Avoidance/Minimization Measures

The following sections describe impacts to agriculture and woodlands and proposed mitigation.

6.9.2.1. Agriculture

Construction of the Project could cause minimal, temporary impacts to agricultural land from soil compaction and rutting, accelerated soil erosion, crop damage, temporary disruption to normal farming activities, and introduction of noxious weeds to the soil surface. However, the Project will repair and restore temporary impacts and will have minimal impact on use of land for agricultural production. As demonstrated by other wind energy projects in North Dakota, agricultural practices will be able to continue during project construction and operations.

Although up to 975.46 acres of agricultural land will be temporarily impacted during construction, these areas will be available for agricultural use following construction. Agricultural land temporarily impacted by construction will be restored to pre-construction conditions in accordance with NRCS recommendations, unless otherwise specified by the landowner and approved by the Commission, as detailed in **Appendix I**. Temporary impacts to soil will be restored (e.g., decompacted) in accordance with Commission requirements and landowner agreements.

The Project will impact up to 69.49 acres of agricultural land for the life of the Project. However, during operations, landowners may continue to plant crops and graze livestock near and up to the turbine pads and access roads.

Row crop production and livestock grazing within the footprint of access roads would be impacted for the life of the Project. However, access roads are designed in such a way that they do not unnecessarily impede agricultural use beyond the footprint of the access road. This allows for continued farming in the area around the access road. Additionally, Badger Wind has reviewed the layout with landowners and sited the access roads in consultation with landowners. The access roads have been located to reserve space for agricultural equipment to maneuver during operations and to avoid unnecessarily impeding agricultural uses while still providing access to project infrastructure. The substation, O&M facility, permanent MET towers, and ADLS tower would be fenced, but agricultural production and livestock grazing would be allowed to continue beyond the fenced area.

The loss of agricultural land for operation of the Project will reduce the amount of land that can be cultivated or grazed in the Project Area; however, less than one percent of the Project Area will be converted to non-agricultural land use (i.e., wind turbines, access roads, substation, O&M facility, permanent MET towers, and ADLS tower) for the life of the Project. This represents minimal impact to agricultural land in the Project Area and will not significantly alter agricultural production in the Project Area or Logan and McIntosh Counties. Furthermore, the Project will

allow landowners to diversify their operations with an additional, steady income source. This additional income would also be reflected as an increase to the county tax bases. Additional money brought into the community would likely result in increased spending at local businesses and improvements to the communities and counties.

6.9.2.2. Woodlands

Trees are sparse within the Project Area, and Badger Wind has designed the Project to minimize tree removal to the extent possible. Badger Wind has sited the majority of project facilities in areas lacking large contiguous woodlands. If tree removal is necessary, Badger Wind will coordinate with landowners regarding tree removal and replacement and will follow the Commission's tree and shrub mitigation specifications. If necessary, Badger Wind may bore collection lines under tree lines and woodlots to avoid impacts.

Construction of the Project will impact up to 0.03 acres of woodlands, which are related to access road and turning radius construction workspaces. Any impacts on trees and woodlands from the placement of wind turbines and associated facilities for the Project would be minor in nature. If impacts are to occur, they will be minimal and mitigated by implementing the Project Tree and Shrub Mitigation Plan.

6.10. Soil Resources

The following sections describe the existing soil conditions within the Study Area and Project Area, potential impacts, and proposed avoidance and minimization measures.

6.10.1. Existing Conditions

Soil characteristics within the Study Area and Project Area were assessed using the NRCS Soil Survey Geographic (SSURGO) database. The SSURGO database provides a description of the soils present and information about their unique properties and productivity (USDA 2019). In all, 112 soil types are found within the Study Area and 97 soil types are within the Project Area. A list of the soil types is provided in **Appendix G**. The dominant soil map units found within the Study Area and the Project Area are classified as silt loams or silty clay loams and range from moderately well drained to poorly drained (USDA 2019).

Prime farmland is defined as land that has the best combination of physical and chemical characteristics for the production of food, feed, forage, fiber, and oilseed crops, and is also available for these uses (the land could be cropland, pasture, woodland, or other lands) (NRCS 2021). Urbanized land and open water cannot be designated as prime farmland. Prime farmland typically contains few or no rocks, is permeable to water and air, is not excessively erodible or saturated with water for long periods, and is not subject to frequent or prolonged flooding during the growing season. Soils that do not meet the above criteria may be considered prime farmland if the limiting factor is mitigated (e.g., by draining or irrigating). Approximately 5.1 percent of the Study Area is classified as prime farmland, and less than 0.1 percent is classified as prime farmland if drained (**Table 6-6**). Prime farmland covers approximately 5.5 percent of the Project Area, and less than 0.1 percent is covered by prime farmland if drained.

Table 6-6: Farmland Classifications within the Study Area and Project Area

Farmland Classification	Study Area (acres)*	Percentage of Study Area*	Project Area (acres)*	Percentage of Project Area*
Prime Farmland	6,368.7	5.1	1,743.0	5.5
Farmland of Statewide Importance	40,505.0	32.2	8,045.5	25.5
Not Prime Farmland	79,015.3	62.7	21,718.4	68.9
Prime Farmland If Drained	65.1	0.1	6.9	0.0
Total	**125,954.2**	**100.0**	**31,513.8**	**100.0**

Source: (USDA 2019)
*Note: Rounding has been applied to all values.

The NRCS also inventories farmland of statewide importance. The criteria for these areas are determined by state agencies; generally, farmland of statewide importance includes areas that nearly meet the requirements for prime farmland and could produce high yields of crops if managed appropriately. Farmland of statewide importance can also include parcels that have been designated for agriculture by state law. Farmland of statewide importance is mapped across 32.2 percent of the Study Area and 25.5 percent of the Project Area.

Table 6-6 lists the acres of prime farmland, prime farmland if drained, and farmland of statewide importance within the Study Area and the Project Area. **Figure 9: Prime and Unique Farmland** depicts the distribution of these classifications within the Study Area and the Project Area.

6.10.2. Soil Resources Impacts and Avoidance/Minimization Measures

Surface disturbance caused by construction of the wind turbines and associated infrastructure would result in the soil surface becoming more prone to erosion. The use of heavy equipment during construction could result in soil compaction. However, any such impacts to soils within the Project Area will be localized to the areas where project activities occur and BMPs will be implemented to minimize these impacts. These BMPs may include the use of erosion and sediment control during and after construction, noxious weed control, segregating topsoil from subsurface materials in accordance with Commission requirements, decompaction of subsurface soils before topsoil replacement, reseeding of temporarily disturbed areas, the use of construction equipment appropriately sized to the scope and scale of the Project, and designing access road grades to fit closely with the natural terrain, to the extent practicable. Soil cuttings will be disposed of on site in accordance with applicable federal, state, and local requirements (see **Appendix I**). Additionally, Badger Wind will use silt fencing in areas under construction, as needed, to control erosion and storm water runoff. Surface flows will be directed away from cut-and-fill slopes and into ditches that discharge into natural drainages. Badger Wind will conduct regular inspection and maintenance of roads, turbine pads, and trenched areas to minimize erosion.

Less than 0.5 percent of the total land in the Project Area that could be considered prime farmland or farmland of statewide importance will be impacted for the life of the Project. Within the Project Area, 7.24 acres of prime farmland and 40.39 acres of farmland of statewide

importance would be impacted for the life of the Project (**Table 6-7**). As such, the acres of prime farmland and farmland of statewide importance removed from use for the life of the Project will have a negligible impact on agricultural production.

Table 6-7: Summary of Permanent Impacts to Prime Farmland

Farmland Classification	Permanent Facility Acres[1]
Prime Farmland[2]	7.24
Farmland of Statewide Importance	40.39
Not Prime Farmland	44.64
Total	**92.28**

[1] Acres of impacts includes all permanent facilities (turbines, access roads, project substation, and O&M facility). Rounding has been applied to all values.
[2] This includes soils classified as prime farmland or prime farmland if the limiting factor is mitigated (e.g., by draining or irrigating).

Following construction, the temporarily disturbed areas outside of cropland will be reclaimed and reseeded with a seed mixture consistent with the surrounding vegetation and free of noxious weeds according to NRCS recommendations, unless otherwise specified by the landowner and approved by the Commission (see **Appendix I**). To minimize the impacts of surface water runoff, BMPs in accordance with a SWPPP will be implemented, including use of silt fencing to control erosion and storm water runoff and directing surface flow away from cut-and-fill slopes and into ditches that discharge to natural drainages. All roads, turbine pads, and trenched areas will be regularly inspected and maintained to minimize erosion. Additionally, Badger Wind will obtain coverage under the NDPDES General Stormwater Construction Permit, which requires preparation of a SWPPP. In addition, if more than 1,320 gallons of oil storage occurs on-site during construction, Badger Wind will complete and implement a SPCC Plan.

6.11. Geologic and Groundwater Resources

The following sections describe existing geologic and groundwater resources, potential impacts, and proposed mitigation measures. **Figure 10: Geologic and Groundwater Resources** depicts the existing geologic and groundwater resources in the Study and Project Areas.

6.11.1. Existing Conditions

The Study Area is located in a region of North Dakota known as the Missouri Coteau Slope (an area of Wisconsin glacial till over Tertiary sandstone and shale) and Cretaceous Pierre Shale. The topography of the area consists of level to gently rolling plains that slope to the Missouri River (Bryce et al. 1996). Surface geology within the Study Area is predominately composed of two formations: Fox Hills and Pierre, which are characterized by thin glacial deposits and outwash consisting of sand and gravel between zero and 50 feet thick and underlying bedrock composed of shale (Clayton 1962; Bluemle 1983; Bluemle 1988).

The geology of south-central North Dakota, including Logan and McIntosh Counties, is not known for oil and gas development, and most oil and gas operations are located in western North Dakota (ND DWR 2021b). According to the Phase I Environmental Site Assessment completed for the

Project, no storage tanks associated with oil and gas activities are within the Project Area and one gas well listed as a dry gas well (i.e., natural gas in the absence of condensate or liquid hydrocarbons) is located approximately two to three miles from the Project Area (KTA 2021). The status of this well is also listed as having a canceled permit, and therefore it is unlikely that this is an active well. A review of the ND DWR oil wells layer indicates that ten dry oil and gas wells are within the Study Area; two of these are within the Project Area. No active oil and gas wells were identified (**Figure 8: Existing Infrastructure)** (ND DWR 2021b).

Groundwater resources in the area occur approximately 50 feet below ground surface (KTA 2021). According to the publicly available North Dakota GIS database and North Dakota GIS Hydrography layer, several aquifers are in Logan and McIntosh Counties, two of which are located in the Project Area: the Wishek and Lower Wishek aquifers. The Wishek and Lower Wishek aquifers cover an area of about 17,920 acres in Logan and McIntosh Counties (ND GIS 2021). In all, 45 domestic/stock/industrial/observational water wells are in the Study Area; of these 45 wells, 15 are located within the Project Area. Six of these wells are for stock ponds, four are associated with farmsteads, two are associated with active observation wells, and three are either capped or destroyed observation wells. Within the Study Area, 26 wells are listed as test wells and four are listed as unknown, of which four test wells and two unknown wells are within the Project Area.

6.11.2. Geologic and Groundwater Impacts and Avoidance/Minimization Measures

Badger Wind does not anticipate any impacts to bedrock during construction or operation of the Project because bedrock within the Project Area is at depths much greater than the proposed foundation depths of seven to 13 feet deep. Additionally, Badger Wind does not expect any impacts to groundwater resources because the Wishek and Lower Wishek aquifers are at depths greater than the underground collection line depths of approximately four feet and proposed foundation depths of seven to 13 feet deep. Additionally, project facilities have been sited to avoid water wells.

Badger Wind anticipates that water may be used during construction for dust control and concrete mixes at a temporary concrete batch plant, if one is needed to supply concrete for construction of the Project. The water source will be determined prior to construction.

The O&M facility will likely require a new private water well. Water usage during the operating period will be similar to household volume—less than five gallons per minute. Use of water for operations will be negligible. The Project will not require the appropriation of surface water or permanent dewatering.

Badger Wind has voluntarily sited turbines 168 meters (approximately 551 feet) (turbine tip height) away from existing inactive oil and gas wells in the Project Area; no active oil and gas wells were identified within the Project Area.

6.12. Surface Water and Floodplain Resources

The following sections describe existing surface water and floodplain resources in the Study Area and Project Area, potential impacts, and proposed avoidance/minimization measures. **Figure 11: Surface Water and Wetlands**, depicts the existing water resources in the Study and Project Areas.

6.12.1. Existing Conditions

The Study Area is adjacent to the West Missouri Coteau Watershed. The West Missouri Coteau subbasin occupies 1,287,800 acres in Dickey, Logan, and McIntosh Counties in North Dakota as well as four additional counties in South Dakota. This watershed is located in the Great Plains Physiographic Province, which has gently rolling to steep topography, characteristic of a hummocky glacial terrain. The drainage pattern in this watershed is poorly defined and characterized by many closed depressions and potholes (NRCS 2009). The Project Area contains a number of creeks, streams, and wetlands (**Figure 11: Surface Water and Wetlands**), which are covered in greater detail in **Section 6.13**.

Logan and McIntosh Counties have not been mapped by the Federal Emergency Management Agency (FEMA); as such, 100-year floodplains have not been delineated in either county (FEMA 2021).

6.12.2. Surface Water and Floodplain Resources Impacts and Avoidance / Minimization Measures

The Project and associated facilities have been sited to avoid or minimize impacts to surface waters and floodplain resources, to the extent practicable. Wind turbines will be built on uplands to avoid surface water resources in lower elevations, to the extent practicable. Access roads, crane paths, and collection lines have been designed to minimize crossing of streams and other surface waters, to the extent practicable. As currently sited, collection lines intersect two perennial watercourses that were delineated during field surveys in 2020 and 2021. However, collection lines will be bored under these watercourses, thereby avoiding impacts.

Construction of project facilities (such as underground electrical collection lines, access roads, crane paths, turbine pads, project substation, and O&M facility) will impact land, and therefore could potentially impact surface water runoff within the Project Area. Ground-disturbing construction activities also have the potential to cause sedimentation, but these impacts are expected to be minimal and would only occur during construction. These impacts will be minimized through use of BMPs. Badger Wind is coordinating with the USACE Omaha District, North Dakota Regulatory Office in Bismarck, as part of pre-construction due diligence. In a January 2021 letter, the USACE indicated that a Section 404 Clean Water Act (CWA, Act) permit will be needed if discharge of dredge or fill material (temporarily or permanently) into waters of the United States (WOTUS) will occur (**Appendix D**). Badger Wind anticipates that if there would be unavoidable impacts to USACE jurisdictional waters, these activities would be permitted under the Nationwide Permit program.

The Project will also comply with EPA regulations regarding storm water runoff, including the creation of a SWPPP. The SWPPP will address the construction-related temporary measures and permanent restoration methods to slow storm water runoff and avoid sediment reaching streams and rivers. Badger Wind will also implement appropriate erosion and sediment control BMPs. Additionally, Badger Wind will obtain coverage under the NDPDES General Stormwater Permit, which requires preparation of a SWPPP. In addition, SPCC Plans will be implemented for the construction and operation phases of the Project. As such, impacts to surface waters from stormwater discharges are not anticipated from the Project.

No FEMA-mapped floodplains are present in the Study Area as confirmed by the Department of Water Resources; thus, no impacts to FEMA-mapped floodplains are anticipated.

6.13. Wetlands and Waterways

The following sections describe the existing wetlands within the Study Area and the Project Area, potential impacts, and proposed mitigation.

6.13.1. Existing Conditions

Wetlands are areas with hydric (wetland) soils, hydrophilic (water-loving) vegetation, and wetland hydrology (inundated or saturated much of the year). Wetland types include marshes, swamps, bogs, and fens. Wetlands vary widely due to differences in soils, topography, climate, hydrology, water chemistry, vegetation, and other factors.

The CWA of 1972 (33 U.S. Code [USC] § 1251 et seq.) establishes federal jurisdiction over "navigable waters," defined in the CWA as "waters of the United States" or WOTUS. Generally, wetlands that have a significant nexus to a navigable water fall within the jurisdiction of the U.S. Army Corps of Engineers (USACE), which administers Section 404 of the CWA. However, both USACE-jurisdictional and non-jurisdictional wetlands have been considered in this analysis. WOTUS may also include non-wetland features such as streams that have a significant nexus to a navigable water (refer to **Section 6.12**).

As discussed further in **Section 6.14**, the Study Area is primarily situated in the Missouri Coteau Slope Level IV Ecoregion of North Dakota. The northwestern portion of the Study Area also intersects the Missouri Coteau ecoregion. The Missouri Coteau Slope Region supports well-developed drainages and has fewer prairie potholes (depressional wetlands formed by glacial activity) in comparison to the Missouri Coteau ecoregion. Unnamed tributaries to South Branch Beaver Creek and Beaver Creek cross the Study Area. Most wetlands within the Missouri Coteau Slope ecoregion (northwestern portion of the Project Area and Study Area) are USACE-jurisdictional due to their connection to these intermittent waterways.

Wetlands in the northeastern portion of the Study Area include wetlands associated with prairie potholes. Both ecoregions naturally support very few forested areas; as a result, wetlands within the Study Area are predominantly emergent. Wetlands in agricultural settings within the Study Area may exhibit anthropological disturbance, particularly ditching and draining to support row crops.

The USFWS National Wetlands Inventory (NWI) is a publicly available dataset of wetlands and waterways generated by aerial imagery analysis (USFWS 2020a). Potential wetlands within the Study Area and Project Area were identified using the NWI. NWI data indicated the potential presence of up to 5,151 acres of wetlands within the Study Area and 1,374 acres of wetlands within the Project Area.

In addition, field wetland delineations were completed at locations within the Project Area with the potential for ground disturbance from project activities. Field wetland delineations were performed between late August and early September 2020, and again between late September and early November 2021. Wetlands were delineated within a survey corridor that included any ground surface area that has the potential to be disturbed by any construction activities or installed facilities associated with the Project. During these surveys, approximately 313.4 acres of wetlands were delineated, of which approximately 268.2 acres fall within the current Project Area. While the majority of areas of potential ground disturbance have been surveyed to date, changes to the proposed project layout were made following feedback from the FAA and to accommodate landowners. As such, limited additional field delineations will be conducted in spring 2022 to delineate wetlands in these areas.

Figure 11: Surface Water and Wetlands shows the locations of delineated wetlands. In areas where field delineations have not yet occurred, wetlands are shown based on NWI data.

6.13.2. Wetlands Impacts and Avoidance/Minimization Measures

The Project has been designed to avoid permanent impacts to delineated wetlands and minimize temporary wetland impacts. Turbines and permanent MET towers will be constructed on higher ground within the Project Area to maximize the wind resource, and as such, will not permanently impact wetlands. Additionally, the preliminary design of the O&M facility, project substation, and ADLS tower are also designed to avoid permanent impacts to delineated wetlands. One access road will cross a field-delineated drainage wetland that parallels an existing road. Badger Wind has sited this access road in the location of an existing farm road to further minimize impacts to this wetland, resulting in a permanent impact to this wetland of less than 0.01 acre. A culvert will be installed where this access road crosses a drainage to facilitate continued wetland function and local hydrology. This impact will be self-certification under the Nation-Wide Permit in accordance with Section 404 of the CWA.

Badger Wind plans to bore to install underground collection only when wetlands are present, thereby avoiding impacts to wetlands. In areas that will be field delineated in spring 2022, Badger Wind plans to re-route crane paths and access roads to avoid delineated wetlands, where feasible. Additionally, the construction workspace of crane paths, access roads, and turbine pads may be reduced in size or slightly shifted, where practicable, to avoid or minimize temporary impacts to wetlands. Matting will also be used in wetlands during construction to minimize temporary disturbances.

Badger Wind is coordinating with the USACE Omaha District, North Dakota Regulatory Office in Bismarck, as part of pre-construction due diligence. In a January 2021 letter, the USACE indicated that a Section 404 CWA permit will be needed if discharge of dredge or fill material (temporarily

or permanently) into WOTUS will occur (**Appendix D**). Badger Wind anticipates that if there would be unavoidable impacts to USACE jurisdictional waters, these activities would be self-certified under the Nationwide Permit program.

6.14. Vegetation Resources

The following sections describe existing vegetation, potential impacts to vegetation, and proposed compensatory mitigation for these impacts.

6.14.1. Existing Conditions

The Project Area is located in both the Missouri Coteau Slope and the Missouri Coteau Level IV Ecoregions within the Northwestern Great Plains Level III Ecoregion of North Dakota (Bryce et al. 1996). The Missouri Coteau is characterized by rolling hummocks that contain numerous wetland potholes. The Missouri Coteau Slope ecoregion is characterized by rolling to hilly plains with more watercourses and fewer prairie potholes. Pre-human development, mixed-grass prairie was the most common grassland in these regions, with very little upland deciduous forest. Land use in these regions is a mixture of agriculture and cattle grazing, which has resulted in conversion of much of the mixed-grass prairie.

Existing vegetation in the Study Area and Project Area is characterized using LANDFIRE's EVT dataset (USGS 2020). Some cover types were grouped into appropriate broader categories to define the land cover types within the Study Area and the Project Area, as summarized in **Table 6-2.**

The Study Area is primarily cropland (57.6 percent). Mixed-grass prairie and planted grassland combined comprise approximately 28.5 percent of the Study Area. These two cover types are interspersed with each other and concentrated in the northeast portion of the Study Area. Similarly, the Project Area is also dominated by cropland (39.4 percent), mixed-grass prairie (29.2 percent), and planted grasslands (14.7 percent) (**Table 6-2** and **Figure 6: Land Cover and Land Use**).

Cropland within the Project Area primarily consists of row crops and wheat. Mixed-grass prairie within the Project Area is characterized by a predominance of native grasses with a mixture of numerous and moderately abundant native forbs (Shiflet 1994). Mixed-grass prairie is often used as pasture or rangeland. Areas that are overgrazed or have experienced extended surface disturbance may support non-native, invasive herbaceous species. Planted grasslands primarily comprise lands that were plowed and converted to agriculture and then replanted as hay or pastureland. Planted grasslands within the Project Area appear to include a number of non-native, invasive herbaceous species including those listed as noxious, as described below.

NDCC Chapter 4.1–47 identifies 13 noxious weed plant species:

- Absinth wormwood (*Artemisia absinthium*)
- Canada thistle (*Cirsium arvense*)

- Dalmatian toadflax (*Linaria genistifolia* spp. *Dalmatica*)
- Diffuse knapweed (*Centaurea diffusa*)
- Houndstongue (*Cynoglossum officinale*)
- Leafy spurge (*Euphorbia esula*)
- Musk thistle (*Carduus nutans*)
- Palmer amaranth (*Amaranthus palmeri*)
- Purple loosestrife (*Lythrum salicaria, Lythrum virgatum*, and all cultivars)
- Russian knapweed (*Centaurea repens*)
- Saltcedar (*Tamarix* spp.)
- Spotted knapweed (*Centaurea maculosa*)
- Yellow toadflax (*Linaria vulgaris*)

Counties are also able to list additional noxious weeds for control within their jurisdiction. Logan County has designated black henbane (*Hyoscyamus niger*) as a noxious weed. McIntosh County has no additional designations.

6.14.2. Vegetation Resources Impacts and Avoidance/Minimization Measures

Badger Wind has designed the Project to minimize impacts to natural vegetation communities to the extent practicable. Almost all turbines are sited in cultivated croplands, and access roads are primarily sited in agricultural fields and mowed areas associated with roadsides or ditches.

Badger Wind has also minimized disruptions to natural vegetation communities by coordinating the locations of roads with landowners and utilizing existing roads, driveways, edge of field lines, or other previously disturbed areas for proposed facility access road locations to the extent practicable. Linear facilities (i.e., crane paths, access roads, and collection lines) have been co-located when practicable.

Vegetation will be removed from areas of permanent infrastructure footprints for the life of the Project. These areas include turbine pads, access roads, the project substation, the O&M facility, the ADLS tower, and permanent MET towers. With less than one percent of the total Project Area permanently converted for wind turbines or other project infrastructure, the Project will permanently remove approximately 92.3 acres of vegetation for the life of the Project, the majority of which is cropland (65.3 acres) (**Table 6-2)**.

Temporary vegetation impacts will occur within construction easements or workspace during the construction of access roads, crane walks, turning radii, equipment laydown areas, turbine pads, collection line installation, the O&M facility, the ADLS tower, permanent MET towers, and

existing road intersection improvements. Construction of the Project will temporarily impact 1,362.5 acres of vegetation (see **Table 6-2**). Following construction, the temporarily disturbed areas outside of cropland will be re-vegetated with a seed mixture consistent with the surrounding vegetation and free of noxious weeds, in coordination with the NRCS and landowners. Once re-vegetated, these areas will be available for their present use. Construction workspace impact calculations are conservative, and actual impacts are anticipated to be less.

Because ground will be disturbed by equipment deliveries from different geographic areas, introduction of noxious weeds may occur. Badger Wind has developed a Reclamation and Noxious Weed Management Plan (**Appendix I**) that identifies and establishes the procedures to prevent the introduction and spread of noxious weeds during construction and ongoing operations. As detailed in the Badger Wind Reclamation and Noxious Weed Management Plan (**Appendix I**), appropriate BMPs will be employed during project construction to avoid or limit temporary impacts to vegetation. Temporary disturbance areas will be reclaimed and reseeded according to NRCS recommendations, unless otherwise specified by the landowner and approved by the Commission. Badger Wind will work collaboratively with construction parties to prevent and/or minimize the introduction and spread of noxious weeds during construction and operations.

6.15. Wildlife

Badger Wind has been conducting wildlife and wildlife habitat studies for the Project since 2019 to evaluate potential impacts to wildlife. Based on the results of these studies, and in coordination with NDGF and USFWS, the Project Area was refined to avoid and minimize potential impacts to wildlife. The wildlife surveys summarized in **Table 6-8** were conducted in coordination with NDGF and USFWS and are consistent with the voluntary USFWS Land-Based Wind Energy Guidelines (WEG) and Eagle Conservation Plan Guidance. The iterations of each survey listed in **Table 6-8** are discussed in detail in the BBCS (**Appendix H**) and are also summarized in the sections below.

Table 6-8: Summary of Wildlife Studies for the Badger Wind Project

Survey Type	Study Period	Reference
Avian Use Surveys	May 2019–April 2020	Atwell 2020a
Avian Use Surveys	May 2020–April 2021	Atwell 2021a
Bald Eagle and Raptor Nest Survey and Monitoring	May 2019	Atwell 2019
Bald Eagle and Raptor Nest Survey and Monitoring	April 2020	Atwell 2020b
Bat Acoustic Monitoring	May 2019–October 2019	Atwell 2020c
Bat Acoustic Monitoring	May 2020–October 2020	Atwell 2021b
Grassland Assessment	August–September 2020	Atwell 2020d
Grassland Assessment	November 2021	WEST 2021a
Northern Long-Eared Bat Habitat Assessment	January 2020	Atwell 2020e
Sharp-tailed Grouse Lek Monitoring	May 2019	Atwell 2019
Sharp-tailed Grouse Lek Monitoring	April–May 2020	Atwell 2020b

Survey Type	Study Period	Reference
Sharp-tailed Grouse Habitat Assessment	November 2021	WEST 2021b
Whooping Crane Desktop Assessment	September 2021	Atwell 2021c

As discussed further in **Section 9.0**, Badger Wind coordinated closely with the USFWS, NDGF, and North Dakota Parks and Recreation (NDPR) regarding wildlife and species habitat. Specifically, the USFWS provided information related to federally listed threatened and endangered species (discussed further in **Section 6.16**), eagles, birds of conservation concern, and other migratory birds. The NDGF provided information relating to species of conservation priority (SCP), particularly relating to conserving habitat for these species. This included concerns relating to potential impacts to native prairie (also referred to interchangeably by NDGF as unbroken grasslands), wetlands, sharp-tailed grouse, bats, bald and golden eagles, and whooping cranes within the Project Area. The NDPR performed a review of the North Dakota Natural Heritage biological conservation database. No resources were identified within the Project Area, and the NDPR deferred further comment on the Project's potential to impact wildlife to the NDGF and USFWS.

6.15.1. Existing Conditions

The following sections describe wildlife species identified during desktop and field studies as occurring within the Study Area.

6.15.1.1. Avian Species

Migratory Birds

The Migratory Bird Treaty Act (MBTA) of 1918 prohibits the taking, killing, possession, transportation, import, and export of migratory birds, their eggs, parts, and nests, except when specifically authorized by the Department of the Interior (16 USC § 703). The word "take" is defined by regulation as "to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect" (50 Code of Federal Regulations [CFR] § 10.12). The USFWS maintains a list of all species protected by the MBTA at 50 CFR § 10.13. This list includes more than one thousand species of migratory birds, including eagles and other raptors, waterfowl, shorebirds, seabirds, wading birds, and passerines.

The 1988 amendment to the Fish and Wildlife Conservation Act mandates that the USFWS "identify species, subspecies, and populations of all migratory nongame birds that, without additional conservation activities, are likely to become candidates for listing under the Endangered Species Act of 1973." As a result of this mandate, the USFWS created the Birds of Conservation Concern list. The goal of the BCC list is to prevent or remove the need for additional Endangered Species Act (ESA) bird listings by implementing proactive management and conservation actions and coordinating consultations in accordance with Executive Order 13186. The Study Area and Project Area are located within Bird Conservation Region (BCR) 11 – Prairie Potholes, which includes 34 BCC species, eight of which do not breed within the BCR.

As discussed in **Sections 6.2** and **6.14**, the predominant land cover types within the Project Area are cropland (39.4 percent), mixed-grass prairie (29.2 percent), and planted grassland (14.7 percent). Mixed-grass prairie and planted grasslands support both migratory and resident bird species for resting, foraging, and breeding activities.

Badger Wind completed two years of baseline general avian use surveys (i.e., diurnal avian activity surveys) to evaluate potential impacts to MBTA-protected species. Ten-minute fixed-point surveys were conducted during the spring (March through May) and fall (August through November) seasons from May 2019 to April 2021 to quantify general avian use of the Study Area. These surveys determined avian species composition, diversity, richness, and concentration within the Study Area both seasonally and spatially, including for species of concern. Avian use studies were conducted in accordance with the USFWS Land-Based WEG (USFWS 2012), the Eagle Conservation Plan Guidance: Module 1—Land-based Wind Energy, Version 2 (USFWS 2013), and the Revisions to Regulations for Eagle Incidental Take and Take of Eagle Nests (i.e., "final Eagle Rule") (USFWS 2016a).

The year one diurnal avian activity surveys recorded 29,404 individual bird observations from 62 species. Many of the most commonly observed species were generalists that are often observed in agricultural areas, including mourning doves (*Zenaida macroura*), rock pigeons (*Columba livia*), and American crows (*Corvus brachyrhynchos*). Passerines and waterfowl together accounted for over 95 percent of bird detections recorded during spring diurnal avian use surveys. Large groups of Lapland longspurs (*Calcarius lapponicus*) and snow geese (*Chen caerulescens*) in particular influenced this pattern. Passerines and waterbirds accounted for over 80 percent of bird detections during fall avian use surveys, driven by large groups of red-winged blackbirds (*Agelaius phoeniceus*) and Franklin's gulls (*Leucophaeus pipixcan*). Sandhill cranes (*Grus canadensis*; in spring) and waterfowl (fall) were observed flying at high altitudes well above the 200-meter-high sample plot and the rotor-swept zone (RSZ).

The year two diurnal avian activity surveys recorded 28,027 individual bird observations from 97 species. Many of the bird species that were commonly observed in the Project Area are habitat generalists that are regularly observed in agricultural areas, including several species of blackbirds and Lapland longspurs. Large groups of birds were observed moving through the Project Area during migration. These included snow geese, Franklin's gulls, and sandhill cranes. Small-bodied passerines (particularly Icterids and Lapland longspurs) and waterfowl (particularly snow geese) together composed the majority (93 percent) of avian detections.

In total, for the year one and year two surveys, one federally listed endangered bird species (whooping crane), two species (bald and golden eagle) protected under the Bald and Golden Eagle Protection Act (BGEPA), and 35 North Dakota SCP (including whooping crane, bald eagle, and golden eagle) were detected. As of the preparation of this Application, 13 SCP species are also listed by the USFWS as BCC species for BCR 11 and/or throughout its range in the continental United States and Alaska (USFWS 2021a). Of the 34 BCC listed for BCR 11, 13 species were observed in the Project Area. The BBCS and associated baseline studies list the North Dakota SCP that were identified during year one and year two avian use surveys. **Section 6.16** discusses North Dakota SCP in more detail.

Eagles and Raptors

Badger Wind conducted aerial and ground-based eagle and raptor nest surveys in 2019 and 2020 to document eagle and non-eagle raptor nest locations within and adjacent to the Project Area (Atwell 2020a; Atwell 2021a). Raptor nest surveys were completed for the Project Area plus a ten-mile buffer. Badger Wind also recorded eagle and raptor use during the two years of eagle use and avian use surveys. These surveys and associated results are discussed further below.

Raptors

In total, 30 non-eagle raptor nests were identified within the Project Area and a two-mile buffer during eagle and raptor nest surveys; nine are within the Project Area, and 21 are outside of, but within two miles of, the Project Area. An additional three non-eagle raptor nests were incidentally found within the Project Area during micrositing activities in 2021. Non-eagle raptor nests belonged to ferruginous hawks, great horned owls, red-tailed hawks, Swainson's hawks, and unknown raptor species. One red-tailed hawk nest that was located within two miles of the Project Area during 2019 raptor and eagle nest surveys was missing in 2020. Refer to the Badger Wind BBCS (**Appendix H**) for additional information regarding raptor nests in the Project Area.

Eagles

Under authority of the BGEPA (16 USC §§ 668–668d), bald eagles and golden eagles are afforded additional legal protection. The BGEPA prohibits the take, sale, purchase, barter, offer of sale, purchase or barter, transport, export, or import, at any time or in any manner of any bald or golden eagle, alive or dead, or any part, nest, or egg thereof (16 USC § 668). The BGEPA also defines take to include "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb" (16 USC § 668c) and includes criminal and civil penalties for violating the statute. The term "disturb" is defined as agitating or bothering an eagle to a degree that causes, or is likely to cause, injury to an eagle, or either a decrease in productivity or nest abandonment by substantially interfering with normal breeding, feeding, or sheltering behavior (50 CFR § 22.3).

No eagle nests are located within two miles of proposed wind turbine locations. The nearest eagle nests to wind turbines (one inactive nest and one active nest) are both approximately 2.02 miles from nearest turbines (turbines 19 and 39, respectively). One active bald eagle nest was found within the Project Area during both the 2019 and 2020 eagle and raptor nest surveys. No other active eagle nests were found within two miles of the Project Area during 2019 and 2020 eagle and raptor nest surveys (Atwell 2020a; Atwell 2021a). However, on 10 March 2021, a new active bald eagle nest was located within the Project Area. The nest was found incidentally during eagle-use surveys. The 2019–2020 and 2021 nests are believed to belong to the same nesting territory, as the 2021 bald eagle active nest is approximately 1.98 miles (3.19 km) east of the 2019–2020 nest. As such, the 2019–2020 nest was classified as an alternate nest site (USFWS 2013; USFWS 2016b), since recent guidance issued by the USFWS notes that nesting bald eagles are not expected to roam beyond two miles from nest sites (USFWS 2020b). The 2019–2020 nest was checked repeatedly after the discovery of the nest on 10 March 2021, and during the course of those checks, it could no longer be located. No bald eagles were observed at the old nest site during these subsequent checks.

No golden eagle nests were located within the Project Area or within ten miles of the Project Area during eagle and raptor nest surveys in 2019 and 2020.

Badger Wind completed two years of avian use and eagle use surveys. In total, 34 bald eagle detections and six golden eagle detections occurred during year one eagle use surveys (Atwell 2020a). Total eagle detections during year two surveys were similar to year one. In total, 35 bald eagle detections and six golden eagle detections occurred during year two surveys (Atwell 2021a).

In total, 13 raptor species were observed during avian use and eagle use surveys in year one. Raptor mean use within the Project Area was greater during the fall compared to the spring. Swainson's hawks, red-tailed hawks, and northern harriers collectively accounted for approximately 68 percent of raptor detections in the spring season and 82 percent of detections in the fall season (Atwell 2020a).

In total, 11 raptor species were observed during avian use and eagle use surveys in year two. Raptor mean use within the Project Area was greater during the fall survey period compared to the spring. Swainson's hawks, red-tailed hawks, and northern harriers collectively accounted for approximately 66 percent of raptor detections in the spring season and 65 percent of detections in the fall season (Atwell 2021a). Overall, red-tailed hawks and Swainson's hawks comprised the majority of raptor species observed within the RSZ. Furthermore, only two SCP Level I ferruginous hawks were observed during year two avian use and eagle use surveys, both of which were within the RSZ. Level II northern harriers and American kestrels, however, tended to fly below the RSZ (Atwell 2021a)

Sharp-tailed Grouse

Aerial and ground-based sharp-tailed grouse lek surveys were conducted in 2019 and 2020 (Atwell 2020a; Atwell 2021a). Two confirmed lek locations were observed within the current Project Area boundary. Four confirmed, and one possible, lek locations were observed within one mile of the Project Area boundary. Seven confirmed, and one possible, lek locations were observed beyond the current Project Area's one-mile buffer. Confirmed leks held four to 27 individuals (Atwell 2021a).

During year one avian use and eagle use surveys, 38 sharp-tailed grouse were detected, including 32 in the spring and six in the fall. During year two avian use and eagle use surveys, 18 sharp-tailed grouse were detected, including nine in the spring and nine in the fall.

Refer to **Section 6.16** for a detailed discussion of special status species, including sharp-tailed grouse.

6.15.1.2. Mammals

Habitat for mammals can be found throughout the Project Area in agricultural fields, grasslands, and wetlands/waterways. Common mammals that may occur within the Project Area include white-tailed deer (*Odocoileus virginiana*), pronghorn (*Antilocapra americana*), coyote (*Canis latrans*), red fox (*Vulpes fulva*), raccoon (*Procyon lotor*), badger (*Taxidea taxis*), striped skunk

(*Mephitis mephitis*), three-lined ground squirrel (*Spermophilus tridecemlineatus*), and western harvest mouse (*Reithrodontomys megalotis*). All these species can be found throughout North Dakota and are habitat generalists.

6.15.1.3. Bat Species

Eleven species of bats are known to occur in North Dakota, six of which may occur within the Project Area. This includes big brown bat (*Eptesicus fuscus*), eastern red bat (*Lasiurus borealis*), hoary bat (*Lasiurus cinereus*), little brown bat (*Myotis lucifugus*), northern long-eared bat (NLEB; *Myotis septentrionalis*), and silver-haired bat (*Lasionycteris noctivagans*) (NDGF 2016a; NDGF 2016b; BCI 2019). One of these species, NLEB, is federally listed as threatened (USFWS 2020c) and is also considered a Level I North Dakota SCP. Two of these bat species, big brown bat and little brown bat, are also considered Level I North Dakota SCP.

Although the ranges of northern long-eared, big brown, and little brown bats overlap the Project Area, the Project Area is dominated by cultivated cropland and herbaceous land cover with very little forested habitat and no known caves or other karst landforms. Forested bat habitat is limited to approximately 62.9 acres (wooded parcels and wooded shelterbelts or tree lines manually delineated using satellite imagery), primarily consisting of small woodlots and shelterbelts scattered throughout the Project Area.

To characterize bat activity in the Project Area, acoustic bat monitoring was performed within the Project Area from 23 May–16 October 2019 at one MET tower and at four ground-based locations representative of potential turbine locations. The raised MET tower location was paired with a ground-based location. Three of the four ground locations and the one MET tower location were within the current Project Area. Overall, bat activity within the Project Area was relatively low. Approximately 89 percent of bat passes were classified as low frequency (<30 kilohertz [kHz]; big brown bat, silver-haired bat, hoary bat), and 11 percent were classified as high frequency bat passes (>30 kHz; eastern red bat, *Myotis* species). No federally listed bat species were confirmed; however, bat passes identified as high frequency could belong to the *Myotis* species group, which includes the NLEB. Four *Myotis* calls (0.20 percent of all bat calls) identified as little brown bat (North Dakota Level 1 SCP) were recorded during the study (Atwell 2020c).

A second year of acoustic bat monitoring occurred within the Project Area from 14 April–15 October 2020 at two MET towers and at four ground-based locations representative of potential turbine locations. Raised MET tower locations were paired with ground-based locations. Three of the four ground locations and both MET tower locations were within the current Project Area boundary. Overall, bat activity within the Project Area was relatively low. Approximately 82 percent of bat passes were classified as low frequency (<30 kHz; big brown bat, silver-haired bat, hoary bat), and 18 percent were classified as high frequency bat passes (>30 kHz; eastern red bat, *Myotis* species). As with the first year results, no federally listed species were confirmed. Two unknown *Myotis* species calls (0.18 percent of all bat calls) were recorded during the study; however, a species determination could not be made as these calls contained characteristics of both NLEB and little brown bat. An additional three *Myotis* calls (0.26 percent

of bat calls) identified as little brown bat (North Dakota Level 1 SCP) were recorded during the study (Atwell 2020c).

Badger Wind also performed a bat habitat desktop assessment of the Study Area and determined that potential suitable habitat for NLEB is limited within the Project Area (Atwell 2020e). The bat habitat desktop assessment found that less than 0.1 percent (approximately 62.9 acres) of the Project Area supports woodlands and wooded shelter belts that may provide roosting and foraging habitat for NLEB. Available wooded areas within the Project Area are highly fragmented, and there is very limited connectivity of wooded shelter belts throughout the landscape. Wooded stands on site are all less than ten acres in size. Most riparian areas in the Project Area do not support adjacent woodlands.

Refer to **Section 6.16** for a discussion of special status species, including the NLEB, big brown bat, and little brown bat.

6.15.1.4. Reptiles and Amphibians

A variety of reptiles and amphibians may be present within the Project Area, such as the Great Plains toad (*Anaxyrus cognatus*), northern leopard frog (*Lithobates pipiens*), boreal chorus frog (*Pseudacris maculate*), tiger salamander (*Ambystoma mavortium*/*Ambystoma tigrinum*), painted turtle (*Chrysemys picta*), snapping turtle (*Chelydra serpentina*), and common and plains garter snakes (*Thamnophis sirtalis* and *Thamnophis radix*). Most of the species listed here live in habitats associated with wetlands, streams, ditches, or waterbodies. A few of the species (e.g., Great Plains toad, garter snakes) may be found in more open areas, such as grasslands, meadows, or woodland edges (Johnson 2015).

Snapping turtle is considered a North Dakota SCP Level 2 species. This species prefers muddy-bottomed permanent or semi-permanent bodies of warm water or slow-moving rivers and streams with high sediment loads. Snapping turtle has been designated as an SCP due to habitat loss (e.g., the loss of aquatic vegetation, stumps, logs, and other debris), as well as road mortality, unregulated harvesting, contaminants, and deliberate killing due to perceived danger (Dyke et al. 2015).

6.15.2. Wildlife Impacts and Avoidance/Minimization Measures

Field and desktop studies indicate that impacts to wildlife and wildlife habitat are expected to be minimal because grasslands, wooded areas, shrublands, and other areas identified as important to wildlife are relatively limited within the Project Area and will largely be avoided through project design. The following sections describe potential impacts and proposed avoidance and minimization measures for wildlife.

6.15.2.1. Avian Species

Migratory Birds

Migratory birds may be impacted direct or indirectly as a result of the construction and operation of wind energy facilities. Direct impacts may result from collision with operating turbines or from

the clearing and construction of the Project. Indirect impacts may occur through habitat avoidance (i.e., displacement) as a result of construction activity or placement of a new feature on the landscape (e.g., wind turbine).

During both years of pre-construction avian use and eagle use surveys, passerines, waterfowl, and waterbirds typically accounted for the greatest proportions of detections. These trends were typically driven by large groups of Lapland longspurs, red-winged blackbirds, snow geese, Franklin's gulls, and sandhill cranes.

Overall, the species composition, seasonal abundance, and spatial use patterns documented during avian surveys are considered typical for birds in this region. The majority of species observed are common and abundant within the region. The Project is not anticipated to result in population-level impacts to avian species, including species of concern.

Potential impacts to avian species habitats, such as wetlands, woodlands, and grasslands, are described in **Sections 6.13** and **6.14**.

Grassland Breeding Birds

Badger Wind has conducted in-depth coordination with NDGF regarding potential impacts to "unbroken" or "native" grasslands that may be used by grassland breeding bird populations. Based on this coordination, Badger Wind completed desktop and field verifications of grassland communities within the Project Area. Field verification of grassland habitat conditions was used to not only confirm areas of unbroken grasslands, but also to identify areas that may once have been unbroken but have been subsequently converted to agricultural production (WEST and Piorkowski 2021). These results have been used to evaluate and inform project infrastructure siting decisions to avoid and/or minimize potential impacts to unbroken grassland habitat (Atwell 2020d; WEST and Piorkowski 2021).

Badger Wind is voluntarily prioritizing avoidance and minimization of impacts to unbroken, or native, grasslands, as there are no local, state, or federal protections for these plant communities, nor are there prohibitions against development on such grasslands. As discussed in **Section 1.2.4**, Badger Wind has revised the size and location of the Project Area and has moved project infrastructure out of unbroken grassland in the northeast corner of the Project Area. Badger Wind has avoided large, intact grasslands and focused land leasing efforts on actively managed agricultural lands to the degree that only two turbine pads will have permanent impacts to field-verified unbroken grassland. The north edge of the pad of Turbine 17 will impact 0.02 acres of this grassland. The west edge of Turbine 60 will impact 0.06 acres of this grassland type.

To reduce habitat fragmentation, roads and laydown areas have been sited in previously disturbed or agricultural areas, outside of unbroken grasslands, wetlands, and waterbodies, to the extent practicable. Existing roads will also be used where feasible to further reduce impacts. Badger Wind will use approved native seed mixes (as appropriate and where final approval is granted by the landowner) to restore temporary impact areas associated with construction activities. Lastly, Badger Wind is coordinating with the USFWS and NDGF on voluntary offsets for potential grassland breeding bird displacement.

Eagles and Raptors

In total, 33 non-eagle raptor nests were recorded within two miles of the Project Area, 12 of which were found within the Project Area. This total includes nests located during surveys as well as those noted incidentally during field micrositing efforts. Non-eagle raptor species observed nesting within the Project Area include ferruginous hawks, great horned owls, red-tailed hawks, and Swainson's hawks. Badger Wind has designed the layout to minimize tree clearing and potential impacts to these nests. Badger Wind has sited turbines at least 0.25 miles from identified active, occupied non-eagle raptor nests to the extent practicable. Further, by siting turbines in cultivated areas to the extent possible, Badger Wind has reduced the potential for raptors to collide with turbines; although collisions may occur, population-level impacts are not anticipated.

No golden eagle nests were identified within the Project Area or within ten miles of the Project Area during eagle and raptor nest surveys in 2019 and 2020. Cumulatively, 12 golden eagle detections were recorded over two years of surveys. Given this low observed use rate, golden eagle use of the Project Area is expected to be minimal. Golden eagles are not likely to nest within the Project Area as the primary breeding range has been delineated mainly in the western half of the state (Dyke et al. 2015; AKN 2019). Therefore, impacts to golden eagles are not expected to occur as a result of the Project.

Cumulatively, 69 bald eagle detections were recorded over two years of surveys. One active bald eagle nest is, and one alternate bald eagle nest was, located within the Project Area. Impacts are not expected to occur to bald eagle nests as turbines have been sited at least two miles from these two nest locations. If guy-wired MET towers are required, they will be marked with avian flight diverters to reduce the potential for collisions. In addition, wildlife carrion and livestock carcasses will be removed in order to minimize attracting prey species and scavenging opportunities. No prairie dog colonies exist in the project area; they are a known prey source. Post-construction monitoring, which will be conducted for at least one year following construction, will provide more clarity regarding any impacts to eagles. If a new eagle nest is identified within the Project Area, or a project-related eagle fatality is confirmed, Badger Wind will coordinate with the USFWS and may implement adaptive management. Badger Wind continues to coordinate with the USFWS regarding recommendations and measures to avoid and minimize potential impacts to eagles.

Sharp-tailed Grouse

It is not anticipated that sharp-tailed grouse will experience direct impacts from construction of the Project. While this species is relatively common within the Study Area, sharp-tailed grouse tend to remain below the RSZ of wind turbines. This species is more likely to experience indirect impacts via avoidance of suitable habitat or displacement of lekking and nesting areas due to the presence of project infrastructure (Coppes et al. 2020).

Badger Wind has minimized siting of turbines, roads, and other infrastructure in unbroken grasslands, thereby minimizing the potential for impacts on grassland-dependent species, such as sharp-tailed grouse. Badger Wind has avoided large, intact grasslands and focused land leasing efforts on actively managed agricultural lands. Badger Wind has also voluntarily sited turbines at

least 0.5 miles away from known, active sharp-tailed grouse leks; outside of potential nesting habitat; and within agricultural areas to the extent practical in coordination with NDGF and the USFWS. To reduce habitat fragmentation, roads and laydown areas have been sited in previously disturbed or agricultural areas, outside of unbroken grasslands to the extent practicable. Existing roads will also be used where feasible to further reduce impacts. Additional mitigation measures for sharp-tailed grouse are further addressed in the project BBCS (**Appendix H**).

Following construction, temporarily disturbed areas will be reclaimed according to NRCS recommendations, unless otherwise specified by the landowner and approved by the Commission, as detailed in the Badger Wind Reclamation and Weed Management Plan (**Appendix I).**

Badger Wind has prepared a BBCS based on the results of surveys and agency recommendations, which outlines specific mitigation measures that Badger Wind has implemented during project layout and design, or plans to implement during construction and operation, to avoid and/or minimize potential impacts on avian species, including but not limited to the following:

- Turbines will be sited at least 0.25 miles from identified active, occupied non-eagle raptor nests, to the extent practical. If turbines cannot be sited away from a raptor nest, Badger Wind will consult with the USFWS and NDGF to determine appropriate mitigation measures, including potentially removing or relocating the nest outside the nesting season.

- Construction activities will be initiated prior to the raptor nesting season, to the extent practical. In cases where construction activities must occur in proximity to active nests, activities will be limited to the extent practical, and nests will be monitored during the nesting season by a qualified biologist.

- As appropriate, areas will be checked for nests prior to disturbance and/or surface disturbance.

- Badger Wind has voluntarily sited turbines at least 0.5 miles away from known active sharp-tailed grouse leks in coordination with NDGF and the USFWS. Additional mitigation measures for sharp-tailed grouse sites are further addressed in the BBCS (**Appendix H**).

- Collection lines will be buried to reduce potential bird strikes with electric lines.

- If guyed permanent MET towers will be used, they will be marked with avian flight diverters.

- Wind turbine and permanent MET tower lighting will comply with minimum FAA requirements and will utilize an ADLS (refer to **Section 4.1.1.5**). Lighting of ancillary structures will be minimized, and downward-facing and/or motion-sensing lights installed, as practicable, to minimize attracting birds and bats.

- Contractors and subcontractors will be required to attend wildlife awareness training.
- Good housekeeping measures will be implemented during the construction period and over the operational life of the Project (e.g., collection and disposal of trash, debris, and limiting unharvested crops, as feasible).
- Wildlife carrion/livestock carcasses will be removed in order to minimize attracting scavengers or prey species.
- Vehicles will be limited to roads or specific construction paths and will adhere to established on-site speed limits.
- A SWPPP will be developed and implemented to limit potential for erosion-related impacts to wildlife or sensitive habitats.
- Pesticide, herbicide, fertilizer, and other chemical treatments will be used in accordance with federal and state regulations and laws to minimize drift and other potential impacts on native habitat.
- Post-Construction Mortality Monitoring (PCMM) will be conducted for at least a one-year period. The PCMM program will include searches for bird and bat carcasses and will correct for potential searcher efficiency and carcass removal biases.
- An adaptive management program will be implemented in accordance with the Badger Wind BBCS (**Appendix H**).

Badger Wind continues to coordinate with the USFWS and NDGF regarding appropriate mitigation measures for potential avian impacts. Should additional avoidance and minimization measures be warranted based on operational impacts or a change in listing status for a species that may occur within the project site, Badger Wind will coordinate with NDGF and/or the USFWS, as described in the Adaptive Management section in the Badger Wind BBCS (**Appendix H**).

6.15.2.2. Mammals

Ground-clearing activities associated with the construction of turbines, the substation, O&M facilities, permanent access roads, and associated facilities have the potential to impact habitat for ground-dwelling wildlife. However, the mammal species that are likely to occur on site are habitat generalists and can readily relocate to adjacent unaffected areas with no population-level impacts. If project construction were to impact these species' habitat, these species could readily relocate to adjacent unaffected areas.

Turbines and access roads have been sited to avoid wooded stands and shelterbelts to the extent practicable. Tree clearing will be avoided to the extent practicable. Where unavoidable, tree removal will be mitigated in accordance with the Commission's tree and shrub mitigation specifications.

After construction, all temporary surface disturbance will be reclaimed according to NRCS recommendations, unless otherwise specified by the landowner and approved by the Commission, as detailed in the Badger Wind Reclamation and Weed Management Plan (**Appendix I**).

6.15.2.3. Bat Species

Impacts to bats may occur through loss of habitat or as a result of direct impact due to collision. Badger Wind has coordinated with the USFWS and NDGF and has designed the Project to avoid and/or minimize potential impacts to bat species. Badger Wind is voluntarily adhering to guidance included in the WEG to minimize potential impacts to bats. Turbines and access roads have been sited to avoid wooded stands and shelterbelts to the extent practicable, and less than 0.03 acre of impacts to wooded areas may occur.

There is the potential for bats to collide with turbines. However, based on the 2019 and 2020 pre-construction bat acoustic study results, bat activity was relatively low, peaking during the late summer and early fall migration period. Based on data from similar nearby wind projects, the Project is anticipated to have low bat fatality rates.

Badger Wind has prepared a BBCS that will be implemented during construction and operation of the Project (**Appendix H**). The BBCS documents Badger Wind's compliance with relevant wildlife laws and regulations and has been developed in a manner that is consistent with the USFWS Land-Based WEG. The BBCS documents the measures to be implemented during siting, construction, and operations to avoid and minimize impacts to bats by the Project.

In addition, Badger Wind will implement the following measures to avoid and minimize potential impacts to bats:

- Unavoidable impacts to trees will be mitigated consistent with the Commission's tree and shrub mitigation specifications.
- As appropriate, wooded areas will be checked for potential bat roosts prior to disturbance. If NLEB is detected, tree removal will be conducted in accordance with the USFWS 4(d) rule (refer to **Section 6.16**)
- PCMM will be conducted for at least a one-year period. The PCMM program will include searches for bird and bat carcasses and will correct for potential searcher efficiency and carcass removal biases.
- An adaptive management program will be implemented in accordance with the Badger Wind BBCS (**Appendix H**).

Badger Wind continues to coordinate with the USFWS and NDGF regarding appropriate measures to address potential bat impacts. Should additional avoidance and minimization measures be warranted based on operational impacts or a change in listing status for a species that may occur within the Project Area, Badger Wind will coordinate with NDGF and/or the USFWS, as described in the Adaptive Management section in the Badger Wind BBCS (**Appendix H**).

Refer to **Section 6.16** for additional information regarding the federally listed NLEB as well as the little brown bat and big brown bat, which are listed as SCP. Refer to the Badger Wind BBCS (**Appendix H**) for further information about bats in relation to the Project.

6.15.2.4. Reptiles and Amphibians

Impacts to wetland habitats are described in **Section 6.13**. The Project Area generally lacks preferred snapping turtle habitat, which includes warm water in lakes or rivers with a muddy bottom and aquatic vegetation. Given the limited impacts to wetlands, watercourses, and waterbodies, impacts to snapping turtles as a result of project development is expected to be minimal.

6.16. Rare and Unique Natural Resources

The following sections describe existing conditions, potential impacts, and proposed avoidance/minimization for rare and unique natural resources in the Project Area.

6.16.1. Existing Conditions

6.16.1.1. Federally Listed Species

The ESA of 1973, 50 CFR Part 402, provides a framework for the conservation of threatened and endangered plants and animals and the habitats in which they are found. Under the ESA, an endangered species is one that is in danger of extinction throughout all or a significant portion of its range. A threatened species is one that is likely to become endangered in the foreseeable future. A proposed species is one that is officially proposed in the Federal Register to be listed under Section 4 of the ESA. The USFWS has one year after a species is proposed for listing under the ESA to make a final determination on whether to list a species as threatened or endangered. A candidate species is a plant or animal for which the USFWS has sufficient information on its biological status and threats to propose it as endangered or threatened under the ESA, but for which development of a proposed listing regulation is precluded by other higher-priority listing activities. While candidate species are not legally protected under the ESA, it is within the spirit of the ESA to consider said species as having significant value and being worth protecting. Finally, critical habitat includes specific areas that are occupied by a species at the time of listing or unoccupied areas that are considered essential to the conservation of a species. Critical habitat must contain physical or biological features essential to conservation of the species and may require special management considerations or protection.

The USFWS Information for Planning and Consultation (IPaC) system was reviewed for a list of threatened, endangered, and candidate species and Designated Critical Habitat that could occur within the Project Area and a one-mile buffer (USFWS 2020c). According to the USFWS IPaC system, no Designated Critical Habitat is present in the Study Area or Project Area. Four federally listed species have the potential to occur within the Project Area and a one-mile buffer:

- Whooping crane (*Grus americana*; endangered)

- NLEB (threatened)
- Piping plover (*Charadrius melodus*; threatened)
- Red knot (*Calidris canutus rufa*; threatened)

Whooping Crane

The whooping crane was first listed as endangered in the United States in 1967. The species was grandfathered into the ESA of 1973, and critical habitat was designated in 1978. A single self-sustaining population exists, the Aransas-Wood Buffalo population, which migrates during spring and fall through a 2,400-mile-long by 200-mile-wide corridor spanning Saskatchewan, eastern Montana, North Dakota, South Dakota, Nebraska, Kansas, Oklahoma and Texas (Urbanek and Lewis 2015). Individuals of this whooping crane population are not known to breed or reside in North Dakota. In North Dakota, the whooping crane is not present year-round; they are only present during the twice-yearly migration between winter grounds and summer nesting sites (i.e., April to June and September to November) (Urbanek and Lewis 2015). In North Dakota, the migratory corridor extends approximately 220 miles wide from east to west; however, 75 percent of the sightings occur within an 80-mile-wide band centered within the larger corridor. Whooping cranes are known to utilize a variety of wetland habitats within an agricultural landscape during migration stopovers (USFWS 2009). However, no Designated Critical Habitat for the whooping crane is present in Logan or McIntosh Counties, North Dakota (USFWS 2016c; USFWS 2019a).

The Project Area lies at the edge of the portion of the whooping crane migration corridor in which 75 percent of whooping crane sightings have occurred (Pearse et al. 2018). Based on stopover data (USFWS unpublished data), the closest whooping crane observations to the Project Area occurred within five miles of the Project Area boundary. The last whooping crane observation documented by the USFWS occurred between 31 October and 6 November 2011, comprising four individuals noted loafing in a pond and feeding in nearby fields approximately five miles southwest of the Project Area.

During an agency coordination meeting in January 2020, the USFWS and NDGF recommended performing a whooping crane stopover habitat assessment. NDGF noted the northwest corner of the Project Area site is considered core stopover habitat (January 2021 guidance letter). The USFWS also confirmed the Project Area is within the whooping crane migration corridor and that whooping cranes have been reported near or within the proposed Project Area (January 2021 guidance letter). Guidance letters and meeting memos are detailed in **Section 9**.

A whooping crane stopover habitat assessment was conducted for the Project in September 2021 using data sources recommended by the USFWS and NDGF. The assessment determined that there is potential suitable stopover habitat for whooping cranes within the Project Area; however, this habitat is of relatively lower quality and quantity compared to reference areas within the regional landscape (Atwell 2021c).

During on-site avian use and eagle use surveys, three adult whooping cranes were observed within the Project Area on 15 April 2020. The whooping cranes were observed foraging in agricultural areas (i.e., corn fields) throughout the day, approximately four miles northwest of

Wishek, North Dakota. The roosting location was confirmed to be within the west-central portion of the Project Area at the confluence of two seasonally saturated wetlands. Poor harvesting conditions in 2019 lead to the presence of unharvested corn in fields in the spring of 2020. It is possible that the whooping cranes were dispersing farther from the migration corridor's centerline than expected due to these conditions.

Northern Long-eared Bat

The NLEB was listed by the USFWS as threatened under the ESA on 4 May 2015, primarily because of the threat posed by white nose syndrome (WNS) (USFWS 2015a,b); the USFWS published a final 4(d) rule for the species on 14 January 2016 (USFWS 2016d). The USFWS determined that designating critical habitat for the species was not prudent (USFWS 2016e). The USFWS's final 4(d) rule for NLEB limits prohibitions for the incidental take of the species to those that would protect the bat in WNS-affected areas. All of North Dakota falls within the 4(d) rule zone (USFWS 2020d).

Per the USFWS final 4(d) rule for NLEB, within the WNS Zone incidental take within known hibernacula is prohibited, and incidental take due to tree removal is prohibited as follows:

- If it occurs within 0.25-miles (0.4 km) of a documented hibernaculum; or
- If it involves a documented maternity roost tree or other trees within 150 feet (47 meters) of the documented maternity roost tree from 1 June 1 through 31 July.

The NLEB is rare in North Dakota, and no known maternity roost trees or hibernacula are reported for NLEB in the state (USFWS 2019b). Publicly documented NLEB presence in North Dakota is west of the Missouri River within the Missouri River Valley, the Badlands of North Dakota, and the Moreau Prairie. The Project Area is located outside of core range for NLEB. Confirmed NLEB presence, captured via acoustic recordings and/or mist netting, range from approximately 53 to 187 miles west and northwest of the Project Area (Nelson et al. 2015; Shank et al. 2015).

The annual life history of the NLEB includes an inactive hibernating period and an active period when the species forages, raises its young, and breeds. NLEB hibernation begins in October and November and ends in March and April (USFWS 2016e). In April, the species emerges from its hibernacula and migrates to summer roosting habitat. The pup season occurs between 1 June and 31 July (USFWS 2016e). Suitable summer habitat for NLEB includes forested and wooded habitats, which may be interspersed with non-forested habitats (i.e., emergent wetlands, shelter belts adjacent to agricultural fields, and pastures). According to the USFWS, although the Project Area is not heavily forested, riparian corridors within the Project Area may serve as treed habitat for roosting and foraging in summer (refer to **Section 9**).

As discussed in **Section 6.15**, bat acoustic surveys were conducted within the Study Area in 2019 and 2020. Qualitative analysis of the acoustic data was inconclusive in that there were some *Myotis* calls that could not be attributed to species. Badger Wind also conducted a bat habitat desktop assessment of the Study Area and determined that potentially suitable habitat for NLEB

is limited within the Project Area (Atwell 2020e). As such, based on the habitat assessment and lack of conclusive NLEB calls detected, the potential for NLEB to occur in the Project Area is low.

Piping Plover

The piping plover was ESA listed in 1986. The Northern Great Plains population is listed as threatened. In North Dakota, this species is a summer resident and a seasonal migrant, arriving at their breeding and nesting grounds in early to mid-April and leaving by early September. No Designated Critical Habitat is present within the Project Area. In Logan County, the closest Designated Critical Habitat for the piping plover is approximately three miles northeast of the Project Area. In McIntosh County, the closest Designated Critical Habitat for this species is approximately 10.5 miles east of the Project Area (USFWS 2019a).

A January 2021 USFWS guidance letter indicates that piping plover habitats in Logan and McIntosh Counties comprise alkali lakes and wetlands, including sparsely vegetated shorelines, sandbars, islands, salt-encrusted mud flats, gravelly salt flats, and adjacent uplands 200 feet above the high water mark (**Section 9**). This type of habitat is extremely limited within the Project Area.

As discussed in **Section 6.15**, avian use surveys were performed within the Project Area in 2019 and 2020. Shorebirds within the Project Area were low in number and frequency; the highest concentration of detection was in the northeast portion of the Project Area where high elevation grassland/pothole habitats can be found. No piping plovers were detected during these surveys.

Rufa Red Knot

Rufa red knots were ESA listed as threatened in 2014. Rufa red knots migrate long distances annually between the Canadian Arctic and several wintering regions, including the southeastern United States (USFWS 2016f). A majority of rufa red knots follow migration routes along the east and west coasts of the United States, but small numbers of this species have been documented along an inland migration route across the Midwest during spring and fall migrations. These sightings are typically concentrated along the Great Lakes. Rufa red knots do not breed in North Dakota. They likely use habitats such as alkali lakes and wetlands, including sparsely vegetated shorelines, sandbars, islands, salt-encrusted mud flats, gravelly salt flats, and adjacent uplands 200 feet above the high-water mark when migrating in the state. No Designated Critical Habitat for rufa red knot is located in North Dakota (USFWS 2021b).

As discussed above in **Section 6.15**, bird habitat assessments and point-count surveys were performed within the Project Area in 2019 and 2020. No rufa red knots were detected during the surveys.

6.16.1.2. State Species of Concern

The NDPR maintains the North Dakota Natural Heritage Inventory database containing the known locations of rare animal and plant species and significant ecological communities within the state. In a November 2021 guidance letter, the NDPR indicated there are no known rare species or significant ecological communities documented within or immediately adjacent to the Project Area (refer to **Section 9** and **Appendix D**).The State of North Dakota does not have a state

threatened and endangered species list; instead, the NDGF maintains a list of SCP. Level I species are the highest level of conservation priority. Level II species are of a moderate level of conservation priority. Level III species are also of a moderate level of conservation priority, but are peripheral or nonbreeding in North Dakota (Dyke et al. 2015).

In a January 2021 guidance letter to Badger Wind, NDGF outlined species-specific considerations for sharp-tailed grouse, bats, whooping crane, and bald eagles (**Section 9**). Whooping cranes are discussed in detail in **Section 6.16.1.1**. Other SCP species are described below.

As noted in Badger's BBCS (**Appendix H**), Tier I and II analyses identified 21 SCP bird species (including the whooping crane and bald eagle) with the potential to occur within the Study Area. As noted in **Section 6.15.1**, each of these species was recorded within or adjacent to the current Project Area during the course of avian use surveys. See **Section 6.15** for more details relating to the results of avian surveys.

Three SCP bat species have the potential to occur within the Project Area: NLEB, big brown bat (SCP 1), and little brown bat (SCP 1). The big brown bat and little brown bat were detected during 2019 and 2020 acoustic monitoring within the Project Area. Due to the similarity in call signatures between big brown bat and silver-haired bat (*Lasionycteris noctivagans*; non-SCP), these two species were grouped during acoustic analysis and accounted for 42.8 percent of bat calls during 2019 and 37.3 percent of bat calls during 2020. Peaks in activity during spring and fall are likely attributable to silver-haired bat activity, but summer activity is likely from big brown bats. Little brown bat calls accounted for less than 0.5 percent of all bat calls during acoustic monitoring during both years.

Snapping turtle is a widespread and fairly common North Dakota SCP. Although no surveys were conducted for this species, it is likely to be found in suitable wetland habitat within the Project Area.

6.16.2. Rare and Unique Natural Resource Impacts and Mitigation Measures

The following sections describe potential impacts and proposed mitigation for impacts to rare and unique natural resources.

6.16.2.1. Federally Listed Species

Potential project impacts and avoidance and minimization measures for federally listed species are discussed below. Avoidance and minimization measures and general conservation strategies for federally listed species follow those described in **Section 6.15** for all avian species. The BBCS (**Appendix H**) outlines specific avoidance and minimization measures that will be used to avoid impacts to bird and bat species, including federally listed species.

Whooping Crane

Because whooping cranes were documented within the Project Area, and the whooping crane habitat assessment indicates that stopover habitat is present in the Project Area, there is the potential for whooping cranes to use the Project Area during migration. However, although

potential stopover habitat for whooping cranes is present within the Project Area, this habitat is of relatively lower quality and quantity compared to nearby reference areas analyzed in the whooping crane habitat assessment. Additionally, no whooping cranes have been documented as fatalities at wind facilities (USFWS 2009; NGPC 2018: 201).

Project collection and communication lines will be buried, thereby avoiding the potential for whooping crane collisions with overhead lines. Crops left unharvested, which could attract whooping cranes to the Project Area, will be minimized to the extent practicable. Although the occurrence of whooping cranes in the Project Area is unlikely, if whooping cranes use sites within or near the Project during migration, Badger Wind will avoid impacts to whooping cranes by implementing the general conservation measures for birds presented in the Project's BBCS. Although expected to be unlikely, if a whooping crane is sighted within the Project Area during construction, construction will stop within one mile of the sighting until the whooping crane has left the area.

Northern Long-eared Bat

Acoustic survey results within the Study Area were inconclusive in that there were some *Myotis* calls that could not be attributed to species. However, the Project Area is located outside the core range for NLEB, and suitable habitat for the NLEB is limited in the Project Area. The species is forest dependent and requires trees for roosting and foraging in summer. The bat habitat desktop assessment found that less than 0.1 percent (approximately 62.9 acres) of the Project Area supports woodlands and wooded shelter belts that may provide roosting and foraging habitat for NLEB. Available wooded areas within the Project Area are highly fragmented, and there is very limited connectivity of wooded shelter belts throughout the landscape. Wooded stands on site are all less than ten acres in size. As such, the potential for NLEB to occur in the Project Area is low. Accordingly, it is not likely that NLEBs are roosting in the Project Area; therefore, they would not be harmed by construction or operation of the Project. Per the final 4(d) Rule for the NLEB (USFWS 2016e), the Project will not result in prohibited incidental take because Badger Wind will not be clearing known maternity roost trees or trees within 150 feet of known maternity roost trees between 1 June and 31 July and will not remove trees within 0.25 miles of a known hibernaculum at any time of the year.

Per the final 4(d) Rule for the NLEB (USFWS 2016e), the project will not result in prohibited incidental take because Badger Wind will not be clearing known maternity roost trees or trees within 150 feet of known maternity roost trees between 1 June 1 and 31 July and will not remove trees within 0.25 miles of a known hibernaculum at any time of the year. As appropriate, wooded areas will be checked for potential bat roosts prior to disturbance. If NLEB presence is detected, tree removal will be conducted in accordance with the USFWS 4(d) rule (refer to **Section 6.15.2.3**).

Piping Plover

No Designated Critical Habitat for the piping plover is present in the Project Area. A January 2021 USFWS guidance letter indicates that piping plover habitats in Logan and McIntosh Counties comprise alkali lakes and wetlands, including sparsely vegetated shorelines, sandbars, islands, salt-encrusted mud flats, gravelly salt flats, and adjacent uplands 200 feet above the high water

mark (**Section 9**). This type of habitat is extremely limited within the Project Area. Additionally, no individuals were observed during avian surveys in 2019 and 2020. Therefore, impacts to piping plover as a result of project construction and operation are not anticipated, and no mitigation measures are proposed.

Rufa Red Knot

There is some potential for the rufa red knot to migrate through the Project or to utilize wetlands and waterbodies for stopover habitat, but habitat for the rufa red knot appears to be limited within the Project Area. Additionally, no individuals were observed during avian surveys in 2019 and 2020. Therefore, impacts to rufa red knot as a result of project construction and operation are not anticipated. Accordingly, no mitigation measures are proposed.

6.16.2.2. State Species of Concern

No designated special status plant species habitat, or protected vegetation communities, occur within the Study Area or Project Area. Therefore, no impacts from construction or operations of the Project would occur to these resources.

Impacts to State SCP would be similar to those identified in **Section 6.15.2** for wildlife. Potential impacts to avian and bat species from the Project include turbine rotor strikes during operations, direct impacts to nests or individuals during construction of the Project, and the removal, degradation, and fragmentation of habitat.

Badger Wind used field survey results to inform project design to voluntarily avoid potential SCP habitat. Specifically, Badger Wind minimized siting of project infrastructure within unbroken grassland, thereby minimizing disturbance to potential SCP habitat. Badger Wind has also voluntarily sited turbines at least 0.5 miles away from known, active sharp-tailed grouse leks in coordination with NDGF and the USFWS. To reduce habitat fragmentation, roads and laydown areas have been sited in previously disturbed or agricultural areas, outside of unbroken grasslands, wetlands, and waterbodies, to the extent practicable.

Wind turbines and other infrastructure have been sited to avoid wetlands to the maximum extent practicable. Given the limited extent of impacts to wetlands, watercourses, and waterbodies, impacts to snapping turtles as a result of project development is expected to be minimal. Impacts to SCP will be limited by avoiding and minimizing impacts to surface water features on site.

To reduce the potential for strikes with electric lines, all collection and communication lines will be buried. Impacts to bats and birds as a result of the Project would be minimized by avoiding and/or mitigating impacts to trees, consistent with the Commission's tree and shrub mitigation specifications.

Avoidance and minimization measures and general conservation strategies for SCP species follow those described in **Section 6.15** for all wildlife species. The BBCS (**Appendix H**) outlines specific avoidance and minimization measures that will be used to avoid impacts to both bird and bat species, including SCP.

6.17. Summary of Impacts and Avoidance/Minimization Measures

Table 6-9 provides a summary of potential Project impacts and avoidance and minimization measures.

Table 6-9: Summary of Impacts

Resource	Potential Impact	Proposed Avoidance, Minimization, and Mitigation	Section
Demographics	The Project will result in an increase in socioeconomic benefits for landowners, local governments, and communities by providing increased income to landowners receiving lease payments, which could raise the per capita income in Logan and McIntosh Counties. No long-term changes to demographics anticipated.	The Project will increase the local tax base, thereby creating benefits to local governments and communities.	6.1
Land Cover, Land Use, and Zoning	The Project would convert approximately 92 acres of land in the Project Area into a renewable, alternative energy source for the life of the Project. The Project would also result in approximately 1,363 acres of temporary impacts.	After construction, temporary disturbance areas will be reclaimed, fertilized, and reseeded according to NRCS recommendations, unless otherwise specified by the landowner and approved by the Commission, as detailed in **Appendix I**. Lease payments will be paid to landowners for placement of Project facilities. The Project is compatible with existing land uses and has been designed to comply with local zoning requirements.	6.2
Public Services	Construction of the Project will temporarily increase traffic on haul roads. Traffic impacts associated with the operations phase after construction will be minimal. The Project has the potential to impact TV reception for residents relying on antennas. Impacts to local emergency services, railroads, water supplies, telephone, microwave, or radio communications are not anticipated.	Badger Wind will utilize North Dakota One Call to identify existing utilities prior to construction. Badger Wind will coordinate with applicable local and state road authorities to ensure that all applicable permits are obtained, delivery plans are communicated, and traffic management plans are implemented where necessary. Badger Wind will negotiate road use and maintenance agreements with Logan County, McIntosh County, and the townships, if needed. Following completion of construction, per the terms of the Road Use Agreements, affected roadways will be repaired or restored to a condition at least equal to the condition prior to construction of the Project. The Project has been sited to avoid microwave beam paths and communication systems. If residents that rely on antennas experience signal disruption, Badger Wind will coordinate with the residence owners to mitigate the disruption.	6.3

Resource	Potential Impact	Proposed Avoidance, Minimization, and Mitigation	Section
Human Health and Safety	No adverse impacts are anticipated.	Badger Wind has sited turbines and associated facilities in compliance with Commission and Logan County setback requirements. Badger Wind will comply with light-mitigating technology system requirements set forth in NDCC Section 49-22-16.4. Badger Wind will coordinate with emergency service providers to determine appropriate safety precautions/standards and develop an Emergency Response Plan.	6.4
Sound	A noise study was completed, and sound levels are modeled below 45 dBA within 100 feet of all inhabited residences and community buildings, with the exception nine receptors (six participating and three non-participating residents).	For the 9 receptors with exceedances, Badger Wind has obtained or is in the process of obtaining written waivers (**Appendix J**). In the event waivers are not obtained, Badger Wind will take steps to ensure compliance with the sound level requirement.	6.5
Visual	The Project will have visual and potential aesthetic impacts. A shadow flicker analysis was performed and indicated that the highest expected shadow flicker at a participating receptor is 38 hours per year. All other receptors, including all non-participating receptors, have expected shadow flicker less than 30 hours per year.	Compliance with applicable setbacks and minimum FAA lighting and marking requirements are anticipated to minimize visual impacts. Badger Wind has designed the Project to comply with the industry standard of 30 hours per year or less of shadow flicker at non-participating occupied residences, absent a waiver. One occupied residence is predicted to exceed 30 hours of shadow flicker per year. If this residence continues to exceed the 30 hour/year threshold when the final Project layout is modeled, Badger Wind will obtain a shadow flicker acknowledgment from the homeowner or will employ measures to ensure that the non-participating and participating occupied residence experiences no more than 30 hours per year of shadow flicker.	6.6
Cultural Resources	Ground-disturbing activities during construction have the potential to impact known or unknown cultural and historic architectural resources in or adjacent to the Project Area.	Class I, II, and III surveys have been completed for the majority of the Project, with a minimal number of unsurveyed areas to be surveyed in spring 2022. Project infrastructure has been sited to avoid sensitive cultural and historic architectural resources that have been identified and recommended for avoidance in the Project's Class I, II, and III cultural resources inventories. Additionally, Badger Wind has prepared an Unanticipated Discoveries Plan.	6.7

Resource	Potential Impact	Proposed Avoidance, Minimization, and Mitigation	Section
Recreational Resources	Impacts to recreational resources are not anticipated.	No mitigation is proposed.	6.8
Land-Based Economies	The Project will temporarily impact up to approximately 975.46 acres of agricultural land, and will impact up to approximately 69.49 acres of agricultural land for the life of the Project. The Project may impact approximately 0.03 acres of trees/shrubs.	Agricultural land temporarily impacted by construction will be restored to pre-construction conditions in accordance with NRCS recommendations, unless otherwise specified by the landowner and approved by the Commission. Agricultural practices will be able to continue during Project construction and operations. After construction, temporarily disturbed non-agricultural lands will be revegetated using a seed mix approved by the NRCS in accordance with the Project reclamation plan. The Project has been designed to minimize tree removal to the extent possible, and the majority of Project facilities have been sited in areas lacking large contiguous woodlands. Any impacts on trees and woodlands from the placement of wind turbines and associated facilities for the Project would be minor in nature. If tree removal is necessary, Badger Wind will coordinate with landowners regarding tree removal and replacement and will follow the Commission's tree and shrub mitigation specifications. If necessary, Badger Wind may bore collection lines under tree lines and woodlots to avoid impacts.	6.9
Soil Resources	Surface disturbance caused by construction of the Project may cause the soil surface to become more prone to erosion and result in soil compaction and the spread of noxious weeds.	Impacts to soils within the Project Area will be localized to the areas where Project activities occur and minimized through the use of BMPs. BMPs may include erosion and sediment control measures, noxious weed control, segregation of topsoil, decompaction of subsurface soils before topsoil replacement, reseeding of temporarily disturbed areas, the use of construction equipment appropriately sized to the scope and scale of the Project, and designing access road grades to fit closely with the natural terrain, to the extent practicable.	6.10

Resource	Potential Impact	Proposed Avoidance, Minimization, and Mitigation	Section
Geologic and Groundwater Resources	Impacts to geologic and groundwater resources are not anticipated.	No mitigation is proposed.	6.11
Surface Water and Floodplain Resources	Construction of Project facilities could potentially impact surface water runoff within the Project Area. Ground-disturbing construction activities have the potential to cause sedimentation, but these impacts are expected to be minimal and would only occur during construction. The Project is not anticipated to permanently impact surface waters.	The Project and associated facilities have been sited to avoid or minimize impacts to surface waters and floodplain resources, to the extent practicable. Where collection lines intersect perennial watercourses, collection lines will be bored under watercourses to avoid impacts. If unavoidable impacts to USACE jurisdictional waters were to occur, these activities would be permitted under the Nationwide Permit Program. Badger Wind will also implement appropriate erosion and sediment control BMPs and obtain coverage under the NDPDES General Stormwater Permit.	6.12
Wetlands	One access road will cross a field-delineated drainage wetland that parallels an existing road resulting in a permanent impact of less than 0.01 acre to this wetland.	Badger Wind has sited this access road in the location of an existing farm road to minimize impacts to the affected wetland. A culvert will be installed where this access road crosses a drainage to facilitate continued wetland function and local hydrology. This impact will be self-certified under the Nationwide Permit in accordance with Section 404 of the CWA. Badger Wind plans to use boring to install underground collection when wetlands are present, thereby avoiding wetland impacts. In areas that will be field delineated in spring 2022, Badger Wind plans to re-route crane paths and access roads to avoid delineated wetlands, where feasible. Additionally, the construction workspace of crane paths, access roads, and turbine pads may be reduced in size or slightly shifted where practicable to avoid or minimize temporary impacts to wetlands. Matting will also be used in wetlands during construction to minimize temporary disturbances. If unavoidable impacts to USACE jurisdictional waters were to occur, these activities would be self-certified under the Nationwide Permit Program.	6.13

Resource	Potential Impact	Proposed Avoidance, Minimization, and Mitigation	Section
Vegetation	The Project will remove up to approximately 92.3 acres of vegetation (the majority of which is cropland) for the life of the Project. The Project will temporarily impact up to approximately 1,362.5 acres of vegetation.	Linear facilities (i.e., crane paths, access roads, and collection lines) have been collocated when practicable. Following construction, temporarily disturbed areas outside of cropland will be re-vegetated with a seed mixture consistent with the surrounding vegetation and free of noxious weeds, according to NRCS recommendations unless otherwise specified by the landowner and approved by the Commission. Badger Wind has developed a Reclamation and Noxious Weed Management Plan (**Appendix I**) that identifies and establishes the procedures to prevent the introduction and spread of noxious weeds during construction and ongoing operations and will work collaboratively with construction parties to prevent and/or minimize the introduction and spread of noxious weeds during construction and operations. Appropriate BMPs will be employed during project construction to avoid or limit temporary impacts to vegetation.	6.14
Wildlife: Avian Species	The Project may impact avian species through increasing the potential for bird strikes with the turbines and/or habitat impacts. \	The Project has been sited to avoid/minimize impacts to avian species by siting Project facilities in previously disturbed or agricultural areas, to the extent practicable. Project collection and communication lines will be buried, thereby avoiding the potential for collisions with overhead lines. Temporary disturbance areas will be reclaimed and reseeded according to NRCS recommendations, unless otherwise specified by the landowner and approved by the Commission. If impacts to trees/shrubs occur, they will be mitigated per the Commission's tree and shrub mitigation specifications Badger Wind has also voluntarily sited turbines at least 0.5 miles away from known, active sharp-tailed grouse leks, outside of potential nesting habitat, and within agricultural areas to the extent practical in coordination with NDGF and the USFWS. Badger Wind is coordinating with the USFWS and NDGF on voluntary offsets for potential grassland breeding bird impacts. Badger Wind's s BBCS outlines proposed avoidance, minimization, and mitigation measures that will be implemented (**Appendix H**).	6.15

Resource	Potential Impact	Proposed Avoidance, Minimization, and Mitigation	Section
Wildlife: Mammals	The Project may impact habitat for ground-dwelling wildlife.	Turbines and access roads have been sited to avoid wooded stands and shelterbelts to the extent practicable. Tree clearing will be avoided to the extent practicable. Where unavoidable, tree removal will be mitigated in accordance with the Commission's tree and shrub mitigation specifications. After construction impacts, all temporary surface disturbance will be reclaimed according to NRCS recommendations, unless otherwise specified by the landowner and approved by the Commission, as detailed in the Badger Wind Reclamation and Weed Management Plan (**Appendix I**).	6.15
Wildlife: Bat Species	Impacts to bats may occur through loss of habitat or as a result of direct impact due to collision. Less than 0.03 acre of impacts to wooded areas may occur.	Badger Wind has coordinated with the USFWS and NDGF and has designed the Project to avoid and/or minimize potential impacts to bat species. Turbines and access roads have been sited to avoid wooded stands and shelterbelts to the extent practicable. Unavoidable impacts to trees will be mitigated consistent with the Commission's tree and shrub mitigation specifications. Badger Wind's s BBCS outlines proposed avoidance, minimization, and mitigation measures that will be implemented (**Appendix H**).	6.15
Wildlife: Reptiles and Amphibians	Impacts to reptiles and amphibians as a result of Project development are expected to be minimal.	Wind turbines and other infrastructure are sited to avoid wetlands to the maximum extent practicable to minimize potential impacts to snapping turtles. Impacts to reptiles and amphibians will be limited by avoiding and minimizing impacts to surface water features on site.	6.15

Resource	Potential Impact	Proposed Avoidance, Minimization, and Mitigation	Section
Rare and Unique Natural Resources: Federally Listed Species	The potential for federally listed species to occur in the Project Area is low due to limited potential habitat; therefore, impacts to federally listed species are not anticipated.	Project collection and communication lines will be buried to avoid the potential for whooping crane collisions with overhead lines. Although the presence of whooping cranes within or near the Project Area is unlikely, Badger Wind will avoid potential impacts to whooping cranes by implementing the conservation measures for birds presented in the Project's BBCS, including stopping construction within one mile of a whooping crane sighting until the whooping crane has left the area. Tree clearing will be avoided to the extent practicable. Where unavoidable, tree removal will be mitigated consistent with the Commission's tree and shrub mitigation specifications. Removal of potential roost trees for NLEB will be avoided to the extent feasible and, in the event that removal is unavoidable, any such tree will be assessed prior to removal to confirm it is not a roost tree for bats, including NLEB. If NLEB presence is detected, tree removal will be conducted in accordance with the USFWS 4(d) rule. Badger Wind's s BBCS outlines proposed avoidance, minimization, and mitigation measures that will be implemented (**Appendix H**).	6.16

Resource	Potential Impact	Proposed Avoidance, Minimization, and Mitigation	Section
Rare and Unique Natural Resources: State Species of Concern	Impacts to state species of concern would be similar to those for wildlife.	The Project has been sited to avoid and minimize impacts to SCP by minimizing siting of Project infrastructure within unbroken grassland. Turbines were voluntarily sited at least 0.5 miles away from known, active sharp-tailed grouse leks in coordination with NDGF and the USFWS. Roads and laydown areas have been sited in previously disturbed or agricultural areas, to the extent practicable, to reduce habitat fragmentation. Wind turbines and other infrastructure have been sited to avoid wetlands to the maximum extent practicable to minimize impacts to snapping turtles. Impacts to SCP will be further limited by avoiding and minimizing impacts to surface water features on site. All collection and communication lines will be buried to reduce the potential for strikes with electric lines. Impacts to bats and birds as a result of the Project will be minimized by avoiding and/or mitigating impacts to trees, consistent with the Commission's tree and shrub mitigation specifications. Avoidance and minimization measures and general conservation strategies for SCP species follow those described in Section 6.15 for all wildlife species. A BBCS (**Appendix H**) was developed, which outlines specific avoidance and minimization measures that will be used to avoid impacts to bird and bat species, including SCP.	6.16

7. IDENTIFICATION OF POTENTIAL PERMITS/APPROVALS

Potential permits, clearances, and approvals that may be needed for the development and operation of the Project are listed in **Table 7-1**. Documentation of related agency correspondence is included in Appendix D.

Table 7-1: Potential Permits and Approvals

Administering Agency	Permit, Approval, or Consultation	Applicability for Project	Status
Federal			
U.S. Army Corps of Engineers	Federal Clean Water Act Section 404	Required if dredging or filling waters of the United States (WOTUS).	To be obtained prior to activity subject to permit, if needed.
U.S. Fish and Wildlife Service (USFWS)	Review for Threatened and Endangered Species	Consultation regarding potential impacts to species protected under the Endangered Species Act (ESA).	Coordination with the USFWS has been ongoing since October 2019.
Federal Aviation Administration (FAA)	Form 7460-1 Notice of Proposed Construction or Alteration (Determination of No Hazard)	Construction or alteration of structures higher than 200 feet AGL, structures near airports, or siting within line of sight of radar of an air defense facility.	Filed October 2021; to be obtained prior to construction of turbines.
	Notice of Actual Construction or Alteration (Form 7460-2)	Supplemental notice to FAA in advance of or after commencing construction of turbines.	Notice to be provided in advance of or after commencing construction of turbines, as appropriate.
	Marking and Lighting Recommendations	Required for approval of light-mitigating technology.	To be obtained prior to marking/lighting.
Federal Communications Commission	Radio Station Authorization/License	Typically required for operation of ADLS communications tower.	If needed, will be obtained prior to activity subject to permit.
	Registration	Typically required for operation of ADLS communications tower.	If needed, will be obtained prior to activity subject to permit.
State of North Dakota			
North Dakota Public Service Commission	Certificate of Site Compatibility	Required for construction of an energy conversion facility with a nameplate capacity greater than 0.5 MW.	In progress; to be obtained prior to construction.
North Dakota Department of Environmental Quality	North Dakota Pollutant Discharge Elimination System (NDPDES) General Permit for Stormwater Discharge Related to Construction	Required for stormwater discharges from construction activities disturbing greater than one acre. Must also prepare a SWPPP.	To be obtained prior to activity subject to permit.

Administering Agency	Permit, Approval, or Consultation	Applicability for Project	Status
	(includes Stormwater Pollution Prevention Plan [SWPPP])		
	401 Water Quality Certification	Required in conjunction with Section 404 permit for filling jurisdictional WOTUS.	Incorporated into Section 404 Nationwide Permits.
North Dakota State Water Commission, Office of the State Engineer	Temporary Water Permit	Required for temporary uses of water, with the exception of when the volume of water to be impounded, withdrawn, or diverted is less than 12.5 acre-feet (4,073,137 gallons) and the water is used for domestic, fish, livestock, wildlife, or recreational purposes.	To be obtained prior to activity subject to permit, if needed.
	Conditional Water Permit	Required for water uses where the use period will exceed 12 months, with the exception of when the volume of water to be impounded, withdrawn, or diverted is less than 12.5 acre-feet and the water is used for domestic, fish, livestock, wildlife, or recreational purposes.	To be obtained prior to activity subject to permit, if needed.
	Drainage Permit	Required prior to drainage of a waterbody, pond, lake, slough, or sheetwater, or any series thereof, that has a watershed area of at least 80 acres.	To be obtained prior to activity subject to permit, if needed.
North Dakota Highway Patrol	Oversize/Overweight Permit	Required to transport oversized/overweight loads within state-managed roadways.	To be obtained prior to transport of oversized/ overweight loads, if needed.
North Dakota Department of Transportation	Utility Occupancy Permit(s)	Required to install electrical lines within state-owned roadway ROW.	To be obtained prior to construction work within state roadway ROW, if needed.

Administering Agency	Permit, Approval, or Consultation	Applicability for Project	Status
	Highway Access Permit(s)	Required to construct driveway access/approach to state-owned roadway ROW.	To be obtained prior to construction or alteration of access/approach, if needed.
	Temporary Modification Permits	Required for temporary modifications to state-owned ROW.	To be obtained prior to temporary modifications subject to permit, if needed.
North Dakota State Electrical Board	Wiring Certificate and Inspection Approval	Required for installation of electrical facilities.	To be obtained prior to activity subject to permit.
North Dakota State Historic Preservation Office (SHPO) / State Historical Society of North Dakota (SHSND)	Cultural and Historic Resources Review, Review of State and National Registers of Historic Sites, and Archaeological Survey	Consultation required in connection with other agency permitting requirements, such as the Commission.	Class I, II, and III surveys have been completed for the majority of the Project, with minor areas to be surveyed in spring 2022. Site forms have been submitted to the SHSND December 2021 for survey work completed to-date.
Local Approvals			
Logan County	Wind Energy Facility Permit (Conditional Use Permit)	Required for construction of a wind energy facility within Logan County.	In progress; to be obtained prior to construction.
	Building Permit(s)	Required to erect, construct, make structural changes, or move any structure.	If needed, to be obtained prior to construction of structures.
	Certificate(s) of Compliance	May be required in connection with building permits.	If needed, to be obtained in connection with building permit.
	Utility Permit(s)	Required to install electrical lines on/across county road ROW.	If needed, to be obtained prior to crossing and/or installation of electrical lines in county road ROW.
	Approach/Driveway Permit(s)	May be required for the installation of approaches/driveways abutting county road ROW.	If needed, to be obtained prior to installation of approaches.

Administering Agency	Permit, Approval, or Consultation	Applicability for Project	Status
	Oversize/Overweight Permit	Transportation of oversize/overweight loads.	If needed, to be obtained prior to transporting oversize/overweight loads.
McIntosh County	Oversize/Overweight Permit	Transportation of oversize/overweight loads.	If needed, to be obtained prior to transporting oversize/overweight loads.
Township(s)	Utility Permit(s)	Installation of facilities in/across township road ROW.	If needed, to be obtained prior to crossing and/or installation of facilities in township road ROW.
	Driveway/Approach Permit(s)	Installation of approaches abutting township road ROW.	If needed, to be obtained prior to installation of approaches.
	Oversize/Overweight Permit	May be required for transportation of oversize/overweight loads.	If needed, to be obtained prior to transporting oversize/overweight loads.
Water Resource District(s) (WRD)	Utility Permit(s)	May be required to cross WRD-owned ROW and infrastructure.	If needed, to be obtained prior to installation of electrical lines across WRD-owned ROW and infrastructure.
Local Public Health Unit (Central Valley Health District)	Septic system permit/approval	May be required for installation of septic system (O&M facility).	If needed, to be obtained prior to construction of the septic system.
Existing Infrastructure Owner(s)	Crossing License(s)/Permit(s)	May be required to cross existing easements (e.g., railroad ROW).	If needed, to be obtained prior to crossing existing infrastructure and easements

8. FACTORS CONSIDERED

NDCC Section 49-22-09 identifies factors that guide the Commission in assessing and designating a site for a proposed facility. These factors are discussed below.

8.1. Public Health, Welfare, Natural Resources, and the Environment

The preceding sections of this Application provide a review of the investigations related to the potential impacts to public health, welfare, natural resources, and the environment that could occur as a result of project development and operation. **Section 6.17** provides a summary of these potential impacts and the proposed mitigation measures that would be implemented to avoid or minimize these impacts.

8.2. Minimizing Adverse Environmental Effects

Badger Wind has, or will, utilize the most current available technologies to site, construct, and operate the Project in order to optimize utilization of wind resources while also minimizing or avoiding potential adverse environmental impacts. Mitigation, minimization, and/or avoidance measures to be implemented for each resource are described in each corresponding subsection within **Section 6.0**.

8.3. Potential for Beneficial Uses of Waste Energy

Wind energy generation does not produce waste energy. Therefore, the Project does not have the potential for beneficial use of waste energy.

8.4. Unavoidable Adverse Environmental Effects

Unavoidable adverse environmental impacts are described for each resource category in **Section 6.0**. Unavoidable long-term ground disturbance associated with the Project will include the conversion of land to a renewable energy generation resource and alteration of the visual landscape through the construction and lighting of turbines, as well as ancillary facilities, for the life of the Project. Areas temporarily impacted by project construction activities will be restored to their original conditions following construction, to the extent practicable and in coordination with landowners. Badger Wind selected the project site to minimize unavoidable environmental impacts and will implement appropriate mitigation measures throughout project development.

8.5. Alternatives to the Proposed Site

As discussed in **Section 1.2**, Badger Wind analyzed various siting options for the Project within a 197-square-mile Study Area. Badger Wind selected the proposed Project Area based on a variety of factors including suitable wind resource, landowner and agency coordination, site-specific studies, transmission and interconnection availability, and engineering considerations. The Project has been sited to avoid and minimize impacts to the environment and existing land uses. Badger Wind believes the proposed site represents the best location for the Project.

8.6. Irreversible and Irretrievable Commitments of Natural Resources

Renewable energy projects, including the Project, require relatively few irreversible and irretrievable commitments of natural resources. The primary irreversible and irretrievable commitments of natural resources for the Project are associated with project construction activities. Natural resources will be used in the manufacture and preparation of construction materials including steel, concrete, and aggregate. In addition, transportation of vehicles and equipment to and from the site during construction will require the use of hydrocarbon fuel. Although they would not be retrievable after use, supply of these materials is not sparse, and their use would not be expected to have a significant impact on resource availability. Further, the limited commitment of natural resources for the Project would be balanced against the anticipated benefits resulting from project development.

8.7. Direct and Indirect Economic Impacts

Direct economic impacts resulting from development of the Project will be primarily positive. The Project will result in conversion of land use during the life of the Project; however, the majority of the Project Area will remain available for agricultural uses, and participating landowners will be financially compensated for land occupied by wind turbines and associated infrastructure.

The Project may also indirectly benefit economies in the surrounding area due to the wages and salaries paid to locally hired workers and increased spending at local businesses. Additionally, long-term benefits to the tax bases of Logan and McIntosh Counties resulting from the Project will improve the local economy.

8.8. Existing Development Plans of the State, Local Government, and Private Entities at or in the Vicinity of the Site

The Project is not anticipated to conflict with the existing plans of state, local, or private entities within the Project Area. The Project will comply with applicable provisions of Logan County's Zoning Regulations (Logan County 2018). Additionally, Badger Wind is coordinating with the Wishek Municipal Airport and has adjusted project design to accommodate the airport's proposed expansion plans.

8.9. Effect of Site on Cultural Resources

Project infrastructure has been sited to avoid sensitive cultural and historic architectural resources that have been identified and recommended for avoidance in the Project's Class I, II, and III cultural resources inventories. Badger Wind continues to coordinate with the SHSND on archaeological and architectural resources. Additionally, Badger Wind will complete cultural resources surveys on any unsurveyed portions of the Project layout, will report the findings to the SHSND, and will obtain and provide the Commission with the SHSND's concurrence prior to constructing in those areas. If additional cultural resources are discovered, Badger Wind will work with SHSND to avoid or mitigate impacts. Badger Wind has also prepared an Unanticipated Discoveries Plan. This plan details the process for prompt communication and action in the event that previously unidentified cultural resources or human remains are encountered during project

construction. Refer to **Section 6.7** for additional details regarding the cultural resources survey efforts conducted for the Project and SHSND consultation.

8.10. Effect of Site on Biological Resources

Extensive efforts to avoid or minimize impacts to biological resources have been made in siting the Project, and efforts will continue during project construction and operation. The Project has been designed to minimize impacts to wildlife. Although the potential for bat and avian collisions with turbines exists, the Project is designed to minimize impacts to avian and bat species. Badger Wind has developed a BBCS in coordination with USFWS and NDGF that outlines specific mitigation measures that have been implemented during project siting and design, or that are planned to be implemented during construction and operation of the Project, to avoid and minimize potential impacts to wildlife (refer to **Appendix H**).

9. AGENCY COMMENTS

Badger Wind has coordinated with various agencies and used this input, as well as study findings, to inform appropriate siting of project infrastructure.

In October 2021, Badger Wind sent Project notification letters to 32 federal, state, and local agencies, including agencies and officers listed on NDAC Section 69-06-01-05. The project notification letters included a description of the Project and a map of the Project Area. The following sections summarize agency coordination efforts to date, organized by agency. A list of agencies consulted and copies of agency correspondence are provided in **Appendix D**.

9.1. U.S. Army Corps of Engineers, North Dakota Regulatory Office

Badger Wind contacted the Bismarck USACE Regulatory Office on 16 and 20 October 2020 and on 10 November 2021 to request guidance on application of the 2020 New Clean Water Act Rule.

On 1 November 2021 the USACE responded to the project notification letter stating the Project may need a Clean Water Act Section 404 permit. Badger Wind anticipates that impacts to USACE jurisdictional waters will be primarily temporary and permitted under the Nationwide Permit program.

9.2. U.S. Department of Commerce, National Telecommunications and Information Administration

Badger Wind coordinated with the NTIA regarding any potential project interference with federal telecommunications. In November 2021, the NTIA reviewed the turbine layout and current Project Area and stated that no agencies had issues with project placement.

9.3. U.S. Bureau of Land Management

The BLM responded to the project notification letter on 2 November 2021. The response stated that the BLM has no resource concerns for the Project and the Project does not appear to involve BLM land.

9.4. U.S. Department of Agriculture, Natural Resources Conservation Service

The USDA NRCS responded to the project notification letter on 20 October 2021. Because the Project does not integrate federal funding, the Farmland Protection Policy Act does not apply, and no further action is needed. Additionally, the NRCS recommended that impacts to wetlands be avoided.

9.5. Department of Defense

The Department of Defense (DoD) reviewed the Project through several venues throughout the development process. Initially, the DoD reviewed the process through the informal review provided through the DoD Clearinghouse. Badger Wind sent an initial project boundary to the DoD to review in 2018, asking for comment. DoD responded in 2019 that they had no concerns

with the Project. In 2019, Badger Wind filed FAA permits for an initial array of potential wind turbine sites. Through the FAA permit issuance process, DoD is afforded the opportunity to comment and ask for mitigation on any turbines that might impact military operations. Those permits were issued late in 2019, and no comments were received from or issues identified by DoD. Finally, the current turbine array was filed with the FAA in October 2021. Although the permits have not been fully issued by FAA because other stakeholders have not yet finished their reviews, the permit filings have cleared the DoD's review without any comments or requests for mitigation.

9.6. Wildlife Agencies (U.S. Fish and Wildlife Service, North Dakota Field Office, and North Dakota Game and Fish)

Badger Wind began coordinating with the USFWS and NDGF in early 2020. Meetings and iterative reviews of project information with the USFWS and NDGF helped to confirm appropriate resource surveys and protocols for the Project, as well as measures to avoid, minimize, and monitor potential impacts and incorporate adaptive management strategies. This coordination, in combination with Tier 1, 2, and 3 studies, were used to refine the Project Area and design the preliminary project layout. Meetings were held both in-person and virtually, in addition to email communication. Copies of correspondence with the USFWS and NDGF are provided in **Appendix D** and **Appendix H**. Significant meetings and communications are summarized below.

9.6.1. 28 January 2020 North Dakota Game and Fish and U.S. Fish and Wildlife Service Meeting

Badger Wind met with the USFWS and NDGF to introduce the Project and its development team. Badger Wind presented the preliminary results of desktop and field studies that had been completed. This included information pertaining to land cover, USFWS grassland and wetland easement data, IPaC report results, nesting raptor surveys, sharp-tailed grouse lek surveys, avian use and eagle use surveys, desktop bat habitat assessments, and bat acoustic monitoring surveys. The agencies did not recommend conducting any other studies beyond the ones discussed at the meeting. Both NDGF and the USFWS noted concerns with siting turbines on or near USFWS wetland and grassland easements, as well as other easements under state or federal management. The agencies also suggested that Badger Wind quantify development effects on unbroken grassland and wetlands in order to offset the impacts.

9.6.2. 3 April 2020 North Dakota Game and Fish and U.S. Fish and Wildlife Service Meeting

Badger Wind conducted additional consultation with the USFWS and NDGF to discuss aerial survey safety precautions given the COVID-19 pandemic and recent safety incidents that had occurred during nesting raptor surveys on other projects. The USFWS and NDGF accepted a modified hybrid aerial survey and ground-based survey approach to meet the goals and expectations for year two pre-construction raptor nest and lek surveys. The shortened aerial surveys would focus on areas within the Study Area that lacked roads and could not be easily accessed during ground-based surveys.

9.6.3. 22 April 2020 U.S. Fish and Wildlife Service Communication

Badger Wind contacted the USFWS on 22 April 2020 to report the incidental observation of three whooping cranes within the Study Area.

9.6.4. 30 October 2020 North Dakota Game and Fish and U.S. Fish and Wildlife Service Meeting

Badger Wind met with the USFWS and NDGF to discuss avian and eagle use studies, wetland studies, grassland bird studies, and the native prairie assessment process. The NDGF clarified that they would be doing their own analysis of potential grassland breeding bird displacement and provided sources for data to assist in Badger Wind's analysis. They also outlined how different types of land disturbance should be integrated into the grassland breeding bird displacement analysis. The NDGF requested a completed analysis of unbroken grasslands for their review and concurrence.

9.6.5. 8 December 2020 North Dakota Game and Fish and U.S. Fish and Wildlife Service Meeting

Badger Wind met with the USFWS and NDGF to provide an update regarding the Project including land acquisition, total project size and MISO results. Badger Wind also provided a summary of the grassland assessment completed and provided an overview of the project study planning considerations and non-grassland biology studies. The NDGF discussed the methodology they use to analyze potential grassland breeding bird displacement impacts and the differences between the two grassland datasets used in the analysis Badger Wind and the agencies then discussed next steps for Project layout development and further refining of the grassland assessment.

9.6.6. 5 January 2021 North Dakota Game and Fish Consultation Letter

On 5 January 2021, NDGF provided a guidance letter on the habitat-focused approach to Badger Wind. Details of the letter included outlining the importance of native prairie (unbroken grassland) and wetland habitats. The NDGF suggested using the USFWS Habitat and Population Evaluation Team's Local Siting Decision Support Tool to estimate the number of duck pairs within the Project Area. The NDGF also noted species-specific considerations for sharp-tailed grouse, bats, whooping cranes and bald eagles, and pointed out resources to assist with planning and development of a potential voluntary offset package.

9.6.7. 15 January 2021 North Dakota Game and Fish Call

Badger Wind met with NDGF to follow up on outstanding questions from the 8 December 2020 meeting. NDGF confirmed their request for avoidance of native prairie and discussed the different grassland data sources to be used for a native prairie assessment. NDGF also confirmed that they would perform their own unbroken grassland/potential grassland breeding bird displacement impact analysis. Restoration and mitigation procedures were also discussed.

9.6.8. 29 January 2021 U.S. Fish and Wildlife Service Letter

On 29 January 2021, the USFWS provided a project review letter to Badger Wind. In the letter, the USFWS recommended siting turbines away from wildlife habitat (e.g., grasslands and wetlands) and instead siting project facilities in disturbed landscapes (i.e., cropland). The USFWS noted the presence of USFWS property interests in the area and recommended further coordination with respect to these interests. The letter also provided recommendations related to assessing, reducing, and/or mitigating potential impacts to wildlife, including grassland nesting birds, waterfowl, bats, whooping cranes, and eagles.

9.6.9. 9 August 2021 North Dakota Game and Fish and U.S. Fish and Wildlife Service Meeting

Badger Wind met with the USFWS and NDGF to provide an update regarding the Project, including anticipated next steps and a proposed construction start date. A map of the project location, proposed turbine layout, and constraint factors was shown to the USFWS and NDGF. The grassland analysis methodology and inputs were outlined for and discussed with the agencies. Badger Wind showed turbines had been moved out of unbroken grassland. Badger Wind and the agencies discussed next steps in assessment of the Project's potential impacts to unbroken grassland and relevant turbine siting considerations. The whooping crane habitat analysis methodology was also discussed, and Badger Wind indicated that they have used all USFWS-recommended data sources and studies in that process. The USFWS and NDGF also asked if PLOTS easements and grassland and wetland conservation easements were considered in siting the turbines. Badger Wind confirmed that those areas had been taken into account.

9.6.10. 20 September 2021 North Dakota Game and Fish and U.S. Fish and Wildlife Service meeting

Badger Wind met with the USFWS and NDGF to discuss the ongoing grassland assessment, avian species impact analyses, and sharp-tailed grouse leks. The USFWS and NDGF requested a final project layout be provided with the grassland assessment, as well as a copy of the BBCS (with preconstruction surveys) and a voluntary offset proposal. Moving turbines out of unbroken grassland was also discussed.

9.6.11. 8 December 2021 North Dakota Game and Fish and U.S. Fish and Wildlife Service Meeting

Badger Wind met with the USFWS and NDGF to provide project updates, including changes to the project layout and field survey results. Badger Wind presented a revised turbine layout that minimized the number of turbines in unbroken grasslands and avoided placing turbines in wetlands. Badger Wind also discussed the methodology and results of the year two sharp-tailed grouse lek survey, the methodology and results of a grassland habitat survey, and strategies for minimizing impacts to raptor nests within the Project Area. The remainder of the meeting

focused on calculating offsets for potential displacement of grassland and waterfowl breeding birds using the Shaffer and Loesch models.

9.6.12. 6 January 2022 U.S. Fish and Wildlife Service Meeting

Badger Wind met with the USFWS Kulm Wetland Management District to discuss details related to WPAs and grassland, waterfowl, and wetland easements. As an initial matter, the USFWS confirmed no fee-owned WPAs are located within the Project Area; only grassland and wetland easements are present in the Project Area. The USFWS confirmed that USFWS wetland easement protections are limited to the wetland basins. The USFWS also noted that boring underneath grassland easements, and wetland easement basins, without impacting the protected easement areas, was permissible without additional authorization. The USFWS requested that Badger Wind provide a notification letter prior to construction.

9.6.13. 10 February 2022 North Dakota Game and Fish and U.S. Fish and Wildlife Service Meeting

Badger Wind met with the USFWS and NDGF to provide project updates, including a change to the proposed layout. Badger Wind presented an updated overview of the Project and Ørsted's commitment to protecting biodiversity. Badger Wind also discussed the results of pre-construction eagle nest and use studies, provided a brief summary of avoidance and minimization measures that have been and that would be implemented for the Project, and confirmed materials that would be submitted to the USFWS and NDGF. The USFWS indicated it would provide documentation noting the USFWS's agreement with the proposed measures.

9.7. North Dakota Aeronautics Commission and Wishek Municipal Airport

The North Dakota Aeronautics Commission (Aeronautics Commission) replied to the project notification letter on 18 October 2021. The Aeronautics Commission noted the proximity of Wishek Municipal Airport to the Project and stated that there are no known private airstrips within the Project Area. While the Aeronautics Commission acknowledged that North Dakota does not regulate private airstrips, and none were identified in the Project Area, it asked that potential impacts to any private airstrips that may exist in or near the area be considered when siting turbines and towers. The Aeronautics Commission also requested that the locations of all MET towers be reported for inclusion in a map they maintain that is used as a safety resource by pilots.

Additionally, as discussed in Section 6.4, the Aeronautics Commission participated in discussions with Badger Wind regarding the Wishek Municipal Airport and Aeronautics Commission regarding the proposed project layout. The Wishek Municipal Airport and Aeronautics Commission identified concerns with five potential turbine locations. As a result of those discussions, Badger Wind modified the project layout, and the Wishek Municipal Airport and Aeronautics Commission indicated the modifications addressed their concerns.

9.8. North Dakota Department of Environmental Quality

The NDDEQ responded to the project notification letter on 27 October 2021. The NDDEQ stated that environmental impacts from the proposed construction of the Project are likely to be minor. The NDDEQ provided guidelines for minimizing degradation to waterways during construction, preventing spills, and the appropriate disposal of solid waste materials. Additionally, NDDEQ stated that they have no projects scheduled in the area and do not own any land within the Project Area. The NDDEQ stated that a permit for discharging stormwater runoff may be needed if the Project plans to disturb more than one acre. Badger Wind will obtain coverage under and construct the Project in compliance with the requirements of the NDPDES General Stormwater Permit.

9.9. North Dakota Department of Trust Lands

The North Dakota Department of Trust Lands responded to the project notification letter on 28 October 2021. The letter indicates that there are school trust surface and/or mineral interests within or near the proposed Project Area and that there are no active coal leases on school trust lands within the Project Area. The Department noted that easements must be obtained for any fee-owned trust lands included in the Project.

No fee-owned school trust lands are located within the Project Area, and Badger Wind has obtained leases with the surface owners of school trust mineral interest parcels.

9.10. North Dakota Department of Water Resources (formerly the State Water Commission)

The ND DWR responded to the project notification letter on 8 November 2021. The letter indicates that there are no FEMA regulatory floodplains within the Project Area, and therefore no permits are needed relating to the National Flood Insurance Program. The ND DWR Engineering and Permitting Section reviewed the Project and determined that changes or effects to ponds, sloughs, lakes, watercourses, or drainage patterns may require an ND DWR permit. ND DWR noted the Project does not require a temporary permit for water appropriation; however, if surface water or groundwater will be diverted for construction of the Project, a water permit will be required. The ND DWR stated that it maintains wells across the state for monitoring water levels and quality in glacial and bedrock aquifers and asked to be contacted if an observation well is encountered during project activities and must be removed. The project layout avoids impacts to observation wells; therefore, Badger Wind does not anticipate that ND DWR permits will be needed.

9.11. North Dakota Geological Survey

The North Dakota Geological Survey responded to the project notification letter on 22 October 2021, indicating that there are no geologic concerns for the Project at this time.

9.12. North Dakota Parks and Recreation

The NDPR responded to the project notification letter on 5 November 2021. NPDR noted that the Project does not appear to affect properties that NDPR owns, leases, or manages or any properties protected under Section 6(f) of the Land and Water Conservation Fund. Additionally, NDPR indicated that no known rare species or significant ecological communities are documented within or immediately adjacent to the Project Area. The NDPR deferred further comment on the Project's potential to impact wildlife to the NDGF and USFWS. A discussion of rare and unique resources in the vicinity of the Project can be found in Section 6.16.

9.13. North Dakota State Historic Preservation Office, State Historical Society of North Dakota

Badger Wind held an initial coordination meeting with the SHSND on 6 October 2020. At the meeting, Badger Wind proposed performing Class III archaeological studies and architectural history studies. The SHSND recommended that a Class II windshield survey be conducted to assess potential architectural sites in the Town of Wishek. The SHSND also stated at the meeting that they would like to review an unanticipated discovery plan.

A project update meeting with the SHSND was held on 21 September 2021 to confirm that Badger Wind should still conduct both the Class III archaeology study and the Class II architectural history study as discussed at the 2020 meeting. During the meeting, the SHSND confirmed that a Class III archaeological study and a Class II architectural history study were still appropriate for the Project and to proceed with both. The SHSND also requested that Badger Wind consider submitting the results of all surveys conducted, even for areas that may no longer be part of the Project.

Badger Wind has completed Class I literature reviews and a Class II architectural history survey for the Project. Additionally, Badger Wind has completed a Class III archaeological survey for all but a few small areas of the Project Area that will be impacted by project construction and will complete the remaining survey work in the spring of 2022. The Project has been designed to avoid impacts to cultural and architectural resources. Additionally, an Unanticipated Discoveries Plan has been prepared and will be submitted to the SHSND for review. Details about Badger Wind's archeological and architectural resource survey efforts are presented in **Section 6.7**.

9.14. Logan County

Badger Wind initiated coordination with Logan County in January 2019. An informal introduction with Logan County occurred on 12 May 2021. Badger Wind actively engaged with Logan County to understand the local permitting process throughout 2021. The engagement with Logan County included attending in person several County commissioners' meetings at which Badger Wind presented to update the commission members on the status and likely timeline for the Project and provide the commissioners the opportunity to ask questions and learn more about the Project. These meetings also provided Badger Wind the opportunity to ask questions and understand Logan County's local permitting process. Per those meetings and conversations, Badger Wind has engaged with Logan County to file applications for a local zoning permit in late

March 2022 and expects to hold public hearings in early April 2022, with permit issuance expected sometime in April of 2022. Additionally, Badger Wind plans to sign a road use agreement with the County to outline obligations during the construction of the Project. The road use agreement is expected to also be signed in April of 2022.

9.15. McIntosh County

Badger Wind initiated coordination with McIntosh County in January 2020 by beginning to discuss with the County any local permitting requirements for the Project and provide information related to the timeline and development process of the Project. Through this coordination, Badger Wind learned that McIntosh County has no zoning, so no permit will be filed or necessary with McIntosh County. However, Badger Wind is still pursuing a road use agreement with the County to outline obligations during the construction of the Project. On 12 May 2021, Badger Wind held in-person introductions with McIntosh County commissioners to provide an overview of the project. Discussions related to Road Use Agreements occurred in May and October 2021, and a draft Road Use Agreement was shared with the McIntosh County Commissioners in December 2021. Badger Wind received comments from the McIntosh County commissioners in February of 2022 and met in person to update the commissioners on the status of the Project and discuss the comments on the road use agreement. Badger Wind expects to provide an updated road use agreement to McIntosh County in late February 2022 and plans to execute the agreement as early as March of 2022. Badger Wind received a letter from McIntosh County on 1 December 2021 relating to zoning ordinances for the Project. The letter confirmed that McIntosh County has not enacted a zoning ordinance, and therefore the project does not need to obtain any zoning permits from McIntosh County. The letter references Badger Wind's commitment to enter into a road use agreement with McIntosh County and applicable townships (as necessary) regarding the use, improvement, and restoration of local roads in connection with project construction.

9.16. Community Outreach

Badger Wind has been active in the local communities of McIntosh and Logan Counties throughout the development process. Through the land leasing process, Badger Wind maintained an active presence in the community. Several landowner meetings were held in 2018, and multiple land agents were living in McIntosh County. Due to the COVID-19 restrictions, Badger Wind had to pause in-person meetings for the year of 2020. However, in 2021, Badger Wind hosted a project open house and a landowner dinner. Additionally in 2021, Badger Wind was a sponsor of the local sauerkraut festival and the Summer Fun festival, both in Wishek, North Dakota. Badger Wind is in active communication with the local communities to design additional sponsorship and donation programs that ensure broader access to the benefits of a wind farm, which will be put in place near the time of construction. Badger Wind is committed to being a good neighbor for years to come and keeping an open line of communication with local officials and stakeholders.

10. QUALIFICATIONS OF CONTRIBUTORS TO SITING STUDY

Table 10-1 presents the qualifications of contributors to the siting study.

Table 10-1: Qualifications of Contributors to Siting Study

Name and Project Role	Education and Professional Experience
Sarah Aftergood Director of Environmental Permitting Ørsted	Sarah Aftergood holds an MSc in International Marine Environment Consultancy from Newcastle University, United Kingdom, and a BSc Honors in Biology from Trent University, Canada. Sarah has more than ten years of experience working on the development and permitting of projects in renewable energy, power transmission and has developed bylaws and regulations concerning the protection of the environment from industrial activities both domestically and internationally. Specifically, in the United States, Sarah has experience with federal, state, and local permitting requirements in the Northeast, Midwest, and the West. Sarah's experience also includes community consultation and the management of environmental surveys for regulatory compliance.
Charles Smith Sr. Director, Development Ørsted	Charlie Smith holds a BA in Economics from Washington University in St. Louis. Charlie has more than eight years of experience working on the development, financing, and acquisition of renewable energy projects. Specifically, Charlie has been responsible for developing, financing, and acquiring over 3 GW of renewable energy projects that are now operational across Texas, Nebraska, South Dakota, and Illinois. Charlie joined Ørsted in October of 2018 when Ørsted entered the United States Onshore renewable energy market via the acquisition of Lincoln Clean Energy.
Francesca Martella Project Developer Ørsted	Francesca Martella holds a BS in Environmental Science and a BA in Literature from Duke University, Durham, North Carolina. Francesca joined Ørsted in June 2020 as a Project Developer and works on the development of onshore wind and solar generation projects, assisting from site identification through financial close and construction. Francesca's experience includes supporting regulatory compliance for local, state, and federal permitting.
Nicholas Gebauer Director, Development Ørsted	Nicholas Gebauer holds an MA from Clark University and a BS from Michigan State University. Having just joined Ørsted in January 2022, Nicholas has 11 years of prior experience in the renewable energy industry, working for a technical consultant before transitioning to project development starting in 2014. As a consultant or developer, Nicholas has been involved in the successful development, construction, or operation of several GW of wind and solar projects across the United States, with expertise in preliminary design and energy estimates, landowner and stakeholder relations, project due diligence, and performance optimization.
Francisco Salazar Project Manager Ørsted	Francisco Salazar holds a BS in Construction Management from the University of Nebraska Lincoln. Mr. Salazar has worked with Ørsted (f/k/a Lincoln Clean Energy) since May 2018 and comes from a strong commercial construction background before transitioning into renewable energy. Francisco has stepped into a variety of roles as the Pre-Construction Manager, Project Engineer, and Construction Project Manager with Ørsted.

Name and Project Role	Education and Professional Experience
Mollie Smith Attorney at Law Frederickson & Byron, P.A.	Mollie Smith assists clients with wind farm, transmission line, and pipeline permitting matters in North Dakota, South Dakota, and Minnesota. At the state level, Mollie represents clients in certificate of corridor compatibility, route permit, certificate of site compatibility, and rulemaking proceedings before the North Dakota Public Service Commission; energy facility permit proceedings before the South Dakota Public Utilities Commission; and certificate of need, route permit and site permit proceedings before the Minnesota Public Utilities Commission. At the local level, Mollie advises and assists clients with a variety of permitting-related matters, including obtaining conditional use/special exception permits, variances and subdivision approvals, and participating in zoning ordinance amendment processes. Mollie has a Bachelor of Arts in English from Northern State University, Aberdeen, SD; a Master of Arts in Literature from Colorado State University, Fort Collins, CO; and a Juris Doctor from the University of Minnesota Law School, Minneapolis, MN.
Bridget Duffus Attorney at Law Frederickson & Byron, P.A.	Bridget Duffus assists clients with wind farm, solar farm, transmission line, and pipeline permitting matters in North Dakota and Minnesota. At the state level, Bridget represents clients in certificate of corridor compatibility, route permit, and certificate of site compatibility proceedings before the North Dakota Public Service Commission; and certificate of need, route permit, and site permit proceedings before the Minnesota Public Utilities Commission. At the local level, Bridget advises and assists clients with a variety of permitting-related matters, including obtaining conditional use permits and variances. Bridget has a BA in Psychology from the University of St. Thomas, St. Paul, MN; and a JD from the University of St. Thomas School of Law, Minneapolis, MN.
Gabriel Constantin Senior Team Leader DNV	Since joining DNV in mid-2012, Gabriel Constantin has been involved in several renewable energy mandates in the United States, Canada, and abroad. He has focused his field of expertise around the environmental and permitting aspects of renewable energy projects as well as the relevant regulations and energy policies in different jurisdictions. More precisely, Gabriel has significantly contributed to the procurement of renewable energy approvals for multiple wind and solar projects across North America (more than 1,000 MW) by coordinating with stakeholders and agencies at all levels, participating in public open houses, managing subcontractors, and writing the mandatory environmental impact assessment reports. Moreover, he has significantly contributed to the environmental and social due diligence of various wind and solar projects in the United States, Canada, Mexico, and other international mandates. His experience also includes project management, environmental impact assessments, due diligence, permitting at various government levels and an array of consultation activities. Gabriel holds an M. Sc. in Geographical Sciences.

Name and Project Role	Education and Professional Experience
Kimberly Peters, PhD Principal Biologist DNV	Kimberly Peters received her BA from Boston College, MSc from North Carolina State University, and PhD from Clemson University. She is an ecologist with over 25 years of experience leading research, conservation, and risk analysis programs on migratory shorebirds, wind energy collision risk, solar-wildlife interactions, grassland birds, and bird-aircraft strike-risk. Dr. Peters currently serves as a Senior Biologist and Team Lead for the Biological Services Team within DNV GL's Environmental & Permitting Services, where she provides technical and permitting support for the renewable energy sector in North America and globally. She is the lead author of the Canadian Wind Energy Association's Wind Energy and Bat Conservation Review, and her avian research has been published in various conservation and wildlife journals. Her primary interests are in migration ecology, coastal ecology, grassland ecology and management, full life-cycle analysis, and monitoring and estimation methodologies.
Kristian Rogers Project Biologist DNV	Kristian Rogers has been a Project Biologist with the Environmental and Permitting Services team at DNV since early 2021. Mr. Rogers holds an MPS in marine ecosystem management from the University of Miami in the United States and a BS in marine and freshwater biology from the University of Texas. Mr. Rogers has more than nine years of experience working in both the private and public sector on the development and permitting of projects related to environmental management, coastal infrastructure, and renewable energy projects both domestically and internationally. In the United States, Mr. Rogers has experience with interpreting federal, state, and local permitting requirements as they relate to the development of large-scale solar and wind energy projects.
Aren Nercessian Project Siting Engineer DNV	Mr. Nercessian has over 13 years of experience running acoustic models for renewable energy projects, has prepared over 50 reports on noise modeling of wind farms and has analyzed sound level measurements at more than 15 sites. He is very familiar with the noise regulations in many jurisdictions including Illinois, Michigan, Minnesota, Oregon, Alberta, Ontario, and Quebec. Additionally, Mr. Nercessian has also performed layout optimizations, shadow flicker assessments, visual simulations, and electromagnetic interference risk assessments on over 150 different projects under development. Mr. Nercessian has a bachelor's degree in mechanical engineering from McGill University in Montreal, Canada.
Justin Puggioni Siting and Acoustics Engineer DNV	Mr. Puggioni has over ten years of consulting experience working in acoustic engineering acquiring an in-depth understanding of the discipline. His project history covers the modeling, measurement, and analysis of acoustic impacts. He has conducted acoustic field measurements across the country and defended his work in public forums. His project portfolio includes offshore wind, onshore wind, IEC measurements, construction noise assessment, traffic noise assessments, horizontal directional drilling, and compressor stations. He has a BS degree in mechanical engineering from The University of Melbourne, Australia.

Name and Project Role	Education and Professional Experience
Frederic Gagnon Senior Scientist DNV	Mr. Gagnon holds a BSc in biology and a Master of Environment in Environmental Impact Assessment from Concordia University. Mr. Gagnon joined DNV GL in 2009 with 17 years of experience as a research scientist and technical writer. For the past 13 years, he has specialized in supporting renewable energy projects by addressing environmental and permitting aspects of development and environmental compliance, including by-law analysis, regulatory processes, stakeholder engagement, impact analysis, cumulative impacts, mitigation strategies, post-permit compliance, monitoring, and due diligence. Mr. Gagnon has developed specific expertise in the preparation of Environmental and Social Impact Assessments in conformance with the 2020 Equator Principles, IFC Performance Standards, and World Bank Environmental, Health and Safety guidelines. Mr. Gagnon has worked on hundreds of wind and solar projects in various jurisdictions within the United States, Canada, and internationally, and has been called upon to testify at public hearings in Quebec on health and safety related to wind energy development, sustainable development, and the environmental assessment process.
Chelsea Scheske GIS Analyst DNV	Chelsea Scheske holds a BEng in Bioresource Engineering from McGill University and a BA in International Development from the University of Regina. Chelsea has worked as a GIS Analyst for DNV's Renewable Advisory in Environmental and Permitting Services since January 2020, supporting renewable energy projects through in-depth GIS data analysis and assisting the biology, permitting, and engineering teams in many capacities. Chelsea has worked in the renewable energy and natural resources industries in various roles over the past decade, through roles as a researcher, a green technology specialist, and an editor of scientific papers. Currently Chelsea is a Candidate for the Engineering Profession in Quebec, working toward her Professional Engineering certification.
Sydney Notman GIS Analyst DNV	Sydney Notman holds an MS in Environmental Management from the University of Houston – Clear Lake and a BA in Geography with a specialization in GIS from Texas Tech University. Sydney has worked as a GIS Analyst with the Environmental and Permitting Services team at DNV since May 2021. In her current role, Sydney supports renewable energy projects through GIS data analysis and works closely with the biology, permitting, and engineering teams. Sydney has a background in the Oil & Gas industry, while working as a GIS Analyst for an environmental consulting company specializing in Phase 1 and Phase 2 ESAs and cultural impact and resource assessments.

Name and Project Role	Education and Professional Experience
Amanda Klehr Project Biologist DNV	Ms. Klehr has been a Project Biologist with the Environmental and Permitting Services team at DNV since 2015. She specializes in biological analysis for environmental assessments and operational compliance for terrestrial and offshore renewable energy projects in the United States and Canada. In her current role, she has worked closely with clients and colleagues for a variety of projects including technical due diligence reviews, environmental assessments and impact assessments, management plans, permit applications, site characterization and selection studies, and biological surveys. Prior to joining DNV, Ms. Klehr completed field work with Wildlife Conservation Society in Alaska focused on habitat disturbance and predation effects for nesting shorebirds in an oilfield and with Portland State University in Oregon related to population studies and behavior of avian species. Ms. Klehr is currently completing her Master of Science in Environmental Conservation at the University of Massachusetts Amherst and is researching avian use of operational photovoltaic solar facilities in NY and western MA.
Cristen Mathews Project Biologist DNV	Cristen Mathews holds an MSc in Conservation Medicine from the Tufts Cummings School of Veterinary Medicine and a BSc in Biopsychology from Tufts University. Cristen has worked as a Project Biologist with the Environmental and Permitting Services team at DNV since 2019, assisting with ensuring the environmental compliance of renewable energy projects by preparing and reviewing environmental permit applications, providing input for project site selection, and supporting technical due diligence reviews. She specializes in conducting Critical Issues Analyses for wind and solar projects and conducting biological analyses for environmental assessments and feasibility studies for onshore and offshore renewable energy developments in North America. Additionally, she also has experience in developing wildlife mitigation plans for the construction and operations phases of renewable energy projects.
Lauren Fletcher Environmental Permitting Analyst DNV	Ms. Fletcher holds an MS in Environmental Policy and Sustainable Management from The New School in New York. She has worked on wind, solar, and battery storage environmental permitting and due diligence projects. Ms. Fletcher is experienced in federal (National Environmental Policy Act, among others), state (the California Environmental Quality Act, among others), and local permitting in relation to renewable energies. Ms. Fletcher is also a deputy manager who has led bid preparation projects for offshore transmission lines and assisted with development of the construction and operations plan for an offshore wind farm. She is a highly detail-oriented professional who coordinates efficiently with all stakeholders to provide timely deliverables.

Name and Project Role	Education and Professional Experience
Christopher R. Rutledge Vice President, Environmental Services Atwell, LLC	Chris Rutledge holds an MS and Rangeland Ecosystem Science from Colorado State University and a BA in Environmental, Population, and Organismic Biology from the University of Colorado. With more than 25 years of professional experience, Chris has supported a variety of land development projects throughout the United States. His experience includes management of environmental and cultural resource surveys; threatened and endangered species surveys and permitting; wetland delineation, permitting, mitigation, and monitoring; development of weed management and restoration plans; local, state, and federal permitting; agency coordination; and stakeholder outreach.
Tanya Johnson Project Manager Atwell, LLC	Tanya Johnson holds a BA and MA Graduate Studies in Anthropology from Idaho State University. With more than 25 years of professional experience, Tanya has supported a variety of large-scale quick burn projects across the Western United States, Hawaii, Guam, and Japan. Her experience includes management of multi-tiered environmental projects in the renewable and traditional energy industries across natural and cultural resources issues with local, state, and federal permitting included.
Maureen O'Shea Stone Project Manager Atwell, LLC	Maureen O'Shea-Stone holds a BA and MA from the University of Colorado, Environmental, Population, and Organismic Biology. In her role at Atwell, Maureen directs and manages technical teams to support all aspects of federal, state, and local permitting, impact analyses, and environmental due diligence review for energy development projects, focusing on wind and solar development. Maureen has over 40 years of experience permitting and conducting environmental impact statement and environmental assessment processes for renewable and traditional energy projects throughout the American West and Midwest.
Michael Lester Environmental Consultant Atwell, LLC	Michael Lester holds a BS degree in Wildlife and Fisheries Biology from the University of Vermont and MS degree in Wildlife Conservation and Management from the University of Arizona. He has extensive experience working with state and federal agencies, non-profits, and private organizations on a variety of biological survey projects, with a particular focus on birds, as well as threatened and endangered species. In his role at Atwell, Michael coordinates pre-construction avian surveys and PCMM for renewable energy projects, including managing field staff, analyzing data, and writing annual reports. He also supports permitting for renewable energy projects in the Upper Midwest.
Caitlyn Cyrus Senior Project Coordinator Atwell, LLC	Caitlyn Cyrus holds a Master of Science in biology from College of William & Mary. She has extensive experience working on a diversity of energy projects, specializing in botany, rare, threatened, and endangered species surveys, and developing pollinator habitat for solar facilities. She coauthored the Pollinator-Smart Solar program for Virginia and is Vice President of the Flora of Virginia Project, which authored and maintains the dichotomous key used by botanists in the state. In her current role as a senior project coordinator at Atwell, she specializes in permitting renewable energy projects.

Name and Project Role	Education and Professional Experience
Alan Plumeau Project Coordinator Atwell, LLC	Alan Plumeau holds a Master of Science in Interdisciplinary Biosciences from the University of Iowa. He has a breadth of experience in environmental consulting and permitting for a diversity of projects, with a primary focus on renewable energy developments. At his current role at Atwell, he serves as a project coordinator, specializing in permitting of wind and solar projects.
Chris Jessen GIS Analyst Atwell, LLC	Chris Jessen holds a Master of Science in geology from the University of Wyoming. He has over 23 years of experience working on projects in the mining, forestry, wind, solar, oil and gas, and agriculture industries across much of the Central and Western United States. He has focused on GIS aspects of renewable energy permitting, including constraints analysis, visual simulations, data mining/development/organization, county zoning, mineral rights, and parcel data analysis. He has also designed and developed multiple database applications that streamline data analysis and reporting.

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Appendix A

Badger Wind, LLC / Ørsted Policy Statement

Badger Wind, LLC
February 2022

Badger Wind LLC Policy and Commitments to the Environment

Badger Wind, LLC ("Badger"), with the assistance of Ørsted Onshore North America's team of environmental siting/permitting professionals, engineering professionals and third-party consultants, is committed to identifying and avoiding or minimizing potential impacts from the Badger Wind Project ("Project") to the extent possible. Throughout the project development, Badger Wind voluntarily followed the U.S. Fish and Wildlife Service ("USFWS") Land-Based Wind Energy Guidelines, the USFWS Eagle Conservation Plan Guidance and other agency guidance and recommendations to identity sensitive resources early in the siting process and then factored those resources into the Project's design. In addition, following Ørsted's standard practice, Badger Wind will prepare a Bird and Bat Conservation Strategy ("BBCS") for the Project, documenting its ongoing commitment to minimizing and managing potential impacts to environmental resources throughout the life of the Project.

C/O Orsted Onshore North America, LLC

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Appendix B

Badger Wind, LLC, Ten Year Plan

Badger Wind, LLC
February 2022

TEN YEAR PLAN: 2022-2032
Badger Wind, LLC

February 21, 2022

In accordance with N.D.C.C. § 49-22-04 and N.D.A.C. Ch. 69-06-02, Badger Wind, LLC ("Badger Wind"), submits the following Ten Year Plan for years 2022 through 2032.

(1) A description of the general location, size, and type of all facilities to be owned or operated by the utility during the ensuing ten years, as well as those facilities to be removed from service during the ten-year period.

Badger Wind is a Delaware limited liability company, authorized to do business in the State of North Dakota. Badger Wind is constructing a wind energy conversion facility known as the Badger Wind Project (the "Project"). The Project would have a nameplate capacity of up to 251.6 megawatts ("MW"), with up to 250 MW delivered to the grid. The Project will be located in western Logan and McIntosh Counties, North Dakota. The Project will interconnect to the grid at Montana-Dakota Utilities Company's ("MDU") Wishek substation, located in McIntosh County, North Dakota. To interconnect the Project to the grid, Badger Wind will construct a 230 kilovolt ("kV") generation interconnection line between the Project substation and the Wishek substation. The generation interconnection line will be less than one mile long and, therefore, will not be subject to the jurisdiction of the North Dakota Public Service Commission ("Commission") as a "transmission facility."

Badger Wind plans to submit a Conditional Use Permit application to Logan County in early 2022. McIntosh County has not enacted a zoning ordinance, so a zoning permit from McIntosh County is not required for the Project. Badger Wind also plans to submit a Certificate of Site Compatibility application to the Commission in early 2022. Badger Wind plans to begin constructing the Project as early as September 2022 and plans for the Project to be commercially operational as early as September 2023.

Other than the proposed Project, Badger Wind does not have any transmission or generation facilities located in North Dakota. The Project will have an estimated life of greater than 10 years. As such, Badger Wind does not have any plans to decommission any transmission or generation facilities within the timeframe of this plan.

(2) An identification of the location of the tentative preferred site for all energy conversion facilities and the tentative location of all transmission facilities on which construction is intended to be commenced within the ensuing five years and such other information as may be required by the commission. The site and corridor identification shall be made in compliance with the criteria published by the commission pursuant to section 49-22-05.1.

As noted above, Badger Wind is developing the above-referenced Project, and proposes to have the Project in-service as early as September 2023. The proposed Project footprint is located in McIntosh and Logan Counties, North Dakota, approximately two miles from Wishek,

North Dakota. The Project will interconnect at MDU's Wishek substation, located in McIntosh County, North Dakota.

Badger Wind has retained qualified environmental consulting firms to evaluate the proposed Project site to ensure compliance with the Commission's siting criteria, including the exclusion and avoidance area criteria referenced in N.D.C.C. § 49-22-05.1 and identified in N.D.A.C. § 69-06-08-01. A map depicting the Project area is attached as **Exhibit A**.

(3) A description of the efforts by the utility to coordinate the plan with other utilities to provide a coordinated regional plan for meeting the utility needs of the region.

Badger Wind is in the process of identifying an offtaker for the Project's output. Energy produced by the Project may help local or regional utilities to meet applicable renewable energy needs. Additionally, Badger Wind and the Midwest Independent System Operator ("MISO") are in the process of completing studies for the potential interconnection of the Project at MDU's Wishek substation. Badger Wind expects final study results in early 2022. Badger Wind is in discussions with MISO and MDU regarding the proposed interconnection and plans to enter into an interconnection agreement to facilitate Project interconnection to the MISO system.

(4) A description of the efforts to involve environmental protection and land-use planning agencies in the planning process, as well as other efforts to identify and minimize environmental problems at the earliest possible stage in the planning process.

Badger Wind has engaged the services of qualified environmental consulting firms to study and identify avoidance and exclusion areas within the proposed Project site, in accordance with N.D.C.C. Ch. 49-22 and N.D.A.C. Ch. 69-06-08. As discussed above, Badger Wind plans to submit a Conditional Use Permit application for the Project to Logan County in early 2022, and a Certificate of Site Compatibility application to the Commission in early 2022.

Additionally, Badger Wind has consulted with applicable local, state, and federal agencies and entities in connection with siting and development of the Project, including the United States Fish and Wildlife Service, the Federal Aviation Administration, the North Dakota Game and Fish Department, the State Historical Society of North Dakota, McIntosh County, and Logan County. Badger Wind will continue to coordinate with agencies and entities, as appropriate, throughout the development, construction, and operation of the Project.

(5) A statement of the projected demand for the service rendered by the utility for the ensuing ten years and the underlying assumptions for the projection, with that information being as geographically specific as possible, and a description of the manner and extent to which the utility will meet the projected demands.

As discussed above, Badger Wind is in the process of identifying an offtaker for the Project's output. Badger Wind is actively marketing the Wind Project to a number of potential offtakers and may sell the power in the form of a power purchase agreement ("PPA"), directly on the merchant market, or the Project could be sold and directly owned and operated by a utility. As an independent power producer, Badger Wind is able to bid into a variety of markets.

Utilities and other customers seeking to diversify and build their energy generation portfolios are attracted to wind energy projects because of long-term, fixed, competitive pricing, environmental benefits and existing and potential renewable energy policies. Thus, the Project could help satisfy local, regional, or even national renewable energy demands.

Locally, in 2021, the North Dakota Legislature enacted a statutory provision adopting a low-emission technology initiative, which establishes a goal that the "agricultural, forestry, natural resources, and working land of the United States should provide energy from low-emission technology and continue to produce safe, abundant, and affordable food, fuel, feed, and fiber."[1] As used in this initiative, low-emission technology includes, among others, wind. Additional renewable resources will be needed to meet the low-emission technology initiative.

Also, in 2010, the North Dakota Department of Commerce, EmPower ND Commission, published the Comprehensive State Energy Policy 2010-2025, which recommended a capacity of wind generation up to 5,000 MW by 2020.[2] The state had a total of 3,989 MW of installed wind capacity at the end of 2020.[3] With improving technology and falling costs, utilities are beginning to include renewable energy projects in their resource plans as long-term economic energy and capacity resources. In North Dakota, excellent wind resources create high capacity factor generation, reducing the cost/megawatt hour ("MWh"). In general, alternative energy sources provide lower costs per MW-hour than conventional sources.[4]

A need also exists for renewable energy produced in North Dakota to meet state renewable portfolio standards. Eleven of the MISO states currently have either mandated or voluntary renewable portfolio standards or policies.[5] Under current state standards, total United States renewable portfolio standard demand will increase from 310 terawatt hours ("TWh") in 2019[6] to 630 TWh in 2030.[7] Given existing renewable energy capacity, an additional 250 TWh

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[1] *See* N.D.C.C. § 17-01-01.

[2] North Dakota Department of Commerce. Undated. EmPower North Dakota. Comprehensive State Energy Policy 2010-2025. Accessed online January 26, 2022. Retrieved from https://www.business.nd.gov/uploads/3/empower_nd2010.pdf.

[3] U.S. Department of Energy. 2021. Land-Based Wind Market Report. Accessed online January 26, 2022. Retrieved from https://www.energy.gov/eere/wind/wind-market-reports-2021-edition.

[4] Lazard, *Lazard's Levelized Cost of Energy Analysis – Version 14.0* (October 2020), at 2. Accessed online January 26, 2022. Retrieved from https://www.lazard.com/media/451419/lazards-levelized-cost-of-energy-version-140.pdf.

[5] National Conference of State Legislatures, State Renewable Portfolio Standards and Goals (Apr. 17, 2020), https://www.ncsl.org/research/energy/renewable-portfolio-standards.aspx; MTEP18 MISO Transmission Enhancement Plan, at 182. Accessed online January 26, 2022. Retrieved from https://cdn.misoenergy.org/MTEP18%20Full%20Report264900.pdf.

[6] *See* Lawrence Berkeley National Laboratory, U.S. Renewable Portfolio Standards 2019 Annual Status Report (July 2019), at 24. Retrieved from https://eta-publications.lbl.gov/sites/default/files/rps_annual_status_update-2019_edition.pdf.

[7] Lawrence Berkeley National Laboratory, U.S. Renewable Portfolio Standards, 2021 Status Update (February 2021), at 25. Retrieved from https://eta-publications.lbl.gov/sites/default/files/rps_status_update-2021_early_release.pdf.

increase in renewable resources will be required to meet demand through 2030.[8] In addition, the regional transmission grid is being expanded to deliver wind generation in a cost-effective manner; specifically, MISO's Multi-Value Project ("MVP") Portfolio is expected to enable 41 million megawatt hours ("MWh") of wind energy per year to meet renewable energy mandates and goals.[9]

In addition to traditional local and regional utility demand for wind energy, a growing number of corporations are turning to renewable energy to save money on energy and meet sustainability goals. Corporate customers either purchase renewable energy directly or obtain renewable benefits and cost savings through financially settled contracts, sometimes called virtual PPAs. In addition, many utilities are creating "green tariffs," which allow customers to purchase up to 100 percent renewable energy from the utility.[10]

Beyond the growing demand from utilities, corporations such as Apple, Google and Facebook, along with many others, have recently set goals to obtain 100 percent of their energy from renewables. These clean energy goals fuel the demand for corporate renewables procurement and subsequent PPAs. According to Wood Mackenzie's report titled an "*Analysis of Commercial and Industrial Wind Energy Demand in the United States*," the United States is "at the beginning stage of a corporate renewables procurement boom," with approximately "85 gigawatts of renewable energy demand" from the "largest U.S. companies" alone through 2030.[11] Another Wood Mackenzie report titled "*US Corporate Procurement of Wind and Solar 2020*" lists 2019 as "the largest year for megawatts of annual wind and solar C&I capacity additions and the largest year on record for new wind and solar C&I PPAs signed." These growth trends are expected to continue, and 2020 saw an immense demand for C&I renewable energy PPAs. Similarly, according to a 2019 research report, corporate contracts accounted for 22 percent of 2018 PPAs for renewables in the United States.[12] Further, the buyers are not just large corporations; smaller companies are entering into aggregated purchasing models and further driving additional market expansion.[13]

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[8] Lawrence Berkeley National Laboratory, U.S. Renewable Portfolio Standards, 2021 Status Update (February 2021), at 27.

[9] MTEP 18 MISO Transmission Enhancement Plan, at 42.

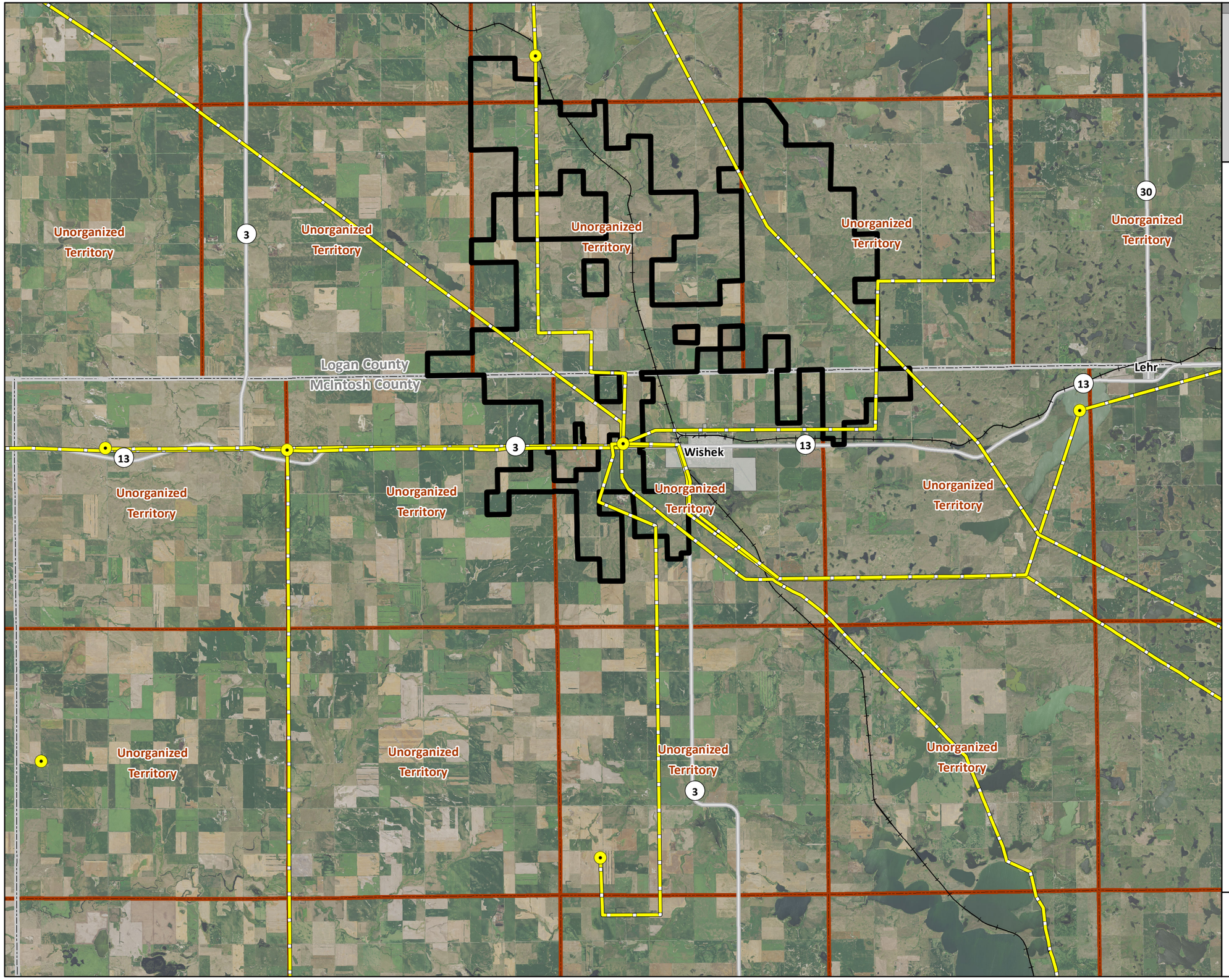
[10] U.S. Environmental Protection Agency – Green Power Partnership. Guide to Purchasing Green Power. Chapter 4. Available online at https://www.epa.gov/sites/default/files/2016-01/documents/purchasing_guide_for_web.pdf.

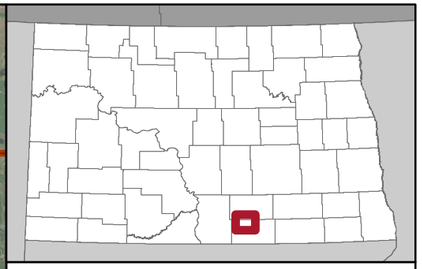
[11] Wood Mackenzie, *Corporates usher in new wave of US wind and solar growth* (Aug. 20, 2019). Accessed online January 26, 2022. Retrieved from https://www.woodmac.com/our-expertise/focus/Power--Renewables/corporates-usher-in-new-wave-of-u.s.-wind-and-solar-growth/.

[12] Emma Foehringer Merchant, *Corporate Renewables Procurement Accounted for Nearly a Quarter of All Deals in 2018* (Feb. 5, 2019). Accessed online January 26, 2022. Retrieved from https://www.greentechmedia.com/articles/read/corporate-renewables-procurements-quarter-ppa-2018.

[13] Emma Foehringer Merchant, *2018 Was Record Year for Corporate Clean Energy Contracts* (Jan. 31, 2019). Accessed online January 26, 2022. Retrieved from https://www.greentechmedia.com/articles/read/reports-confirm-a-record-year-for-corporate-clean-energy-contracts#gs.nxat51.

In summary, the renewable energy produced by Badger Wind's proposed Project will be positioned to help meet local renewable energy initiatives/goals, the regional need for renewable energy, and national C&I customer demand.





Legend

- Existing Substation
- Existing Transmission Line
- Project Area
- State Road
- Railroad
- City/Village
- Township
- County

Source: National Agriculture Imagery Program (2020)

0 1 2 3

Miles

ATWELL

The information contained on this map is proprietary and confidential. The use or disclosure of this information by you to third parties is prohibited by law and may give rise to civil or criminal liability.

Badger Wind, LLC

2/16/2022

Exhibit A

Project Area

Logan and McIntosh Counties, North Dakota

Appendix C

Telecommunications Studies

Badger Wind, LLC
February 2022

Wind Power GeoPlanner™

Communication Tower Study

Badger Wind



Prepared on Behalf of
Orsted Onshore NA

January 20, 2022

COMSEARCH®
A CommScope Company

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1. Introduction

This Communication Tower Study was performed for the Badger Wind project in Logan and McIntosh Counties, North Dakota to identify the tower structures as well as FCC-licensed communication antennas that exist in the project area. This information is useful in the planning stages of the wind energy facilities to identify turbine setbacks and to prevent disruption to the services provided by the tenants on the towers. This data can be used in support of the wind energy facilities communications needs in addition to avoiding any potential impact to the current communications services provided in the region.

2. Summary of Results

The communication towers and antennas in the study area were derived from a variety of sources including the FCC's Antenna Structure Registration (ASR) database, Universal Licensing System (ULS), national and regional tower owner databases, and the local planning and zoning boards. The data[1] was imported into GIS software and the structures mapped in the wind energy area of interest. Each tower location is identified with a unique ID number associated with detailed structure and contact information provided in a spreadsheet attachment.

Six tower structures and twenty-three communication antennas were identified within the Badger Wind project area using the data sources described in our methodology above. All six structures found were registered with the FCC, four of which contain eleven of the twenty-three communication antennas. The remaining antennas may be located on a variety of structure types such as guyed towers, monopoles, silos, rooftops or portable structures. The specific type of structure would normally need to be determined by an on-site visit.

Detailed information about the tower structures and communication antennas is provided in Table 1 and Table 2 including location coordinates, structure height above ground level, and owner-operator name[2].

A discussion of turbine setback distances is provided in section three.

[1] Comsearch makes no warranty as to the accuracy of the data included in this report beyond the date of the report. The data provided in this report is governed by Comsearch's data license notification and agreement located at http://www.comsearch.com/files/data_license.pdf.

[2] Please note that this report analyzes all known operators on the towers from data sources available to Comsearch. Unidentified operators may exist on the towers due to unlicensed or federal government systems, mobile phone operators with proprietary locations, erroneous data on the FCC license, and other factors beyond our control.

Tower ID	ASR Number	Owner	Structure Height AGL (m)	Latitude (NAD83)	Longitude (NAD83)	Distance to the Nearest Turbine (km)
Tower001	1291978	SBA Towers V, LLC	76.2	46.236278	-99.566722	1.22
Tower002	1040004	NORTH DAKOTA, STATE OF	60.3	46.255000	-99.739167	5.67
Tower003	1254358	CCATT LLC	58.2	46.255417	-99.587694	0.97
Tower004	1201574	Montana-Dakota Utilities Co	29.0	46.259444	-99.559444	3.18
Tower005	1291890	SBA Towers V, LLC	90.2	46.261472	-99.771500	7.50
Tower006	1039835	BASIN ELECTRIC POWER COOPERATIVE	125.0	46.362500	-99.676389	1.67

Table 1: Summary of Tower Structures

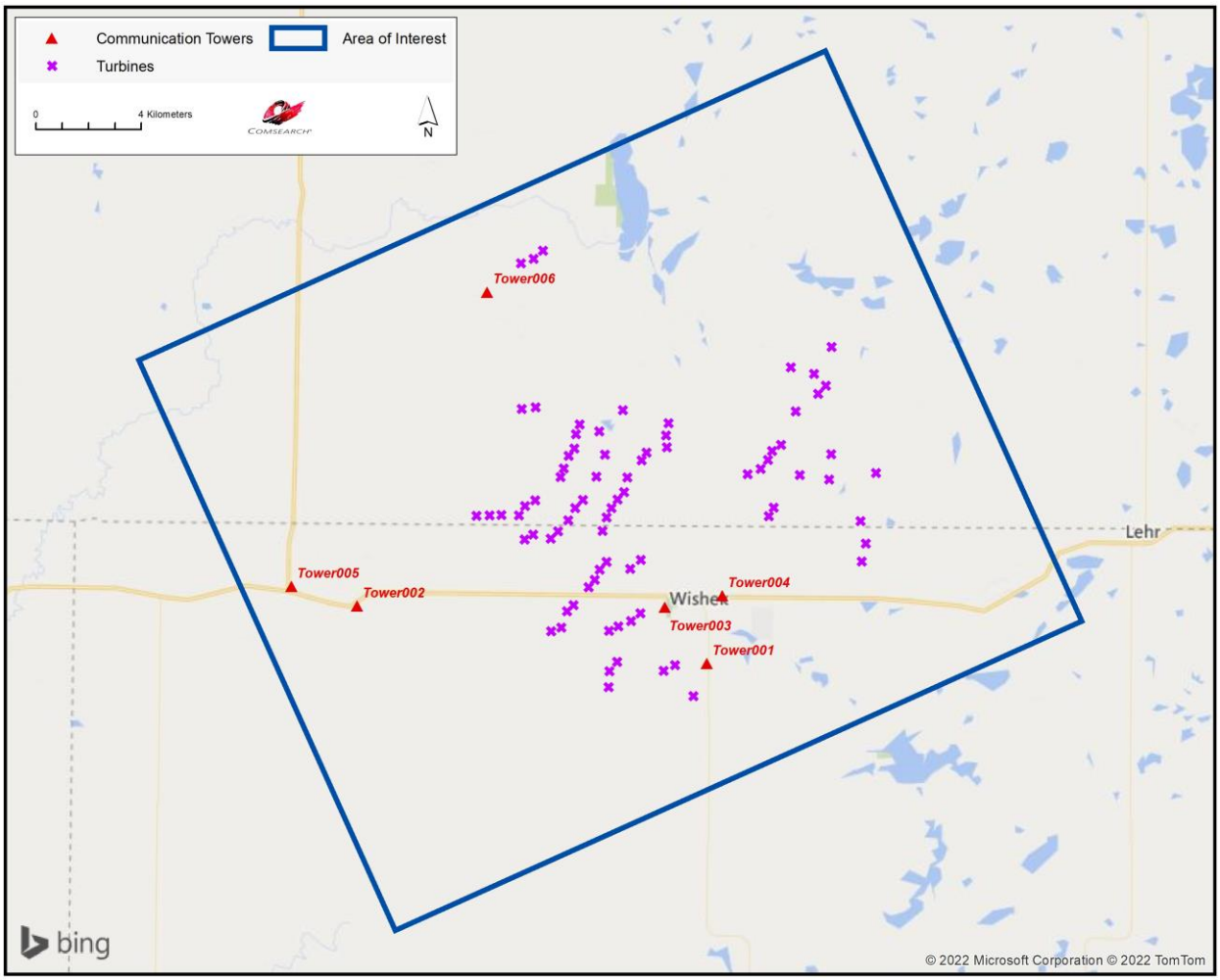


Figure 1: Towers within the Area of Interest

ID	Tower ID	Callsign	Service Type	Licensee	Antenna Height AGL (m)	Latitude (NAD83)	Longitude (NAD83)	Distance to the Nearest Turbine (km)
1		WNZC976	Land Mobile	RAILE, EDWIN	15.0	46.237472	-99.586500	0.36
2		KWI834	Land Mobile	Department of Emergency Services/State Radio	70.0	46.254972	-99.739556	5.70
3		KNFF825	Land Mobile	NORTH DAKOTA, STATE OF	53.0	46.254972	-99.739556	5.70
4	Tower002	WPPF241	Land Mobile	Department of Emergency Services/State Radio	70.0	46.254972	-99.739556	5.70
5	Tower002	KAP981	Land Mobile	State of North Dakota Dept. of Transportation/Telecommunications	60.0	46.254972	-99.739278	5.68
6	Tower002	WRKT635	Land Mobile	MONTANA-DAKOTA UTILITIES CO.	63.4	46.255000	-99.739167	5.67
7	Tower002	WRHZ393	Land Mobile	NORTH DAKOTA INFORMATION TECHNOLOGY DEPT	56.9	46.255000	-99.739167	5.67
8	Tower002	WQDA866	Land Mobile	Department of Emergency Services/State Radio	63.9	46.255000	-99.739167	5.67
9		WQNN362	Land Mobile	WISHEK HOME FOR THE AGED	12.0	46.255139	-99.560694	2.74
10	Tower003	KNKN782	Cellular	AT&T Mobility Spectrum LLC	Unknown	46.255417	-99.587694	0.97
11	Tower003	WPVV301	Cellular	AT&T Mobility Spectrum LLC	Unknown	46.255417	-99.587694	0.97
12		KUZ839	Land Mobile	WISHEK COMMUNITY HOSPITAL	37.0	46.255528	-99.550389	3.32
13	Tower004	KAF607	Land Mobile	Montana-Dakota Utilities Co.	30.0	46.259444	-99.559444	3.18
14		WPJU239	Land Mobile	BEK COMMUNICATIONS COOPERATIVE	55.0	46.259972	-99.664278	2.09
15		KNFY423	Land Mobile	MCINTOSH, COUNTY OF	30.0	46.260528	-99.518167	2.42
16		KNFY423	Land Mobile	MCINTOSH, COUNTY OF	37.0	46.261083	-99.518167	2.39
17		WSR667	Land Mobile	Waste Management Holdings, Inc	13.0	46.266444	-99.714528	3.40
18		KNNT540	Land Mobile	JAMESTOWN COMMUNICATIONS INC	60.0	46.361083	-99.678167	1.88
19		KNNT542	Land Mobile	JAMESTOWN COMMUNICATIONS INC	60.0	46.361083	-99.678167	1.88
20	Tower006	KNKN356	Cellular	North Dakota 5-Kidder Limited Partnership	Unknown	46.362500	-99.676389	1.67

ID	Tower ID	Callsign	Service Type	Licensee	Antenna Height AGL (m)	Latitude (NAD83)	Longitude (NAD83)	Distance to the Nearest Turbine (km)
21	Tower006	WQEK731	Land Mobile	Basin Electric Power Cooperative	102.1	46.362500	-99.676389	1.67
22	Tower006	WBD236	Microwave	Basin Electric Power Cooperative	123.44/1 11.25	46.362500	-99.676389	1.67
23		KEQ905	Land Mobile	Department of Emergency Services/State Radio	18.0	46.400806	-99.619556	3.51

Table 2: Summary of Communication Antennas

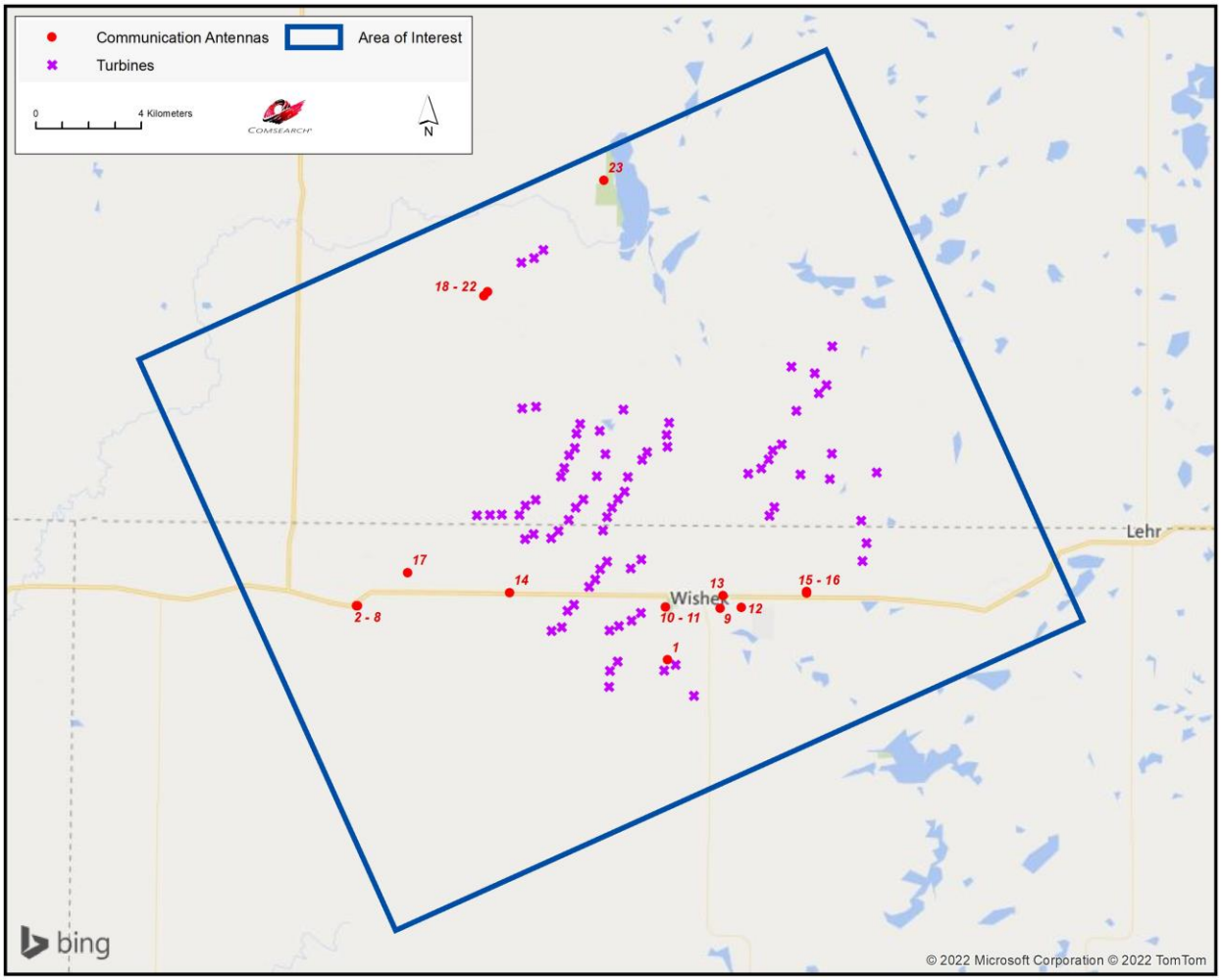


Figure 2: Communication Antennas within the Area of Interest

3. Discussion of Separation Distances

In planning the wind energy turbine locations, a conservative approach would dictate not locating any turbines in close proximity to existing tower structures to avoid any possible impact to the communications services provided by the structures. Reasonable distance between communication towers and wind turbine towers is a function of two things: (1) the physical turning radius of the wind turbine blades and (2) the characteristics of the communication systems on the communication tower.

Since wind turbine blades can rotate 360º, the first consideration of separation distance to other structures is clearance of the blades. If the blade radius is 50 meters, then a separation distance greater than 50 meters is necessary. From a practical standpoint, a setback distance greater than the maximum height of the turbine is necessary to insure a “fall” safety zone in the unlikely event of a turbine tower failure. Setback requirements for “fall” safety are typically specified by the local zoning ordinances.

The required separation distance based on the characteristics of the communication systems will vary depending on the type of communication antennas that are installed on the tower. For example, AM broadcast antennas should be separated by distances that allow for normal coverage which can extend up to 3 kilometers. For land mobile and mobile phone systems, setback distances are based on FCC interference emission limits from electrical devices in the land mobile and mobile phone frequency bands.

Finally, the tower structures identified could be a potential benefit in support of communications network needs for the wind energy facility. An example would be the implementation of a Supervisory Control and Data Acquisition (SCADA) system that monitors and provides communications access to the wind energy facility.

4. Conclusions

Our study identified six tower structures and twenty-three communication antennas within the project area. They are used for microwave, cellular, and land mobile services in the area.

5. Contact Us

For questions or information regarding the Communication Tower Study, please contact:

Contact person: David Meyer
Title: Senior Manager
Company: Comsearch
Address: 19700 Janelia Farm Blvd., Ashburn, VA 20147
Telephone: 703-726-5656
Fax: 703-726-5595
Email: dmeyer@comsearch.com
Web site: www.comsearch.com

Wind Power GeoPlanner™

Off-Air TV Analysis

Badger Wind



Prepared on Behalf of
Orsted Onshore

January 20, 2022

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1. Introduction

Off-air television stations broadcast signals from terrestrially-based facilities directly to television receivers. Comsearch identified those off-air stations whose service could potentially be affected by the proposed Badger Wind project in Logan and McIntosh Counties, North Dakota. Comsearch then examined the coverage of the stations and the communities in the area that could potentially have degraded television reception due to the location of the proposed wind turbines.

2. Summary of Results

The proposed wind energy project area and local communities are depicted in Figure 1, below.

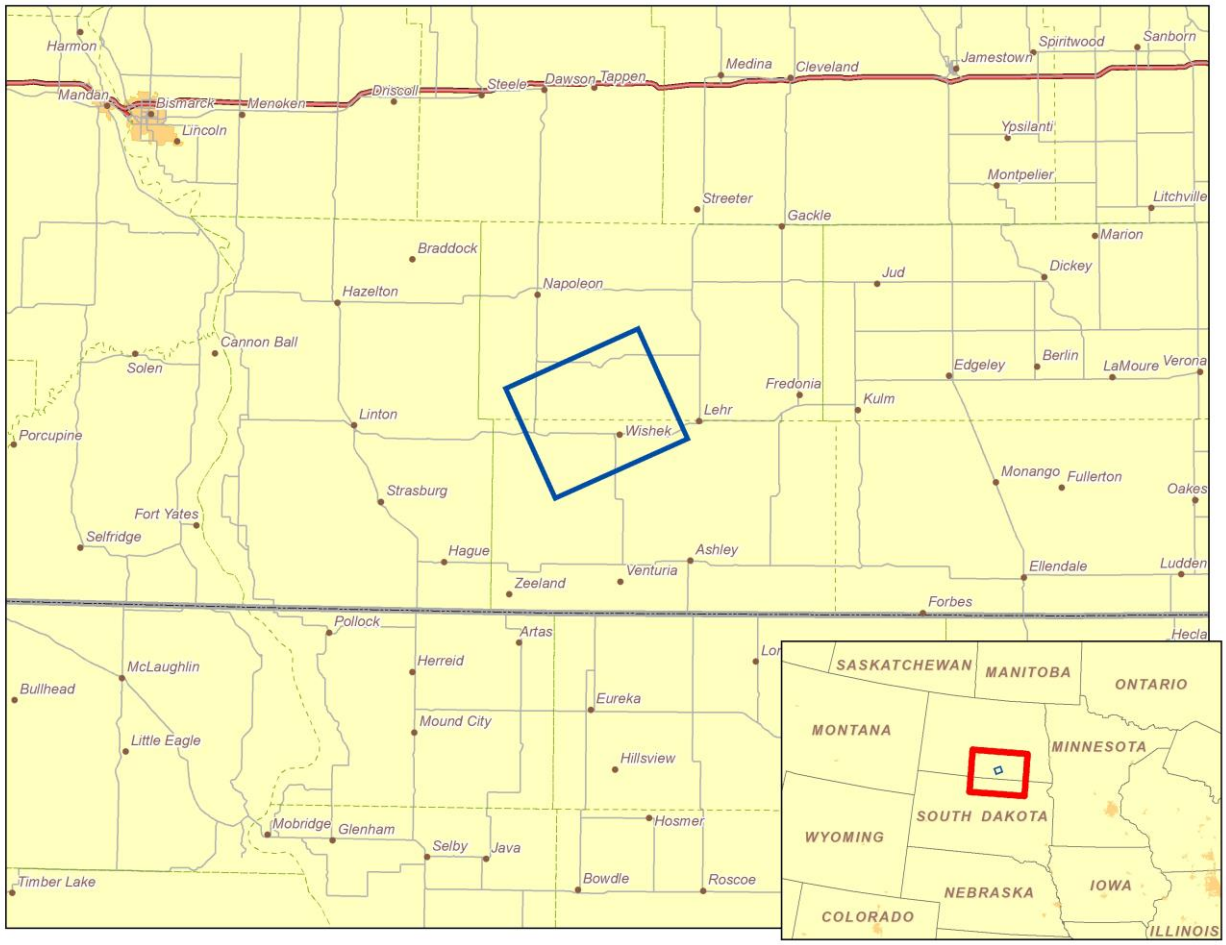


Figure 1: Wind Farm Project Area and Local Communities

To begin the analysis, Comsearch compiled all off-air television stations[1] within 150 kilometers of the proposed turbines. TV stations at a distance of 150 kilometers or less are the most likely to provide off-air coverage to the project area and neighboring communities. These stations are listed in Table 1, on the next page, and a plot depicting their locations is provided in Figure 2. There are a total of 24 database records for stations within approximately 150 kilometers of the proposed turbines. Of these stations, only 19 stations are currently licensed and operating, 11 of which are low-power stations or translators. Translator stations are low-power stations that receive signals from distant broadcasters and retransmit the signal to a local audience. These stations serve local audiences and have limited range, which is a function of their transmit power and the height of their transmit antenna.

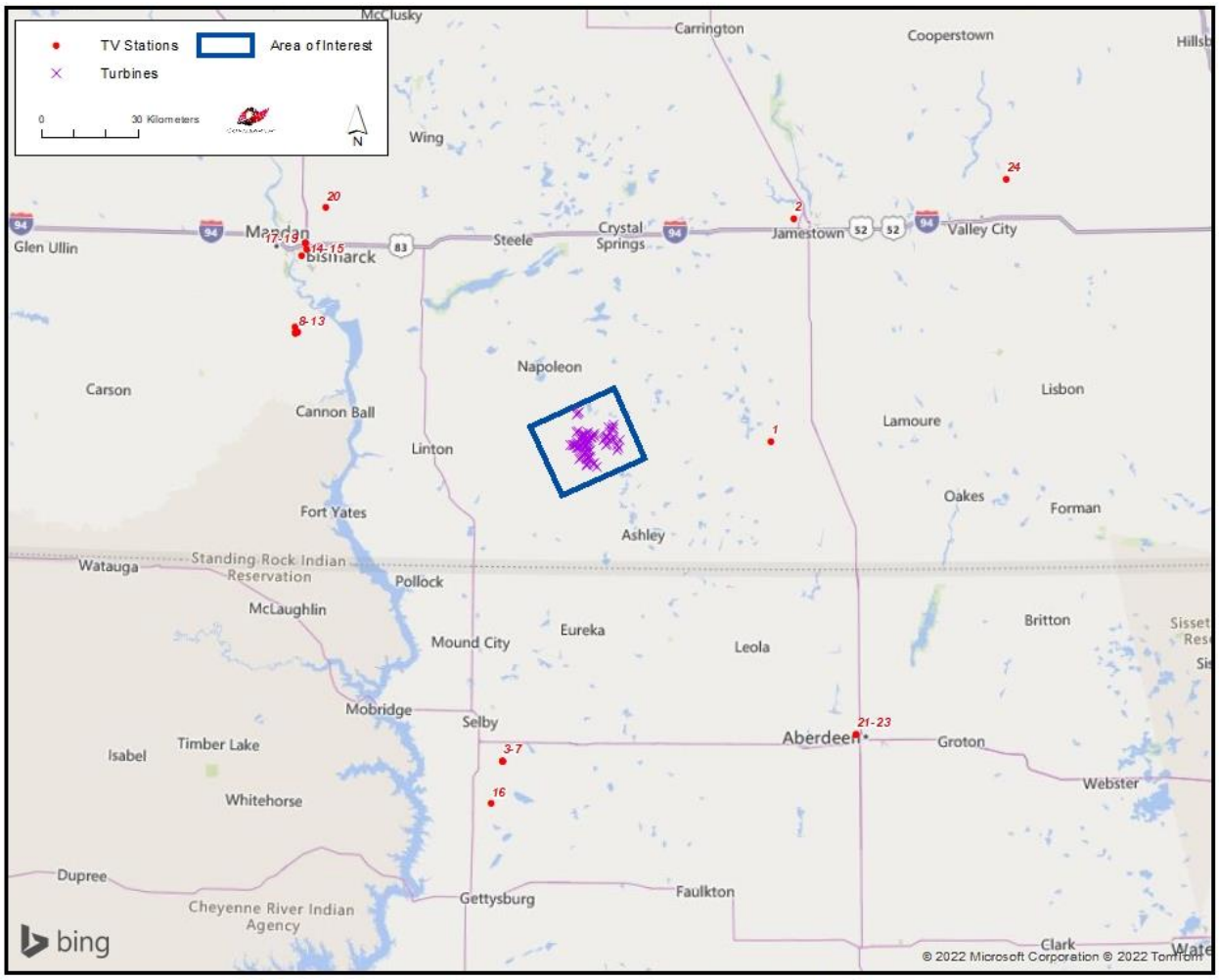


Figure 2: Plot of Off-Air TV Stations within 150 Kilometers of Proposed Turbines

[1] Comsearch makes no warranty as to the accuracy of the data included in this report beyond the date of the report. The data presented in this report is derived from the TV station's FCC license and governed by Comsearch's data license notification and agreement located at http://www.comsearch.com/files/data_license.pdf.

ID	Call Sign	Status	Service[2]	Channel	Transmit ERP[3] (kW)	Latitude (NAD 83)	Longitude (NAD 83)	Distance to the Closest Turbine (km)
1	KJRE	LIC	DTV	20	72.3	46.298889	-98.865833	47.64
2	KJRR	LIC	DTV	7	21.3	46.924167	-98.772222	85.47
3	K17KW-D	LIC	LPD	17	4.0	45.397222	-99.941667	95.73
4	K44ME-D	LIC	LPT	44	4.24	45.397222	-99.941667	95.73
5	K46MX-D	LIC	LPT	46	4.24	45.397222	-99.941667	95.73
6	K48OQ-D	LIC	LPT	48	4.24	45.397222	-99.941667	95.73
7	K50NL-D	LIC	LPT	50	4.24	45.397222	-99.941667	95.73
8	KNDB	LIC	DTV	26	50.0	46.589722	-100.794444	90.37
9	KBME-TV	LIC	DTV	22	97.3	46.589722	-100.800833	90.84
10	KBMY	LIC	DTV	17	75.0	46.587500	-100.805833	91.15
11	KXMB-TV	LIC	DTV	12	19.1	46.589722	-100.806111	91.23
12	KFYR-TV	LIC	DTV	31	500.0	46.605639	-100.807333	91.79
13	K35PO-D	CP	LPD	35	15.0	46.605639	-100.807333	91.79
14	KXBK-LD	LIC	LPD	15	0.85	46.805667	-100.785083	98.73
15	K28MS-D	LIC	LPD	28	2.0	46.825417	-100.767111	98.61
16	KQSD-TV	LIC	DTV	11	33.72	45.277222	-99.986389	109.51
17	K34LO-D	CP	LPD	34	5.0	46.840250	-100.775667	100.02
18	K43JQ-D	LIC	LPD	43	1.6	46.840250	-100.775667	100.02
19	K23OL-D	CP	LPD	23	2.0	46.840250	-100.775694	100.02
20	K16NV-D	CP	LPD	16	9.0	46.941944	-100.694917	101.37
21	K24DT-D	LIC	LPT	24	0.737	45.474722	-98.527222	115.90
22	K33MI-D	LIC	LPT	33	15.0	45.474722	-98.527222	115.90
23	K36NW-D	LIC	LPD	36	3.0	45.474722	-98.527222	115.90
24	K23PR-D	CP	LPD	23	15.0	47.029444	-97.896944	144.70

Table 1: Off-Air TV Stations within 150 Kilometers of Proposed Turbines

[2] Definitions of service and status codes:
ACA - Analog Class A
DCA - Digital Class A
DRT - Digital Replacement Translator
DT - ETL testing
DTS - Distributed Transmission System
DTV - Full Service Television
DTX - Digital TV Auxiliary
LPA - Low Power Analog TV
LPD - Low Power Digital TV
LPT - Digital TV Translator
LPX - Analog TV Translator
TS - Legacy Service for Analog TV Auxiliary
TV - Analog TV legacy

LIC – Licensed and operational station
CP – Construction permit granted

[3] ERP = Transmit Effective Radiated Power

3. Impact Assessment

Based on a contour analysis of the licensed stations within 150 kilometers of the badger Wind turbines, it was determined that five of the full-power digital stations, identified below in Table 2 below, may have their reception disrupted in and around the project. The areas primarily affected would include TV service locations within 10 kilometers of the turbines that have clear line-of-sight (LOS) to a proposed wind turbine but not to the respective station. After the wind turbines are installed, communities and homes in these locations may have degraded reception of these stations. This is due to multipath interference caused by signal scattering as TV signals are reflected by the rotating wind turbine blades and mast.

ID	Call Sign	Status	Service	Channel	Transmit ERP (kW)	Latitude (NAD 83)	Longitude (NAD 83)	Distance to the Closest Turbine (km)
1	KJRE	LIC	DTV	20	72.3	46.298889	-98.865833	47.64
2	KJRR	LIC	DTV	7	21.3	46.924167	-98.772222	85.47
11	KXMB-TV	LIC	DTV	12	19.1	46.589722	-100.806111	91.23
12	KFYR-TV	LIC	DTV	31	500.0	46.605639	-100.807333	91.79
16	KQSD-TV	LIC	DTV	11	33.72	45.277222	-99.986389	109.51

Table 2: Licensed Off-Air TV Stations Subject to Degradation

4. Recommendations

While TV signals are reflected by wind turbines, which can cause multipath interference to the TV receiver, modern digital TV receivers have undergone significant improvements to mitigate the effects of signal scattering. When used in combination with a directional antenna, it becomes even less likely that signal scattering from wind farms will cause interference to digital TV reception.

Nevertheless, signal scattering could still impact certain areas currently served by the TV station mentioned above, especially those that would have line-of-sight to at least one wind turbine but not to the station antenna. In the unlikely event that interference is observed in any of the TV service areas, it is recommended that a high-gain directional antenna be used, preferably outdoors, and oriented towards the signal origin in order to mitigate the interference.

Both cable service and direct broadcast satellite service will be unaffected by the presence of the wind turbine facility and may be offered to those residents who can show that their off-air TV reception has been disrupted by the presence of the wind turbines after they are installed.

5. Contact

For questions or information regarding the Off-Air TV Analysis, please contact:

Contact person:	David Meyer
Title:	Senior Manager
Company:	Comsearch
Address:	19700 Janelia Farm Blvd., Ashburn, VA 20147
Telephone:	703-726-5656
Fax:	703-726-5595
Email:	dmeyer@comsearch.com
Web site:	www.comsearch.com

Appendix D
Agency Correspondence

Mr./Ms. XX
Title, Agency
Address line 1
Address line 2

October X, 2021

Subject: Proposed Badger Wind Energy Center in Mcintosh and Logan Counties, North Dakota

Dear XX:

Badger Wind, LLC ("Badger") is in the process of developing the proposed approximate 252-megawatt ("MW") Badger Wind Energy Center (the "Project") in McIntosh and Logan Counties, North Dakota. Badger is an indirect, wholly owned subsidiary of Ørsted Onshore North America, LLC ("Ørsted"), which is a large renewable energy developer with more than 2,000 MW of wind and solar energy in operation or under construction in the United States. The proposed Project is planned to be located on approximately 34,000 acres of private land in southern Logan County and northern McIntosh County, approximately 40 miles east of the Missouri River. The approximate location of the Project is shown below in Figure 2 (the "Area of Analysis"). I am reaching out to you on behalf of Badger to inform you about the proposed Project and give you the opportunity to provide input.

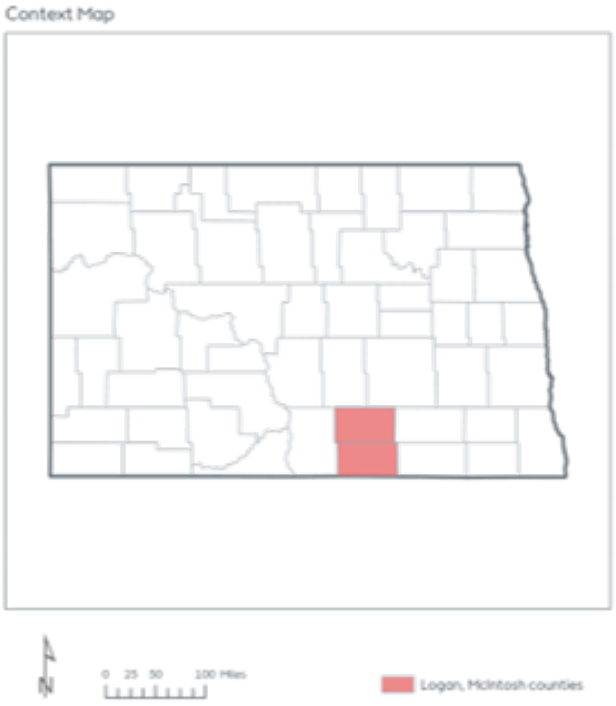


Figure 1: Context map of Area of Analysis in North Dakota.

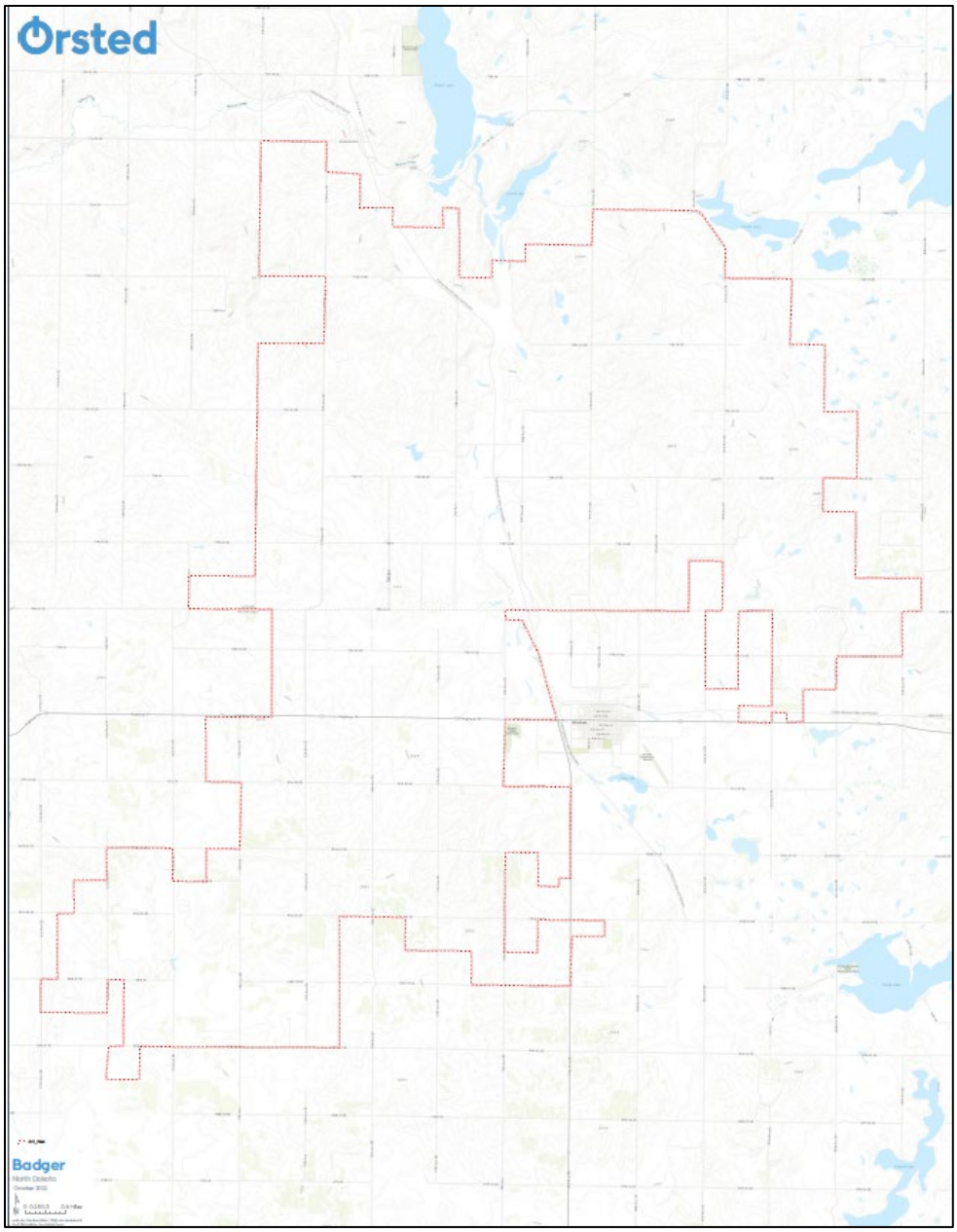


Figure 2: Area of Analysis for Badger Wind Farm

Proposed Project

The proposed Project would consist of an array of wind turbines, each with an associated transformer. Proposed Project facilities would include the following components:

- Currently up to 100 turbine locations under consideration with up to 75 wind turbines, depending on final turbine model selected, for final site construction;
- All-weather access roads to each turbine site;
- One collection substation (approximately 5 acres);
- Underground electrical collection lines and fiber optic cables from each turbine to the collection substation;
- An operations and maintenance ("O&M") facility (approximately 10 acres);
- A temporary concrete batch plant location (up to 5 additional acres);
- A temporary laydown yard (up to 15 acres);
- An Aircraft Detection Lighting System (ADLS) tower;
- Up to 3 permanent meteorological ("MET") towers; and
- One generation tie-line that would not exceed 1 mile in length

The Project will have one point of interconnection: Montana-Dakota Utilities' ("MDU") 230 kV Wishek substation. There will be one collector substation and one generation tie line totaling less than 1 mile.

Resource surveys and other supporting field work is anticipated to take place Fall 2021 with Badger anticipating initiating permitting through the North Dakota Public Service Commission in early 2022, with construction scheduled to start in Fall 2022.

More information can be found at our project website:
https://badgerwindfarm.com

If you have an interest in receiving further information about the project, please contact me via e-mail at saraf@orsted.com.

Regards,
Sarah Aftergood
Director, Environmental Permitting

Cc: Charles Smith, Senior Director of Development, Ørsted

Badger Wind Agency Consultation List				
Date	**Task**	**Communication Type**	**To**	**From**
10/15/2021	Project Notification	Letter	20th Airforce 91st Missile Wing	Orsted
10/15/2021	Project Notification	Letter	Federal Aviation Administration	Orsted
10/15/2021	Project Notification	Letter	Grand Forks Air Force Base	Orsted
10/15/2021	Project Notification	Letter	Job Service North Dakota	Orsted
Various Dates	Project Notification/Consultation	Various	Logan County	Orsted
Various Dates	Project Notification/Consultation	Various	McIntosh County	Orsted
10/15/2021	Project Notification	Letter	Military Aviation and Installation Assurance Siting Clearinghouse	Orsted
10/15/2021	Project Notification	Letter	Minot Air Force Base	Orsted
10/15/2021	Project Notification	Letter	North Dakota Aeronautics Commission	Orsted
10/15/2021	Project Notification	Letter	North Dakota Department of Agriculture	Orsted
10/15/2021	Project Notification	Letter	North Dakota Department of Career and Technical Education	Orsted
10/15/2021	Project Notification	Letter	North Dakota Department of Commerce	Orsted
10/15/2021	Project Notification	Letter	North Dakota Department of Environmental Quality	Orsted
10/15/2021	Project Notification	Letter	North Dakota Department of Health	Orsted
10/15/2021	Project Notification	Letter	North Dakota Department of Human Services	Orsted
10/15/2021	Project Notification	Letter	North Dakota Department of Labor and Human Rights	Orsted
10/15/2021	Project Notification	Letter	North Dakota Department of Transportation	Orsted
10/15/2021	Project Notification	Letter	North Dakota Department of Trust Lands	Orsted
10/15/2021	Project Notification	Letter	Energy Infrastructure and Impact Office, North Dakota Department of Trust Lands	Orsted
10/15/2021	Project Notification	Letter	North Dakota Department of Water Resources	Orsted
10/15/2021	Project Notification	Letter	North Dakota Forest Service	Orsted
Various Dates	Project Consultation	Various	North Dakota Game and Fish	Orsted
10/15/2021	Project Notification	Letter	North Dakota Geological Survey	Orsted
10/15/2021	Project Notification	Letter	North Dakota Indian Affairs Commission	Orsted
10/15/2021	Project Notification	Letter	North Dakota Industrial Commission	Orsted
10/15/2021	Project Notification	Letter	North Dakota Office of the Attorney General	Orsted
10/15/2021	Project Notification	Letter	North Dakota Parks and Recreation Department	Orsted
10/15/2021	Project Notification	Letter	North Dakota Pipeline Authority	Orsted
Various Dates	Project Notification/Consultation	Various	North Dakota State Historic Preservation Office, State Historical Society of North Dakota	Orsted
10/15/2021	Project Notification	Letter	North Dakota Transmission Authority	Orsted
10/15/2021	Project Notification	Letter	Office of Governor Doug Burgum	Orsted

Date	Task	Communication Type	To	From
9/22/2021	Project Notification	Letter	Crow Creek Sioux Cheyenne River Sioux Flandreau Santee Sioux Lower Brule Sioux Three Affiliated Tribes of the Fort Berthold Reservation: Mandan, Hidatsa, and Arikara Nation Oglala Sioux Rosebud Sioux Santee Sioux Sisseton Wahpeton Oyate Spirit Lake Standing Rock Sioux Turtle Mountain Band of Chippewa Yankton Sioux Omaha Tribe Winnebago Tribe of Nebraska	Orsted
Various Dates	Project Notification/Consultation	Various	U.S. Army Corps of Engineers	Orsted
10/15/2021	Project Notification	Letter	Bureau of Land Management	Orsted
10/15/2021	Project Notification	Letter	U.S. Department of Defense	Orsted
10/15/2021	Project Notification	Letter	USDA NRCS	Orsted
Various Dates	Project Notification/Consultation	Various	U.S. Fish and Wildlife Service	Orsted

Appendix D

Agency Correspondence

North Dakota Aeronautics Commission/20th Airforce 91st Missile Wing

From: Sarah Aftergood
To: Dillin, Adam
Cc: June Marie Gray
Subject: RE: Wind Farm Project Comments
Attachments: image003.png

Hi Adam

Thank you for the response. We are actively working through the FAA process which will include the Wishek Airport so I imagine more will come out of the process. We are currently working to finalize the layout for the state permitting process so once I know the location of our Met towers locations I will be more than happy to share with you. Let me know if you have any questions in the meantime. Have a good Thursday.

Best regards,
Sarah Aftergood
Director of Environmental Permitting
Development 1
Onshore

Ørsted
Tel. +15122302148

From: Dillin, Adam <adillin@nd.gov>
Sent: Monday, October 18, 2021 2:07 PM
To: Sarah Aftergood <SARAF@orsted.com>
Subject: Wind Farm Project Comments

Good afternoon,

My name is Adam Dillin, and I am the North Dakota Aeronautics Commission airport planner for eastern North Dakota. Wind power is increasingly important to our state and it should be a welcome benefit to see another wind farm added to our energy infrastructure. I have two brief comments to offer as the project moves forward.

First, while I'm sure that Badger Wind has factored aircraft operations in the area into the design of the farm, I would like to specifically mention that Wishek Municipal Airport lies just outside of the development area as identified in the letter recently sent to our office. At the North Dakota Aeronautics Commission, our top priority is the safety of aircraft and the communities from which they operate and we would like to make sure that the airport airspace protections outlined in Federal Aeronautical Regulations Part 77 and North Dakota Administrative Code Chapter 6-02-03.1 are followed to prevent safety hazards to aviation. Additionally, while North Dakota does not regulate private airstrips in our state and none were identified within the boundaries of the proposed wind farm as of our last statewide system plan in 2014, we ask that potential impacts to private airstrips in/near the area be considered when siting turbines and towers.

Second, Aeronautics requests that the locations of all MET towers be reported to us for inclusion in the map we have posted on our website at https://aero.nd.gov/maps/. This serves as a safety resource to help pilots, particularly our agricultural spraying aircraft, avoid potential collisions. To

report MET tower locations, please contact Mike McHugh at mmchugh@nd.gov or (701)328-9653.

Please feel free to reach out to me if you have any question. Thank you.

Adam Dillin, C.M., A.C.E.
Airport Planner
North Dakota Aeronautics Commission
Tel: (701) 328-9657 Email: adillin@nd.gov Website: https://aero.nd.gov



Appendix D

Agency Correspondence

Bureau of Land Management

Caitlin Cyrus

Subject: BLM Response to the Proposed Badger Wind Energy Center in McIntosh and Logan Counties, North Dakota

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From: Splichal, Chelsie J <csplichal@blm.gov>
Sent: Tuesday, November 2, 2021 3:07 PM
To: Sarah Aftergood <SARAF@orsted.com>
Subject: BLM Response to the Proposed Badger Wind Energy Center in McIntosh and Logan Counties, North Dakota

Sarah,

Upon review of the proposed Badger Wind Energy Center in McIntosh and Logan Counties the Bureau of Land Management (BLM) has no resource concerns regarding the proposal, at this time. It does not appear to involve BLM land, but it could potentially impact other Federal Lands, in which those agencies may wish to respond.

Thank you

Chelsie Splichal
Realty Specialist
Bureau of Land Management
99 23rd Avenue West, Suite A
North Dakota Field Office
701-227-7702

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Appendix D

Agency Correspondence

Logan County, North Dakota

From: Blanche Schumacher <baschuma@nd.gov>
Sent: Thursday, October 15, 2020 3:29 PM
To: Jonathan Baker <JONBA@orsted.com>
Cc: 'Brenda Fischer' <bkfischer@nd.gov>
Subject: FW: Message from "LoganAuditorMPC2504"

Jon:

Attached you will find pages 41 thru 58 of the Logan County Zoning Regulations which pertain to the Wind Energy Facility permitting process.

Section 6.11.3.1 sets forth the Application process, and the fees that are to be included with the Application. You will notice the section thereafter calls for the submission of names, etc., along with a map, followed by the proposed start and completion dates, and copies of all leases and easements or agreements .

Section 6.11.3.2 sets forth the requirements for a public hearing, followed with sections explaining the Deliberation and Decision, Demonstration of Compliance and General Requirements for Wind Energy Facilities. Section 6.11.4.2 explains the setbacks required for the wind towers.

In looking back through one of the previous files, I noticed that we did not have a Conditional Use Permit, and am uncertain whether one was filed with the latest Wind Energy Facility Application. I am also sending a copy of this email to the Code Administrator, Brenda Fischer, so that you may communicate with her in the event that you need to request any additional forms, etc. for this project. I am also enclosing a sample Application so that you may use this as a format when preparing your Application for Building Permit, as I noticed that one of the companies used this when they prepared their application as it gets quite lengthy when all the information is placed within the document.

I apologize for the delay in responding to your request—we look forward to hearing from you and working with you and your company, and in the event that you would like us to forward actual copies of the Application or other forms that were filed by the most recent Wind Energy Facility Applicant, please don't hesitate to ask and we will do our best to round up those documents.

Sincerely yours,

Blanche Schumacher,
Logan County Commissioner

From: loganauditor.copier@nd.gov [mailto:loganauditor.copier@nd.gov]
Sent: Thursday, October 15, 2020 1:09 PM
To: Blanche
Subject: Message from "LoganAuditorMPC2504"

External Email: Do not click any links or open any attachments unless you trust the sender and know the content is safe.

Alan Plumeau

Subject: FW: Logan County - Wind Energy Ordinances/Permitting
Attachments: LOGAN CO ZONING REGS AMEND 071118.doc

From: Brenda Fischer <bkfischer@nd.gov>
Sent: Wednesday, January 15, 2020 7:34 AM
To: Griffin Fraser <gfraser@atwell-group.com>
Subject: RE: Logan County - Wind Energy Ordinances/Permitting

Griffin-

Please find attached the Logan County Zoning Regulations.

Brenda

From: Griffin Fraser <gfraser@atwell-group.com>
Sent: Tuesday, January 14, 2020 3:16 PM
To: bkfischer@nd.gov
Subject: Logan County - Wind Energy Ordinances/Permitting

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Hi Brenda –

Thanks again for taking the time to help me out this afternoon. As discussed, we are assisting a client in the permitting of a utility scale wind energy facility in Logan County. We'd like to obtain copies of your zoning ordinance, comprehensive plan, and any other guidance documents you have related to wind development in the county. Would you please be able to provide me with copies?

Thanks so much, and please give me a call on my mobile if you have any questions.

Griffin Fraser
Environmental Consultant
ATWELL, LLC
303.222.5046 Direct
720.925.8217 Mobile
6200 S. Syracuse Way | Suite 470 | Greenwood Village, CO 80111
www.atwell-group.com

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REGULAR MEETING
Board of Logan County Commissioners
Napoleon, ND
May 12, 2021

The regular monthly meeting of the Board of Logan County Commissioners was called to order at 1:00 P.M. by Chairperson, Blanche Schumacher with Commissioner Charles Johs present. Absent due to illness was Commission member, John W. Wald.

Johs moved, seconded by Schumacher to approve the agenda. All voted in favor—the motion carried.

Johs moved, seconded by Schumacher, to approve the minutes of the April, 2021 regular and special meetings. All voted in favor--the motion carried.

Schumacher moved, seconded by Johs, to approve the Auditor's list of vouchers prepaid during the month of April, the May vouchers proposed for payment including those vouchers flagged for special attention, and the following April payroll vouchers: County Extension Service payroll voucher in the amount of $2,810.00; County General payroll vouchers in the amount of $40,113.55; Veterans Service Officer payroll voucher in the amount of $696.00; E-911 payroll voucher in the amount of $200.00; Napoleon Contract Policing payroll voucher in the amount of $125.00; Weed Control payroll voucher in the amount of $574.08 and County Highway Department payroll vouchers in the amount of $15,264.73. All voted in favor--the motion carried.

The following is a list of the vouchers with attached invoices that the Board authorized for payment:

8198	Dakota Central Telecom I-Monthly Phone Service----------	43.07
8199	Dakota Central Telecommunications-911 Circuit Telecom----------	21.00
8200	Quadient Finance USA, Inc.-Postage----------	612.00
8201	Andrew S Marquart-Adult Mental Hearing----------	441.00
8202	Nutrien Ag Solutions, Inc.-Plateau----------	2120.00
8203	Pharmchem, Inc.-Sweat Patch Analysis----------	57.10
8204	Underground Vaults & Storage-Lease Rental-MFILM Box----------	200.00
8205	Verizon Wireless-4G Mobile Broadband 5GB----------	50.29
8206	Brenda Fischer-Mileage Reimbursement----------	42.00
8207	Gackle Coop Oil Co-ATF Fluid; Blades; Oxygen; Misc Shop Supplies----	943.71
8208	BEK Communications Cooperative-Monthly Phone Service----------	936.32
8209	Fredonia Coop Oil Co-Equipment Fuel----------	4116.50
8210	Napoleon Drug, Inc.-Jury Supplies----------	78.76
8211	Charles Johs-Mileage Reimbursement----------	211.12
8212	Verizon-Monthly Sheriff & Deputies Cell Phone Service----------	246.41
8213	Personalized Stamped Envelope Program-Stamped Envelopes & Hdlg--	1650.20
8214	First Community CU-Official Travel; Bulbs for Light; Postage----------	833.34
8215	Andrew S. Marquart-Adult Mental Hearing Legal Services----------	639.00
8216	Quality Repair, Inc.-Repairs on Kenworth----------	2405.80
8217	RDO Equipment-Misc Maintenance Supplies; Repairs on 772D----------	5175.98
8218	Escosupply-Cutting Edges (Napoleon Shop) ----------	2821.00
8219	Local's Convenience Center-Official Travel----------	150.02
8220	Prairie Heating & Air, Inc.-2021 Heating/Cooling Maint. Agreement--------	1100.20
8221	Electionsource-Quick Seals & Freight----------	15.85
8222	Advanced Business Methods-Contracted Base Rate----------	254.64
8223	ND Surplus Property-Light Bar; Two Laptop Computers----------	250.00

3:20 P.M. Logan County Sheriff, Andrew Bartholomaus arrived to discuss the possibility of retaining the 2015 Dodge Ram patrol vehicle as a back-up vehicle and for use by the Special Deputy, as Special Deputy is currently using the 2012 Ford Expedition which has over 200,000 miles on it. Board members stated that they will take the request into consideration.

Bartholomaus also reported that he worked the Easter Holiday and stated that he would like to be allowed to receive Holiday pay (same as Deputies) when working one of the 11.5 state holidays. Johs moved, seconded by Schumacher to authorize Bartholomaus to be paid when required to work on one of the 11.5 state holidays. All voted in favor---the motion carried.

3:25 P.M. Logan County resident, Gerald Rattei arrived.

3:30 P.M. Representatives from Lincoln Clean Energy, Jonathan and Franchesca, arrived to update Logan County Commissioners on the Badger Wind project between Logan/McIntosh Counties. Representatives noted that the project is moving quickly, they have reviewed the County Zoning Ordinances, and requested copies of the Conditional Use Permits that were filed for previous projects. Board members discussed the roads and bridges in the proposed grid area that may be affected when moving heavy equipment into and out of the area.

3:40 P.M. Logan County Tax Director, Trisha Laine arrived.

3:45 P.M. Gerald Rattei addressed the Board concerning the tax on his farm residence, which wasn't removed from the time when he moved off in 2015 through 2021. Tax Director, Trisha Laine, who was present, reported that the exemption for the farm residence was corrected for the 2021 tax year, and an abatement was filled out for tax year 2020, but he would need to also complete an abatement for tax year 2019. Rattei reported that he came in several times requesting the tax to be removed after he moved into the City in March, 2015, but there was no change, and he is now requesting a correction, and asked that the County consider reimbursing him for taxes paid for calendar year 2015 and thereafter. Commission members informed Rattei that for tax year 2015, the valuations would have been in place by February of that same year, that he could file an abatement for 2018, 2019 and 2020, but by law, they could not go back beyond 2018. Commissioner Schumacher stated that there are Century Code laws that all jurisdictions are required to follow, and the county may have to issue an apology for the oversight, however, Schumacher volunteered to discuss the matter with the State Tax Department and with the Logan County States Attorney to see if they would have any other suggestions.

In reviewing the annual contracts for custodial services at the Logan County Courthouse, Johs moved, seconded by Schumacher to send a Letter of Intent to the Courthouse Custodian that their contract for custodial services will be renewed for an additional twelve months. Voting in favor were Johs and Schumacher—absent and not voting was Wald--the motion carried.

Auditor presented the following Building Permit Applications: Application received from Nicholas Gross for an addition onto existing Farm Shop which he proposes to locate in the NE¼ of Section 20, Township 135, Range 73 (Kroeber Township); Lane Kleingartner, Application for a hoop barn which he proposes to locate in the SE¼ of Section 30, Township 136, Range 67 (Finn Township) and Lawrence (Larry) Fettig, a Corrected Application to place a double-wide mobile home (instead of an off-site built log cabin home) which he proposes to locate in the NE¼ of Section 8, Township 133, Range 73 (Schell Butte Township). After briefly discussing the requests and the set-back requirements of each, Johs moved, seconded by Schumacher to issue Building Permits as requested. Voting in favor were Commissioners Schumacher and Johs—absent and not voting was Commissioner Wald--the motion carried.

County Auditor reported that Highway Department Employee, Bryan Batsch would like to donate 8 days of sick leave to County Highway Department Employee, Jack Erbele, who has nearly depleted his sick leave. Briefly noting that county policies are not definitive, Johs moved, seconded by Schumacher to approve the donation of 8 days sick leave from Batsch to Erbele. Voting in favor were Johs and Schumacher—absent and not voting was Commissioner Wald—the motion carried.

From: Schumacher, Blanche A.
To: June Marie Gray
Subject: FW: Message from "LoganAuditorMPC2504"
Date: Thursday, September 16, 2021 11:25:27 AM
Attachments: 20210916102538194.pdf

June:

I scanned these maps at an earlier date, but noticed I had to make some additional notations for the bridges, so sorry for the delay, but they are now attached.

As far as the additional questions in your September 8th email, I plan to respond to those within the next few days if that will work for you. At that time, I can attach a copy of the Template that was used by Emmons-Logan Wind if that will be of some help. Sorry to make this short and brief, but I got to run.

Blanche

From: loganauditor.copier@nd.gov <loganauditor.copier@nd.gov>
Sent: Thursday, September 16, 2021 9:26 AM
To: Schumacher, Blanche A. <blschumacher@nd.gov>
Subject: Message from "LoganAuditorMPC2504"

RED LAKE DIRECTORY

T134N CODE: AX R71W



	R73W	R72W	R71W	R70W	R69W	R68W	R67W
T136N	AZ	AH	AD	AG	AB	AW	AF
T135N	AS	AC	AE	AI	AQ	AU	AJ
T134N	BB	BA		AN	AM	AV	AO
T133N	AY	AL	AP	AA	AR	AT	AK

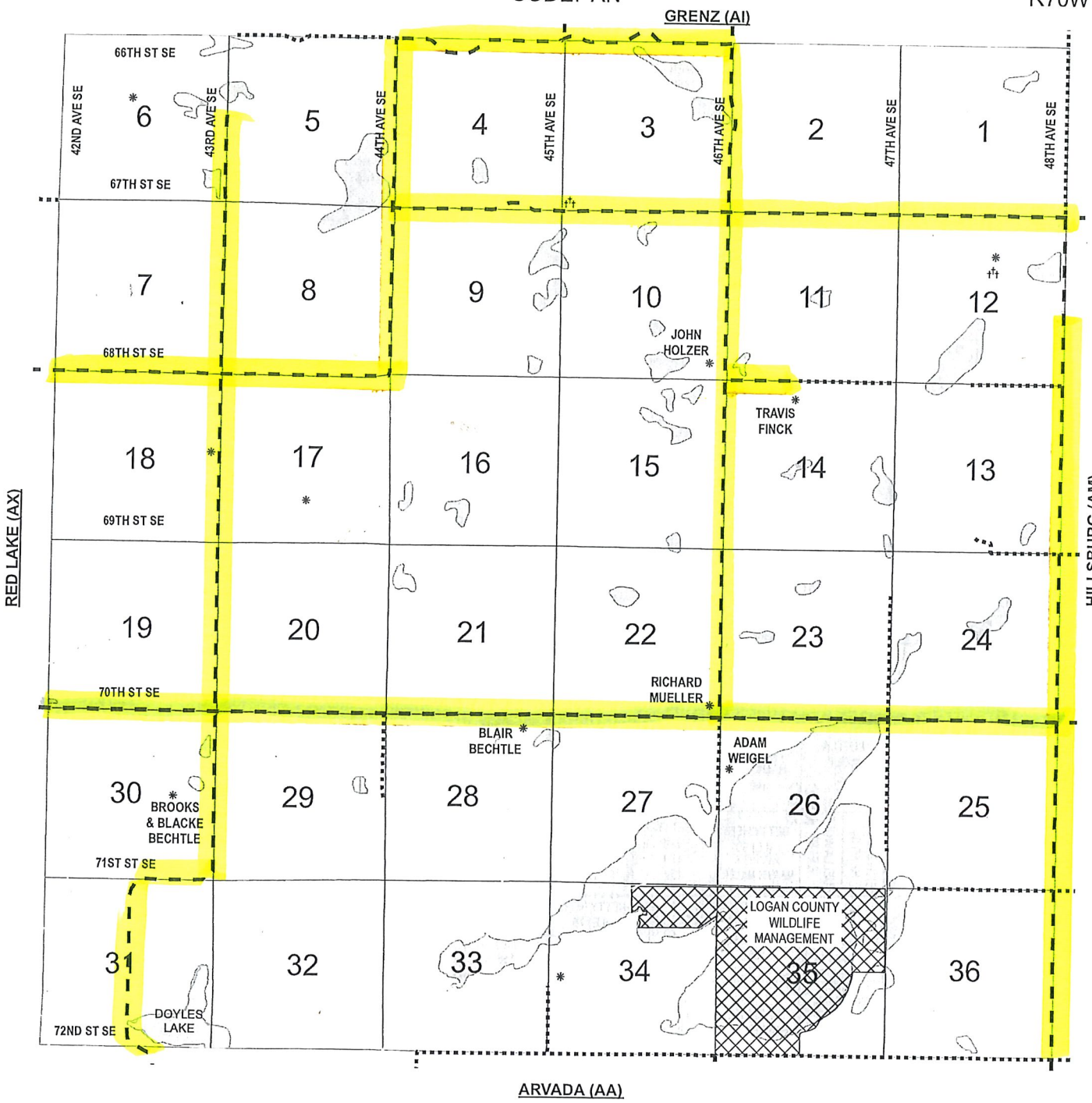
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HOLLANDSWORTH DIRECTORY

T134N

CODE: AN

R70W



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T136N	AZ	AH	AD	AG	AB	AW	AF
T135N	AS	AC	AE	AI	AQ	AU	AJ
T134N	BB	BA	AX		AM	AV	AO
T133N	AY	AL	AP	AA	AR	AT	AK

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JOHANNESDALE DIRECTORY

T133N

CODE: AP

R71W



Box Culvert

Bridges

	R73W	R72W	R71W	R70W	R69W	R68W	R67W
T136N	AZ	AH	AD	AG	AB	AW	AF
T135N	AS	AC	AE	AI	AQ	AU	AJ
T134N	BB	BA	AX	AN	AM	AV	AO
T133N	AY	AL		AA	AR	AT	AK

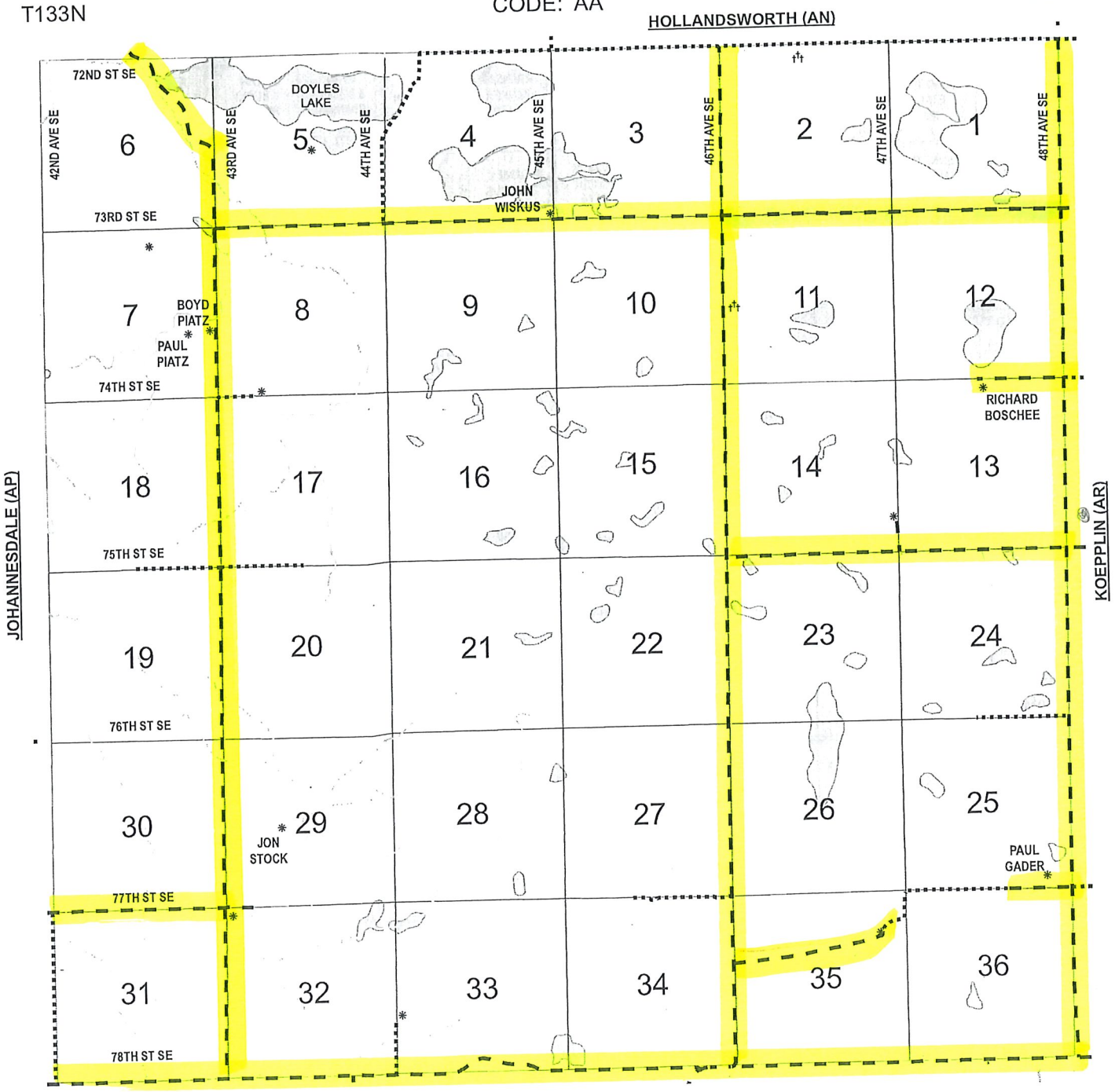
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ARVADA DIRECTORY

CODE: AA

T133N

R70W



	R73W	R72W	R71W	R70W	R69W	R68W	R67W
T136N	AZ	AH	AD	AG	AB	AW	AF
T135N	AS	AC	AE	AI	AQ	AU	AJ
T134N	BB	BA	AX	AN	AM	AV	AO
T133N	AY	AL	AP		AR	AT	AK

LOGAN COUNTY
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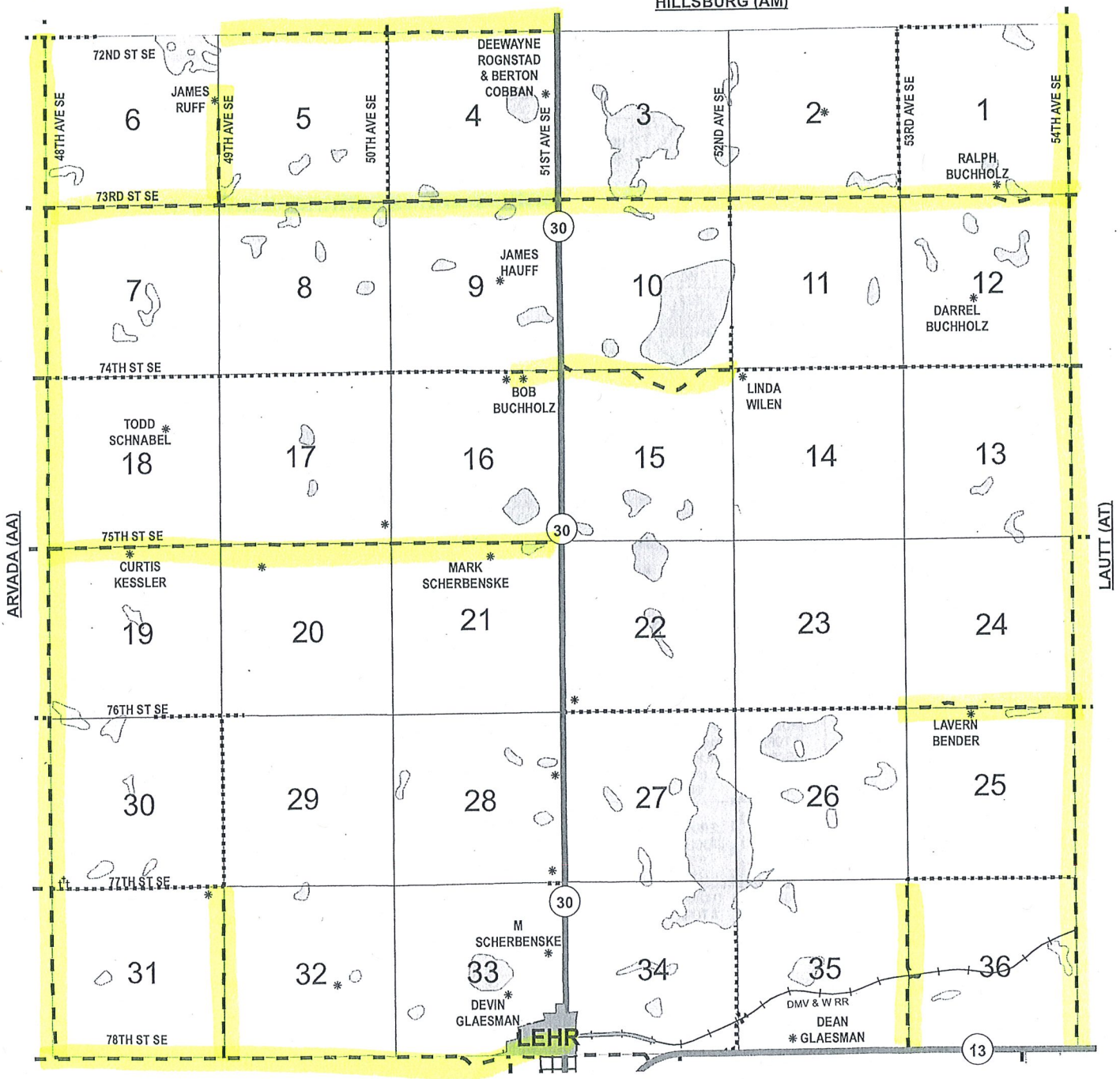
KOEPPLIN DIRECTORY

T133N

CODE: AR

R69W

HILLSBURG (AM)



	R73W	R72W	R71W	R70W	R69W	R68W	R67W
T136N	AZ	AH	AD	AG	AB	AW	AF
T135N	AS	AC	AE	AI	AQ	AU	AJ
T134N	BB	BA	AX	AN	AM	AV	AO
T133N	AY	AL	AP	AA		AT	AK

LOGAN COUNTY
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From: Schumacher, Blanche A.
To: June Marie Gray
Subject: RE: ND Badger Wind - Logan Wind Energy Facility Siting Permit
Date: Friday, September 17, 2021 4:23:08 PM
Attachments: image001.png

June:

Wanted to take the time to attempt to answer some of the questions you had in your September 9th email…..

You ask whether Logan County has jurisdiction over all sections lines within the County (or does the township have jurisdiction)?. The only organized Township that you may be working with is Red Lake Township, and as far as jurisdiction over all section lines in the unorganized townships, I don't know if I can give you a legal answer, but I have always been taught that the landowners pay the taxes right up to the center of the section lines, and the County has no jurisdiction other than an obligation to address any safety concerns in the section lines. In all other cases, where the section lines are unimproved, the public has a right to access that section line as long as it isn't officially closed to the public. The adjoining landowners are entitled to any crop or hay that be growing within the section lines.

Your next question deals with whether section lines without maintained roads are considered as "pubic roads", and I would have to give an off the cuff opinion and say that they are considered as pubic roads as the county has a right to improve those section lines for future use, if any.

I will attempt to provide you with a Wind Energy Facility Siting Permit Application (along with a copy of from the Emmons-Logan Wind Project in a separate email attachment.

Sincerely,

Blanche

From: June Marie Gray <XJUMG@orsted.com>
Sent: Thursday, September 9, 2021 6:07 PM
To: Schumacher, Blanche A. <blschumacher@nd.gov>
Subject: RE: ND Badger Wind - Logan Wind Energy Facility Siting Permit

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Hi Commissioner Schumacher,

I hope you are doing well. I'm just checking in to see if you have had time to look into the questions below.

Thank you,

June Gray

From: June Marie Gray
Sent: Wednesday, August 25, 2021 5:42 PM
To: Schumacher, Blanche A. <blschumacher@nd.gov>
Subject: RE: ND Badger Wind - Logan Wind Energy Facility Siting Permit

Dear Commissioner Schumacher,

It was really nice speaking with you last week. Thank you for the time. A lot has happened since we last spoke in regards to the layout and potential project boundary. On the call, I mentioned I would like to meet everyone and introduce details of the project at your September meeting. I may have to push the intro meeting to October to make sure that we do not have a bunch of changes a short time later. I will keep you updated and will make sure to reach out to Ms. Fisher once we are ready to present at the commissioners court meeting. A few follow-up questions/items:

- Can you please provide a map that shows the county maintained roads on the section lines? Let me know if you would like me to send you our preliminary project area (far south Logan Co, north of Wishek)? Since the section lines are all public access ways, we are unsure which roads on section lines are county roads.
- Do you have a map of the townships within the county? I believe our project is in unorganized West Logan Township, but I have found a few maps of the townships that are different, so want to confirm.
- Does Logan County have jurisdiction over all section lines within the county (or does the township have jurisdiction)? If the township has jurisdiction, would this apply to unorganized West Logan?
- Variance - I mentioned on the call that our preferred turbine model did not meet the county zoning clearance height (65' instead of 75'). We have determined over the last few days that there is a better turbine model for this site and that it meets the county ordinance ground clearance requirement. Therefore, we do not currently need a variance for ground clearance.
- The Logan Co zoning ordinance says "each wind turbine shall be set back from the nearest public road or above ground communication and electrical lines at a distance not less than two hundred (200) feet…" Are section lines without maintained roads considered "public roads"? We are trying to determine if we need to stay 200 ft away from all section lines (even the section lines that do not have roads) since they are public access ways. The definition of "Public Roadway or Public Way" sounds like we may have a setback of 200ft from the section line even if there is not a road, but it is not clear. Can you please confirm?
- Please provide the Wind Energy Facility Siting Permit application template you would like us to use. I believe you said on the call that you might have something we should work off of, but if not I can put together our own template.

I look forward to meeting you in person in September or October.

Best regards,
June Marie Gray
Development 1

Onshore

Ørsted
Tel. +15126369618

From: Schumacher, Blanche A. <blschumacher@nd.gov>
Sent: Tuesday, August 17, 2021 10:28 AM
To: June Marie Gray <XJUMG@orsted.com>
Subject: RE: ND Badger Wind - Logan Wind Energy Facility Siting Permit

June:

Thanks for the correspondence—I should be available on Wednesday between1 and 2 pm. Sorry I couldn't respond sooner as I have been quite tied up with other obligations. I will be waiting for your call. Please contact me at 701-321-1544.

Sincerely,

Blanche Schumacher,
Logan County Commission Member

From: June Marie Gray <XJUMG@orsted.com>
Sent: Monday, August 16, 2021 4:19 PM
To: Schumacher, Blanche A. <blschumacher@nd.gov>
Subject: RE: ND Badger Wind - Logan Wind Energy Facility Siting Permit

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Dear Commissioner Schumacher,

I hope you had a great weekend. As I mention below, I am working on the Badger Wind project. Jon Baker is currently on paternity leave so I am taking over some of his responsibilities while he is out of the office. Do you have a few minutes for an introductory call? I am available tomorrow 9-11am, 1-2pm and Wednesday before 10am and any time after 1pm.

I look forward to speaking with you.

Best regards,
June Marie Gray
Development 1
Onshore

Ørsted
Tel. +15126369618

From: June Marie Gray

Sent: Thursday, August 5, 2021 9:42 PM
To: baschuma@nd.gov
Cc: Francesca Martella <FRKEH@orsted.com>
Subject: ND Badger Wind - Logan Wind Energy Facility Siting Permit

Dear Commissioner Schumacher,

I hope you are doing well. My name is June Gray and I work on the Orsted development team. We are pulling together the information for the Facility Siting Permit for the Badger Wind project. Is there an application form you prefer we use or should we draft our own application template? I have reviewed the Logan County Zoning Regulations and understand that we need to answer the questions and provide the information listed in Section 6.11.3.1, but want to make sure we are submitting the application on the appropriate form.

I look forward to working with you on this project.

Best regards,

June Marie Gray
Development 1
Onshore

Tel. +15126369618
xjumg@orsted.com



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Austin, TX 78701

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From: Schumacher, Blanche A.
To: June Marie Gray
Subject: FW: Message from "LoganAuditorMPC2504"
Date: Thursday, November 18, 2021 12:42:51 PM
Attachments: 20211118114847564.pdf

June:

Attached you will find a copy of the USDA-NRCS guidelines setting forth the setbacks for trees and shelterbelts which Logan County has incorporated into their Logan County Zoning Regulations.

Blanche

From: loganauditor.copier@nd.gov <loganauditor.copier@nd.gov>
Sent: Thursday, November 18, 2021 10:49 AM
To: Schumacher, Blanche A. <blschumacher@nd.gov>
Subject: Message from "LoganAuditorMPC2504"

Trapping of snow outside the primary windbreak in Major Land Resource Areas 53, 54, and 58 should be planned with caution, since the removal of snow moisture from the root zone of the main windbreak may adversely impact the life and effectiveness of the windbreak.

All areas needing protection should be located within the 10H - 15 H zone on the leeward side of the windbreak. Estimates of 20-year heights of trees and shrubs needed to calculate areas of protection can be found in Expected 20-Year Tree Heights.

Field windbreaks designed for snow spreading may be spaced up to 20 H apart.

Secondary Windbreaks

Secondary windbreaks are located on the leeward sides, usually the south and east, of the area protected by the primary windbreak.

Secondary windbreaks usually consist of shrubs or short trees to stop the rare snowstorm from the south or east while allowing summer breezes to penetrate the protected area.

Setbacks

All Windbreaks

Windbreaks shall be located no closer than 16 feet away from any property line unless a signed agreement between both owners exists that would permit a closer planting.

According to North Dakota Century Code, no trees or shrubs may be placed within 33 feet of a section line unless written permission has first been secured from the county commissioners or township supervisors.

No trees shall be placed within the easement area of overhead transmission lines unless permission has been secured from the appropriate utility company.

As per international treaty, no trees or shrubs shall be planted in a location where the foliage, at maturity, will encroach upon the 20' wide (10' each side) line-of-site vista along the Canada-USA border.

Windbreaks that are adjacent to, or cross, legal and private drainage ways should be set back at least 100' to prevent snow and ice buildup that will restrict spring drainage.

In all cases, if local units of government have established more restrictive setback distances, then the more restrictive regulations will apply.

Primary Windbreaks

For windbreaks north and/or west of the area needing protection, the most windward row must be at least 200 feet from the area to be protected. See Figure 1.

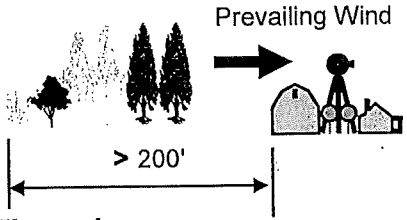


Figure 1

When measuring from roadways, the measurement should begin at the edge of the road surface nearest to the proposed windbreak. See Figure 2. The most windward row of a snow trap can be used for setback measurement purposes. This setback distance also applies to the ends of windbreaks that are perpendicular to roads and areas needing protection.

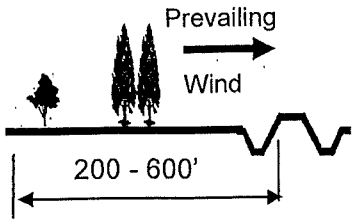


Figure 2

The setback distances may be reduced by 50 feet if topography, healthy field windbreaks upwind, reduced fetch distances, or long term crop management practices can be expected to remove 50

percent or more of the typical snow load before it reaches the main windbreak.

Leeward rows of primary windbreaks, located to the north or west of a road, even with the minimum 200-foot setback to the windward row, should be no closer than 100 feet to the nearest traveled portion of a public road. See Figure 3.

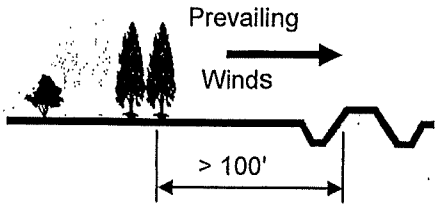


Figure 3

For snow control, windbreaks should not be placed farther from the area needing protection than 35 times the expected 20-year height of the tallest species to be planted or 600 feet, whichever is smaller.

Windbreaks planted to the south or east of roadways shall be located no closer to the road than 5 times (5H) the mature heights of the trees and/or shrubs in order to reduce upwind snow deposition and shading problems. Refer to Tree and Shrub Characteristics for mature plant heights. When measuring from roadways, measurements begin at the portion of the road surface nearest the proposed planting. See Figure 4.

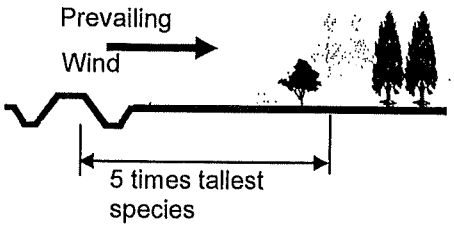


Figure 4

Secondary Windbreaks

In North Dakota, secondary windbreaks are usually located to the south and east of the areas needing protection. Secondary windbreaks should be located far enough away from the area needing protection to allow snow deposition where it won't be a problem and to provide year-round accessibility in and around the area protected.

The inside tree or shrub row in windbreaks on the south and east of areas needing protection shall not be any closer than 100 feet. Where solar gain during the winter is important, windbreaks on the south side of a building site shall be no closer than 3 times the mature height of the tallest plant. Exercise caution in utilizing tall trees in secondary windbreaks that may restrict summer breezes.

WINDBREAK DESIGN

General Information

Windbreak tree species shall be selected that are compatible with the soils on which they will be planted. Refer to the Expected 20-Year Tree Heights, located in FOTG – Section II – Windbreaks and Forest, to determine which plants will grow on which soils. Most soil map units contain small percentages of minor soil components. See Windbreak Suitability Groups by County in Section II FOTG to determine component soils within each map unit. Ensure that the species selected are compatible with these minor components as well. Changes in soil properties within the planting site may require a species change within the row. If there is any doubt, select species appropriate for the most limiting soil condition.

Unless otherwise noted, 20-year plant heights will be used to determine setback distances and the extent of protected areas. Expected 20-year heights of trees and shrubs, under good management, can be found in Expected 20-Year Tree Heights.

Maximum snow depth can be expected within 2-5 H from the tallest tree or shrub row, under normal winter conditions. The deepest part of the snowdrift will be closest to dense windbreaks and will be located progressively farther away from the windbreak as windbreak density decreases.

Zones of protection will vary, depending upon density and height of the windbreak. Generally, the denser the windbreak the greater the wind speed reduction and the smaller the zone of protection.

From: Schumacher, Blanche A.
To: June Marie Gray
Cc: Fischer, Brenda K.
Subject: FW: Message from "LoganAuditorMPC2504"
Date: Tuesday, November 23, 2021 3:11:02 PM
Attachments: 20211123121156682.pdf

June:

Attached you will find a copy of the Petition for Conditional Use Permit filed by Emmons-Logan Wind Energy Center. I did not find a Building Permit, as the Conditional Use Permit Process was a bit unclear whether a Building Permit was needed—the project was approved after the Petition for Conditional Use Permit was approved by the County Commission. It does, however, make sense that a Building Permit should be issued and that is perhaps the route that we should be taking going forward.

Sincerely,

Blanche Schumacher

From: loganauditor.copier@nd.gov <loganauditor.copier@nd.gov>
Sent: Tuesday, November 23, 2021 11:12 AM
To: Schumacher, Blanche A. <blschumacher@nd.gov>
Subject: Message from "LoganAuditorMPC2504"

LOGAN COUNTY ZONING COMMISSION

PETITION FOR CONDITIONAL USE PERMIT

The undersigned, owner(s) of, (agent) for the property described below, do hereby petition to receive a conditional use permit for:

EMMONS LOGAN WIND ENERGY CENTER
LOGAN COUNTY, NORTH DAKOTA

Legal description of property and number of acres:

LISTED IN CUP APPLICATION BOOK

Describe briefly the purpose for this use:

LISTED IN CUP APPLICATION BOOK

Describe or list the uses within 1/2 mile of this site (attach a drawing from the latest plat book):

PROVIDED IN CUP APPLICATION BOOK

Describe the layout of the land, access point and the utilities on or near the site:

PROVIDED IN CUP APPLICATION BOOK

I further state that if this request is granted, I will abide by all conditions set forth by the Zoning Commission. Site plan and documents and other information required are attached.

Existing zoning: AG Existing use of property: AG

Signature of Applicant [signature] 4/3/18

Action of Zoning Commission:

X
Approval

Denial

5-8-18
Date

[signature]
Chairperson of Zoning Commission

From: Schumacher, Blanche A.
To: June Marie Gray
Subject: FW: Message from "LoganAuditorMPC2504"
Date: Tuesday, November 23, 2021 5:37:43 PM
Attachments: 20211123163039209.pdf

June—I noticed that the map was not attached to the last email that I sent you, so here it is.

From: loganauditor.copier@nd.gov <loganauditor.copier@nd.gov>
Sent: Tuesday, November 23, 2021 3:31 PM
To: Schumacher, Blanche A. <blschumacher@nd.gov>
Subject: Message from "LoganAuditorMPC2504"

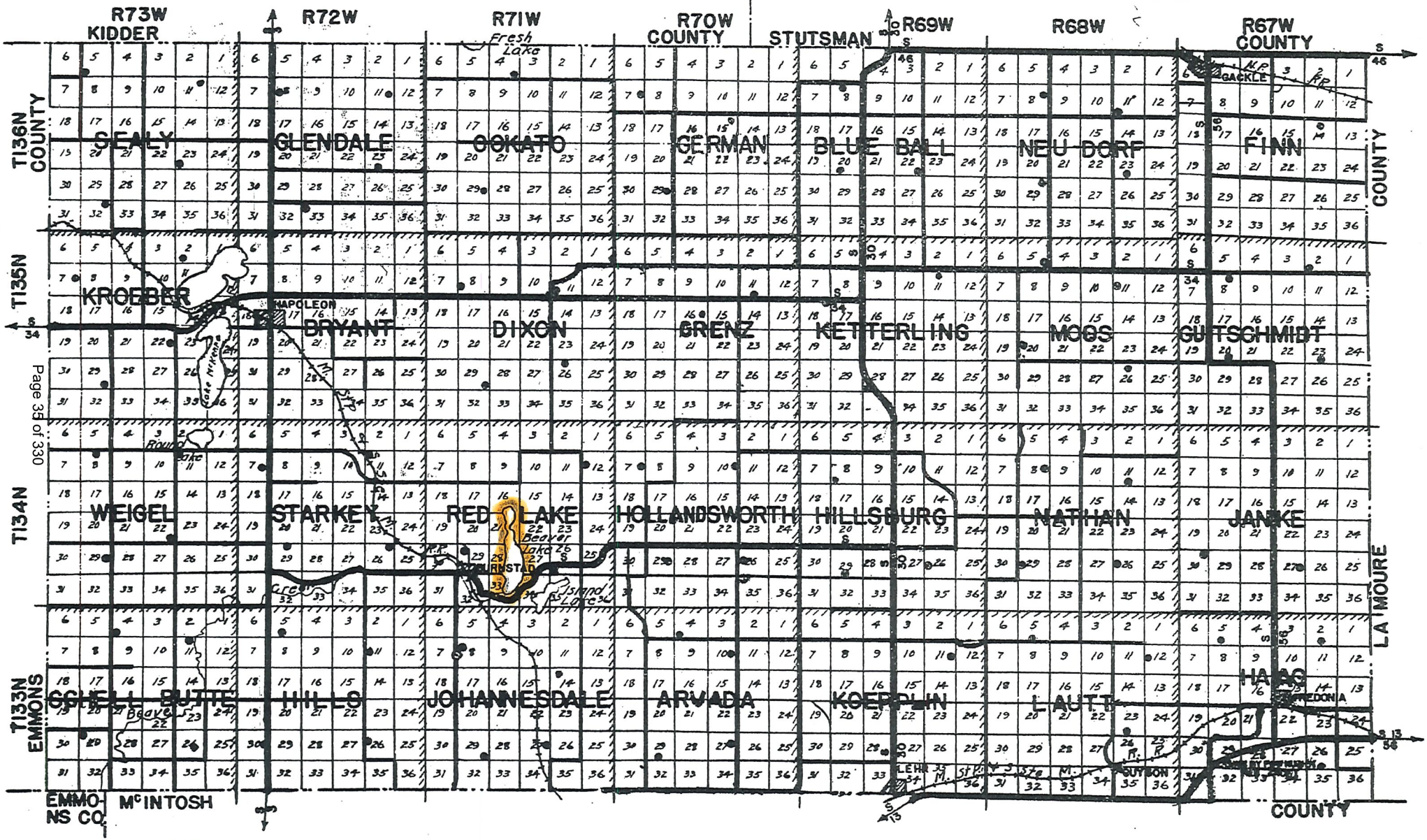
LOGAN COUNTY HIGHWAY MAP

NORTH DAKOTA

—1960—

US & STATE HIGHWAYS
COUNTY HIGHWAYS
RURAL SCHOOLS

COUNTY MAP NO. 24
KUEHN'S
HURON S DAK



MAP KEY: [ ] Residential Zone (All areas within 500 feet of the ordinary high water mark adjacent to Beaver Lake).

From: Schumacher, Blanche A.
To: June Marie Gray
Cc: Fischer, Brenda K.
Subject: RE: Badger - Thank you and Follow-up Items
Date: Tuesday, November 23, 2021 12:31:15 PM
Attachments: image003.png

June:

After visiting with the Logan County States Attorney, I believe we have a few more answers to some of the questions that you have presented in your October 31st email.

(1) You asked how Badger Wind should address the possibility of a size decrease, etc. —the answer is to communicate with us so that we may collectively discuss it at an upcoming county commission meeting.

(2) In reviewing the Logan County Zoning Ordinances, we are of the opinion that a Conditional Use Permit would be the only permit that will be required.

(3) The CUP would be issued for all components of the project—there would be no separate process for overhead transmission lines, etc.

(4) The County Code Administrator is the Logan County Auditor, Brenda Fischer, and I have copied her on this email so you may also communicate directly with her.

(5) The Logan County Comprehensive Plan was forwarded to you last week.

(6) The NRCS guidelines for trees and shelterbelts was forwarded to you last week.

(7) The zoning district map was also forwarded to you last week—please inform us if you did not receive any of the requested documents.

(8) We will send you, in a separate email, a copy of the Emmons-Logan Wind Energy Facility Application.

Thank you for your inquiry and for your continued patience with us in providing you with this information.

Sincerely,

Blanche Schumacher,
Logan County Commission Chairperson

From: June Marie Gray <XJUMG@orsted.com>
Sent: Sunday, October 31, 2021 10:55 AM
To: Schumacher, Blanche A. <blschumacher@nd.gov>
Subject: Badger - Thank you and Follow-up Items

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Dear Commissioner Schumacher,

It was really nice meeting you in person. Thank you for taking the time to meet with us before the dinner and attending the landowner dinner. Below please find the items I had in my notes that you are checking on:

- How should Badger Wind address the possibility of a size decrease in Logan Co (ex. provide

range of turbines and MW, etc) - More turbine locations than needed are being evaluated. Locations will not shift, but may be reduced. Our plan is to permit all possible locations, but want to make sure this is ok with the county.

- Is a Wind Energy Facility (WEF) Siting Permit issued and/or a Conditional Use Permit (CUP) issued? From our research, it looks like the Emmons-Logan project received a CUP and not a WEF Siting Permit.
- Is the WEF Siting Permit/CUP issued for all components of the project or is there a separate process (ex. building permit, separate CUP, etc) for the overhead transmission line, Operations and Maintenance building, access roads, collection lines, and/or any other project equipment other than turbines?

Also, I forgot to ask about the following:

- Who is serving as the County Code Administrator?
- Can you please provide the following documents:
    - Logan Co Comprehensive Plan
    - Guidelines from the USDA-NRCS Offices, referenced in Section 3.8 (tree planting and shelterbelts near roads)
    - Zoning district map
    - Copy of Emmons-Logan Wind Energy Facility and transmission line (if separate) application

Please let me know if you have any questions and/or need any additional information on Badger Wind.

Thank you again.

Best regards,
June Marie Gray
Development 1
Onshore

Tel. +15126369618
xjumg@orsted.com



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From: Schumacher, Blanche A.
To: June Marie Gray
Subject: FW: Message from "LoganAuditorMPC2504"
Date: Monday, November 29, 2021 12:30:10 PM
Attachments: 20211129111509165.pdf

June:

Attached is a map of Logan County with the organized townships highlighted in orange. As of right now, we have eight organized townships, and as of January 1st, we will have seven. Sealy Township, in the upper left hand corner, voted to dissolve at the end of this year.

Blanche

From: loganauditor.copier@nd.gov <loganauditor.copier@nd.gov>
Sent: Monday, November 29, 2021 10:15 AM
To: Schumacher, Blanche A. <blschumacher@nd.gov>
Subject: Message from "LoganAuditorMPC2504"

LOGAN COUNTY

NAPOLEON AREA

GACKLE AREA

LEHR AREA

R73W R72W R71W R70W R69W R68W R67W

T136N T135N T134N T133N

SEALY GLENDALE COKATO GERMAN BLUE BALL NEUDORF FINN

KROEBER BRYANT DIXON GRENZ KETTERLING MOOS GUTSCHMIDT

WEIGEL STARKLEY RED LAKE HOLLANDSWORTH HILLSBURG NATHAN JANKE

SCHEELS BUTTE HILLS JOHANNESDALE ARVADA KOEPPLIN LAUTT HAAG

LEGENDS

PAVED ROAD
GRAVEL ROAD
DIRT ROAD
RAILROAD

NO REPRESENTATION MADE AS TO COMPLETE ACCURACY

ORGANIZED TOWNSHIPS
FARM TO MARKET ROADS
FEDERAL AID ROADS
COUNTY GRAVEL PITS
FORMER COMMISSIONER DISTRICT NO. 1 (GACKLE AREA)
FORMER COMMISSIONER DISTRICT NO. 2 (LEHR AREA)
FORMER COMMISSIONER DISTRICT NO. 3 (NAPOLEON AREA)

From: Schumacher, Blanche A.
To: June Marie Gray
Subject: RE: Badger - Township question
Date: Wednesday, December 1, 2021 11:15:59 AM

June:

To the best of my knowledge, Red Lake Township has no separate zoning regulations, and when the county zoning ordinances were adopted in 2006, if the townships did not have their own separate ordinances, I believe they were informed that they would have to follow the county's. In the event that you would like to contact one of their officers, I would recommend that you contact Charles Fettig, whose phone number is 701-452-2813.

Sincerely,

Blanche Schumacher

From: June Marie Gray <XJUMG@orsted.com>
Sent: Monday, November 29, 2021 3:21 PM
To: Schumacher, Blanche A. <blschumacher@nd.gov>
Subject: Badger - Township question

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Commissioner Schumacher,

One of the layouts we are considering has a few turbines (up to 3 turbines) located in the southwest portion of Red Lake Township. All other turbine locations are outside of an organized township. Do you know what requirements (ex. permits, setbacks, etc) we would need to meet if we were to place turbines in this township or who I might speak with about these locations?

Best regards,
June Marie Gray
Development 1
Onshore

Ørsted
Tel. +15126369618

From: June Marie Gray
Sent: Monday, November 29, 2021 11:57 AM
To: Schumacher, Blanche A. <blschumacher@nd.gov>
Subject: RE: Message from "LoganAuditorMPC2504"

Received. This is perfect. Thanks!

Best regards,
June Marie Gray
Development 1
Onshore

Ørsted
Tel. +15126369618

From: Schumacher, Blanche A. <blschumacher@nd.gov>
Sent: Monday, November 29, 2021 11:30 AM
To: June Marie Gray <XJUMG@orsted.com>
Subject: FW: Message from "LoganAuditorMPC2504"

June:

Attached is a map of Logan County with the organized townships highlighted in orange. As of right now, we have eight organized townships, and as of January 1st, we will have seven. Sealy Township, in the upper left hand corner, voted to dissolve at the end of this year.

Blanche

From: loganauditor.copier@nd.gov <loganauditor.copier@nd.gov>
Sent: Monday, November 29, 2021 10:15 AM
To: Schumacher, Blanche A. <blschumacher@nd.gov>
Subject: Message from "LoganAuditorMPC2504"

From: Schumacher, Blanche A.
To: June Marie Gray
Subject: RE: Badger - CUP Template
Date: Tuesday, January 18, 2022 3:51:00 PM

Hi June—

Yes, I did have a great week-end. The temperatures here in ND reached right around forty degrees (above zero) yesterday, but today the winds are blowing at the rate of 50+ miles per hour, we are experiencing snow squalls where the snow comes and goes, and the wind chill is probably around minus 20. What a difference a day makes in "Good old North Dakota!!!!!!!"

Your January 11th email was discussed at the January 14th meeting of the Board of Logan County Commissioners, and I will attempt to answer your questions in the order in which they were presented.

1. You asked about our Zoning Ordinance 3.1 "permitted uses", along with Section 5.1.2.13, which lists a Wind Energy Facility as a "permitted use" subject to the provisions of Section 6.11, and you inquired whether the issuance of building permits for a Wind Energy Facility would follow the "permitted uses" building permit process. Our answer is "yes", a Wind Energy Facility would follow the "permitted uses" building permit process (subject to the provisions of Section 6.11 which allows the Zoning Commission to review the application, ***and in its discretion***, to hold a public hearing on the application within no more than 45 days from receipt of the application…").
2. Your second question was what the process is to obtain a building permit for a permitted use and how does this differ from other types of uses. The process to obtain a permit for a permitted use is one where an individual requests a permit to construct some type of building , etc. and the County Zoning Administrator asks a number of questions, and after due diligence and inquiry, determines that all zoning regulations have been complied with, the set-backs from property lines and from roads is sufficient, no Variance or Conditional Use Permit hearing is required, and may thereafter issue the Permit, subject to the approval of the Board of County Commissioners at their next regular meeting.
3. Your third question was whether one building permit would be issued for the entire wind energy facility, and I believe in our November 23rd email, we had stated that the Conditional Use Permit would be issued for all components and there would be no separate process for overhead transmission lines, etc. (as this is partially the purpose for conducting the Conditional Use Hearing).

Sincerely,

Blanche Schumacher,
Logan County Commission Chairperson

From: June Marie Gray <XJUMG@orsted.com>
Sent: Tuesday, January 18, 2022 12:12 PM
To: Schumacher, Blanche A. <blschumacher@nd.gov>
Cc: Francesca Martella <FRKEH@orsted.com>
Subject: RE: Badger - CUP Template

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Commissioner Schumacher,

I hope you had a great weekend. I'm checking in to see how the discussion with the commissioners went last week and if you have any additions to the Condition Use Permit application template.

Best regards,
June Marie Gray
West Regional Development
Onshore

Ørsted
Tel. +15126369618

From: June Marie Gray
Sent: Tuesday, January 11, 2022 4:11 PM
To: Schumacher, Blanche A. <blschumacher@nd.gov>
Cc: Francesca Martella <FRKEH@orsted.com>
Subject: RE: Badger - CUP Template

Commissioner Schumacher,

Thank you for discussing the template with the other commissioners. We are expecting the project to be 252MW located in both Logan and McIntosh counties. We are still unsure of the number of MWs that will be in Logan County, but are planning on permitting up to 52 wind turbines in Logan County (includes alternate locations). I hope to be able to provide a good estimate of the size that will be in Logan County when we submit the application. The plan is to still submit the application to Logan county at the end of Jan/early Feb.

Please find below some questions our legal team has on the building permit (I believe you mentioned we would likely need one in addition to the Conditional Use Permit):

- Zoning Ordinance, Section 3.1 references different procedures for building permits issued for "permitted uses" as compared to other uses. In Zoning Ordinance, Section 5.1.2.13, a Wind Energy Facility is listed as a "permitted use" subject to the provisions of Section 6.11. Is it accurate, then, that the issuance of building permits for a Wind Energy Facility would follow the "permitted uses" building permit process?
- Zoning Ordinance, Section 3.1 states that the County Code Administrator issues building permits for permitted uses, but the specific process isn't outlined in the ordinance. What is the process to obtain a building permit for a permitted use? How does the process differ for other types of uses?

- Will one building permit be issued for the entire wind energy facility? If not, which structures will require building permits? Will each structure (e.g., turbine, MET tower, etc.) require a separate building permit?

Best regards,
June Marie Gray
West Regional Development
Onshore

Ørsted
Tel. +15126369618

From: Schumacher, Blanche A. <blschumacher@nd.gov>
Sent: Thursday, January 6, 2022 3:24 PM
To: June Marie Gray <XJUMG@orsted.com>
Cc: Isaac Zimmerman <Isaac@zlawnd.com>; jcwald@bektel.com; charlesjohs@yahoo.com; Fischer, Brenda K. <bkfischer@nd.gov>
Subject: RE: Badger - CUP Template

June:

Thank you for your December 28th email. I have reviewed the template that you sent and am going to forward a copy to our States Attorney as well as forwarding copies to Commissioners John Wald and Charlie Johs, and we can then discuss it at our January 12th meeting. Following that meeting, I will let you know if anyone has any comments or suggestions about changes, additions, etc.

Sincerely,

Blanche Schumacher,
Logan County Commissioner

From: June Marie Gray <XJUMG@orsted.com>
Sent: Tuesday, December 28, 2021 2:29 PM
To: Schumacher, Blanche A. <blschumacher@nd.gov>
Cc: Francesca Martella <FRKEH@orsted.com>
Subject: Badger - CUP Template

***** **CAUTION:** This email originated from an outside source. Do not click links or open attachments unless you know they are safe. *****

Commissioner Schumacher,

I hope you are having a happy holiday. Please find attached the template for the Badger Wind Logan County permit application we are planning on using. Please let me know if you notice anything missing

and/or have a different template you would like us to use. We are planning on submitting the application at the end of January.

Best regards,
June Marie Gray
West Regional Development
Onshore

Ørsted
Tel. +15126369618

From: Schumacher, Blanche A.
To: June Marie Gray
Cc: Fischer, Brenda K.
Subject: RE: Badger- Logan Co Permit Fees
Date: Thursday, January 27, 2022 1:07:02 PM
Attachments: image003.png

June:

Thank you for your email. I will attempt to answer your questions in the order in which they were presented.

1. The maximum permit fee of $10,000.00 can be made payable to Logan County Auditor—(our Zoning Code Administrator);
2. You may also provide a Conditional Use Permit Fee in the amount of $100.00, also made payable to Logan County Auditor;
3. You do not need to include a check for $25.00 + $10.00 for each $100K valuation for the building permit, as we had earlier determined that there was no need for both a Conditional Use Permit Fee plus the Building Permit fee, (plus we are following past practices where only a Conditional Use Permit fee was requested and not both the CUP and Building Permit Fee).
4. We would prefer that you submit your Application before the County Commission meeting, because I believe the Zoning Administrator will need some time to do a certain amount of research, she needs to set up a public hearing on the Conditional Use Permit and needs ample time to send out notice to the landowners. The Conditional Use Permit will then be voted on and issued after the public hearing. (We would, however, invite you to attend any one of our forthcoming meetings, even before you file your CUP Application, to visit with us and to explain your project.

Sincerely,

Blanche Schumacher, Chairperson
Logan County Zoning Commission

From: June Marie Gray <XJUMG@orsted.com>
Sent: Wednesday, January 26, 2022 12:10 PM
To: Schumacher, Blanche A. <blschumacher@nd.gov>
Subject: Badger- Logan Co Permit Fees

***** **CAUTION:** This email originated from an outside source. Do not click links or open attachments unless you know they are safe. *****

Commissioner Schumacher,

I hope you are doing well. We are requesting the check(s) for the Logan County Wind Energy Facility Site Permit/Conditional Use Permit/Building Permit for the Badger Wind project. Can you please confirm that the following check(s) are correct/needed:

- Wind Energy Facility Site Permit Fee - $10,000 check made out to “Logan County Zoning Commission”
- Conditional Use Permit (CUP) Fee – Should we also provide a $100 check for the CUP. If so, should this check be made out to “Logan County Zoning Commission”?
- Building permit Fee – Should we also provide a Check for $25 + $10 for each $100k valuation for the building permit? If so, should this check be made out to “Logan County Zoning Commission”?

Also, do we need to submit the application at (or before) a formal commissioners court meeting or can we submit it at any time for the application to be voted on after review at a formal meeting?

Best regards,
June Marie Gray
West Regional Development
Onshore

Tel. +15126369618
xjumg@orsted.com



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Austin, TX 78701

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Appendix D

Agency Correspondence

McIntosh County, North Dakota

Communication Log

To:	Gina Ketterling	**DATE:**	January 14, 2020
	McIntosh County Auditor	**PROJECT:**	Badger Wind
		JOB #:	19000785
		VIA:	Phone

REMARKS:

Griffin Fraser contacted Gina Ketterling, the McIntosh County Auditor, to inquire whether McIntosh County had any specific zoning ordinances or regulations regarding wind energy development. Topics of discussion included the following:

- Ms. Ketterling stated that McIntosh County does not have any zoning ordinances or regulations regarding wind energy development
- Ms. Ketterling stated that the county defers to state regulations.

FROM: Griffin Fraser

From: Francesca Martella
To: devindeile@butlermachinery.com; gketterl@nd.gov
Cc: Charles Smith; June Marie Gray; Lucas Buseck
Subject: Badger Wind - McIntosh Road Use Agreement
Attachments: image002.png
Badger_County Road Use Agreement 12_2_2021_JMG.docx

Dear Gina and Devin,

Please find here attached the draft Road Use Agreement we have prepared for Badger Wind. Note that the attached agreement includes 3 question for your review:

1. Does McIntosh County have a separate driveway permit process?
2. Does McIntosh County have a separate approval process for collection system cabling?
3. Could McIntosh County provide the rate sheet?

If you have any questions, don't hesitate to reach out. We look forward to working together on Badger Wind.

Thank you,

Best regards,
Francesca Martella
Project Developer
West Regional Development
Onshore

Tel. +13475220931
frkeh@orsted.com



Learn more at us.orsted.com

401 N Michigan Ave., Suite 501
Chicago, IL 60611

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MCINTOSH COUNTY PROCEEDINGS

May 12, 2021 **9:00 am**

The meeting was called to order by Chairman Neil Meidinger. Present were Devin Deile, Perry Turner and Tony Bender of the Wishek Star.

The Pledge of Allegiance was recited by all.

The agenda was reviewed. Patricia Smith replaced Jesse Smith on the agenda to talk about 62nd Ave. Devin Deile moved to approve the agenda with the changes, Perry Turner seconded. Motion carried.

The minutes of the April meeting were read. Perry Turner moved to approve the minutes as presented, Devin Deile seconded. Motion carried.

Jonathan Baker, representing Orsted Onshore North America LLC, met with the Board to discuss the potential wind farm that is being looked at for Logan and McIntosh Counties. Lincoln Energy was acquired by Orsted two years ago. In 2018 they started leasing land. Both Neil Meidinger and Perry Turner have lease contracts with Orsted. Mr. Baker discussed things in regard to roads, permits, etc. Road Use Agreements were discussed. The commissioners stated that we need a better one that what we had with EDF Renewable Energy.

Patricia Smith, Tax Director, met with the Board to discuss the following:

- Property tax assessment notice requirements were discussed. Certain percent increases are allowed by law.
- She showed the Board the ND Century Code and process of the Equalization meeting. The Cities and townships are notified of the meeting. They are not required to attend.
- Reviewed the Agricultural Value Per Acre report for the 2021 assessment.
- She presented a report that showed all the increases and decreases caused by using the breakpoint method. Some of the changes were also caused from the updating of the soils.

Chris Opsahl, Highway Superintendent, met with the Board on the following matters:

- Joe Fregien wants an approach where he wants to have a lake lot development. He needs is wide enough for 80' trailers. Perry feels that it is going into a development so the county should put it in. Perry Turner moved to put in the approach, up to 10 loads, Devin Deile seconded. Discussion: Chris stated that the county doesn't put in approaches. Commissioner Turner and Commissioner Deile feel that because its going into a development, it is okay. Motion carried.
- Patricia Smith met with the Board to discuss 62nd Avenue. She wanted to know who is responsible for maintaining it. She showed pictures of 62nd Ave. south of 91st St. and also 65th St. Board stated that at this time, the EDF Renewable Energy is responsible. She also asked about the part of 62nd Ave. that is underwater. She mentioned that she has talked to some taxpayers and they don't have a problem paying higher taxes if they can see improvements to the roads. Commissioner Turner stated that he has been discussing this with Jesse Smith for over a year and its foolish to put dirt into water. The Postal Service will not redraw the route so the patrons have to drive to other locations to get their mail. Board stated that they will contact EDF Renewable Energy.
- Chris discussed the wind farm roads. They are not getting maintained. Chris got call from a construction company that Wanzek, Inc. asked them to blade. Chris stated that our blade is out there right now. Commissioner Deile stated that the county should bill Wanzek, Inc. $250/hr. Devin Deile moved to charge Wanzek, Inc. $250/hr. for blading work. Perry Turner seconded. Motion carried. Board wants State's Attorney to write a letter.
- The bridge on 25th Ave. was discussed. It collapsed. It had a wooden deck. Board discussed possible using metal decking. Chris will check into this and the Auditor will get information for wood planking.
- Log sheets were discussed. Chris visited with Barnes County and got a copy of what they use. Its's a lot easier to use. Perry Turner moved to use this for the blading for 60 days, Devin Deile seconded. Motion carried
- Dale Nagel from KEM Electric met with the Board to discuss our Utility Permits. He asked if there was any way that these permits for new service could be approve prior to a meeting because sometimes the contractor is in the area and it can be done right away. Devin Deile moved to allow for this for this season, Perry Turner seconded. Motion carried. The Board also reviewed a Utility Permit from KEM Electric to burrow through a road. Devin moved to approve said permit, Perry Turner seconded. Motion carried.
- Board also reviewed the pre-approved Utility Permits from KEM Electric and they were satisfied with them.
- The bids for propane tanks and heating system were as follows:

  Westside Heating & A/C – 6 – 1,000 gallon LP Tanks - $19,200.00
  24 – cement block - $60.00

Next meeting will be June 9, 2021, starting at 12:00 p.m. The Board of Equalization meeting will be 1:00 p.m.

There being no further business, Devin Deile moved to adjourn, Perry Turner seconded. Motion carried. Meeting adjourned.

_____

Neil Meidinger, Board Chairman

ATTEST: _____

Gina Ketterling, County Auditor

SPECIAL MCINTOSH COUNTY PROCEEDINGS

October 21, 2021 **2:00 pm**

The meeting was called to order by Chairman, Neil Meidinger. Also present were Perry Turner, and Devin Deile. June, Gray, Charlie Smith and Francesca Martella of Orsted were also in attendance.

The meeting was requested by representatives of Orsted for the purpose of meeting the Board of Commissioners and to discuss road maintenance agreements and such for the proposed wind farm that Orsted is looking to build. Orsted held an open house and landowner meeting in Wishek on October 20th to let the landowners know where they are on the project, now they are here to discuss and answer any questions the commission may have for them. Orsted is in the advance stage of development and are working on environmental studies, etc. They are shooting for a Quarter 3, 2022 construction date.

For the road maintenance agreement, Devin Deile told them that he does not want the county to touch the roads until the project is completed. Neil Meidinger wants the contracts to follow the project, for example, if Orsted sells it, the road maintenance agreement goes to the next owner, and so on and so on. Devin Deile stated he would also like 2" of gravel put on the roads after construction is completed.

The representatives will take this information back with them.

There being no further business, Devin Deile moved to adjourn, Perry Turner seconded. Motion carried. Meeting adjourned.

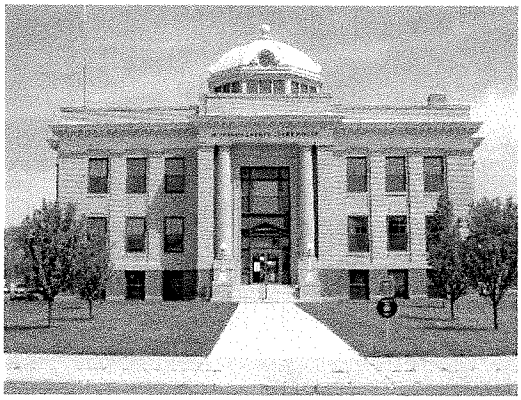
_____

Neil Meidinger, Board Chairman

ATTEST: _____

Gina Ketterling, County Auditor

McIntosh County
112 1st St. NE
PO Box 39
Ashley, ND 58413



BOARD OF COUNTY COMMISSIONERS:
Neil Meidinger
Devin Deile
Perry Turner
AUDITOR: Gina Ketterling
TREASURER: Lanette Blumhardt
STATE'S ATTORNEY: Mary DePuydt
SHERIFF: Laurie Heupel
CLERK OF COURT/COUNTY RECORDER: Carol Fey
TAX DIRECTOR: Patricia Smith
VETERANS SERVICE OFFICER: Douglas Olson
DISASTER EMERGENCY MANAGER: Neil Meidinger

December 1, 2021

Mr. Charlie Smith
Badger Wind, LLC
401 N. Michigan Ave
Suite 501
Chicago, IL 60611

Re: Badger Wind Project

Dear Mr. Smith:

Based on prior conversations with you and your colleagues, the McIntosh County Board of Commissioners ("Board") understands that Badger Wind, LLC ("Badger Wind") is proposing to develop a wind energy conversion facility and associated 230 kilovolt transmission line in McIntosh and Logan Counties, North Dakota (the "Project"). Badger Wind has asked the Board to provide this letter regarding McIntosh County's permitting requirements for the Project.

McIntosh County has not enacted a zoning ordinance. As such, the Project does not need to obtain any zoning permits from McIntosh County. Additionally, the only township in McIntosh County that has enacted a zoning ordinance is Roloff Township, and it is the Board's understanding that the Project will not be located in Roloff Township.

Badger Wind has indicated it will enter into a road use agreement with McIntosh County and applicable townships (as necessary) regarding the use, improvement, and restoration of local roads in connection with Project construction. It is also the Board's understanding that Badger Wind will comply with all applicable federal, state, and local laws and regulations when constructing and operating the Project, including but not limited to the North Dakota Public Service Commission's permitting requirements and the McIntosh County Highway Department's road use (i.e., overweight/oversized load) permitting requirements.

If you have any questions, please let me know.

Sincerely,

Neil Meidinger, Chairman
McIntosh County Board of Commissioners

Appendix D

Agency Correspondence

North Dakota Aeronautics Commission/Minot Airforce Base

From: Sarah Aftergood
To: Dillin, Adam
Cc: June Marie Gray
Subject: RE: Wind Farm Project Comments
Attachments: image003.png

Hi Adam

Thank you for the response. We are actively working through the FAA process which will include the Wishek Airport so I imagine more will come out of the process. We are currently working to finalize the layout for the state permitting process so once I know the location of our Met towers locations I will be more than happy to share with you. Let me know if you have any questions in the meantime. Have a good Thursday.

Best regards,
Sarah Aftergood
Director of Environmental Permitting
Development 1
Onshore

Ørsted
Tel. +15122302148

From: Dillin, Adam <adillin@nd.gov>
Sent: Monday, October 18, 2021 2:07 PM
To: Sarah Aftergood <SARAF@orsted.com>
Subject: Wind Farm Project Comments

Good afternoon,

My name is Adam Dillin, and I am the North Dakota Aeronautics Commission airport planner for eastern North Dakota. Wind power is increasingly important to our state and it should be a welcome benefit to see another wind farm added to our energy infrastructure. I have two brief comments to offer as the project moves forward.

First, while I'm sure that Badger Wind has factored aircraft operations in the area into the design of the farm, I would like to specifically mention that Wishek Municipal Airport lies just outside of the development area as identified in the letter recently sent to our office. At the North Dakota Aeronautics Commission, our top priority is the safety of aircraft and the communities from which they operate and we would like to make sure that the airport airspace protections outlined in Federal Aeronautical Regulations Part 77 and North Dakota Administrative Code Chapter 6-02-03.1 are followed to prevent safety hazards to aviation. Additionally, while North Dakota does not regulate private airstrips in our state and none were identified within the boundaries of the proposed wind farm as of our last statewide system plan in 2014, we ask that potential impacts to private airstrips in/near the area be considered when siting turbines and towers.

Second, Aeronautics requests that the locations of all MET towers be reported to us for inclusion in the map we have posted on our website at https://aero.nd.gov/maps/. This serves as a safety resource to help pilots, particularly our agricultural spraying aircraft, avoid potential collisions. To

report MET tower locations, please contact Mike McHugh at mmchugh@nd.gov or (701)328-9653.

Please feel free to reach out to me if you have any question. Thank you.

Adam Dillin, C.M., A.C.E.
Airport Planner
North Dakota Aeronautics Commission
Tel: (701) 328-9657 Email: adillin@nd.gov Website: https://aero.nd.gov



Appendix D

Agency Correspondence

North Dakota Aeronautics Commission

From: Dillin, Adam <adillin@nd.gov>
Sent: Monday, October 18, 2021 2:07 PM
To: Sarah Aftergood <SARAF@orsted.com>
Subject: Wind Farm Project Comments

Good afternoon,

My name is Adam Dillin, and I am the North Dakota Aeronautics Commission airport planner for eastern North Dakota. Wind power is increasingly important to our state and it should be a welcome benefit to see another wind farm added to our energy infrastructure. I have two brief comments to offer as the project moves forward.

First, while I'm sure that Badger Wind has factored aircraft operations in the area into the design of the farm, I would like to specifically mention that Wishek Municipal Airport lies just outside of the development area as identified in the letter recently sent to our office. At the North Dakota Aeronautics Commission, our top priority is the safety of aircraft and the communities from which they operate and we would like to make sure that the airport airspace protections outlined in Federal Aeronautical Regulations Part 77 and North Dakota Administrative Code Chapter 6-02-03.1 are followed to prevent safety hazards to aviation. Additionally, while North Dakota does not regulate private airstrips in our state and none were identified within the boundaries of the proposed wind farm as of our last statewide system plan in 2014, we ask that potential impacts to private airstrips in/near the area be considered when siting turbines and towers.

Second, Aeronautics requests that the locations of all MET towers be reported to us for inclusion in the map we have posted on our website at https://aero.nd.gov/maps/. This serves as a safety resource to help pilots, particularly our agricultural spraying aircraft, avoid potential collisions. To report MET tower locations, please contact Mike McHugh at mmchugh@nd.gov or (701)328-9653.

Please feel free to reach out to me if you have any question. Thank you.

Adam Dillin, C.M., A.C.E.
Airport Planner
North Dakota Aeronautics Commission
Tel: (701) 328-9657 Email: adillin@nd.gov Website: https://aero.nd.gov

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Appendix D

Agency Correspondence

North Dakota Department of Commerce

Caitlin Cyrus

Subject: FW:

> Sarah,
>
> We received this at our office and I am reaching out to see if there is anything that we can do to help from the Dept. of Commerce perspective.
>
> Looking forward to hearing from you,
> Josh
>
> -----Original Message-----
> From: Heick, Tammy A. <theick@nd.gov>
> Sent: Tuesday, October 19, 2021 1:57 PM
> To: Teigen, Joshua L. <jlteigen@nd.gov>; Garman, Rich W. <rgarman@nd.gov>
> Subject: FW:
>
> We received this in the mail today ---
>
> -----Original Message-----
> From: COM6053@nd.gov <COM6053@nd.gov>
> Sent: Tuesday, October 19, 2021 12:44 PM
> To: Heick, Tammy A. <theick@nd.gov>
> Subject:
>
> ----------
> TASKalfa 6053ci
> [00:17:c8:88:fa:e2]
> ----------

Appendix D
Agency Correspondence
National Telecommunications and Information Administration

Alan Plumeau

To: Alan Plumeau
Subject: FW: **Turbine Response Letter** Badger Project, LLC: Logan & McIntosh Counties, ND
Attachments: Digital Final_Badger Project LLC_ORSTED_no concerns.pdf

---

From: Henry, Joyce <JHenry@ntia.gov>
Sent: Wednesday, December 22, 2021 8:16 AM
To: Francesca Martella <FRKEH@orsted.com>
Cc: faslist <faslist@osmmail.ntia.doc.gov>
Subject: **Turbine Response Letter** Badger Project, LLC: Logan & McIntosh Counties, ND

Good Morning, Francesca:

Please see attached the digitally signed Final NTIA Response Letter for the Badger Wind Project, LLC, located in Logan and McIntosh Counties, North Dakota.

After a 45+ day period of review, we received responses from **DOA (Agriculture), CG (Coast Guard), DOC (Commerce), DOE (Energy), DOJ (Justice), and DON (Navy),** stating No Harmful Interference Anticipated (NHIA).

In the event that an agency *has* expressed concerns, we encourage you to work with the agency representatives directly to resolve all issues.

Joyce C. Henry
DOC/NTIA/OSM HQ
Admin
240-381-5789 (cell)
202-482-2215 (office)
jhenry@ntia.gov

"It's about living while you're alive" – Thomas Rhett

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UNITED STATES DEPARTMENT OF COMMERCE
National Telecommunications and Information Administration
Washington, D.C. 20230

December 21, 2021

Francesca Martella
Project Developer
Development 2
Onshore
Ørsted

Re: Badger Project, LLC: Logan & McIntosh Counties, ND

Dear Ms. Martella:

In response to your request on November 1, 2021, the National Telecommunications and Information Administration provided to the federal agencies represented in the Interdepartment Radio Advisory Committee (IRAC) the plans for the Badger Wind Project, LLC, located in Logan and McIntosh Counties, North Dakota.

After a 45+ day period of evaluation, no reviewing agencies had issues with turbine placement in this area.

While the IRAC agencies did not identify any concerns regarding radio frequency blockage, this does not eliminate the need for the wind energy facilities to meet any other requirements specified by law related to these agencies. For example, this review by the IRAC does not eliminate any need that may exist to coordinate with the Federal Aviation Administration concerning flight obstruction.

Thank you for the opportunity to review these proposals.

Sincerely,

JOHN MCFALL
Digitally signed by JOHN MCFALL
Date: 2021.12.22 09:02:02 -05'00'

John R. McFall
Deputy Chief, Spectrum Services Division
Office of Spectrum Management

Appendix D

Agency Correspondence

North Dakota Department of Trust Lands

Alan Plumeau

From: Sarah Aftergood <SARAF@orsted.com>
Sent: Thursday, October 21, 2021 5:59 AM
To: Humann, Michael T.
Subject: RE: Badger Wind Farm
Attachments: AOI_New.zip

Hi Michael,

Please find an attached kmz of the Area of Analysis for our project. Let me know if you have any questions!

Thank you and talk soon.

Best regards,
Sarah Aftergood
Director of Environmental Permitting
Development 1
Onshore

Ørsted
Tel. +15122302148

From: Humann, Michael T. <mhumann@nd.gov>
Sent: Tuesday, October 19, 2021 10:05 AM
To: Sarah Aftergood <SARAF@orsted.com>
Subject: Badger Wind Farm

Sara,

Received your memo regarding the proposed Badger Wind Energy Center in Mcintosh and Logan Counties in North Dakota. Please send a kmz or shape file of the area of Analysis for the Badger Wind Farm so that we are able to determine the State Trust Lands within the project area. The map attached to the memo is to small of scale to determine acreage. We would like to send you a letter informing you of State Trust Lands within the project area. We would also appreciate receiving a mailing address as it was not shown in the memo we received. Thank you

Michael Humann
Surface Division Manager

701.328.1917 • 701.527.3376 (m) • mhumann@nd.gov • land.nd.gov

NORTH Dakota | Trust Lands
Be Legendary.

From: Humann, Michael T. <mhumann@nd.gov>
Sent: Thursday, October 28, 2021 8:14 AM
To: Sarah Aftergood <SARAF@orsted.com>
Cc: Smith, Jodi <jodi.smith@nd.gov>; Spangelo, Kayla <kspangelo@nd.gov>; Spencer, Lynn <lyspencer@nd.gov>
Subject: Badger Wind Project

Sarah,,

The attached letter is being sent to you in response to your letter dated October 14, 2021 which was received by the North Dakota Department of Trust Lands on October 18, 2021.

Michael Humann
Surface Division Manager

701.328.1917 • 701.527.3376 (m) • mhumann@nd.gov • land.nd.gov

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October 28, 2021

SARA AFTERGOOD
DIRECTOR, ENVIRONMENTAL PERMITTING
ORSTED ONSHORE
812 SAN ANTONIO ST, STE 500
AUSTIN TX, 78701

RE: Badger Wind 252-megawatt Wind Farm in McIntosh and Logan Counties, ND

Dear Ms. Aftergood,

We received your letter dated October 15, 2021, regarding a request for information on the proposed Badger Wind250-megawatt Wind Farm in McIntosh and Logan Counties, North Dakota. Please be aware that an easement must be obtained for any trust lands included in the project.

To obtain an easement across trust Lands, an on-line application form must be completed. This application can be found at: https://www.land.nd.gov/SurfaceROW/RowApplicationForm . Any proposed towers or lines would be subject to review by the surface division staff and approval by the Land Commissioner on behalf of the Board of University and School Lands.

The following items may be considered in the review of an easement application:

1. Financial benefit to the trusts.
2. Availability of alternate encumbrance site or route.
3. The least environmentally damaging site or route regardless of property ownership.
4. Physical stability of the landscape.
5. Other potential future uses for the trust lands, including urban development.
6. Potential mineral and other material development including oil, gas, coal, cement materials, sodium sulfate, sand and gravel, road material, building stone, chemical substances, metallic ores, uranium ores, colloidal, or other clays.
7. Feasibility for reclamation.
8. Maintenance of existing wetlands and water flows.
9. Any cultural, historical, archeological, and paleontological resources.
10. Federally listed threatened and endangered species.
11. Location of the proposed route or site in relation to section lines, quarter section lines and corridors.
12. Potential liability to the trusts.
13. Applicant's past encumbrances on trust lands.
14. Applicant's financial stability; and
15. Any other information relevant to the application which would assist in the determination.

There are school trust surface and mineral interests that are managed by the North Dakota Department of Trust Lands on behalf of the Board of University and School Lands which are located within or near the proposed project area. These surface and mineral interests are listed on the attached Exhibit 1. There are no active Coal Leases on school trust lands within the project area.

Please be advised the Board of University and School Lands will not move forward on Wind Projects until site inspection and review have been completed and all local and state approvals have been obtained.

If you have any questions, feel free to contact our office at 701-328-2800.

Sincerely,

Michael Humann
Surface Division Manager

Jodi A. Smith COMMISSIONER

1707 North 9th Street | P.O. Box 5523 | Bismarck, ND 58506-5523

PHONE: 701-328-2800 | FAX: 701-328-3650 | https://land.nd.gov

Township	Range	Section	Subdv	Estate	Mineral Interest	Mineral Net Acres
134	71	32	SW4	Mineral	0.5	80
133	71	4	W2SE4, E2SW4	Mineral	0.5	80
133	71	6	LOTS 1,2, SW4SE4, LOT 3, SE4SW4, LOTS 6,7	Mineral	0.5	148.42
133	71	16	NE4, NW4, SE4, SW4	Surface & Mineral	1	640
133	71	29	NE4	Mineral	0.5	80
133	71	31	SE4	Mineral	0.5	80
133	71	32	SE4	Mineral	0.5	80
133	71	36	NE4, NW4, SE4, SW4	Mineral	0.5	320
133	70	6	SW4NE4, LOTS 1,2,8, SE4, E2SW4, LOT 7	Mineral	0.5	206.45
133	70	16	NW4	Mineral	1	160
133	70	16	SW4	Mineral	0.5	80
133	70	17	SW4	Mineral	0.5	80
133	70	18	NE4, SE4	Mineral	0.5	160
133	70	29	NE4, NW4, SE4, SW4	Mineral	0.5	320
132	70	6	LOT 3, NE4SW4	Mineral	0.5	34.01
132	70	6	E2SE4, NW4SE4	Mineral	1	120
132	71	6	LOTS 1,2,3,4, SE4	Mineral	0.5	119.79
132	71	7	E2NW4, LOTS 1,2, E2SW4, LOTS 3,4	Mineral	0.5	162.32
132	71	9	NE4 EAST OF RR R/W	Mineral	0.05	6.18
132	71	21	NE4, NW4	Mineral	0.5	160
132	72	2	LOTS 1,2, SE4	Mineral	0.5	97.37
132	72	12	E2NE4, E2SE4, SW4SE4, SE4SW4	Mineral	0.5	120
132	72	13	NE4	Mineral	0.5	80
132	72	25	NE4, NW4	Mineral	0.5	160
132	72	28	NE4, NW4, SW4	Mineral	0.5	240
132	72	34	N2NE4, SW4, N2NW4	Mineral	0.5	160
132	72	35	SW4	Mineral	0.5	80
132	72	36	NW4, SW4	Mineral	0.5	160
131	72	2	S2NW4, LOTS 3,4, SW4	Mineral	0.5	158.12
131	72	3	SE4, SW4	Mineral	0.5	160

Appendix D

Agency Correspondence

North Dakota Department of Environmental Quality

October 27, 2021

Sarah Aftergood
Director
Orsted Onshore North America LLC
812 San Antonio St. Ste 500
Austin, TX 78701

Re: Proposed Badger Wind Energy Center in Logan, McIntosh Counties

Dear Ms. Aftergood:

The North Dakota Department of Environmental Quality has reviewed the information concerning the above-referenced project received at the department on October 19, 2021 with respect to possible environmental impacts.

This department believes that environmental impacts from the proposed construction will be minor and can be controlled by proper construction methods. With respect to construction, we have the following comments:

1. Care is to be taken during construction activity near any water of the state to minimize adverse effects on a water body. This includes minimal disturbance of stream beds and banks to prevent excess siltation, and the replacement and revegetation of any disturbed area as soon as possible after work has been completed. Caution must also be taken to prevent spills of oil and grease that may reach the receiving water from equipment maintenance, and/or the handling of fuels on the site. Guidelines for minimizing degradation to waterways during construction are attached.

2. Projects disturbing one or more acres are required to have a permit to discharge stormwater runoff until the site is stabilized by the reestablishment of vegetation or other permanent cover. Further information on the stormwater permit may be obtained from the department's website or by calling the Division of Water Quality (701-328-5210). Also, cities may impose additional requirements and/or specific best management practices for construction affecting their storm drainage system. Check with the local officials to be sure any local stormwater management considerations are addressed.

   A total maximum daily load (TMDL) allocation for fecal coliform bacteria has been developed for the unnamed tributary on the south side of Beaver Lake. Storm water runoff from the project should not contribute to the impairment if the appropriate practices are in place to manage sanitary waste.

3. The proposed construction project may include individual projects located within Logan and McIntosh Counties. It is possible that some projects may be located over defined glacial drift aquifers, sensitive groundwater areas, or within wellhead or source water protection areas. Care should be taken to avoid spills of any materials that may have an adverse effect on

groundwater quality. All spills must be immediately reported to this Department and appropriate remedial actions performed.

4. All solid waste materials must be managed and transported in accordance with the state's solid and hazardous waste rules. Appropriate efforts to reduce, reuse and/or recycle waste materials are strongly encouraged. As appropriate, segregation of inert waste from non-inert waste can generally reduce the cost of waste management. Further information on waste management and recycling is available from the department's Division of Waste Management at (701) 328-5166.

The department owns no land in or adjacent to the proposed improvements, nor does it have any projects scheduled in the area. In addition, we believe the proposed activities are consistent with the State Implementation Plan for the Control of Air Pollution for the State of North Dakota.

If you have any questions regarding our comments, please feel free to contact this office.

Sincerely,

L. David Glatt, P.E., Director
North Dakota Department of Environmental Quality

LDG:csc
Attach.

Facility Report

Latitude and Longitude within 0.25 mile(s) of 47.774657 and -99.945201

Tuesday, October 26, 2021

Facility ID	Facility	Address	City	Region	Facility Type	Latitude	Longitude	Status
481	Farmers Union Oil Company	2574 25th St NE	Harvey	1	Gas Station	47.775742	-99.948042	Inactive
524	Little Mart C-Store	708 Hwy 52 W	Harvey	1	Gas Station	47.775964	-99.948694	Active

Number of Records 2

Construction and Environmental Disturbance Requirements

The following are the minimum requirements of the North Dakota Department of Environmental Quality for projects that involve construction and environmental disturbance in or near waters of the State of North Dakota. They ensure that minimal environmental degradation occurs as a result of construction or related work which has the potential to affect waters of the state. All projects must be constructed to minimize the loss of soil, vegetative cover, and pollutants (chemical or biological) from a site.

Soils

Prevent the erosion and sediment loss using erosion and sediment controls. Fragile and sensitive areas such as wetlands, riparian zones, delicate flora, and land resources must be prohibited against compaction, vegetation loss and unnecessary damage.

Surface Waters

All construction must be managed to minimize impacts to aquatic systems. Follow safe storage and handling procedures to prevent the contamination of water from fuel spills, lubricants, and chemicals. Stream bank and stream bed disturbances must be contained to minimize silt movement, nutrient upsurges, plant dislocations, and any physical chemicals, or biological disruption. The use of pesticides or herbicides in or near surface waters is allowed under the department's pesticide application permit with notification to the department.

Fill Material

Any fill material place below the ordinary high-water mark must be free of topsoil, decomposable materials, and persistent synthetic organic compounds; including, but not limited to, asphalt, tires, treated lumber, and construction debris. The department may require testing of fill material. All temporary fills must be removed. Debris and solid waste must be properly disposed or recycled. Impacted areas must be restored to near original condition.

Appendix D

Agency Correspondence

North Dakota Geological Survey

From: Anderson, Fred J. <fjanderson@nd.gov>
Sent: Friday, October 22, 2021 10:23 AM
To: Sarah Aftergood <SARAF@orsted.com>
Subject: North Dakota Geological Survey Comments: Proposed Badger Wind Energy Center Logan and McIntosh Counties North Dakota

Hello Sara-

Please find attached to this message our comments on the Badger Wind Energy Center Project.

These comments would be in response to your mailings to the North Dakota Geological Survey, North Dakota Industrial Commission, and ND Transmission Authority.

Regards,

Fred J. Anderson
Geologist, North Dakota Geological Survey

701.328.8000 (Survey Main Office) • 701.328.8037 (Office Direct) • fjanderson@nd.gov • www.dmr.nd.gov/ndgs (-> protect2.fireeye.com)

North Dakota | Mineral Resources
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701.328.8020 (Front Office) • oilandgasinfo@nd.gov • www.dmr.nd.gov (-> protect2.fireeye.com) • 600 E Boulevard Ave, Dept. 405 • Bismarck, ND 58505

NORTH Dakota | Mineral Resources
Be Legendary.™

October 22, 2021

Ms. Sara Aftergood
Orsted
812 San Antonio St., Ste. 500
Austin, TX 78701

Re: Proposed Badger Wind Energy Center in McIntosh and Logan Counties, North Dakota

The North Dakota Geological Survey appreciates the notification and opportunity to review and provide comment on the proposed energy development project. We reviewed the proposed project boundaries in south-central Logan and north-central McIntosh Counties and would not note any geologic concerns at this time. The project area is located within glacial sediments of the Missouri Coteau in the northeast and Coteau Slope in the southwest.

Available geologic mapping information shows this area to be free of landslides with no mineable coal or abandoned mine lands occurring within the project area boundaries. Available shallow drilling records and bedrock geologic mapping information suggest that the project area may be underlain by a relatively thin layer of 50 to 100 feet of clayey glacial till (boulder clay) which mantles sedimentary sandstone bedrock of the Fox Hills and Hell Creek Formations. In the northeast portion of the project area shallow sandstone bedrock of the Fox Hills Formation may be found at the surface.

All recently completed geologic, landslide area, and LiDAR maps are available on our website at: https://www.dmr.nd.gov/ndgs/landslides/

If there are any additional questions or comments, please contact us at (701) 328-8000.

Sincerely,

North Dakota Geological Survey:

Fred Anderson
Geologist
fjanderson@nd.gov

FJA\

Appendix D

Agency Correspondence

North Dakota Game and Fish Department

DRAFT MEETING MINUTES

Project: **Badger Wind**
Logan and McIntosh counties, ND
Ørsted Onshore North America, LLC

Host/Organizer: Elisha Mueller, North Dakota Game and Fish Department (NDGF)

Meeting Date: January 28, 2020

Purpose: **Project Introduction Meeting**

Attendees

- Drew Becker, Deputy Field Supervisor, North Dakota and South Dakota Field Offices, U.S. Fish and Wildlife Service (USFWS)
- Heidi Riddle, Fish and Wildlife Biologist, USFWS
- Steve Dyke, Conservation Supervisor, North Dakota Game and Fish Department (NDGF)
- Elisha Mueller, Conservation Biologist, NDGF
- Sandra Johnson, Conservation Biologist, NDGF
- Kevin Kading, Private Lands Section Lead, NDGF
- Renae Schultz, Private Lands Biologist, NDGF (remote)
- Jon Baker, Sr. Development Director, Ørsted Onshore North America, LLC (Ørsted)
- Emily Cooper, Sr. Project Manager, Atwell, LLC (Atwell)
- Chris McCreedy, Sr. Environmental Consultant, Atwell

Agenda Item 1: Introductions

Attendees introduced themselves and stated their organization and title.

Agenda Item 2: Project Overview

J. Baker introduced Ørsted Onshore and Badger Wind, and the Badger Wind project, including project location, timeline (targeting construction in 2022 or 2023), and proposed interconnection point. He confirmed that there is no power purchase agreement (PPA) at this stage, but that

Ørsted is comfortable proceeding and even operating some of their wind farms without a PPA in hand.

Agenda Item 3: Studies Completed to Date

C. McCreedy presented results of desktop and field studies completed to date.

Topics included: land cover within the project area, grassland and wetland easement data provided by the USFWS, Information for Planning and Consultation (IPaC) resource report results (Whooping Cranes, northern long eared bats, Piping Plovers, Red Knots), nesting raptor survey, Sharp-tailed Grouse lek survey, eagle and avian use surveys, bat habitat assessment, and bat acoustic monitoring survey.

Agenda Item 4: Questions and Discussion

Following the presentation, a discussion occurred focusing on habitat and unbroken prairie considerations for project development.

- S. Dyke said that NDGF is moving away from its emphasis on a species-based approach and the Species of Greatest Conservation Need and toward a habitat-based approach. The NDGF is focused on grasslands, wetlands, and woodlands habitat. Their goal is to minimize impacts on these habitats. Recommended that the project look at the Ruso, Southern, Burke County, and North Divide applications in the docket for guidance.
- S. Dyke emphasized as an example, the grouse lek survey is not something they are looking for at this stage. S. Johnson added that lek surveys will never find all of the leks, since grouse move lek locations all of the time; E. Mueller noted that furthermore, studies need to demonstrate 5 years of non-use for a lek to be confirmed as abandoned. In lieu of lek surveys, NDGF staff advised the project to identify potentially suitable habitat (i.e., unbroken prairie) and avoid that habitat to the extent possible.
- C. McCreedy asked how they are handling setbacks from leks in the absence of surveys. NDGF responded that they do not have a lot of confidence that surveys can find all of the leks, and that the NDGF would rather that a turbine be located within a setback or at an unknown distance from a lek but within cropland than located outside a setback but within grassland.
- D. Becker noted that wind farms can have negative impacts on these habitats and consequently on wildlife; therefore, the emphasis should be on minimizing impacts to habitat. NDGF agreed.
- Atwell asked to confirm the current definition of unbroken grassland, since the terminology and definitions have been evolving. NDGF replied that the definition they are using is that unbroken grassland is grassland that has not been plowed. They are discouraging efforts to try to classify “high quality” or “native” grassland as not

worthwhile, and are focusing instead on the unbroken classification as the conservation priority.

- NDGF confirmed that spatial data are available for unbroken grassland; Atwell to request the current dataset from S. Johnson. NDGF noted that ground truthing and discussions with landowners will be needed to verify spatial data and confirm history of use at any particular location.

- Atwell asked if there is still a contiguous patch size threshold of 160 acres for grassland. NDGF replied that they are not using a threshold approach at this time. Projects should try to avoid unbroken grassland to the extent possible, regardless of patch size.

Easements and Designated Lands

- D. Becker brought up wetland and grassland easements; he noted that the USFWS has invested in these easements. In addition to avoiding direct impacts to established USFWS easements, he noted that turbine placement near easements may diminish the value of the easements.

- K. Kading mentioned that there are private land easements under state management as well (Private Land Open to Sportsmen [PLOTS]); he echoed D. Becker's comment that turbine placement close to these areas may affect hunting / recreational use.

Offsets

- S. Dyke said that the most recent projects have quantified development effects on grasslands and wetlands in order to offset the impacts.

- D. Becker suggested including the offset package in the Bird and Bat Conservation Strategy (BBCS) for the project.

- NDGF explained that offset packages have ranged significantly in size / value by project, with some very small offset packages and some very large ones. There are no habitat banks in place in North Dakota and developers are not being asked to find and directly purchase habitat offsets. At this time, the agency is using third party vendors like Ducks Unlimited to identify offset projects. Most of the emphasis has been on rehabilitating equivalent habitat rather than acquiring and protecting habitat. North Dakota does not require mitigation monitoring.

Additional Studies

- The agencies did not identify any other studies beyond the ones discussed at the meeting that they would expect to see. They confirmed that Whooping Crane and unbroken grassland habitat studies would both be recommended, and that the eagle use and raptor nest studies underway should be continued.

- S. Dyke noted that NDGF is not requiring post-construction mortality monitoring (PCM) studies at this time. E. Mueller asked if Ørsted conducts PCM studies; J. Baker responded that they are used on a case by case basis.

Other Resources

- D. Becker mentioned the Shaffer and Buhl 2015 paper (Effects of wind-energy facilities on breeding bird distributions) on wind effects on grassland birds.
- Heidi Riddle mentioned that the project should consider new Whooping Crane studies produced by Dr. Neimuth, Dr. Loesch, and the USFWS Habitat and Population Evaluation Team (HAPET).

Action Items

- Atwell to call S. Johnson and confirm list of available data to use for desktop and habitat analyses for the site, including raptor nests, native prairie layers, and Whooping Crane information. Data sharing agreement may be needed for some or all of this data.
- Atwell and Ørsted to continue to familiarize themselves with the dockets for existing projects and maintain communication with the agencies as studies for 2020 and beyond are planned.

Alan Plumeau

From: Chris McCreedy
Sent: Tuesday, February 18, 2020 5:41 PM
To: 'Johnson, Sandra K.'
Subject: RE: data sharing agreement/data layers from NDGF
Attachments: 19000785_ProjectArea.cpg; 19000785_ProjectArea.dbf; 19000785_ProjectArea.prj; 19000785_ProjectArea.sbn; 19000785_ProjectArea.sbx; 19000785_ProjectArea.shp; 19000785_ProjectArea.shp.xml; 19000785_ProjectArea.shx

Here are those attachments :)

Chris McCreedy
Senior Environmental Consultant
ATWELL, LLC
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480.218.8831 x2503 Tel
480.830.4888 Fax
4700 E. Southern Avenue | Mesa, AZ 85206
www.atwell-group.com

From: Chris McCreedy
Sent: Tuesday, February 18, 2020 3:08 PM
To: 'Johnson, Sandra K.' <sajohnson@nd.gov>
Subject: RE: data sharing agreement/data layers from NDGF

Hi Sandra,

Shapefiles of the Badger project area attached. I will call tomorrow. I think most of my questions revolved around the desktop Whooping Crane stopover risk assessment. Thanks again!

Chris

Chris McCreedy
Senior Environmental Consultant
ATWELL, LLC
602.513.3950 Mobile (best)
480.218.8831 x2503 Tel
480.830.4888 Fax
4700 E. Southern Avenue | Mesa, AZ 85206
www.atwell-group.com

From: Johnson, Sandra K. <sajohnson@nd.gov>
Sent: Tuesday, February 18, 2020 7:13 AM
To: Chris McCreedy <cmccreedy@atwell-group.com>
Subject: RE: data sharing agreement/data layers from NDGF

I'm pretty busy today, tomorrow would work better for me. Or just email me the list and I can reply if we have that specific data or not.
Sandy

From: Chris McCreedy <cmccreedy@atwell-group.com>
Sent: Tuesday, February 18, 2020 7:59 AM
To: Johnson, Sandra K. <sajohnson@nd.gov>
Subject: RE: data sharing agreement/data layers from NDGF

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Sure thing! I hope it was a good meeting, I could use a good conference just about now. May I call you later today with a handful of questions? I had a small list for you but I could use some time to track down that list and refresh it in my mind so that I do not omit anything.

Chris

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From: Johnson, Sandra K. <sajohnson@nd.gov>
Sent: Tuesday, February 18, 2020 6:54 AM
To: Chris McCreedy <cmccreedy@atwell-group.com>
Subject: RE: data sharing agreement/data layers from NDGF

Hi Chris,
I was attending the ND Chapter of the Wildlife Society Conference last week and did not have a chance to respond to emails. Please send me a shapefile of the latest project boundary and I will query our database for known eagle nests, leks, and other data we discussed during the meeting.
Note: do NOT zip the shapefile, our state email deletes zip files. Either send the shapefile not zipped or if you do zip it, change the extension to ".piz"
Thanks,
Sandy

Sandra Johnson
Conservation Biologist

701.328.6382 • sajohnson@nd.gov • gf.nd.gov

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From: Chris McCreedy <cmccreedy@atwell-group.com>
Sent: Friday, February 14, 2020 12:39 PM

To: Johnson, Sandra K. <sajohnson@nd.gov>
Subject: RE: data sharing agreement/data layers from NDGF

CAUTION: This email originated from an outside source. Do not click links or open attachments unless you know they are safe.

Hi Sandra,

I wanted to check on this and I can call if that is more convenient. In summary, we are looking to find out more about the data layers that NDGF can help us with and how we go about setting up a data sharing agreement with your office. Thank you again for your help, it is really appreciated.

Sincerely,
Chris

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www.atwell-group.com

From: Chris McCreedy
Sent: Wednesday, February 12, 2020 4:36 PM
To: 'sajohnson@nd.gov' <sajohnson@nd.gov>
Subject: data sharing agreement/data layers from NDGF

Hi Sandra,

As I wrote yesterday I enjoyed meeting everyone at the meeting for the Badger Wind Project last month. It was such a beautiful day after the meeting and I managed to sneak over to Fort Abraham Lincoln SP across the river in the afternoon and found a Townsend's Solitaire!

During the meeting, we discussed various data layers NDGF has developed that will help us at this stage of the project. Bald Eagle nests, other raptor nests, leks (if lek data were available), waterfowl, unbroken grassland/native prairie, and perhaps Whooping Crane data come to mind. Are there others that I am missing that you believe we should be thinking about?

I believe the next step would be for us to create a data sharing agreement with your agency, is that correct? I suspect that you will need spatial data files of the project boundary from us, and can you let me know what else I can provide to you to help get that process rolling?

Thank you,
Chris McCreedy

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Alan Plumeau

From: Chris McCreedy
Sent: Tuesday, February 25, 2020 11:19 AM
To: 'Johnson, Sandra K.'
Subject: RE: data sharing agreement/data layers from NDGF
Attachments: NDGF GIS Data Sharing_Atwell_Feb2020_fully executed.pdf

Hi Sandra,

I have attached the signed data sharing agreement. Please note that my supervisor Chris Rutledge signed the agreement to more appropriately represent the company. Thank you for all of your help with this and please let me know if you have additional questions.

Sincerely,
Chris

Chris McCreedy
Senior Environmental Consultant
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From: Johnson, Sandra K. <sajohnson@nd.gov>
Sent: Tuesday, February 25, 2020 8:03 AM
To: Chris McCreedy <cmccreedy@atwell-group.com>
Subject: RE: data sharing agreement/data layers from NDGF

Chris,

Attached is a data sharing agreement for bald eagle nests within 10 miles of the project. Please sign and email to me, then I will share the data.

We do not have a sharp-tailed grouse census block in this area, therefore do not have any leks documented in our database. However, that does not imply there are not leks within the project area, we simply haven't conducted surveys there in the past.

We are currently awaiting the release of a new native grassland product that the USFWS has developed. It should be available sometime in March. In the meantime, you can reference this layer for native grassland https://gishubdata.nd.gov/dataset/micro-native-grassland-range Again, we will recommend turbines not be sited on native prairie. Particularly, the northern portion of your project area contains large tracts of native prairie, which is habitat for grouse, grassland birds, etc. For example, grassland bird models developed by Niemuth et al. 2017 indicate this area has a high occurrence of Chestnut-collared Longspurs, which is a Level I Species of Conservation Priority for North Dakota.

For whooping crane, we suggest using the spatial layer form Niemuth et al. 2018 and consult with the USFWS, since they have primary authority over endangered species.

I have also attached the manuscripts we are using for impact assessment and recommendations for offsets. The tools are available from USFWS HAPET.

Sandra Johnson
Conservation Biologist

701.328.6382 • sajohnson@nd.gov • gf.nd.gov

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From: Chris McCreedy <cmccreedy@atwell-group.com>
Sent: Tuesday, February 25, 2020 8:02 AM
To: Johnson, Sandra K. <sajohnson@nd.gov>
Subject: RE: data sharing agreement/data layers from NDGF

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Hi Sandy, I hope all is well. I am checking in on the data request for the Badger Wind Project in Logan and McIntosh counties, not least of which to make sure you received the spatial files of the project boundary (I did not zip them).

For the Whooping Crane desktop, I am looking to confirm that the method at Ruso (and I believe Aurora as well, if I remember correctly) is sufficient. They compared the project area's stopover habitat resources (using Niemuth and The Watershed Institute) to GIS-generated comparison project boundaries in each cardinal direction.

Thanks for your help with this.

Sincerely,
Chris

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Sent: Tuesday, February 18, 2020 7:13 AM
To: Chris McCreedy
Subject: RE: data sharing agreement/data layers from NDGF

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Conservation Biologist

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From: Chris McCreedy
Sent: Wednesday, February 12, 2020 4:36 PM
To: 'sajohnson@nd.gov' <sajohnson@nd.gov>
Subject: data sharing agreement/data layers from NDGF

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Thank you,
Chris McCreedy

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GIS DATA SHARING AGREEMENT
NORTH DAKOTA GAME AND FISH DEPARTMENT

This is to serve as a formal agreement with: ~~Chris McCreedy,~~ ATWELL, LLC, ~~Mesa, AZ~~.

The data includes: Bald eagle nest sites within 10 miles of a proposed wind project in Logan and McIntosh Counties.

This data will be used for: To minimize impacts to sensitive species during project development.

It is agreed that:

1. *Access to this data or web services will be restricted to the individuals or groups listed in this document.*

2. *All data provided or access to the web services will be used for these purposes only, and will not be given or sold to anyone not affiliated with these purposes. The information contained hereon is intended for the user and may not be copied, duplicated, or redistributed in any way, in whole or in part, without the written consent of the North Dakota Game and Fish Department. Confidentiality of information continues beyond the term of this agreement, or any extensions or renewals of it.*

3. *The North Dakota Game and Fish Department provides no guarantee, express or implied, as to the accuracy and/or completeness of the information contained hereon.*

4. *The user shall provide results of wildlife surveys conducted for the specified project, including on known or newly discovered wildlife features (e.g. golden eagle nest status, sharp-tailed grouse leks), to the North Dakota Game and Fish Department upon project completion. Spatial information must be compatible with ESRI ArcGIS formats.*

Signed: _____ Date: 2-25-2020
North Dakota Game and Fish Department

Signed: _____ Date: 2/25/2020
Chris Rutledge
Vice President, Atwell, LLC

Alan Plumeau

From: Johnson, Sandra K. <sajohnson@nd.gov>
Sent: Wednesday, February 26, 2020 7:51 AM
To: Chris McCreedy
Subject: RE: data sharing agreement/data layers from NDGF
Attachments: BaldEagleStatus_Jan2020.shx; BaldEagleStatus_Jan2020.dbf; BaldEagleStatus_Jan2020.prj; BaldEagleStatus_Jan2020.sbn; BaldEagleStatus_Jan2020.sbx; BaldEagleStatus_Jan2020.shp; NDGF Eagle Database Definitions_Jan2020.docx

Good morning,
I think the nest within the project boundary is the nest you discovered last year during your aerial surveys. If you have additional information on this nest to share with me at this time, I would appreciate it.
Let me know if you have any questions.
Thanks!
Sandy

From: Chris McCreedy <cmccreedy@atwell-group.com>
Sent: Tuesday, February 25, 2020 12:19 PM
To: Johnson, Sandra K. <sajohnson@nd.gov>
Subject: RE: data sharing agreement/data layers from NDGF

CAUTION: This email originated from an outside source. Do not click links or open attachments unless you know they are safe.

Hi Sandra,

I have attached the signed data sharing agreement. Please note that my supervisor Chris Rutledge signed the agreement to more appropriately represent the company. Thank you for all of your help with this and please let me know if you have additional questions.

Sincerely,
Chris

Chris McCreedy
Senior Environmental Consultant
ATWELL, LLC
602.513.3950 Mobile (best)
480.218.8831 x2503 Tel
480.830.4888 Fax
4700 E. Southern Avenue | Mesa, AZ 85206
www.atwell-group.com

From: Johnson, Sandra K. <sajohnson@nd.gov>
Sent: Tuesday, February 25, 2020 8:03 AM
To: Chris McCreedy <cmccreedy@atwell-group.com>
Subject: RE: data sharing agreement/data layers from NDGF

Chris,

Attached is a data sharing agreement for bald eagle nests within 10 miles of the project. Please sign and email to me, then I will share the data.

We do not have a sharp-tailed grouse census block in this area, therefore do not have any leks documented in our database. However, that does not imply there are not leks within the project area, we simply haven't conducted surveys there in the past.

We are currently awaiting the release of a new native grassland product that the USFWS has developed. It should be available sometime in March. In the meantime, you can reference this layer for native grassland https://gishubdata.nd.gov/dataset/micro-native-grassland-range Again, we will recommend turbines not be sited on native prairie. Particularly, the northern portion of your project area contains large tracts of native prairie, which is habitat for grouse, grassland birds, etc. For example, grassland bird models developed by Niemuth et al. 2017 indicate this area has a high occurrence of Chestnut-collared Longspurs, which is a Level I Species of Conservation Priority for North Dakota.

For whooping crane, we suggest using the spatial layer form Niemuth et al. 2018 and consult with the USFWS, since they have primary authority over endangered species.

I have also attached the manuscripts we are using for impact assessment and recommendations for offsets. The tools are available from USFWS HAPET.

Sandra Johnson
Conservation Biologist

701.328.6382 • sajohnson@nd.gov • gf.nd.gov

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From: Chris McCreedy <cmccreedy@atwell-group.com>
Sent: Tuesday, February 25, 2020 8:02 AM
To: Johnson, Sandra K. <sajohnson@nd.gov>
Subject: RE: data sharing agreement/data layers from NDGF

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Hi Sandy, I hope all is well. I am checking in on the data request for the Badger Wind Project in Logan and McIntosh counties, not least of which to make sure you received the spatial files of the project boundary (I did not zip them).

For the Whooping Crane desktop, I am looking to confirm that the method at Ruso (and I believe Aurora as well, if I remember correctly) is sufficient. They compared the project area's stopover habitat resources (using Niemuth and The Watershed Institute) to GIS-generated comparison project boundaries in each cardinal direction.

Thanks for your help with this.

Sincerely,
Chris

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From: Johnson, Sandra K. [mailto:sajohnson@nd.gov]
Sent: Tuesday, February 18, 2020 7:13 AM
To: Chris McCreedy
Subject: RE: data sharing agreement/data layers from NDGF

I'm pretty busy today, tomorrow would work better for me. Or just email me the list and I can reply if we have that specific data or not.
Sandy

From: Chris McCreedy <cmccreedy@atwell-group.com>
Sent: Tuesday, February 18, 2020 7:59 AM
To: Johnson, Sandra K. <sajohnson@nd.gov>
Subject: RE: data sharing agreement/data layers from NDGF

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Sure thing! I hope it was a good meeting, I could use a good conference just about now. May I call you later today with a handful of questions? I had a small list for you but I could use some time to track down that list and refresh it in my mind so that I do not omit anything.

Chris

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Hi Chris,

I was attending the ND Chapter of the Wildlife Society Conference last week and did not have a chance to respond to emails. Please send me a shapefile of the latest project boundary and I will query our database for known eagle nests, leks, and other data we discussed during the meeting.
Note: do NOT zip the shapefile, our state email deletes zip files. Either send the shapefile not zipped or if you do zip it, change the extension to ".piz"
Thanks,
Sandy

Sandra Johnson
Conservation Biologist

701.328.6382 • sajohnson@nd.gov • gf.nd.gov

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From: Chris McCreedy <cmccreedy@atwell-group.com>
Sent: Friday, February 14, 2020 12:39 PM
To: Johnson, Sandra K. <sajohnson@nd.gov>
Subject: RE: data sharing agreement/data layers from NDGF

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Hi Sandra,

I wanted to check on this and I can call if that is more convenient. In summary, we are looking to find out more about the data layers that NDGF can help us with and how we go about setting up a data sharing agreement with your office. Thank you again for your help, it is really appreciated.

Sincerely,
Chris

Chris McCreedy
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From: Chris McCreedy
Sent: Wednesday, February 12, 2020 4:36 PM
To: 'sajohnson@nd.gov' <sajohnson@nd.gov>
Subject: data sharing agreement/data layers from NDGF

Hi Sandra,

As I wrote yesterday I enjoyed meeting everyone at the meeting for the Badger Wind Project last month. It was such a beautiful day after the meeting and I managed to sneak over to Fort Abraham Lincoln SP across the river in the afternoon and found a Townsend's Solitaire!

During the meeting, we discussed various data layers NDGF has developed that will help us at this stage of the project. Bald Eagle nests, other raptor nests, leks (if lek data were available), waterfowl, unbroken grassland/native prairie, and perhaps Whooping Crane data come to mind. Are there others that I am missing that you believe we should be thinking about?

I believe the next step would be for us to create a data sharing agreement with your agency, is that correct? I suspect that you will need spatial data files of the project boundary from us, and can you let me know what else I can provide to you to help get that process rolling?

Thank you,
Chris McCreedy

Chris McCreedy
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Alan Plumeau

From: Mueller, Elisha K. <ekmueller@nd.gov>
Sent: Wednesday, February 26, 2020 11:36 AM
To: Chris McCreedy
Subject: RE: Badger Wind Project - Jan 28 Meeting Minutes Draft

Hi Chris,

After some internal discussions, the Department does still feel it is of value to recommend developers do lek surveys, especially when a project boundary includes a noteworthy amount of unbroken habitats (as the Badger project does). We are happy to discuss this further as the project develops, but I wanted to send this in to make sure the meeting minutes reflects this recommendation correctly.

Thanks!

Elisha

From: Chris McCreedy <cmccreedy@atwell-group.com>
Sent: Tuesday, February 25, 2020 4:51 PM
To: Mueller, Elisha K. <ekmueller@nd.gov>; heidi_riddle@fws.gov
Cc: Kading, Kevin J. <kkading@nd.gov>; Schultz, Renae J. <rjschultz@nd.gov>; Johnson, Sandra K. <sajohnson@nd.gov>; Jon Baker <jbaker@lincolnclean.com>; Emily Cooper <ecooper@atwell-group.com>; drew_becker@fws.gov
Subject: RE: Badger Wind Project - Jan 28 Meeting Minutes Draft

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Hi everyone,

I would like to send out a last call for edits and comments on the Badger Wind Project's draft January 28 meeting minutes, which I have re-attached for your convenience. I would like to finalize the minutes by Thursday Feb. 27th and will send them to all recipients in a .pdf file at the end of the day Thursday.

Thank you again,
Chris

Chris McCreedy
Senior Environmental Consultant
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From: Chris McCreedy
Sent: Tuesday, February 11, 2020 9:13 PM

To: 'Mueller, Elisha K.' <ekmueller@nd.gov>; 'heidi_riddle@fws.gov' <heidi_riddle@fws.gov>
Cc: 'kkading@nd.gov' <kkading@nd.gov>; Schultz, Renae J. <rjschultz@nd.gov>; 'sajohnson@nd.gov' <sajohnson@nd.gov>; 'Jon Baker' <jbaker@lincolnclean.com>; Emily Cooper <ecooper@atwell-group.com>
Subject: Badger Wind Project - Jan 28 Meeting Minutes Draft

Elisha and Heidi,

Thank you again for taking the time to host our project introduction meeting for Badger Wind. It was useful for us to have the opportunity to hear your suggestions and concerns, and we are grateful.

I have attached a draft of the meeting minutes for your review. I am hopeful to get your comments on the draft back by Friday, February 21, and I will deliver the final version back to you shortly afterward. If I may ask, would you please forward the draft minutes to Steve and Drew as well? I do not appear to have their addresses and I want to make sure that they also receive the draft minutes.

Sincerely,
Chris

Chris McCreedy
Senior Environmental Consultant
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Alan Plumeau

From: Chris McCreedy
Sent: Thursday, February 27, 2020 7:18 AM
To: 'Johnson, Sandra K.'
Subject: RE: data sharing agreement/data layers from NDGF
Attachments: Badger Wind 2019 Bald Eagle and Ferruginous Hawk Nest Locations.xlsx

Hi Sandy, thanks for sending this information. It does look to be the same Bald Eagle nest. I have attached the coordinates and status for the Bald Eagle nest that we found, as well as four Ferruginous Hawk nest locations. Each was in-use with an adult that was incubating or perhaps brooding small chicks, we did not flush the adults to view nest contents.

Thank you again,
Chris

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From: Johnson, Sandra K. <sajohnson@nd.gov>
Sent: Wednesday, February 26, 2020 7:51 AM
To: Chris McCreedy <cmccreedy@atwell-group.com>
Subject: RE: data sharing agreement/data layers from NDGF

Good morning,
I think the nest within the project boundary is the nest you discovered last year during your aerial surveys. If you have additional information on this nest to share with me at this time, I would appreciate it.
Let me know if you have any questions.
Thanks!
Sandy

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Sent: Tuesday, February 25, 2020 12:19 PM
To: Johnson, Sandra K. <sajohnson@nd.gov>
Subject: RE: data sharing agreement/data layers from NDGF

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Hi Sandra,

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Sincerely,
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From: Johnson, Sandra K. <sajohnson@nd.gov>
Sent: Tuesday, February 25, 2020 8:03 AM
To: Chris McCreedy <cmccreedy@atwell-group.com>
Subject: RE: data sharing agreement/data layers from NDGF

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We do not have a sharp-tailed grouse census block in this area, therefore do not have any leks documented in our database. However, that does not imply there are not leks within the project area, we simply haven't conducted surveys there in the past.

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I have also attached the manuscripts we are using for impact assessment and recommendations for offsets. The tools are available from USFWS HAPET.

Sandra Johnson
Conservation Biologist

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From: Chris McCreedy <cmccreedy@atwell-group.com>
Sent: Tuesday, February 25, 2020 8:02 AM
To: Johnson, Sandra K. <sajohnson@nd.gov>
Subject: RE: data sharing agreement/data layers from NDGF

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Hi Sandy, I hope all is well. I am checking in on the data request for the Badger Wind Project in Logan and McIntosh counties, not least of which to make sure you received the spatial files of the project boundary (I did not zip them).

For the Whooping Crane desktop, I am looking to confirm that the method at Ruso (and I believe Aurora as well, if I remember correctly) is sufficient. They compared the project area's stopover habitat resources (using Niemuth and The Watershed Institute) to GIS-generated comparison project boundaries in each cardinal direction.

Thanks for your help with this.

Sincerely,
Chris

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Sent: Tuesday, February 18, 2020 7:13 AM
To: Chris McCreedy
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From: Chris McCreedy <cmccreedy@atwell-group.com>
Sent: Tuesday, February 18, 2020 7:59 AM
To: Johnson, Sandra K. <sajohnson@nd.gov>
Subject: RE: data sharing agreement/data layers from NDGF

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From: Johnson, Sandra K. <sajohnson@nd.gov>
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To: Chris McCreedy <cmccreedy@atwell-group.com>
Subject: RE: data sharing agreement/data layers from NDGF

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Note: do NOT zip the shapefile, our state email deletes zip files. Either send the shapefile not zipped or if you do zip it, change the extension to ".piz"
Thanks,
Sandy

Sandra Johnson
Conservation Biologist

701.328.6382 • sajohnson@nd.gov • gf.nd.gov

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From: Chris McCreedy <cmccreedy@atwell-group.com>
Sent: Friday, February 14, 2020 12:39 PM
To: Johnson, Sandra K. <sajohnson@nd.gov>
Subject: RE: data sharing agreement/data layers from NDGF

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Hi Sandra,

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Sincerely,
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From: Chris McCreedy
Sent: Wednesday, February 12, 2020 4:36 PM
To: 'sajohnson@nd.gov' <sajohnson@nd.gov>
Subject: data sharing agreement/data layers from NDGF

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I believe the next step would be for us to create a data sharing agreement with your agency, is that correct? I suspect that you will need spatial data files of the project boundary from us, and can you let me know what else I can provide to you to help get that process rolling?

Thank you,
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Alan Plumeau

From: Mueller, Elisha K. <ekmueller@nd.gov>
Sent: Friday, March 20, 2020 7:27 AM
To: Chris McCreedy
Cc: Johnson, Sandra K.
Subject: RE: status of ND grassland habitat decision support tool

Hi Chris,

Due to the circumstances, we, as well as many of our partners, have been working remotely, making coordination quite difficult.

I have cc'ed Sandy on this email, she will be able to get in touch with you when she is able to share the layer.

Elisha

From: Chris McCreedy <cmccreedy@atwell-group.com>
Sent: Thursday, March 19, 2020 6:14 PM
To: Mueller, Elisha K. <ekmueller@nd.gov>
Subject: RE: status of ND grassland habitat decision support tool

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Hi Elisha,

I am just checking in on the grassland tool. I apologize on asking so frequently for it, you guys must be slammed trying to negotiate scheduling and logistics and heavens knows what else because of the virus.

Thanks for your help!

Chris

Chris McCreedy
Senior Environmental Consultant
ATWELL, LLC

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From: Mueller, Elisha K. <ekmueller@nd.gov>
Sent: Thursday, March 12, 2020 9:39 AM
To: Chris McCreedy <cmccreedy@atwell-group.com>
Subject: RE: status of ND grassland habitat decision support tool

Hi Chris,

We had expected to have it sooner but Sandy just recently received the file. We will need to discuss how we are able to share and will be back in touch with you as soon as we learn more.

Elisha

From: Chris McCreedy <cmccreedy@atwell-group.com>
Sent: Wednesday, March 11, 2020 1:34 PM
To: Mueller, Elisha K. <ekmueller@nd.gov>
Subject: status of ND grassland habitat decision support tool

CAUTION: This email originated from an outside source. Do not click links or open attachments unless you know they are safe.

Hi Elisha,

I hope you are doing well. I am checking in on the grassland habitat tool, do you have an update on its availability?

Thanks!

Chris McCreedy
Senior Environmental Consultant
ATWELL, LLC

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CALL SUMMARY

Project: **Badger Wind**
Logan and McIntosh counties, North Dakota
Ørsted Onshore North America, LLC (formerly Lincoln Clean Energy)

Host/Organizer: Chris McCreedy, Atwell LLC (Atwell)

Meeting Date: April 3, 2020

Purpose: **Aerial Survey Safety Discussion**

Attendees

- Elisha Mueller (EM), Conservation Biologist, North Dakota Game and Fish Department (NDGF)
- Heidi Riddle (HR), Fish Wildlife Biologist, U.S. Fish and Wildlife Service (USFWS)
- Emily Cooper (EC), Senior Project Manager, Atwell
- Chris McCreedy (CM), Senior Environmental Consultant, Atwell

Call Summary

The second year of aerial nesting raptor and Sharp-tailed Grouse lek surveys are scheduled to be conducted at the Badger Wind project from April 17-20, 2020. Given a) health concerns regarding transmission and spread of the COVID-19 virus and b) safety concerns stemming from recent fatalities that occurred during nesting raptor surveys at wind facilities in nearby states, Atwell requested NDGF and USFWS input on whether a hybrid aerial survey and ground-based survey approach in 2020 could adequately meet the goals and expectations for year 2 pre-construction raptor nest and lek surveys for Badger Wind.

HR noted that safety is highest priority and should be taken into consideration while considering survey approaches. HR noted that recent survey guidance released by the USFWS Region 6 places safety at the top of the list.

EM seconded the importance of safety and added that Atwell should consider safety first and follow guidelines the best it can under these circumstances. HR and EM voiced acceptance of a hybrid survey that would utilize a ground-based approach combined with a scaled-back aerial survey strategy, with the aerial survey focusing on areas within the survey area that lack roads,

and which cannot be easily accessed during ground-based surveys. EC remarked that given that it is April already Atwell will not have time to send a study plan to the agencies prior to this month's surveys, but that Atwell will share the study plan as quickly as it can. EM and HR accepted this and reiterated that the project team should do their best to collect the best data they can under these unusual circumstances.

From:	Chris McCreedy
To:	"Mueller, Elisha K."; "heidi_riddle@fws.gov"; Chris McCreedy
Cc:	Emily Cooper; Johnson, Sandra K.
Subject:	Badger Wind: Aerial Survey Safety Call

Call to discuss safety concerns for aerial raptor nest surveys at the Badger Wind project. Dial in and passcode above.

Chris

From: Riddle, Heidi L
To: Chris McCreedy; Mueller, Elisha K.
Cc: Emily Cooper
Subject: RE: [EXTERNAL] for your review - Badger Wind Apr 3 survey safety call summary
Date: Tuesday, April 7, 2020 2:00:02 PM

Looks good to me. Thanks for scheduling the call on this.

Heidi

From: Chris McCreedy <cmccreedy@atwell-group.com>
Sent: Monday, April 6, 2020 6:52 PM
To: Mueller, Elisha K. <ekmueller@nd.gov>; Riddle, Heidi L <heidi_riddle@fws.gov>
Cc: Emily Cooper <ecooper@atwell-group.com>
Subject: [EXTERNAL] for your review - Badger Wind Apr 3 survey safety call summary

Heidi and Elisha,

Thank you again for joining us on the call last week to discuss safety concerns for our pre-construction surveys at Badger Wind. We are grateful for your perspective and for making time for the call on short notice. I have attached a call summary for our phone meeting for your review, and I would be happy to incorporate your comments if my notes are incomplete.

Chris

Chris McCreedy
Senior Environmental Consultant
ATWELL, LLC

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From: Riddle, Heidi L
To: Chris McCreedy
Subject: RE: [EXTERNAL] Safety precautions for aerial surveys this spring at Badger Wind
Date: Thursday, April 2, 2020 12:59:51 PM

Hi Chris,

I could be available most times tomorrow afternoon from 1-5.

Thank you,
Heidi

From: Chris McCreedy <cmccreedy@atwell-group.com>
Sent: Thursday, April 2, 2020 11:13 AM
To: Mueller, Elisha K. <ekmueller@nd.gov>; Johnson, Sandra K. <sajohnson@nd.gov>; Riddle, Heidi L <heidi_riddle@fws.gov>
Subject: [EXTERNAL] Safety precautions for aerial surveys this spring at Badger Wind

Elisha, Sandy, and Heidi,

Good morning. I suspect that like us you may be working at home. I am writing to request if you can attend a group call this afternoon or if necessary tomorrow to discuss the items below. Please feel free to suggest a few times, I will gladly make myself available at any time you suggest and once I have suggestions I will send out an invite.

We are working through circumstances regarding safety concerns for our aerial nesting raptor and lek surveys and I would be grateful for your input. The first revolves around corona virus; the need to fly in an enclosed space for several hours with our pilot is a health concern given the corona virus outbreak's spread and transmission. It is something that we have been preparing for and working through as we approach the survey window. A second concern is there have been recent accidents during aerial nesting raptor surveys. I am aware of two, one last month in Illinois and one this week in Iowa. The second incident has prompted us to take step back and evaluate these concerns.

We completed the project's first year of aerial nesting raptor surveys last spring and located 1 occupied active BAEA nest during the surveys. Our biologist that has been conducting ongoing eagle use point count surveys on the ground is already aware that the BAEA pair is present and is constructing a new nest nearby this spring. He was also able to locate multiple Ferruginous Hawks last year just in the course of his point count surveys and already knows of two this spring. For leks, we conducted an aerial survey of the entire project last year. After some discussion on the need for aerial lek surveys in 2020 we decided on flying focus areas with higher probability of leks.

Given ongoing safety concerns we are interested in your views on using a ground-based approach this April for our second year of surveys. I want to emphasize that we are prepared to conduct aerial surveys if needed; we have a pilot ready to go and are tentatively scheduled to fly our surveys in the April 17-20 window this month.

Also, Sandy, Sean Fields sent us the PUDL spatial data last night – thanks!

Sincerely,
Chris

Chris McCreedy
Senior Environmental Consultant
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From: Mueller, Elisha K.
To: Chris McCreedy; heidi_riddle@fws.gov
Cc: Emily Cooper
Subject: RE: for your review - Badger Wind Apr 3 survey safety call summary
Date: Tuesday, April 7, 2020 9:53:11 AM

Hi Chris,

It looks good to me. Thanks for sharing.

Stay safe & healthy!
Elisha

From: Chris McCreedy <cmccreedy@atwell-group.com>
Sent: Monday, April 6, 2020 6:52 PM
To: Mueller, Elisha K. <ekmueller@nd.gov>; heidi_riddle@fws.gov
Cc: Emily Cooper <ecooper@atwell-group.com>
Subject: for your review - Badger Wind Apr 3 survey safety call summary

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Heidi and Elisha,

Thank you again for joining us on the call last week to discuss safety concerns for our pre-construction surveys at Badger Wind. We are grateful for your perspective and for making time for the call on short notice. I have attached a call summary for our phone meeting for your review, and I would be happy to incorporate your comments if my notes are incomplete.

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Senior Environmental Consultant
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file with Atwell and can be provided upon request.

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From: Mueller, Elisha K.
To: Chris McCreedy
Subject: RE: Safety precautions for aerial surveys this spring at Badger Wind
Date: Thursday, April 2, 2020 12:36:40 PM

Hi Chris,

The Department is supportive of ground based lek surveys, which typically produce a more accurate count than aerial surveys anyways. As for eagle nests, we would support any decision USFWS makes on the matter.

I am able to join in on a call tomorrow if you get a conference call set up. Just send over the time & call-in information.

Elisha

From: Chris McCreedy <cmccreedy@atwell-group.com>
Sent: Thursday, April 2, 2020 11:13 AM
To: Mueller, Elisha K. <ekmueller@nd.gov>; Johnson, Sandra K. <sajohnson@nd.gov>; heidi_riddle@fws.gov
Subject: Safety precautions for aerial surveys this spring at Badger Wind

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Elisha, Sandy, and Heidi,

Good morning. I suspect that like us you may be working at home. I am writing to request if you can attend a group call this afternoon or if necessary tomorrow to discuss the items below. Please feel free to suggest a few times, I will gladly make myself available at any time you suggest and once I have suggestions I will send out an invite.

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need for aerial lek surveys in 2020 we decided on flying focus areas with higher probability of leks.

Given ongoing safety concerns we are interested in your views on using a ground-based approach this April for our second year of surveys. I want to emphasize that we are prepared to conduct aerial surveys if needed; we have a pilot ready to go and are tentatively scheduled to fly our surveys in the April 17-20 window this month.

Also, Sandy, Sean Fields sent us the PUDL spatial data last night – thanks!

Sincerely,
Chris

Chris McCreedy
Senior Environmental Consultant
ATWELL, LLC

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Travis Apfel

From: Maureen O'Shea-Stone
Sent: Friday, November 6, 2020 7:53 PM
To: Mueller, Elisha K.; heidi_riddle@fws.gov; Johnson, Sandra K.; Dyke, Steve R.; Link, Greg W.
Cc: Tara Corbett; Chris McCreedy; Emily Cooper
Subject: Badger Wind Project - Grassland Assessment and Project Update

Elisha:

Thank you for meeting with us via Zoom on Friday, October 30, 2020, as well as providing your feedback to this memo on Monday, November 2, 2020 (incorporated in text, below). Sandra Johnson provided a link to the download a file named NDGF Grassland Analysis.zip (the description of the file is as follows: NDGF Native/Unbroken Grassland Analysis. Base Raster Layers 2008 and 2014).

Your feedback and information provided are most helpful. We are providing the following list of understanding points from our conversations, as well as action items we will complete to address this issue.

Understanding Points:

1) The Public Service Commission (PSC) requests input on wind projects from approximately 30 different state and federal agencies, including NDGF. NDGF evaluates the impacts of a wind project on wildlife and wildlife habitat using grassland nesting birds and waterfowl as indicator species.

2) You kindly provided us with contact information for Chuck Loesch, USFWS HAPET, to obtain the Local Siting Decision Support Tool (DST) used in the wetland/waterfowl impact analysis.

3) The grassland bird analysis depends on a quantitative estimate of impacts to unbroken grassland based on Shaffer et al. 2013 and Shaffer et al. 2019. This category of grassland includes pasture lands and hayfields, as long as they are unbroken.

4) The NDGFD's native grassland range datasets, based on the native grassland layer, will be the basis for the estimated impacts to grassland birds. The focus of the analysis will be impacts to unbroken grassland.

5) Evidence of tillage (breaking) can be integrated into the delineation of unbroken grassland. This evidence would comprise rock piling, visible furrows, or other physical indications of tilling. Land use history, in terms of past cropping in specific areas can also be collected and presented.

Given this, we propose the following action items:

1) Re-run the grassland assessment analysis, integrating our understanding of what types of grasslands can be considered unbroken, in order to provide additional information regarding tilling (breaking) in specific land areas within the preliminary construction easement for the project.

2) The grassland analysis will be conducted as a progressive discrimination exercise starting with the NDGF native grassland layer (raster layer obtained from Sandra Johnson on , over-laid with the Prairie Pothole Joint Venture PUDL dataset (which we understand from our previous meeting is considered a more refined delineation of unbroken grassland). We will then overlay this with our aerial photography interpretation analysis of the PUDL dataset. Finally, the results of our field verification effort, in terms of visible evidence of tillage will be overlaid on these results. The ultimate goal would be to provide you with additional information regarding past tilling to add to your delineation of unbroken grassland.

3) The results of this analysis will be forwarded to you for review. We anticipate we will be able to complete this and return to you next week.

4) We propose we convene for a conversation about the data and potential updates to what is considered unbroken (untilled) grassland in the proposed project area. Hopefully this can occur soon after your review our analysis.

5) Upon your acceptance, or editing, of this dataset, we will run a draft impact analysis as you described: using the Schaffer paper methods to estimate impacts to grassland birds as well as integrating the results of the Local Siting Decision Support Tool (DST) for estimating impacts to waterfowl. This will be forwarded for your review.

6) We anticipate a meeting can then be joined to discuss potential impacts, potential siting changes, and potential offset calculations and details, prior to your delivery of the impact assessment report to PSC.

Thank you again for your time and most helpful explanations.

All the best,
Maureen

Maureen O'Shea-Stone
Project Director
ATWELL, LLC
720.937.1359 Mobile
720.557.2918 Ext. 4224 Tel
3000 Center Green Drive | Suite 210 | Boulder, CO 80301

From: Emily Cooper
To: Maureen O'Shea-Stone; Tara Corbett
Cc: Chris McCreedy
Subject: FW: Badger Wind Project - Grassland Assessment and Project Update Meeting Scheduling
Date: Wednesday, October 28, 2020 4:17:32 PM

Maureen, Tara –

Chris sent the grassland report today – sorry; we had a miscommunication about who would be in copy so we were not included, but he got a reply.

Please see Elisha's reply below.

Emily Cooper

ATWELL, LLC
3000 Center Green Drive | Suite 210 | Boulder, CO 80301
978.273.3275 Tel

From: Chris McCreedy <cmccreedy@atwell-group.com>
Sent: Wednesday, October 28, 2020 4:13 PM
To: Emily Cooper <ecooper@atwell-group.com>
Subject: FW: Badger Wind Project - Grassland Assessment and Project Update Meeting Scheduling

fyi

Chris McCreedy
Senior Environmental Consultant
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www.atwell-group.com

From: Mueller, Elisha K. <ekmueller@nd.gov>
Sent: Wednesday, October 28, 2020 1:27 PM
To: Chris McCreedy <cmccreedy@atwell-group.com>; Riddle, Heidi L <heidi_riddle@fws.gov>
Cc: Johnson, Sandra K. <sajohnson@nd.gov>; Dyke, Steve R. <sdyke@nd.gov>; Link, Greg W. <glink@nd.gov>
Subject: RE: Badger Wind Project - Grassland Assessment and Project Update Meeting Scheduling

Hi Chris,

I have not gone through your document with a fine tooth comb, but would like to point out that unbroken grasslands are grasslands that **have not been plowed**. Undesirable species nor haying and grazing mean the grassland is disturbed. Actually quite the contrary, as our grasslands have evolved

with and are dependent upon defoliation (grazing, fire, etc.). The majority of pasture in North Dakota is unbroken grassland. Per the notes from our January 28, 2020 meeting, *"Atwell asked to confirm the current definition of unbroken grassland, since the terminology and definitions have been evolving. NDGF replied that the definition they are using is that unbroken grassland is grassland that has not been plowed. They are discouraging efforts to try to classify "high quality" or "native" grassland as not worthwhile, and are focusing instead on the unbroken classification as the conservation priority."* This report appears to do the exact opposite of what was discussed. We indicated at that meeting there is a considerable amount of native prairie/unbroken grassland in the northeast portion of the project area and it appears that is where numerous turbines will be sited. As currently presented, the Department has large concerns and recommends re-visiting this analysis based on the information provided in the January meeting.

Elisha

From: Chris McCreedy <cmccreedy@atwell-group.com>
Sent: Wednesday, October 28, 2020 1:18 PM
To: Riddle, Heidi L <heidi_riddle@fws.gov>; Mueller, Elisha K. <ekmueller@nd.gov>
Subject: Badger Wind Project - Grassland Assessment and Project Update Meeting Scheduling

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Hi Elisha and Heidi,

It has been a strange year, I hope you are hanging in there. My grandparents live in Grand Forks, and I definitely worry about them with the high Covid infection rate I am hearing about up there. I hope that you and your families are safe and healthy.

Our studies have continued and are going well. Please find attached the results of the Grassland Assessment undertaken for the Badger Wind Project. If possible, we would like to schedule a remote meeting with you to provide an update on the project and to discuss findings of studies undertaken for the project to date. These include ongoing avian studies as well as the attached grassland assessment. We would especially like to get your feedback on the grassland assessment and discuss how this pertains to project siting. Would the NDGF and USFWS be available for a conference call in the coming weeks? At the moment, our team has availability the weeks of November 9 and November 16, with the exception of November 17th and 18th. I can generate a Doodle poll again if that is your preferred way to schedule a call.

Sincerely,
Chris McCreedy

Chris McCreedy
Senior Environmental Consultant
ATWELL, LLC

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From: Mueller, Elisha K.
To: Chris McCreedy
Subject: RE: Badger Wind Project - Grassland Assessment and Project Update Meeting Scheduling
Date: Friday, October 30, 2020 7:48:50 AM

Hi Chris,

I would have time to jump on a call today before 1pm.

Elisha

From: Chris McCreedy <cmccreedy@atwell-group.com>
Sent: Thursday, October 29, 2020 4:25 PM
To: Mueller, Elisha K. <ekmueller@nd.gov>; Riddle, Heidi L <heidi_riddle@fws.gov>
Cc: Johnson, Sandra K. <sajohnson@nd.gov>; Dyke, Steve R. <sdyke@nd.gov>; Link, Greg W. <glink@nd.gov>; Maureen O'Shea-Stone <moshea-stone@atwell-group.com>
Subject: RE: Badger Wind Project - Grassland Assessment and Project Update Meeting Scheduling

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Elisha –

Thank you for the quick response. This is incredibly helpful feedback. We collected the data we need to analyze in order to adjust the report and address your concerns effectively. I am adding our lead botanist, Maureen, into copy as well. Would you by any chance be available for a brief call this week with Maureen and I, so that we can confirm we are on the right track before we start adjusting the report?

Sincerely,
Chris

Chris McCreedy
Senior Environmental Consultant
ATWELL, LLC

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Sent: Wednesday, October 28, 2020 1:27 PM
To: Chris McCreedy <cmccreedy@atwell-group.com>; Riddle, Heidi L <heidi_riddle@fws.gov>
Cc: Johnson, Sandra K. <sajohnson@nd.gov>; Dyke, Steve R. <sdyke@nd.gov>; Link, Greg W.

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Subject: RE: Badger Wind Project - Grassland Assessment and Project Update Meeting Scheduling

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Elisha

From: Chris McCreedy <cmccreedy@atwell-group.com>
Sent: Wednesday, October 28, 2020 1:18 PM
To: Riddle, Heidi L <heidi_riddle@fws.gov>; Mueller, Elisha K. <ekmueller@nd.gov>
Subject: Badger Wind Project - Grassland Assessment and Project Update Meeting Scheduling

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Hi Elisha and Heidi,

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Our studies have continued and are going well. Please find attached the results of the Grassland Assessment undertaken for the Badger Wind Project. If possible, we would like to schedule a remote meeting with you to provide an update on the project and to discuss findings of studies undertaken for the project to date. These include ongoing avian studies as well as the attached grassland assessment. We would especially like to get your feedback on the grassland assessment and discuss how this pertains to project siting. Would the NDGF and USFWS be available for a conference call in the coming weeks? At the moment, our team has availability the weeks of November 9 and November 16, with the exception of November 17th and 18th. I can generate a Doodle poll again if that is your preferred way to schedule a call.

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From: Mueller, Elisha K.
To: Chris McCreedy; Maureen O'Shea-Stone
Subject: RE: Badger Wind grassland assessment call
Date: Friday, October 30, 2020 1:19:34 PM

Hi folks,

Chuck Loesch, USFWS HAPET, would be your best contact for moving forward with a wetland/waterfowl impact analysis. The model I mentioned is their Local Siting Decision Support Tool (DST) and he should be able to provide that for you. He can be reached at chuck_loesch@fws.gov.

Elisha

-----Original Appointment-----
From: Chris McCreedy <cmccreedy@atwell-group.com>
Sent: Friday, October 30, 2020 10:52 AM
To: Mueller, Elisha K.; Maureen O'Shea-Stone
Subject: Badger Wind grassland assessment call
When: Friday, October 30, 2020 12:00 PM-12:30 PM (UTC-06:00) Central Time (US & Canada).
Where: Microsoft Teams Meeting

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Call to discuss Badger Wind Project's grassland assessment report. 12 Central/11 Mountain/10 AZ.

Elisha, I have set up a Microsoft Teams meeting (see link below). Please let me know if the Teams platform will not look and I can track down a conference phone line. Thank you again for speaking to us on short notice.

Chris

Join Microsoft Teams Meeting

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Atwell, LLC

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From:	Mueller, Elisha K.
To:	Maureen O'Shea-Stone; heidi_riddle@fws.gov; Johnson, Sandra K.; Dyke, Steve R.; Link, Greg W.
Cc:	Tara Corbett; Chris McCreedy; Emily Cooper
Subject:	RE: Badger Wind Project - Grassland Assessment and Project Update Meeting Scheduling
Date:	Monday, November 2, 2020 9:35:59 AM

I made a few edits below. Sandy Johnson is our GIS guru though, and if there is anything I may have missed on the GIS/impact analysis, she may jump in.

Thanks.

From: Maureen O'Shea-Stone <moshea-stone@atwell-group.com>
Sent: Friday, October 30, 2020 7:29 PM
To: Mueller, Elisha K. <ekmueller@nd.gov>; heidi_riddle@fws.gov; Johnson, Sandra K. <sajohnson@nd.gov>; Dyke, Steve R. <sdyke@nd.gov>; Link, Greg W. <glink@nd.gov>
Cc: Tara Corbett <tcorbett@atwell-group.com>; Chris McCreedy <cmccreedy@atwell-group.com>; Emily Cooper <ecooper@atwell-group.com>
Subject: RE: Badger Wind Project - Grassland Assessment and Project Update Meeting Scheduling

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Elisha:

Thank you so much for your time this morning. Your feedback and information are most helpful. We are providing the following list of understanding points and action items from our discussion, just to make sure we adjourned our call on the same page.

Understanding Points:

1. NDGFD is responsible for conducting an analysis of the potential impacts of the project on wetland/waterfowl species, as well as grassland birds, and reports these results to the PUC.
   The Public Service Commission (PSC) requests input on wind projects from approximately 30 different state and federal agencies, including NDGF. We evaluate the impacts of a wind project on wildlife and wildlife habitat using grassland nesting birds and waterfowl as indicator species.

2. You kindly provided us with contact information for Chuck Loesch, USFWS HAPET, to obtain the Local Siting Decision Support Tool (DST) used in the wetland/waterfowl impact analysis.

3. The grassland bird analysis depends on a quantitative estimate of ~~surface~~ impacts to unbroken grassland based on Shaffer et al. 2013 & Shaffer et al. 2019. This category of grassland includes pasture lands and hayfields, as long as they are unbroken.

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5. Evidence of tillage (breaking) can be integrated into the delineation of unbroken grassland. This evidence would comprise rock piling, visible furrows, or other physical indications of tilling. Land use history, in terms of past cropping in specific areas can also be collected and presented.

Given this, we propose the following action items:

1. Re-run the grassland assessment analysis, integrating our understanding of what types of grasslands can be considered unbroken, in order to provide additional information regarding tilling (breaking) in specific land areas within the preliminary construction easement for the project.

2. The grassland analysis will be conducted as a progressive discrimination exercise starting with the NDGFD native grassland layer, over-laid with the Prairie Pothole Joint Venture PUDL dataset (which we understand from our previous meeting is considered a more refined delineation of unbroken grassland). We will then overlay this with our aerial photography interpretation analysis of the PUDL dataset. Finally, the results of our field verification effort, in terms of visible evidence of tillage will be overlaid on these results. The ultimate goal would be to provide you with additional information regarding past tilling to add to your delineation of unbroken grassland.

3. The results of this analysis will be forwarded to you for review. We anticipate we will be able to complete this and return to you next week.

4. Upon your acceptance, or editing, of this dataset, we will run a draft impact analysis as you described: using the Schaffer paper methods to estimate impacts to grassland birds as well as integrating the results of the Local Siting Decision Support Tool (DST) for estimating impacts to waterfowl. This will be forwarded for your review.

5. We anticipate a meeting can then be joined to discuss potential impacts, potential siting changes, and potential offset calculations and details, prior to your delivery of the impact assessment report to PSC.

Thank you again for your time and most helpful explanations.

All the best,

Maureen

Maureen O'Shea-Stone
Botanist/Project Director
ATWELL, LLC
720.937.1359 Mobile
720.557.2918 Ext. 4224 Tel
3000 Center Green Drive | Suite 210 | Boulder, CO 80301

From: Mueller, Elisha K. <ekmueller@nd.gov>
Sent: Wednesday, October 28, 2020 1:27 PM
To: Chris McCreedy <cmccreedy@atwell-group.com>; Riddle, Heidi L <heidi_riddle@fws.gov>
Cc: Johnson, Sandra K. <sajohnson@nd.gov>; Dyke, Steve R. <sdyke@nd.gov>; Link, Greg W. <glink@nd.gov>
Subject: RE: Badger Wind Project - Grassland Assessment and Project Update Meeting Scheduling

Hi Chris,

I have not gone through your document with a fine tooth comb, but would like to point out that unbroken grasslands are grasslands that **have not been plowed**. Undesirable species nor haying and grazing mean the grassland is disturbed. Actually quite the contrary, as our grasslands have evolved with and are dependent upon defoliation (grazing, fire, etc.). The majority of pasture in North Dakota is unbroken grassland. Per the notes from our January 28, 2020 meeting, *"Atwell asked to confirm the current definition of unbroken grassland, since the terminology and definitions have been evolving. NDGF replied that the definition they are using is that unbroken grassland is grassland that has not been plowed. They are discouraging efforts to try to classify "high quality" or "native" grassland as not worthwhile, and are focusing instead on the unbroken classification as the conservation priority."* This report appears to do the exact opposite of what was discussed. We indicated at that meeting there is a considerable amount of native prairie/unbroken grassland in the northeast portion of the project area and it appears that is where numerous turbines will be sited. As currently presented, the Department has large concerns and recommends re-visiting this analysis based on the information provided in the January meeting.

Elisha

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Alan Plumeau

From: Johnson, Sandra K. <sajohnson@nd.gov>
Sent: Monday, November 2, 2020 9:55 AM
To: Mueller, Elisha K.; Maureen O'Shea-Stone; heidi_riddle@fws.gov; Dyke, Steve R.; Link, Greg W.
Cc: Tara Corbett; Chris McCreedy; Emily Cooper
Subject: RE: Badger Wind Project - Grassland Assessment and Project Update Meeting Scheduling
Attachments: RE: data sharing agreement/data layers from NDGF

Please reconsider the attached email I sent to Chris McCreedy in Feb 2020.
I currently cannot access my desktop computer but hopefully tomorrow I can send our base raster layer for native prairie (a.k.a. unbroken grassland). Note the native prairie micro layer (per attached email) is a product of our base raster layer and is publicly available on the GIS Hub.
Thanks,
Sandy

From: Mueller, Elisha K. <ekmueller@nd.gov>
Sent: Monday, November 2, 2020 10:35 AM
To: Maureen O'Shea-Stone <moshea-stone@atwell-group.com>; heidi_riddle@fws.gov; Johnson, Sandra K. <sajohnson@nd.gov>; Dyke, Steve R. <sdyke@nd.gov>; Link, Greg W. <glink@nd.gov>
Cc: Tara Corbett <tcorbett@atwell-group.com>; Chris McCreedy <cmccreedy@atwell-group.com>; Emily Cooper <ecooper@atwell-group.com>
Subject: RE: Badger Wind Project - Grassland Assessment and Project Update Meeting Scheduling

I made a few edits below. Sandy Johnson is our GIS guru though, and if there is anything I may have missed on the GIS/impact analysis, she may jump in.

Thanks.

From: Maureen O'Shea-Stone <moshea-stone@atwell-group.com>
Sent: Friday, October 30, 2020 7:29 PM
To: Mueller, Elisha K. <ekmueller@nd.gov>; heidi_riddle@fws.gov; Johnson, Sandra K. <sajohnson@nd.gov>; Dyke, Steve R. <sdyke@nd.gov>; Link, Greg W. <glink@nd.gov>
Cc: Tara Corbett <tcorbett@atwell-group.com>; Chris McCreedy <cmccreedy@atwell-group.com>; Emily Cooper <ecooper@atwell-group.com>
Subject: RE: Badger Wind Project - Grassland Assessment and Project Update Meeting Scheduling

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Elisha:

Thank you so much for your time this morning. Your feedback and information are most helpful. We are providing the following list of understanding points and action items from our discussion, just to make sure we adjourned our call on the same page.

Understanding Points:

1) NDGFD is responsible for conducting an analysis of the potential impacts of the project on wetland/waterfowl species, as well as grassland birds, and reports these results to the PUC.

The Public Service Commission (PSC) requests input on wind projects from approximately 30 different state and federal agencies, including NDGF. We evaluate the impacts of a wind project on wildlife and wildlife habitat using grassland nesting birds and waterfowl as indicator species.

2) You kindly provided us with contact information for Chuck Loesch, USFWS HAPET, to obtain the Local Siting Decision Support Tool (DST) used in the wetland/waterfowl impact analysis.

3) The grassland bird analysis depends on a quantitative estimate of ~~surface~~ impacts to unbroken grassland based on Shaffer et al. 2013 & Shaffer et al. 2019. This category of grassland includes pasture lands and hayfields, as long as they are unbroken.

4) The NDGFD's native grassland range datasets, based on the native grassland layer, will be the basis for the estimated impacts to grassland birds. The focus of the analysis will be impacts to unbroken grassland.

5) Evidence of tillage (breaking) can be integrated into the delineation of unbroken grassland. This evidence would comprise rock piling, visible furrows, or other physical indications of tilling. Land use history, in terms of past cropping in specific areas can also be collected and presented.

Given this, we propose the following action items:

1) Re-run the grassland assessment analysis, integrating our understanding of what types of grasslands can be considered unbroken, in order to provide additional information regarding tilling (breaking) in specific land areas within the preliminary construction easement for the project.

2) The grassland analysis will be conducted as a progressive discrimination exercise starting with the NDGFD native grassland layer, over-laid with the Prairie Pothole Joint Venture PUDL dataset (which we understand from our previous meeting is considered a more refined delineation of unbroken grassland). We will then overlay this with our aerial photography interpretation analysis of the PUDL dataset. Finally, the results of our field verification effort, in terms of visible evidence of tillage will be overlaid on these results. The ultimate goal would be to provide you with additional information regarding past tilling to add to your delineation of unbroken grassland.

3) The results of this analysis will be forwarded to you for review. We anticipate we will be able to complete this and return to you next week.

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Thank you again for your time and most helpful explanations.

All the best,
Maureen

Maureen O'Shea-Stone
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Elisha

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From: sajohnson@nd.gov
To: Chris McCreedy
Cc: Maureen O'Shea-Stone; Tara Corbett; Emily Cooper
Subject: Invitation to Download a File
Date: Wednesday, November 4, 2020 7:42:22 AM

Sandra K. Johnson from the Game and Fish Dept has invited you to download a file named NDGF Grassland Analysis.zip. The description of the file is as follows: NDGF Native/Unbroken Grassland Analysis. Base Raster Layers 2008 and 2014..

You can download the file using the following link: https://apps.nd.gov/itd/filetransfer/downloadByInvitation.htm?id=1-e6efbcf014be2754fffd8725ecc709fc

NDGF Base Raster layers for native/unbroken grassland and a pdf describing the methods. Neighborhood statistics layers publicly available on ND GIS Hub.

****
For security reasons, please do not forward this email to other persons. Doing so may allow unauthorized persons the ability to download the file as well.
****

****
This is an automated message. We are not able to respond to messages sent to this address. Please do NOT 'reply' to this message.
****

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From: Maureen O'Shea-Stone
To: Johnson, Sandra K.; Mueller, Elisha K.; Dyke, Steve R.; Riddle, Heidi L; drew_becker@fws.gov
Cc: Jonathan Baker; Emily Cooper; Tara Corbett; Chris McCreedy
Subject: RE: NDGF/ USFWS Badger Wind Project Update and Grassland Discussion 12-8-2020
Date: Monday, December 14, 2020 8:14:11 AM
Attachments: image001.png

Sandy,

Thank you so much for getting back to us We certainly appreciate your efforts and look forward to the additional information and guidance.

Best,
Maureen

Maureen O'Shea-Stone
Project Director
ATWELL, LLC
720.937.1359 Mobile
720.557.2918 Ext. 4224 Tel
3000 Center Green Drive | Suite 210 | Boulder, CO 80301

From: Johnson, Sandra K. <sajohnson@nd.gov>
Sent: Monday, December 14, 2020 7:26 AM
To: Maureen O'Shea-Stone <moshea-stone@atwell-group.com>; Mueller, Elisha K. <ekmueller@nd.gov>; Dyke, Steve R. <sdyke@nd.gov>; Riddle, Heidi L <heidi_riddle@fws.gov>; drew_becker@fws.gov
Cc: Jonathan Baker <JONBA@orsted.com>; Emily Cooper <ecooper@atwell-group.com>; Tara Corbett <tcorbett@atwell-group.com>; Chris McCreedy <cmccreedy@atwell-group.com>
Subject: RE: NDGF/ USFWS Badger Wind Project Update and Grassland Discussion 12-8-2020

Hi Maureen,
I will work on describing the approach we use to evaluate grassland at a local scale. I can't guarantee it will be before the Holidays but will try.
Thanks,
Sandy

Sandra Johnson
Conservation Biologist

701.328.6382 • sajohnson@nd.gov • gf.nd.gov

From: Maureen O'Shea-Stone <moshea-stone@atwell-group.com>
Sent: Wednesday, December 9, 2020 3:22 PM
To: Mueller, Elisha K. <ekmueller@nd.gov>; Johnson, Sandra K. <sajohnson@nd.gov>; Dyke, Steve R. <sdyke@nd.gov>; Riddle, Heidi L <heidi_riddle@fws.gov>; drew_becker@fws.gov
Cc: Jonathan Baker <JONBA@orsted.com>; Emily Cooper <ecooper@atwell-group.com>; Tara Corbett <tcorbett@atwell-group.com>; Chris McCreedy <cmccreedy@atwell-group.com>
Subject: NDGF/ USFWS Badger Wind Project Update and Grassland Discussion 12-8-2020

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On behalf of the Badger Wind Ørsted and Atwell teams, thank you all for your time and engagement in our interesting discussion yesterday. Your input and guidance will prove most helpful for building next-steps for the project.

We appreciate the offer made by Steve Dyke to put-together a formal communication describing the tools and approach you will consider acceptable for evaluating/categorizing grassland habitat in the project vicinity. This will be essential to support project siting refinements. This will also be a critical understanding as to what data source will ultimately be used by NDGF to assess impacts of the proposed project. If this could be provided before the winter holidays, it would be much appreciated.

All the best,
Maureen

Maureen O'Shea-Stone
Project Director
ATWELL, LLC
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3000 Center Green Drive | Suite 210 | Boulder, CO 80301

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From:	Mueller, Elisha K.
To:	Emily Cooper; Maureen O'Shea-Stone; Johnson, Sandra K.; Dyke, Steve R.; Riddle, Heidi L; drew_becker@fws.gov
Cc:	Jonathan Baker; Tara Corbett; Chris McCreedy
Subject:	RE: NDGF/ USFWS Badger Wind Project Update and Grassland Discussion 12-8-2020
Date:	Friday, December 18, 2020 9:21:05 AM
Attachments:	image001.png

Hi Emily,

The following edits should be made:

1. The Department recommended using all available tools for analysis. In January, we did not have the PUDL dataset, so we provided our grassland layer in an email from Sandy. (Second bullet on page 2)
2. The Department did not say proof of tillage could be provided by pointing it out on aerials exclusively. Aerial photography can be used as a tool to show discrepancy, but not all cases can be proven broken based on aerial photography alone. The Department brought this issue up on the call, stating there are areas that Atwell identified as broken prairie that the Department does not agree with and further proof would be needed. (Second to last bullet on page 3)
3. The Department has never said any amount of turbines on native prairie is too much or that there is a threshold on how many will be allowed. The Department only makes recommendations. It is the Public Service Commission that permits a project and it is them who decides whether a project has too many environmental impacts. The Department did share major concerns with the number of turbines placed on native prairie, concerns which we will share with PSC prior to a hearing. The Department also shared an estimate of the number of turbines that have broken native prairie over the last few years (approximately 5, with most projects moving all turbines off native prairie). (Top of page 4).

Thanks!
Elisha

From: Emily Cooper <ecooper@atwell-group.com>
Sent: Monday, December 14, 2020 5:03 PM
To: Maureen O'Shea-Stone <moshea-stone@atwell-group.com>; Johnson, Sandra K. <sajohnson@nd.gov>; Mueller, Elisha K. <ekmueller@nd.gov>; Dyke, Steve R. <sdyke@nd.gov>; Riddle, Heidi L <heidi_riddle@fws.gov>; drew_becker@fws.gov
Cc: Jonathan Baker <JONBA@orsted.com>; Tara Corbett <tcorbett@atwell-group.com>; Chris McCreedy <cmccreedy@atwell-group.com>
Subject: RE: NDGF/ USFWS Badger Wind Project Update and Grassland Discussion 12-8-2020

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Hi everyone –

Seconding Maureen's thanks – that will be a big help and we appreciate the guidance.

I am attaching draft meeting notes from the December 8 meeting. Please let us know if you have any edits or additions you would like us to incorporate.

Thank you!
Emily

Emily Cooper

ATWELL, LLC
3000 Center Green Drive | Suite 210 | Boulder, CO 80301
978.273.3275 Tel

From: Maureen O'Shea-Stone <moshea-stone@atwell-group.com>
Sent: Monday, December 14, 2020 8:14 AM
To: Johnson, Sandra K. <sajohnson@nd.gov>; Mueller, Elisha K. <ekmueller@nd.gov>; Dyke, Steve R. <sdyke@nd.gov>; Riddle, Heidi L <heidi_riddle@fws.gov>; drew_becker@fws.gov
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Subject: RE: NDGF/ USFWS Badger Wind Project Update and Grassland Discussion 12-8-2020

Sandy,

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Best,
Maureen

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Sent: Monday, December 14, 2020 7:26 AM
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<ekmueller@nd.gov>; Dyke, Steve R. <sdyke@nd.gov>; Riddle, Heidi L <heidi_riddle@fws.gov>; drew_becker@fws.gov
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Subject: RE: NDGF/ USFWS Badger Wind Project Update and Grassland Discussion 12-8-2020

Hi Maureen,
I will work on describing the approach we use to evaluate grassland at a local scale. I can't guarantee it will be before the Holidays but will try.
Thanks,
Sandy

Sandra Johnson
Conservation Biologist

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Sent: Wednesday, December 9, 2020 3:22 PM
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All the best,

Maureen

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Alan Plumeau

From: Mueller, Elisha K. <ekmueller@nd.gov>
Sent: Thursday, January 7, 2021 3:30 PM
To: Chris McCreedy; Maureen O'Shea-Stone; Emily Cooper
Cc: Johnson, Sandra K.; Dyke, Steve R.; Riddle, Heidi L
Subject: Guidance and Clarification
Attachments: Badger guidance letter.pdf; NDGF Approach to Identifying Grassland_Dec2020_DRAFT (002).pdf

Hi folks,

Attached to this email you will find some further guidance and clarification. I hope this is helpful & answers the questions you had brought to us at our last meeting.

Please feel free to reach out with any questions.

Elisha Mueller
Conservation Biologist

701.328.6348 • ekmueller@nd.gov • gf.nd.gov

NORTH Dakota | Game and Fish
Be Legendary.

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GOVERNOR Doug Burgum

DIRECTOR, Terry Steinwand
DEPUTY, Scott A. Peterson

"VARIETY IN HUNTING AND FISHING"

NORTH DAKOTA GAME AND FISH DEPARTMENT

100 NORTH BISMARCK EXPRESSWAY BISMARCK, NORTH DAKOTA 58501-5095 PHONE 701-328-6300 FAX 701-328-6352

January 5, 2021

Chris McCreedy
Senior Environmental Consultant
ATWELL, LLC

RE: Badger Wind Project, Logan and McIntosh counties, ND

Dear Mr. McCreedy:

Thank you for your continued coordination with the North Dakota Game and Fish Department (Department) on the proposed Badger Wind Project. Based on recent conversations, the Department would like to use this opportunity to provide clearer guidance.

Native prairie (prairie that has not been plowed or broken in any way) is the most endangered ecosystem in North Dakota and, as we are a grassland state, the majority of our native species are linked to prairie. Disturbance, fragmentation, and loss of native prairie have adversely impacted a wide variety of species and these negative impacts will only continue to compound as more development takes place on the landscape. The remaining tracts of unbroken prairie are becoming more and more vital to many declining bird and pollinator species. This habitat supports 30 or more of the 115 Species of Conservation Priority identified in the North Dakota State Wildlife Action Plan (Dyke et. al 2015) and for species of conservation priority, such as the Chestnut-collared Longspur (Model, Attachment 1) which has declined 86% or the Loggerhead Shrike which has declined 74% since 1974 (Rosenberg et. al 2016), the loss and fragmentation of native prairie in the project area may further negatively impact these declining species.

Wetlands are another productive wildlife habitat in North Dakota, supporting 54 Species of Conservation Priority, as well as a considerable number of waterfowl, shorebirds and cranes throughout the year. Though the project area includes only a small number of wetlands, the resources they provide are still of value to many of our native species. The USFWS's Habitat and Population Evaluation Team (HAPET) has developed a Local

Siting Decision Support Tool (DST) to estimate the number of duck pairs that are displaced based on research conducted in the Dakotas (Loesch et al. 2013, Loesch 2016). We highly recommend Atwell contact HAPET office to request the DST to evaluate project impacts on wetland resources.

Finally, though the Department believes the best way to protect our species of conservation priority is by taking a habitat-focused approach, we would also like to reiterate the following species-specific concerns.

- Nearly 31% of the entire Sharp-tailed Grouse population falls within North Dakota and declines to the state's population will likely lead to range-wide population declines. Sharp-tailed Grouse are a high-valued upland game bird, and because research indicated that prairie grouse may be adversely affected by energy development, it is vital that lek surveys be conducted to understand the risk associated with development.

- Bats are long-lived, reproduce slowly, and migrate long distances, making them particularly susceptible to wind development. Acoustic surveys should begin at a minimum two years pre-construction to assess the risk the project poses to local bat populations.

- The Whooping Crane's migration corridor centers along the east side of the Missouri River. The project falls within the 75% core migration corridor and the northwest corner is considered to be core stopover habitat. A considerable number of Whooping Cranes have been observed along the river to the west of the project and at Long Lake to the north and it is possible they use resources within the project boundary as well. Contact the US Fish and Wildlife Habitat and Population Evaluation Team (HAPET) in Bismarck to request the Whooping Crane model of predicted use of landscapes.

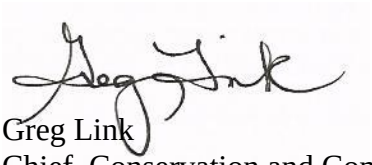
- The Bald Eagle population and number of nest sites is increasing significantly in North Dakota. The number of nest sites has increased from 10 known sites in the year 2000 to more than 300 in the year 2017. Due to the continual increase and selection of non-traditional nest sites, it is possible that Bald Eagle nests may be found anywhere across the state where large trees are present. Therefore, it is recommended that Atwell conduct searches for raptor nests during the breeding season to understand the risk associated with development.

The Department has a number of resources available for the benefit of the developer and consultant, including maps and information on native habitats (see Native Prairie Model, Attachment 2), priority areas, and sensitive species. Core native habitat layers are available via Esri REST Services https://gf.nd.gov/maps/data then selecting North Dakota Game and Fish Department Species Range and Habitats. The Department also recommends working with the U.S. Fish and Wildlife Service, as any state recommendations do not relieve the developer of its obligations to comply with any applicable federal regulations.

As we continue to address the challenges of stemming the decline of our state's most sensitive species, we cannot endorse or consent to the disturbance, fragmentation, and loss of the remaining high value habitats essential to Species of Conservation Priority without recommending that suitable replacement or offsets be applied back onto the landscape. Ensuring these habitats remain on the landscape is the only way to stem the decline of these species and prevent listings through the Endangered Species Act, which could impact both the state and its citizens. The Department has stressed the importance of following the best available science in determining impacts and voluntary offsets. The best science addressing North Dakota resources are Loesch et al. 2013 and Shaffer and Buhl 2016; these papers should be used to help guide Atwell in understanding impacts and developing a voluntary offset package, if one is deemed appropriate. For Further clarification on estimating grassland impacts, the Department is working on developing a guidance document which will also be shared.

As Orsted moves forward with this project, the Department requests to remain informed. To accurately analyze the project and provide valuable feedback to the PSC, it is important that the Department receives all documents, including wildlife surveys, spatial data, and any voluntary offsets being proposed 100 days prior to the hearing date.

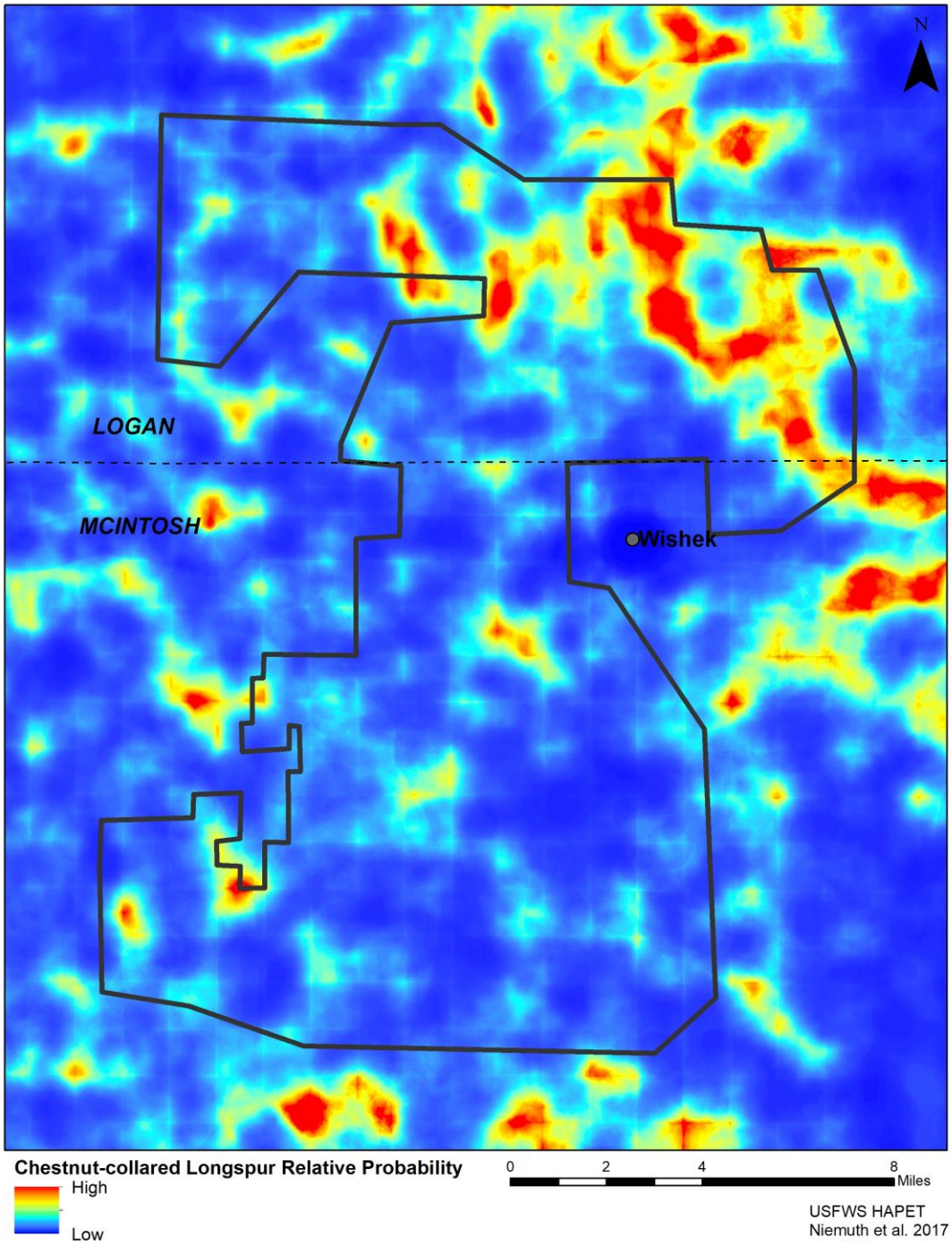
Sincerely,



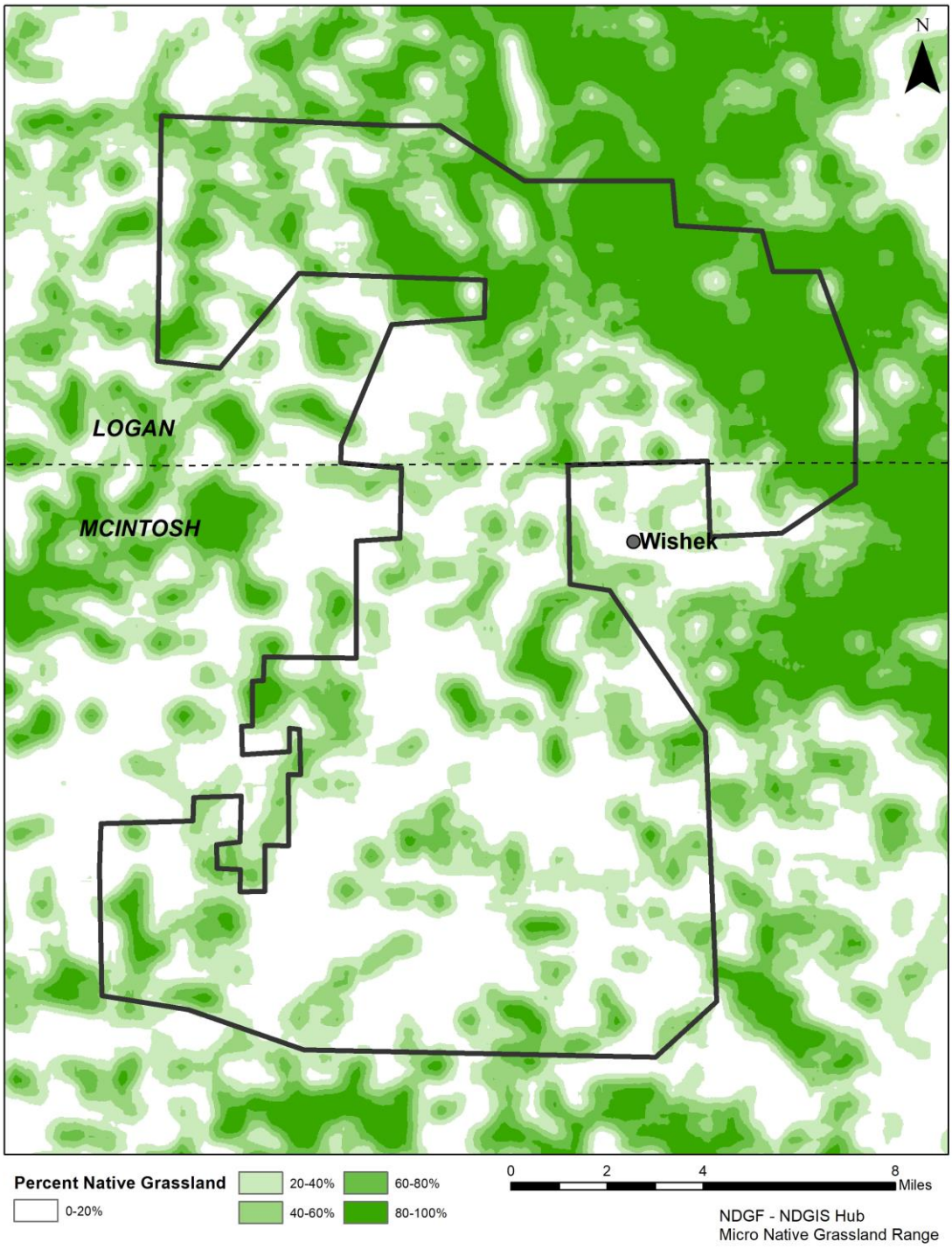
Greg Link
Chief, Conservation and Communications Division

Cc: Drew Becker, US Fish and Wildlife Service
ND Public Service Commission

Attachment 1. Chestnut-collared Longspur Model



Attachment 2. Native Prairie Model



Assessing Grassland at Various Scales

A Desktop Approach to Avoid and Minimize Impacts to Grassland
North Dakota Game and Fish Department
Draft December 21, 2020

INTRODUCTION

North Dakota's natural habitat was predominantly prairie – large open areas that have few trees and covered in grasses and forbs. Consequently, numerous grassland endemic wildlife species are dependent upon prairie to complete their life cycle. Over the past 150 years, the landscape of North Dakota has changed dramatically. Nearly 75% of the prairie has been converted for cropland, urban development, energy development, roads, and other human uses. Since 48 species of conservation priority and myriad other wildlife in North Dakota depend on grasslands to complete their full annual life cycle, it is important to identify where native prairie, or unbroken grassland, remains on the landscape. Recognize these analyses do not provide an assessment of habitat quality. Grasslands are a dynamic ecosystem, with vegetation composition, height, density and ground cover varying greatly from year to year depending on climate conditions and land use. Regardless of the visual quality or if it is invaded with nonnative or noxious species, limiting further unbroken grassland destruction and preventing additional fragmentation is essential to sustain North Dakota wildlife and species of conservation priority for the future.

There are numerous spatial products that can help determine extant unbroken grassland on the landscape. The NDGF has identified extant unbroken grassland by merging grassland classifications from land cover datasets, then subtracting cultivated land and CRP data to produce a base raster 30X30 meter pixel size of unbroken vs. broken grassland. **This layer will be considered by the NDGF to be the fundamental layer identifying native unbroken grassland (native prairie) unless demonstrated otherwise.** Recognizing there is some inaccuracy and inconsistency among datasets, a desktop approach can result in a vector dataset that may be more current and a more refined assessment of grassland at a local scale.

GRASSLANDS DEFINED

Prairie or grassland (used interchangeably herein) is usually described as tallgrass, mixed-grass or short-grass. However, this grassland assessment is intended to identify extant prairie, or prairie that has not been converted from its natural state to another landcover (cropland, roads, etc.). The result should be 3 types of grassland:

1) **Unbroken Grassland** – also referred to as "native prairie." This is grassland that, according to best available spatial information, has not been converted to another land type or land cover (e.g. cropland, developed, roads).
    - May be composed of native and/or non-native grasses and forbs.
    - May be heavily invaded with nonnative species such as Kentucky bluegrass or smooth brome, but it is still considered unbroken/native prairie if there is no cultivation history.

- May be grazed or otherwise “disturbed” with animals, hayed, or burned. Appropriate grazing can be very beneficial to grasses and forbs.
- May be fenced, contain structures (e.g. old homesteads, water tanks), or two-track roads (i.e. with grass between the tire ruts).
- May contain patches of shrubs (e.g. buffaloberry, chokecherry, silverberry bush) or woody draws.
- May contain natural wetlands or created (e.g. stock dams).

2) Restored Grassland – planted or reconstructed grassland. This typically occurs on previously cultivated land (broken prairie that was then used for crop production for several years). The most common type of restored grassland is CRP but other natural resource agencies operate grassland restoration programs.

- May be planted with native or non-native grass and/or forb species.
- May be grazed or otherwise “disturbed” with animals, hayed, or burned.
- May contain tree rows.
- May contain natural wetlands or created (e.g. stock dams).
- Enrolled land in restoration programs may remain in a grassland state after the contract has expired.

3) Unspecified or Inconclusive Grassland – may be unbroken or restored grassland, but spatial layers do not present a definitive answer.

- May be “go-back” prairie, where the land had been partially or totally converted from prairie to farmed land, but farming ceased, and the land naturally return to a vegetated state.
- May be previously cultivated land but could be enrolled in a grassland restoration program for which no spatial data is available.

All three types of grassland are important for wildlife. The NDGF, first and foremost, recommends that project development avoid siting on unbroken grassland. Impacts to other grassland types should be minimized or avoided to the extent possible.

PURPOSE

The purpose of this document is to describe three scales of grassland assessment (statewide, regional, and local) that can be used to minimize impacts to this important habitat during development projects. An example is included to illustrate how various raster and vector spatial layers may be utilized to refine and on-screen digitize the current extent of grassland types within a select project area. This is the process and categories used by the NDGF to produce a vector dataset of unbroken, restored, and unspecified or inconclusive grassland.

DRAFT

STATEWIDE SCALE ASSESSMENT

PHASE 1: *Use the Key Native Wildlife and Habitat Areas (item A) to help identify a project location with minimal impacts. Or, if general project area is known, use KNWHA to adjust specific project location to avoid and minimize impacts.*

(A) KEY NATIVE WILDLIFE AND HABITAT AREAS

The Key Native Wildlife and Habitat Areas layer was developed using the ND State Wildlife Action Plan Focus Areas, areas where unbroken grassland is ≥ 40% within a 4 square mile area, and areas where the accessibility for breeding duck pairs per square mile is greater than 60 ("Thunderstorm Map").

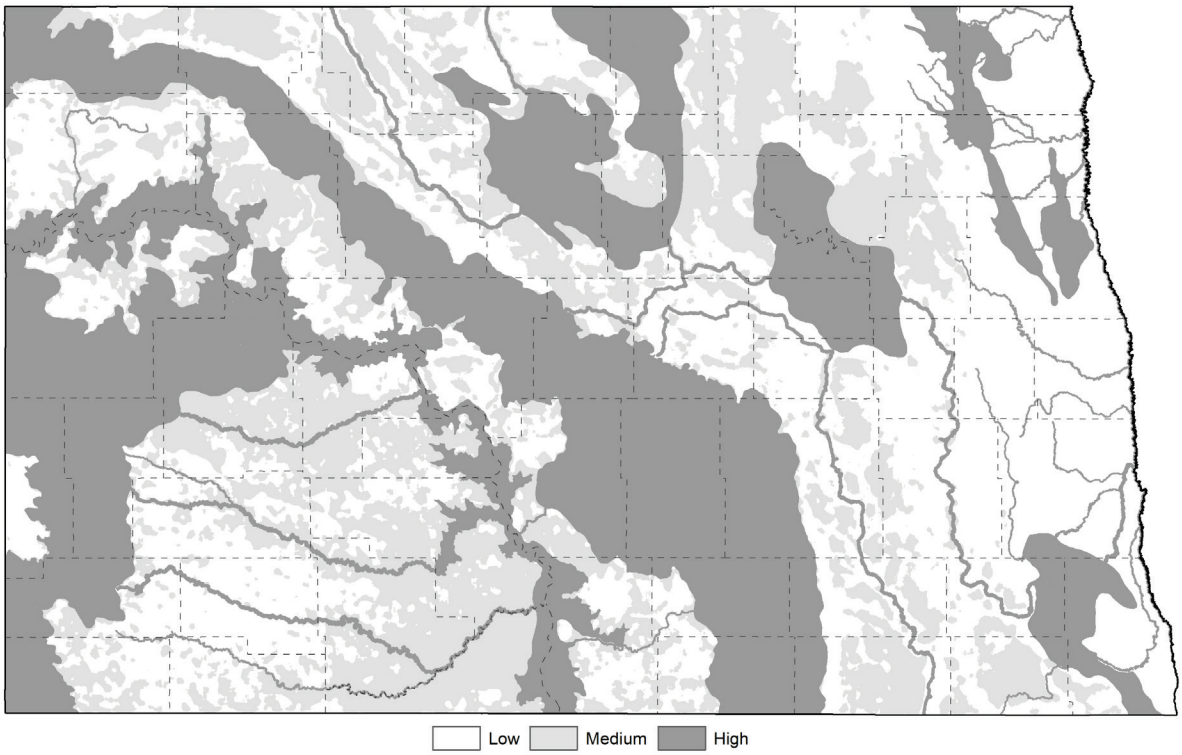
These areas do not represent complete avoidance or exclusion areas for development. Rather, the high and medium categories contain "*areas where animal or plant species that are unique or rare to this state would be irreversibly damaged"* (see PSC Administrative Rule). The map can be used as an initial scoping tool for project siting in areas where impacts to native wildlife and habitat will be minimized.

- Low Impact Native Wildlife and Habitat Areas – This spatial area represents lands that are primarily broken or disturbed land; land that has been converted from its native state to other uses, such as cropland and developed areas, and is a highly fragmented landscape. Offsets for impacts to wildlife and habitat are relatively low, but appropriate siting could often result in little to no impacts. Approximately 37% of the state is in the low category. Project development in the low category will have the least impact to key native wildlife and habitat.
- Medium Impact Native Wildlife and Habitat Areas – This spatial area represents lands that are partially broken or disturbed. These areas may encompass tracts that have or have not been converted from its native state to other uses, such as cropland and developed areas, therefore it is a more fragmented landscape. Offsets for impacts to wildlife and habitat may be of moderate nature, but appropriate siting can result in minimal impacts. Approximately 25% of the state is in the medium category. Project development in the medium category will have a higher likelihood of impacting key native wildlife and habitat than projects in the low impact areas.
- High Impact Native Wildlife and Habitat Areas – This spatial area represents a mostly intact and undisturbed landscape. These areas contain large tracts of land that have not been converted from their native state to other uses, such as cropland and developed areas, and are therefore a less fragmented landscape. Offsets for impacts to wildlife and habitat would be at their highest, but appropriate siting can result in moderate to minimal impacts. Approximately 37% of the state is in the high category. Project development in the high category will have the greatest impact to key native wildlife and habitat.

Spatial Data Access: *insert link, need to upload map and metadata to GIS Hub.*

DRAFT

Key Native Wildlife and Habitat Areas (KNWHA).



DRAFT

REGIONAL SCALE ASSESSMENT

PHASE 2: *Use grassland spatial products (item B) to help identify core tracts of grassland within the project area that were not depicted in the statewide KNWHA spatial product. Avoid and minimize siting project components within grassland tracts.*

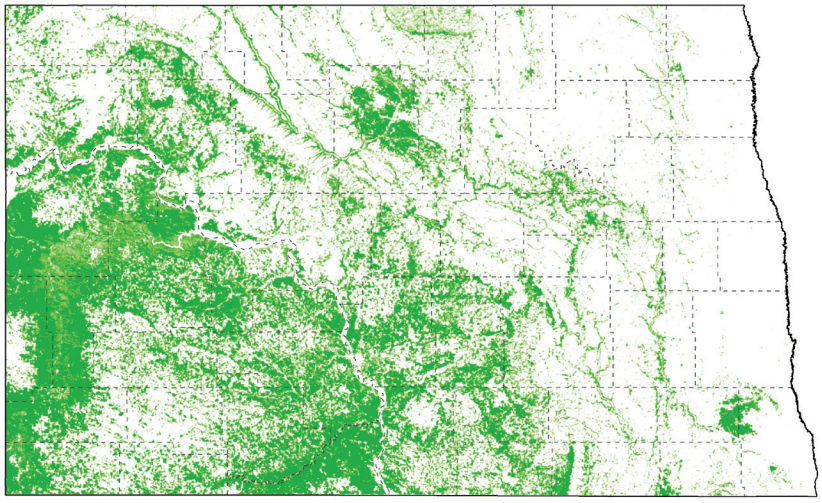
(B) MICRO NATIVE GRASSLAND RANGE

This product is derived from the NDGF Base Raster Native Grassland Layer. The purpose is to identify the distribution of core native grassland habitats in North Dakota. This product is not to be interpreted as a landuse/landcover classification. This dataset quantifies the amount of native grassland in a 160 acre neighborhood at each focal point of the native grassland dataset. Various thresholds were utilized to identify core native grassland, primary and secondary habitat, or fixed intervals of the percent of native grassland on the landscape.

Spatial Data Access:

- 2008 product: https://gishubdata.nd.gov/dataset/micro-native-grassland-range
- *need to upload 2014 product and metadata to GIS Hub*

Micro Native Grassland Range



DRAFT

LOCAL SCALE ASSESSMENT

PHASE 3: *Use the NDGF Base Raster Grassland as the foundation (Item D) and additional spatial products (items E, F, G, H, I) to perform a desktop analysis of the current extant grassland within the project area. This is the process used by the NDGF to produce a vector dataset of unbroken, restored, and unspecified or inconclusive grassland.*

(D) BASE RASTER GRASSLAND (NDGF 2008 and 2014 products)

These products are representative of extant unbroken prairie (uncultivated, native prairie). Grassland vegetation classes were extracted from foundation layers, reclassified and merged to create one raster layer identifying native grassland. NASS Cultivated Layers and FSA CRP polygons were used to subtract cells potentially misclassified as grassland to prevent overestimation and a representation of unbroken, native grassland. The final product is 30X30 meter raster layer.

Spatial layers available: *insert link when available*

(E) OTHER LANDCOVER

Numerous landcover products classify grassland differently. Consider examining all the following datasets to confirm consistencies or inconsistencies of grassland classification. Consistencies in grassland occurrence over time and over numerous landcovers suggest it may be unbroken grassland or restored ("go-back") grassland, even if landcovers use different classification terminoology (e.g. herbaceous, potentially undisturbed, disturbed grass, native vegetation, introduced vegetation, non-cultivated).

- National Land Cover Database. The U.S. Geological Survey (USGS), in partnership with several federal agencies, has developed and released four National Land Cover Database (NLCD) products over the past two decades: NLCD 1992, 2001, 2006, and 2011. These products provide spatially explicit and reliable information on the Nation's land cover and land cover change. The NLCD 2016 design aims to provide innovative, consistent, and robust methodologies for production of a multi-temporal land cover and land cover change database from 2001 to 2016 at 2–3-year intervals.
- World Wildlife Fund Plowprint Report. The Plowprint identifies remaining intact habitat and tracks grassland loss across the Great Plains region of the US and Canada.
- Grassland Assessment of North American Great Plains Migratory Bird Joint Ventures (2019). The goal of this assessment was to provide explicit planning and conservation delivery datasets to assist JV partnerships to stem grassland losses and avian population declines. We used recent time-series landcover data to spatially identify potentially undisturbed lands (PUDL) defined as grass/shrub/wetland complexes with no history of agricultural cultivation or development.
- USDA National Cultivated Layer. The Cultivated Layer is based on the most recent five years (2015-2019) of cultivated land.
- USDA-NASS North Dakota Cropland Data Layers. The USDA, NASS Cropland Data Layer (CDL) is a raster, geo-referenced, crop-specific land cover data layer. The CDL is produced using satellite imagery.
- USGS 2005 and 2010 GAP Landcover. This dataset combines the work of several different projects to create a seamless data set for the contiguous United States. Data from four regional Gap Analysis Projects and the LANDFIRE project were combined to make this dataset.
- USFWS 1996 and 2002 Landcover. Land classification to map upland waterfowl nesting cover in the North and South Dakota and northeast Montana portion of the Prairie Pothole Region. The

updated classification contains 9 classes and imagery dates range from the late 90's through 2002.

(F) FSA DATA PRODUCTS

USDA Farm Service Agency maintains farm and crop history data. Note: this information may not be readily available to the public.

- Conservation Reserve Program. CRP is a land conservation program administered by FSA. In exchange for a yearly rental payment, farmers enrolled in the program agree to remove environmentally sensitive land from agricultural production and plant species that will improve environmental health and quality. Contracts for land enrolled in CRP are 10-15 years in length. The long-term goal of the program is to re-establish valuable land cover to help improve water quality, prevent soil erosion, and reduce loss of wildlife habitat. In 2007, more than 3.3 million acres were enrolled in North Dakota and in 2020 about 1.2 million acres.
- Common Land Unit. CLU is the smallest unit of land that has a permanent, contiguous boundary, a common land cover and land management, a common owner and a common producer in agricultural land associated with USDA farm programs. CLU boundaries are delineated from relatively permanent features such as fence lines, roads, and/or waterways.

(G) AERIAL IMAGERY

Numerous aerial imagery products are available for North Dakota.

- National Agriculture Imagery Program (various years, 2003-2020). NAIP acquires aerial imagery during the agricultural growing seasons in the continental U.S. A primary goal of the NAIP program is to make digital ortho photography available to governmental agencies and the public within a year of acquisition.
- Other State Imagery. FSA Aerial Photography 1957-1962, USGS Aerial Photography 1995-1998, and various other state or regionally collect aerial imagery for various years. See 'imagery' on the GIS Hub Data Portal or the ND State Water Commission Aerial Imagery Map Service.

(H) LiDAR

LiDAR-Derived Elevation Data, ND State Water Commission.

(I) GRASSLAND BIRD CONSERVATION AREAS

The USFWS Habitat and Population Evaluation Team (HAPET) developed a conceptual model for Grassland Bird Conservation Areas (GBCAs). Maps of GBCAs were created to be decision support tools to be used by managers to target future conservation at the largest grassland patches with the smallest perimeter to area ratio (the greatest "blockiness") to efficiently benefit area sensitive grassland bird species.

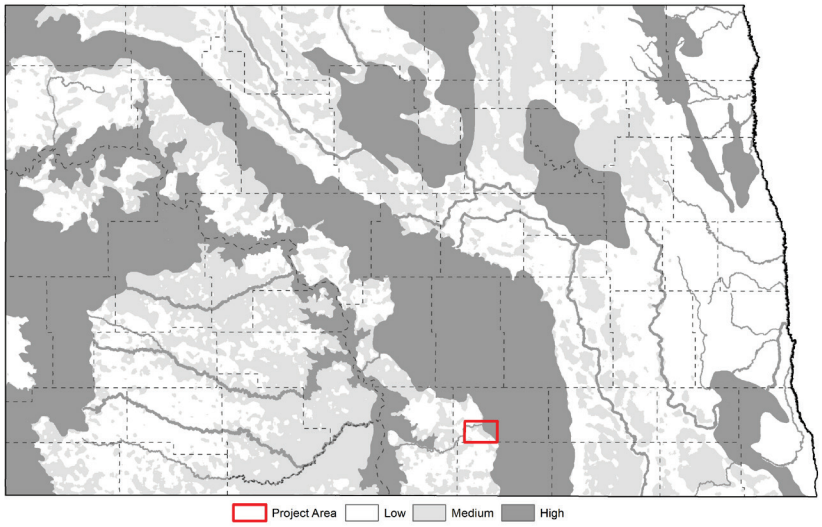
- Type III Grassland Bird Conservation Areas are used in the Avian-Impact Offset Method. All grassland is represented in the model, including CRP.
    - Shaffer, J. A., Loesch, C. R., and Buhl, D. A. 2019. Estimating offsets for avian displacement effects of anthropogenic impacts. *Ecological Applications* 29(8):e01983 10.1002/eap.1983
    - Rex R. Johnson, R. R., Granfors, D. A., Niemuth, N. D., Estey, M. E., and Reynolds, R. E. 2010. Delineating Grassland Bird Conservation Areas in the U.S. Prairie Pothole Region. *Journal of Fish and Wildlife Management* 1 (1): 38–42. doi: https://doi.org/10.3996/JFWM-022

Spatial Data Access: contact HAPET office in Bismarck

GRASSLAND ASSESSMENT EXAMPLE

PHASE 1: Statewide Scale

a) The red outline represents a proposed wind energy project. The total project area is 85,000 acres but the final turbine layout will not span the entire project area.

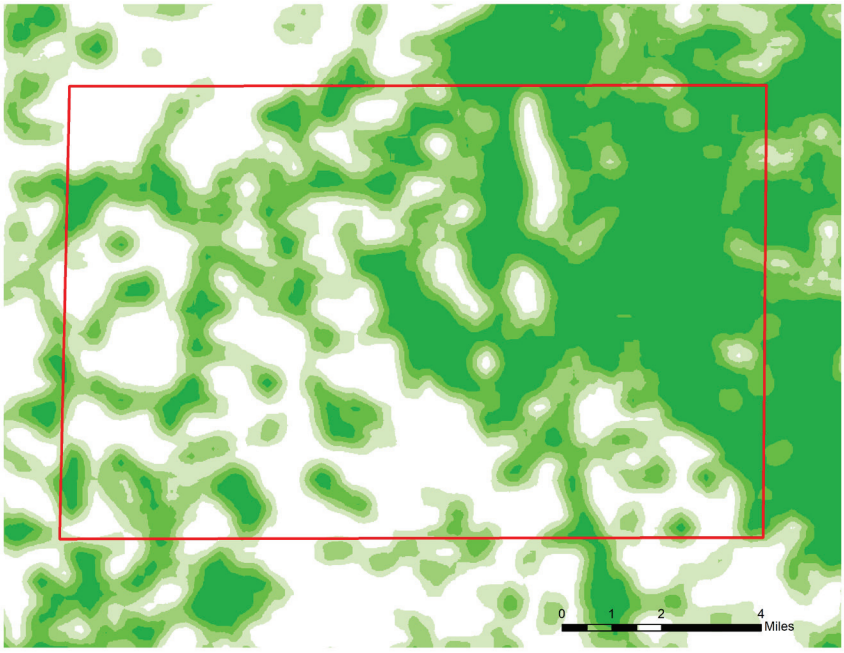


b) The project area includes similar spatial amount of all 3 categories of Key Native Wildlife and Habitat Areas.

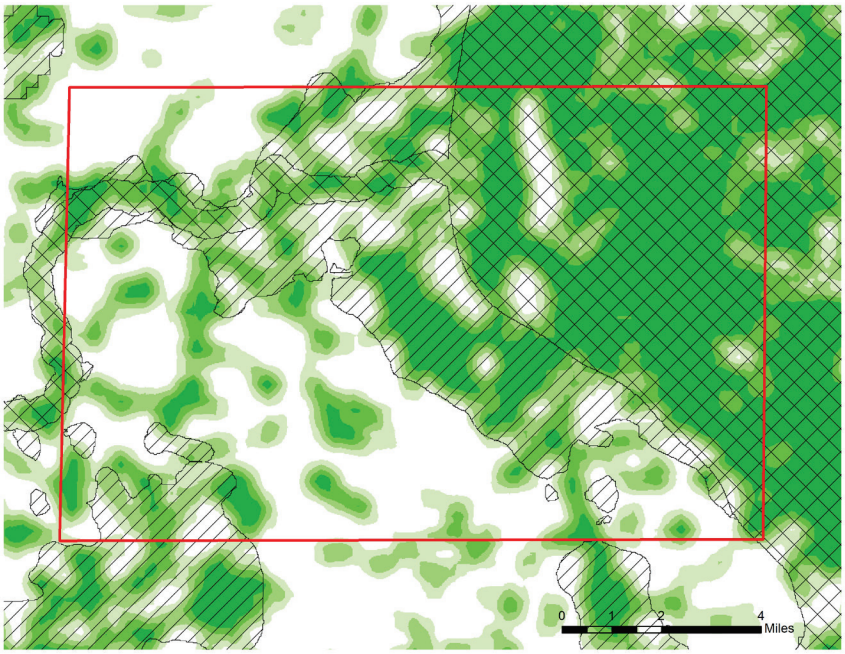


PHASE 2: Regional Scale

a) Micro Native Grassland Range shows a large area of relatively contiguous unbroken grassland in the northeast portion of the project area.

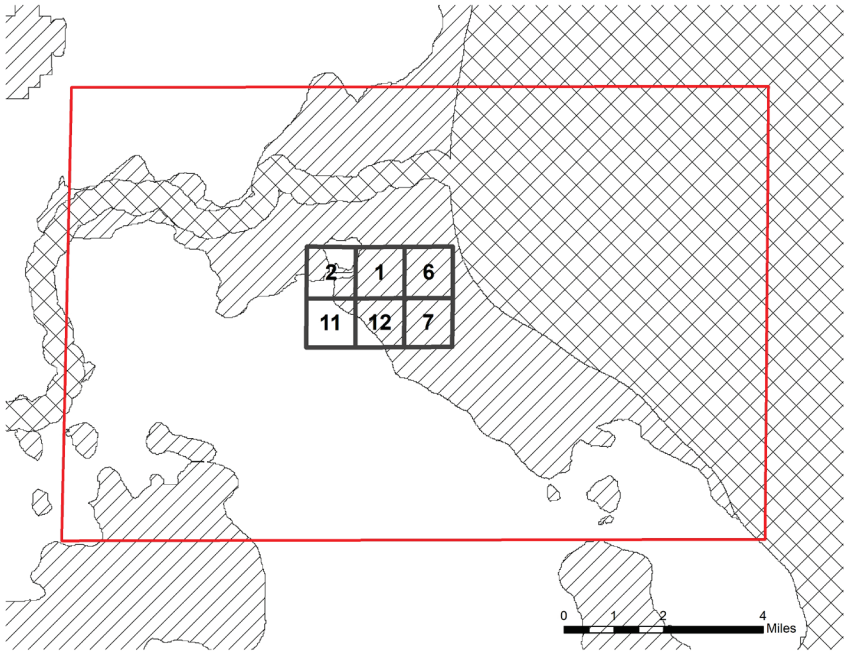


b) Cross hatch represents High KNWHA. Diagonal lines represent Medium KNWHA. Areas with no lines represent Low KNWHA.



PHASE 3: Local Scale

a) Digitize extant grassland within the project area using additional data layers. For this example, six contiguous sections (2X3 miles) were selected in the center of the project area.

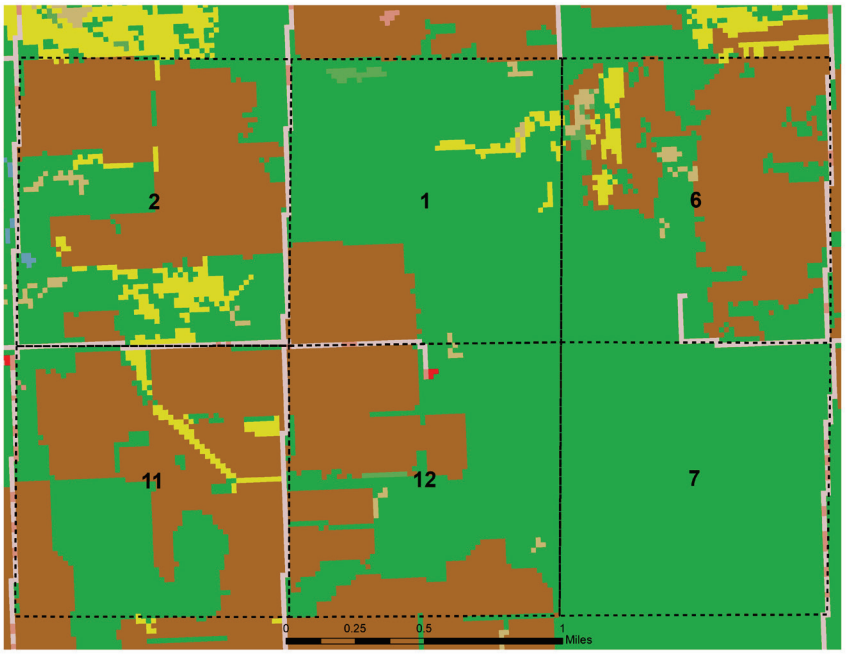


b) The fundamental layer is the NDGF Grassland Base Raster. This is what the NDGF identifies as unbroken grassland, unless the grassland assessment demonstrates otherwise.

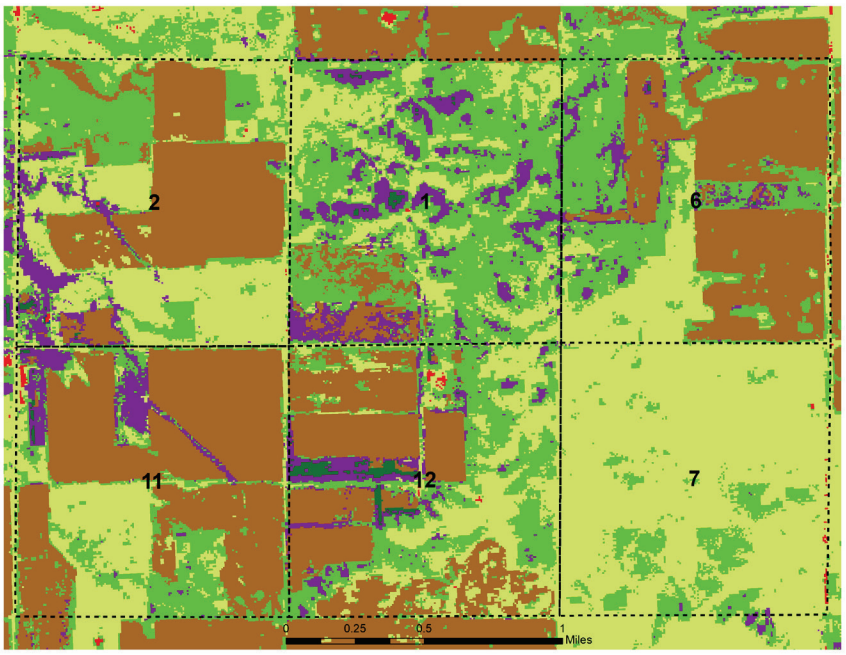


c) Examine other landcovers. Consistencies in grassland occurrence over time and over numerous landcovers suggest it may be unbroken grassland or possibly restored (“go-back”) grassland, even if landcovers use different classifications (e.g. herbaceous, potentially undisturbed, disturbed grass, native vegetation, introduced vegetation, non-cultivated).

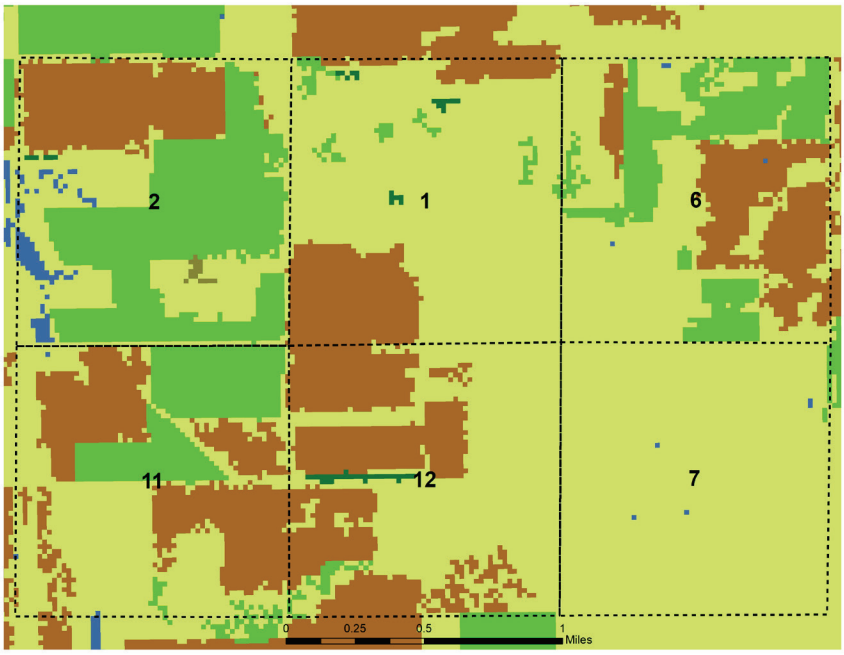
(i) NLC 2016. Green is herbaceous (grassland), yellow is hay/pasture, brown is cultivated crop.



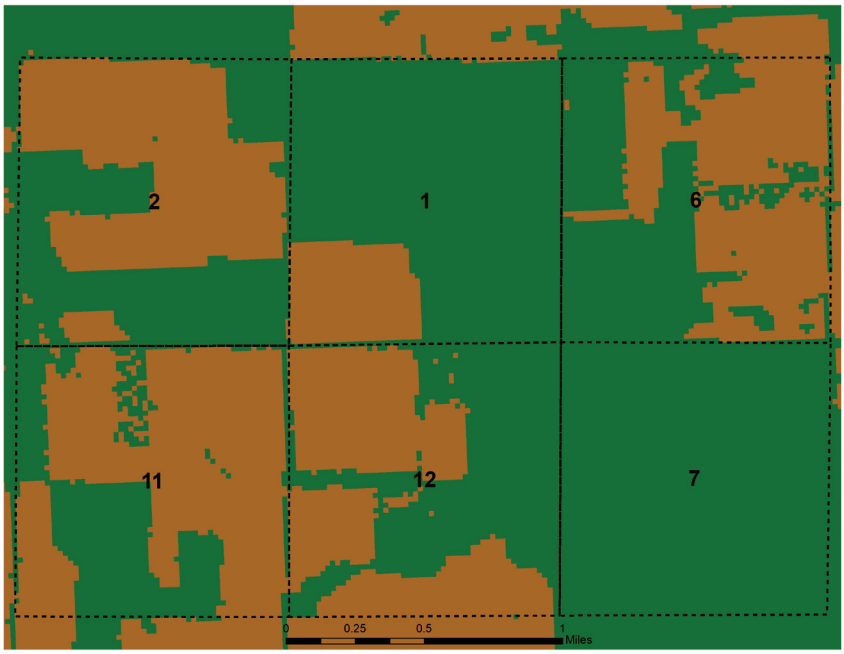
(ii) PUDL. Light green is potentially undisturbed grass, dark green is disturbed grass, purple is shrub, brown is cultivated crop.



(iii) USFWS 2002. Light green is native vegetation, dark green is introduced vegetation, brown is cropland.

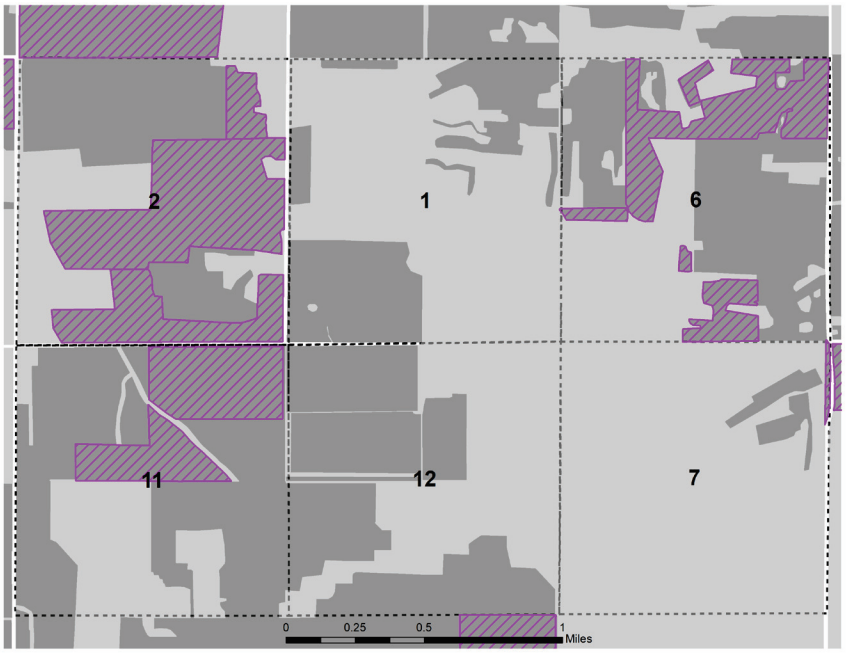


(iv) National Cultivated Layer 2019. Green is non-cultivated and brown is cultivated.



d) Use other polygon datasets such as CRP determine if grassland areas have a cropping history.

Purple diagonal line is CRP. Dark gray may have a cropping history, light gray is undetermined and therefore may not have a cropping history.

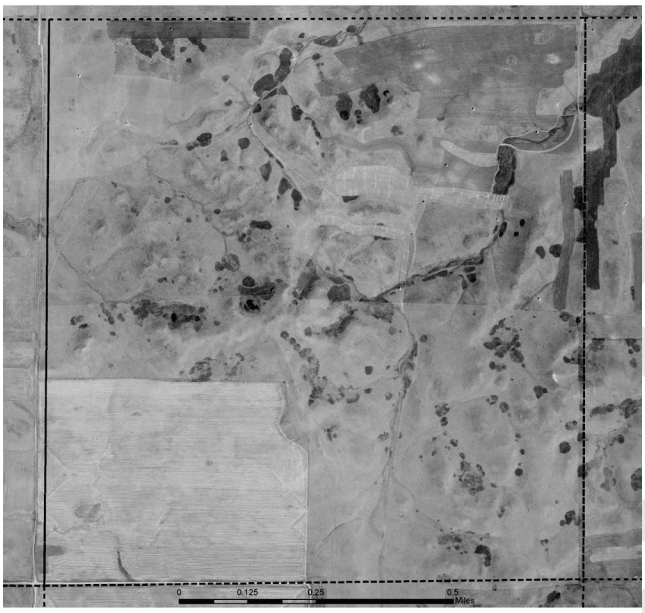


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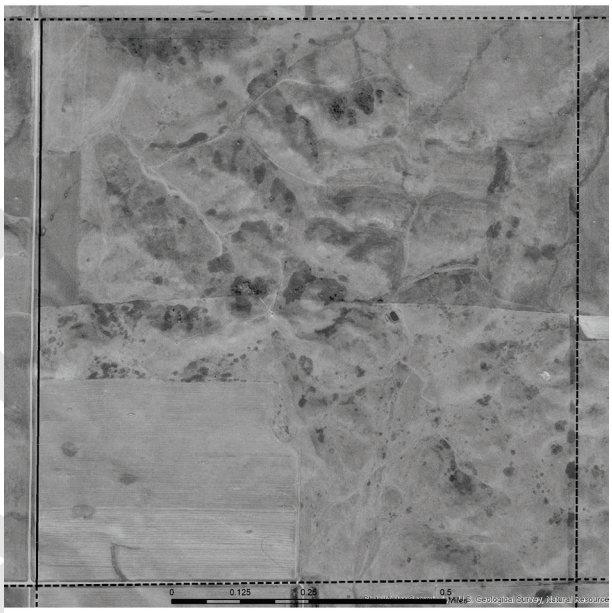
e) Use aerial imagery and LiDAR to examine areas with inconsistencies.

(i) Example: There are inconsistencies in Section 1. The NDGF Grassland Base raster, and some other landcovers, classify the NE quarter as unbroken prairie. The Cultivated Layer classifies it as non-cultivated, but some landcover (PUDL) and the CLU database indicates it may have been cultivated or disturbed at some point in time.

1957/1963. Farming activity visible in NE quarter.



1995/1998. No farming activity visible in NE quarter.



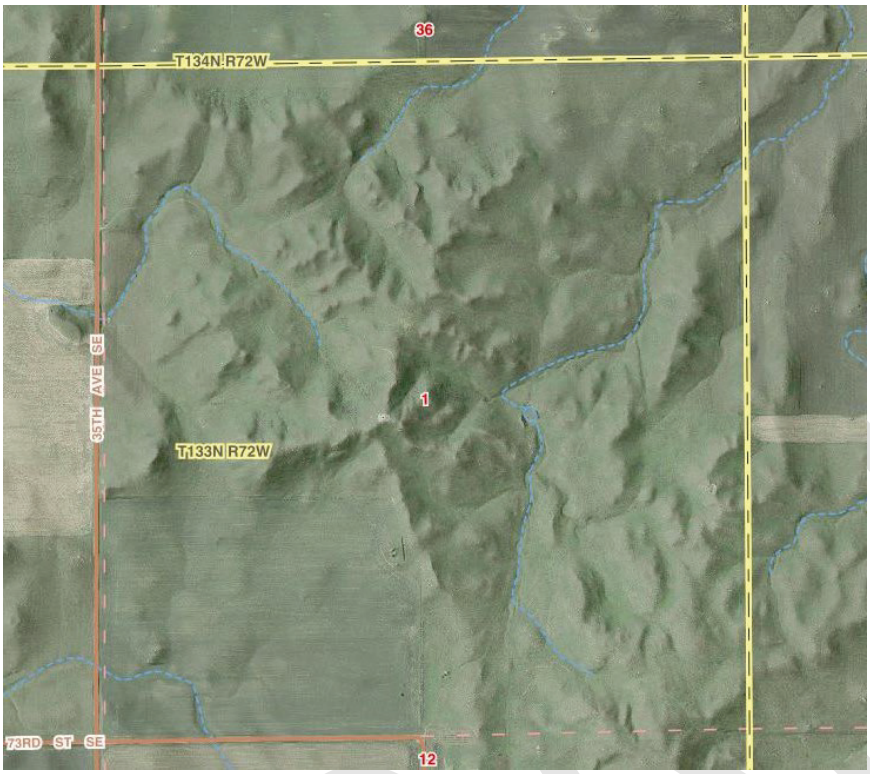
2003. Farming activity visible in NE quarter.



2020. Some farming activity visible in NE quarter.



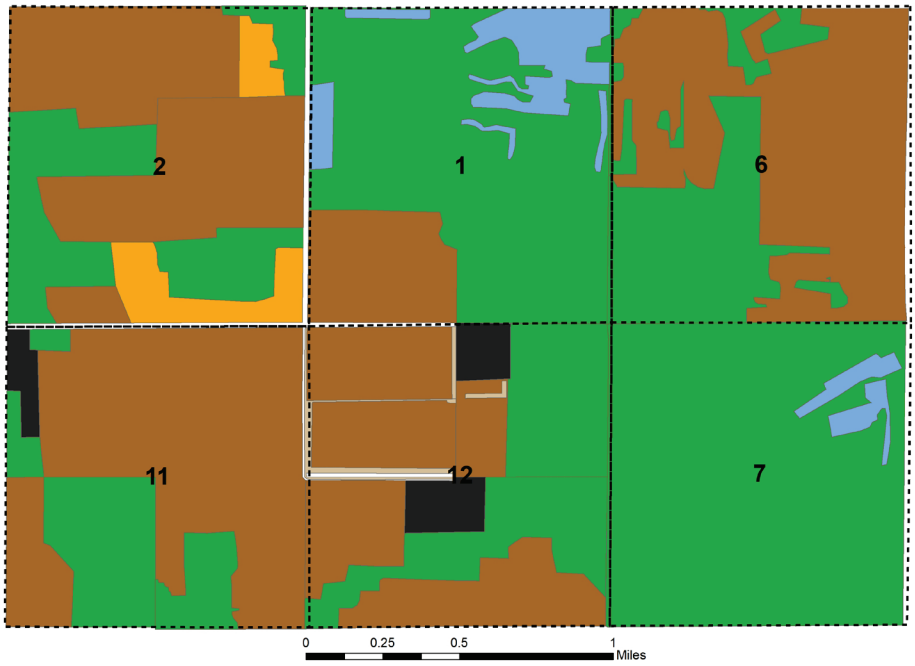
(ii) LiDAR



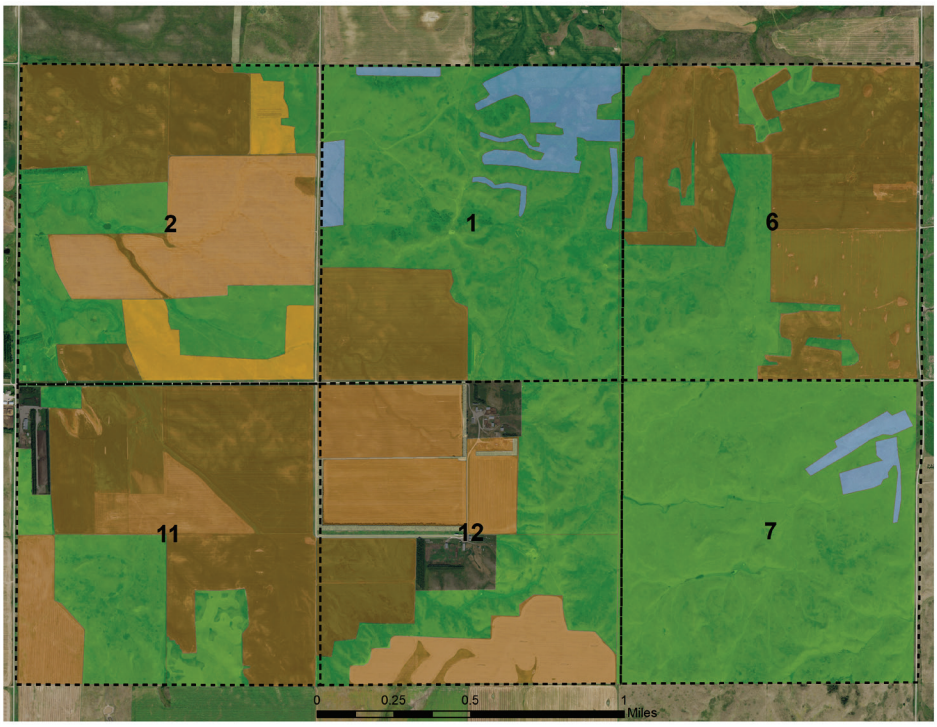
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GRASSLAND ASSESSMENT FINAL PRODUCT

The result of the desktop exercise is a vector dataset of unbroken grassland (green), restored grassland (orange), unspecified or inconclusive grassland (blue), active cropland (brown), and farmsteads (black).



Grassland assessment overlaid on 2020 aerial imagery.



From:	Maureen O'Shea-Stone
To:	Mueller, Elisha K.; heidi_riddle@fws.gov; Johnson, Sandra K.; Dyke, Steve R.; Link, Greg W.; drew_becker@fws.gov
Cc:	Tara Corbett; Chris McCreedy; Emily Cooper
Subject:	Badger Wind Project - Revised Grassland Assessment and Project Update Meeting Notes
Date:	Monday, January 11, 2021 1:48:00 PM
Attachments:	20201208_NDGF_USFWS_Badger Wind_Meeting Notes_Revised_1-11-2021.pdf

Elisha,

Attached please find the meeting notes from our December 8, 2020 meeting about the Badger Wind project. These have been revised to integrate comments you forwarded on 12-18-2020.

We would be happy to arrange for another meeting to review the non-grassland surveys and results that have been conducted to-date.

I am sure we will be in touch soon as we process the guidance your forwarded on January 7, 2021.

Best,
Maureen

Maureen O'Shea-Stone
Project Director
ATWELL, LLC
720.937.1359 Mobile
720.557.2918 Ext. 4224 Tel
3000 Center Green Drive | Suite 210 | Boulder, CO 80301

MEETING NOTES

Project: **Badger Wind Project**
Ørsted Onshore North America

Host/Organizer: Emily Cooper, Atwell

Meeting Date: December 8, 2020

Purpose: **NDGF/ USFWS Badger Wind Project Update and Grassland Discussion**

Attendees and Introductions

Maureen O'Shea-Stone, Atwell Botanist

Emily Cooper, Atwell Project Manager

Chris McCreedy, Atwell Biologist

Tara Corbett, Atwell Permitting

Sam Lodge, Ørsted Wind Analyst

Jon Baker, Ørsted Project Developer

Nicki Lindsey, Ørsted Wind Analyst

Elisha Mueller, NDGF Wind Projects Coordinator

Steve Dyke, NDGF Conservation Biologist

Sandra Johnson, NDGF Biologist

Heidi Riddle, North Dakota Ecological Services, Biologist USFWS

Drew Becker, North Dakota Ecological Services Supervisor, USFWS

Meeting Summary

J. Baker provided an overview of the project.

- Project area has been modified to include where Ørsted has been able to obtain land agreements with enough connectivity between lands to allow for a viable project.
- Interconnection queue position is for 250 MW. Anticipating between 60-90 turbines, depending on turbine model selected.
- Anticipating close to final MISO results in early 2021 and planning to begin construction as early as Spring of 2022.

- Planning to submit PSC application in late Spring/ early Summer in 2021.

E. Cooper provided an overview of project study planning considerations and indicated the meeting's focus would be on the grassland analysis.

C. McCreedy provided an overview of non-grassland biology studies completed to-date and indicated that another meeting could be held at the request of the agencies to go over the results of other biology studies completed, if desired.

M. O'Shea-Stone provided a summary of Atwell's grassland assessment:

- Geospatial analysis was conducted using time-series aerial photographs and LandFire data. The aerial imagery analysis results were compared to the NDGF grassland dataset and the PPJV PUDL dataset.

- PUDL is based on spectral criteria of a satellite time-series dataset from 2008 to 2018. PUDL accuracy for grasslands is estimated to be 54 to 75 percent. The initial project layout was planned to try to avoid undisturbed areas to the degree feasible using PUDL as a basis.

- The aerial imagery analysis identified and removed active croplands first. The primary signature used to determine croplands was the presence of large numbers of narrow, parallel furrows.

- The historic record was then evaluated using with older imagery to distinguish broken and unbroken grasslands further. Roads, rock piles, and furrows were also identified to indicate evidence of tillage. Field verification was then completed to confirm evidence of tillage. There are places where the aerial analysis results for unbroken grassland disagreed with PUDL results.

- The results of the analysis indicate that in the study area, the PUDL dataset and the aerial analysis had high fidelity (82%) between grasslands generally, but less fidelity between what is considered broken and unbroken grasslands.

- The analysis identified 376 acres of unbroken grassland and 499 broken grassland in the study area.

- The study area used included a 300-foot buffer around turbines, 200-foot buffer around access roads and transmission line, and 150-foot buffer around crane path and collection lines.

Discussion:

- S. Johnson noted NDGF looks at a 300-meter buffer on turbines for indirect impacts from grasslands for birds. Roads are considered direct impacts but don't get evaluated for indirect impacts. The indirect impacts of 300 meters are based on the Shaeffer papers. Sandra is curious about northeast part of project and is interested in the intermingling of disturbed and undisturbed categories in the PUDL dataset. She wants to further discuss it with the PUDL developers. M. O'Shea-Stone indicated the initial analysis was completed to understand the relationship of different datasets to estimate the extent of broken/unbroken grassland.

- S. Johnson indicated the NDGF dataset overestimates unbroken grasslands but thinks PUDL underestimates.

- D. Becker joined and asked about habitat quality and if any assessment or evaluation was conducted. M. O'Shea-Stone indicated field verification efforts included collecting habitat data including information about livestock grazing, crop types, predominant plant species, and estimation of weed presence. She indicated NDGF had asked the focus of the analysis be on broken and unbroken verifications. S. Dyke indicated that in previous projects where there was a quality focus put on grasslands, they found it isn't always the best indicator, as different years can yield very different results. So, NDGF has moved to an approach to use "unbroken, native prairie" as the best surrogate and focus.

- E. Mueller said that there may be a need to look at small patch areas. Will have to drive in and verify what is unbroken. If things have no tillage history, rock piles aren't always the best indicator of tillage.

- E. Cooper indicated feedback is needed regarding what approach to use so that the project can move forward. E. Mueller said maybe there are a few areas where differences arise. S. Dyke said he was not aware of comparisons previously completed. S. Johnson thinks other tools could be used. NDGF staff recommended using all available tools for this analysis.

- S. Dyke said it's incumbent on the NDGF staff to get back to the Ørsted team about what to do.

- E. Mueller said they would look at the final project and then S. Johnson can look at resources and then they could come to an agreement. Proof of tillage could be provided by aerial interpretation and other information. Aerial photography is a tool that can be used to show discrepancies, but not all cases where there are discrepancies can be proven by aerial photography alone. NDGF staff specifically noted disagreement with some areas

identified in the aerial photography analysis as broken prairie and that further proof of tillage would be required.

- E. Cooper asked for clarification about what tool or tools will be used to assess the project and mitigation? NDGF said that regardless of what tools are used, all tools are going to show that the northeast area of the project has a lot of grassland (broken and unbroken).
- While NDGF staff shared that other wind projects recently permitted in North Dakota have had an average of five wind turbines placed in broken grasslands and that most projects have avoided wind turbine placement in native (i.e. unbroken) prairie, they noted there is no threshold on how many turbines may be allowed in unbroken grassland. [NDGF had noted in a previous call (10-30-2020) that their responsibility is limited to recommendations to the Public Service Commission (PSC) that permits a project. PSC alone decides whether a project has too many environmental impacts.] NDGF expressed concerns with the number of turbines (16) in the preliminary layout located in grasslands, with some in what appeared to be unbroken prairie, and that these concerns would be shared with PSC prior to a hearing, should revised project plans retain this turbine layout.
- S. Dyke indicated NDGF should regroup internally and then provide a formal correspondence to Ørsted, putting NDGF input on paper. NDGF recognizes that they need to provide clearer input about what tools to use so that the project has clearer guidance.
- H. Riddle wanted to make sure USFWS easements have been considered and E. Cooper confirmed the project has taken easements into account.
- J. Baker indicated another turn of layout will be forthcoming and will incorporate comments of this call and follow-up guidance.

The meeting adjourned.

From:	Mueller, Elisha K.
To:	Maureen O'Shea-Stone; heidi_riddle@fws.gov; Johnson, Sandra K.; Dyke, Steve R.; Link, Greg W.; drew_becker@fws.gov
Cc:	Tara Corbett; Chris McCreedy; Emily Cooper
Subject:	RE: Badger Wind Project - Revised Grassland Assessment and Project Update Meeting Notes
Date:	Wednesday, January 13, 2021 10:25:11 AM

Hi Maureen

In the minutes you have:
"While NDGF staff shared that other wind projects recently permitted in North Dakota have had an average of five wind turbines placed in broken grasslands…"

I cannot tell if there is still confusion or if this wording is just a little unclear. As I mentioned in the meeting and in my last email– the estimation of 5 turbines in native prairie is what we have seen **all together** over the past few years, over several different projects. That number is not an average. Further, I believe you meant unbroken (rather than broken).

Please feel free to call if there is still any confusion.

Elisha

From: Maureen O'Shea-Stone <moshea-stone@atwell-group.com>
Sent: Monday, January 11, 2021 2:48 PM
To: Mueller, Elisha K. <ekmueller@nd.gov>; heidi_riddle@fws.gov; Johnson, Sandra K. <sajohnson@nd.gov>; Dyke, Steve R. <sdyke@nd.gov>; Link, Greg W. <glink@nd.gov>; drew_becker@fws.gov
Cc: Tara Corbett <tcorbett@atwell-group.com>; Chris McCreedy <cmccreedy@atwell-group.com>; Emily Cooper <ecooper@atwell-group.com>
Subject: Badger Wind Project - Revised Grassland Assessment and Project Update Meeting Notes

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Elisha,

Attached please find the meeting notes from our December 8, 2020 meeting about the Badger Wind project. These have been revised to integrate comments you forwarded on 12-18-2020.

We would be happy to arrange for another meeting to review the non-grassland surveys and results that have been conducted to-date.

I am sure we will be in touch soon as we process the guidance your forwarded on January 7, 2021.

Best,
Maureen

Maureen O'Shea-Stone
Project Director
ATWELL, LLC
720.937.1359 Mobile
720.557.2918 Ext. 4224 Tel
3000 Center Green Drive | Suite 210 | Boulder, CO 80301

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Alan Plumeau

From: Mueller, Elisha K. <ekmueller@nd.gov>
Sent: Friday, January 15, 2021 11:56 AM
To: Maureen O'Shea-Stone
Subject: RE: Badger Wind Project - Revised Grassland Assessment and Project Update Meeting Notes

Hi Maureen,

I can discuss today before 3. Feel free to give me a call.

Elisha

From: Maureen O'Shea-Stone <moshea-stone@atwell-group.com>
Sent: Friday, January 15, 2021 12:38 PM
To: Mueller, Elisha K. <ekmueller@nd.gov>
Subject: RE: Badger Wind Project - Revised Grassland Assessment and Project Update Meeting Notes

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Hi Elisha,

Thanks for the note below. Honestly, this is obviously an on-going point of confusion on our part, based on the notes that we took during our December 8 call.

I wonder if you have time to discuss later today, or next week? Would also welcome some additional guidance on the materials you forwarded on January 7.

Best,
Maureen

Maureen O'Shea-Stone
Project Director
ATWELL, LLC
720.937.1359 Mobile
720.557.2918 Ext. 4224 Tel
3000 Center Green Drive | Suite 210 | Boulder, CO 80301

From: Mueller, Elisha K. <ekmueller@nd.gov>
Sent: Wednesday, January 13, 2021 10:25 AM
To: Maureen O'Shea-Stone <moshea-stone@atwell-group.com>; heidi_riddle@fws.gov; Johnson, Sandra K. <sajohnson@nd.gov>; Dyke, Steve R. <sdyke@nd.gov>; Link, Greg W. <glink@nd.gov>; drew_becker@fws.gov
Cc: Tara Corbett <tcorbett@atwell-group.com>; Chris McCreedy <cmccreedy@atwell-group.com>; Emily Cooper

<ecooper@atwell-group.com>
Subject: RE: Badger Wind Project - Revised Grassland Assessment and Project Update Meeting Notes

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Sent: Monday, January 11, 2021 2:48 PM
To: Mueller, Elisha K. <ekmueller@nd.gov>; heidi_riddle@fws.gov; Johnson, Sandra K. <sajohnson@nd.gov>; Dyke, Steve R. <sdyke@nd.gov>; Link, Greg W. <glink@nd.gov>; drew_becker@fws.gov
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Subject: Badger Wind Project - Revised Grassland Assessment and Project Update Meeting Notes

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Maureen

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Badger Wind Project Call with NDGF Meeting Notes **1-15-2021**

Participants:

Maureen O'Shea, Atwell Elisha Mueller, North Dakota Game and Fish (NDGF)

1) Elisha clarified a NDGF comment in the 12-8 meeting: approximately five turbines have been sited in unbroken prairie by other permitted wind projects in the last few years. NDGF requests avoidance of native prairie.

2) Guidance letter issued on 1-7-2021 was forwarded because NDGF was never asked for input on the proposed project boundary.

3) Data sources for determining unbroken grassland: NDGF native prairie dataset probably overestimates, the PUDL dataset likely underestimates.

4) Would be willing to workshop on next preliminary project layout to determine grassland status for infrastructure siting

5) Stated that the NDGF would never declare conclude a project has too many impacts to mitigate; will always offer voluntary offsets.

6) NDGF will do an impact analysis for notification to PSC. Will use these impact to, and near, native prairie. Urged Atwell to do the same for the project and include the results with submission of the proposed project layout

7) USFWS prefers to have voluntary offset summarized in BBCS, which needs to be final by the hearing.

8) NDGF not interested in calculating cost of voluntary impacts. Will agree to the area of impacts with developer and sign an MOU with third-party to restore X acres of habitat. MOU is part of PSC permit application.

9) No mitigation banks in ND. Potential third-party administrators of mitigation = Natural Resources Trust; Magnolia; Ducks Unlimited.

10) Developer can do restoration in-house. Elisha will forward draft documents with offset recommendations. Don't usually consider on-site mitigation. Must be at least 0.5 mile from project. Preferences to local landowners.

11) Stated NDGF goal of no offsets because no turbines on native prairie

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From:	Maureen O'Shea-Stone
To:	Mueller, Elisha K.; heidi_riddle@fws.gov; Johnson, Sandra K.; Dyke, Steve R.; Link, Greg W.; drew_becker@fws.gov
Cc:	Tara Corbett; Chris McCreedy; Emily Cooper
Subject:	RE: Badger Wind Project - Revised Grassland Assessment and Project Update Meeting Notes
Date:	Friday, January 15, 2021 5:53:42 PM
Attachments:	20201208_NDGF_USFWS_Badger Wind_Meeting Notes_Revised_1-15-2021.pdf

Elisha,

Thank you for your time this afternoon to discuss the confusion you noted in your previous email. We have revised the meeting notes with this understanding and attach here.

Best,
Maureen

Maureen O'Shea-Stone
Project Director
ATWELL, LLC
720.937.1359 Mobile
720.557.2918 Ext. 4224 Tel
3000 Center Green Drive | Suite 210 | Boulder, CO 80301

From: Mueller, Elisha K. <ekmueller@nd.gov>
Sent: Wednesday, January 13, 2021 10:25 AM
To: Maureen O'Shea-Stone <moshea-stone@atwell-group.com>; heidi_riddle@fws.gov; Johnson, Sandra K. <sajohnson@nd.gov>; Dyke, Steve R. <sdyke@nd.gov>; Link, Greg W. <glink@nd.gov>; drew_becker@fws.gov
Cc: Tara Corbett <tcorbett@atwell-group.com>; Chris McCreedy <cmccreedy@atwell-group.com>; Emily Cooper <ecooper@atwell-group.com>
Subject: RE: Badger Wind Project - Revised Grassland Assessment and Project Update Meeting Notes

Hi Maureen

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Please feel free to call if there is still any confusion.

Elisha

From: Maureen O'Shea-Stone <moshea-stone@atwell-group.com>
Sent: Monday, January 11, 2021 2:48 PM
To: Mueller, Elisha K. <ekmueller@nd.gov>; heidi_riddle@fws.gov; Johnson, Sandra K. <sajohnson@nd.gov>; Dyke, Steve R. <sdyke@nd.gov>; Link, Greg W. <glink@nd.gov>; drew_becker@fws.gov
Cc: Tara Corbett <tcorbett@atwell-group.com>; Chris McCreedy <cmccreedy@atwell-group.com>; Emily Cooper <ecooper@atwell-group.com>
Subject: Badger Wind Project - Revised Grassland Assessment and Project Update Meeting Notes

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Elisha,

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I am sure we will be in touch soon as we process the guidance your forwarded on January 7, 2021.

Best,
Maureen

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From:	Mueller, Elisha K.
To:	Emily Cooper; Maureen O'Shea-Stone; Johnson, Sandra K.; Dyke, Steve R.; Riddle, Heidi L; drew_becker@fws.gov
Cc:	Jonathan Baker; Tara Corbett; Chris McCreedy
Subject:	RE: NDGF/ USFWS Badger Wind Project Update and Grassland Discussion 12-8-2020
Date:	Friday, December 18, 2020 9:21:05 AM
Attachments:	image001.png

Hi Emily,

The following edits should be made:

1. The Department recommended using all available tools for analysis. In January, we did not have the PUDL dataset, so we provided our grassland layer in an email from Sandy. (Second bullet on page 2)
2. The Department did not say proof of tillage could be provided by pointing it out on aerials exclusively. Aerial photography can be used as a tool to show discrepancy, but not all cases can be proven broken based on aerial photography alone. The Department brought this issue up on the call, stating there are areas that Atwell identified as broken prairie that the Department does not agree with and further proof would be needed. (Second to last bullet on page 3)
3. The Department has never said any amount of turbines on native prairie is too much or that there is a threshold on how many will be allowed. The Department only makes recommendations. It is the Public Service Commission that permits a project and it is them who decides whether a project has too many environmental impacts. The Department did share major concerns with the number of turbines placed on native prairie, concerns which we will share with PSC prior to a hearing. The Department also shared an estimate of the number of turbines that have broken native prairie over the last few years (approximately 5, with most projects moving all turbines off native prairie). (Top of page 4).

Thanks!
Elisha

From: Emily Cooper <ecooper@atwell-group.com>
Sent: Monday, December 14, 2020 5:03 PM
To: Maureen O'Shea-Stone <moshea-stone@atwell-group.com>; Johnson, Sandra K. <sajohnson@nd.gov>; Mueller, Elisha K. <ekmueller@nd.gov>; Dyke, Steve R. <sdyke@nd.gov>; Riddle, Heidi L <heidi_riddle@fws.gov>; drew_becker@fws.gov
Cc: Jonathan Baker <JONBA@orsted.com>; Tara Corbett <tcorbett@atwell-group.com>; Chris McCreedy <cmccreedy@atwell-group.com>
Subject: RE: NDGF/ USFWS Badger Wind Project Update and Grassland Discussion 12-8-2020

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Hi everyone –

Seconding Maureen's thanks – that will be a big help and we appreciate the guidance.

I am attaching draft meeting notes from the December 8 meeting. Please let us know if you have any edits or additions you would like us to incorporate.

Thank you!
Emily

Emily Cooper

ATWELL, LLC
3000 Center Green Drive | Suite 210 | Boulder, CO 80301
978.273.3275 Tel

From: Maureen O'Shea-Stone <moshea-stone@atwell-group.com>
Sent: Monday, December 14, 2020 8:14 AM
To: Johnson, Sandra K. <sajohnson@nd.gov>; Mueller, Elisha K. <ekmueller@nd.gov>; Dyke, Steve R. <sdyke@nd.gov>; Riddle, Heidi L <heidi_riddle@fws.gov>; drew_becker@fws.gov
Cc: Jonathan Baker <JONBA@orsted.com>; Emily Cooper <ecooper@atwell-group.com>; Tara Corbett <tcorbett@atwell-group.com>; Chris McCreedy <cmccreedy@atwell-group.com>
Subject: RE: NDGF/ USFWS Badger Wind Project Update and Grassland Discussion 12-8-2020

Sandy,

Thank you so much for getting back to us We certainly appreciate your efforts and look forward to the additional information and guidance.

Best,
Maureen

Maureen O'Shea-Stone
Project Director
ATWELL, LLC
720.937.1359 Mobile
720.557.2918 Ext. 4224 Tel
3000 Center Green Drive | Suite 210 | Boulder, CO 80301

From: Johnson, Sandra K. <sajohnson@nd.gov>
Sent: Monday, December 14, 2020 7:26 AM
To: Maureen O'Shea-Stone <moshea-stone@atwell-group.com>; Mueller, Elisha K.

<ekmueller@nd.gov>; Dyke, Steve R. <sdyke@nd.gov>; Riddle, Heidi L <heidi_riddle@fws.gov>; drew_becker@fws.gov
Cc: Jonathan Baker <JONBA@orsted.com>; Emily Cooper <ecooper@atwell-group.com>; Tara Corbett <tcorbett@atwell-group.com>; Chris McCreedy <cmccreedy@atwell-group.com>
Subject: RE: NDGF/ USFWS Badger Wind Project Update and Grassland Discussion 12-8-2020

Hi Maureen,
I will work on describing the approach we use to evaluate grassland at a local scale. I can't guarantee it will be before the Holidays but will try.
Thanks,
Sandy

Sandra Johnson
Conservation Biologist

701.328.6382 • sajohnson@nd.gov • gf.nd.gov



From: Maureen O'Shea-Stone <moshea-stone@atwell-group.com>
Sent: Wednesday, December 9, 2020 3:22 PM
To: Mueller, Elisha K. <ekmueller@nd.gov>; Johnson, Sandra K. <sajohnson@nd.gov>; Dyke, Steve R. <sdyke@nd.gov>; Riddle, Heidi L <heidi_riddle@fws.gov>; drew_becker@fws.gov
Cc: Jonathan Baker <JONBA@orsted.com>; Emily Cooper <ecooper@atwell-group.com>; Tara Corbett <tcorbett@atwell-group.com>; Chris McCreedy <cmccreedy@atwell-group.com>
Subject: NDGF/ USFWS Badger Wind Project Update and Grassland Discussion 12-8-2020

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On behalf of the Badger Wind Ørsted and Atwell teams, thank you all for your time and engagement in our interesting discussion yesterday. Your input and guidance will prove most helpful for building next-steps for the project.

We appreciate the offer made by Steve Dyke to put-together a formal communication describing the tools and approach you will consider acceptable for evaluating/categorizing grassland habitat in the project vicinity. This will be essential to support project siting refinements. This will also be a critical understanding as to what data source will ultimately be used by NDGF to assess impacts of the proposed project. If this could be provided before the winter holidays, it would be much appreciated.

All the best,

Maureen

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MEETING NOTES

Project: **Badger Wind Project**
Ørsted Onshore North America

Host/Organizer: Emily Cooper, Atwell

Meeting Date: December 8, 2020

Purpose: **NDGF/ USFWS Badger Wind Project Update and Grassland Discussion**

Attendees and Introductions

Maureen O'Shea-Stone, Atwell Botanist

Emily Cooper, Atwell Project Manager

Chris McCreedy, Atwell Biologist

Tara Corbett, Atwell Permitting

Sam Lodge, Ørsted Wind Analyst

Jon Baker, Ørsted Project Developer

Nicki Lindsey, Ørsted Wind Analyst

Elisha Mueller, NDGF Wind Projects Coordinator

Steve Dyke, NDGF Conservation Biologist

Sandra Johnson, NDGF Biologist

Heidi Riddle, North Dakota Ecological Services, Biologist USFWS

Drew Becker, North Dakota Ecological Services Supervisor, USFWS

Meeting Summary

J. Baker provided an overview of the project.

- Project area has been modified to include where Ørsted has been able to obtain land agreements with enough connectivity between lands to allow for a viable project.
- Interconnection queue position is for 250 MW. Anticipating between 60-90 turbines, depending on turbine model selected.
- Anticipating close to final MISO results in early 2021 and planning to begin construction as early as Spring of 2022.

- Planning to submit PSC application in late Spring/ early Summer in 2021.

E. Cooper provided an overview of project study planning considerations and indicated the meeting's focus would be on the grassland analysis.

C. McCreedy provided an overview of non-grassland biology studies completed to-date and indicated that another meeting could be held at the request of the agencies to go over the results of other biology studies completed, if desired.

M. O'Shea-Stone provided a summary of Atwell's grassland assessment:

- Geospatial analysis was conducted using time-series aerial photographs and LandFire data. The aerial imagery analysis results were compared to the NDGF grassland dataset and the PPJV PUDL dataset.

- PUDL is based on spectral criteria of a satellite time-series dataset from 2008 to 2018. PUDL accuracy for grasslands is estimated to be 54 to 75 percent. The initial project layout was planned to try to avoid undisturbed areas to the degree feasible using PUDL as a basis.

- The aerial imagery analysis identified and removed active croplands first. The primary signature used to determine croplands was the presence of large numbers of narrow, parallel furrows.

- The historic record was then evaluated using with older imagery to distinguish broken and unbroken grasslands further. Roads, rock piles, and furrows were also identified to indicate evidence of tillage. Field verification was then completed to confirm evidence of tillage. There are places where the aerial analysis results for unbroken grassland disagreed with PUDL results.

- The results of the analysis indicate that in the study area, the PUDL dataset and the aerial analysis had high fidelity (82%) between grasslands generally, but less fidelity between what is considered broken and unbroken grasslands.

- The analysis identified 376 acres of unbroken grassland and 499 broken grassland in the study area.

- The study area used included a 300-foot buffer around turbines, 200-foot buffer around access roads and transmission line, and 150-foot buffer around crane path and collection lines.

Discussion:

- S. Johnson noted NDGF looks at a 300-meter buffer on turbines for indirect impacts from grasslands for birds. Roads are considered direct impacts but don't get evaluated for indirect impacts. The indirect impacts of 300 meters are based on the Shaeffer papers. Sandra is curious about northeast part of project and is interested in the intermingling of disturbed and undisturbed categories in the PUDL dataset. She wants to further discuss it with the PUDL developers. M. O'Shea-Stone indicated the initial analysis was completed to understand the relationship of different datasets to estimate the extent of broken/unbroken grassland.

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- D. Becker joined and asked about habitat quality and if any assessment or evaluation was conducted. M. O'Shea-Stone indicated field verification efforts included collecting habitat data including information about livestock grazing, crop types, predominant plant species, and estimation of weed presence. She indicated NDGF had asked the focus of the analysis be on broken and unbroken verifications. S. Dyke indicated that in previous projects where there was a quality focus put on grasslands, they found it isn't always the best indicator, as different years can yield very different results. So, NDGF has moved to an approach to use "unbroken, native prairie" as the best surrogate and focus.

- E. Mueller said that there may be a need to look at small patch areas. Will have to drive in and verify what is unbroken. If things have no tillage history, rock piles aren't always the best indicator of tillage.

- E. Cooper indicated feedback is needed regarding what approach to use so that the project can move forward. E. Mueller said maybe there are a few areas where differences arise. S. Dyke said he was not aware of comparisons previously completed. S. Johnson thinks other tools could be used. NDGF staff recommended using all available tools for this analysis.

- S. Dyke said it's incumbent on the NDGF staff to get back to the Ørsted team about what to do.

- E. Mueller said they would look at the final project and then S. Johnson can look at resources and then they could come to an agreement. Proof of tillage could be provided by aerial interpretation and other information. Aerial photography is a tool that can be used to show discrepancies, but not all cases where there are discrepancies can be proven by aerial photography alone. NDGF staff specifically noted disagreement with some areas

identified in the aerial photography analysis as broken prairie and that further proof of tillage would be required.

- E. Cooper asked for clarification about what tool or tools will be used to assess the project and mitigation? NDGF said that regardless of what tools are used, all tools are going to show that the northeast area of the project has a lot of grassland (broken and unbroken).
- NDGF staff estimate that other wind projects permitted in North Dakota in the last few years have located approximately five turbines in unbroken grassland. Most projects have avoided wind turbine placement in native (i.e. unbroken) prairie. There is no threshold on how many turbines may be allowed in unbroken grassland. [NDGF had noted in a previous call (10-30-2020) that their responsibility is limited to recommendations to the Public Service Commission (PSC) that permits a project. PSC alone decides whether a project has too many environmental impacts.] NDGF expressed concerns with the number of turbines (16) in the preliminary layout located in grasslands, with some in what appeared to be unbroken prairie, and that these concerns would be shared with PSC prior to a hearing, should revised project plans retain this turbine layout.
- S. Dyke indicated NDGF should regroup internally and then provide a formal correspondence to Ørsted, putting NDGF input on paper. NDGF recognizes that they need to provide clearer input about what tools to use so that the project has clearer guidance.
- H. Riddle wanted to make sure USFWS easements have been considered and E. Cooper confirmed the project has taken easements into account.
- J. Baker indicated another turn of layout will be forthcoming and will incorporate comments of this call and follow-up guidance.

The meeting adjourned.

Alan Plumeau

From: Mueller, Elisha K. <ekmueller@nd.gov>
Sent: Tuesday, January 19, 2021 3:12 PM
To: Maureen O'Shea-Stone
Subject: RE: our call last Friday
Attachments: Wetland Restoration for Energy Offsets_draft.docx; Grassland Reconstruction for Energy Offsets_draft ekm.docx

Follow Up Flag: Follow up
Flag Status: Completed

Hi Maureen,

Thank you for the reminder email. It has been on my list of to-do's but I have been in and out of meetings all day.

These are draft documents we have provided to companies assisting with other voluntary offsets in the state. These would likely be the same recommendations we would make if the developer for this project chooses to provide voluntary offsets for impacts to wildlife.

Elisha

From: Maureen O'Shea-Stone <moshea-stone@atwell-group.com>
Sent: Tuesday, January 19, 2021 3:00 PM
To: Mueller, Elisha K. <ekmueller@nd.gov>
Subject: our call last Friday

***** **CAUTION:** This email originated from an outside source. Do not click links or open attachments unless you know they are safe. *****

Elisha,

Thank you again for your time and our most helpful conversation last Friday. Was following-up to see if you could forward those two guidance documents we discussed?

Best,
Maureen

Maureen O'Shea-Stone
Project Director
ATWELL, LLC
720.937.1359 Mobile
720.557.2918 Ext. 4224 Tel
3000 Center Green Drive | Suite 210 | Boulder, CO 80301

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Wetland Restoration for Energy Development Offsets

Background

North Dakota is a top producer of coal, oil and gas, and wind energy. Increased demand for energy causes stress on the state's wildlife resources from direct and indirect impacts to habitat. Voluntary offset measures by energy developers can help alleviate these impacts. This document outlines the parameters of a wetland restoration program for offsetting impacts to wetlands as a result of energy development. Delivery of wetland restoration will be accomplished through funding assistance provided to willing landowners and is completely voluntary.

Wetland Restoration Parameters

Wetland restoration is defined as the return of a wetland and its functions to close approximation of its original condition as it existed prior to disturbance on a former or degraded wetland site. This would include, in most cases, restoring the natural hydrologic conditions by excavation and/or repair of a drained, ditched or tiled wetland basin. Because the wetlands are restored to offset for impacts resulting from an energy development project, the wetland will need to stay intact for the life of the specific development project.

I. Administrative Parameters

1. Eligible vendors:
    a. Registered with the North Dakota Secretary of State.
    b. Deliver all aspects of wetland restoration, including locating willing private landowners, execute and enforce the lease agreement(s), oversee contractors or excavators, and distribute payments.
2. Geographic constraints:
    a. Preference to local landowners within general vicinity of impact, but not within 0.5 miles of direct impact.
    b. Priority flowchart:
        i. Within county of impact, within same geological feature (i.e. Missouri Coteau)
        ii. Within county of impact, within different geological feature
        iii. Adjacent county, within same geological feature
        iv. Adjacent county, within different geological feature
        v. Non-adjacent county, within same geological feature
3. Lease agreements:
    a. Commensurate with projected length of impact.
    b. Notice of Agreement recorded on title.
4. Reporting requirements:
    a. For all candidate restorations, a written summary for plans and specifications, including but not limited to worksheets detailing the acreage and depth of each restored wetland, seeding list, management plan, and a map showing the project location and wetland boundaries must be submitted to NDGF for approval.

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5. Monitoring requirements:
    a. Verification the restoration was completed in year 1 and that it is not compromised in following years is required. See attachment 1 for the form that will be submitted during monitoring.
    b. Monitoring will take place between May and September. The two monitoring schedules are:
        i. Remote monitoring: Can include current year's aerial imagery verification or with photos submitted by landowner.
            1. Photo points will be designated by NDGF and photos will have to be submitted to both the third-party vendor and NDGF in years 3, 10, and 20.
        ii. Field monitoring: In-person field verification performed by third party or NDGF and photos will be submitted to both the third-party vendor and NDGF in years 1, 5, 15, and 25.

II. Biological Parameters

1. Size/Hydrology constraints:
    a. Minimum basin size: 1 acre
    b. Maximum basin size: 10 acres
    c. Wetlands within the 1-3-acre range should be prioritized.
    d. Restorations should be of temporary and seasonal wetlands (0.5-2.5 feet deep) only.
2. Location constraints:
    a. Prioritize wetlands within grasslands, but wetlands within croplands should not be omitted.
        i. Native grass/forb buffers are encouraged around wetlands within croplands but are not required. Interested landowners should contact NRCS to pursue buffer creations.
3. Wetland restoration criteria:
    a. Refer to and follow *NRCS Wetland Restoration Standard – 657*
    b. Additional useful information can be found in *Minnesota Wetland Restoration Guide – Blocking and Filling Surface Drainage Ditches*
4. Planning considerations:
    a. Refer to and follow *NRCS ND Wetland Restoration Workbook*, with the addition "Ditches will be filled for their entire length or 300 feet, whichever comes first. The fill will not exceed the elevation of the natural wetland sill, allowing 10 percent overfill for settling. Borrow material may be taken from the wetland basin but must be accomplished in a manner which does not compromise the wetland seal" per the (ND) United States Fish and Wildlife Service's Partners for Wildlife program.
        i. Recommend using Ditch Plug design only.

III. Landowner/Operator Parameters

1. Privately owned land only.

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2. Public access encouraged but not required.
3. Commitment to a wetland management plan (required):
    a. Mowing allowed during the first three years for weed control.
    b. Grazing prohibited the first four years of contract to allow vegetation establishment
    c. Managed grazing may occur after the first four years.
    d. No physical alteration permitted.
4. Offset payments:
    a. 100% cost-share for excavation work, seed mix, site preparation, seeding, and management treatments.
5. Buyout option:
    a. If an agreement is exited, landowner must make a prorated repayment to account for remaining agreement services no longer provided. The vendor must determine a new offset site to replace the remaining services of the previous agreement.
6. Agreement extensions or alternatives to provide additional environmental benefits and services past the term of the original agreement are optional based on mutual consent of both parties or other conservation program providers.

IV. Ineligible Practices

1. Permanent easements.
2. Land acquisition.
3. Restoration on public land.

V. Resources

USDA Natural Resources Conservation Service Wetland Restoration Standard
https://efotg.sc.egov.usda.gov/references/public/ND/ND_657_Standard.pdf

USDA Natural Resources Conservation Service ND Wetland Restoration Workbook
https://efotg.sc.egov.usda.gov/references/public/ND/ND_Wetland_Restoration_Workbook.xls

USDA Natural Resources Conservation Service Web Soil Survey
https://websoilsurvey.nrcs.usda.gov/app/

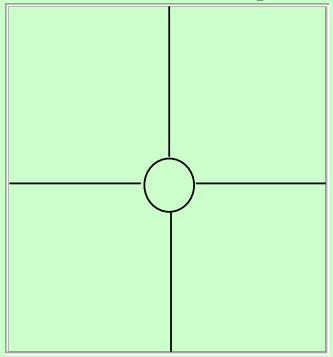
Minnesota Wetland Restoration Guide – Blocking and Filling Surface Drainage Ditches

https://bwsr.state.mn.us/sites/default/files/2019-01/appendix_4a-1_blocking_and_filling_surface_drainage_ditches.pdf

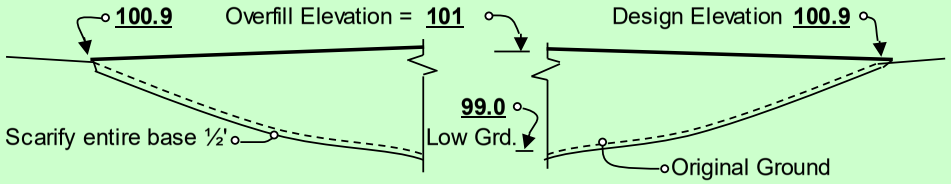
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Attachment 1

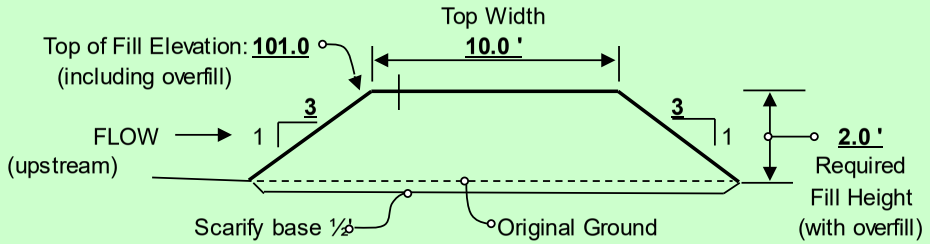
Location Map



Quarter = 0

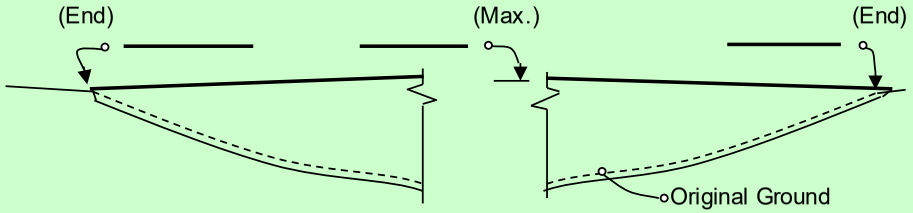


Profile (perpendicular to flow) - DESIGN



Maximum X-Section (parallel flow) - DESIGN

CHECKOUT - Profile (perpendicular to flow)

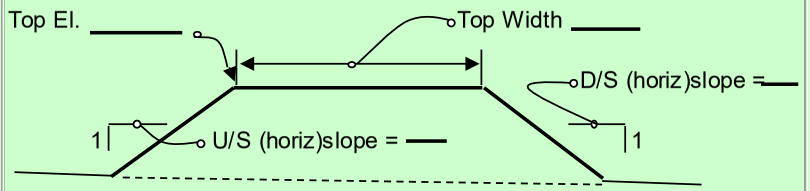


TRACT # 0
FIELD # 0
WETLAND # 0
CONTRACT # 0

Checkout Date _____
Checked By _____

Contractor _____
Completion Date _____

CHECKOUT - Max. X-Section (parallel flow)



TBM1 Elevation = 100.00
Description:
1X2 hub 5" southeast of structure on the south rim of the wetland

Ditch Plug Checkout

Approved By:	Date		
	Title:		Title:
Designed:	Date	Jan-00	
Drawn:			
Traced:			Jan-00
Checked:			

0
DITCH PLUG PLAN
SECTION , TOWNSHIP , RANGE
0 County, ND

U.S. DEPARTMENT OF AGRICULTURE - NATURAL RESOURCES CONSERVATION SERVICE

DRAW. NO.: __-__
SHEET NO. 1 OF 1

Wetland Restoration Monitoring Form

Wetland Latitude/Longitude:

Checked by:

Date:

Approved by:

Date:

Brief description of current wetland condition:

Additional notes:

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***Submission of photos from designated photo sites required with this form.**

Grassland Reconstruction for Energy Development Offsets

Background

North Dakota is a top producer of coal, oil and gas, and wind energy. Increased demand for energy causes stress on the state's wildlife resources from direct and indirect impacts to habitat. Voluntary offset measures by energy developers can help alleviate these impacts. This document outlines the parameters of a grassland reconstruction program for offsetting impacts to native grassland as a result of energy development. Delivery of grassland reconstruction will be accomplished through funding assistance provided to willing landowners and is completely voluntary.

Grassland Reconstruction Parameters

Grassland reconstruction is considered the reestablishment of native grassland habitat in key areas important to declining wildlife where it has been lost due to conversion. This would include, in most cases, planting cropland back to a diverse native grass/forb planting specifically designed for the soils, topography, precipitation, and other characteristics of the local area. A management plan is required to be implemented by the owner/operator on the newly established grassland acres. The reestablished grassland is intended to be utilized as working lands in a haying or grazing operation and not remain idle indefinitely. Because this grassland is reconstructed to offset for impacts resulting from an energy development project, the grassland will need to stay intact for the life of the specific development project.

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I. Administrative Parameters

1. Eligible vendors:
    a. Registered with the North Dakota Secretary of State.
    b. Deliver all aspects of grassland reconstruction, including locating willing private landowners, execute and enforce the lease agreement(s), verify the grassland management plan is being implemented, and distribute payments.
        i. use the flow chart "Evaluation for Grassland Offset" to prioritize offers
2. Geographic constraints:
    a. Offset project delivered within county of impact (preferred) or county adjacent to impact (secondary).
    b. Preference to local landowners within general vicinity of impact, but not within 0.5 miles of direct impact.
3. Lease agreements:
    a. Commensurate with projected length of impact.
    b. Notice of Agreement recorded on title.
4. Reporting requirements:
    a. For all candidate restorations, a written summary for plans and specifications, including but not limited to worksheets detailing the acreage and depth of each restored wetland, seeding list, management plan, and a map showing the project location and wetland boundaries must be submitted to NDGF for approval.

5. Monitoring requirements:
    a. Verification the restoration was completed in year 1 and that it is not compromised in following years is required. See attachment 1 and 2 for the forms that must be submitted during monitoring.
        i. Field monitoring: In-person field verification performed by third party or NDGF and photos will be submitted to both the third-party vendor and NDGF in years 1, 3, 15, and 25.
            1. In year 3, stand evaluation must be carried out by third-party and approved by NDGF before restoration can be fully incorporated into operation. (See Attachment 1)
            2. Years 1, 15, and 25 the standard from (Attachment 2) should be used for monitoring.
        ii. Remote monitoring: Can include NDGF aerial image verification or with photos submitted by landowner.
            1. The standard form, as well as photo from points designated by NDGF will have to be submitted to both the third-party vendor and NDGF in years 5, 10, and 20.

II. Biological Parameters

1. Size/location constraints:
    a. If the grassland reconstruction is <55 acres, it must be located adjacent to an extant grassland tract so the entire parcel will be ≥55 acres.
    b. Land tract is adjacent to an extant grassland tract >55 acres (high priority).
    c. Land tract is within 0.5 miles of an extant grassland tract >55 acres (medium priority).
    d. Land tract is >0.5 miles from an extant grassland tract >55 acres (low priority).
2. Grassland establishment:
    a. Refer to and follow *USDA-NRCS Herbaceous Vegetation Establishment Guide*:
        i. Seeding dates (Part 1)
        ii. Seedbed preparation (Part 2)
        iii. Seeding equipment (Part 3)
        iv. Drill calibration (Part 4)
        v. Seed requirements (Part 5)
        vi. Seeding depth (Part 6)
        vii. Cover and companion crops (Part 7)
        viii. Management and protection during establishment (Part 8)
        ix. Procedure for stand evaluation (Part 9)
3. Selecting species and varieties:
    a. Native grasses and forbs only.
    b. Mixes designed to mimic the local natural conditions.
    c. Determine the Ecological Sites from the soils information located in either the *Web Soil Survey* or the county specific soil interpretations (see FOTG, Section II - Soil Information).

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d. Mix must be selected from the Recommended Species by Ecological Site list associated with the MLRA (see FOTG, Section II- Upland and Riparian Ecological Site Descriptions, Range Site Descriptions and Reference Worksheets) of the site.
e. Mix must be a ratio of 50-to-50 grasses-to-forbs. However, spiking individual forb seeding rates is encouraged (see Prairie Reconstruction Guidebook for North Dakota), as this will promote establishment success.
f. The mix must contain a minimum of 6 grass species, 1 sedge, and 15 forbs. More specifically, the mix should include at least:
    i. 1 cool-season bunch grass
    ii. 1 cool-season rhizomatous grass
    iii. 1 warm-season bunch grass
    iv. 1 warm-season rhizomatous grass
    v. 1 sedge species
    vi. 4 forbs with early summer bloom period
    vii. 4 forbs with mid-summer bloom period
    viii. 4 forbs with late summer bloom period
g. Refer to Table 1 of the *Herbaceous Vegetation Establishment Guide* for recommended species and percent minimums and maximums for the Ecological Site(s).
h. Refer to *Herbaceous Vegetation Establishment Guide* for approved named varieties and full seeding rates of native grasses, forbs and shrubs. Use named varieties when available.
i. Refer to *ND-CPA-Planning or Data Sheet for Grass and/or Legume Seeding* to determine proper seeding rates (see FOTG, Section II, Ecological Sciences Forms).

4. Planning considerations:
    a. Where water erosion is a concern, all tillage and seeding operations should be performed across the general slope of the fields where appropriate. When seeding into light textured soils, adequate cover is required to prevent excessive erosion.
    b. For improved germination, scarification of legumes with hard seed coats is recommended. Scarification is especially important with the following species: purple prairie clover, white prairie clover, leadplant and Canada milkvetch.
    c. Slender wheatgrass and Canada Wildrye are short-lived species but establish rapidly and provides quick cover.
5. Guidelines for stand evaluation:
    a. Stand must have a minimum density of two rhizomatous grass plants per square foot, or four plants per square foot for bunchgrasses or mixtures of bunch and rhizomatous type grasses; or in the case of grass/legume/forb mixtures, two grass plants and one legume or forb plant per square foot.
        i. See Part 9 of *Herbaceous Vegetation Establishment Guide* for additional guidance on stand evaluation.
        ii. Stand success must be evaluated prior to fully incorporating restoration into operation.
            1. Stand evaluation will be carried out by third-party vendor in year 3 and submitted to NDGF for approval.

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III. Landowner/Operator Parameters

1. Privately owned land only.
2. Public access encouraged but not required.
3. Commitment to a grassland management plan (required):
    a. Grazing prohibited the first three years of contract to allow vegetation establishment
    b. Managed grazing encouraged after the first three years.
        i. Refer to *Prescribed Grazing - 528 Specification* for management after establishment.
    c. Haying/mowing allowed on 1/3 tract annually with timing restrictions.
    d. Prescribed fire allowed.
4. Offset payments:
    a. Payment to landowner may be provided in lump sum or periodic disbursements, per landowner and vendor agreement.
    b. Payments may include up to:
        i. 100% cost-share for seed mix, site preparation, seeding, and management treatments.
        ii. Loss of production (foregone revenue) payment for Years 1 - 3 of establishment. Suggest using the 5-year average non-irrigated cropland rental rate for the specified county per North Dakota Trust Lands current county rents and prices.
        iii. Graduated operational transition payment provided for Years 4+ (declining percentage of full county rental rate/acre).
        iv. Infrastructure cost-share for fencing and water development.
5. Buyout option:
    a. If an agreement is exited, landowner must make a prorated repayment to account for remaining agreement services no longer provided. The vendor must determine a new offset site to replace the remaining services of the previous agreement.
6. Agreement extensions or alternatives to provide additional environmental benefits and services past the term of the original agreement are optional based on mutual consent of both parties or other conservation program providers.

IV. Ineligible Practices

1. Permanent easements.
2. Land acquisition.
3. Reconstruction on public land.

V. Resources

USDA Natural Resources Conservation Service Herbaceous Vegetation Establishment Guide
https://efotg.sc.egov.usda.gov/references/public/ND/Herbaceous_Veg_Est_Guide.pdf

USDA Natural Resources Conservation Service Web Soil Survey
https://websoilsurvey.nrcs.usda.gov/app/

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NRCS Field Office Technical Guide (FOTG)
https://efotg.sc.egov.usda.gov/#/details

- Section II
  - *Soil Information*
  - *Upland and Riparian Ecological Site Descriptions, Range Site Descriptions and Reference Worksheets* (MLRA information)
- Section IV
  - Old Section IV
    - Ecological Sciences Forms
    - *ND-CPA-9 Planning or Data Sheet for Grass and/or Legume Seeding* https://efotg.sc.egov.usda.gov/references/public/ND/ND-CPA-9_Herbaceous_Planting_Workbook.xlsm
    - Ecological Sciences Practices
      - *Herbaceous Vegetation Establishment Guide*
      - *Prescribed Grazing – 528 Prescribed Grazing Specification* *https://efotg.sc.egov.usda.gov/references/public/ND/528_specs_.pdf*

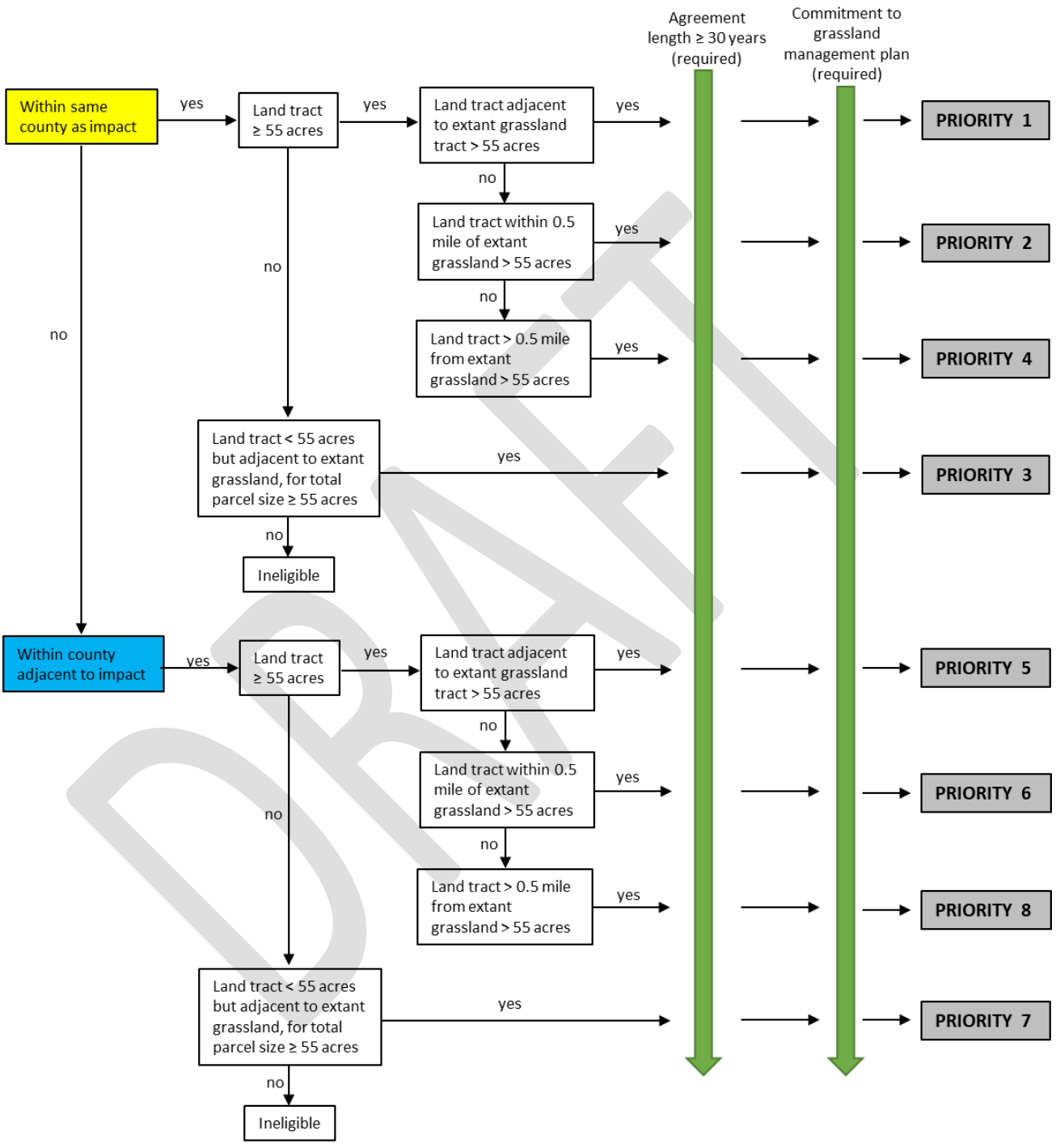
Prairie Reconstruction Guidebook for North Dakota
https://www.ag.ndsu.edu/publications/environment-natural-resources/prairie-reconstruction-guidebook-for-north-dakota

Prairie Seedling and Seeding Evaluation Guide
https://secure.iowadot.gov/lrtf/docs/PrairieSeedlingGuide.pdf

North Dakota Trust Lands County Rents and Prices North Dakota
https://www.land.nd.gov/
Or search for "County Rents and Prices North Dakota" and use current year.

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Evaluation for Grassland Offset



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Attachment 1.

Grass/Legume Stand Evaluation

Name: | Date:
Transect No: | Tract / Field #:
Completed By: | Legal Desc: | Sect: | Twshp | Range

Clear Worksheet

	Species and/or Variety	Plants / Square Foot Plot 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	Total	Average Plants/ SqFt
1																												
2																												
3																												
4																												
5																												
6																												
7																												
8																												
9																												
10																												
11																												
12																												
13																												
14																												
15																												
	Totals Per Count																											

Indicate how field was sampled:

Seeding Direction
Total Acres

Total number of plots:
Average Density (plant/sq. foot):
Plant Vigor: Low ☐ Medium ☐ High ☐
Weed Competition:

N

Comments:

Recommendations to Cooperator:

Guidelines:

→ Sample in a systematic and uniform manner
→ Minimum of 10 plots for each 10 acres or less of field size
→ Avoid areas that may have been double-seeded
→ Sample perpendicular or diagonal to drill rows
→ Use a 1 square foot frame (12 in. X 12 in.) or count parallel drill rows:

Recommended Minimum Seeded Species Densities:

Practices 512, 550: (3 - 5 plants per square foot)
Practice 327 : (1 - 2 plants per square foot)

Use the lower limit for rhizomatous species; upper limit for bunch-type or mixtures) Refer to the "Herbaceous Vegetation Establishment Guide" for additional guidance.

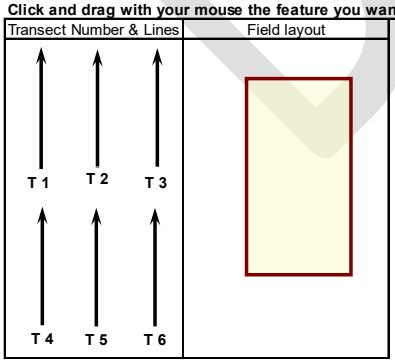
Row spacing	No. of rows	Length
6 inches	2 rows	12.0 inches
7 inches	2 rows	10.3 inches
8 inches	2 rows	9.0 inches

I certify that the above stand evaluation is documented per NRCS practice specifications.

NRCS Evaluator Signature: | **Date:**

Click and drag with your mouse the feature you want from the patterns below:

Transect Number & Lines | Field layout



Attachment 2:

Grassland Restoration Monitoring Form

Grassland Latitude/Longitude:

Checked by:

Date:

Approved by:

Date:

Brief description of current grassland condition:

Additional notes:

DRAFT

Submission of photos from designated photo sites required with this form.

Alan Plumeau

From: Chris McCreedy
Sent: Friday, May 28, 2021 2:45 PM
To: 'Johnson, Sandra K.'
Cc: Mueller, Elisha K.; Riddle, Heidi L; Maureen O'Shea-Stone
Subject: RE: Question on raptor nest removal outside of the nesting season

Hi Sandra,

Thank you for sending this great information, and also thank you for including the link to the report.

Chris

Chris McCreedy
Senior Environmental Consultant
ATWELL, LLC

602.513.3950 Mobile (best)
480.218.8831 x2503 Tel
4700 E. Southern Avenue | Mesa, AZ 85206
www.atwell-group.com

From: Johnson, Sandra K. <sajohnson@nd.gov>
Sent: Tuesday, May 25, 2021 6:53 AM
To: Chris McCreedy <cmccreedy@atwell-group.com>
Cc: Mueller, Elisha K. <ekmueller@nd.gov>; Riddle, Heidi L <heidi_riddle@fws.gov>; Maureen O'Shea-Stone <moshea-stone@atwell-group.com>
Subject: RE: Question on raptor nest removal outside of the nesting season

Hi Chris,
Per the North Dakota Century Code:
20.1-04-04. Nests and eggs of protected birds protected.
No person, without a permit issued by the director, may take, have in that person's possession or under that person's control, or needlessly break up or destroy, or in any manner interfere with, the nest or the eggs of any kind of bird, the killing of which is prohibited.

In 2013-2014, a comprehensive study of active raptor nests in Logan, McIntosh, and Dickey counties found few Ferruginous Hawks nests: 16 of 181 active raptor nests in 2013 and 14 of 281 active raptor nests (https://gf.nd.gov/wildlife/swg/project/t-36-r). We do have concerns with this proposed action of removing a nesting site of a level I Species of Conservation Priority. Ferruginous Hawks were once one of the most common hawks in North Dakota and are now uncommon to rare in many areas of the state. What mitigation actions does Badger Wind propose if this nest site is removed?

We have drafted recommendations for distance and seasonal restrictions for development activities. This information is contained in a BMP document we will be releasing soon.

Common Name	Ability to co-exist?[1]	Spatial Buffer (miles)[2]	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Bald Eagle	Mod-High	0.5												
Golden Eagle	Low	0.5												
American Kestrel	Mod-High	0.125												
Broad-winged Hawk	Mod	0.25												
Cooper's Hawk	Mod-High	0.125												
Ferruginous Hawk	Low-Mod	1												
Merlin	Mod-High	0.125												
Northern Harrier	Mod-High	0.25												
*Osprey	High	0.25												
*Peregrine Falcon	Mod	0.5												
Prairie Falcon	Mod	0.5												
Red-tailed Hawk	High	0.33												
Sharp-shinned Hawk	Mod	0.25												
Swainson's Hawk	Mod-High	0.25												
Turkey Vulture	Mod													
Burrowing Owl	Low	0.25												
Eastern Screech-Owl	Mod	0.125												
Great-horned Owl	High	0.125												
Long-eared Owl	Mod	0.125												
*Northern Saw-whet Owl	Mod-High	0.125												
Short-eared Owl	Low-Mod	0.25												

[1] Ability to Co-exist? – Adapted from Table 3 in Demarchi and Bentley (2005), the degree to which the raptors relative ability to co-exist with humans in urban and rural environments.
[2] Spatial buffers adapted from Whittington and Allen (February 2008).

Sandra Johnson
Conservation Biologist

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Be Legendary.

From: Chris McCreedy <cmccreedy@atwell-group.com>
Sent: Monday, May 24, 2021 3:18 PM
To: Johnson, Sandra K. <sajohnson@nd.gov>
Cc: Mueller, Elisha K. <ekmueller@nd.gov>; Riddle, Heidi L <heidi_riddle@fws.gov>; Maureen O'Shea-Stone <moshea-stone@atwell-group.com>
Subject: Question on raptor nest removal outside of the nesting season

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Hi Sandra,

We are working on a constraints analysis for the proposed Badger Wind Project in McIntosh and Logan counties. Our question at hand is described in Heidi's message below. She pointed us to the referenced USFWS 2018 memo regarding

removal of Ferruginous Hawk nests outside of the nesting season. Heidi noted that the memo does not supersede or apply to other Federal, State, or Tribal laws and regulation. Heidi indicated we should ask Elisha and Elisha pointed me to you. Does ND have laws or regulations that may supersede the USFWS memo's guidance on removal of a Ferruginous Hawk nest outside of the nesting season? In addition, there is another raptor nest that we have not found to be occupied that is within a few hundred meters of the FEHA nest. It seems that if the FEHA nest was removed it would be prudent to remove this unoccupied raptor nest of unknown species outside of the nesting season as well, to discourage potentially returning FEHA from repurposing the unoccupied nest into a new nest in the following nesting season.

Thank you for your help.

Chris

Chris McCreedy
Senior Environmental Consultant
ATWELL, LLC

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4700 E. Southern Avenue | Mesa, AZ 85206
www.atwell-group.com

Thanks for the message, Heidi.

Chris, you will want to contact Sandra Johnson on this: sajohnson@nd.gov

Elisha

From: Riddle, Heidi L <heidi_riddle@fws.gov>
Sent: Monday, May 24, 2021 2:04 PM
To: Chris McCreedy <cmccreedy@atwell-group.com>
Cc: Maureen O'Shea-Stone <moshea-stone@atwell-group.com>; Mueller, Elisha K. <ekmueller@nd.gov>
Subject: FW: [EXTERNAL] question on Ferruginous Hawk nest setbacks for constraints analysis

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Chris,

I should have noted that ferruginous hawks are a North Dakota Level 1 Species of Conservation Priority. Per the document, this "memo does not supersede or apply to other Federal, State, or Tribal laws and regulations..". I don't know if ND Game and Fish has any additional policies that may apply here, but I have cc'd Elisha Mueller as well.

From: Riddle, Heidi L
Sent: Monday, May 24, 2021 1:57 PM
To: Chris McCreedy <cmccreedy@atwell-group.com>

Alan Plumeau

From: Sarah Aftergood <SARAF@orsted.com>
Sent: Wednesday, August 25, 2021 11:45 AM
To: Maureen O'Shea-Stone; Tara Corbett
Subject: FW: Badger Wind Farm Project Follow up-Turbine locations and meeting notes
Attachments: Meeting Notes - Atwell - 9 Aug 2021.docx

FYI

Best regards,
Sarah Aftergood
Director of Environmental Permitting
Development 1
Onshore

Ørsted
Tel. +15122302148

From: Mueller, Elisha K. <ekmueller@nd.gov>
Sent: Wednesday, August 25, 2021 12:36 PM
To: Sarah Aftergood <SARAF@orsted.com>; Johnson, Sandra K. <sajohnson@nd.gov>; Dyke, Steve R. <sdyke@nd.gov>; Charles Smith <CHASM@orsted.com>; June Marie Gray <XJUMG@orsted.com>; Riddle, Heidi L <heidi_riddle@fws.gov>
Subject: RE: Badger Wind Farm Project Follow up-Turbine locations and meeting notes

Hi Sarah,

I did receive your emails, but with vacation followed by field work, I have not yet had a chance to go through any of the supplied materials. Would September 8th or 9th work for you? I am also available August 30th and September 1st, but I don't think we will be able to do a review all of the materials by then. If you would like, we could set up an informal call to discuss any questions you have on the 30th/1st and then meet on the 8th or 9th after we have had time to review the materials.

Also, I made a few edits to the meeting minutes, attached here.

Elisha

From: Sarah Aftergood <SARAF@orsted.com>
Sent: Tuesday, August 24, 2021 9:22 AM
To: Mueller, Elisha K. <ekmueller@nd.gov>; Johnson, Sandra K. <sajohnson@nd.gov>; Dyke, Steve R. <sdyke@nd.gov>; Charles Smith <CHASM@orsted.com>; June Marie Gray <XJUMG@orsted.com>; Riddle, Heidi L <heidi_riddle@fws.gov>
Subject: Badger Wind Farm Project Follow up-Turbine locations and meeting notes
Importance: High

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Hi Elisha,

I hope this email finds you well and that you had a well-rested vacation. We've started making some significant changes to the layout in the interest of protecting native grassland and would like to set up another meeting to discuss areas of grassland that are indeed broken and cultivated (I've reattached the materials we sent you on Aug 13th).

Also-I have some questions regarding the new NDGF guidance that has been circulated.

Let me know if you have any availability later this week or early next week. Your time is really appreciated.

@Riddle, Heidi L I will be in touch soon regarding our strategy for Eagles. I'm just reassessing our plan based upon the changes we are currently making.

Best regards,
Sarah Aftergood
Director of Environmental Permitting
Development 1
Onshore

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From: Sarah Aftergood
Sent: Friday, August 13, 2021 3:53 PM
To: Charles Smith <CHASM@orsted.com>; June Marie Gray <XJUMG@orsted.com>; Francesca Martella <FRKEH@orsted.com>; Mueller, Elisha K. <ekmueller@nd.gov>
Cc: Maureen O'Shea-Stone <moshea-stone@atwell-group.com>; Riddle, Heidi L <heidi_riddle@fws.gov>
Subject: Badger Wind Farm Project Follow up-Turbine locations and meeting notes
Importance: High

Hi Elisha,

Great meeting you Monday. As per the discussions we had, here is a presentation of turbines sites we are looking at on land that is cultivated with photos and turbine numbers that conflicts with the information we have concerning unbroken grassland. I've also attached the meeting notes for your review and confirmation.

Let me know if you need anything else to conduct your review. I will reach out next week to set up a second meeting so we can go through this and work together on this layout.

Thank you and have a great weekend!

Best regards,
Sarah Aftergood
Director of Environmental Permitting
Development 1
Onshore

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PRESENTATION NOTES

Project: **Badger Wind Farm**

Host/Organizer: Sarah Aftergood, Director of Environmental Permitting, Ørsted

Meeting Date: August 9, 2021 (Remote)

Purpose: **NDGF/ USFWS Badger Wind Farm – Ørsted Update**

Attendees and Introductions:

Elisha Mueller, NDGF Wind Projects Coordinator

Heidi Riddle, North Dakota Ecological Services, Biologist USFWS

Sarah Aftergood, Ørsted Director of Environmental Permitting

Charlie Smith, Ørsted Sr. Director Development

Francesca Martella, Ørsted Project Developer

Maureen O'Shea-Stone, Atwell Project Manager

Chris McCreedy, Atwell Biologist

Tara Corbett, Atwell Permitting

After introductions C. Smith introduced Ørsted, describing Ørsted's growing domestic and international presence. Ørsted is expanding its footprint in several states toward a goal of 5 GW of energy production by 2025.

Ørsted is committed to reducing environmental impacts from its developed projects and is working with state and federal agencies to incorporate grassland habitat considerations in its project siting at Badger.

C. Smith reviewed the Badger Wind Project's history to date and anticipated next steps, including micrositing in 2021, submission of application for siting compatibility certificate in December 2021, signing an interconnection agreement with MDU in June of 2022, construction timeline beginning Q4 of 2022.

C. Smith introduced a project location map with the latest proposed layout version (v6). The layout reflects environmental constraints, aerospace constraints, county permitting constraints, and reflects landowner preferences.

The project will provide approximately $3 million annually in additional local revenue and 10 permanent jobs.

S. Aftergood then summarized project and planning considerations. Badger Wind has grounded its pre-construction due diligence in USFWS guidelines (WEG and ECPG) as well as the North Dakota SWAP and the NDGF habitat-based approach. Badger Wind has initiated a number of pre-construction studies and they are for the most part completed.

S. Aftergood presented Badger Wind's grassland considerations in its siting design including:

- Integration of landcover spatial data sets
- Data overlay of 2014 micro grassland layer with parcel information and cross-referenced with conversations with landowners.
- Field verification in 2020 and 2021
- Micrositing layouts twice in 2021

Badger Wind has continuously refined its turbine layout to address constraints and is now on version 6. Version 1 was presented at the Dec 2020 meeting and included 38 WTG in grassland. V6 only includes 23 WTG in grassland.

S. Aftergood noted that Badger has identified examples of verified active (or recently active) cropland in areas identified in the 2014 micro grassland layer as grassland. The question is how does Ørsted go forward in working with the agencies to address incongruencies such as these?

E. Mueller answered that this is a difficult topic to answer. There are going to be incongruencies in the grassland layer. She expressed concern that a landowner would till up an area just so a turbine could be placed there. When the question was re-phrased, E. Mueller indicated the following:

E. Mueller indicated that it is important to view the 2014 micro layer as high level on a coarse scale. For micrositing use fine scale aerial imagery, history to establish if the 2014 micro layer has misclassified a turbine location.

S. Aftergood suggested that a follow-up meeting where Ørsted and the NDGF and USFWS review the 23 turbines in grassland together and asked for the NDGF's thoughts on this.

E. Mueller responded that the best-case scenario is that the conversation continues. Twenty-three turbines in grassland is a lot. Recent applicants had a max number of 5 WTG in grassland to her memory. The more NDGF is kept in the loop and appraised of the process, the better. Ørsted can demonstrate if turbine locations have been recently cultivated.

S. Aftergood asked if it is correct that the NDGF will use a 300 m buffer on grassland in its indirect impact calculations.

E. Mueller confirmed this and noted that NDGF uses its most recent science for these calculations, including the Shaffer and Buhl paper and the Loesch paper.

S. Aftergood presented a project layout map illustrating the v1 layout superimposed on the v6 layout to show the reduction from 38 to 23 turbines in grassland. She noted that Ørsted has considered permitting more turbines than it may ultimately build.

S. Aftergood noted that Ørsted hopes for a public hearing in February or March of 2022. After closing with a summary of ongoing and future studies S. Aftergood opened the floor for questions and discussion.

E. Mueller asked for a map of the turbine layout. Reviewing the project layout slide, E. Mueller pointed out that the NDGF's concern is the northeastern portion of the project area, and that looking at the layout map, she suspects it is all uncultivated grassland. Impacting this grassland will impact grassland bird species. If Ørsted can provide NDGF a turbine layout then the NDGF GIS staff will analyze the layout against their various constraints layers, including some data that are not public.

E. Mueller noted that the NDGF needs to deliver their project review letter to the PSC 30 days before the public hearing, and as such, requested that all studies, voluntary offsets, and documents such as a BBCS be provided 100 days prior to the hearing so that NDGF can review all the material and any questions/concerns can be discussed with Orsted prior to writing that letter.

H. Riddle asked if Ørsted will apply for an eagle take permit for project. USFWS will require time to process the application.

S. Aftergood did not believe so but will discuss this with Atwell.

H. Riddle asked to confirm that the HAPET's Whooping Crane model was used for the WHCR desktop.

C. McCreedy confirmed that it was, and that as suggested Atwell used the WHCR desktop approach of comparing the project area to four surrounding reference areas used by other recent site permit applicants when completing the WHCR desktop for Badger. In addition to the HAPET model the project area was compared to reference areas using Pearse's stopover intensity modeling, past WHCR sightings, and scoring of wetlands as potential stopover locations.

H. Riddle asked if Badger Wind has reached out to the local USFWS wetland conservation district staff. T. Corbett confirmed that Atwell had done this and that she believed that H. Riddle may have been on that call. All sites have been avoided.

H. Riddle indicated that the USFWS will want to see everything compiled into a BBCS, she believes she has shared a BBCS template with Badger Wind and Atwell but can resend it just in case. S. Aftergood asked USFWS to resend it please.

E. Mueller asked if any WTGs had been sited on PLOTs parcels if PLOTs had been considered in turbine siting. Terms of PLOTs contracts may have been violated by project agreements. T. Corbett indicated that Badger Wind is aware of PLOTs parcels as a constraint, but that Atwell would need to evaluate the current layout confirm whether any WTGs were ultimately sited in PLOTs parcels.

S. Aftergood asked if PLOTs easements are tied to deeds. E. Mueller responded that this was a good question and was uncertain of this. There are many different kinds of PLOTs contracts, some contracts are centered on crop management, some may be centered on native habitat preservation.

H. Riddle inquired if USFWS grassland and wetland conservation easements had been obtained from the USFWS Kulm office. T. Corbett confirmed that the easements had been obtained, that coordination with the USFWS Kulm office had occurred, and that the easements were used in the development of the layout.

E. Mueller asked how quickly can Badger Wind provide a project layout and studies?

S. Aftergood indicated that it will not take long and that she will reach out to Ørsted's GIS team to deliver a KMZ when it is ready.

E. Mueller noted to not send zip files for studies, NDGF cannot accept zip files.

M. O'Shea-Stone asked if from a process standpoint might it be more important to internally discuss and potentially refine the layout with 23 WTGs in grassland before sending in the layout to NDGF and USFWS?

S. Aftergood indicated Ørsted will consider this. E. Mueller noted that Badger Wind should put its best foot forward with its submission. If it wants to submit a layout with 23 WTGs in grassland it can, but NDGF will need to analyze the submission. It may be better from the project's standpoint to continue to refine its layout before submission. NDGF simply will analyze what is provided.

S. Aftergood noted that Ørsted can provide demonstration of why some WTGs are in unbroken grassland and check mutual assumptions in a follow-up meeting. E. Mueller agreed.

C. Smith asked if NDGF only uses the 2014 micro grassland layer in its analysis. E. Mueller indicated no; their GIS staff conducts a more complex analysis with several data sources.

F. Martella asked to confirm the status of grazed grassland as broken or unbroken. E. Mueller indicated that grazing is not indicative of broken grassland and that in fact some of the best prairie in North Dakota may be grazed. Broken means tilling or removal of topsoil.

Alan Plumeau

From: Maureen O'Shea-Stone
Sent: Tuesday, September 21, 2021 5:03 PM
To: Sarah Aftergood
Cc: Tanya Johnson
Subject: RE: Notes from call with NDGF, WEST, USFWS
Attachments: Badger_NDGF Meeting Notes_9-20-2021.docx

Sarah,

Attached please find the compiled notes from the 9-20 call with NDGF and USFWS.

Best,
Maureen

Maureen O'Shea-Stone
Project Manager/Botanist
ATWELL, LLC
720.937.1359 Mobile
3000 Center Green Drive | Suite 210 | Boulder, CO 80301

From: Sarah Aftergood <SARAF@orsted.com>
Sent: Monday, September 20, 2021 10:17 AM
To: Maureen O'Shea-Stone <moshea-stone@atwell-group.com>
Cc: Tanya Johnson <tljohnson@atwell-group.com>
Subject: RE: Notes from call with NDGF, WEST, USFWS

Happy for atwell to compile. I took notes on my side.

Best regards,
Sarah Aftergood
Director of Environmental Permitting
Development 1
Onshore

Ørsted
Tel. +15122302148

From: Maureen O'Shea-Stone <moshea-stone@atwell-group.com>
Sent: Monday, September 20, 2021 11:04 AM
To: Sarah Aftergood <SARAF@orsted.com>
Cc: Tanya Johnson <tljohnson@atwell-group.com>
Subject: Notes from call with NDGF, WEST, USFWS
Importance: High

Sarah,

Who is compiling these notes?

Best,
Maureen

Maureen O'Shea-Stone
Project Manager/Botanist
ATWELL, LLC
720.937.1359 Mobile
3000 Center Green Drive | Suite 210 | Boulder, CO 80301

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Badger Wind Farm – Formal Meeting Follow Up with North Dakota Game and Fish (NDGF)
September 20, 2021 10:00 AM CST – Teams Meeting Call

Attendees:
NDGF: Elisha Mueller
USFWS: Heidi Riddle
Ørsted: Claire Dittrich, Sarah Aftergood, Francesca Martella
WEST: Kurt Smith, Martin Piorkowski
Atwell: Tanya Johnson, Maureen O'Shea-Stone, Chris Rutledge,

- Data relayed to NDGF by Ørsted RE: assessment of grassland for nine proposed turbines
    - E. Mueller: in agreement with the Ørsted assessment for the 9 turbines. But will really come down to the micro-siting. This review to-date is at a large-scale data scale.
    - When they do actual assessment with final layout:
        - Results may look different, this analysis is more intense and comprehensive of other data/information sources
    - Suggested Ørsted send final project layout so they can run though all of it at once. Will dedicate staff to this assessment.
    - Starting into hunting season and staff are out
    - E. Mueller will let Ørsted know what time is best for next meeting

- Avian Species Impact Analysis
    - NDGF uses Shaffer (2016) with 300 meter buffer around turbines and Loesch model to calculate impacts to upland birds and waterfowl, respectively
    - This may catch surface impacts to native grassland at the edges of the buffers
    - Primary goal = no native prairie being plowed up
    - Any impacts to native grassland:
        - Would be used to calculate voluntary mitigation offsets, as noted in BBCS
        - Would recommend new habitat creation. Assumes what is left is at carrying capacity

    - Should Ørsted to initiate offset conversation before filing with PSC? Can this be done during their review process?
        - E. Mueller: would like to know as early as possible.
        - Recommends submitting a plan with the CSC application, so NDGF can comment on it as part of their review
        - The offset proposal can then change as the project develops, as the costs will be invoked much later in the process
        - E. Mueller: NDGF must have their comments submitted to PSC 30 day prior to hearing
        - So, need final lay-out and pre-construction surveys as soon as possible, so they can run the Schaffer and Loesch models and calculate impacts

- Sharp-tailed Grouse Leks
    - WEST is doing a sharp-tail grouse habitat assessment
        - K. Smith: Travis in SD developed Sharp-tailed Grouse occurrence model they are using
        - Landscapes dominated by grassland is where most birds are. Surface disturbance is influential in behavioral avoidance
        - Areas that have a lot of agriculture is not expected to be used by Sharp-tailed Grouse
        - Finding that some of the areas within 2 miles of a lek are already impacted
        - Finding areas to site, in order to minimize impacts
        - Will request review of findings by NDGF
        - Expect to use the results in overall project narrative

- E. Mueller: want to be kept in the loop about this assessment. Acknowledges numerous resources/issues and setbacks need to be considered
  - Her focus is on nesting habitat, not lekking habitat
  - She recommends a case-by-case decision
  - Doesn't want a buffer on a lek to push impacts into native grassland
  - Positive can find the best case scenario for the project. Really appreciates the on-going communication about the project.

- Takeaways
  - WEST is continuing to work on lek assessment and grassland mapping. Will share with NDGF for review.
  - Ørsted will send over final project lay-out for concurrence with grassland assessment
  - E. Mueller: other issue would be to check for PLOTS within project boundary. F. Martella noted there are none in current project area.
  - E. Mueller: NDGF would like to see, asap:
    - Final turbine layout
    - BBCS (a working document, doesn't have to be finalized right away) with preconstruction surveys and a voluntary offset proposal
    - Wants to see the project moved out of areas of greatest concern

- Heidi Riddle RE: Federal Trust Resources
  - USFWS input:
    - Defers to NDGF, listening in and using their data in the process
    - Addresses a lot of their concerns as well by avoiding grasslands
    - Will likely make the same, or similar, recommendations to NDGF
    - Federal easements will by another issue of concern, as well as hawk nests and other USFWS jurisdictional mandates
    - S. Aftergood: Ørsted will be in contact shortly with final project layout and schedule call RE: USFWS jurisdictional issues

- Meeting adjourned

Meeting notes by Sarah Aftergood and Maureen O'Shea-Stone

Badger Wind Farm – Formal Meeting Follow Up with North Dakota Game and Fish (NDGF)
December 08, 2021 10:00 AM EST – Teams Meeting Call

Attendees:
NDGF: Elisha Mueller
USFWS: Heidi Riddle
Ørsted: Sarah Aftergood, Francesca Martella, June Marie Grey, Lucas Buseck
Frederickson: Mollie Smith, Bridget Duffus
WEST: Kurt Smith, Martin Piorkowski
Atwell: Tanya Johnson, Chris Rutledge, Alan Plumeau, Caitie Cyrus

- The purpose of this meeting is to update NDFG and USFWS on status of overall project and remaining impacts to resources:
    - Ørsted has made significant progress on the project layout, moving it away from grasslands and other sensitive natural resources. They are at a point where, due to the land that is available, other types of constraints, and the timing of permit submittal, that the turbine layout is solidified. There are 74 turbines and 20 alternate turbine locations presented during the meeting.
        - Turbines in the grassland layer provided by NDGF are identified as being in existing cropland now. The southwest of the Project Area is completely cropland. Parcels are still in negotiations to the south, but the hope is that they can build in the southwest portion of the Project Area and, in turn, can leave the northeast area alone.
    - Present the results of WEST's sharp-trailed grouse lek and grassland surveys.
    - Present the locations of raptor nests within the Project Area.
    - Finish with discussion of the BBCS, recommendations for mitigation, any additional comments.

- West Survey Results Updates-
    - Grasslands
        - Survey was a two-step process beginning with a desktop analysis and followed up with a field validation effort.
        - The desktop assessment focused on using recent imagery and data layers within the General Project area and 1-mile Buffer to produce a first draft that identifies potential grassland parcels.
        - The field validation effort determined the status of grasslands within those identified areas.
        - This survey resulted in identifying 21,000 acres (41% of the project area) of grasslands.
            - 18,000+ acres are unbroken (85%) and 3,000 acres are broken (14%)
        - Figure shared with USFWS and NDGF displayed results, showing broken and unbroken grassland distribution within the Project Area and 1-mile buffer. Figure shows unbroken grassland concentrated in the northeast part of the Project Area, becomes more fragmented moving towards the center and southwest of the Project Area (consistent with description above)
            - Heidi Question: Is bright green areas of unbroken grassland? West: Correct
    - Sharp-tail Grouse (STG) Leks
        - The objective of this assessment was to use best available science to evaluate STG and their habitat within the Project Area. There are currently no studies evaluating STG in response to wind development but can assess habitat to narrow areas we expect to be low use for STG.
        - Figure 1 - Showed known lek locations; brown area is cultivated crop, yellow is grassland areas.

        - Figure 2- Base map shows occurrence models based on Runia et al. (2021). It is a heat map of relative occurrence. Areas in blue and green are predicted to be high occurrence orange/red areas predicted to be low. Corresponds well to grassland layer.
        - Figure 3- Suitable grasslands habitat. Areas of purple predicted to be good habitat. Based on studies done in Montana, 60% or greater grassland within a mile seems to be good habitat for STG.
        - Figure 4- Suitable areas of habitat based on proportion of cropland. Studies pointing with less than 45% cropland as suitable. Areas in southwest are unsuitable using this model because of large expanses of agriculture.
        - Figure 5 – Suitable areas of habitat based on development (<4% development within 0.7mi).
        - Figure 6 – Shows all of the above figures incorporated into a single layer representing suitable habitat for STG. This roughly corresponds to the grasslands layer.
    - As a result of WEST studies, some turbines are still placed within the 2-mile lek buffer, but they are in areas that are cropland.
- Discussion of Surveys and Potential Mitigation Measures
    - Ørsted took all data collected by WEST and sited turbines in areas that avoid grasslands and leks as much as possible. As discussed before, if turbines are in cropland, displacement would be less. Ørsted recognizes NDGF guidance on 2-mile buffer, but if a 2-mile buffer is used it would be detrimental to the Project. Sarah is proposing 1-mile buffer, having moved more down south to help mitigate all turbines outside of grassland. The remaining turbines within a 1-mile buffer of STG leks are in cropland.
        - Because of various constraints, there are still some turbines proposed in the northern portion of the Project Area. However, there are more turbines proposed for permitting than they will build.
    - Ørsted asks what possible mitigation measures for turbines in this area are if we plan on building them
        - Elisha: How many turbines might not get built? How many extra are in the permit application?
            - Sarah: 74 primary; 20 alternates (94 total for permitting)
        - Elisha: If Ørsted gets agreement with landowners in the south, the northern turbines would be taken out?
            - Sarah: Will have to check with development team. If the southern area is accessible, then it would be ideal to remove northeastern turbines. Noted the long collection line going to the northern turbine locations. This is another reason why these northern turbines would likely be the first to be removed from final design.
        - Elisha: NDGF recommendations for mitigation and/or offsets are all in the BMPs. The expectation is that every turbine provided in the permit application should be run through the risk analysis and the impact analysis. Then the offset package should match that.
            - This should be provided before the application is submitted to make PSC's job easier.
        - Elisha: The second trigger is once construction starts because what is committed to in PSC application might change. So when the project goes to construction, we can see what the offsets actually are. Within 5 years we want to see offsets being put back onto the landscape.
            - The impacts are determined using Schaffer and Chuck Loesch papers/models for wetlands and grasslands. There is no scientific model for woodland impact assessments in the area, so we should just use PSC's standard, which is a 2:1 replacement. Recommend reestablishing prairie and wetlands outside of project area as offset for areas lost.

        - ND has lost about 75% of native prairie and 60% of wetlands, they have to make the conclusion that the carrying capacity is maxxed out and there is no extra space for animals to go, so we are more than likely losing them instead. The idea is to create extra habitat that they can use as refugia from impacts created by energy development.
    - Sarah: Should we come back when we have BMPs and an offset approach to review prior to submitting Application in January?
        - Elisha: The sooner the better. We want to make PSC job easier. There is a step by step on how to evaluate impacts in their BMPs, and Elisha will check to make sure they are online. If not, they will be sent to Ørsted.
        - Heidi: prefer the offset package to be included in the BBCS so it's wrapped up in one place and easier to comment on.
    - Sarah: Would you like to see WEST report?
        - Elisha: Yes, that would be great.
    - Elisha: The state has a limited toolbox for mitigation because of the political climate. Ducks Unlimited is one of three that can do restoration in the area. The other thing is they get pressure on easements. It upsets politicians and landowners. If you do restoration and wrap it up in protecting those sites for the life of the project, then that is good. Be careful in the language you use because we have to appease all sides of this. It's a win-win if we package it right in a way that's amenable to everyone. Natural Resources Trusts also works on easements and restorations, they have held $ for offset packages. Magnolia Company also works with a different wind developer with some off-site work. Those are the only 3 groups that can do the offset work in the state as of right now.
        - Sarah: after this, I'll put together information on what I'm also proposing, and some provisions we can add for during construction.

- Raptor Nests
    - Sarah- Reviews Figure with layout showing various raptor nest sites found in Y1 and Y2 surveys. Nest locations identified as active. Displaying hatched inner buffer with old half-mile guidance as well as solid 1-mile buffer for setbacks.
        - In the northeast, Ørsted is away from all eagle nests identified and not near Whooping Crane Stopover Habitat.
        - Further south we have some conflicts
            - Swainson's and Ferruginous Hawks nests are within buffer areas. ¼ mile setback for Swainson's hawk (consistent with former guidance) and within ½ mile for Ferruginous hawk (250 ft away). These nests were discovered late – not in the Year 1 and Year 2 survey efforts, but during micrositing this year – and we are at a critical point where the turbines cannot be moved (3 turbines impacted).
    - Heidi: Is this the one that came up for discussion on nest removal? There is a legal way to remove the nest. If that is the option would want to see some sort of mitigation. We are open to ideas for mitigation. It gets tricky because the MBTA doesn't say we can't put turbines near nests, but we know it is probably going to have some sort of impact. We would like to see some sort of mitigation and there are ways to work around this. There is no formula for mitigation like this. We would welcome ideas to look at and then Heidi can talk to their migratory bird office. The sooner we can see proposed measures, the better. Better if I have something to react to.
    - Sarah: We want to come up with creative way to protect this nest that can be collaborative. Will do post construction monitoring so can put some measures in then.
        - Heidi: Agreed. Will be helpful if we have something to react to. When thinking about post construction monitoring, that is great because it can give us info we might not otherwise have. What we like to see, in addition, if there turns out to be a major impact – are there things that Ørsted can do to adapt if it those that is an issue (adaptive management

concept)? Not necessarily asking for turbine to be turned off or removed once it has been constructed, but open to other ideas.

- Next Steps
    - Sarah: Is it easier to set up another meeting before the holidays to work through mitigation measures or would you prefer a memo back and forth?
        - Heidi: It is helpful to have something to look at and read to digest. Then we can have a follow-up meeting with questions.
    - Sarah: propose two memos: one for the nests being impacted and one for the leks within a 1-mile buffer, keeping in mind that Ørsted doesn't have the final 74 turbines determined and in case those turbines wind up not getting built, those issues go away. Ørsted will also work on offset package, which will be included in the BBCS. There will need to be more follow-ups as they come up with a final site layout design. Will provide before PSC application is submitted. Anything else you need?
- Elisha requests final turbine layout ASAP because NDGF runs the same analysis on all turbines (including alternates) independently and provides it to PSC.
    - Sarah: Do you also want our data layers for wetlands and grasslands?
        - Elisha: You can provide them, but we do the analysis on our own. If you provide them we can look at discrepancies. For wetlands, do you only look at jurisdictional? We look at all wetlands in our analysis.
- Sarah: We are looking at all wetlands but are sending jurisdictional request to USACE this week.
    - Elisha: When it comes to wetlands we run Chuck Loesch's model (use waterfowl as an umbrella species for anything that may be impacted due to the loss of wetlands). Offset recommendations are based on what that model puts out. Have you been in touch with Chuck on this? Recommend reaching out to them to get that data. Office can provide contact info.
- Sarah: Heidi mentioned a response to raptor memo regarding removal of nests. Atwell, do you have?
    - Chris: We do have the correspondence. We sent out recommendations in memo to Ørsted, including input from Heidi. There was some follow up because the hawks are level 1 SCP for NDGF.
- Heidi: It is easiest in the BBCS to present every turbine as though you are building 94 so that there is info on every single one. Then as turbines fall out, it is easy to pull that information out of the package.
    - Elisha: recommend running an impact analysis on all of the turbines. Run the offset analysis on all of them. The second trigger is when construction is completed and we know what the actual offset might look like after the turbines have been built. In the BBCS it would be great to see all of that.
        - Sarah: in past projects, they true up the actual built versus the assessed level of impact at that time.

- Meeting adjourned

Meeting notes by Sarah Aftergood and Tanya Johnson

Appendix D

Agency Correspondence

North Dakota Parks & Recreation

NORTH Dakota | Parks & Recreation
Be Legendary.

November 5, 2021

Sarah Aftergood
Orsted

Re: Proposed Wind Turbines near Wishek, North Dakota

Dear Ms. Aftergood,

The North Dakota Parks and Recreation Department (NDPRD) has reviewed the above-referenced wind turbine project near the City of Wishek, North Dakota. NDPRD's scope of authority and expertise covers properties that NDPRD owns, leases, or manages; properties protected under Section 6(f) of the Land and Water Conservation Fund (LWCF); rare plants and ecological communities established through the Natural Heritage Program.

The project does not appear to affect properties that NDPRD owns, leases, or manages.

The project does not appear to affect any properties protected under Section 6(f) of the LWCF.

The North Dakota Natural Heritage biological conservation database has reviewed the project to determine if any current or historical plant or animal species of concern or other significant ecological communities are known to occur within an approximate one-mile radius of the project area. Based on this review, we have no known rare species or significant ecological communities documented within or immediately adjacent to the project site. Because the Natural Heritage information is not based on a comprehensive inventory, there may be species of concern or otherwise significant ecological communities in the area not represented in the database. The absence of data may indicate that the project area has not been surveyed rather than confirm that it lacks natural heritage resources.

We appreciate your commitment to rare plant, animal, and ecological community conservation, management, and inter-agency cooperation to date. For additional information, please get in touch with Natural Resources Coordinator Kathy Duttenhefner at 701-328-5370, 701-220-3377 (cell), or kgduttenhefner@nd.gov.

Thank you for the opportunity to comment on the proposed project.

Sincerely,

Kathy Duttenhefner

Kathy Duttenhefner, Coordinator/Biologist II
Natural Resources Division

North Dakota Natural Heritage Inventory

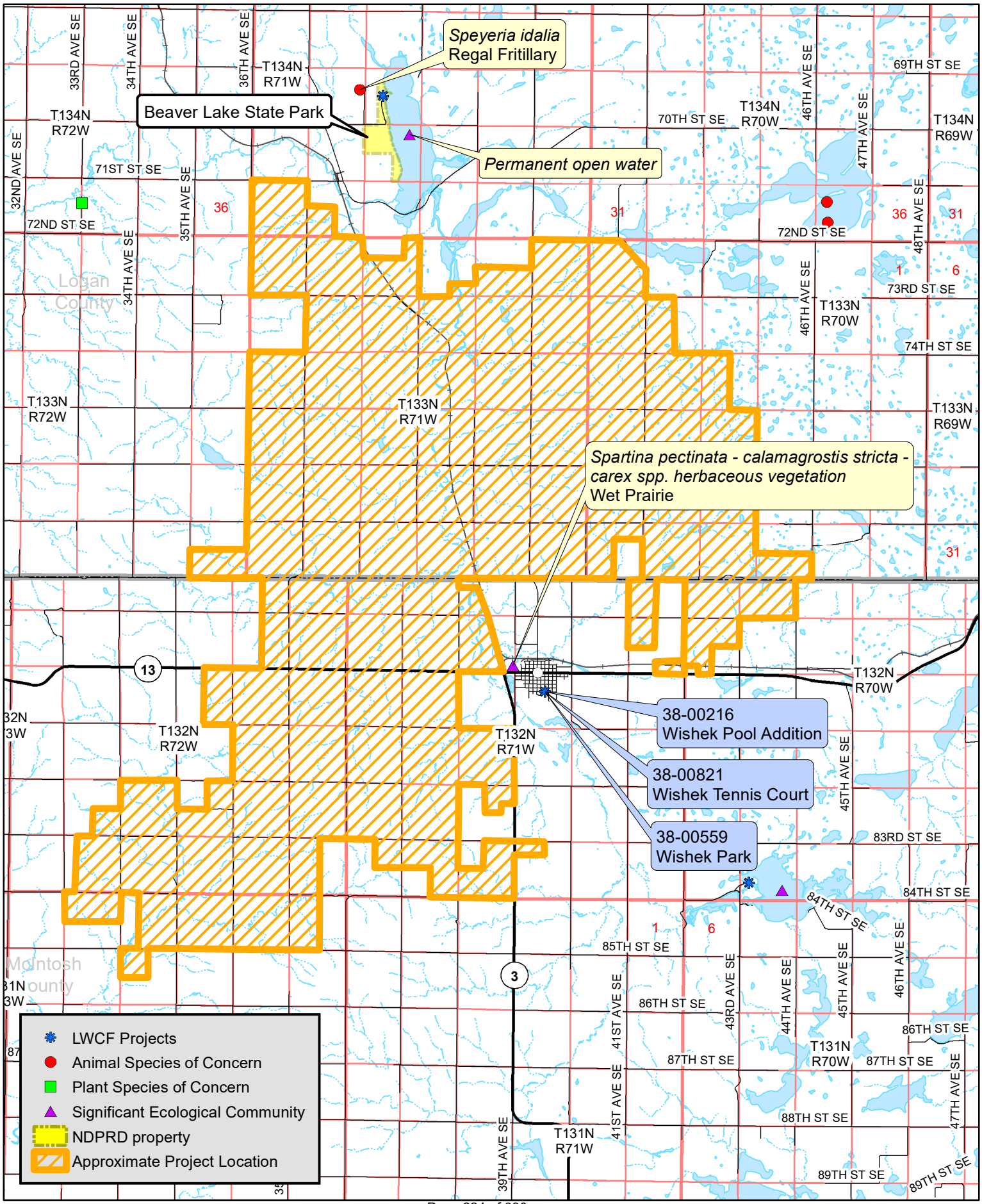
Rare Animal and Plant Species and Significant Ecological Communities

State Scientific Name	State Common Name	State Rank	Global Rank	Federal Status	Township Range Section	County	Last Observation	Estimated Representation Accuracy	Precision
Permanent open water		S2	GNR		134N071W - 28	Logan	1977		S
Spartina pectinata - calamagrostis stricta - carex spp. herbaceous vegetation	Wet Prairie	S2S3	GNR		132N071W - 09; 132N071W - 10	McIntosh	1985-06-14		S
Speyeria idalia	Regal Fritillary	S2	G3?		134N071W - 20	Logan	1991-08-08		S

Land and Water Conservation Fund Projects

Project Name	Project Number
Wishek Park	38-00559
Wishek Pool Addition	38-00216
Wishek Tennis Court	38-00821

North Dakota Parks and Recreation Department
North Dakota Natural Heritage Inventory



November 2021

Appendix D

Agency Correspondence

North Dakota Public Service Commission

DRAFT MEETING MINUTES

Project: **Badger Wind**
Logan and McIntosh counties, ND
Ørsted Onshore North America, LLC

Host/Organizer: Jerry Lein, PSC

Meeting Date: January 27, 2020

Purpose: **Project Introduction Meeting**

Attendees

- Jerry Lein, Staff Engineer, North Dakota Public Service Commission (PSC)
- John (Jack) Schuh, Commission Counsel, PSC
- Brian Johnson, Attorney, PSC
- Patrick Fahn, Director, Public Utilities Division, PSC
- Jon Baker, Senior Developer, Ørsted Onshore North America (Ørsted)
- Emily Cooper, Senior Project Manager, Atwell
- Chris McCreedy, Senior Environmental Consultant, Atwell

Meeting Summary

The project team provided PSC staff with an introduction to Ørsted and the Badger Wind project and requested feedback on setbacks, permitting requirements, new developments in the permitting process, and any additional guidance and suggestions.

Discussion Topics

- J. Baker introduced Ørsted and the project, including location and size, stage of project development, and status of interconnection processes (project in the queue for MISO and SPP). Targeting start of construction in 2022 or 2023.
- Ongoing developments in wind permitting:
    - Discussions with the Department of Defense (DOD) regarding distance of wind developments from intercontinental ballistic missile (ICBM) sites; DOD requesting 2

miles. J. Baker noted that Ørsted participates in industry groups that are also tracking this issue, since it has come up more broadly.

- Noise – North Dakota is considering revising the requirement from 50 decibels (dB) at 100 feet from an occupied building to 45 decibels (dB) at 100 feet from an occupied building. Still in process – could potentially go even lower, but staff thought 45 dB would be the most likely outcome.
- Nothing else new on the horizon for setbacks.

- Project-specific feedback / thoughts from PSC:
  - Beaver Lake State Park is just north of the project site – recreation, hunting interests.
  - They have seen more resistance to wind from property owners and wildlife groups in the northwest portion of the state. Would not expect to see as much resistance from property owners in McIntosh and Logan counties.
- Permitting
  - Recommendation to have county permits in order or at least in process before the application is submitted to the PSC.
  - If McIntosh County has no zoning regulations, the project should nonetheless confirm there are no township regulations to consider. (Atwell would recommend meeting with the county and obtaining written documentation confirming that no permits required for wind development, including buildings such as an operations and maintenance facility or substation, roads, etc.)
  - PSC staff noted that unbroken prairie is a major focus of the North Dakota Game and Fish's (NDGF's) objective to protect the state's "unique and rare" species. Avoidance is not an issue per se for PSC except as they need to consider recommendations from NDGF.
    - Topic of offset payments for impacts to unbroken prairie (or other priority habitats) was raised. PSC confirmed that many wind farms have utilized offsets to date. NDGF is supportive; PSC less so. Politically speaking, offsets are viewed unfavorably by some parties.
    - PSC acknowledged that offsets may be part of the picture, but technically the Commission will not consider them in their determination. Best strategy is to avoid / minimize impact to the extent practicable.

        - A new law was proposed during the last session stating that the PSC cannot consider offsets in granting a permit. PSC staff noted that this essentially formalizes a practice that was already in place.

- Other recommendations:
    - Project will want to consult /involve tribes in development process.
    - Recommendation to review the Emmons-Logan docket, given proximity to the project.

Actions

No specific actions coming out of the meeting, except recommendations for the project to review the docket for recent and nearby wind facilities, and to keep an eye on evolving regulations. PSC staff all offered to answer questions and be a point of contact as the project develops.

Appendix D

Agency Correspondence

North Dakota State Water Commission

NORTH Dakota | Water Resources

Be Legendary.

November 8, 2021

Sarah Aftergood
Orsted
Email

Dear Ms. Aftergood:

This is in response to your request for a review of the environmental impacts associated with the Badger Wind Energy Center project located in McIntosh and Logan Counties, ND.

The proposed project has been reviewed by Department of Water Resources staff, and the following comments are provided:

- There are no FEMA regulatory floodplains identified and/or mapped where this proposed project is to take place. No permits relative to the NFIP are required based on the current effective FIRM and State minimum standards.

- The Department of Water Resources (DWR) Engineering and Permitting Section reviewed the Project and determined that any changes or effects to ponds, sloughs, or lakes, watercourses, or drainage patterns may require a DWR permit. For more information on these requirements, please visit the Regulation & Appropriation tab on the DWR's website (dwr.nd.gov), or contact the DWR's Regulatory Division at 701-328-2752 or dwrregpermits@nd.gov.

- Initial review indicates the project does not require a conditional or temporary permit for water appropriation. However, if surface water or groundwater will be diverted for construction of the project, a water permit will be required per North Dakota Century Code § 61-04-02. Please consult with the Department of Water Resources Water Appropriation Division if you have any questions at (701) 328-2754 or appropinfo@nd.gov.

- The Department of Water Resources maintains a network of observation wells across the state for monitoring the water levels and quality in glacial and bedrock aquifers. These wells are often installed in road and highway rights-of-way to limit inconvenience to the adjacent landowners. Department of Water Resources observation wells have a yellow protective casing extending between 1 and 3 feet above ground surface, and their locations are marked with a stake. If an observation well is encountered during project activities and must be removed, please contact the Water Appropriation Division. The Department of Water Resources hopes to keep all observation wells, but otherwise will ensure the well is properly abandoned.

Thank you for the opportunity to provide review comments. Should you have further questions, please contact me at 701-328-4970 or stevebest@nd.gov.

Sincerely,

Steven Best
Planner III

SB:dm/1570

900 East Boulevard Ave | Bismarck, ND 58505 | 701.328.2750 | DWR.nd.gov

Appendix D

Agency Correspondence

North Dakota State Historic Preservation Office

MEETING MINUTES

DRAFT/CONFIDENTIAL

Project: **Badger Wind, Wishek, North Dakota**
Atwell Project Number: 19000785
Orsted

Host/Organizer: Benjamin Banks, Atwell
405.614.0621 bbanks@atwell-group.com

Meeting Date: October 6, 2020

Purpose: **Project Introductory Meeting**

Attendees

Andrew Clark, North Dakota SHPO

Lisa Steckler, North Dakota SHPO

Jonathan Baker, Orsted

Ben Banks, Atwell Cultural Lead

Tara Corbett, Atwell Technical Lead

Emily Cooper, Atwell Project Manager

Meeting Summary

Attendee Introductions

Project Introduction:

- Ben Banks introduced the project and shared the project layout and boundary on his screen.
- Badger Wind started leasing land in 2017 and 2018.
- The project design team is starting to prepare a more detailed layout.
- The planned project layout incorporates setbacks and constraints identified via mapping and field studies.

- The interconnect position is for 250 MW of energy and there are 90 turbines in consideration - the project has a lot of alternates at the moment in anticipation that some turbine positions will need to be dropped.
- Planning late Quarter 1 or early Quarter 2 2021 to submit a state siting application through PSC.
- Atwell has been conducting wildlife studies on Badger Wind's behalf.

Proposed Cultural Resources investigations:

- The Atwell team is getting ready to conduct Class III Archeological studies, with architectural history studies to be conducted in early 2021.
- The Town of Wishek is within the 2 miles from an architectural history perspective.
- Class III archaeological studies are planned for the project footprint starting the week of October 19, weather conditions permitting. Proposed impact areas will be used. Using standard North Dakota Class III guidelines. Two field crews expected for approximately one week of survey.

Discussion about contingencies for project re-design:

- SHPO mentioned a concern that report addendums can become confusing. Prefer a single submittal once surveys completed for final site design. Site forms should be as complete as possible.
- Atwell is planning to hold the final cultural resources survey report until design is complete – will plan to provide consolidated report to SHPO that provides field results in a timely manner and clearly shows project impact area.

Discussion on SHPO involvement in PSC process:

- SHPO often does not know about projects until last minute (until they receive a request for concurrence) as part of the overall PSC application process. Appreciate earlier notice that cultural work is planned.
- The full cultural resources report can be included as an addendum to the certificate of site compatibility as long as the report can be redacted so that any archeological sites can be protected. Otherwise simply reference the report and include an executive summary. The report can then be available via SHPO.
- The SHPO typically has a two-week time period for state reviews. Usually try to stay about a week from submittal. Best case is a week.

- Receipt of paper report copies initiates the project into the queue for review.
- The SHPO needs a final hard copy cultural report for their archives but needs electronic files for archives as well. Contractors typically provide a pdf of the cultural report and survey shapefiles via the SHPO's FTP site and then follow up with a hard copy of the report.

Architectural Survey Discussion:

- Class III Architectural Survey planned for early 2021.
- Atwell is planning to partner with an architectural historian out of Bismarck.
- Plan to use the typical 2-mile radius around turbines.
- Regarding survey of Town of Wishek:
    - Architectural historian should be able to use professional judgement regarding what to include in the survey.
    - SHPO suggests a Class II windshield survey to assess and provide a plan for feedback.
    - SHPO stated site lead forms would be sufficient for most resources in Wishek
- Historic railroad bisects the project. Railroads are not generally eligible, sometimes bridges, overpasses, workshops are eligible, but grade itself isn't eligible. Eligible features would need to be more than just a train track passing through the area.

Discussion of potential project Impacts:

- There is a planned bore under the railroad grade. SHPO not too concerned about boring under grade. SHPO has concerns about boring beneath prehistoric sites. Boring is not considered site avoidance.
- SHPO typically recommends a 50-foot avoidance area around sites with fencing and monitoring.
- SHPO would like to review an unanticipated discovery plan to understand responses to unexpected discoveries during construction.

Alan Plumeau

From: Ben Banks <bbanks@atwell-group.com>
Sent: Friday, October 2, 2020 1:51 PM
To: 'andrewclark@nd.gov'; 'lsteckler@nd.gov'; jbaker@lincolnclean.com; Emily Cooper; Tara Corbett
Cc: Jonathan Baker
Subject: Badger Wind Project Introduction
Attachments: attachment.ics; 19000785_ProjectArea_20190415.kmz

Thank you everyone for helping to get this call scheduled. This update includes the call in information and also a KMZ of the project location we will be discussing. I look forward to talking with you Tuesday morning.

Preliminary Agenda:

- Project Description
- Planed Fieldwork
    - Archaeological
    - Architectural
- Comments, Questions, and Feedback

Join Microsoft Teams Meeting
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Conference ID: 892 020 224#
Local numbers | Reset PIN | Learn more about Teams | Meeting options
Atwell, LLC

Regards,

Ben Banks, RPA
Project Coordinator
Environmental Services
ATWELL, LLC
405.614.0621 Mobile
www.atwell-group.com

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Minutes of meeting to:		**MoM. No.:**	10306372-HOU-R-01-A
Badger Wind Farm, Logan and McIntosh Counties, North Dakota SHPO Coordination Meeting Ørsted Onshore North America, LLC		**From:**	DNV Environmental Permitting Services
		Date:	21 September 2021
Copied to:		**Prep. By:**	Gabriel Constantin, DNV
Kimberly Peters, Claire Dittrich, Sarah Aftergood			Jennifer Bring, Atwell

For: Badger Wind Farm, located in Logan and McIntosh counties, North Dakota
Subject: Badger Wind Farm Project SHPO coordination

Time/Place:	Microsoft Teams virtual meeting, 10:00 am CT
Participants:	State Historic Preservation Office (SHPO): Andrew Clark, Lisa Steckler Ørsted: Sarah Aftergood, Claire Dittrich DNV: Kimberly Peters, Gabriel Constantin Cultural Resource Analysts, Inc. (CRA): Liz Heavrin, Robert Ball Atwell, Inc.: Maureen O'Shea-Stone, Tanya Johnson, Jennifer Bring
Absent:	N/A

Agenda:
- Introductions
- North Dakota State Historical Society and State Historic Preservation Office (SHPO)
- Update on Class II Architectural Assessment
- Update on Class III Archeological Assessment
- Questions and Answers (Q&A)

Introduction

Brief introduction of the participants included Andrew Clark (chief archaeologist for state of ND), Lisa Steckler (106 reviewer, standing in for state reviewer) and the members of Ørsted (project developer), DNV (environmental consultant), Atwell (permitting; archaeological consultant) and CRA (architectural consultant).

Sarah Aftergood (Ørsted) indicated that the Badger Wind Farm (the "Project"), a 250 MW wind farm in Logan and McIntosh Counties, with a less-than one mile transmission line, has not changed significantly since the last Project meeting with SHPO other than a reduction in project area and minor movements/micrositing near the town of Wishek. The Project is planning to submit its Certificate of Site Compatibility (CSC) application to ND Public Service Commission (PSC) by the end of December 2021, with expectation of permit issuance in June 2022.

To date, the Project has completed its Class I literature research and has partially completed the Class III Archaeological Assessment in 2020. The items the Project wants to cover for the meeting are as follows:
- What is the role North Dakota State Historical Society and SHPO?
- Project update on Class II Architectural Assessment and ensuring the right methodology is followed
- Project update on Class III Archeological Assessment and ensuring the right methodology is followed
- Address any additional Q&A from SHPO, Ørsted and the consultants as needed.

North Dakota State Historical Society and SHPO

Andrew Clark confirmed that the ND State Historical Society and SHPO are one and the same. SHPO is defined by Section 106 National Historic Preservation Act, and the activities run through the State Historical Society.

Class II Architectural Assessment

Liz Heavrin from CRA confirmed that they will complete their Class II architectural reconnaissance survey within a 2-mile buffer from the Project turbines. All structures of 45 years old or older will be mapped and photographed from public right of way. Reporting will include basic information for ineligible structures (probably in a table format). For structures potentially eligible for listing on the National Register of Historic Places, a thorough description of history and photographs will be provided. Structures in the town of Wishek will be documented in a similar manner to those in rural areas.

Lisa Steckler from SHPO confirmed that this is in line with SHPO expectations for Class II Architectural Assessment and reflected what was discussed in the last meeting.

Class III Archaeological Assessment

Jennifer Bring from Atwell indicated that the Class III archaeological investigation for the Project was initiated and partially completed last year. The Class III surveys will be completed this year based on the latest layout, focusing on new areas. The entire Project area is on private land. Standard ND SHPO guidelines will be followed (pedestrian surveys, shovel testing in identified areas, as needed) and one final and consolidated Class III Archaeological Survey report for all work completed (2020 and 2021 surveys) will be submitted to SHPO.

Andrew Clark from SHPO confirmed that one report is preferred.

Additional Q&A

Timing for Letter of Recommendations

Sarah Aftergood asked about timing of the submission of studies and Letter of Recommendations from SHPO. Andrew Clark from SHPO indicated that they will typically review the archaeological and architectural reports prior to the submission of the CSC application. The Letter of Recommendation is typically issued and submitted to the PSC along with the application.

Qualified Personnel Permits

Sarah Aftergood asked if SHPO had any concerns or additional input for the Project to be aware of. Andrew Clark from SHPO indicated that he had no concerns and that the survey plans put forward are good and in line with expectations. He indicated that Qualified Personnel need to be on permits for each of the consultants conducting cultural resources studies. Maureen O'Shea-Stone confirmed that Atwell has been in contact with SHPO and updated the qualified personnel on their permit for archaeological work. Liz Heavrin from CRA noted that Robert Ball (CRA) was recently added to the ND list for architectural work.

Tribal Consultation

Sarah Aftergood asked SHPO about Tribal Consultation requirements. Andrew Clark indicated SHPO doesn't coordinate that at the state level. Bureau of Indian Affairs handles it, and it is typically initiated with the CSC application submission to PSC.

Site Lead Forms for Inaccessible Sites

Liz Heavrin from CRA asked about where the Site Lead Form for inaccessible architectural structures (access denied) can be obtained. Andrew Clark noted that the form used for site lead is the same as any other regular architectural sites (Architectural Site Form) and it should include any available information. SHPO noted that these sites are identified by an "X" in the site numbers.

Liz Heavrin also asked for guidance on how to assess visual effects on inaccessible properties. Lisa Steckler from SHPO said it is dependent on the site, but photographs and inclusion of any available information that could be helpful for their assessment should be included. For instance, significance of property, how close it is, and any obstructions can be included.

SHPO question

Andrew Clark from SHPO asked if there are some areas that were surveyed in 2020 during the partial Class III Archaeological Assessment that aren't going to be part of the final Project area. Andrew requested that the Project share this information/data for their files and database. Jennifer Bring indicated that the extent to which areas that are now excluded from the Project were surveyed hasn't been determined yet (i.e., the updated layout was finalized just before the meeting and therefore no comparison had been made yet).

From:	Steckler, Lisa L.
To:	Ben Banks
Subject:	RE: Badger Project Introduction Call with SHPO
Date:	Thursday, September 24, 2020 8:38:12 AM

I am usually happy if I can remember which month it is…lol

From: Ben Banks <bbanks@atwell-group.com>
Sent: Thursday, September 24, 2020 9:27 AM
To: Steckler, Lisa L. <lsteckler@nd.gov>; Clark, Andrew <andrewclark@nd.gov>
Cc: Tara Corbett <tcorbett@atwell-group.com>; Emily Cooper <ecooper@atwell-group.com>
Subject: RE: Badger Project Introduction Call with SHPO

CAUTION: This email originated from an outside source. Do not click links or open attachments unless you know they are safe.

Thanks for that catch Lisa. Yes, I meant October 5th. Honestly, some days I'm lucky if I know what day "today" is.

Ben Banks
ATWELL, LLC
405.614.0621 Mobile
www.atwell-group.com

From: Steckler, Lisa L. [mailto:lsteckler@nd.gov]
Sent: Thursday, September 24, 2020 9:24 AM
To: Ben Banks; Clark, Andrew
Cc: Tara Corbett; Emily Cooper
Subject: RE: Badger Project Introduction Call with SHPO

Next week is the week of the 28th. Do you mean the 5th?

From: Ben Banks <bbanks@atwell-group.com>
Sent: Thursday, September 24, 2020 8:56 AM
To: Steckler, Lisa L. <lsteckler@nd.gov>; Clark, Andrew <andrewclark@nd.gov>
Cc: Tara Corbett <tcorbett@atwell-group.com>; Emily Cooper <ecooper@atwell-group.com>
Subject: RE: Badger Project Introduction Call with SHPO

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Lisa and Andy,
Thank you for getting back to me so quickly. Would it help if we pushed the call back to the week of September 28th? Some or our questions are specific to the architectural survey, so it would be good to speak to both of you.

Ben Banks
ATWELL, LLC
405.614.0621 Mobile
www.atwell-group.com

From: Steckler, Lisa L. [mailto:lsteckler@nd.gov]
Sent: Thursday, September 24, 2020 8:53 AM
To: Clark, Andrew; Ben Banks
Cc: Tara Corbett; Emily Cooper
Subject: RE: Badger Project Introduction Call with SHPO

And I am supposed to have jury duty Wed-Friday.

Please go ahead and meet with Andy whenever he is available. He can fill me in.

From: Clark, Andrew <andrewclark@nd.gov>
Sent: Thursday, September 24, 2020 8:52 AM
To: Ben Banks <bbanks@atwell-group.com>; Steckler, Lisa L. <lsteckler@nd.gov>
Cc: Tara Corbett <tcorbett@atwell-group.com>; Emily Cooper <ecooper@atwell-group.com>
Subject: RE: Badger Project Introduction Call with SHPO

Hi Ben,

It was good to talk to you yesterday. Thank you for the follow-up email. I just found out that I won't be available Monday through Thursday next week. The only day I have available is Friday.

Best,

Andy

Andrew Clark, PhD
Chief Archaeologist
Archaeology and Historic Preservation Division
State Historical Society of North Dakota
612 East Boulevard Avenue
Bismarck, North Dakota 58505-0830
701-328-3574

From: Ben Banks <bbanks@atwell-group.com>
Sent: Wednesday, September 23, 2020 3:10 PM
To: Steckler, Lisa L. <lsteckler@nd.gov>; Clark, Andrew <andrewclark@nd.gov>
Cc: Tara Corbett <tcorbett@atwell-group.com>; Emily Cooper <ecooper@atwell-group.com>
Subject: Badger Project Introduction Call with SHPO

CAUTION: This email originated from an outside source. Do not click links or open attachments unless you know they are safe.

Good afternoon Lisa and Andrew,
Atwell is working on a proposed wind project near Wishek in McIntosh County that will require a Certificate of Site Compatibility from the Public Service Commission. Prior to beginning archaeological fieldwork in the coming weeks, we would like to have a brief meeting with you to introduce the wind project and incorporate any concerns or insights you might have into our field methods. We would also like to discuss the approach for architectural survey as we prepare that scope of work.
If possible, we would like to schedule a Zoom or Microsoft Teams screen share meeting with you sometime next week. I spoke with Andrew this afternoon, and it sounds like Wednesday won't work for him. Would Monday afternoon or a day later in the week work for both of you?

Regards,

Ben Banks, RPA
Project Coordinator
Environmental Services
ATWELL, LLC
405.614.0621 Mobile
www.atwell-group.com

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From: Emily Sakariassen
To: Daan Meens
Cc: Ben Banks
Subject: Re: FW: Badger Wind Architectural Study Questions
Date: Thursday, December 10, 2020 9:49:50 AM

Sorry to bombard with emails. Do we have an established meeting format? Should I keep my eyes peeled for a meeting invite? Thanks!

On Thu, Dec 10, 2020 at 8:57 AM Daan Meens <dmeens@metcalfarchaeology.com> wrote:

> 3pm central works for me.
>
> On Thu, Dec 10, 2020 at 7:52 AM Ben Banks <bbanks@atwell-group.com> wrote:
>
> > Daan,
> >
> > Should we try for 3:00 central this afternoon?
> >
> > **Ben Banks**
> > **ATWELL, LLC**
> > 405.614.0621 Mobile
> > **www.atwell-group.com**
> >
> > ---
> >
> > **From:** Steckler, Lisa L. <lsteckler@nd.gov>
> > **Sent:** Thursday, December 10, 2020 8:08 AM
> > **To:** Ben Banks <bbanks@atwell-group.com>
> > **Subject:** RE: Badger Wind Architectural Study Questions
> >
> > Ben,
> >
> > I have a meeting today at 1 but otherwise I am free.
> >
> > Thanks
> >
> > *Lisa Steckler*
> >
> > *Historic Preservation Specialist*
> >
> > *State Historical Society of North Dakota*

701-328-3577

From: Ben Banks <bbanks@atwell-group.com>
Sent: Wednesday, December 9, 2020 4:40 PM
To: Steckler, Lisa L. <lsteckler@nd.gov>
Cc: Emily Sakariassen (esakariassen@metcalfarchaeology.com) <esakariassen@metcalfarchaeology.com>; Daan Meens <dmeens@metcalfarchaeology.com>
Subject: Badger Wind Architectural Study Questions

CAUTION: This email originated from an outside source. Do not click links or open attachments unless you know they are safe.

Good afternoon Lisa,

Atwell and Metcalf are trying to iron out the architectural history sturdy scope for the Badger Wind project. We would like to ask you a couple of questions about specifics for the study if you have an opening for a brief call tomorrow or Friday. To refresh your memory a bit, Atwell hosted a meeting in October to discuss this project in Logan and McIntosh with you and Andrew Clark.

Regards,

Ben Banks, RPA
Project Coordinator

Environmental Services
ATWELL, LLC
405.614.0621 Mobile
www.atwell-group.com

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--

Emily Sakariassen, M.S. |Architectural Historian

Metcalf Archaeological Consultants, Inc.

701-258-1215 office | 701-220-4014 mobile

metcalfarchaeology.com



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January 21, 2022

Robert Ball
Cultural Resource Analysts, Inc.
151 Walton Avenue
Lexington, KY 40508

ND SHPO Ref.: 22-0020 Badger Wind in portions of 49 sections in Logan and Mountrail Counties, North Dakota

Dear Mr. Ball,

We reviewed the report for ND SHPO Ref: 22-0020 Badger Wind in portions of 49 sections in Logan and Mountrail Counties, titled "Class I Literature Review and Class II Architectural Reconnaissance Inventory for the Proposed Badger Wind Project in Logan and McIntosh Counties, North Dakota" and find this Cultural Resource Analysts, Inc. report by John Dickerson and Robert Ball not acceptable for the following reasons:

- The portion of the area east of map 2e is missing from the map set.
- The maps include a recommended NRHP boundary but only for one of the sites recommended eligible.
- Appendix A is printed book style so requires constant rotation.
- Site 21 is a large barn with a round arched roof, a very rare type in North Dakota. This site needs to be recorded and evaluated.
- The sites recommended eligible are included in Appendix B.
- Site 331 is a water tower of a vintage fast disappearing in ND and ones with strong integrity are considered eligible. This site needs recorded and evaluated.

Thank you for the opportunity to review this report. If you have any questions, please contact Lorna Meidinger, Historic Preservation Specialist at (701) 328-2089 or lbmeidinger@nd.gov

Sincerely,

for William D. Peterson, PhD
State Historic Preservation Officer
(North Dakota)

22-0020

Appendix D

Agency Correspondence

North Dakota Tribal Nations and Indian Affairs Commission

September 22nd, 2021

Subject: Proposed Badger Wind Energy Center in Mcintosh and Logan Counties, North Dakota

Dear Honorable Chairman,

Badger Wind, LLC ("Badger") is in the process of developing the proposed 250 MW Badger Wind Energy Center (the "Project") in Mcintosh and Logan Counties, North Dakota. Badger is an indirect, wholly owned subsidiary of Orsted Onshore North America, LLC ("Orsted"), which is a large renewable energy developer with more than 4000 megawatts ("MW") of wind and solar energy in operation or under construction in the United States. The proposed Project is planned to be located on approximately 34,000 acres of private land in western Logan County and western Mcintosh County, approximately 40 miles east of the Missouri River and 2 miles northwest of Wishek, ND, as shown below in Figure 2 (shaded area is the "Project Area"). I am reaching out to you on behalf of Badger to inform you about the proposed Project and give you the opportunity to provide input.

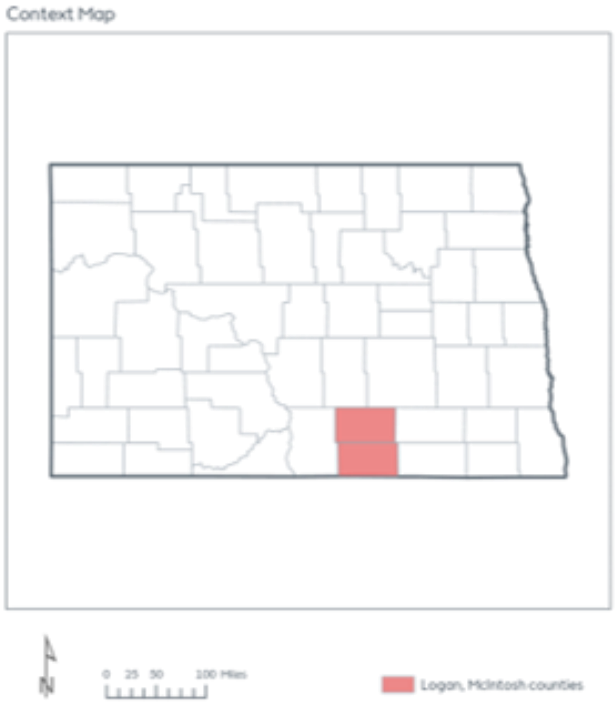


Figure 1: Context map of Project Area in North Dakota.

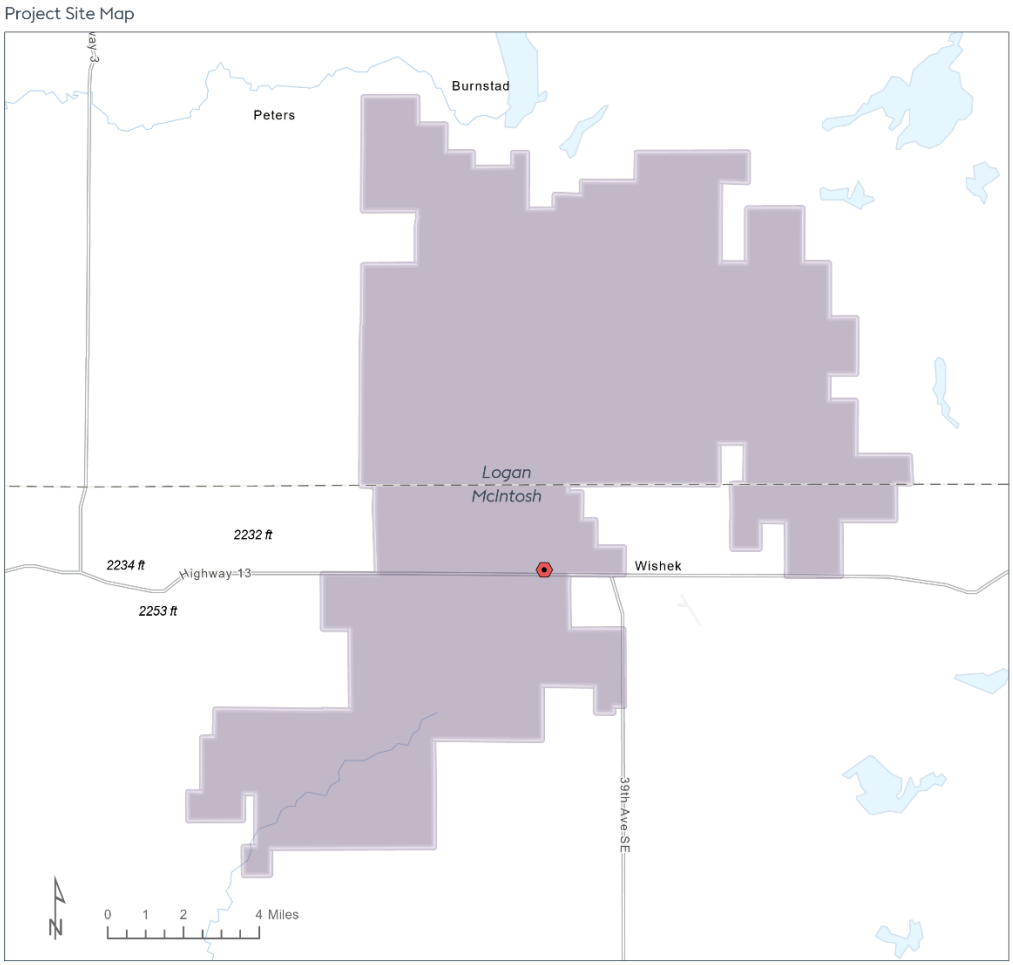


Figure 2: Project Area for Badger Wind Farm

Proposed Project

The proposed Project would consist of an array of wind turbines, each with an associated transformer. Proposed Project facilities would include the following components:

- Approximately 74 wind turbines;
- All-weather access roads to each turbine site;
- One collection substation (approximately 5 acres);
- Underground electrical collection lines and fiber optic cables from each turbine to the collection substation;
- An operations and maintenance ("O&M") facility (approximately 10 acres);
- A temporary concrete batch plant location (up to 5 additional acres);

- A temporary laydown yard (up to 15 acres);
- Approximately 3 permanent meteorological ("MET") towers; and
- One generation tie-line that would not exceed 1 mile in length

The Project will have one point of interconnection: Montana-Dakota Utilities' ("MDU") 230 kV Wishek substation. There will be one collector substation and one generation tie line totaling less than 1 mile.

Field work is anticipated to take place Fall 2021 with Badger anticipating initiating permitting through the North Dakota Public Service Commission in late 2021, with construction scheduled to start in fall 2022.

If you have an interest in receiving further information about the project, please contact me (512) 230.2148 or via e-mail at saraf@orsted.com

Also please visit our project website at.
https://badgerwindfarm.com

Regards, Sarah Aftergood
Director, Environmental Permitting

Sarah Aftergood

Cc: Charles Smith, Orsted
June Marie Gray, Orsted

Appendix D

Agency Correspondence

United States Department of Defense

November 6, 2018

DOD Siting Clearinghouse
3400 Defense Pentagon, Room 5C646
Washington, DC 20301-3400

Sent Via Electronic Mail to:
Osd.dod-siting-clearinghouse@mail.com

To whom it may concern:

Lincoln Clean Energy, LLC develops, owns and operates renewable energy generation projects throughout the United States. We are in the process of developing a utility-scale wind farm called Badger Wind with a footprint of approximately 70,000 acres located in Logan and McIntosh Counties, North Dakota.

Enclosed you will find two aerial images of the proposed layout, which currently consists of 200 – GE 2.5 Megawatt wind turbine generators. Each wind turbine generator has a hub height of 89 meters and a maximum blade tip height of 152.5 meters. Enclosed you will also find an excel spreadsheet with coordinates (DMS) of the same proposed layout for your review.

We look forward to working with you throughout the DOD Clearinghouse Siting process. Please feel free to contact me at (402) 290-6500 should you have any questions or comments to the above or enclosed documents

Best Regards



Charlie Smith

Director of Development
Lincoln Clean Energy, LLC
401 N. Michigan Ave., Suite 501
Chicago, IL 60611
W – (312) 422-1604
C – (402) 290-6500
csmith@lincolnclean.com

Enclosed:

Badger Wind Site Layout (11-6-2018).pdf
Badger Wind Coordinates (11-6-2018).xlsx

Badger Wind Coordinates

Name	Latitude	Longitude
1	46.35657	-99.77
2	46.35657	-99.7541
3	46.35657	-99.7382
4	46.35657	-99.7223
5	46.35657	-99.7064
6	46.35657	-99.6905
7	46.35657	-99.6746
8	46.35657	-99.6587
9	46.35657	-99.6428
10	46.35657	-99.6269
11	46.35657	-99.611
12	46.35657	-99.5951
13	46.35657	-99.5792
14	46.35657	-99.5633
15	46.35657	-99.5475
16	46.35657	-99.5316
17	46.35657	-99.5157
18	46.35657	-99.4998
19	46.35657	-99.4839
20	46.35657	-99.468
21	46.35657	-99.4521
22	46.32367	-99.77
23	46.32367	-99.7541
24	46.32367	-99.7382
25	46.32367	-99.7223
26	46.32367	-99.7064
27	46.32367	-99.6905
28	46.32367	-99.6746
29	46.32367	-99.6587
30	46.32367	-99.6428
31	46.32367	-99.6269
32	46.32367	-99.611
33	46.32367	-99.5951
34	46.32367	-99.5792
35	46.32367	-99.5633
36	46.32367	-99.5475
37	46.32367	-99.5316
38	46.32367	-99.5157
39	46.32367	-99.4998
40	46.32367	-99.4839
41	46.32367	-99.468
42	46.32367	-99.4521
43	46.32367	-99.4839
44	46.32367	-99.4521
45	46.29078	-99.77

46	46.29078	-99.7541
47	46.29078	-99.7382
48	46.29078	-99.7223
49	46.29078	-99.7064
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51	46.29078	-99.6746
52	46.29078	-99.6587
53	46.29078	-99.6428
54	46.29078	-99.6269
55	46.29078	-99.611
56	46.29078	-99.5951
57	46.29078	-99.5792
58	46.29078	-99.5633
59	46.29078	-99.5475
60	46.29078	-99.5316
61	46.29078	-99.5157
62	46.29078	-99.4998
63	46.29078	-99.4839
64	46.29078	-99.468
65	46.29078	-99.4521
66	46.29078	-99.4839
67	46.29078	-99.4521
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72	46.25788	-99.7064
73	46.25788	-99.6905
74	46.25788	-99.6746
75	46.25788	-99.6587
76	46.25788	-99.6428
77	46.25788	-99.6269
78	46.25788	-99.611
79	46.25788	-99.5951
80	46.25788	-99.5792
81	46.25788	-99.5633
82	46.25788	-99.5475
83	46.25788	-99.5316
84	46.25788	-99.5157
85	46.25788	-99.4998
86	46.25788	-99.4839
87	46.25788	-99.468
88	46.25788	-99.4521
89	46.25788	-99.4839
90	46.25788	-99.4521
91	46.22499	-99.7859
92	46.22499	-99.8018

93	46.22499	-99.8177
94	46.22499	-99.8336
95	46.22499	-99.8495
96	46.22499	-99.77
97	46.22499	-99.7541
98	46.22499	-99.7382
99	46.22499	-99.7223
100	46.22499	-99.7064
101	46.22499	-99.6905
102	46.22499	-99.6746
103	46.22499	-99.6587
104	46.22499	-99.6428
105	46.22499	-99.6269
106	46.22499	-99.611
107	46.22499	-99.5951
108	46.22499	-99.5792
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110	46.22499	-99.5475
111	46.22499	-99.5316
112	46.22499	-99.5157
113	46.22499	-99.4998
114	46.22499	-99.4839
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117	46.22499	-99.4839
118	46.22499	-99.4521
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125	46.1921	-99.7541
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129	46.1921	-99.6905
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131	46.1921	-99.6587
132	46.1921	-99.6428
133	46.1921	-99.6269
134	46.1921	-99.611
135	46.1921	-99.5951
136	46.1921	-99.5792
137	46.1921	-99.5633
138	46.1921	-99.5475
139	46.1921	-99.5316

140	46.1921	-99.5157
141	46.1921	-99.4998
142	46.1921	-99.4839
143	46.1921	-99.468
144	46.1921	-99.4521
145	46.1921	-99.4839
146	46.1921	-99.4521
147	46.1592	-99.7859
148	46.1592	-99.8018
149	46.1592	-99.8177
150	46.1592	-99.8336
151	46.1592	-99.8495
152	46.1592	-99.77
153	46.1592	-99.7541
154	46.1592	-99.7382
155	46.1592	-99.7223
156	46.1592	-99.7064
157	46.1592	-99.6905
158	46.1592	-99.6746
159	46.1592	-99.6587
160	46.1592	-99.6428
161	46.1592	-99.6269
162	46.1592	-99.611
163	46.1592	-99.5951
164	46.1592	-99.5792
165	46.1592	-99.5633
166	46.1592	-99.5475
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168	46.1592	-99.5157
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177	46.12631	-99.8177
178	46.12631	-99.8336
179	46.12631	-99.8495
180	46.12631	-99.77
181	46.12631	-99.7541
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183	46.12631	-99.7223
184	46.12631	-99.7064
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186	46.12631	-99.6746

187	46.12631	-99.6587
188	46.12631	-99.6428
189	46.12631	-99.6269
190	46.12631	-99.611
191	46.12631	-99.5951
192	46.12631	-99.5792
193	46.12631	-99.5633
194	46.12631	-99.5475
195	46.12631	-99.5316
196	46.12631	-99.5157
197	46.12631	-99.4998
198	46.12631	-99.4839
199	46.12631	-99.468
200	46.12631	-99.4521


Logan
McIntosh
Ashley
© 2018 Google
Image Landsat / Copernicus

OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE
3500 DEFENSE PENTAGON
WASHINGTON, DC 20301-3500

SUSTAINMENT

December 3, 2018

Charlie Smith
Director of Development
Lincoln Clean Energy, LLC
401 N. Michigan Ave., Suite 501
Chicago, IL 60611

Dear Mr. Smith,

As requested, the Military Aviation and Installation Assurance Siting Clearinghouse coordinated within DoD an informal review of the Badger Wind Project. The results of our review indicated that the wind project located in Logan and McIntosh Counties, ND, as proposed, will have minimal impact on military operations conducted in the area.

Please note that this informal review by the DoD Military Aviation and Installation Assurance Siting Clearinghouse does not constitute an action under 49 United States Code Section 44718 and that the DoD is not bound by the conclusion arrived at under this informal review. If you have any questions, please contact me at steven.j.sample4.civ@mail.mil or at 703-571-0076.

Sincerely,

Steven J. Sample
Deputy Director
Military Aviation and Installation
Assurance Siting Clearinghouse

Appendix D
Agency Correspondence
United States Army Corps of Engineers

MEETING MINUTES

DRAFT/CONFIDENTIAL

Project: **Badger Wind Project**
Badger Wind, LLC

Host/Organizer: Travis Apfel, Atwell, LLC
757-817-6420 tapfel@atwell-group.com

Meeting Date: October 16th, 2020

Purpose: **Request for Regulatory Guidance from Bismarck, ND USACE office**

Attendees

Travis Apfel, Environmental Consultant, Atwell, LLC

Toni Erhardt, USACE Regulator, Bismarck USACE Regulatory Office

Meeting Summary

I called the USACE regulatory office in Bismarck and tried a few extensions for different regulators until Toni Erhardt answered her line. I asked her some questions regarding how the Bismarck office was regulating wetlands under specific conditions related to what is considered non-jurisdictional compared to jurisdictional under the "2020 New Clean Water Act Rule". I was vague about the project and only mentioned that it was for a windfarm in the state (did not disclose any project specific details other than project type for her reference). Below is a bulleted list of topics and responses from her:

1) I asked if they considered a wetland or intermittent feature to be jurisdictional if it only had a surficial connection to downstream jurisdictional waters through a "non-jurisdictional ephemeral stream channel"

    a. "…there aren't too many ephemeral streams in this area, so that is not extremely relevant. Rainstorms don't generally contribute to the overall hydrology/channel morphology in this area, so the streams aren't usually formed by incised channels or erosion from heavy rainfall on sloped topography. However, we do have a spring snowmelt effect that tends to provide a seasonal connection between features; snow falls a lot in the Fall/early winter then stops snowing but snow stays around

(snowpack) without melting (2-3 months of snow sitting without melting, and without much additional precipitation). Once spring hits, all the snow melts at once and things become quite flooded. This seasonal melt in the spring is usually what links wetlands with surficial connection by creating seasonal wetland drainages that are only wet in spring/early summer. Wetland vegetation is dominant in these areas during this time and once the snowmelt stops mid-summer, sometimes these areas tend to dry up enough to allow some upland vegetative species to sprout (usually grasses). Thus, there are seasonal (intermittent) connective drainages linking seemingly isolated wetland depressions that are not always accurately delineated in the later months of summer due to dry conditions."

b. "If there is enough water in late-summer/drier months to maintain wetlands, then a seasonal (intermittent) connection via spring snowmelt is most likely present early in the year"

c. "It is important to describe what you see and think about the waterway/wetland and be totally up front about the feature. Explain/identify features and present anything that is potential no matter how you think the corps will regulate it."

d. "we have these 'prairie streams' here that are vegetated slow flowing streams in the spring after snowmelt but then kind of turn into what resembles chains of wetland pockets in the drier months of summer.."

2) I also asked her what they look for when they get a report that has certain features labeled or described as "isolated":

a. "If there is any channel/drainage/oulet visible on the aerials that looks like a way for water to drain out of the wetland or feature, then we need some supporting evidence for why it was decided that the feature is not connected and that no indication of seasonal connection via snowmelt is a possibility."

b. "If you want to prove something to be isolated, take pictures or data that proves your point instead of giving open-ended data/pics of the area because that will make us scratch our heads and ask more questions.."

c. "To determine connectivity, I start at the bottom of the drainage by the jurisdictional channel and then track the channel upstream to the feature. Then locate the spot where it is assumed to terminate it's seasonal intermittent connection…"

MEETING MINUTES

DRAFT/CONFIDENTIAL

Project: **Badger Wind Project**
Badger Wind, LLC

Host/Organizer: Travis Apfel, Atwell, LLC
757-817-6420 tapfel@atwell-group.com

Meeting Date: October 28th, 2020

Purpose: **Request for Regulatory Guidance from Bismarck, ND USACE office**

Attendees

Travis Apfel, Environmental Consultant, Atwell, LLC

Toni Erhardt, USACE Regulator, Bismarck USACE Regulatory Office

Meeting Summary

I was asked to call the USACE Regulatory office in Bismarck again with some additional questions about the project. I was able to reach the same regulator (Toni Erhardt) as I had talked to previously. I had three question topics to ask her:

1) Does groundwater count as connection between wetlands? What about in terms of "prairie potholes?"
2) Follow up confirmation question; "Are wetlands jurisdictional if they are connected by a drainage swale that becomes flooded during seasonal spring snowmelt?"
3) Specific questions about some isolated wetlands within our report without giving details about the project.

Toni's answers:

1) "Technically, groundwater (shallow subsurface) connection is no longer considered a significant nexus under the 'New Rule'. So, even though it doesn't make scientific sense, prairie potholes are most likely not considered jurisdictional if they lack a surficial connection…"

2) “Features that experience seasonal surficial hydrological connection (via spring snowmelt) are considered to be jurisdictional and to prove that they are not connected, the best way to convince us is to perform surveys in the spring when the snow is melting or just after it melts so you can visually see whether or not the connection is present or not. Otherwise, you will need strong supportive data (soils, pictures of conditions, logical explanation, etc…) to convince us that there is no connection when the delineation was performed in the drier times of the year (late summer).”

3) “We have to consider each feature presented within a delineation/permit independently throughout the entire project and do not just write off the entire report if they seem to agree with how the calls were generally made. This is time consuming when there are many isolated features to consider.”

    a. She personally recommended that it’s a better approach to air on the side of caution calling something jurisdictional if there is any indication of a potential flowline outside of the survey area. Getting aggressive with the isolated feature calls could cause them to take more time in their review and create more questions that could potentially result in changes to how the data is considered (which could mean having to tell the client that we were wrong and that some “isolated” features need to be changed to jurisdictional)

4) Additionally, she explained a lot more about how they do things there at their office and also reiterated the fact that things are still being worked out with the exact direction they are taking on interpretation of the regulations. This is because they spent so much time creating a unified direction and way to regulate WOUS after the 2015 rule (8 months of weekly webinars) and then had to basically drop everything they learned and come up with a new approach based on the sudden “New Clean Water Act” rule in 2020. She said they are basically waiting to see who the new President is because that will determine whether things will go back to what they are used to or if they need to take a stance on how to deal with the New Rule.

    a. “this new rule was not at all made based on science and the regulations do not make sense because they say one thing then contradict what they said and no one from headquarters is giving guidance for the local offices other than to ‘read the regulations’ so this is all pretty messed up right now.”

        i. *Hindsight comment (11/09/2020) – Biden won the election so it will most likely revert back to the 2015 rule or something similar, which is what they are used to regulating. So, this all might change now and a new call might

need to be made if the regulations change again…. But this is what we have from them for now

From: Nygard, Jeremy S CIV USARMY CENWO (USA) <Jeremy.S.Nygard@usace.army.mil>
Sent: Monday, November 1, 2021 12:05 PM
To: Sarah Aftergood <SARAF@orsted.com>
Subject: NWO-2021-01889-BIS, Orsted Onshore North America LLC, Badger Wind Energy Center

Hello Sara Aftergood,

Our office has reviewed the information you provided regarding the proposed Orsted Onshore North America LLC, Badger Wind Energy Center project and determined that a U.S. Army Corps of Engineers Section 404 permit may be required for your project. Please see attached letter and blank application form. Thank you,

v/r

Jeremy Nygard
Regulatory Permit Assistant
U.S. Army Corps of Engineers
North Dakota Regulatory Office
3319 University Drive
Bismarck, ND 58504
701-255-0015 ext. 2006

Due to precautions taken in response to the COVID-19 pandemic, email is currently the best way to contact me. I am mostly teleworking from home so if you call my office phone extension and leave a voicemail, I'll receive it via email and I'll respond as soon as possible.

The North Dakota Regulatory office prefers that all submissions are sent electronically to the following email address: CENWO-OD-RND@usace.army.mil instead of a hard copy by mail. Please split large attachments (>25 MB) into multiple emails if needed.

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October 29, 2021

NWO-2021-01889-BIS

Orsted Onshore North America
Attn: Ms. Sara Aftergood
812 San Antonio Street, Suite 500
Austin, Texas 78701

Dear Ms. Aftergood:

This is in response to your solicitation letter received on October 20, 2021 requesting Department of the Army (DA), United States Army Corps of Engineers (Corps) comments on the proposed Badger Wind Energy Center project. The proposed project is located on approximately 34,000 acres of private land approximately 40 miles east of the Missouri River in southern Logan County and northern McIntosh County, North Dakota.

U. S. Army Corps of Engineers Regulatory Offices administer Section 404 of the Clean Water Act (Section 404). A Section 404 permit would be required for the discharge of dredge or fill material (temporarily or permanently) in waters of the United States. Waters of the United States may include, but are not limited to, rivers, streams, ditches, coulees, lakes, ponds, and their adjacent wetlands. Fill material includes, but is not limited to, rock, sand, soil, clay, plastics, construction debris, wood chips, overburden from mines or other excavation activities and materials used to create any structure or infrastructure in waters of the United States.

Based on the information contained in your letter, the Corps has determined that your proposed project may need a Clean Water Act Section 404 permit. The permit application and instructions for completing the application are enclosed and may also be found at: http://www.usace.army.mil/Missions/Civil-Works/Regulatory-Program-and-Permits/Obtain-a-Permit. Be sure to accurately describe all proposed work and construction methodology. Once the application is complete, mail it to the letterhead address or to the email address (preferred) below.

Due to precautions taken in response to the COVID-19 pandemic, The North Dakota Regulatory office prefers that all submissions are sent electronically to the following email address: CENWO-OD-RND@usace.army.mil instead of a hard copy by mail. Please split large attachments (>25 MB) into multiple emails if needed.

Please refer to identification number NWO-2021-01889-BIS in any correspondence concerning this project. If you have any questions, please contact Jeremy Nygard at U.S. Army Corps of Engineers, North Dakota Regulatory Office, 3319 University Drive, Bismarck, North Dakota 58504-7565, by email at *Jeremy.S.Nygard@usace.army.mil*, or telephone at (701) 255-0015, extension 2006. For more information regarding our program, please visit our website at *http://www.nwo.usace.army.mil/Missions/RegulatoryProgram/NorthDakota.aspx*.

Sincerely,



Toni R. Erhardt
Senior Project Manager
North Dakota Regulatory Office

Enclosure

MEETING MINUTES

DRAFT/CONFIDENTIAL

Project: **Badger Wind Project**
Badger Wind, LLC

Host/Organizer: Caitlin Cyrus, Atwell Group
410.693.6829 ccyrus@atwell-group.com
Participant: Amber Inman, USACE Bismarck Regulatory Office
701.255.0015 ext 2009 Amber.L.Inman@usace.army.mil

Meeting Date: November 10th, 2021

Purpose: **NWO-2021-01889-BIS**
Questions relating to producing an Aquatic Resources Report

Meeting Summary

- *Regulator that spoke with Travis Apfel in 2020: Toni Erhardt, USACE Regulator, Bismarck USACE Regulatory Office*
- Regulator to contact in regards to NWO-2021-01889-BIS:
    - Jeremy Nygard - Jeremy.S.Nygard@usace.army.mil or 701-255-0015 extension 2006
        - I contacted Jeremy the morning of the 10th and he stated that a project manager would need to answer my questions. While most of the team was off today, Amber Inman was available to talk.

- **With the NWPR vacated and interpretation back to the 1986 regulations and Rapanos, how have these items changed since last talking with Travis:**
    - Q: Does groundwater count as a connection between wetlands? What about in terms of prairie potholes?
        - The USACE now has much greater latitude when it comes to determining jurisdictional connections. Almost all wetlands and watercourses in their area have a groundwater influence related to snowmelt, and only very rarely are there ephemeral channels that flow only in response to precipitation. Most things, while appearing isolated during the drier seasons, are likely jurisdictional due to this connection.
        - A prairie pothole will have to be a completely enclosed basin to be considered isolated. A swale, ditch, or drainage, that could connect it to TNWs will make it jurisdictional.
    - Q: Are wetlands jurisdictional if they are connected by a drainage swale that becomes flooded during seasonal spring groundmelt (prairie streams)? If wetlands are considered jurisdictional in the above situation, are manmade barriers to surface water flow (for example, a berm or a road w/ no culverts underneath) enough to make the wetland considered isolated?

        - The USACE has greater latitude to claim a nexus to TNWs, and in most cases they will disagree with isolated calls.
        - Anything that looks like a drainage should be presented in the report. Blue line streams should have documentation in the report. It doesn't have to have wetland characteristics to be considered a stream.
        - Be extremely cognizant of all the drainages out there, a lot of times people will call them upland swales or upland drainage features when they are prairie streams that will be flowing in the spring. Put what you know in the report, don't worry so much about what you "think" it is because the USACE will draw their own conclusions anyways.
    - Q: Are connectivity flowlines still recommended for determining jurisdictional resources?
        - They are greatly appreciated. Any information that we can provide relating to the site will help facilitate their determination.
- **What is the confirmation process for the Omaha District?**
    - If we decide to pursue an AJD for isolated features, does that mean that every wetland within the Study Area will need to be evaluated, or can we call out specific wetlands that we think are isolated for an AJD and do the rest of the site under a PJD (you can do this in the Norfolk and Wilmington Districts)?
        - Her advice is not to ask for specific items to be isolated – the USACE will usually disagree with our assessment. They will do their own research on the project site and make their own determinations on jurisdictional status.
        - Field investigations should occur in the spring, because snow pack is the largest influence on wetlands. If you perform your field efforts in the fall, they will take this into consideration when determining their assessments because wetlands will look very different at that time.
        - They have done the mix and match approach for DOT, but they prefer to do either a PJD or an AJD for the site.
    - What's the current timeline for receiving a confirmation? For a PJD? For an AJD?
        - For AJD – the target is 60 days for an action, but permit actions take priority over JDs. They have several out of office or just now returning to the office; so you're looking at 60-90 days.
        - For PJD – they can turn these around almost immediately if you need to just get the confirmation done and over with. However, this means they are claiming jurisdiction over everything and will expect mitigation if anything is impacted, even if it would be considered isolated if it had gone through the AJD process.
    - Will you need to perform a site visit for us to receive confirmation?
        - No site visit will be needed in most cases, as they will perform their own desktop assessment. If there is an area that they are truly unsure of, they will not go out until the spring to perform the confirmation.
    - How closely should we follow the template and other guidance materials on the website?
        - She indicated that the minimum standards should be followed and that it is good to follow the report Template guidance as well.

Appendix D

Agency Correspondence

U.S. Department of Agriculture, Natural Resources Conservation Service

Caitlin Cyrus

Subject: address

Sarah,

We are replying to a proposed wind energy project in North Dakota.

What is your mailing address that I can mail the response. Thanks.

Mary Hirchert
Executive Secretary
U.S. Department of Agriculture
Natural Resources Conservation Service
220 East Rosser Avenue, Rm 278
Bismarck, ND 58501
Phone: (701) 530-2001
mary.hirchert@usda.gov

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USDA
United States Department of Agriculture

Natural Resources
Conservation Service

Bismarck State Office
PO Box 1458
Bismarck, ND
58502-1458

Voice 701.530.2000
Fax 855-813-7556

October 20, 2021

Ørsted
Attn: Sarah Aftergood
812 San Antonio St., Ste. 530
Austin, TX 78701

Dear Ms. Aftergood:

The Natural Resources Conservation Service (NRCS) has reviewed your letter dated October 15, 2021 concerning the Proposed Badger Wind Energy Center in McIntosh and Logan Counties, North Dakota.

Farmland Protection Policy Act

NRCS has a major responsibility with the Farmland Protection Policy Act (FPPA) in documenting conversion of farmland (i.e., prime, statewide importance and local importance) to non-agriculture use when federal funding is utilized. Your project does not mention a source of federal funding, therefore, FPPA does not apply, and no further action is needed.

Wetlands

The Wetland Conservation Provisions of the 1985 Food Security Act, as amended, provide that if a USDA participant converts a wetland for the purpose or to have the effect of making agricultural production possible, loss of USDA benefits could occur. The NRCS has developed the following guidelines for the installation of permanent structures where wetlands occur. If these guidelines are followed the impacts to the wetland will be considered minimal allowing USDA participants to continue to receive USDA benefits. Following are the requirements:

- Disturbance to the wetland must be temporary.
- No drainage of wetland is allowed (temporary or permanent).
- Mechanized landscaping necessary for installation is kept to a minimum and preconstruction contours are maintained.
- Temporary side cast material must be placed in such a manner not to be dispersed in the wetland.
- All trenches must be backfilled to the original wetland bottom elevation.

Potentially impacted USDA participants that wish to request a certified wetland determination can be directed to the USDA Farm Service Agency (FSA) to request a Highly Erodible Land Conservation (HELC) and Wetland Conservation (WC) Certification (AD-1026) or they may contact Neil Schaar, Designated Conservationist, NRCS, Ellendale, North Dakota at (701) 701-349-3653 for information about conservation compliance provisions related to the project.

NRCS recommends that impacts to wetlands be avoided.

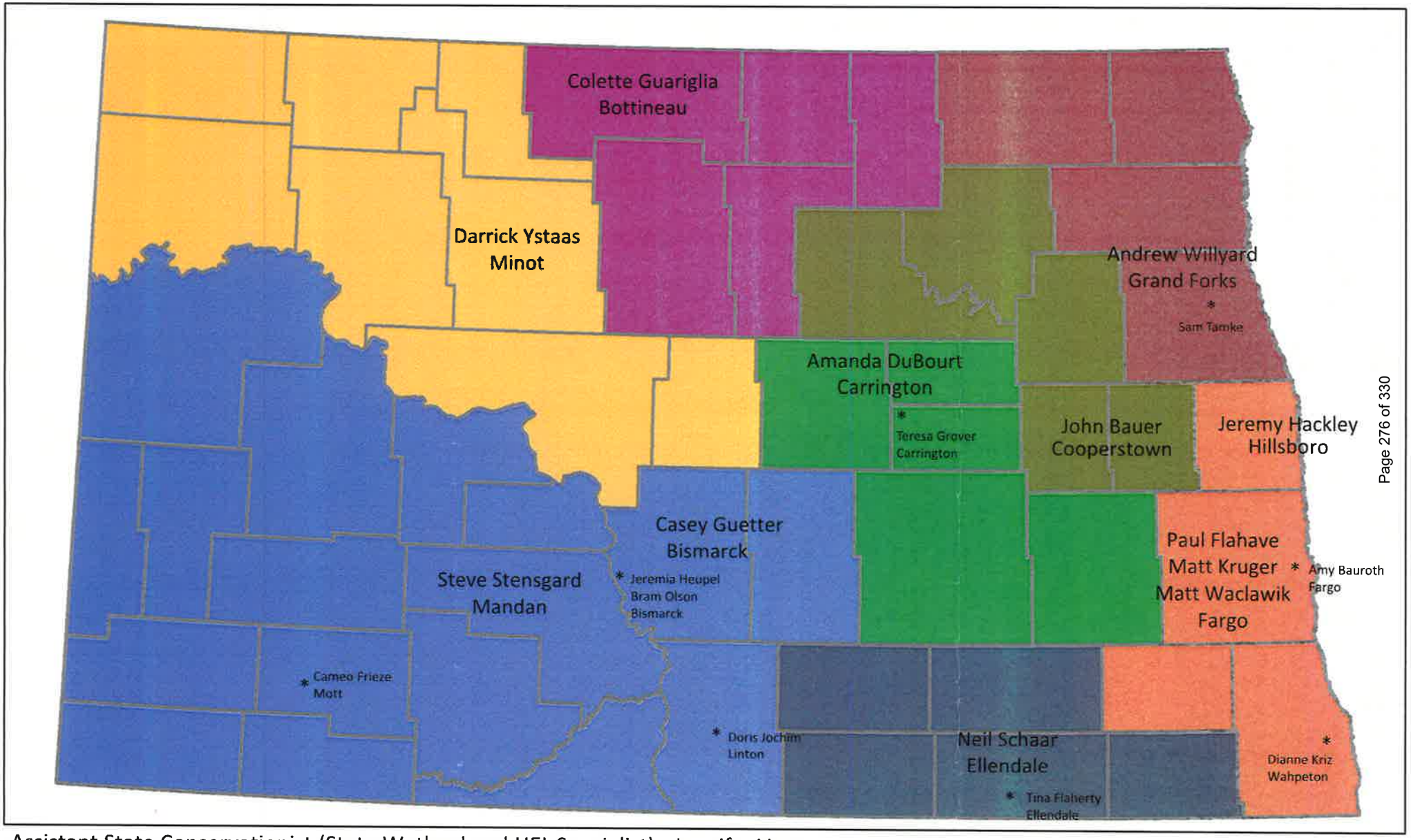
If you have additional questions pertaining to FPPA, please contact Wade Bott, State Soil Scientist, NRCS, Bismarck, North Dakota, at (701) 530-2021 or email to wade.bott@usda.gov.

WADE BOTT Digitally signed by WADE BOTT
Date: 2021.10.20 14:43:04 -05'00'

WADE D. BOTT
State Soil Scientist

ND NRCS Conservation Compliance

September 2021



Assistant State Conservationist (State Wetland and HEL Specialist) - Jennifer Vetter
Conservation Compliance Specialist - Matt Waclawik
Mitigation Specialists - Steve Stensgard and John Bauer
HEL Designated Conservationist - Paul Flahave
Natural Resource Specialist (GIS) - Colette Guariglia

*Heartland Contractor

Appendix D

Agency Correspondence

United States Fish and Wildlife Service

Alan Plumeau

From: Erickson, Michael <michael_erickson@fws.gov>
Sent: Tuesday, January 14, 2020 6:24 AM
To: Chris McCreedy
Subject: Re: [EXTERNAL] Grassland and wetland easement request for McIntosh and Logan counties
Attachments: Badger1-13-20.pdf

Chris;

Attached is a map showing the locations of our wetland and grassland easements. We should visit to discuss your plans sometime before you get too far in the siting of turbines, roads, cables, gravel needs, etc.

On Fri, Jan 10, 2020 at 4:14 PM Chris McCreedy <cmccreedy@atwell-group.com> wrote:

> Mr. Erickson,
>
> We'd like to request USFWS-managed easement data (grassland and wetland easements) for a proposed wind farm in Logan and McIntosh counties, ND. We have attached geospatial files that represent the area of interest currently under consideration for this project. Would you be able to provide us the locations of the easements within this boundary?
>
> Thank you for your help with this request, I would be happy to discuss this further with you if you need more information from us.
>
> Sincerely,
>
> Chris McCreedy
>
> Chris McCreedy
> Senior Environmental Consultant
> ATWELL, LLC
> 602.513.3950 Mobile
> 480.830.4888 Fax
> 4700 E. Southern Avenue | Mesa, AZ 85206
> www.atwell-group.com

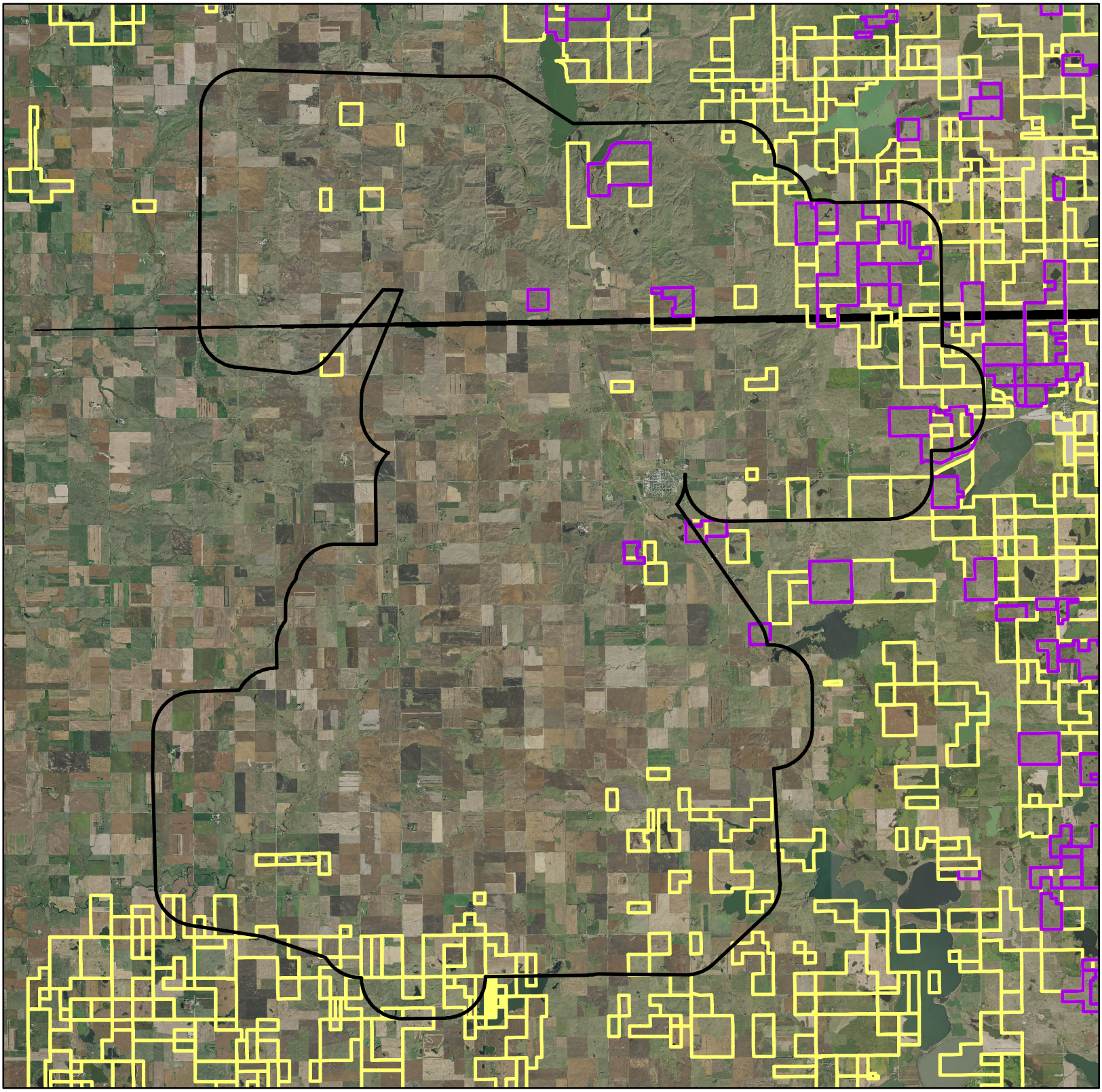
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--

Mick Erickson
Refuge Manager
Kulm Wetland Mgmt District
1 First Street
Kulm, ND 58456
701-647-2866
http://www.fws.gov/refuge/Kulm_WMD

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Badger Wind Farm



BadgerWind_ProjectArea_1MileBuffer
Wetland Easements
Grassland Easement
FmHA Easements

0 2.75 5.5 11
Miles

N

U.S. Fish and Wildlife Service
Kulm Wetland Management Disctrict
13 January 2020

From: Erickson, Michael
To: Chris McCreedy
Subject: Re: [EXTERNAL] Grassland and wetland easement request for McIntosh and Logan counties
Date: Tuesday, January 21, 2020 10:32:59 AM

Chris;

Try this link to get the GIS layers of our easements....I have not used this myself but have been told that the USFWS easement layer should be up to date. I will point out that you may have to check the shapefiles to differentiate between wetland easements, grassland easements, FmHA easements, and Waterfowl Production Areas. I think they will all show up as the same color. The pdf I sent earlier should help give you an idea of where our grassland easements and WPA's are located.

https://www.fws.gov/gis/data/CadastralDB/index_cadastral.html

As far as general guidance goes, I am only speaking about USFWS conservation easements. We strongly recommend avoiding our grassland easements. Any disturbance actions that impact the grassland vegetation on grass easements will trigger a federal nexus which will require you to obtain various approvals and permits. The very few grass easements located in your proposed project area makes it fairly easy to avoid these tracts. As far as wetland easements are concerned, as long as your infrastructure (roads, turbine pads, cables, crane walks) avoid any impacts to individual wetlands, then there would be no federal nexus and permits needed from my office. We are in the process of preparing wetland maps for each wetland easement that will show the approximate size, shape and location of all protected basins. If you are considering building on lands with a wetland easement, then contact me and we can provide those maps for your planning efforts.

I would also recommend contacting our USFWS Ecological Services office in Bismarck (701-355-8512 - Drew Becker) and the North Dakota Game and Fish Dept (701-328-6300) for their recommendations on your proposal.

Let me know if you have difficulties in acquiring our easement layers and/or would like to discuss more specifics about our easements.

On Fri, Jan 17, 2020 at 9:51 AM Chris McCreedy <cmccreedy@atwell-group.com> wrote:

> Mick,
>
> Thanks so much for providing the information so quickly, it is much appreciated. Is the data available in GIS or KMZ format? Some of the easements are adjacent to each other and it makes it difficult to decipher. We want to make sure we capture the right areas that have easements.
>
> Also, can you clarify whether entire parcels that have easements necessitate avoidance or if only portions of the parcels need to be avoided? Are collection line bores or temporary impacts such as crane walk paths allowed on easement parcels? Any general guidance you

have would be helpful. As we get further in the process, we'd like to further discuss with you. Thanks again.

Chris

Chris McCreedy
Senior Environmental Consultant
ATWELL, LLC
602.513.3950 Mobile (best)

480.218.8831 x2503 Tel
480.830.4888 Fax
4700 E. Southern Avenue | Mesa, AZ 85206
www.atwell-group.com

From: Erickson, Michael <michael_erickson@fws.gov>
Sent: Tuesday, January 14, 2020 6:24 AM
To: Chris McCreedy <cmccreedy@atwell-group.com>
Subject: Re: [EXTERNAL] Grassland and wetland easement request for McIntosh and Logan counties

Chris;

Attached is a map showing the locations of our wetland and grassland easements. We should visit to discuss your plans sometime before you get too far in the siting of turbines, roads, cables, gravel needs, etc.

On Fri, Jan 10, 2020 at 4:14 PM Chris McCreedy <cmccreedy@atwell-group.com> wrote:

> Mr. Erickson,
>
> We'd like to request USFWS-managed easement data (grassland and wetland easements) for a proposed wind farm in Logan and McIntosh counties, ND. We have attached geospatial files that represent the area of interest currently under consideration for this project. Would you be able to provide us the locations of the easements within this

boundary?

Thank you for your help with this request, I would be happy to discuss this further with you if you need more information from us.

Sincerely,

Chris McCreedy

Chris McCreedy
Senior Environmental Consultant
ATWELL, LLC
602.513.3950 Mobile
480.830.4888 Fax
4700 E. Southern Avenue | Mesa, AZ 85206
www.atwell-group.com

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--

Mick Erickson

Refuge Manager

Kulm Wetland Mgmt District

1 First Street

Kulm, ND 58456

701-647-2866

http://www.fws.gov/refuge/Kulm_WMD

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--
Mick Erickson
Refuge Manager
Kulm Wetland Mgmt District
1 First Street
Kulm, ND 58456
701-647-2866
http://www.fws.gov/refuge/Kulm_WMD

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From: Riddle, Heidi L
To: Chris McCreedy
Subject: RE: [EXTERNAL] Safety precautions for aerial surveys this spring at Badger Wind
Date: Thursday, April 2, 2020 12:59:51 PM

Hi Chris,

I could be available most times tomorrow afternoon from 1-5.

Thank you,
Heidi

From: Chris McCreedy <cmccreedy@atwell-group.com>
Sent: Thursday, April 2, 2020 11:13 AM
To: Mueller, Elisha K. <ekmueller@nd.gov>; Johnson, Sandra K. <sajohnson@nd.gov>; Riddle, Heidi L <heidi_riddle@fws.gov>
Subject: [EXTERNAL] Safety precautions for aerial surveys this spring at Badger Wind

Elisha, Sandy, and Heidi,

Good morning. I suspect that like us you may be working at home. I am writing to request if you can attend a group call this afternoon or if necessary tomorrow to discuss the items below. Please feel free to suggest a few times, I will gladly make myself available at any time you suggest and once I have suggestions I will send out an invite.

We are working through circumstances regarding safety concerns for our aerial nesting raptor and lek surveys and I would be grateful for your input. The first revolves around corona virus; the need to fly in an enclosed space for several hours with our pilot is a health concern given the corona virus outbreak's spread and transmission. It is something that we have been preparing for and working through as we approach the survey window. A second concern is there have been recent accidents during aerial nesting raptor surveys. I am aware of two, one last month in Illinois and one this week in Iowa. The second incident has prompted us to take step back and evaluate these concerns.

We completed the project's first year of aerial nesting raptor surveys last spring and located 1 occupied active BAEA nest during the surveys. Our biologist that has been conducting ongoing eagle use point count surveys on the ground is already aware that the BAEA pair is present and is constructing a new nest nearby this spring. He was also able to locate multiple Ferruginous Hawks last year just in the course of his point count surveys and already knows of two this spring. For leks, we conducted an aerial survey of the entire project last year. After some discussion on the need for aerial lek surveys in 2020 we decided on flying focus areas with higher probability of leks.

Given ongoing safety concerns we are interested in your views on using a ground-based approach this April for our second year of surveys. I want to emphasize that we are prepared to conduct aerial surveys if needed; we have a pilot ready to go and are tentatively scheduled to fly our surveys in the April 17-20 window this month.

Also, Sandy, Sean Fields sent us the PUDL spatial data last night – thanks!

Sincerely,
Chris

Chris McCreedy
Senior Environmental Consultant
ATWELL, LLC

602.513.3950 Mobile (best)
480.218.8831 x2503 Tel
4700 E. Southern Avenue | Mesa, AZ 85206
www.atwell-group.com

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From: Riddle, Heidi L
To: Chris McCreedy; Mueller, Elisha K.
Cc: Emily Cooper
Subject: RE: [EXTERNAL] for your review - Badger Wind Apr 3 survey safety call summary
Date: Tuesday, April 7, 2020 2:00:02 PM

Looks good to me. Thanks for scheduling the call on this.

Heidi

From: Chris McCreedy <cmccreedy@atwell-group.com>
Sent: Monday, April 6, 2020 6:52 PM
To: Mueller, Elisha K. <ekmueller@nd.gov>; Riddle, Heidi L <heidi_riddle@fws.gov>
Cc: Emily Cooper <ecooper@atwell-group.com>
Subject: [EXTERNAL] for your review - Badger Wind Apr 3 survey safety call summary

Heidi and Elisha,

Thank you again for joining us on the call last week to discuss safety concerns for our pre-construction surveys at Badger Wind. We are grateful for your perspective and for making time for the call on short notice. I have attached a call summary for our phone meeting for your review, and I would be happy to incorporate your comments if my notes are incomplete.

Chris

Chris McCreedy
Senior Environmental Consultant
ATWELL, LLC

602.513.3950 Mobile (best)
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From: Chris McCreedy
To: Emily Cooper; Christopher Rutledge
Subject: WHCR USFWS call update
Date: Wednesday, April 22, 2020 8:22:00 AM

Good morning,

I was able to reach Heidi Riddle at the ND USFWS this morning. She is our local USFWS POC for the project. I mentioned that we observed three WHCR nw of Wishek Apr 15-17 in what looked like unharvested corn, and that I have come across some online sighting submission forms but that I wanted to see if she had a particular preference for how we submit this information, to whom, and if she would prefer a follow up call to discuss the sighting.

She was excited about the sighting and happy that I called her, but otherwise she did not know what to do next and will find out.

Chris

Chris McCreedy
Senior Environmental Consultant
ATWELL, LLC

602.513.3950 Mobile (best)
480.218.8831 x2503 Tel
4700 E. Southern Avenue | Mesa, AZ 85206
www.atwell-group.com

From:	Aaron McAlexander
To:	heidi_riddle@fws.gov
Cc:	ekmueller@nd.gov; Jon Baker; Emily Cooper; Chris McCreedy
Subject:	Badger Wind_ NLEB Bats_5.15.2020
Date:	Friday, May 15, 2020 9:51:38 AM
Attachments:	Badger_19000785_Bat Habitat Assessment_Binder_20200121.pdf 19000785_BadgerAcousticReportDraft_4.18.2020_binder_reduced.pdf

Hello Ms. Riddle,

I am a bat biologist with Atwell, LLC and have been working with Badger Wind, LLC in conducting pre-construction bat surveys for the Badger Wind Project in Logan and McIntosh counties, North Dakota. The proposed project is located outside the range of the federally listed Indiana bat, but is within range for the northern long-eared bat (within USFWS WNS Zone).

As we have completed the first year of bat survey work at the site, I am reaching out to provide our findings and request feedback on appropriate next steps to meet USFWS' requirements for northern long-eared bats.

To date, we have completed a Bat Habitat Assessment as well as one year of acoustic monitoring within the project area (see attachments). We have currently initiated our 2nd year of acoustic monitoring (ground based and met towers) at the project.

Based on the findings of the Bat Habitat Assessment, suitable summer habitat for northern long-eared bats is very limited within the project area. Woodlots within the project area are small, ranging from 0.09 to 8.65 acres. We were unable to find records of known maternity roosts within the project area or in North Dakota. In addition, Year 1 acoustic monitoring data only had 4 Myotis calls, all of which were manually vetted and confirmed to be little brown bats.

Based on the habitat assessment, it is my opinion that summer potential for northern long-eared bats may be limited within the project area.

The *North Dakota Native Wildlife Resources: Guidelines for Reducing Impacts from Wind Energy Development* states that USFWS survey protocols should be followed for listed species. We would like your input on whether this project should be concerned with impacts to bats, particularly northern long-eared bats, and if you feel summer presence/probable absence (p/a) surveys (in accordance with the *2020 Range-Wide Indiana Bat Survey Guidelines*) are warranted? Based on current Covid-19 restrictions, it is my understanding that p/a surveys would be limited to an acoustics-only approach until additional updates are provided.

Thank you for your feedback. Please feel free to contact me with any questions.

Have a great day!

Aaron McAlexander
Project Manager
ATWELL, LLC
502.553.9916 Mobile (Preferred)
Bloomington, IN 47403
www.atwell-group.com

From:	Aaron McAlexander
To:	heidi_riddle@fws.gov
Cc:	ekmueller@nd.gov; Jon Baker; Emily Cooper; Chris McCreedy
Subject:	RE: Badger Wind_ NLEB Bats_5.15.2020
Date:	Friday, May 22, 2020 7:28:56 AM

Good morning Heidi,
I just wanted to touch base regarding the prior e-mail and see if you had any questions.
Thank you!

Aaron McAlexander
Project Manager
ATWELL, LLC
502.553.9916 Mobile (Preferred)
Bloomington, IN 47403
www.atwell-group.com

From: Aaron McAlexander
Sent: Friday, May 15, 2020 11:51 AM
To: 'heidi_riddle@fws.gov' <heidi_riddle@fws.gov>
Cc: 'ekmueller@nd.gov' <ekmueller@nd.gov>; 'Jon Baker' <jbaker@lincolnclean.com>; Emily Cooper <ecooper@atwell-group.com>; Chris McCreedy <cmccreedy@atwell-group.com>
Subject: Badger Wind_ NLEB Bats_5.15.2020

Hello Ms. Riddle,
I am a bat biologist with Atwell, LLC and have been working with Badger Wind, LLC in conducting pre-construction bat surveys for the Badger Wind Project in Logan and McIntosh counties, North Dakota. The proposed project is located outside the range of the federally listed Indiana bat, but is within range for the northern long-eared bat (within USFWS WNS Zone).
As we have completed the first year of bat survey work at the site, I am reaching out to provide our findings and request feedback on appropriate next steps to meet USFWS' requirements for northern long-eared bats.
To date, we have completed a Bat Habitat Assessment as well as one year of acoustic monitoring within the project area (see attachments). We have currently initiated our 2nd year of acoustic monitoring (ground based and met towers) at the project.
Based on the findings of the Bat Habitat Assessment, suitable summer habitat for northern long-eared bats is very limited within the project area. Woodlots within the project area are small, ranging from 0.09 to 8.65 acres. We were unable to find records of known maternity roosts within the project area or in North Dakota. In addition, Year 1 acoustic monitoring data only had 4 Myotis calls, all of which were manually vetted and confirmed to be little brown bats.
Based on the habitat assessment, it is my opinion that summer potential for northern long-eared bats may be limited within the project area.
The *North Dakota Native Wildlife Resources: Guidelines for Reducing Impacts from Wind Energy Development* states that USFWS survey protocols should be followed for listed species. We would like your input on whether this project should be concerned with impacts to bats,

particularly northern long-eared bats, and if you feel summer presence/probable absence (p/a) surveys (in accordance with the *2020 Range-Wide Indiana Bat Survey Guidelines*) are warranted? Based on current Covid-19 restrictions, it is my understanding that p/a surveys would be limited to an acoustics-only approach until additional updates are provided.
Thank you for your feedback. Please feel free to contact me with any questions.
Have a great day!

Aaron McAlexander
Project Manager
ATWELL, LLC
502.553.9916 Mobile (Preferred)
Bloomington, IN 47403
www.atwell-group.com

MEETING MINUTES

Project: **Badger Wind**
Logan and McIntosh Counties, ND
Ørsted Onshore North America, LLC

Host/Organizer: Atwell, LLC

Meeting Date: May 27, 2020 (conference call)

Purpose: **USFWS Wetland Easements in Badger Wind Project Boundary**

Attendees

- Heidi Riddle, Fish and Wildlife Biologist, USFWS
- Michael (Mick) Erickson, Wetland Easement Coordinator, USFWS
- Jon Baker, Sr. Development Director, Ørsted Onshore North America, LLC (Ørsted)
- Emily Cooper, Project Manager, Atwell, LLC (Atwell)
- Tara Corbett, Project Manager, Atwell

Discussion

- **Project Introduction -** J. Baker provided an update on the Badger Wind project. Project location was provided by KMZ prior to the meeting. The Badger project has been active for a couple of years with a second year of avian studies underway. The project team is just getting to the layout stage and the public siting commission application process will likely occur in 2021.

- **Meeting Purpose -** J. Baker explained that the Badger team wanted to understand more about the USFWS wetland easements within the Badger project area. The impetus for the meeting was that a landowner participating in the project told Ørsted that he was recently approached by USFWS to put a wetland easement on land that was under a wind farm agreement for the project. J. Baker wanted to confirm the easement and the wind farm agreement were not in conflict with each other and better understand the easement program.

- **USFWS Introductions -** M. Erickson is the field lead in Kulm, North Dakota responsible for managing the USFWS wetland easements in the vicinity of the Badger project. Heidi Riddle

focuses more on wind farm projects overall and the siting of project infrastructure from a wildlife perspective.

- **Wetland Easement Program Overview** -USFWS wetland easements are contracted, perpetual easements wherein the easement holder agrees to not burn, drain or fill wetland basins present on the property. M. Erickson confirmed that development on other portions of the easement property, outside of wetland basins, can occur, but no burning, dredge, or fill activities are allowed within the basins. Wetland basins are determined much in the same way that wetland delineations are typically done and are based on the vegetation and hydric soils associated with the wetlands. In addition, often the wetland basins are farmed and thus the USFWS uses historic aerial photographs over the past thirty years to observe the extent of wetland areas in wet years. Based on this information, the USFWS is in the process of mapping most of the wetland areas. When wetland delineations for the project are conducted on properties where USFWS wetland easements occur, USFWS can review the delineations via desktop or in the field to determine whether they concur with the delineation or not. The maps provided by USFWS are not exact and should not be used to determine the exact wetland boundaries. M. Erickson recommended confirming boundaries of wetlands early in the process, prior to public siting process permitting.

- **Setbacks -** No setbacks are required from wetland easements. Disturbance to USFWS wetlands is not allowed and would trigger a federal nexus. M. Erickson indicated that allowing disturbance in USFWS wetlands is unprecedented and strictly not recommended. If disturbed, a federal nexus is triggered, and an Environmental Assessment process is needed. M. Erickson indicated that if, during construction, inadvertent fill occurred in a USFWS wetland, it would be a violation and law enforcement issue. Voluntary restoration would be necessary to restore the inadvertent fill back to normal condition over a determined duration.

- **UFWS Grassland Easements -** USFWS grassland easements are handled differently than wetland easements. Grassland easements are typically designated for entire parcels. If disturbed, a federal nexus is triggered and Environmental Assessment process is needed.

- **Easements Underway/ New Easements -** J. Baker inquired if other wetland easements are being actively pursued with landowners in the project area. M. Erickson responded that approximately ten other landowners in Logan County (as a whole) are currently in the process of signing up for wetland easements. Given the project location in western Logan County, aside from those ten landowners, it is unlikely that other easements will develop. M. Erickson offered to review the Badger project boundary once it was further refined through siting to confirm if any other parcels within the boundary were under consideration for easements.

- **Pre-1976 Easements -** M. Erickson explained that all wetland easements established after 1976 have been mapped by USFWS. Those easements established prior to 1976 are mapped as parcel boundaries only, and USFWS is currently reviewing the pre-1976

easement areas to map the wetland boundaries for these parcels using multiple years of aerial imagery. This effort is expected to be completed by the end of September 2020.

- **Action Items -** M. Erickson indicated that he would review the refined Badger project area and confirm whether there are any pre-1976 easements in the project area that are unmapped and that he would also let the team know if any new easement acquisitions were currently underway in the Project Area.

Alan Plumeau

From: Riddle, Heidi L <heidi_riddle@fws.gov>
Sent: Tuesday, February 2, 2021 11:59 AM
To: Chris McCreedy
Cc: glink@nd.gov; Henderson, Wayne; Lundgren, Krista; Dyke, Steve R.; Mueller, Elisha K.
Subject: FWS Response - Badger Wind Project.pdf
Attachments: Badger Wind Project.pdf

Please see attachment.

Heidi Riddle, CWB®
Fish and Wildlife Biologist
USFWS North Dakota Ecological Services Field Office
3425 Miriam Ave
Bismarck, ND 58501
(701) 355-8545
heidi_riddle@fws.gov

External Email: Do not click any links or open any attachments unless you trust the sender and know the content is safe.

Alan Plumeau

From: Emily Cooper
Sent: Wednesday, February 3, 2021 9:26 PM
To: Jonathan Baker
Cc: Ben Banks; Maureen O'Shea-Stone; Francesca Martella Kehl
Subject: Badger Wind - USFWS Coordination Letter
Attachments: Badger Wind Project.pdf

Follow Up Flag: Follow up
Flag Status: Completed

Hi Jon –

As mentioned on this week's call, USFWS sent a coordination letter on the Badger Project, received this week (though dated last week). A lot of the recommendations in here are fairly standard, but a few things to note:

- The letter revisits both bats and whooping cranes, as well as other listed species. I do think it makes sense for us to circle back with the agencies / schedule a call to update them on the Y2 studies and reassure them that the project is keeping an eye on these things.
    - If you would like us to present the whooping crane analysis, it may make sense to get a jump on updating that analysis for the new project area. I think the faster we can scrub / move away from the old project boundary, the better.
- They double down on the grassland and wetland avoidance recommendation, and recommend the same papers and mitigation calculations provided by NDGF.
- The way that they touch on the topic of acoustic studies and question the coverage of the MET towers is worth keeping an eye on – I think we may need to circle back / present our Y2 bat acoustic findings (report is in draft now) and remind them how little habitat is located on the site.
- They provide contacts for the USFWS wetland and grassland easement programs – this is probably something we should circle back on again now that the design is moving ahead (maybe once we have the next iteration of the array).
- They provide some feedback and standard recommendations on design of transmission lines – worth noting that we haven't really discussed the transmission line with the agencies to date. At a minimum, you may need to consider line marking given the location of the project in the whooping crane corridor.

These are a few initial takeaways. We will go through this in more detail to make sure there are no surprises and that we have accounted for the recommendations in our current studies and planning. Please let me know if you have any other questions upon reviewing.

Thanks,
Emily

Emily Cooper
Sr. Project Manager
ATWELL, LLC

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www.atwell-group.com

United States Department of the Interior

FISH AND WILDLIFE SERVICE
North Dakota Ecological Services Field Office
3425 Miriam Avenue
Bismarck, North Dakota 58501
(701) 250-4481, ndfieldoffice@fws.gov

In Reply Refer To:
Badger Wind Project
2020-B-0037

January 29, 2021

Mr. Chris McCreedy
Senior Environmental Consultant
Atwell, LLC

Dear Mr. McCreedy:

Thank you for your continued coordination with the U.S. Fish and Wildlife Service (Service) and for providing information about the proposed Badger Wind Proposal in Logan and McIntosh Counties, North Dakota. You have coordinated two meetings with the Service and the North Dakota Game and Fish Department (Department) in 2020, and provided us with wildlife surveys that have been conducted to date for the project. We appreciate your conveyance of that information and request any future reports that may result from wildlife/habitat studies in/around the project area.

We recognize that you are likely aware of and have been using the voluntary 2012 *U.S. Fish and Wildlife Service Land-Based Wind Energy Guidelines* (WEG) (available online at: http://www.fws.gov/windenergy/) which were developed in consultation with wind industry companies. We recommend close adherence to these guidelines, using the information gathered to first determine whether the project should be placed in the area of interest at all. The WEG invokes a tiered approach in which information is collected with increasing levels of detail in order to evaluate risk posed to habitats and wildlife at potential wind energy sites. Tiers 1-3 each represent a preconstruction decision point to either move forward to development, gather more information and move to the next tier, or to abandon project plans at a given site, thereby avoiding areas where development is precluded or where wildlife impacts are likely to be high and difficult or costly to remedy or mitigate at a later stage. Sites dominated by grasslands with a high component of native prairie may fit that description. If the project is to proceed at the chosen location, then the information gathered per the WEG is used to guide project specifics, such as turbine locations, and any needed mitigation measures. Wind energy facility impacts are incurred to both habitat and wildlife, typically including wildlife collision mortality, loss of habitat due to the footprint of the turbines/roads/other facilities, habitat fragmentation, wildlife displacement, encroachment of invasive weeds, and more. Currently, the best strategy to reduce impacts to wildlife is to develop wind energy facilities within areas dominated by cropland wherever possible to preclude direct impacts to valuable wildlife habitats, and siting turbines away from adjacent wildlife habitat as much as possible to reduce indirect effects. Per our

previous communications, we recommend addressing all Service trust resources and applicable avoidance, minimization, and offset measures in a Bird and Bat Conservation Strategy (BBCS) for our review.

Our first and foremost recommendation to all wind energy development companies in North Dakota is to avoid grasslands and wetlands – two primary types of habitat in the state that support native species. Choosing a project site dominated by cropland greatly increases the potential to avoid and reduce direct/indirect impacts to wildlife habitat and we support efforts toward that end. We recommend referring to the Department's January 5, 2021, letter and guidance document when estimating impacts to grasslands.

We note that Service easements are located within the project area, as well as Waterfowl Production Areas (WPA) within or near the project area. The presence of Service property interests indicate the high fish and wildlife resource value in these areas. We recommend working closely with the Wetland Management District (WMD) to ensure that appropriate measures are implemented to preclude effects to wildlife using these areas. Please contact Wayne Henderson, wayne_henderson@fws.gov, or Krista Lundgren, krista_lundgren@fws.gov at the Kulm WMD, for more information regarding Service property interests. Overall, we recommend complete avoidance of direct disturbance of remnant grasslands and wetlands.

Despite the potential benefits of directly avoiding habitat, risk to wildlife still exists. Indirect impacts such as wildlife displacement in habitats adjacent to project facilities may occur, and direct impacts such as avian and bat collision mortality are anticipated regardless of the project location. Since grassland nesting birds and waterfowl are known to be displaced by turbines, we recommend buffering proposed wind energy facilities from grasslands and wetlands in the project area as much as possible. Peer-reviewed published literature described in the attached information (Shaffer et al. 2019, Loesch et al. 2013, Shaffer and Buhl 2016, and Leddy et al. 1999) can serve as your guide regarding appropriate distances needed to reduce/avoid this displacement. A buffer between facilities and any forested sites may also be prudent to reduce risk to bats that may use those habitats. Feathering turbine blades and increasing cut-in speeds, are also effective and recommended conservation measures, particularly for bats.

The project area is within the whooping crane migration corridor and whooping cranes have been reported near/within the proposed Badger Wind facility. Wind turbines may pose a collision risk to these birds, or cause displacement if the cranes avoid otherwise suitable habitat. Overhead transmission lines are a known source of mortality for this species. If the project cannot be moved from the whooping crane migration corridor, measures to reduce the collision mortality risks to this species (e.g. active monitoring, turbine shutdowns, line marking devices) should be applied to reduce the risk of unauthorized take of this species under section 9 of the Endangered Species Act (ESA). Without a federal nexus to this project, development of a Habitat Conservation Plan (HCP) is the means by which to ensure ESA compliance (see: https://www.fws.gov/endangered/what-we-do/hcp-overview.html).

We note that species of concern including eagles, federally listed species, North Dakota Species of Conservation Priority, Birds of Conservation Concern, and Species of Habitat Fragmentation Concern have either been detected or have the potential to occur in the project area. We recommend adhering closely to the Eagle Conservation Plan Guidance and Region 6 guidance regarding eagles (see attachment). Some impacts to other species of concern may be precluded by the aforementioned avoidance and buffering of grassland and wetland habitats.

Bat acoustic surveys were conducted that may have allowed for detection of the northern long-eared bat at the proposed project site. However, per the report, "evaluating operational mortality risk during normal operations based on the MET tower station with year one data may not adequately depict comparable bat data between the RSZ and ground units within the project area." As such, the monitoring may not fully represent potentially suitable bat habitat for the northern long-eared bat and the other tree-loving species most likely to occur at the site. Thus, the results of the acoustic bat surveys may be limited in value regarding bat use of the project area. The report also indicates that the BMg4 station increased activity may be due to its location on the "northeast side of the project adjacent to the prairie pothole region". It may be beneficial to gather more information regarding these questions to obtain a better estimate of risk to bats at this wind facility.

The attached information provides additional information and recommendations regarding important wildlife habitats and Service trust resources including federally listed species, eagles, birds of conservation concern, and other migratory birds that may occur in the project area and vicinity. We have included guidelines and methods to be applied to various components of a wind farm including turbines, meteorological towers, and power lines in order to avoid, minimize, and/or compensate for impacts to trust resources and assist you in achieving compliance with Federal laws.

If changes are made in the project plans or operating criteria, or if additional information becomes available, the Service should be informed so that the above determinations can be reconsidered.

Thank you for the opportunity to comment on this project proposal. If you have any additional questions or concerns, please contact Heidi Riddle of my staff, at (701) 355-8545 or heidi_riddle@fws.gov, or you can contact me at (701) 355-8512 or drew_becker@fws.gov.

Sincerely,

Drew Becker
ND Ecological Services Office Supervisor

Enclosure

cc: Greg Link, NDGF, Bismarck, ND
Wayne Henderson, USFWS, Kulm Wetland Management District
Krista Lundgren, USFWS, Kulm Wetland Management District

Attachment: U.S. Fish and Wildlife Service Additional Information Regarding the Badger Wind Proposal
Logan and McIntosh Counties, North Dakota
January 26, 2021

Eagle Guidance

Golden eagles (*Aquila chrysaetos*) are year-round residents in western North Dakota and may be found throughout the state in winter or during migration. Bald eagles (*Haliaeetus leucocephalus*) occur throughout North Dakota in all seasons. These species are protected from a variety of harmful actions via take prohibitions in both the Migratory Bird Treaty Act[1] (MBTA; 16 U.S.C. 703-712) and the Bald and Golden Eagle Protection Act (BGEPA; 16 U.S.C. 668–668d). The BGEPA, enacted in 1940 and amended several times, prohibits take of bald eagles and golden eagles, including their parts, nests, young, or eggs, except where otherwise permitted pursuant to federal regulations. Incidental take of eagles from actions such as electrocutions from power lines or wind turbine strikes are prohibited unless specifically authorized via an eagle incidental take permit from US Fish and Wildlife Service (Service). BGEPA provides penalties for persons who "take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle ... [or any golden eagle], alive or dead, or any part, nest, or egg thereof." BGEPA defines take to include the following actions: "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb." The Service expanded this definition by regulation to include the term "destroy" to ensure that "take" also encompasses destruction of eagle nests. Also the Service defined the term disturb which means to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, (1) injury to an eagle, (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior.

The Service has developed guidance for the public regarding means to avoid take of bald and golden eagles:

- The 2007 *National Bald Eagle Management Guidelines* serve to advise landowners, land managers, and others who share public and private lands with bald eagles when and under what circumstances the protective provisions of BGEPA may apply. They provide conservation recommendations to help people avoid and/or minimize such impacts to bald eagles, particularly where they may constitute "disturbance," which is prohibited by the BGEPA. https://www.fws.gov/northeast/ecologicalservices/pdf/NationalBaldEagleManagementGuidelines.pdf

1 On December 22, 2017, the Department of the Interior's (DOI) Office of the Solicitor Memorandum M-37050 titled The Migratory Bird Treaty Act Does Not Prohibit Incidental Take (https://www.doi.gov/sites/doi.gov/files/uploads/m-37050.pdf) concludes that the MBTA's prohibitions on pursuing, hunting, taking, capturing, killing, or attempting to do the same apply only to affirmative actions that have as their purpose the taking or killing of migratory birds, their nests, or their eggs. The MBTA list of protected species includes bald and golden eagles, and the law has been an effective tool to pursue incidental take cases involving eagles. However, the primary law protecting eagles is the Bald and Golden Eagle Protection Act (BGEPA) (16 U.S. Code § 668), since the bald eagle was delisted under the Endangered Species Act in 2007. Memorandum-37050 does not affect the ability of the Service to refer entities for prosecution that have violated the take prohibitions for eagles established by the BGEPA.

- The 2013 *Eagle Conservation Plan Guidance, Module 1- Land-based Wind Energy, Version 2* is specific to wind energy development and provides in-depth guidance for conserving bald and golden eagles in the course of siting, constructing, and operating wind energy facilities. Development of an Eagle Conservation Plan per these guidelines may serve as the basis for applying for an eagle incidental take permit for wind energy facilities. Applications for such eagle incidental take permits must include an Eagle Conservation Plan. https://www.fws.gov/migratorybirds/pdf/management/ eagleconservationplanguidance.pdf

The Service also has promulgated new permit regulations under BGEPA:

- Eagle permit regulations, as allowed under BGEPA, were promulgated by the Service in 2009 (74 FR 46836; Sept. 11, 2009) and revised in 2016 (81 FR 91494; Dec. 16, 2016). The regulations authorize the limited take of bald and golden eagles where the take to be authorized is associated with otherwise lawful activities. These regulations also establish permit provisions for intentional take of eagle nests where necessary to ensure public health and safety, in addition to other limited circumstances.

The revisions in 2016 included changes to permit issuance criteria and duration, definitions, compensatory mitigation standards, criteria for eagle nest removal permits, permit application requirements, and fees in order to clarify, improve implementation and increase compliance while still protecting eagles. https://www.gpo.gov/fdsys/pkg/ FR-2016-12-16/pdf/2016-29908.pdf

The Service's Office of Law Enforcement carries out its mission to protect eagles through investigations and enforcement, as well as by fostering relationships with individuals, companies, industries and agencies that have taken effective steps to avoid take, including incidental take of these species, and encouraging others to implement measures to avoid take. The Office of Law Enforcement focuses its resources on investigating individuals and entities that take eagles without identifying and implementing all reasonable, prudent, and effective measures to avoid that take. Those individuals and entities are encouraged to work closely with Service biologists to identify available protective measures, and to implement those measures during all activities or situations where their action or inaction may result in the take of an eagle(s).

Note that the Service has also developed recommendations for wind developers specific to the Mountain-Prairie Region (Region 6):

- *Region 6 Recommendations for Avoidance and Minimization of Impacts to Golden Eagles at Wind Energy Facilities* –The goal of this document is to contribute to maintaining stable or increasing breeding populations of eagles by recommending conservation measures that will maintain breeding territories and minimize impacts to other important eagle use areas (e.g., eagle nests, foraging areas, and communal roosts). https://www.fws.gov/coloradoes/documents/Final_GOEA_Buffer_Recommendations_ AvoidanceMinimization_WindFacilities_April_10_2013.pdf.

- *U.S. Fish and Wildlife Service, Region 6, Recommended Approach for Development and Submission of Eagle Conservation Plans submitted to Region 6, Migratory Management Office in support of an Eagle Incidental Take Permit Application for Wind Energy Projects* – finalized in July 2019, this guidance replaces an earlier outline version of ECP recommendations by the Service's Mountain-Prairie Region (Region 6) entitled "Final

Outline and Components of an Eagle Conservation Plan (ECP) for Wind Development: Recommendations from USFWS, Region 6". The purpose of the new guidance is to eliminate unnecessary work and expense by permit applicants and shorten/streamline the process of applying for an eagle incidental take permit (EITP). The guidance will reduce the ECP process to only those items necessary for the USFWS to conclude that the ECP is sufficient to support the EITP application, and ensure that we have what we need both for our review of the application and our required NEPA compliance.

We recommend close adherence to the guidelines above, including modeling of eagle data to determine the level of risk posed by the project and possible need for an eagle take permit and we request results of all eagle data collected for this project.

Threatened/Endangered Species

In accordance with section 7(c) of the Endangered Species Act (ESA), as amended, 16 U.S.C. 1531 et seq., we have determined that the following federally listed species may occur in the project area (this list is considered valid for 90 days):

Species	Status	Expected Occurrence
Northern Long-eared Bat (*Myotis septentrionalis*)	Threatened	Summer resident, seasonal migrant
Whooping Crane (*Grus Americana*)	Endangered	Spring and fall migrant
Piping Plover and Critical Habitat (*Charadrius melodus*)	Threatened	Summer resident, seasonal migrant
Rufa Red Knot (*Calidris canutus rufa*)	Threatened	Rare seasonal migrant

Northern Long-eared Bat:
The northern long-eared bat is a medium-sized brown bat that roosts singly or in colonies underneath bark, in cavities, or in crevices of both live and dead trees in the summer and migrates to hibernacula (often caves) in the winter. White nose syndrome - a fungus affecting hibernating bats - is considered a significant threat to this species, but individuals may be harmed by other activities such as modifications to hibernacula, timber harvest, human disturbance, and collisions with wind turbines. A 4(d) rule has been published that exempts take of Northern long-eared bats at wind facilities that are not located near maternity roosts or hibernacula (see: https://www.fws.gov/Midwest/Endangered/mammals/nleb/index.html). At this time, we have not located maternity roosts or hibernacula in North Dakota. The project site is not heavily forested, but riparian corridors within the project area may serve as habitat for the species. We recommend proactive measures to protect individual bats that may be at risk from this development including feathering turbine blades and increasing cut-in speeds to 5 m/s or more to reduce the risk of bat mortality at wind generation facilities. Post-construction mortality studies per the WEG are recommended to determine impacts to bats and inform the need for additional adaptive management strategies.

Whooping Crane:

The proposed Badger Wind project location is within the documented primary migration corridor of the Aransas/Wood Buffalo population of whooping cranes - the only self-sustaining migratory population of whooping cranes in existence. Whooping cranes migrate through North Dakota twice annually on their way to northern breeding grounds and southern wintering areas, occupying numerous habitats such as cropland and pastures; wet meadows; shallow marshes; shallow portions of rivers, lakes, reservoirs, and stock ponds; and both freshwater and alkaline basins for feeding and loafing. Overnight roosting sites frequently require shallow water in which to stand and rest. Use of the proposed project area by sandhill cranes may be indicative of the potential presence of whooping cranes since the two species are often observed utilizing the same habitats and migrating together. Sightings of whooping cranes should be reported to this office. These are large birds with low maneuverability. Line strike mortality is the greatest known threat to fledged whooping cranes. More information on this topic is provided herein (see enclosure: *Region 6 Guidance for Minimizing Effects from Power Line Projects within the Whooping Crane Migration Corridor*, and Power Lines section below). Mortality via turbine strikes may also pose a risk if the birds utilize habitat at/near wind farm sites and loss of stopover habitat in the migration corridor is a concern that may be realized if whooping cranes tend to avoid wind farms. Additionally, should construction occur during spring or fall migration, the potential for whooping crane disturbances (flushing the birds) exists. Disturbance stresses them at critical times of the year and should be avoided.

Potential whooping crane habitat in North Dakota has been modeled by the Service's Habitat and Population Evaluation Team in Bismarck (Neimuth et al. 2018) as a source of information helpful in assessing risks to whooping cranes. The most effective means to reduce the risks posed to this species is to locate the project outside the whooping crane migration corridor.

If a federal nexus exists for this project (i.e. a federal agency is funding, permitting or otherwise authorizing the project), and the federal action agency, or their designated representative determines that the project "may adversely affect" listed species in North Dakota, they should request formal consultation from this office. If a "may affect - not likely to adversely affect" determination is made for this project, they should submit it to us for concurrence. If a "no effect" determination is made, further consultation may not be necessary; however, a copy of the determination should be sent to this office. If no federal agency is involved with the proposed project and take of federally listed species may occur, ESA compliance may be achieved by private entities via coordination with this office and development of a Habitat Conservation Plan (HCP). Our website provides more information on HCPs at: http://www.fws.gov/endangered/what-we-do/hcp-overview.html.

Piping Plover

Piping plovers *(Charadrius melodus),* a federally threatened species, have the potential to use areas near the project. In North Dakota, piping plovers begin arriving to their breeding and nesting grounds in early to mid-April and are typically gone by September 1. Construction or maintenance activities during this time period may disturb nesting piping plovers. Piping plovers are sensitive to human disturbances, which can limit reproduction. Within the proposed project area, potential piping plover habitat is near alkali lakes and consists of sparsely vegetated shorelines, sandbars, and islands, salt-encrusted mud flats, gravelly salt flats, and adjacent uplands 200 ft (61 m) above the high water mark of alkali lakes and wetlands. These habitats are used for nesting, foraging, and brood-rearing. The Service recommends a ½ mile no entry buffer around all designated critical habitat and on wetlands with potential or documented plover nesting during the timeframe of April 1-September 1. If you are unable to maintain a ½ mile buffer around all piping plover nesting wetlands, the Service recommends that the project

proponent provide additional protective measures in these areas to avoid the potential take of piping plovers. Critical habitat has been designated for the piping plover and does occur in both Logan and McIntosh counties.

Rufa Red Knot

The rufa red knot is a robin-sized shorebird listed as threatened under the Endangered Species Act (see: http://www.gpo.gov/fdsys/pkg/FR-2014-12-11/pdf/2014-28338.pdf for more information). The red knot migrates annually between its breeding grounds in the Canadian Arctic and several wintering regions, including the Southeast United States, the Northeast Gulf of Mexico, northern Brazil, and Tierra del Fuego at the southern tip of South America. Although it is primarily a coastal species, small numbers of rufa red knots are reported annually across the interior United States (i.e., greater than 25 miles from the Gulf or Atlantic Coasts) during spring and fall migration. These reported sightings are concentrated along the Great Lakes. The red knot likely uses North Dakota habitats similar to those of the least tern and piping plover. The species does not breed in this state.

Wetlands

According to National Wetlands Inventory maps, available online at: https://www.fws.gov/wetlands/, wetlands exist within the proposed project area. If a project may impact wetlands or other important fish and wildlife habitats, the Service, in accordance with the National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. 4321-4347) and other environmental laws and rules, recommends complete avoidance of these areas, if possible; then minimization of any adverse impacts; and finally, replacement of any lost acres; in that order. Alternatives should be examined and the least damaging practical alternative selected. If wetland impacts are unavoidable, a mitigation plan addressing the number and types of wetland acres to be impacted and the methods of replacement should be prepared and submitted to the resource agencies for review.

Native Grasslands and Grassland Dependent Birds

Native prairie is a particularly important and imperiled habitat in North Dakota. In addition to the intrinsic value of diverse native prairie plant communities, these areas represent a fraction of the prairie acres that once existed in the state and remaining tracts have become increasingly critical to many declining bird and pollinator species. These habitats harbor numerous native wildlife species, some of which cannot survive outside the native plant community. The North Dakota Game and Fish Department's January 5, 2021, letter regarding this project highlighted that native prairie supports more than 30 of the 115 Species of Conservation Priority (SCP) identified by the state, some of which have experienced population declines of 74% or more.

Some of the State's SCP species are also identified by the Service as Birds of Conservation Concern (BCC) (see below) due to their declining numbers. Further overlap occurs between the list of BCC species and Service-identified avian Species of Habitat Fragmentation Concern in North Dakota. The majority of North American bird species are known to be in decline, incurring a 29% reduction in abundance since 1970, equating to a loss of 2.9 billion birds across almost all biomes (Rosenberg et al. 2019). Among those, grassland birds have experienced the largest magnitude of total population loss: 53%, or more than 700 million breeding individuals across 31 species (Rosenberg et al. 2019). Population level declines begin with local impacts to individuals and/or habitats; development of the Badger Wind project will impact local nesting grassland birds. Birds are important components of the prairie ecosystem and their loss has

cascading effects. Our overarching recommendation to wind energy developers is to avoid grassland habitats to the maximum extent possible by seeking out areas dominated by previously disturbed lands (e.g. cropland) for developments in order to reduce or eliminate impacts to these grassland dependent species.

Also note that while native prairie is considered a conservation priority in the state, lesser-quality grasslands (e.g. grasslands with a high non-native plant component, overgrazed grasslands) can still provide some habitat for wildlife, and we recommend avoidance of these plant communities whenever possible as well. Project impacts should instead be directed toward previously disturbed land (e.g. cropland).

Birds of Conservation Concern

The Migratory Birds Division of the Service has published *Birds of Conservation Concern 2008*, which may be found online at:
https://www.fws.gov/migratorybirds/pdf/management/BCC2008.pdf
This document is intended to identify species in need of coordinated and proactive conservation efforts among State, Federal, and private entities, with the goals of precluding future evaluation of these species for ESA protections and promoting/conserving long-term avian diversity. There are 27 species listed in the BCC document that occur within Bird Conservation Region 11 (Prairie Potholes) where the Badger Wind project area is proposed. Direct and indirect effects to these species will occur with establishment of this wind facility. Primary threats impacting grassland species that occur in North Dakota are habitat loss and fragmentation. In accordance with Executive Order 13186 regarding migratory bird protection, we recommend avoidance, minimization, and finally compensation to reduce the impacts to species protected by the MBTA, including BCC species. Compliance with this law may be partially addressed in a Bird and Bat Conservation Strategy (BBCS) (identified within the WEG and explained further below).

Avian Avoidance of Wind Turbines

As indicated in the WEG, wind turbines are known to impact migratory birds directly via collision with turbines, thus post-construction mortality surveys are typically recommended for 1-2 years (or more) to quantify that mortality and compare it with pre-construction risk assessments. Importantly, the WEG also identify other effects of wind energy facilities such as habitat fragmentation and wildlife avoidance of turbines. While direct mortality can readily be observed and quantified, displacement impacts are more difficult to document/quantify and require more time and effort. The Before-After-Control-Impact (BACI) method for avian studies is recommended in the WEG. This study design is particularly useful in determining indirect effects of wind projects on wildlife, but such studies are rarely conducted typically due to those time/effort constraints. In the absence of robust project-specific research at every wind farm, two relatively recent studies are of particular importance to this issue of quantifying avoidance/displacement: Loesch et al. (2013) and Shaffer and Buhl (2016).

Loesch et al. (2013) evaluated breeding waterfowl pairs on wetlands at existing wind farms and reference sites in the Prairie Pothole Region. Displacement of 18% of pairs, among five waterfowl species was detected within 805 meters (0.5 mile) of wind turbines (C. Loesch, USFWS, pers. comm., 2019).

Similarly, Shaffer and Buhl (2016) evaluated wind farms and reference sites in the Prairie Pothole Region, but their research was on grassland nesting birds and also included pre-

construction data, thus this study applied the BACI method. Their results detected avoidance of turbines by seven species. The average rate of displacement out to 300 meters (0.19 mile) from wind turbines was 53% by the 5th year post construction (J. Shaffer, USGS, pers. comm., 2019). This research also detected a trend: displacement rates of grassland nesting birds continued to increase over time during that 5 years post-construction (J. Shaffer, USGS, pers. comm. 2019).

Both of these peer-reviewed/published studies occurred in North and South Dakota over multiple years, on multiple wind farms, and involved large sample sizes and reference sites that were used for comparison with impacted sites. Many of the species found to be displaced during these studies occur at the Badger Wind project.

In addition to the above recent research, an older study of shorter duration was conducted at a wind facility in Minnesota and also documented avoidance of wind turbines by birds, this time on Conservation Reserve Program (CRP) lands: Leddy et al. (1999). CRP grasslands are areas typically planted with grass species after being cropped. CRP grasslands without turbines and areas located 180 m from turbines supported higher densities (261.0-312.5 males/100 ha) of grassland birds than areas within 80 m of turbines (58.2-128.0 males/100 ha) (Leddy et al. 1999).

If the Badger Wind project proceeds, we recommend using C. Loesch's 18% displacement of waterfowl pairs within ½ mile of turbines to quantify the number of wetlands needed to compensate for waterfowl displacement at the site and develop a plan to achieve those offsets. We also recommend quantifying grasslands within 300 m of turbines and applying the 53% displacement value via Shaffer and Buhl (2016) to determine and disclose anticipated indirect impacts to grassland nesting birds, and adding this to the offset plan. Methods used to obtain appropriate grassland and wetland offsets are described in Shaffer et al. 2019. Finally, if CRP or other non-native grassland habitats will be affected by the Badger Wind project, we recommend using the displacement information in Leddy et al. (1999) to develop appropriate offsets for this impact in the plan as well. This information is needed to adequately develop appropriate compensation for this form of habitat loss and its associated effect on grassland nesting birds and we encourage project developers to provide that plan as part of the project.

Mitigation

The Service's mitigation policy, available online at: https://www.fws.gov/policy/a1npi89_02.pdf, was established in 1981 to help assure consistent and effective mitigation recommendations that help federal action agencies and developers plan for mitigation measures early, avoid delays, and assure equal consideration of fish and wildlife resources with other project features and purposes. Our policy adopts the definition of the term "mitigation" as stated in the NEPA regulations which includes:

"***(a) avoiding the impact altogether by not taking a certain action or parts of an action; (b) minimizing impacts by limiting the degree or magnitude of the action and its implementation;*** *(c) rectifying the impact by restoring the affected environment; (d) reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and (e) compensating for the impact by replacing or providing substitute resources or environments.*"

As noted above, loss/degradation of habitats and mortality/displacement of wildlife are known to occur at wind energy facilities. We recommend analysis and quantification of these impacts, followed by application of the above mitigation methods during each step of project

development - but particularly during early planning stages - to help ensure full implementation of any necessary mitigation measures.

Bird and Bat Conservation Strategy

Bird and bat conservation strategies are recommended in the WEG. We have developed a regional document to further assist companies in following our established national guidance on BBCSs: *U.S. Fish and Wildlife Service, Region 6, Mountain-Prairie Region Outline for a Bird and Bat Conservation Strategy: Wind Energy Projects,* available online at: https://www.fws.gov/coloradoes/documents/Final%20R6%20BBCS%20Outline%20with%20annotation.pdf. As stated in the introduction of that document: a BBCS "…is a life-of-a-project framework for identifying and implementing actions to conserve birds and bats during wind energy project planning, construction, operation, maintenance, and decommissioning. It is the responsibility of wind energy project developers and operators to effectively assess project-related impacts to birds, bats and their habitats, and to work to avoid and minimize those impacts." A BBCS explains the actions taken by developers as they progress through the tiers of the WEG, describing the analyses, studies, and reasoning implemented with the purpose of mitigating for potential avian and bat impacts. It also addresses post-construction monitoring and habitat impacts. We recommend completion of a BBCS for this proposed energy wind facility.

Meteorological Towers

Meteorological towers associated with Badger Wind project are similar to other communication towers in that they are a known mortality hazard to wildlife, particularly birds. Of primary concern is the risk of avian collision mortality. Communication towers are currently estimated to kill 6.8 million birds per year in the United States and Canada (Longcore et al. 2012). To assist developers in establishing communications towers that are more compatible with wildlife, we have developed our 2018 *Recommended Best Practices for Communication Tower Design, Siting, Construction, Operation, Maintenance, and Decommissioning*, available online at: https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds/collisions/communication-towers.php. These recommendations incorporate the state of the science and the 2015 Federal Aviation Administration's *Obstruction Marking and Lighting Advisory Circular AC 70/7460-1L*, online at: https://www.faa.gov/documentLibrary/media/Advisory_Circular/AC_70_7460-1L_with_chg_1.pdf. Among the primary concerns addressed within our guidelines are the establishment of new towers on the landscape, the heights of these towers, their lighting scheme, and means of structural support. Collocation of new tower facilities on an existing structure is strongly recommended to avoid any additional impacts to migratory birds. If a new tower is necessary, placement of the new tower near other existing structures is recommended to concentrate the risk posed by the towers to relatively small areas. Minimization of tower height (below 200 feet to preclude the need for Federal Aviation Administration lighting requirements), use of only strobe or flashing lights (avoid steady-burning lights), and avoidance of guy wires (a great deal of avian mortality is a result of collisions with supporting guy wires) are important components intended to minimize potential impacts to migratory birds. The habitat at a tower location and surrounding area can also affect its level of risk to wildlife. Tower placement should occur in degraded sites avoiding ridgelines, coastal areas, wetlands or other bird concentration areas such as staging areas, rookeries, leks, and state or federal refuges. Please see the website provided above for additional information.

Overhead Power Lines

The construction of additional overhead power lines associated with wind farms creates the threat of avian electrocution, particularly for raptors. Thousands of these birds, including endangered species, are killed annually as they attempt to utilize overhead power lines as nesting, hunting, resting, feeding, and sunning sites. The Service recommends the installation of underground, rather than overhead, power lines whenever possible/appropriate to minimize environmental disturbances. For all new overhead lines or modernization of old overhead lines, we recommend incorporating measures to prevent avian electrocutions. The publication entitled *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006* includes many measures to reduce risk to birds including pole extensions, modified positioning of live phase conductors and ground wires, placement of perch guards and elevated perches, elimination of cross arms, use of wood (not metal) braces, and installation of various insulating covers. You may obtain this publication by contacting the Edison Electric Institute via their website at: http://www.eei.org/resourcesandmedia/products/Pages/products.aspx, or by calling 202-508-5000.

Please note that utilizing just one of the "*Suggested Practices . . .*" methods may not entirely remove the threat of electrocution to raptors. In fact, improper use of some methods may increase electrocution mortality. Perch guards, for example, may be only partially effective as some birds may still attempt to perch on structures with misplaced or small-sized guards and suffer electrocution as they approach too close to conducting materials. Among the most dangerous structures to raptors are poles that are located at a crossing of two or more lines, exposed above-ground transformers, or dead end poles. Numerous hot and neutral lines at these sites, combined with inadequate spacing between conductors, increase the threat of raptor electrocutions. Perch guards placed on other poles has, in some cases, served to actually shift birds to these more dangerous sites, increasing the number of mortalities. Thus, it may be necessary to utilize other methods or combine methods to achieve the best results. The same principles may be applied to substation structures.

Please also note that the spacing recommendation within the "*Suggested Practices . . .*" publication of at least 60 inches between conductors or features that cause grounding may not be protective of larger raptors such as eagles. This measure was based on the fact that the skin-to-skin contact distance on these birds (i.e., talon to beak, wrist to wrist, etc.) is less than 60 inches. However, an adult eagle's wingspan (distance between feather tips) may vary from 66 to 96 inches depending on the species (golden or bald) and gender of the bird, and unfortunately, wet feathers in contact with conductors and/or grounding connections can result in a lethal electrical surge. Thus, the focus of the above precautionary measures should be: a) provide more than 96 inches of spacing between conductors or grounding features, b) insulate exposed conducting features so that contact will not cause raptor electrocution, and/or c) prevent raptors from perching on the poles in the first place.

Additional information regarding simple, effective ways to prevent raptor electrocutions on power lines is available in video form. *Raptors at Risk* may be obtained by contacting EDM International, Inc. at 4001 Automation Way, Fort Collins, Colorado 80525-3479, Telephone No. (970) 204-4001, or by visiting their website at: https://www.edmlink.com/component/zoo/item/ video-raptors-at-risk.

In addition to electrocution, overhead power lines also present the threat of avian line strike mortality. Particularly in situations where these lines are adjacent to wetlands or where waters exist on opposite sides of the lines, we recommend marking them in order to make them more visible to birds. For more information on bird strikes, please see *Reducing Avian Collisions with*

Power Lines: The State of the Art in 2012 which, again, may be obtained by contacting the Edison Electric Institute via their website at: http://www.eei.org/resourcesandmedia/products/Pages/products.aspx, or by calling 202-508-5000.

While marking of power lines reduces line strike mortality, it does not preclude it entirely. Thus, marking of additional, existing, overhead lines is recommended to further offset the potential for avian line strike mortality. As noted above, the whooping crane is particularly susceptible to this type of mortality, and your project occurs within the whooping crane migratory corridor. Marking of existing lines elsewhere in the species' corridor is recommended.

Summary

Below we reiterate items above that are pertinent to the proposed project:

- Wind energy guidelines:
  - *U.S. Fish and Wildlife Service Land-Based Wind Energy Guidelines* http://www.fws.gov/windenergy/

- Eagle guidance:
  - Bald and Golden Eagle Protection Act (BGEPA)
  - *National Bald Eagle Management Guidelines* https://www.fws.gov/northeast/ecologicalservices/pdf/NationalBaldEagleManagementGuidelines.pdf
  - *Eagle Conservation Plan Guidance, Module 1 – Land-based Wind Energy Version 2* https://www.fws.gov/migratorybirds/pdf/management/eagleconservationplanguidance.pdf
  - Eagle take permit https://www.gpo.gov/fdsys/pkg/FR-2016-12-16/pdf/2016-29908.pdf
  - *Region 6 Recommendations for Avoidance and Minimization of Impacts to Golden Eagles at Wind Energy Facilities* https://www.fws.gov/coloradoes/documents/Final_GOEA_Buffer_Recommendations_AvoidanceMinimization_WindFacilities_April_10_2013.pdf
  - *U.S. Fish and Wildlife Service, Region 6, Recommended Approach for Development and Submission of Eagle Conservation Plans submitted to Region 6, Migratory Management Office in support of an Eagle Incidental Take Permit Application for Wind Energy Projects* (enclosed)

- Threatened/endangered species - Endangered Species Act (ESA):
  - Northern long-eared bat
  - Whooping crane

- Wetlands – avoid, minimize, compensate for unavoidable impacts,
  - National Wetlands Inventory: https://www.fws.gov/wetlands/

- Native Grasslands and Grassland Dependent Birds – identify, avoid, minimize:

- Birds of Conservation Concern:
  - *Birds of Conservation Concern 2008:* fws/gov/migratorybirds/pdf/management/BCC2008.pdf

- Avian Avoidance of Wind Turbines - compensate for unavoidable indirect impacts:
    - Loesch et al. (2013) – displacement of waterfowl
    - Shaffer and Buhl (2016) – displacement of grassland nesting birds
    - Shaffer et al. (2019) – methods to determine displacement compensation
    - Leddy et al. (1999) – displacement of grassland nesting birds in CRP

- Mitigation:
    - 1981 Service Mitigation Policy: https://www.fws.gov/policy/a1npi89_02.pdf

- Bird and Bat Conservation Strategy:
    - *U.S. Fish and Wildlife Service Land-Based Wind Energy Guidelines*
    - *U.S. Fish and Wildlife Service, Region 6, Mountain-Prairie Region Outline for a Bird and Bat Conservation Strategy: Wind Energy Projects:* https://www.fws.gov/coloradoes/documents/Final%20R6%20BBCS%20Outline%20with%20annotation.pdf

- Meteorological Towers:
    - 2*018 Recommended Best Practices for Communication Tower Design, Siting, Construction, Operation, Maintenance, and Decommissioning* https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds/collisions/communication-towers.php
    - 2015 Federal Aviation Administration Obstruction Marking and Lighting Advisory Circular AC70/7460-1L, https://www.faa.gov/documentLibrary/media/Advisory_Circular/AC_70_7460-1L_with_chg_1.pdf

- Overhead Power Lines:
    - *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006,* http://www.eei.org/resourcesandmedia/products/Pages/products.aspx
    - *Raptors at Risk* video, https://www.edmlink.com/component/zoo/item/video-raptors-at-risk
    - *Reducing Avian Collisions with Power Lines: The State of the Art in 2012,* http://www.eei.org/resourcesandmedia/products/Pages/products.aspx

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Alan Plumeau

From: Riddle, Heidi L <heidi_riddle@fws.gov>
Sent: Thursday, May 20, 2021 1:08 PM
To: Chris McCreedy
Cc: Maureen O'Shea-Stone
Subject: RE: [EXTERNAL] question on Ferruginous Hawk nest setbacks for constraints analysis
Attachments: USFWS R6 Buffer Recommendations for wind energy projects_ver3.pdf

Hello Chris,

Thank you for following up with this email. I did get your voicemail but I accidentally deleted it and then couldn't get back to it! Sorry about that.

I am attaching the Region 6 wind energy guidance for wildlife buffers, which specifically addresses ferruginous hawks. There are other guidance documents on the R6 page too that you may find helpful. The link is:

https://www.fws.gov/mountain-prairie/migbirds/index.php
Scroll down to "Wind Energy Guidance Documents" and click on it. Five other document links will pop up that you can click on.

Hope this helps. Let me know if you have any other questions. As a side note, Tucson is one of my favorite places I've ever been. Would love to retire there someday ☺.

Thanks!

Heidi Riddle, CWB®
Fish and Wildlife Biologist
USFWS North Dakota Ecological Services Field Office
3425 Miriam Ave
Bismarck, ND 58501
(701) 355-8545
heidi_riddle@fws.gov

From: Chris McCreedy <cmccreedy@atwell-group.com>
Sent: Thursday, May 20, 2021 1:34 PM
To: Riddle, Heidi L <heidi_riddle@fws.gov>
Cc: Maureen O'Shea-Stone <moshea-stone@atwell-group.com>
Subject: [EXTERNAL] question on Ferruginous Hawk nest setbacks for constraints analysis

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Heidi,

Hello, I hope that this message finds you well. Here in Tucson it is really dry. We have our fingers crossed for good summer rains that hopefully will start in 6 or 7 weeks.

We have been working on a constraints analysis for the proposed Badger Wind project in Logan and McIntosh counties. I have a question on the setback buffers used for Ferruginous Hawk nests at turbines in North Dakota. I have checked the PSC docket to look into the approaches used at other ND projects, and I would appreciate your input on this. I left a phone message as well and I can call at your convenience if that is best.

Thank you,
Chris McCreedy

Chris McCreedy
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U.S. Fish and Wildlife Service (USFWS), Region 6
Wildlife Buffer Recommendations for Wind Energy Projects

March 31, 2021

Version 3.0

Note: The buffer described in these recommendations are minimum distances suggested to be used to separate any of the following features and proposed wind turbine locations, unless otherwise noted below. These USFWS recommendations are for wind energy projects in Region 6 only (Colorado, Utah, Wyoming, Montana, North Dakota, South Dakota, Nebraska, and Kansas). This USFWS Region 6 voluntary guidance includes recommended buffers for a variety of wildlife and wildlife habitat features that may, or may not, be present within the project area for a given wind energy project. We recommend that the following buffer distances be implemented for all wildlife species or wildlife habitat features addressed below and present within the project area.

1. Raptor nest buffers (non-eagle):
   Nesting raptor species commonly encountered at proposed wind energy project sites in Region 6 are addressed in this section. We recommend that existing raptor nests documented as occupied through recent pre-construction surveys for the project be buffered as follows: Swainson's hawk 800 meters, ferruginous hawk 1,600 meters, red-tailed hawk 800 meters, great-horned owl 400 meters, peregrine falcon 1,600 meters, and prairie falcon 800 meters. Ferruginous hawk, peregrine falcon, and prairie falcon are all USFWS Birds of Conservation Concern (USFWS 2008) and thus there are additional considerations in conserving their nest sites. If nests for other raptor species, besides those listed here, have also been documented as occupied through recent pre-construction surveys within the wind project area, USFWS Region 6 can provide additional buffer recommendations for them.

2. Greater Sage-Grouse buffers:

   The greater sage-grouse is primarily managed by state wildlife and conservation agencies as well as by the Bureau of Land Management (BLM) and U.S. Forest Service (USFS) on BLM and USFS-administered lands. Where state-designated greater sage-grouse habitat occurs in the proposed project limits or vicinity, the recommends project coordination with the appropriate state agency(s) regarding any applicable required or recommended compliance with state sage-grouse laws, executive orders, policies, and conservation strategies, including lek and other sage-grouse habitat buffers. Projects with BLM or USFS involvement that are proposed near state, BLM, or USFS-designated sage-grouse habitats should additionally coordinate with the administrating BLM or USFS office regarding applicable compliance with sage-grouse elements of governing federal land use plans.

3. Lesser Prairie-Chicken buffers:
   We recommend conducting a risk assessment of the project area for lesser prairie-chickens following USFWS guidance documents (USFWS July, 2016 Recommendation for the Characterization of Effects of Wind Energy on the Lesser Prairie-Chicken, and

USFWS December, 2014 Guidelines for the Establishment, Management, and Operation of Permanent Lesser Prairie-Chicken Mitigation Lands). Once the results of the assessment and risk for prairie-chickens in the project area are known, the USFWS can provide further recommendations, if warranted.

4. Greater Prairie-Chicken buffers/ Sharp-tailed Grouse buffers:
   Many state Fish and Wildlife Agencies have management recommendations for these species. Hence, we recommend that wind project proponents contact their state Fish and Wildlife Agencies regarding potential recommended buffers for these species in relation to your project.

5. Mountain Plover nest buffers:
   Mountain plover is a USFWS Bird of Conservation Concern. We recommend that existing mountain plover nests documented as active through pre-construction surveys be buffered as follows: if the nest is within a prairie dog colony then a buffer of 800 meters should be applied to that colony and if the nest is located outside of a prairie dog colony then apply a buffer of 230 meters should be applied around the documented active nest.

6. Other USFWS Birds of Conservation Concern buffers:
   Bird species designated as BCC by USFWS (USFWS 2008). If your wind energy project survey work documents that there are other USFWS BCC birds present and nesting within the project area USFWS, Region 6 may provide other species-specific buffer recommendations for the project.

7. Playas and wetlands:
   For playas/wetlands within the project area we recommend applying a buffer of 500 meters. Hence, in general, no wind turbines should be constructed within 500 meters of playas/wetlands that occur within the project area. Adjustments to the size of the buffer may be warranted based on the size, quality, and raptor/avian use of the playa/wetland. For playas/wetlands that are larger, or higher quality, and with greater avian use, a buffer larger than 500 meters may be warranted. For playas/wetlands that are smaller in size, of lower quality, and have less avian use, a buffer less than 500 meters may be appropriate.

8. Native grasslands and prairie:
   For areas or blocks of land that protect intact native grassland/prairie habitats, whether they are private lands enrolled in one of several conservation programs or public lands that protect these habitats, our recommendation is to apply a buffer of 500 meters. Hence, in general, no wind turbines should be constructed within 500 meters of native grasslands/prairie habitat that occur within the project area. Lands that consist mostly or completely of native prairie, have greater ecosystem value due to their higher biodiversity. These grassland/prairie habitats are increasingly rare and thus these habitats and should be prioritized for buffers.

9. Setback distances for topographic features such as ridgelines, cliff edges, mesa edges, buttes, (etc):
   These topographic features create areas of wind uplift used by many raptor species. Placing wind turbines too close to such topographic features creates risk that raptors will

of collide with wind turbine blades resulting in death or injury. Therefore, we recommend a minimum setback distance (buffer) be applied for all wind turbines from all such topographic features. This recommended minimum setback distance should be equal to the greatest height of the largest wind turbine model used in building the wind energy project (measured from the turbine base to the highest tip of the turbine blade when directly vertical).

10. Burrowing Owl Colonies:
    Burrowing owl is a USFWS BCC. For any prairie dog colonies where pre-construction surveys document that burrowing owls are also present, apply a buffer of 800 meters around these colonies.

11. Prairie Dog Colonies:
    Prairie dog colonies are foraging areas for many raptor species. Hence, we recommend that all active prairie dog colonies be buffered from wind turbines. For prairie dog colonies we generally recommend applying a buffer of 500 meters. Region 6 overlaps the ranges of the black-tailed, white-tailed, Utah, and Gunnison's prairie dogs. There are ecological differences between these species which include the timing of annual activity and the related risk this may pose to predators (including raptors) that forage on them. Of greatest concern are black-tailed prairie dogs since they are active year round. Region 6 is open to discussions for individual projects per what prairie dog species are present and how our basic buffer recommendations may be adapted based on this.

12. We also recommend that contacting the appropriate state Fish and Wildlife Agency, based on the energy project location, to acquire other state agency- based conservation recommendations for your project.

Alan Plumeau

From: Mueller, Elisha K. <ekmueller@nd.gov>
Sent: Monday, May 24, 2021 1:30 PM
To: Riddle, Heidi L; Chris McCreedy
Cc: Maureen O'Shea-Stone
Subject: RE: [EXTERNAL] question on Ferruginous Hawk nest setbacks for constraints analysis

Follow Up Flag: Follow up
Flag Status: Completed

Thanks for the message, Heidi.

Chris, you will want to contact Sandra Johnson on this: sajohnson@nd.gov

Elisha

From: Riddle, Heidi L <heidi_riddle@fws.gov>
Sent: Monday, May 24, 2021 2:04 PM
To: Chris McCreedy <cmccreedy@atwell-group.com>
Cc: Maureen O'Shea-Stone <moshea-stone@atwell-group.com>; Mueller, Elisha K. <ekmueller@nd.gov>
Subject: FW: [EXTERNAL] question on Ferruginous Hawk nest setbacks for constraints analysis

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Chris,

I should have noted that ferruginous hawks are a North Dakota Level 1 Species of Conservation Priority. Per the document, this "memo does not supersede or apply to other Federal, State, or Tribal laws and regulations..". I don't know if ND Game and Fish has any additional policies that may apply here, but I have cc'd Elisha Mueller as well.

From: Riddle, Heidi L
Sent: Monday, May 24, 2021 1:57 PM
To: Chris McCreedy <cmccreedy@atwell-group.com>
Cc: Maureen O'Shea-Stone <moshea-stone@atwell-group.com>
Subject: RE: [EXTERNAL] question on Ferruginous Hawk nest setbacks for constraints analysis

Hi Chris,

See the attached U.S. Fish and Wildlife Service (USFWS), Division of Migratory Bird Management, HQ Office memo on *Destruction and Relocation of Migratory Bird Nest Contents*, dated 14 June, 2018. Per this national 2018 USFWS memo a ferruginous hawk nest can be removed at any time as long as it is inactive (an active nest is one that contains viable eggs and/or chicks - as defined in this memo) and provided the nest is destroyed and not retained. In these cases there is no need for any permit under the Migratory Bird Treaty Act (MBTA) from

USFWS, Region 6. And there is no need for any coordination with USFWS, Region 6 on this matter. This applies to all species of migratory birds protected under MBTA except for eagles and any migratory bird federally listed under the Endangered Species Act (as explained in the attached guidance memo).

If some entity wants to remove or relocate a hawk nest that is active that is treated differently. Such cases would require a MBTA permit from USFWS. Based on your email, your intent is to remove the hawk nest outside the nesting season. Per the above points this is not a problem.

Let me know if you need additional information.

Best,
Heidi

Heidi Riddle, CWB®
Fish and Wildlife Biologist
USFWS North Dakota Ecological Services Field Office
3425 Miriam Ave
Bismarck, ND 58501
(701) 355-8545
heidi_riddle@fws.gov

From: Chris McCreedy <cmccreedy@atwell-group.com>
Sent: Thursday, May 20, 2021 3:35 PM
To: Riddle, Heidi L <heidi_riddle@fws.gov>
Cc: Maureen O'Shea-Stone <moshea-stone@atwell-group.com>
Subject: RE: [EXTERNAL] question on Ferruginous Hawk nest setbacks for constraints analysis

Heidi,

Thank you for sending this and for your quick response. I never get tired of Tucson, I worked across the deserts for many years and after living in some of those desert towns Tucson is Paris!

If I may, I have a follow up question on the potential to remove a Ferruginous Hawk nest outside of the breeding season. If it is possible, what steps of agency coordination are required? Are there best practices that you can forward for this? The nest is in a shelterbelt.

Thank you,
Chris

Chris McCreedy
Senior Environmental Consultant
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From: Riddle, Heidi L <heidi_riddle@fws.gov>
Sent: Thursday, May 20, 2021 12:08 PM
To: Chris McCreedy <cmccreedy@atwell-group.com>

Cc: Maureen O'Shea-Stone <moshea-stone@atwell-group.com>
Subject: RE: [EXTERNAL] question on Ferruginous Hawk nest setbacks for constraints analysis

Hello Chris,

Thank you for following up with this email. I did get your voicemail but I accidentally deleted it and then couldn't get back to it! Sorry about that.

I am attaching the Region 6 wind energy guidance for wildlife buffers, which specifically addresses ferruginous hawks. There are other guidance documents on the R6 page too that you may find helpful. The link is:

https://www.fws.gov/mountain-prairie/migbirds/index.php
Scroll down to "Wind Energy Guidance Documents" and click on it. Five other document links will pop up that you can click on.

Hope this helps. Let me know if you have any other questions. As a side note, Tucson is one of my favorite places I've ever been. Would love to retire there someday ☺.

Thanks!

Heidi Riddle, CWB®
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From: Chris McCreedy <cmccreedy@atwell-group.com>
Sent: Thursday, May 20, 2021 1:34 PM
To: Riddle, Heidi L <heidi_riddle@fws.gov>
Cc: Maureen O'Shea-Stone <moshea-stone@atwell-group.com>
Subject: [EXTERNAL] question on Ferruginous Hawk nest setbacks for constraints analysis

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Heidi,

Hello, I hope that this message finds you well. Here in Tucson it is really dry. We have our fingers crossed for good summer rains that hopefully will start in 6 or 7 weeks.

We have been working on a constraints analysis for the proposed Badger Wind project in Logan and McIntosh counties. I have a question on the setback buffers used for Ferruginous Hawk nests at turbines in North Dakota. I have checked the PSC docket to look into the approaches used at other ND projects, and I

would appreciate your input on this. I left a phone message as well and I can call at your convenience if that is best.

Thank you,
Chris McCreedy

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
Washington D.C. 20240

In Reply Refer To:
FWS/DMBM/AMB/068029

Memorandum

To: Regional Directors

From: Assistant Director, Migratory Birds /sgd/ Jerome Ford 6/14/2018

Subject: Destruction and Relocation of Migratory Bird Nest Contents

The purpose of this memorandum is to clarify the application of the Migratory Bird Treaty Act (50 C.F.R. §§ 703-712; MBTA) to the destruction and relocation of migratory bird[1] nests and provide guidance for advising the public regarding this issue. This Memo replaces Migratory Bird Permit Memorandum MBPM-2 on Nest Destruction (Apr 15, 2003). This memo does not supersede or apply to other Federal, State, or Tribal laws and regulations, including the Endangered Species Act (16 U.S.C. §§ 1531; ESA) and the Bald and Golden Eagle Protection Act (16 U.S.C. §§ 668–668d; Eagle Act).

BACKGROUND:
The MBTA protects migratory birds, including migratory bird nests, eggs, and chicks. The prohibitions of the MBTA include *possession, transport, import, export, purchase, sale, barter,* and *take*. The regulatory definition of take, as defined by 50 C.F.R. § 10.12, means to *pursue, shoot, wound, kill, trap, capture,* or *collect,* or *attempt thereof.* This memo clarifies the Service's interpretation of how these prohibitions apply to migratory bird nests, eggs, and chicks.

The MBTA does not prohibit the destruction of an inactive[2] migratory bird nest, provided that no possession occurs during the destruction and no permit or other regulatory authorization is required (see Policy #1 below). Additionally, the Service should make every effort to inform the public of how to

[1] A list of species protected by the MBTA can be found at 50 C.F.R § 10.13
[2] An active nest is one that contains viable eggs and/or chicks. A nest becomes active when the first egg is laid and remains active until fledged young are no longer dependent on the nest. Nests that are empty, contain non-viable eggs, or are being built but do not yet have an egg in them are considered inactive.

minimize the risk of killing migratory bird species whose nesting behaviors make it difficult to determine occupancy status or continuing nest dependency (e.g., cavity and burrow nesting species).

On December 22 2017, the Department of Interior released M-Opinion 37050 (Opinion) regarding whether incidental take (the taking of migratory birds that results from an activity, but is not the purpose of the activity) is prohibited under the MBTA. The Opinion concludes that "the MBTA's prohibition on pursuing, hunting, taking, capturing, killing, or attempting to do the same applies only to direct and affirmative purposeful actions that reduce migratory birds, their eggs, or their nests, by killing or capturing, to human control" (M-Opinion, pg. 41). The Opinion clarifies that the MBTA does not prohibit the incidental or unintentional take of migratory birds and/or their active nest contents.

Therefore, an individual or entity may destroy an active nest while conducting any activity where the intent of the action is not to kill migratory birds or destroy their nests or contents. However, because the MBTA specifically protects migratory bird nests, eggs, chicks, and adults from possession and transport without a permit, individuals and entities cannot, in most cases, take reasonable protective actions (such as removing eggs and chicks prior to nest destruction or relocating nests) without first obtaining authorization to do so.

Currently, there are two mechanisms explained in Policy #2 and Policy #3 below for the temporary possession and transport of healthy, unaffected birds for the purpose of removing them from imminent danger (i.e., immediate threat of mortality). Policy #2 explains in more detail the Service's Good Samaritan provision included in the Rehabilitation regulation (50 C.F.R. § 21.31(a)). Policy #3 outlines the permitting mechanism under the Special Purpose regulation (50 C.F.R. § 21.27) for active nest situations that fall outside the Good Samaritan provision.

POLICY:

1. Inactive Nest Destruction

A permit or other regulatory authorization is not required under the MBTA to destroy an inactive migratory bird nest[3], provided no possession occurs during or after the destruction. The MBTA does not authorize the Service to issue permits in situations where the prohibitions of the Act do not apply, such as the destruction of inactive nests.

The public should be made aware that, due to the biological and behavioral characteristics of some migratory bird species, destruction of their nests entails an elevated risk of unknowingly killing them. For example, it is difficult to detect whether or not the nest of a cavity-nesting species, such as a burrowing owl or a bank swallow, is active. Before destroying this type of nest, we recommend consulting with an expert (e.g., USDA-Wildlife Services, Wildlife Professionals, Environmental Consultants, or Rehabilitation experts) who can help determine nest activity.

[3] An inactive nest is one that is empty, contains non-viable eggs, or is being built but does not yet have an egg in the nest.

Inactive nests may be protected by federal statutes other than the MBTA, such as nests of bird species federally listed as threatened or endangered under the ESA as well as nests of bald eagles and golden eagles, which are protected under the Eagle Act. State, Tribal, and local laws may also protect inactive bird nests. The Service should make every effort to ensure awareness regarding these possible additional protections and should inform the public of factors that will help minimize the likelihood that bird deaths would occur should nests be destroyed (i.e., when active nesting season normally occurs).

2. Good Samaritan Provision

For active nests, an individual or entity whose activity unintentionally or incidentally destroys an active nest, or is likely to do so, may collect the eggs or chicks and temporarily possess them for the purposes of transport to a federally-permitted rehabilitator under the Good Samaritan authorization in the rehabilitation regulation (50 C.F.R. § 21.31(a)). This Good Samaritan provision states: *"*Any person who finds a sick, injured, or orphaned migratory bird may, without a permit, take possession of the bird in order to immediately transport it to a permitted rehabilitator*"* (50 C.F.R. § 21.31(a)). The Service interprets the definition of "finds" to include encountering birds that become sick, injured, or orphaned while conducting activities where the intention is not to kill migratory birds or destroy their nests. "Finds" also applies when a planned activity is likely to cause or is about to cause destruction of an active nest resulting in the death, injury, or orphaning of eggs or chicks because, if nest destruction is imminent, any egg or chick in that nest can be considered orphaned. The Good Samaritan provision applies to the landowner of where the action is taking place and anyone designated to act on their behalf (e.g., wildlife professionals, pest-control contractors, rehabilitators, etc.). The Good Samaritan provision does not apply to regularly re-occurring actions where a single entity purposefully removes nests (e.g., a company that needs to purposefully remove nests from electrical distribution poles). For these situations a permit is recommended (see #3 below).

If the landowner is not comfortable with collecting the eggs or chicks, they may designate someone else to conduct the work on their behalf. After the eggs or chicks are collected, a federally-permitted rehabilitator may accept them as orphaned birds, consistent with their rehabilitation permit. All requirements and conditions of a rehabilitation permit apply. Rehabilitators have discretion as to what they will and will not accept and to determine the fate of any eggs or chicks accepted, including euthanasia. If a rehabilitator is unavailable or will not accept the eggs or chicks, the landowner (or the person acting on their behalf) may take the eggs or chicks to a licensed veterinarian who may temporarily possess, transfer, or euthanize the eggs or chicks without a permit (50 C.F.R. § 21.12(c)).

The Service can provide contact information for federally-permitted rehabilitators. The Service does not maintain or provide information on contractors, such as wildlife professionals, contractors, or pest control companies. Finally, the Service will provide information for voluntary reporting of active nest destruction in our Injury and Mortality Reporting System.

3. Special Purpose Permits

Permits are required to relocate a nest rather than destroy it, as possession of any nest is prohibited under the MBTA without prior authorization. Permits may also be appropriate for entities with ongoing projects that regularly need to intentionally remove or destroy nests. In these cases, permits can authorize possession of nests for various purposes, including active and inactive nest relocation, collection of nest contents for humane disposal, a combination thereof, or other compelling justifications. The Service can issue Special Purpose permits (50 C.F.R. § 21.27) to individuals or entities in these situations. In the case of utilities, authorization to destroy or relocate active and inactive nests is covered by applying for a specific type of special purpose permit: Special Purpose – Utility (https://www.fws.gov/forms/3-200-81.pdf).

Biologically, the success of nest relocation varies widely based on a number of factors, such as the distance moved, the presence of chicks, the nesting substrate, and the tolerance of the species and individual birds. Service biologists can provide technical assistance as to whether or not nest relocation is likely to succeed. Nest relocation should only be recommended for consideration when likely to result in success or when there are no other viable alternatives to achieve a conservation outcome. Relocation permit conditions will include short-term monitoring requirements by the person doing the nest relocation to ensure adults return to attend to the nest and an alternative protocol in the event nest abandonment occurs (such as collection and transport to a rehabilitator or veterinarian for euthanasia).

4. Other Permits and Authorizations

Other situations where there is purposeful take of active nests may fall under different permit types or regulatory authorizations. The Service will advise when a different permit or authorization may be appropriate.

Badger Wind
Call with USFWS KULM **1-6-2021**

Attendees:

USFWS, Kulm Wetland Management District:
Wayne Henderson

Ørsted:
Sarah Aftergood
Nick Mcintosh
Amber Minor
Mallorie
Lucas Buseck
Francesca Martella
Francisco Salazar
Wayne Henderson
Katharine Hinton Rosenberg

Fredrickson:
Mollie Smith

Atwell:
Tanya Johnson
Alan Plumeau
Maureen O'Shea-Stone

Amber Minor: First, wanted to go over WPAs, is this more of a third category which could be inclusive of grassland or wetland easements, and are also Exclusion Areas.

Wayne Henderson: WPA – USFWS own outright in fee title. So there's not a whole lot we can do there. I don't know that there's any in this project area, actually there's a couple but I don't think you're impacting them that I know of. I can't get GIS up so can't look from here. Looking at your map,

Amber: Sharing screen

Nick McIntosh: Just to be clear, WPAs is only land that you own, surface fee ownership of the property, those are the only areas designated as WPAs?

Wayne: No that's not correct because our easements say WPA too on the easement contract. We make the distinction between easements and fee title. We call them easements vs. WPAs which are purchased outright as WPAs. If you look at the easement contract, it will say easement for waterfowl production.

Amber: Is the GIS data pertaining to these from Kulm's website and shown on the maps we provided – is this all the datasets we should be aware of?

Wayne: Looking at your map here, you're actually missing our fee title land. I can send the website where you can download all this. You must have this because you have the easement layer.

Amber: Is this up to date?

Wayne: As far as I know, as of August 2021, it's up to date. We have not purchased any new fee title property in this district in the last 12 years. Agrees there are two easements in project area where Badger easements supersede his and have priority. I don't know of any new ones there. I haven't signed any new ones for that project area.

Amber: Is there a way to obtain a redacted copy of these agreements if they are not recorded.

Wayne: They are all recorded. If you can't find one, let me know. All agreements are recorded at county courthouse

Nick: I know there's a couple areas where there's both a waterfowl easement and a grassland easement. Amber, do you know if there's a grassland easement located in the title.

Wayne: There are two contracts: one for wetlands, one for grasslands. So, should be two recorded at the county courthouse.

Nick: We'll follow up with the title company. They probably missed it.

Wayne: If not, give me a call, I have it all in PDF and I'm happy to share it.

Amber: The WPA, does that typically cover a portion of the parcel or the entirety of it?

Wayne: Whatever the legal description is in the contract or the title, that's what's covered. Might be a subset of acres in a section, depends on who sold it to us and how much they owned.

Amber: So for these WPA areas, are we able to bore underneath without having any surface infrastructure on them?

Wayne: Yes, absolutely. If you can bore underneath grassland easements, WPAs. As long as you don't need to put any infrastructure on the land, we're good. In the future if you need to fix something on that land, I can issue a special use permit for temporary disturbance.

Amber: Would that trigger a NEPA review process?

Wayne: No, not if it's temporary. Permanent structure or ROW to cross a grassland easement or WPA, that would trigger NEPA.

Nick: In instances where we would need to bore, since we have not placed anything on the surface of that tract, we would not be triggering NEPA review, is that correct?

Wayne: Correct. As long as you're not disturbing surface area of the grassland easement. That's what we protect, not below it.

Nick: We typically bore pretty deep, but to understand how deep we would need to go, would we need to factor in root zones? Or as long as it's below the surface, we're good?

Wayne: As long as it's below the surface, you're good. We have no minimum depth that you have to be at.

Mollie Smith: One question, you had mentioned if you need a ROW. Knowing that this would be bored, the infrastructure would be bored, they'd still need some sort of legal easement or something to have the infrastructure there, does that agreement trigger anything as far as NEPA?

Wayne: As long as you bore underneath and you don't want a ROW, NEPA is not triggered. If you want a ROW, NEPA is triggered. If you bore underneath, and in the future, you need to fix something, as long as it's a temporary disturbance, NEPA is not triggered. Would be allowed via Special Use Permit.

Mollie: But if you need an easement, some sort of permanent land right, more for documentation purposes, to show that you have the right to go in there without getting the special use permit, that would trigger NEPA.

Wayne: That is correct. If you wanted the right to go in there and not even have to talk to me, that would trigger it.

Nick: To clarify, that would be specific to lands you own in fee, correct? For lands we'd be impacting or boring, it's a third party or a private landowner and you guys have the easement there?

Wayne: If it's a grassland easement, we own the rights to that grassland. So that would trigger NEPA if you wanted a ROW across that. Grassland easement is private lands but convey protection from surface disturbance (accept grazing and haying) entire easement.

Nick: If we were obtain an easement from the landowner, that would be the rights that we would need. If we impact surface, we'd need to go through you guys to get a temporary disturbance permit. In other words, we wouldn't be going through the U.S. to bore there.

Wayne: If you're getting an easement from the landowner to bore underneath, and we have a grassland easement. And it's prior to yours. We have the rights. In wetland easements, only protect delineated wetland within the easement, even if the legal description describes a larger area. In a grassland easement, we protect the entire area. So, can do no surface disturbance whatsoever. If you wanted to buy an easement from that landowner, and USFWS already had a grassland easement on it, it would supersede yours.

Nick: In terms of documentation, if we can show we will only be boring underneath, some type of letter of no objection or something like that, I don't know if an easement would apply there?

Wayne: For us, no. An easement wouldn't apply. I would need from you guys, a letter saying you are going to bore underneath this parcel of land, with a grassland easement, I have no objections.

As long as there's no disturbance to the grasslands in a grassland easement, there's nothing triggered on my end. I see in the spreadsheet Amber sent, there's some temporary impacts in grassland easements. Temporary impacts, I can issue a Special Use Permit, as long as they're repaired, we're good to go. As long as no permanent impacts.

Amber: Could you go over the NEPA review process and estimated time involved from initial involvement to approval.

Wayne: Sorry, no. Don't have a lot of experience in this, but I know it's a long time. We typically try to avoid NEPA.

Amber: That's our intent as well.

Amber: For the WPAs, we would not need a formal agreement with you? We can do something like a letter of no objection, or an email, or would you prefer a formal agreement?

Wayne: No, not a formal agreement. Would like a letter notifying of bore. Will have no objections. If no disturbance to grassland surface, no concerns are triggered. Can issue a temporary use permit for temporary impacts (e.g., if maintenance to a bored line is required). This would not trigger NEPA. To be clear, WPAs are fee title and even though we call our easements WPAs as well, the rights are different. When you say WPAs, I'm thinking fee title that we own outright. Easements, we own certain rights. I don't need a formal agreement on either one. If you are going to put something on a WPA – meaning fee title – that's a big problem. I don't see any in here. I don't remember seeing any in here that you come close to. There are some there.

Nick: I don't believe that there are. We would only place infrastructure in land that we would have leases with private landowners.

Wayne: Right, so I don't think this has changed much since the last time we talked, other than the two easements where you either need to bore under or go over.

Amber: If we find that we could impact a wetland but it's not delineated by USFWS, would we be in the clear here?

Wayne: Yes. If we haven't delineated it. We're in the process of sending out those maps to those landowners, showing wetlands that we protect on their easements. If you need that, let me know. From what I've seen, you aren't impacting wetlands.

Nick: Once we dig into this, any of the areas with the wetland easements, we may reach out and get those maps with those delineated wetlands specific with those easements just to make sure.

Amber: In the event that this occurs, could we get an email or a compliance letter stating that this is acceptable for us to be on here.

Wayne: Yes, can send an email saying I've looked over the map with the plan that you've presented to me saying it's acceptable to the USFWS.

Amber: Thank you. Now looking at the table we sent yesterday to go through by item. Francisco, would you like to go through here and any concerns on our end?

Francisco Salazar: Reviewed lines of excel table. Wayne agreed with all statements

1) no concerns

2) grassland – clip corner – will bore

3) grassland – clip corner – will bore - not WPA, just an easement

Mollie: It mentions Logan County WPA, is that not accurate?

Wayne: The easement contract says WPA in it, but it's actually an easement.

4) Grassland/wetland – will bore

6) grassland/wetland – will bore

7/8) USFWS wetland – parcel with prior lease – can do whatever you want – can trench. If not wetlands, can do whatever you want.

9) USFWS wetland – Nick requests delineated maps for this area. Wayne will send, asked for legal description.

Nick: That's all on our end.

Alan Plumeau: For the WPA easements, do you know if those are considered Exclusion Areas for state permitting or just the fee title areas?

Wayne: Don't know. Don't think they are, but not sure.

Wayne noted he appreciates chance to review and comment on the Project.

Appendix E

Sound Analysis Report

Badger Wind, LLC
February 2022

BADGER WIND FARM

Sound Assessment

Badger Wind, LLC

Document No.: 10306372-HOU-R-01
Issue: C**, Status:** Final
Date: 16 February 2022



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Project name:	Badger Wind Farm	DNV Energy USA Inc.
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	Chicago, IL 60611	Enterprise No.: 23-2625724
Contact person:	Sarah Aftergood	
Date of issue:	16 February 2022	
Project No.:	10306372	
Proposal Reference:	218998-HOU-P-01-B	
Document No.:	10306372-HOU-R-01	
Issue/Status:	C/Final	

Task and objective:
This report presents the results of a sound analysis conducted by DNV on behalf of Badger Wind, LLC.

Prepared by:	Verified by:	Approved by:
Justin Puggioni Siting and Acoustics Engineer, Environment and Permitting Services	Aren Nercessian Project Siting Engineer, Environment and Permitting Services	Gabriel Constantin Senior Team Leader, Environment and Permitting Services

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Keywords:

Sound, Badger Wind, North Dakota

Issue	Date	Reason for Issue	Prepared by	Verified by	Approved by
A	31 December 2021	Draft	J. Puggioni	A. Nercessian	K. Rogers
B	2 February 2022	Layout update	J. Puggioni	A. Nercessian	G. Constantin
C	16 February 2022	Substation update	J. Puggioni	A. Nercessian	G. Constantin

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EXECUTIVE SUMMARY

DNV Energy USA Inc. (“DNV”) has conducted a sound assessment for the Badger Wind Farm (the “Project”) located in Logan County and McIntosh County, North Dakota. The Project consists of 79 wind turbine generators (WTGs) and two step-up transformers within the substation. There are no neighboring wind farms or solar farms near the Project. Only 74 of the 79 turbines are planned to be constructed.

45 sound receptors, representing inhabited residences or community buildings, within one mile of a WTG or substation transformer have been included in this report.

The sound pressure level (SPL) at each receptor for the aggregate of all WTGs and transformers was calculated based on the ISO 9613-2 method.

The calculated results include a +2 dB adjustment to the published wind turbine sound power level (PWL).

The loudest cumulative SPL is 47.5 dBA at receptor 258, which is in close proximity to the substation transformers, and at participant receptor 263.

Calculations were performed at the receptor location and at a distance of 100 feet from the respective noise sensitive building in the loudest direction as per North Dakota Administrative Code Section 69-06-08-01. Badger Wind has obtained or is in the process of obtaining waivers from the owners of receptors modeled above the 45 dBA sound limit.

1 INTRODUCTION

Badger Wind, LLC ("Badger" or the "Customer") requested that DNV Energy USA Inc. ("DNV") perform a noise analysis for the Badger Wind Farm (the "Project") located in Logan County and McIntosh County, North Dakota.

The Project layout considered for the noise analysis includes 79 GE3.4-140 wind turbine generators (WTGs) with a hub height of 322 ft (98 m) and two step-up transformers within the substation. Only 74 of the 79 turbines in this analysis are planned to be constructed.

The objective of this assessment was to predict the sound levels generated by the Project WTGs and substation transformers at all receptors within one mile of the Project's sound emitting equipment using the International Organization for Standardization (ISO) standard 9613-2 sound propagation model [1].

2 ENVIRONMENTAL SOUND BACKGROUND

Sound levels are expressed in the decibel unit and are quantified on a logarithmic scale to account for the large range of acoustic pressures to which the human ear is exposed. A decibel (dB) is used to quantify sound levels relative to a 0 dB reference. The reference level of 0 dB is defined as a sound pressure level of 20 micropascals (µPa), which is the typical lower threshold of hearing for humans.

Sound levels can be presented both in broadband (i.e., sound energy summed across the entire audible frequency spectrum) and in octave band spectra (i.e., audible frequency spectrum divided into bands). Frequency is expressed in the Hertz unit (Hz), measuring the cycles per second of the sound pressure waves. The audible range of humans spans from 20 to 20,000 Hz. Since the human ear does not perceive every frequency with equal loudness, spectrally varying sounds are often adjusted with a weighting filter. The A-weighting filter is applied to closely approximate the human ear's response to sound. This scale is commonly used in environmental and industrial sound. Sound expressed in the A-weighted scale is denoted dBA. This is used as the weighting in this report.

A sound source has a certain sound power level rating, which describes the amount of sound energy per unit of time. This is a basic measure of how much acoustical energy it can produce and is independent of its surroundings. Sound pressure is created as sound energy flows away from the source. The measured sound pressure level (SPL) at a given point depends not only on the power rating of the source and the distance between the source and the measurement point (geometric divergence), but also on the amount of sound energy absorbed by environmental elements between the source and the measurement point (attenuation). Sound attenuation factors include meteorological conditions such as wind direction, temperature, and humidity, sound interaction with the ground, atmospheric absorption, terrain effects, diffraction of sound around objects and topographical features, and foliage.

3 APPLICABLE REGULATIONS

Sound emanating from the Project is subject to the *North Dakota Administrative Code Section 69-06-08-01* [2]. The regulations state:

> *a wind energy conversion facility site must **not include** a geographic area where, due to operation of the facility, the **sound levels within one hundred feet** of an inhabited residence or a community building **will exceed forty-five dBA.** The sound level avoidance area criteria may be waived in writing by the owner of the occupied residence or the community building.*

The applicable sound regulation is therefore 45 dBA within 100 feet of an inhabited residence or a community building that is not subject to a waiver.

4 DESCRIPTION OF THE PROJECT SITE

4.1 Site description

The Project is situated in relatively simple terrain, consisting of flat farmland, with project equipment base elevations ranging from approximately 2,000 to 2,200 feet above sea level. The ground cover on and near the site is primarily composed of farmland or open fields. Dwellings are interspersed throughout the Project site.

The Project is located in Logan County and McIntosh County, west of the town of Wishek, North Dakota.

4.2 Project layout

The Project consists of 79 GE3.4-140 WTGs with a hub height of 322 ft (98 m). Two step-up transformers were included at the Project substation. Only 74 of the 79 turbines in this analysis are planned to be constructed.

The coordinates of the Project equipment included in the modeling are presented in Appendix A. The turbine layout and substation transformer locations were provided by the Customer [3] [4].

4.3 Neighboring wind farms

There are no neighboring operational wind or solar farms near the Project.

4.4 Receptor locations

A list of 348 receptors was provided by the Customer [5], most of which were clustered in the nearby town of Wishek over 1 mile from the nearest turbine. Of the total number of identified receptors, results for 45 receptors within one mile of the Project equipment were included in this assessment. Coordinates of each receptor point are presented in Appendix B.

5 SOUND ASSESSMENT

5.1 Description of the sound sources

The sources of sound considered in this analysis are the WTGs and substation transformers. Sound associated with other sources in the vicinity of the Project, such as construction activities, have not been considered in this report.

5.1.1 Project turbines

Project specific total broadband and octave band sound power levels for the General Electric GE3.4-140 WTG at a hub height of 322 ft (98 m) are contained in the manufacturer documentation [6]. The maximum sound power level for the GE3.4-140 turbine model was 106.8 dBA. A +2 dB adjustment was applied to ensure conservatism in the assessment for a total modeled sound power level of 108.8 dBA. The sound power levels used in the analysis were at hub height wind speeds of 10-15 m/s, which were reported to have the same octave band sound levels for each wind speed within that range. Low Noise Trailing Edge Technology (LNTE) is included in this model as per the manufacturer documentation [6].

Table 5-1 shows the octave band sound power levels associated with the turbines used in this analysis.

Table 5-1 WTG sound power levels [dBA]

WTG Model	Frequency [Hz]									Broadband
	31.5	63	125	250	500	1000	2000	4000	8000	
GE3.4-140 (+2dB)	81.7	90.3	94.2	98.1	101.2	104.2	103.5	95.7	76.9	108.8

5.1.2 Substation transformers

There are two transformers planned at the Project substation, each rated at 167 MVA with a voltage of 230 kV on the high voltage side.

A total broadband sound power level of 111.8 dBA was estimated according to the Institute of Electrical and Electronics Engineers Standards Association (IEEE) standard C57.12.90-2015 [7], based on an audible sound level of 83 dBA each [8] and transformer dimensions [9] provided by the Customer. A tonality penalty of 5 dB is included in this value in accordance with ISO-1996-2 [10].

A typical transformer octave band distribution [11] was used. The octave band sound power levels of the Project transformers are shown in Table 5-2.

Table 5-2 Transformer sound power levels [dBA]

Transformer	Frequency [Hz]									Broadband
	31.5	63	125	250	500	1000	2000	4000	8000	
167 MVA - 230 kV	69.0	88.2	100.3	102.8	108.2	105.4	101.6	96.4	87.3	111.8

5.2 Assessment methodology

The sound pressure level at each receptor for the aggregate of all WTGs and transformers associated with the Project was calculated using CadnaA acoustic modeling software based on the ISO 9613-2 method [1]. The simulation was performed using the maximum sound power level of the turbines and transformers, including upward corrections or safety margins. The Project's turbines were modeled with a 322 ft (98 m) hub height. Substation transformers were modeled at a height of 4.4 m (14.4 ft).

The ISO 9613-2 standard provides a prediction of the equivalent continuous SPL at a distance from one or more point sources. The method consists of octave-band algorithms (i.e., with nominal mid band frequencies from 31.5 Hz to 8 kHz) for calculating the attenuation of the emitted sound. The algorithm takes into account the following physical effects:

- Geometrical divergence – attenuation due to spherical spreading from the sound source
- Atmospheric absorption – attenuation due to absorption by the atmosphere
- Ground absorption – attenuation due to the acoustical properties of the ground

The ISO 9613-2 standard calculates attenuation "under meteorological conditions favorable to propagation from sources of sound emission." These meteorological conditions are for "downwind propagation or, equivalently, propagation under a well-developed moderate ground-based temperature inversion, such as commonly occurs at night". In other words, though a physical impracticality, the ISO 9613-2 standard treats every receptor as being downwind from every source of sound emission (i.e., transformers and turbines).

The ISO 9613-2 standard accounts for ground absorption by assigning a numerical coefficient (G) with a value ranging from 0 to 1. A value of G = 0 represents hard ground (e.g., paving, water, ice, concrete, tamped ground, and other ground surfaces with a low porosity), while a G = 1 value represents porous ground (e.g., ground covered by grass, trees, or other vegetation, and other ground surfaces suitable for the growth of vegetation such as farming land). Though the ground use on and around the site is farming, a mixed (i.e., semi-reflective) global ground factor of G = 0.5 was used in this assessment.

Additionally, temperature, barometric pressure, and humidity parameters were selected to represent typical local annual averages, and topographical information to accurately represent terrain in three-dimensions was included in this assessment.

Specifically, the ISO 9613-2 parameters were set as follows:

- Ambient air temperature: 50º F (10º C)
- Ambient barometric pressure: 101.32 kPa
- Humidity: 70%
- Overall ground factor: 0.5
- Topography included (10 m elevation intervals)

Additional attenuation from foliage was not considered in this assessment, implying that lower sound levels are expected in areas where there is foliage present in the line of sight between any turbine and a sound receptor. Similarly, because the model assumes every receptor is downwind of every sound source at all times, lower sound levels are expected at times when a receptor is upwind of any sound source.

6 RESULTS

A detailed map illustrating predicted sound pressure levels at receptors located in the vicinity of the Project is presented in Figure 6-1, at 4 m height only, representing the receptor location**.**

The predicted sound levels at each of the receptors located within 1 mile of the Project equipment are presented in Appendix B.

For each receptor, the following information is provided:

- ID
- Coordinates in UTM projection and NAD83 Datum
- Closest noise generating equipment
- Distance to the closest noise generating equipment
- Sound pressure levels (SPL) in dBA for each receptor

Two sets of results were calculated for each receptor:

1. At a distance of 100 feet from the receptor in the loudest direction, at a height of 5 ft (1.5 m)
2. At the building location at a height of 13 ft (4 m).

The greater of the two sound levels was reported in the results in Appendix B for each receptor and compared to the prescribed sound level limits in accordance with North Dakota Administrative Code Section 69-06-08-01.

The highest modelled sound level throughout the Project area is 47.5 dBA at receptor 258 and at participant receptor 263. The substation transformers are the main sound contributors at this receptor. It is understood that a waiver is currently in progress at this location, as well as for other potential non-compliant receptors.

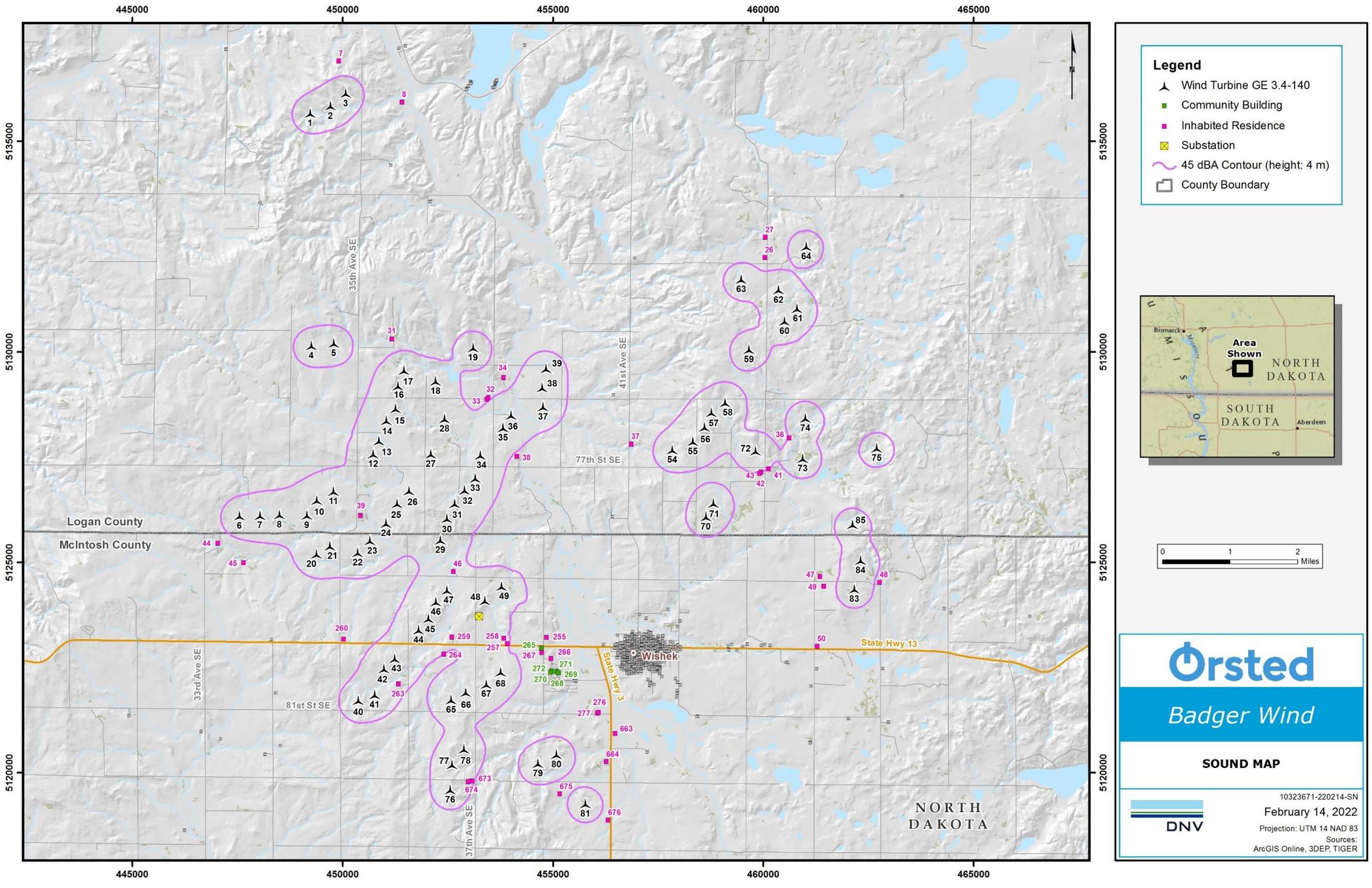


Figure 6-1 Modeled sound levels at the Badger Wind Farm

7 CONCLUSION

DNV has conducted an analysis to determine the maximum predicted sound levels at receptors in the vicinity of the Badger Wind Farm in Logan County and McIntosh County, North Dakota. The Project equipment considered in the analysis were 79 GE 3.4-140 WTGs with a hub height of 322 ft (98 m) and two step-up transformers within the substation. Only 74 of the 79 turbines in this analysis are planned to be constructed. Sound levels in this report may be overestimated in areas where no turbines will eventually be built.

Results are presented for receptors within one mile of a sound source. The loudest cumulative sound pressure level is 47.5 dBA at receptor 258, which is close to the substation transformers, and at participant receptor 263..

Calculations were performed at the receptor location and at a distance of 100 feet from the building in the loudest direction as per North Dakota Administrative Code Section 69-06-08-01. Badger Wind has obtained or is in the process of obtaining waivers from the owners of receptors modeled above the 45 dBA sound limit.

8 REFERENCES

[1] International Organization for Standardization. *ISO 9613-2: Acoustics – Attenuation of Sound During Propagation Outdoors – Part 2: General Method of Calculation*. 15 December 1996.

[2] North Dakota Administrative Code Section 69-06-08-01 Energy Conversion Facility Siting Criteria item 4 Additional Avoidance Areas for Wind Energy Conversion Facilities

[3] Turbine locations accessed in dataroom by DNV on 20 December 2021, filenames "*V17_Turbines_PRIMARYS.shp*" and "*V17_Turbines_ALTS.shp*"

[4] Substation location sent by email on 9 February 2022, filename "*20220208_BADGER_SUBSTATION.kmz*"

[5] Receptor locations sent by email, by Orsted to DNV on 23 September 2021, "*Badger_ReceptorSurvey_FieldVerify.zip*"

[6] One-third octave band sound power levels sent by email, by Orsted to DNV on 22 September 2021, "*2.3 - Noise_Emissions_Sierra 140-60Hz_IEC_EN_r05.pdf"*

[7] C57.12.90-2015 IEEE Standard Test Code for Liquid-Immersed Distribution, Power, and Regulating Transformers. 11 March 2016.

[8] NEMA TR-2013, Transformers, Step Voltage Regulators and Reactors. National Electrical Manufacturers Association, 2014.

[9] Transformer dimensions and specifications sent by email, by Orsted on 9 February 2022.

[10] International Organization for Standardization. *ISO 1996-2: Acoustics – Description, measurement and assessment of environmental noise -Part 2: Determination of sound pressure levels*. July 2017

[11] *Handbook of Acoustics*. Edited by Malcolm J. Crocker. John Wiley & Sons. 1998.

APPENDIX A – SOUND SOURCE LOCATIONS

ID	UTM Zone 14, NAD 83 Datum	
	Easting [m]	Northing [m]
TR1	453247	5123735
TR2	453246	5123700
T1	449232	5135639
T2	449715	5135813
T3	450072	5136112
T4	449261	5130118
T5	449789	5130171
T6	447551	5126070
T7	448036	5126080
T8	448497	5126099
T9	449154	5126085
T10	449387	5126438
T11	449782	5126653
T12	450729	5127537
T13	450861	5127853
T14	451042	5128333
T15	451257	5128621
T16	451315	5129161
T17	451454	5129529
T18	452210	5129271
T19	453100	5130066
T20	449377	5125160
T21	449699	5125357
T22	450360	5125201
T23	450646	5125479
T24	451033	5125893
T25	451295	5126363

ID	UTM Zone 14, NAD 83 Datum	
	Easting [m]	Northing [m]
T26	451577	5126667
T27	452098	5127542
T28	452421	5128376
T29	452324	5125495
T30	452479	5126005
T31	452664	5126362
T32	452894	5126680
T33	453151	5126962
T34	453276	5127510
T35	453813	5128161
T36	454004	5128462
T37	454764	5128664
T38	454742	5129113
T39	454835	5129567
T40	450371	5121682
T41	450761	5121823
T42	450983	5122435
T43	451235	5122677
T44	451804	5123359
T45	452037	5123629
T46	452217	5124027
T47	452482	5124307
T48	453381	5124054
T49	453779	5124395
T54	457835	5127638
T55	458325	5127835
T56	458602	5128176

ID	UTM Zone 14, NAD 83 Datum	
	Easting [m]	Northing [m]
T57	458765	5128526
T58	459095	5128759
T59	459657	5130026
T60	460506	5130695
T61	460804	5130994
T62	460359	5131442
T63	459474	5131694
T64	461020	5132473
T65	452577	5121697
T66	452929	5121877
T67	453416	5122072
T68	453759	5122358
T70	458635	5126052
T71	458816	5126368
T72	459815	5127608
T73	460934	5127436
T74	461003	5128392
T75	462699	5127680
T76	452558	5119564
T77	452597	5120163
T78	452882	5120526
T79	454642	5120186
T80	455082	5120402
T81	455774	5119232
T83	462165	5124334
T84	462316	5125016
T85	462125	5125862

Transformer IDs (TR1 and TR2) have been arbitrarily added for the purpose of this report.

APPENDIX B – RECEPTOR RESULTS

Receptor ID	UTM Coordinates Zone 14, NAD 83 Datum		Nearest Sound Source [ID]	Distance to Nearest Sound Source [feet]	Sound Pressure Level at Receptor [dBA]
	Easting [m]	Northing [m]			
P7	449910	5136911	T3	2675	39.4
8	451414	5135938	T3	4440	34.0
P26	460040	5132243	T63	2587	42.2
P27	460052	5132724	T64	3281	39.1
P31	451171	5130311	T17	2729	41.5
32	453428	5128874	T36	2320	44.6
33	453463	5128918	T36	2319	44.5
P34	453827	5129394	T36	3113	43.1
P36	460620	5127961	T74	1893	45.2
P37	456860	5127809	T54	3246	39.2
P38	454147	5127522	T35	2368	44.2
P39	450426	5126113	T24	2119	47.0
P41	459950	5127152	T72	1562	44.9
P42	460131	5127219	T72	1645	44.8
P43	459917	5127112	T72	1663	44.4
44	447037	5125452	T6	2635	40.2
45	447643	5124993	T6	3545	39.8
P46	452631	5124788	T47	1652	46.8
P47	461350	5124665	83	2887	39.9
P48	462767	5124527	T83	2073	43.2
P49	461444	5124433	T83	2389	40.8
50	461281	5123004	T83	5239	32.0
255	454849	5123219	T68	4559	38.6
257	453922	5123072	T68	2402	45.4
258	453837	5123201	TR1	2493	47.5
259	452598	5123225	T45	2266	46.1
260	450024	5123180	T42	3984	40.3
P263	451329	5122110	T42	1558	47.5
264	452406	5122819	T44	2653	45.0
265	454729	5122962	T68	3748	40.0
266	454738	5122856	T68	3604	39.9
267	454957	5122712	T68	4098	38.5
268	454969	5122422	T68	3977	38.4
269	455092	5122408	T68	4378	37.7
270	455124	5122382	T68	4479	37.6
271	455138	5122382	T68	4526	37.5
272	454951	5122389	T68	3913	38.5
276	456064	5121418	T80	4635	35.4
277	456081	5121438	T80	4721	35.3
663	456482	5120937	T80	4917	34.5
P664	456265	5120265	T81	3750	37.7
P673	453076	5119807	T76	1879	45.5
P674	452989	5119794	T76	1605	46.5
675	455159	5119498	T81	2200	42.8
676	456308	5118878	T81	2101	40.6

Receptor IDs with a “P” prefix indicate a participating receptor.

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Appendix F

Shadow Flicker Analysis Report

Badger Wind, LLC
February 2022

BADGER WIND FARM

Shadow Flicker Analysis Report

Badger Wind, LLC

Document No.: 10306372-HOU-R-03
Issue: C**, Status:** Final
Date: 16 February 2022



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Task and objective:
This report presents the results of a shadow flicker analysis conducted by DNV on behalf of Badger Wind, LLC.

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EXECUTIVE SUMMARY

DNV Energy USA Inc. (“DNV”) has conducted an analysis to predict the duration of shadow flicker expected to be experienced at receptors near the Badger Wind Farm (the “Project”). The site is located in Logan County and McIntosh County, North Dakota. At the request of Badger Wind, LLC (“the “Customer”), this analysis includes a total of 79 wind turbine generators (WTGs), of which 74 will ultimately be constructed. There are no neighboring wind farms or solar farms near the Project.

There were 40 receptors, representing inhabited residences, identified within 5,512 feet (1,680 m) of a Project turbine, which is the equivalent of ten tip heights of the WTG.

Receptor 39 is predicted to experience the most shadow flicker per year (expected case), with a total of 38 hours. This is a participating receptor.

There are certain simplifications and conservative assumptions inherent within the model that may result in an overestimation of shadow flicker duration. These are further explained in the report.

1 INTRODUCTION

Badger Wind, LLC (the “Customer”) retained DNV Energy USA Inc. (“DNV”) to perform a shadow flicker assessment for the Badger Wind Farm (the “Project”) located in Logan County and McIntosh County, North Dakota.

The Project layout considered for the analysis includes 79 GE3.4-140 wind turbine generators with a hub height of 322 ft (98 m). The turbine layout was provided by the Customer [1]. Only 74 of the 79 turbines in this analysis are planned to be constructed.

The GE3.4-140 has a maximum blade tip height of 551 feet (168 m), a hub height of 322 feet (98 m), and a rotor diameter of 459 feet (140 m).

The purpose of this shadow flicker assessment is to calculate the predicted shadow flicker duration for the proposed Project at nearby receptor locations. This report includes a brief presentation of the Project site, a description of the shadow flicker assessment methodology, results of the analysis including a map illustrating areas prone to shadow flicker and concluding comments. This report presents the results of DNV’s analysis.

1.1 Shadow flicker definition

Shadow flicker is defined as the modulation of light levels resulting from the periodic passage of a rotating wind turbine blade between the sun and a viewer. The duration of shadow flicker experienced at a specific location can be determined using a purely geometric analysis which takes into account the relative positions of the sun throughout the year, the wind turbines at the site, and the viewer. This method has been used to determine the shadow flicker duration at sensitive locations in the vicinity of the Project.

It should be noted, as described in Section 3, that there are certain simplifications and conservative assumptions inherent within the model that may result in an overestimation of shadow flicker duration.

2 DESCRIPTION OF THE WIND FARM SITE

2.1 Site description

The Project is situated in relatively simple terrain, consisting of flat farmland, with wind turbine base elevations ranging from approximately 2,000 feet to 2,200 feet above sea level. The ground cover on and near the site is primarily composed of farmland and open fields. Dwellings are interspersed throughout the Project site.

The site is in Logan County and McIntosh County, west of the town of Lehr, North Dakota.

2.2 Wind farm layout and turbine model

The current Project layout consists of 79 GE3.4-140 WTGs. Ultimately, 74 of these turbines will be constructed. The turbine layout was provided by the Customer [1].

The GE3.4-140 has a maximum blade tip height of 551 feet (168 m), a hub height of 322 feet (98 m), and a rotor diameter of 459 feet (140 m).

The coordinates of the Project equipment included in the assessment are presented in Appendix A.

2.3 Neighboring wind farms

There are no neighboring wind farms in the vicinity of the Project.

2.4 Receptor locations

A list of 348 receptors was provided by the Customer [4], most of which were clustered in a nearby town of Wishek over 1 mile from the nearest turbine. Of the total number of identified receptors, results for 40 receptors, representing inhabited residence, located within the affected study area defined in Section 3.2 are reported. Coordinates of each receptor are presented in Appendix B.

2.5 Applicable regulations

No applicable shadow flicker regulations were identified at the state and county level when the report was issued.

3 SHADOW FLICKER ASSESSMENT

3.1 Overview

Shadow flicker may occur under certain combinations of circumstances with regard to the sun's position and wind direction; when the sun passes behind the rotating blades of a wind turbine, a moving shadow is cast in front of or behind the turbine. When viewed from a stationary position, the moving shadows cause periodic flickering of the sunlight, otherwise known as the "shadow flicker" phenomenon.

The effect is most noticeable inside buildings, where the flicker appears through a window opening. The likelihood and duration of the effect depends on a number of variables, namely:

- Orientation of the building relative to the turbine;
- Wind direction: The shape and intensity of the shadow are determined by the position of the sun relative to the blades (the turbine rotor continuously yaws to face the wind so the rotor plane will always be perpendicular to the wind direction);
- Distance from turbine: The farther the observer from the turbine, the less pronounced the effect;
- Turbine height and rotor diameter: A larger turbine rotor diameter will cast a larger shadow, meaning a larger area will be prone to incidences of shadow flicker;
- Time of year and day: Position of sun relative to the horizon;
- Weather conditions: Cloud cover reduces the occurrence of shadow flicker;
- Vegetation and other obstacles that help to mask shadows;
- Operational status of turbines.

3.2 Assessment methodology

The number of hours of shadow flicker experienced annually at a given location can be calculated using a geometrical model which takes into account the sun's position, topography of the wind farm site, and wind turbine specifications such as rotor diameter and hub height.

Shadow flicker has been calculated at the subject receptors (i.e. residences) at a height of 6.5 feet (2 m) to represent ground floor windows. Rather than facing a particular direction, shadow flicker receptors (windows) are simulated as horizontal planes, meaning they experience shadow flicker over 360°, often referenced as the "greenhouse" scenario; this assumption therefore represents a worst-case scenario. Simulations with WindFarmer Analyst software have been carried out with a resolution of 1 minute; if shadow flicker occurs in any 1-minute period, the model registers this as 1 minute of shadow flicker.

It is generally accepted that shadow flicker from wind turbines does not occur beyond a distance, D, from a given wind turbine. The UK wind industry considers this distance to be equivalent to 10 rotor diameters [2], while the Danish wind industry suggests a value of between 1,640 feet and 3,281 feet (500 m and 1,000 m) [3]. DNV has adopted a conservative approach and has assumed the length, D, that a shadow can be cast to be defined as follows:

$$D = 10 \times (\text{hub height} + \text{rotor radius})$$

Beyond this distance, a viewer does not perceive the turbine blade to be chopping the light, but rather as an object passing in front of the sun.

In the case of this Project, 10 x (hub height + rotor radius) is equal to 5,512 feet (1,680 m).

The annual hours of shadow flicker at receptors have been calculated using an “expected case” approach.

An “expected case” considers cloud cover and the site-specific wind rose in order to get a more realistic shadow flicker estimate, as described below. It is noted that additional attenuation factors are still not considered (see Section 3.4), and therefore, the “expected case” is still conservative.

3.3 Attenuations

Shadow flicker calculations can be adjusted using average monthly cloud coverage, which is based on historical meteorological data and statistics. According to data gathered from the Bismarck, ND, and Aberdeen, SD, National Oceanic and Atmospheric Administration (NOAA) stations, monthly cloud cover can be estimated and applied as a percentage decrease in flicker duration. Cloud cover percentages are shown in Table 3-1.

Table 3-1 Monthly cloud cover percentage (%) reduction

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Percentage	64.1	64.9	68.0	65.0	61.3	55.9	43.5	43.5	50.8	56.5	69.2	66.1

The annual site-specific wind direction distribution was used in order to consider the probability of the turbines being oriented in a given direction. This produces a more accurate estimate of shadow flicker duration at receptors. The directional wind frequency that was measured on site [5] is shown in Table 3-2.

Table 3-2 Site specific directional frequencies (%) (Mast ID: M2000)

Sector (°)	0	30	60	90	120	150	180	210	240	270	300	330
Percentage	9.6	6.4	5.1	5.1	6.7	10.4	10.2	6.2	7.7	8.6	11.0	12.9

Note: The sectors are defined as 30° sectors centered at the given value.

No attempt has been made to account for vegetation or other shielding effects around each shadow receptor in the calculations of shadow flicker duration. Similarly, turbine operational shut-down has not been considered in this analysis. Consideration of these factors could lead to a reduction of the levels of shadow flicker predicted.

3.4 Simplifications and conservative assumptions

Shadow flicker duration calculated in the manner described above has several limitations and may over-estimate the annual number of hours of shadow flicker experienced at a specified location for several reasons, namely:

- The modeling of the wind turbine blades as discs rather than individual blades results in an overestimate of shadow flicker duration.
- Turbine blades are of non-uniform thickness with the thickest part of the blade (maximum chord) close to the hub and the thinnest part (minimum chord) at the tip. Diffusion of sunlight, as discussed above, results in a limit to the maximum distance that a shadow can be perceived. This maximum distance will also be dependent on the thickness of the turbine blade and the human threshold for perception of light intensity variation. As such, a shadow cast by the blade tip will be shorter than the shadow cast by the thickest part of the blade [6]. These distinctions are not modeled and shadow cast from any part of the blade is considered a shadow flicker event.
- Additionally, the orientation of windows on a given residence has not been taken into account, i.e. the model assumes that a window is always facing the turbine(s).
- Aerosols (moisture, dust, smoke, etc.) in the atmosphere have the ability to influence shadows cast by a wind turbine. The length of the shadow cast by a wind turbine is dependent on the degree that direct sunlight is diffused, which in turn is dependent on the amount of dispersants (humidity, smoke and other aerosols) in the path between the light source (sun) and the receiver [6]. The model does not consider any such factors.
- The presence of vegetation or other physical barriers around a receptor location may shield the view of the wind turbine, and therefore reduce the incidence of shadow flicker. No physical barriers have been modeled.
- Periods where Project wind turbines are not in operation due to low winds, high winds, or for operational and maintenance reasons will also reduce shadow flicker occurrence but are not considered herein.

In light of the reasons listed above, it is likely that the shadow flicker durations presented in Appendix B can be regarded as conservative.

4 RESULTS AND CONCLUSION

The results of the shadow flicker assessment (in terms of expected total hours per year) are presented in tabular format in Appendix B for all receptor locations in the study area.

Results for the “expected case” in hours per year take into account the average monthly cloud cover from two NOAA meteorological stations at Bismarck, ND, and Aberdeen, SD. The annual site specific wind directional frequencies were gathered from a meteorological mast deployed on site [5].

A detailed map illustrating predicted “expected case” shadow flicker duration at receptors lying within 5,512 feet (1,680 m) of the Badger Wind Farm are presented in Figure 4-1. The map takes into account average monthly cloud cover and annual wind direction distribution. Shadow flicker is shown in isopleths of 30 hours per year or more.

Receptor 39 is predicted to experience the most shadow flicker per year (expected case), with a total of 38. This is a participating receptor.

As described in Section 3, certain conservative assumptions have been made in this analysis, which likely results in an overestimation of the shadow flicker impacts that may be experienced at each receptor. Additionally, only 74 of the 79 turbines included in this analysis will be built. Results may be overestimated in areas where turbines may not end up being constructed.

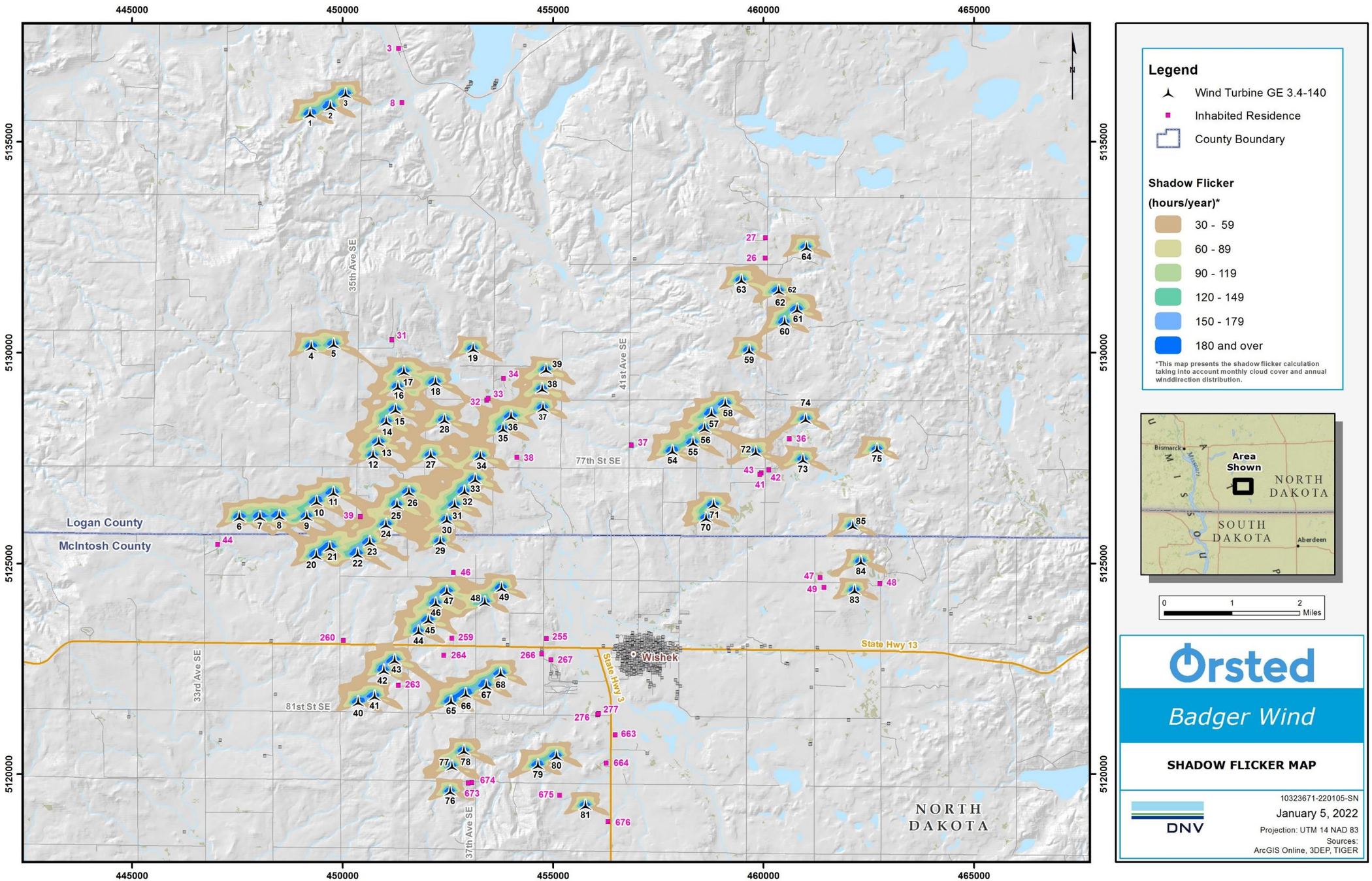


Figure 4-1 Modeled hours of shadow flicker (Expected Case)

5 REFERENCES

[1] Badger Wind Turbine locations accessed in dataroom by DNV on 20 December 2021, filenames "*V17_Turbines_PRIMARYS.shp*" and "*V17_Turbines_ALTS.shp*"

[2] Department for Business Enterprise & Regulatory Reform, UK, "Onshore Wind: Shadow Flicker", http://webarchive.nationalarchives.gov.uk/20090609003228/http:/www.berr.gov.uk/whatwedo/energy/sources/renewables/planning/onshore-wind/shadow-flicker/page18736.html . Accessed December 2021.

[3] Danish Wind Industry Association, "Shadow variations from Wind turbines", http://xn--drmstrre-64ad.dk/wp-content/wind/miller/windpower%20web/en/tour/env/shadow/shadow2.htm . Accessed December 2021.

[4] Receptor locations sent by email, by Orsted to DNV on 23 September 2021, "*Badger_ReceptorSurvey_FieldVerify.zip*""

[5] Annual site-specific wind direction distribution for Badger Wind sent by email, by Orsted to DNV on 22 September 2021, "*M2000_WindRose_12sector.xlsx*"

[6] Freud H-D, Kiel F.H., "Influences of the opaqueness of the atmosphere, the extension of the sun and rotor blade profile on the shadow impact of wind turbine", DEWI Magazine No. 20 pp 43-51, February 2002.

APPENDIX A – WIND TURBINE COORDINATES

ID	UTM Zone 14, NAD 83 Datum	
	Easting [m]	Northing [m]
T1	449232	5135639
T2	449715	5135813
T3	450072	5136112
T4	449261	5130118
T5	449789	5130171
T6	447551	5126070
T7	448036	5126080
T8	448497	5126099
T9	449154	5126085
T10	449387	5126438
T11	449782	5126653
T12	450729	5127537
T13	450861	5127853
T14	451042	5128333
T15	451257	5128621
T16	451315	5129161
T17	451454	5129529
T18	452210	5129271
T19	453100	5130066
T20	449377	5125160
T21	449699	5125357
T22	450360	5125201
T23	450646	5125479
T24	451033	5125893
T25	451295	5126363
T26	451577	5126667
T27	452098	5127542
T28	452421	5128376
T29	452324	5125495
T30	452479	5126005
T31	452664	5126362
T32	452894	5126680
T33	453151	5126962
T34	453276	5127510
T35	453813	5128161
T36	454004	5128462
T37	454764	5128664
T38	454742	5129113
T39	454835	5129567
T40	450371	5121682
T41	450761	5121823
T42	450983	5122435
T43	451235	5122677
T44	451804	5123359
T45	452037	5123629
T46	452217	5124027
T47	452482	5124307
T48	453381	5124054
T49	453779	5124395
T54	457835	5127638
T55	458325	5127835
T56	458602	5128176
T57	458765	5128526
T58	459095	5128759
T59	459657	5130026
T60	460506	5130695
T61	460804	5130994
T62	460359	5131442
T63	459474	5131694
T64	461020	5132473

ID	UTM Zone 14, NAD 83 Datum	
	Easting [m]	Northing [m]
T65	452577	5121697
T66	452929	5121877
T67	453416	5122072
T68	453759	5122358
T70	458635	5126052
T71	458816	5126368
T72	459815	5127608
T73	460934	5127436
T74	461003	5128392
T75	462699	5127680
T76	452558	5119564
T77	452597	5120163
T78	452882	5120526
T79	454642	5120186
T80	455082	5120402
T81	455774	5119232
T83	462165	5124334
T84	462316	5125016
T85	462125	5125862

APPENDIX B – RECEPTOR LOCATIONS & RESULTS

Receptor ID	UTM Easting [m]	UTM Northing [m]	Expected Case with Monthly Cloud Cover and Wind Rose [hrs/yr]	Closest Turbine		
				Distance [ft]	Distance [m]	Turbine ID
P39	450426	5126113	38	2119	646	24
33	453463	5128918	29	2320	707	36
32	453428	5128874	25	2320	707	36
P674	452989	5119794	16	1604	489	76
P34	453827	5129394	15	3114	949	36
P26	460040	5132243	15	2585	788	63
P263	451329	5122110	14	1558	475	42
P673	453076	5119807	13	1880	573	76
P47	461350	5124665	13	2887	880	83
259	452598	5123225	13	2267	691	45
675	455159	5119498	10	2198	670	81
P43	459917	5127112	10	1663	507	72
P48	462767	5124527	10	2073	632	83
P46	452631	5124788	10	1654	504	47
P38	454147	5127522	10	2369	722	35
P42	460131	5127219	9	1644	501	72
264	452406	5122819	8	2654	809	44
P36	460620	5127961	8	1893	577	74
P49	461444	5124433	8	2388	728	83
260	450024	5123180	7	3983	1214	42
P41	459950	5127152	7	1562	476	72
P37	456860	5127809	6	3245	989	54
P664	456265	5120265	4	3750	1143	81
266	454738	5122856	4	3606	1099	68
255	454849	5123219	4	4557	1389	68
P27	460052	5132724	4	3281	1000	64
267	454957	5122712	3	4098	1249	68
44	447037	5125452	3	2635	803	6
3	451335	5137218	2	5509	1679	3
8	451414	5135938	2	4439	1353	3
663	456482	5120937	2	4918	1499	80
676	456308	5118878	2	2100	640	81
P31	451171	5130311	1	2730	832	17
276	456064	5121418	0	4636	1413	80
277	456081	5121438	0	4721	1439	80
P7	449910	5136911	0	2674	815	3
45	447643	5124993	0	3543	1080	6
50	461281	5123004	0	5240	1597	83
257	453922	5123072	0	2402	732	68
258	453837	5123201	0	2779	847	68

Receptor IDs with a “P” prefix indicate a participating receptor.

About DNV

DNV is a global quality assurance and risk management company. Driven by our purpose of safeguarding life, property and the environment, we enable our customers to advance the safety and sustainability of their business. We provide classification, technical assurance, software and independent expert advisory services to the maritime, oil & gas, power and renewables industries. We also provide certification, supply chain and data management services to customers across a wide range of industries. Operating in more than 100 countries, our experts are dedicated to helping customers make the world safer, smarter and greener.

APPENDIX G
SOIL TYPES FOR THE BADGER WIND PROJECT

Badger Wind, LLC
February 2022

Table H-1: Soil Types for the Badger Wind Project

Map Unit Name	Soil Name	Study Area		Project Area		Farmland Designation	Hydric Soil	K-Factor	Wind Erodibility Group	Slope Range
		Acres	%	Acres	%					
C131C	Williams loam, 6 to 9 percent slopes	6,028.4	4.8%	866.8	2.8%	Farmland of statewide importance	No	.32	6	6–9
C132B	Williams-Zahl loams, 3 to 6 percent slopes	406.1	0.3%	-	-	Farmland of statewide importance	No	.32	4L	3–6
C132B	Williams-Zahl loams, 3 to 6 percent slopes	956.4	0.8%	461.7	1.5%	Farmland of statewide importance	No	.32	6	3–6
C135C	Zahl-Williams-Zahill complex, 6 to 9 percent slopes	2,681.7	2.1%	1,574.6	5.0%	Not prime farmland	No	.37	4L	6–9
C135C	Zahl-Williams-Zahill complex, 6 to 9 percent slopes	722.5	0.6%	316.4	1.0%	Not prime farmland	No	.32	6	6–9
C135D	Zahl-Williams loams, 9 to 15 percent slopes	3,999.7	3.2%	2,124.7	6.7%	Not prime farmland	No	.37	4L	9–15
C135D	Zahl-Williams loams, 9 to 15 percent slopes	2,222.5	1.8%	464.6	1.5%	Not prime farmland	No	.37	6	9–15
C148C	Williams-Zahl-Parnell complex, 0 to 9 percent slopes	173.2	0.1%	83.5	0.3%	Not prime farmland	No	.37	4L	6–9
C153E	Zahl-Max loams, 15 to 25 percent slopes	8.0	0.0%	-	-	Not prime farmland	No	.24	4L	15–25
C153E	Zahl-Max loams, 15 to 25 percent slopes	26.6	0.0%	-	-	Not prime farmland	No	.37	4L	15–25
C155F	Zahl-Max-Arnegard loams, 15 to 60 percent slopes	1,220.9	1.0%	236.2	0.7%	Not prime farmland	No	.28	6	15–25
C156F	Zahl-Max-Bowbells loams, 6 to 35 percent slopes	965.8	0.8%	395.4	1.3%	Not prime farmland	No	.32	6	6–9
C156F	Zahl-Max-Bowbells loams, 6 to 35 percent slopes	608.2	0.5%	143.3	0.5%	Not prime farmland	No	.32	4L	15–35
C162F	Max-Zahl-Arnegard complex, 9 to 35 percent slopes, very stony	2,481.1	2.0%	1,377.7	4.4%	Not prime farmland	No	.24	4L	9–35
C162F	Max-Zahl-Arnegard complex, 9 to 35 percent slopes, very stony	175.8	0.1%	10.1	0.0%	Not prime farmland	No	.32	4L	9–35
C190C	Bearpaw loam, 6 to 9 percent slopes	11.2	0.0%	-	-	Farmland of statewide importance	No	.28	6	6–9
C194A	Bearpaw-Zeeland loams, 0 to 3 percent slopes	47.4	0.0%	-	-	Farmland of statewide importance	No	.32	6	0–3
C194B	Bearpaw-Zeeland loams, 3 to 6 percent slopes	86.2	0.1%	-	-	Farmland of statewide importance	No	.28	6	3–6
C210A	Williams-Bowbells loams, 0 to 3 percent slopes	2,375.1	1.9%	22.0	0.1%	Farmland of statewide importance	No	.24	6	0–3
C210A	Williams-Bowbells loams, 0 to 3 percent slopes	516.2	0.4%	455.8	1.4%	Farmland of statewide importance	No	.28	6	0–3
C210B	Williams-Bowbells loams, 3 to 6 percent slopes	12,280.1	9.7%	2,520.3	8.0%	Farmland of statewide importance	No	.24	6	3–6
C21A	Vallers loam, 0 to 1 percent slopes	65.1	0.1%	6.9	0.0%	Prime farmland if drained	Yes	.20	4L	0–1
C270A	Hamerly loam, 0 to 3 percent slopes	209.1	0.2%	34.9	0.1%	All areas are prime farmland	No	.32	4L	0–3
C276A	Hamerly-Tonka-Parnell complex, 0 to 3 percent slopes	17.2	0.0%	9.0	0.0%	Not prime farmland	No	.20	4L	0–3
C276A	Hamerly-Tonka-Parnell complex, 0 to 3 percent slopes	95.8	0.1%	27.0	0.1%	Not prime farmland	No	.32	4L	0–3
C317B	Lihen-Telfer loamy fine sands, 0 to 6 percent slopes	40.2	0.0%	38.4	0.1%	Not prime farmland	No	.05	2	0–6
C317B	Lihen-Telfer loamy fine sands, 0 to 6 percent slopes	132.9	0.1%	4.5	0.0%	Not prime farmland	No	.02	2	2–6
C317C	Lihen-Telfer loamy fine sands, 6 to 9 percent slopes	67.0	0.1%	11.9	0.0%	Not prime farmland	No	.05	2	6–9
C337D	Telfer-Lihen loamy fine sands, 9 to 15 percent slopes	17.6	0.0%	1.0	0.0%	Not prime farmland	No	.02	2	9–15
C350A	Flaxton fine sandy loam, 0 to 3 percent slopes	59.6	0.0%	-	-	Farmland of statewide importance	No	.28	3	0–3
C350B	Flaxton fine sandy loam, 3 to 6 percent slopes	92.4	0.1%	-	-	Farmland of statewide importance	No	.10	3	3–6
C356B	Flaxton-Williams complex, 0 to 6 percent slopes	62.3	0.0%	35.1	0.1%	Farmland of statewide importance	No	.37	6	3–6
C356C	Flaxton-Williams complex, 6 to 9 percent slopes	65.8	0.1%	24.9	0.1%	Not prime farmland	No	.24	6	6–9
C3A	Parnell silty clay loam, 0 to 1 percent slopes	195.7	0.2%	106.8	0.3%	Not prime farmland	Yes	.28	6	0–1
C3A	Parnell silty clay loam, 0 to 1 percent slopes	152.5	0.1%	7.9	0.0%	Not prime farmland	Yes	.32	6	0–1

Map Unit Name	Soil Name	Study Area		Project Area		Farmland Designation	Hydric Soil	K-Factor	Wind Erodibility Group	Slope Range
		Acres	%	Acres	%					
C403A	Tansem-Makoti complex, 0 to 2 percent slopes	26.9	0.0%	-	-	All areas are prime farmland	No	.32	6	0–2
C403B	Tansem-Makoti complex, 2 to 6 percent slopes	233.8	0.2%	110.1	0.3%	All areas are prime farmland	No	.37	6	2–6
C406B	Makoti-Sakakawea complex, 2 to 6 percent slopes	44.3	0.0%	9.0	0.0%	All areas are prime farmland	No	.32	6	2–6
C409B	Sakakawea silty clay loam, 2 to 6 percent slopes	6.3	0.0%	-	-	Not prime farmland	No	.55	4L	2–6
C411A	Makoti silty clay loam, 0 to 2 percent slopes	25.5	0.0%	4.9	0.0%	All areas are prime farmland	No	.32	6	0–2
C416A	Farnuf loam, 0 to 2 percent slopes	338.6	0.3%	16.0	0.1%	Farmland of statewide importance	No	.32	6	0–2
C416A	Farnuf loam, 0 to 2 percent slopes	42.0	0.0%	29.0	0.1%	Farmland of statewide importance	No	.37	6	0–2
C419A	Wildrose silty clay, 0 to 2 percent slopes	7.3	0.0%	-	-	All areas are prime farmland	No	.17	4	0–2
C451A	Arnegard loam, 0 to 2 percent slopes	368.7	0.3%	268.7	0.9%	All areas are prime farmland	No	.20	6	0–2
C451A	Arnegard loam, 0 to 2 percent slopes	458.9	0.4%	51.8	0.2%	All areas are prime farmland	No	.28	6	0–2
C451B	Arnegard loam, 2 to 6 percent slopes	2,202.0	1.7%	331.1	1.1%	All areas are prime farmland	No	.20	6	2–6
C451B	Arnegard loam, 2 to 6 percent slopes	837.6	0.7%	489.4	1.6%	All areas are prime farmland	No	.28	6	2–6
C471A	Grail silty clay loam, 0 to 2 percent slopes	175.9	0.1%	30.8	0.1%	All areas are prime farmland	No	.28	6	0–2
C471B	Grail silty clay loam, 2 to 6 percent slopes	767.8	0.6%	77.3	0.2%	All areas are prime farmland	No	.28	6	2–6
C50A	Lowe-Fluvaquents channeled, complex, 0 to 2 percent slopes, flooded	40.4	0.0%	10.5	0.0%	Not prime farmland	Yes	.17	4L	0–2
C524A	Daglum-Belfield complex, 0 to 2 percent slopes	3,149.7	2.5%	262.0	0.8%	Not prime farmland	No	.32	5	0–2
C524A	Daglum-Belfield complex, 0 to 2 percent slopes	189.3	0.2%	123.8	0.4%	Not prime farmland	No	.49	5	0–2
C54A	Lowe loam, 0 to 2 percent slopes, occasionally flooded	352.7	0.3%	106.1	0.3%	Not prime farmland	Yes	.17	4L	0–2
C54A	Lowe loam, 0 to 2 percent slopes, occasionally flooded	167.7	0.1%	137.7	0.4%	Not prime farmland	Yes	.24	4L	0–2
C580A	Harriet-Regan-Stirum complex, 0 to 2 percent slopes, occasionally flooded	922.6	0.7%	826.4	2.6%	Not prime farmland	Yes	.28	4L	0–2
C580A	Harriet-Regan-Stirum complex, 0 to 2 percent slopes, occasionally flooded	131.9	0.1%	24.6	0.1%	Not prime farmland	Yes	.37	4L	0–2
C584A	Harriet loam, 0 to 2 percent slopes	2,559.1	2.0%	226.8	0.7%	Not prime farmland	Yes	.32	6	0–2
C591C	Rhoades-Daglum complex, 2 to 9 percent slopes	70.5	0.1%	60.4	0.2%	Not prime farmland	No	.37	5	2–9
C591C	Rhoades-Daglum complex, 2 to 9 percent slopes	95.8	0.1%	-	-	Not prime farmland	No	.43	5	2–9
C5A	Southam silty clay loam, 0 to 1 percent slopes	102.0	0.1%	19.5	0.1%	Not prime farmland	Yes	.28	8	0–1
C665B	Noonan-Niobell-Williams loams, 0 to 6 percent slopes	418.1	0.3%	130.5	0.4%	Not prime farmland	No	.32	6	0–6
C667B	Williams-Niobell loams, 3 to 6 percent slopes	167.8	0.1%	6.4	0.0%	Farmland of statewide importance	No	.24	6	3–6
C73A	Hamerly-Vallers loams, moderately saline, 0 to 3 percent slopes	850.4	0.7%	265.4	0.8%	Not prime farmland	No	.24	4L	0–3
C751A	Parshall fine sandy loam, 0 to 2 percent slopes	189.2	0.2%	30.1	0.1%	Farmland of statewide importance	No	.02	3	0–2
C751A	Parshall fine sandy loam, 0 to 2 percent slopes	4.3	0.0%	-	-	Farmland of statewide importance	No	.20	3	0–2
C800B	Appam sandy loam, 2 to 6 percent slopes	110.0	0.1%	89.6	0.3%	Not prime farmland	No	.15	3	2–6
C800B	Appam sandy loam, 2 to 6 percent slopes	81.0	0.1%	13.1	0.0%	Not prime farmland	No	.17	3	2–6
C814A	Bowdle-Lehr loams, 0 to 2 percent slopes	12,261.8	9.7%	548.4	1.7%	Not prime farmland	No	.02	5	0–2
C814A	Bowdle-Lehr loams, 0 to 2 percent slopes	2,236.1	1.8%	1,564.6	5.0%	Not prime farmland	No	.24	5	0–2
C817B	Lehr-Bowdle loams, 2 to 6 percent slopes	4,399.7	3.5%	1,287.8	4.1%	Not prime farmland	No	.02	5	2–6
C825A	Divide loam, 0 to 2 percent slopes	1,926.5	1.5%	52.9	0.2%	Not prime farmland	No	.02	4L	0–2

Map Unit Name	Soil Name	Study Area		Project Area		Farmland Designation	Hydric Soil	K-Factor	Wind Erodibility Group	Slope Range
		Acres	%	Acres	%					
C825A	Divide loam, 0 to 2 percent slopes	74.6	0.1%	59.3	0.2%	Not prime farmland	No	.28	4L	0–2
C829A	Marysland loam, 0 to 1 percent slopes	780.0	0.6%	158.4	0.5%	Not prime farmland	Yes	.20	4L	0–1
C840B	Manning fine sandy loam, 0 to 6 percent slopes	9.9	0.0%	5.3	0.0%	Not prime farmland	No	.02	3	0–6
C840B	Manning fine sandy loam, 0 to 6 percent slopes	195.5	0.2%	-	-	Not prime farmland	No	.24	3	0–6
C860B	Schaller loamy sand, 0 to 6 percent slopes	5.2	0.0%	-	-	Not prime farmland	No	.02	2	0–6
C860B	Schaller loamy sand, 0 to 6 percent slopes	22.4	0.0%	22.4	0.1%	Not prime farmland	No	.10	2	0–6
C860D	Schaller loamy sand, 6 to 15 percent slopes	112.5	0.1%	107.3	0.3%	Not prime farmland	No	.02	2	6–15
C860D	Schaller loamy sand, 6 to 15 percent slopes	24.0	0.0%	8.6	0.0%	Not prime farmland	No	.10	2	6–15
C870E	Wabek-Lehr-Appam complex, 9 to 25 percent slopes	1,799.7	1.4%	392.2	1.2%	Not prime farmland	No	.02	5	9–25
C870E	Wabek-Lehr-Appam complex, 9 to 25 percent slopes	1,928.8	1.5%	1,383.6	4.4%	Not prime farmland	No	.32	5	9–25
C874B	Wabek-Appam complex, 2 to 6 percent slopes	375.0	0.3%	26.2	0.1%	Not prime farmland	No	.02	3	2–6
C874B	Wabek-Appam complex, 2 to 6 percent slopes	150.5	0.1%	95.4	0.3%	Not prime farmland	No	.02	5	2–6
C874C	Wabek-Appam complex, 6 to 9 percent slopes	1,048.4	0.8%	117.0	0.4%	Not prime farmland	No	.02	3	6–9
C874C	Wabek-Appam complex, 6 to 9 percent slopes	441.6	0.4%	289.5	0.9%	Not prime farmland	No	.15	3	6–9
C877B	Wabek-Lehr complex, 2 to 6 percent slopes	1,492.0	1.2%	1,068.8	3.4%	Not prime farmland	No	.02	6	2–6
C877B	Wabek-Lehr complex, 2 to 6 percent slopes	5,404.2	4.3%	506.8	1.6%	Not prime farmland	No	.17	6	2–6
C901A	Amor-Arnegard loams, 0 to 3 percent slopes	3.2	0.0%	3.2	0.0%	Farmland of statewide importance	No	.28	6	0–2
C901A	Amor-Arnegard loams, 0 to 3 percent slopes	443.8	0.4%	5.2	0.0%	Farmland of statewide importance	No	.37	6	0–3
C902B	Amor-Cabba loams, 3 to 6 percent slopes	213.9	0.2%	112.8	0.4%	Farmland of statewide importance	No	.37	6	3–6
C902C	Amor-Cabba loams, 6 to 9 percent slopes	2,373.9	1.9%	464.9	1.5%	Not prime farmland	No	-	6	6–9
C902C	Amor-Cabba loams, 6 to 9 percent slopes	767.6	0.6%	425.6	1.4%	Not prime farmland	No	.28	6	6–9
C903D	Amor-Werner loams, 9 to 15 percent slopes	1,021.8	0.8%	343.9	1.1%	Not prime farmland	No	.28	6	9–15
C903D	Amor-Werner loams, 9 to 15 percent slopes	506.8	0.4%	216.6	0.7%	Not prime farmland	No	.32	6	9–15
C913A	Felor loam, 0 to 2 percent slopes	632.9	0.5%	-	-	Farmland of statewide importance	No	.28	6	0–2
C915A	Reeder-Arnegard loams, 0 to 3 percent slopes	666.4	0.5%	175.2	0.6%	Farmland of statewide importance	No	.20	6	0–2
C915B	Reeder-Arnegard loams, 3 to 6 percent slopes	1,374.4	1.1%	750.4	2.4%	Farmland of statewide importance	No	.24	6	3–6
C915B	Reeder-Arnegard loams, 3 to 6 percent slopes	5,142.6	4.1%	716.6	2.3%	Farmland of statewide importance	No	.28	6	3–6
C953F	Flasher-Vebar-Parshall complex, 15 to 50 percent slopes	12.0	0.0%	-	-	Not prime farmland	No	.15	3	15–25
C953F	Flasher-Vebar-Parshall complex, 15 to 50 percent slopes	148.8	0.1%	68.3	0.2%	Not prime farmland	No	.20	3	15–25
C954A	Regent-Savage silty clay loams, 0 to 3 percent slopes	236.8	0.2%	16.3	0.1%	Farmland of statewide importance	No	.37	6	0–2
C954B	Regent-Savage silty clay loams, 3 to 6 percent slopes	2,413.3	1.9%	114.0	0.4%	Farmland of statewide importance	No	.32	6	3–6
C954B	Regent-Savage silty clay loams, 3 to 6 percent slopes	306.0	0.2%	125.5	0.4%	Farmland of statewide importance	No	.37	6	3–6
C956A	Vebar fine sandy loam, 0 to 3 percent slopes	474.7	0.4%	88.9	0.3%	Farmland of statewide importance	No	.20	3	0–3
C956B	Vebar fine sandy loam, 3 to 6 percent slopes	923.7	0.7%	273.2	0.9%	Farmland of statewide importance	No	.15	3	3–6
C956B	Vebar fine sandy loam, 3 to 6 percent slopes	147.1	0.1%	99.4	0.3%	Farmland of statewide importance	No	.20	3	3–6
C962F	Werner-Amor-Arnegard loams, 9 to 50 percent slopes	15.4	0.0%	-	-	Not prime farmland	No	-	6	9–25

Map Unit Name	Soil Name	Study Area		Project Area		Farmland Designation	Hydric Soil	K-Factor	Wind Erodibility Group	Slope Range
		Acres	%	Acres	%					
C962F	Werner-Amor-Arnegard loams, 9 to 50 percent slopes	113.8	0.1%	9.0	0.0%	Not prime farmland	No	.37	6	9–25
C977C	Vebar-Cohagen fine sandy loams, 6 to 9 percent slopes	153.1	0.1%	50.1	0.2%	Not prime farmland	No	-	3	6–9
C977C	Vebar-Cohagen fine sandy loams, 6 to 9 percent slopes	944.0	0.7%	256.9	0.8%	Not prime farmland	No	.24	3	6–9
C978D	Vebar-Flasher complex, 9 to 15 percent slopes	71.0	0.1%	21.5	0.1%	Not prime farmland	No	-	3	9–15
C978D	Vebar-Flasher complex, 9 to 15 percent slopes	392.1	0.3%	208.6	0.7%	Not prime farmland	No	.24	3	9–15
C990F	Pits, gravel and sand, 0 to 60 percent slopes	58.1	0.0%	18.5	0.1%	Not prime farmland	No	.02	5	0–60
C996	Water	48.4	0.0%	9.6	0.0%	Not prime farmland	-	-	-	-
E0445A	Daglum-Belfield loams, 0 to 2 percent slopes	162.8	0.1%	67.2	0.2%	Not prime farmland	No	.32	6	0–2
E0515B	Rhoades-Daglum complex, 0 to 6 percent slopes	75.7	0.1%	3.5	0.0%	Not prime farmland	No	.32	6	0–6
E0515C	Rhoades-Daglum complex, 6 to 9 percent slopes	49.4	0.0%	5.6	0.0%	Not prime farmland	No	.43	6	6–9
E0807A	Grail silty clay loam,till, 0 to 2 percent slopes	13.3	0.0%	-	-	All areas are prime farmland	No	.32	6	0–2
E0807B	Grail silty clay loam, till, 2 to 6 percent slopes	188.1	0.1%	45.1	0.1%	All areas are prime farmland	No	.32	6	2–6
E1025B	Regent-Savage silty clay loams, 3 to 6 percent slopes	622.0	0.5%	207.3	0.7%	Farmland of statewide importance	No	-	6	3–6
E1301F	Cohagen-Vebar-Parshall fine sandy loams, 9 to 35 percent slopes	579.5	0.5%	125.7	0.4%	Not prime farmland	No	.24	3	15–35
E1333C	Vebar-Cohagen fine sandy loams, 6 to 9 percent slopes	1,607.1	1.3%	61.2	0.2%	Not prime farmland	No	.24	3	6–9
E1333D	Vebar-Cohagen fine sandy loams, 9 to 15 percent slopes	2,705.4	2.1%	135.0	0.4%	Not prime farmland	No	.24	3	9–15
E1607D	Telfer-Parshall-Vebar complex, 6 to 15 percent slopes	46.4	0.0%	-	-	Not prime farmland	No	.24	3	6–9
E1625B	Vebar-Parshall fine sandy loams, 3 to 6 percent slopes	856.5	0.7%	109.8	0.3%	Farmland of statewide importance	No	.20	3	3–6
E1823A	Parshall fine sandy loam, 0 to 2 percent slopes	122.6	0.1%	16.5	0.1%	Farmland of statewide importance	No	.20	3	0–2
E1875B	Telfer loamy fine sand, 0 to 6 percent slopes	78.2	0.1%	-	-	Not prime farmland	No	.20	2	0–6
E2107B	Arnegard loam, 2 to 6 percent slopes	810.2	0.6%	290.2	0.9%	All areas are prime farmland	No	.32	6	2–6
E2120A	Farnuf loam, 0 to 2 percent slopes	118.6	0.1%	1.0	0.0%	Farmland of statewide importance	No	.32	6	0–2
E2607B	Amor-Werner loams, 3 to 6 percent slopes	840.1	0.7%	121.2	0.4%	Farmland of statewide importance	No	.28	6	3–6
E2607D	Amor-Werner loams, 9 to 15 percent slopes	2,174.0	1.7%	837.5	2.7%	Not prime farmland	No	.43	6	9–15
E2609C	Amor-Werner-Farnuf loams, 6 to 9 percent slopes	2,115.5	1.7%	793.6	2.5%	Not prime farmland	No	.32	6	6–9
E2651F	Werner-Amor-Arnegard loams, 9 to 50 percent slopes	748.1	0.6%	236.5	0.8%	Not prime farmland	No	.24	6	9–25
E2801A	Amor-Arnegard loams, 0 to 3 percent slopes	121.9	0.1%	8.1	0.0%	Farmland of statewide importance	No	.32	6	0–2
E2819B	Reeder-Farnuf loams, 3 to 6 percent slopes	1,108.2	0.9%	600.8	1.9%	Farmland of statewide importance	No	.24	6	3–6
E3527B	Williams-Bowbells loams, 3 to 6 percent slopes	19.7	0.0%	9.8	0.0%	Farmland of statewide importance	No	.37	6	3–6
E3531C	Williams loam, 6 to 9 percent slopes	54.3	0.0%	47.2	0.1%	Farmland of statewide importance	No	.28	6	6–9
E3555D	Zahl-Williams loams, 9 to 15 percent slopes	137.8	0.1%	57.2	0.2%	Not prime farmland	No	.28	6	9–15
E3567F	Zahl-Max loams, dissected, 15 to 45 percent slopes	112.6	0.1%	48.6	0.2%	Not prime farmland	No	.37	4L	15–45
E4005A	Harriet loam, 0 to 2 percent slopes, occasionally flooded	684.7	0.5%	4.0	0.0%	Not prime farmland	Yes	.37	6	0–2
E4541A	Bowdle-Lehr loams, 0 to 2 percent slopes	167.2	0.1%	18.5	0.1%	Not prime farmland	No	.28	5	0–2
E4542B	Lehr-Bowdle loams, 2 to 6 percent slopes	163.1	0.1%	53.4	0.2%	Not prime farmland	No	.20	5	2–6
E4549B	Wabek-Lehr complex, 2 to 6 percent slopes	30.4	0.0%	26.1	0.1%	Not prime farmland	No	.24	5	2–6

Map Unit Name	Soil Name	Study Area		Project Area		Farmland Designation	Hydric Soil	K-Factor	Wind Erodibility Group	Slope Range
		Acres	%	Acres	%					
E4582B	Appam sandy loam, 2 to 6 percent slopes	19.2	0.0%	-	-	Not prime farmland	No	.15	3	2–6
E4583B	Wabek-Appam sandy loams, 2 to 6 percent slopes	9.8	0.0%	-	-	Not prime farmland	No	.10	3	2–6
E4583E	Wabek-Appam sandy loams, 6 to 25 percent slopes	305.1	0.2%	92.8	0.3%	Not prime farmland	No	.15	3	6–15
E4757A	Regan silt loam, 0 to 2 percent slopes, occasionally flooded	139.2	0.1%	41.9	0.1%	Not prime farmland	Yes	.32	4L	0–2
E4765A	Tonka-Hamerly complex, 0 to 3 percent slopes	33.1	0.0%	33.1	0.1%	Not prime farmland	No	.28	4L	0–3
E4767A	Regan silt loam, saline, 0 to 2 percent slopes, occasionally flooded	218.6	0.2%	15.6	0.0%	Not prime farmland	Yes	.43	4L	0–1
EW	Water	20.7	0.0%	19.9	0.1%	Not prime farmland	No	-	-	-
	Totals	**125,954.2**	**100.0%**	**31,514.8**	**100.0%**					

Source:

Appendix H

Bird and Bat Conservation Strategy

Badger Wind, LLC
February 2022

BIRD AND BAT CONSERVATION STRATEGY

BADGER WIND PROJECT
LOGAN AND MCINTOSH COUNTIES, NORTH DAKOTA

Prepared for:
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Submitted by Atwell, LLC

Atwell Project No. 19000785

DRAFT
CONFIDENTIAL: DO NOT DISTRIBUTE

February 2022

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Acronyms and Abbreviations

2019 Study Area	the 121,695-acre area in which Badger Wind studies were conducted
ADLS	Aircraft Detection Lighting System
AKN	Avian Knowledge Network
AWP	Aransas/Wood Buffalo Population (whooping cranes)
APLIC	Avian Power-Line Interaction Committee
AWWI	American Wind Wildlife Institute
Badger Wind	Badger Wind, LLC
BBCS	Bird and Bat Conservation Strategy
BCC	Birds of Conservation Concern
BCR	Bird Conservation Region
BGEPA	Bald and Golden Eagle Protection Act
CFR	Code of Federal Regulations
CREP	Conservation Reserve Enhancement Program
CRP	Conservation Reserve Program
DST	Local Siting Decision Support Tool
ECPG	Eagle Conservation Plan Guidance
ESA	Endangered Species Act
EVT	Existing Vegetation Type
FAA	Federal Aviation Administration
GenEst	Generalized Mortality Estimator
IBA	Important Bird Area
IPaC	Information for Planning and Consultation
Kaleidoscope	Kaleidoscope Pro 4.2.0
km	kilometer(s)
kV	kilovolt

LF	LANDFIRE
m	meter
MBTA	Migratory Bird Treaty Act
MET tower	meteorological evaluation tower
MW	megawatt
NDGF	North Dakota Game and Fish
NHD	National Hydrography Dataset
NLEB	northern long-eared bat
NWI	National Wetland Inventory
O&M	Operations and Maintenance
PAD-US	Protected Areas Database of the U.S.
PCMM	post-construction mortality monitoring
PLOTS	Private Lands Open to Sportsmen
Project	Badger Wind Project
Project Area	the 31,514-acre area of the Badger Wind Project
RSZ	rotor-swept zone
SCP	species of conservation priority
SWAP	State Wildlife Action Plan
SPCC	Spill Prevention, Control, and Countermeasure
TES	threatened and endangered species
USC	U.S. Code
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WEG	Wind Energy Guidelines
WEST	Western Ecosystems Technology, Inc.
WMA	Wildlife Management Area

WNS	white-nose syndrome
WPA	Waterfowl Production Area
WTG	wind turbine generator

1. INTRODUCTION

This Bird and Bat Conservation Strategy (BBCS) was prepared for the Badger Wind Project (Project) in Logan and McIntosh Counties, North Dakota. The proposed Project is a 256.1-megawatt (MW) wind energy project that will be developed by Badger Wind, LLC (Badger Wind). The project layout comprises 79 potential wind turbine generator (WTG) locations, including 74 primary and 5 alternate locations. The Project Area is located in Red Lake Township and three unorganized townships (T133N R70W, T133N R71W, and T133N R72W) in Logan County, North Dakota, and four unorganized townships (T132N R70W, T132N R71W, T132N R72W, and T131N R72W) in McIntosh County, North Dakota (**Figure 1, Site Location**).

An approximately 0.75-mile-long transmission line will extend east from the central portion of the Project Area (approximately 2.0 miles west-northwest of Wishek, McIntosh County, North Dakota) to the Wishek Junction 230-kilovolt (kV) substation approximately 1.5 miles west of Wishek, McIntosh County, North Dakota (**Figure 1, Site Location**). The proposed route is located entirely within the Badger Wind Project Area (Project Area) and is located in T133N R71W in Logan County, North Dakota and T132N R71W in McIntosh County, North Dakota (**Figure 1, Site Location**).

Badger Wind voluntarily developed this BBCS as part of ongoing efforts to avoid and minimize potential project impacts to avian and bat species. This BBCS covers the development, construction, and operations of the Project.

1.1. Goals and Objectives

The U.S. Fish and Wildlife Service (USFWS) Land-Based Wind Energy Guidelines (WEG) (USFWS 2012) outline a voluntary, structured, tier-based framework that is designed to iteratively evaluate avian and bat concerns at all stages of wind energy development. The USFWS recommends that a wind energy developer "prepare a Bird and Bat Conservation Strategy in stages, over time, as analysis and studies are undertaken for each tier." As such, this conservation strategy should be viewed as a living document.

In accordance with the WEG, this BBCS documents activities that Badger Wind has completed as part of each tier of the WEG to address potential risks to avian and bat populations and species of concern. Specifically, this BBCS documents steps taken to adhere to federal and state bird and bat conservation and protection laws and regulations; identifies, quantifies, and analyzes potential impacts to birds and bats that may use resources within the Project Area; and outlines measures that will be implemented to reduce potential wildlife impacts resulting from project activities. Sensitive habitat review, species of concern review, and conservation strategies outlined herein were informed by site assessment and by site characterization reviews, desktop and field studies conducted by consultants, and wildlife agency correspondence. Avian surveys and bat acoustic surveys were conducted on an approximately 121,695-acre study area (referenced herein as the "2019 Study Area") that contains much of the current Project Area. This BBCS is a living document that will remain in effect, and will be updated, as necessary, through the life of the Project.

1.2. Corporate Policy on Wildlife Conservation

Badger Wind has a strong commitment to protecting biodiversity, and its parent company, Ørsted, has set a goal of delivering a net-positive biodiversity impact from all new renewable energy projects it commissions beginning in 2030 at the latest. When developing new projects, Ørsted will systematically implement initiatives that ensure an overall net-positive contribution to natural ecosystems, habitats, and species in and around the company's new renewable energy projects. The core philosophy of the policy is prevention before mitigation wherever possible.

1.3. Regulatory Framework

This BBCS documents efforts by Badger Wind to comply with federal and state regulations including the Endangered Species Act (ESA), Bald and Golden Eagle Protection Act (BGEPA) and the Migratory Bird Treaty Act (MBTA). North Dakota does not maintain a state-level list of threatened and endangered species. Therefore, only species listed under the ESA are considered threatened or endangered in the state. However, the North Dakota Game and Fish Department (NDGF) does identify Species of Conservation Priority (SCP) within its State Wildlife Action Plan (SWAP); 47 bird species and 7 bat species have been identified. The USFWS specifically recommends that a wind energy developer "may prepare a Bird and Bat Conservation Strategy in stages, over time, as analysis and studies are undertaken for each tier" (USFWS 2012). Measures are incorporated into siting, design, and operation of the project in order to reduce or eliminate the potential for impacts to federal and state endangered and threatened species and bird and bat species of concern. These measures are described in this BBCS.

1.3.1. Endangered Species Act

The ESA of 1973 authorizes the USFWS (while working cooperatively with states) to identify, list, and monitor qualifying species as endangered and threatened. The process by which potential candidates are listed is determined by the vulnerability of the species population and considers a number of different factors. Species that are designated as either endangered or threatened are afforded protection from possession, sale, transport, and take. The definition of take is "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct" including "incidental take" or significant habitat modification. Take, however, can be permitted by the USFWS through the ESA Section 7 consultation process among federal agencies or by individual permit under ESA Section 10(a)(1)(B) and an accompanying habitat conservation plan.

The USFWS is responsible for the protection and management of ESA-listed species, as protected under federal law. The USFWS Information for Planning and Consultation (IPaC) is an online resource that allows users to quickly search a comprehensive geo-referenced database to help assess the potential for ESA-listed endangered and threatened species (TES) to occur in an area (USFWS 2021a). The USFWS also has created a list of bird species that have the potential to become listed in the future without additional conservation actions (USFWS 2021b). Information on these species, referred to as Birds of Conservation Concern (BCC), is also included in IPaC reports. BCC species are not afforded any additional regulatory protection under the ESA.

1.3.2. Bald and Golden Eagle Protection Act

Under authority of BGEPA, 16 U.S. Code (USC) 668–668d, bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*) are afforded legal protections in addition to the MBTA. BGEPA prohibits the take, sale, purchase, barter, offer of sale, transport, export, or import, at any time or in any manner of any bald or golden eagle, alive or dead, or any part, nest, or egg thereof. In 16 USC 668c, the BGEPA also expands the common law scope of "take" to include "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb," and includes criminal and civil penalties for violating the statute (see 16 USC 668). The USFWS further defined the term "disturb" as agitating or bothering an eagle to a degree that causes, or is likely to cause, injury, a decrease in productivity, or nest abandonment by substantially interfering with normal breeding, feeding, or sheltering behavior.

If eagles are identified as a potential risk at a project site, wind energy developers are encouraged by the USFWS to follow the Eagle Conservation Plan Guidance (ECPG) (USFWS 2013). The ECPG describes recommended actions to develop wind energy projects while protecting eagles, including guidance for applicants seeking to obtain the above permits.

1.3.3. Migratory Bird Treaty Act

The MBTA integrates and implements four international treaties that provide for the protection of migratory birds against hunters and poachers. The MBTA prohibits the taking, killing, possession, transportation, import, and export of migratory birds, their eggs, parts, and nests, except when specifically authorized by the Department of the Interior" (16 USC § 703; 1918). The word "take" is defined by regulation as "to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect" (50 Code of Federal Regulations [CFR] § 10.12; 1973). The USFWS maintains a list of all species protected by the MBTA at 50 CFR § 10.13 (1973). This list includes over one thousand species of migratory birds, including eagles and other raptors, waterfowl, shorebirds, seabirds, wading birds, and passerines. There currently is no permit available from the USFWS that authorizes take of migratory birds protected under the MBTA. However, the USFWS is currently evaluating proposed rulemaking that would include regulations that would authorize incidental take of migratory birds under certain prescribed conditions.

1.3.4. North Dakota Century Code Chapter 20.1-04

In accordance with North Dakota Century Code Chapter 20.1-04, no person, without a permit, "shall kill, catch, take, ship, cause to be shipped, purchase, offer, or expose for sale, sell, or have in that person's possession or under that person's control, any harmless wild bird, or any part thereof". Harmless wild birds are defined as all wild birds except blackbirds, magpies, English sparrows, and starlings. Similarly, "no person may hunt, take, kill, posses, convey, ship, or cause to be shipped, by common or private carrier, sell, or barter any game bird or any part thereof…except as provided by this title". Game birds include all varieties of geese, brant, swans, ducks, plovers, snipes, woodcocks, grouse, sagehens, pheasants, Hungarian partridges, quails, partridges, cranes, rails, coots, wild turkeys, mourning doves, and crows.

1.3.5. North Dakota's State Wildlife Action Plan

The 2015 North Dakota SWAP is the principal document for safeguarding rare and declining species of fish and wildlife within the state (Dyke et al. 2015). The SWAP places an emphasis on the protection of diverse native habitats to maximize the preservation of native wildlife diversity. In addition, the SWAP denoted 115 species that are assigned to one of three conservation priority levels based on their risk level and the species-specific sources and availability of conservation funding. The SWAP defines SCP conservation levels as follows (Dyke et al. 2015):

> Level I species are those having a high level of conservation priority because of declining status in North Dakota or across their range; or have a high rate of occurrence in North Dakota, constituting the core of the species breeding range, but may be at risk range wide.
>
> Level II species are those having a moderate level of conservation priority; or a high level of conservation priority but a substantial level of non-state wildlife grant funding is available to them.
>
> Level III species are those having a moderate level of conservation priority but are believed to be peripheral or non-breeding in North Dakota.

The statewide list includes 47 birds, 2 amphibians, 9 reptiles, 21 mammals, 22 fish, 10 freshwater mussels, and 4 insects (Dyke et al. 2015).

It is understood that the SWAP has no regulatory authority over industrial development on private land. Conservation actions in the SWAP for such development include goals to foster/develop entities to administer conservation easements and to urge ecologically responsible ordinances and suitable reclamation standards. Should project development impact SCP on private land, the SWAP will be consulted for possible mitigation actions to reduce or minimize those impacts.

1.3.6. Agency Coordination

Badger Wind has coordinated with the USFWS and NDGF during development of the Project. Periodic coordination with the wildlife agencies has continued, particularly through the process of assessing and analyzing bird and bat data collected, throughout the development of the Project. Coordination has included emails, conference calls, and meetings to discuss study plans and preliminary results from studies, as well as to request data from the agencies. Badger Wind has also requested that USFWS and NDGF provide recommendations to minimize potential impacts to species of concern for consideration by Badger Wind. **Table 1** includes a timeline of communications and coordination with federal and state wildlife agencies. Badger Wind intends to continue to coordinate with USFWS and NDGF during the development and implementation of this BBCS.

Table 1. Summary of Agency Correspondence

Date	Parties Involved	Correspondence Type	Correspondence Content
January 10, 2020	**USFWS**: Michael Erickson **Atwell**: Chris McCreedy	Email	Request for grassland and wetlands easements data.
January 14, 2020	**USFWS**: Michael Erickson **Atwell**: Chris McCreedy	Email	Response to request for grassland and wetlands easements data.
January 21, 2020	**USFWS**: Michael Erickson **Atwell**: Chris McCreedy	Email	Answers to follow-up questions, including how to get shapefile and KMZ spatial data of easements.
January 28, 2020	**USFWS**: Drew Becker, Heidi Riddle **NDGF**: Steve Dyke, Elisha Mueller, Sandra Johnson, Kevin Kading, Renae Schultz **Ørsted**: Jon Baker **Atwell**: Emily Cooper, Chris McCreedy	Meeting	Agency project introduction meeting—included summary of studies completed to date.
February 12–18, 2020	**NDGF**: Sandra Johnson **Atwell**: Chris McCreedy	Email	Request to discuss available data layers NDGF has developed to inform analysis for the Project and to establish a data-sharing agreement. S. Johnson requested shapefiles of the latest project boundary. C. McCreedy sent the shapefiles and set up a follow-up meeting to discuss the shapefiles.
February 25–27, 2020	**NDGF**: Sandra Johnson **Atwell**: Chris McCreedy	Email	S. Johnson provided the data-sharing agreement, along with data for sharp-tailed grouse, native grassland, whooping crane, and bald eagle nests, as well as manuscripts to inform impact assessment and recommendations for offsets. C. McCreedy responded confirming the one bald eagle nest in the Project Area was the one Atwell identified. C. McCreedy also provided coordinates for that nest, as well as four ferruginous hawk nest locations.

Date	Parties Involved	Correspondence Type	Correspondence Content
February 25–26, 2020	**USFWS**: Heidi Riddle, **NDGF**: Elisha Mueller, Kevin Kading, Renae Schultz **Ørsted**: Jon Baker **Atwell**: Emily Cooper, Chris McCreedy	Email	C. McCreedy requested final comments on the draft minutes from the January 28 meeting. E. Mueller recommended that developers perform lek surveys and requested that the meeting minutes reflect that recommendation.
March 11–20, 2020	**NDGF**: Elisha Mueller, Sandra Johnson **Atwell**: Chris McCreedy	Email	C. McCreedy inquired about the availability of the grassland habitat tool. E. Mueller confirmed NDGF had just received that data and will follow up when they determine how they may be able to share it. In another follow-up, E. Mueller indicated there was a delay due to staff working remotely, but Sandra would be in touch when the data can be shared.
March 12, 2020	**NDGF**: Sandra Johnson **Atwell**: Chris McCreedy	Email	Follow-up response to agency meeting requesting to create a data-sharing agreement with the agency to obtain North Dakota grassland habitat decision support tool.
April 3, 2020	**USFWS**: Heidi Riddle **NDGF**: Elisha Mueller **Atwell**: Emily Cooper, Chris McCreedy	Meeting	Agency meeting regarding aerial survey safety precautions. Given (a) health concerns regarding the COVID-19 virus and (b) safety concerns stemming from recent incidents during nesting raptor surveys at wind facilities in nearby states. Atwell inquired whether a hybrid aerial survey and ground-based survey approach could meet the goals and expectations for year 2 pre-construction raptor nest and lek surveys. USFWS and NDGF indicated their acceptance of a hybrid survey approach, with a scaled-back aerial survey focusing on areas within the 2019 Study Area that lack roads and cannot be easily accessed during ground-based survey.
April 22, 2020	**USFWS**: Heidi Riddle **Atwell**: Chris McCreedy	Phone Call	Discussion of whooping crane sightings near Wishek.

Date	Parties Involved	Correspondence Type	Correspondence Content
May 15, 2020	**USFWS**: Heidi Riddle **NDGF**: Elisha Mueller **Atwell**: Aaron McAlexander	Email	Provided draft bat habitat assessment and year 1 acoustic monitoring results for review and comment. Recommendation is that summer potential for northern long-eared bats may be limited within the Project Area. Requested input on whether the Project should be concerned with impacts to bats, particularly northern long-eared bats, and whether the agencies feel summer presence/probable absence (p/a) surveys (in accordance with the 2020 Range-Wide Indiana Bat Survey Guidelines) are warranted.
May 22, 2020	**USFWS**: Heidi Riddle **Atwell**: Aaron McAlexander	Email	Follow-up to May 15, 2021, email.
May 27, 2020	**USFWS**: Heidi Riddle, Michael Erickson **Ørsted**: Jon Baker **Atwell**: Emily Cooper, Tara Corbett	Meeting	Discussion of USFWS wetland easements in Badger Project Area.
October 28, 2020	**USFWS**: Heidi Riddle **NDGF**: Elisha Mueller **Atwell**: Chris McCreedy	Email	Submitted initial Grasslands Report to agency. Request to schedule meeting to provide update on Project and discuss findings for avian studies and grassland assessment.
October 28, 2020	**USFWS**: Heidi Riddle **NDGF**: Elisha Mueller, Sandra Johnson, Steve Dyke, Greg Link **Atwell**: Chris McCreedy	Email	Response to receipt of report and how the contents relate to regulatory guidance and prior January 28, 2020 meeting.

Date	Parties Involved	Correspondence Type	Correspondence Content
October 30, 2020	**USFWS**: Heidi Riddle **NDGF**: Elisha Mueller, Sandra Johnson, Steve Dyke, Greg Link **Atwell**: Chris McCreedy, Maureen O'Shea-Stone	Email (2)	1) NDGF response to grassland assessment, noting specific definition of unbroken grasslands are grasslands that have not been plowed. Presence of haying, grazing, or undesirable species do not indicate disturbance. NDGF noted they… "*are discouraging efforts to try to classify "high quality" or "native" grassland as not worthwhile, and are focusing instead on the unbroken classification as the conservation priority."* 2) NDGF provided contact information for Chuck Loesch, USFWS HAPET and recommendation he would be best contact for moving forward with a wetland/waterfowl impact analysis using the Local Siting Decision Support Tool (DST).
October 30, 2020	**NDGF**: Elisha Mueller **Atwell**: Maureen O'Shea-Stone, Chris McCreedy	Meeting	Phone meeting to discuss E. Mueller's comments on the draft grassland report. E. Mueller provided contact information (Chuck Loesch, USFWS HAPET) for moving forward with wetland/waterfowl impact analysis; C. Loesch should be able to provide the Local Siting DST.
November 2–6, 2020	**USFWS**: Heidi Riddle **NDGF**: Elisha Mueller, Steve Dyke, Greg Link, Sandra Johnson **Atwell**: Tara Corbett, Chris McCreedy, Maureen O'Shea-Stone, Emily Cooper,	Email	E. Mueller responded to M. O'Shea-Stone's email with some edits to her list of understanding points/action items and then asked S. Johnson to add anything she missed. S. Johnson responded and said that she will send the base raster layer for native prairie (unbroken grassland) and attached an email she sent C. McCreedy in February 2020. Revisions to notes re: understanding points and action items were finalized based on E. Mueller's requests.
November 6, 2020	**USFWS**: Heidi Riddle **NDGF**: Elisha Mueller, Sandra Johnson, Steve Dyke, Greg Link **Atwell**: Chris McCreedy, Tara Corbett, Maureen O'Shea-Stone	Email	Response to November 2, 2020, email from E. Mueller. Email outlines list of further understanding points from conversations and action items to complete to address issue.

Date	Parties Involved	Correspondence Type	Correspondence Content
December 8, 2020	**USFWS**: Heidi Riddle, Drew Becker **NDGF**: Elisha Mueller, Sandra Johnson, Steve Dyke, Greg Link **Ørsted**: Sam Lodge, Jon Baker, Nick Lindsey **Atwell**: Chris McCreedy, Tara Corbett, Maureen O'Shea-Stone	Meeting	Meeting to provide a project update and grassland discussion.
January 15, 2021	**NDGF**: Elisha Mueller **Atwell**: Maureen O'Shea-Stone	Phone Call	Discussion of native grassland impacts and voluntary offsets.
January 19, 2021	**NDGF**: Elisha Mueller **Atwell**: Maureen O'Shea-Stone	Email	Draft guidance regarding wetland and grassland mitigation.
February 2, 2021	**USFWS**: Heidi Riddle **Atwell**: Chris McCreedy	Email	USFWS response to Project, including recommended guidance and required compliance for development of Badger Wind Project.
May 20–25, 2021	**USFWS**: Heidi Riddle **NDGF**: Sandra Johnson, Elisha Mueller **Atwell**: Chris McCreedy	Email	Guidance regarding raptor nest buffers and removal.
August 9, 2021	**USFWS**: Heidi Riddle **NDGF**: Elisha Mueller **Ørsted**: Charlie Smith, Francesca Martella, Sarah Aftergood **Atwell**: Maureen O'Shea-Stone, Tara Corbett, Chris McCreedy	Meeting	Project update meeting.

Date	Parties Involved	Correspondence Type	Correspondence Content
September 1, 2021	**USFWS**: Heidi Riddle **NDGF**: Elisha Mueller **Ørsted**: Francesca Martella, Charlie Smith, June Marie Gray, Sarah Aftergood **Atwell**: Christopher Rutledge, Maureen O'Shea-Stone	Phone Call	Informal project update meeting.
September 20, 2021	**USFWS**: Heidi Riddle **NDGF**: Elisha Mueller **Ørsted**: Francesca Martella, Claire Dittrich, Sarah Aftergood **WEST:** Kurt Smith, Martin Piorkowski **Atwell**: Christopher Rutledge, Maureen O'Shea-Stone, Tanya Johnson	Meeting	Meeting to discuss grassland assessment, avian species impact analysis, and sharp-tailed grouse leks.
December 8, 2021	**USFWS**: Heidi Riddle **NDGF**: Elisha Mueller **Ørsted**: Francesca Martella, June Marie Grey, Lucas Buseck, Sarah Aftergood **WEST:** Kurt Smith, Martin Piorkowski **Atwell**: Christopher Rutledge, Tanya Johnson, Caitlin Cyrus, Alan Plumeau **Frederickson:** Mollie Smith, Bridget Duffus	Meeting	Project update meeting. Ørsted presented the preliminary project layouts, working through how they have been sited to address USFWS and NDGF concerns. Western Ecosystems Technology, Inc. (WEST) presented results of year 2 grassland habitat surveys and sharp-tailed grouse lek surveys. The remainder of the meeting focused on discussions relating to how to address impacts and potential mitigation measures. The USFWS and NDGF pointed Ørsted toward the Shaffer and Loesch models for calculating offsets to grassland birds and waterfowl.

2. PROJECT AND SITE DESCRIPTION

The current Project Area (as of February 10, 2022) spans approximately 31,514 acres within Red Lake Township and three unorganized townships (T133N R70W, T133N R71W, and T133N R72W) in Logan County, North Dakota, and four unorganized townships (T132N R70W, T132N R71W, T132N R72W, and T131N R72W) in McIntosh County, North Dakota (**Figure 1, Site Location**). Project components include 74 primary and 5 alternate WTG locations.

An approximately 0.75-mile-long transmission line will extend south from the central portion of the Project Area (approximately 2.0 miles west-northwest of Wishek, McIntosh County, North Dakota) to the Wishek Junction 230-kV substation approximately 1.5 miles west of Wishek, McIntosh County, North Dakota. The proposed route travels through T133N R71W in Logan County, North Dakota, and T132N R71W in McIntosh County, North Dakota (**Figure 1, Site Location**).

Project infrastructure would include approximately 30.3 miles of permanent access roads, an underground electric collection line system totaling approximately 75.0 miles, temporary laydown/staging areas totaling approximately 90.2 acres, approximately 2.1 acres for the proposed electric substation. In addition, a haul route with multiple temporary road intersection improvements and temporary disturbance from construction crane paths will be required for construction of the Project. WTGs and permanent infrastructure for the project layout have been sited to reduce the potential for impacts to sensitive wildlife and habitat to the maximum extent feasible. Total permanent impacts from all project infrastructure will comprise approximately 92.3 acres (approximately 0.3 percent of the Project Area), and temporary construction impacts will account for approximately 1,361.4 acres (approximately 4.3 percent of the Project Area).

The Project Area is predominately within the Missouri Coteau Slope Level IV Ecoregion, with portions of the eastern boundary extending upward into the Missouri Coteau Level IV Ecoregion (Bryce et al. 1996). The Level IV Ecoregions are located within the Northwestern Glaciated Plains Level III Ecoregion. Soils in the ecoregion consist of mollisols and some entisols. The region was once dominated by prairie grasses (spear, grama, and wheat grasses) and shrubs. Forested area consisting of scrubby aspen, box elder, cottonwood, and willow is limited to shaded slopes in the valleys and river terraces (EPA 2002). The Missouri Coteau is an escarpment of glacial till containing numerous hills, small lakes, and poorly drained depressions that are referred to as “potholes” that receive most of their water from snow melt and precipitation (Bryce et al. 1996). The Missouri Coteau Slope descends westward toward the Missouri River from the Coteau and is characterized by a thinner glacial till layer and integrated drainages that flow toward the Missouri River (Clayton 1962).

Existing vegetation within the Project Area is summarized using LANDFIRE’s (LF) Existing Vegetation Type (EVT) dataset (USGS 2020a). According to the LF dataset, cropland represents the greatest portion, approximately 39.3 percent, of land cover within the Project Area. In addition, pasture/hayland comprises approximately 6.3 percent of cover within the Project Area. Mixed-grass prairie, planted grassland, and riparian herbaceous cover types encompass approximately 29.2 percent, 14.7 percent, and 6.7 percent of the Project Area, respectively (**Figure 2, Land Cover**

Types within the Project Area). Developed roadways comprise approximately 2.5 of land cover within the Project Area. The remaining approximately 1.3 percent of land cover within the Project Area includes planted woodland (0.4 percent), planted herbaceous (0.3 percent), prairie pothole (0.3 percent), open water (0.1 percent), and wooded draw/ravine woodland (0.1 percent) cover types. Shrubland, riparian woodland, badlands, herbaceous wetland, and tallgrass prairie cover types each represent less than 0.1 percent of cover within the Project Area (USGS 2020a). According to the U.S. Geological Survey (USGS) Protected Areas Database of the U.S. (PAD-US), protected lands within the Project Area consist several USFWS grassland and wetland easements, as well as one state-owned land parcel. Additional USFWS easements and state-owned lands (including state wildlife management areas) are located within one mile of the Project Area (**Figure 3, Public Lands**) (USGS 2020b).

Analysis of aerial imagery, the USGS National Hydrography Dataset (NHD), and USFWS National Wetland Inventory (NWI) databases confirms that scattered woodlots, tree lines, riparian corridors, and mapped surface water features (i.e., streams) and/or wetlands exist within the Project Area. According to the USGS NHD and USFWS NWI, the Project Area contains approximately 127.0 miles of NHD watercourses, 219.4 acres (approximately 0.7 percent of the Project Area) of NHD waterbodies (USGS 2020c), and approximately 1,372.8 acres (approximately 4.4 percent of the Project Area) of NWI wetlands (USFWS 2020a) (**Figure 4, Water Resources**).

A review of NWI data indicates that there are approximately 1,147.9 acres (approximately 3.6 percent of the total Project Area) of emergent wetlands and freshwater ponds within the Project Area. Additionally, forested/scrub-shrub wetlands account for approximately 0.8 acres (less than 0.1 percent of the Project Area), and riverine features account for approximately 224.1 acres (approximately 0.7 percent) of the Project Area (USFWS 2021c). NWI wetlands are scattered throughout the Project Area and appear to be concentrated along stream corridors. According to the LF dataset, the prairie pothole cover type encompasses approximately 100.8 acres (0.3 percent) of the Project Area (USGS 2020a). Prairie potholes are depressional freshwater wetlands found mostly in the upper Midwest. The prairie pothole region is a complex system of wetlands and surrounding grasslands that serves as crucial habitat for waterfowl, grassland species, and migratory birds. However, more than half of the region has been converted to cropland. The northeastern portion of the Project Area appears to have the relatively highest concentration of prairie pothole features with associated emergent wetlands.

Filter strips (also referred to as buffer strips) are common within agricultural areas in this region. Filter strips are vegetated areas similar to pastures and grasslands. These areas serve as buffers to protect surface water from agricultural runoff and provide potential habitat for wildlife.

The Project Area is located in the Prairie Pothole Bird Conservation Region (BCR) (NABCI 2021). BCRs are ecologically distinct regions in North America with similar bird communities, habitats, and resource management issues. The prairie potholes region stretches from the prairie provinces in Canada into northern Montana, the Dakotas, western Minnesota, and northern Iowa and is an area characterized by mixed-grass and tallgrass prairie marked by thousands of shallow wetlands (i.e., potholes). This region is important to North American waterfowl production, despite years of extensive wetland drainage and agricultural conversion. Dabbling and diving duck densities, in

addition to upland nesting shorebird species, can be notably high in this region of North Dakota. Important habitat for dozens of other nesting and migrant conservation priority species is present throughout the region (Fitzgerald et al. 1999). Based on USFWS waterfowl nesting density data provided to Atwell in 2017 by the NDGF, the Project Area is located primarily within a region that supports approximately 40 pairs of waterfowl or less per square mile. This is relatively low compared to much of the region to the north and east of the Project Area, which supports more than 100 pairs of waterfowl per square mile (NABCI 2021). The overall landscape within the Project Area is highly fragmented, consisting of approximately 45.6 percent cultivated crops and hay/pasture (USGS 2020a), consistent with the described modern use of this BCR. According to USFWS, 34 species are considered BCC for the U.S. portion of the Prairie Pothole BCR, eight of which do not breed within the BCR (USFWS 2021b).

3. DESCRIPTION OF WEG TIERED APPROACH

In March 2012, the USFWS released the final WEG, which uses a tiered approach as an interactive decision-making process. This tier process collects information in increasing detail to identify avian and bat species of concern to determine how a proposed development may impact such species, both directly and indirectly (USFWS 2012). This section provides an overview of the tiered approach outlined in the WEG.

Tier 1 of the WEG is a preliminary site evaluation on a broad geographical scale that is undertaken to understand which species of concern may be present, what critical habitat may exist, and whether areas of wildlife concentration are present. Tier 2 typically consists of the same review but on a site-level scale. For Tier 2, the proposed development footprint within site boundaries is evaluated relative to the potential for species of concern to occupy the site, and potential impacts to those species are assessed. The specific objectives of the Tier 1 and Tier 2 evaluations as they pertain to the Project include the following:

- Tier 1—Preliminary Site Evaluation
    - Identify species of concern and/or their habitats in the region surrounding the proposed project.
    - Identify critical habitats, areas of conservation concern, and state/local habitat areas that could harbor or concentrate species of known conservation concern in the region surrounding the proposed project.
    - Review known areas of wildlife concentration, large habitat patches, and known movement corridors in the region surrounding the proposed project.
- Tier 2—Site Characterization
    - Conduct the same analysis as Tier 1, but on a more refined site-specific scale.
    - Review which species of birds and bats are known to be at risk from wind energy development and operation and are likely to use or move through the site.
    - Assess potential impacts to species of concern.

During Tier 3, field studies are conducted to determine the use of the site by avian and bat species, including species of concern. Information gathered from Tier 3 studies is used to evaluate potential risks to birds and bats and to inform the project design to avoid or minimize significant impacts to species and habitats. The specific objectives of the Tier 3 evaluations are summarized as follows:

- Tier 3—Wildlife Field Studies and Impact Prediction
    - Evaluate potential risks to bird and bat species.

  - Design and conduct wildlife surveys/studies to determine use of the site by species of concern.
  - Use study results to inform project design to avoid and/or minimize significant adverse impacts, identify potential mitigation measures, and determine level of effort needed for post-construction studies.

For the Tier 4 evaluation, potential impacts are evaluated through post-construction mortality studies. If additional information is needed, other post-construction studies or a more formalized research program may be deemed necessary, and these studies may be implemented as part of a Tier 5 process. The specific objectives of the Tier 4 and 5 evaluations include the following:

- Tier 4—Post-construction Studies to Estimate Impacts
  - Conduct fatality studies to assess whether predictions of fatality risk and direct and indirect impacts were correct.
  - Compare fatality rates within the Project Area, and among other nearby projects, relative to bird and bat use of the Project Area.
  - Assess direct and indirect impacts of habitat loss, degradation, and fragmentation.
- Tier 5—Other Post-Construction Studies and Research
  - Implement additional post-construction studies or research only if additional information is needed.

Tier 4 studies will be undertaken after the completion of project construction and in accordance with the post-construction monitoring program. The results of these studies may be used to inform updates to this BBCS, as appropriate.

At the conclusion of each tiered analysis, a series of decision points are evaluated prior to moving to the next tier. Decisions are based on the information obtained from answering a series of questions in each tier. Part of the decision process for each tier is an evaluation of risk. Estimates of risk will typically be qualitative but may be based on quantitative information.

The BBCS summarizes the results of/answers to questions posed in each tier of the WEG. The BBCS document serves as the primary synthesis of information gathered during the tiered siting process, details each specific question for each WEG tier, provides a response to that question, and ultimately addresses how this information was used to avoid and reduce potential impacts to birds and bats.

4. TIERS 1 AND 2—PRELIMINARY SITE EVALUATION AND SITE CHARACTERIZATION

A preliminary site evaluation was conducted to review habitat characteristics and historic bird and bat occurrence data at a regional level. As part of this evaluation, a Tier 1 analysis was completed to assess the likelihood of federal and state species to occur within the general vicinity of the Project Area (the 2019 Study Area). For the purposes of this document, the 2019 Study Area consists of an initial (April 2019) project boundary that was considered for development of the Badger Wind Project and described in the Critical Issues Analysis for the Badger Wind Project (Atwell 2019). An IPaC analysis was performed for the 2019 Study Area and a 1-mile buffer in July 2019 (**Appendix A**) (USFWS 2019a). **Figure 5, Site Evaluation** shows the 2019 Study Area boundary drawn at a scale that includes a 10-mile buffer around the 2019 Study Area to provide regional context regarding potential resources relevant to birds and bats in the surrounding area.

Following the preliminary site evaluation, Tier 2 studies were conducted for the Project, including a desktop bat habitat characterization (with site visit), desktop whooping crane (*Grus americana*) stopover habitat assessment, and a desktop grassland assessment (with site visit). The bat habitat assessment was conducted for the 2019 Study Area, but the whooping crane stopover habitat assessment was conducted for a December 2020 Project Area boundary that is similar to (though slightly larger than) the current Project Area. The desktop grassland assessment was conducted for a preliminary site layout within the current Project Area boundary. The current Project Area boundary is a significant reduction in size from the 2019 Study Area; however, this smaller boundary is almost entirely within the larger 2019 Study Area boundary. Approximately 96.7 percent of the current Project Area boundary is within the 2019 Study Area boundary. Therefore, results from the studies discussed hereafter are representative of the current Project Area.

Publicly available information that was reviewed as part of Tier 1 and Tier 2 analyses included, but was not limited to:

- USGS 7.5-minute quadrangle maps
- USGS PAD-US
- USGS NHD
- USGS National Land Cover Database
- USFWS NWI data
- USFWS Critical Habitat Portal
- USFWS IPaC tool
- USFWS and NDGF websites (including species profiles)
- North Dakota SWAP

Data that were utilized for the preliminary site evaluation were compiled into a site evaluation map (**Figure 5, Site Evaluation**) that was subsequently used to inform site characterization (Tier 2), baseline avian and bat studies (Tier 3), project planning and site layout and design, and project infrastructure micrositing.

4.1. Question 1 and Response

Are known species of concern present on the proposed site, or is habitat (including designated critical habitat) present for these species?

Tier 1 and 2 analyses indicated that the 2019 Study Area is within the range of 21 species of concern, including four ESA-listed threatened or endangered species and species listed as SCP per North Dakota's SWAP. ESA-listed species identified as having the potential to occur within the 2019 Study Area include northern long-eared bat (*Myotis septentrionalis*), whooping crane, piping plover (*Charadrius melodus*), and red knot (*Calidris canutus rufa*) (**Table 2**). Bald and golden eagles, which are protected under BGEPA, were also identified during Tier 1 and 2 analyses as being likely to occur within the 2019 Study Area (**Table 2**). Threatened and endangered species listed under the ESA and eagle species listed under the BGEPA are discussed below.

Table 2. Bird and Bat Species of Concern with Potential to Occur in the 2019 Study Area

Common Name (Scientific Name)	Federal Status[a]	State Status[b]	Habitat Requirements[c]	Likelihood of Occurrence[d]
BIRDS				
Whooping Crane (*Grus americana*)	FE	SCP III	Inhabits open habitats such as grasslands, marshes, and agricultural fields. Nest selection varies from natural cavities to fabricated structures.	Moderate
Piping Plover (*Charadrius melodus*)	FT	SCP II	Alkali lakes, freshwater lakes, reservoirs, and rivers.	Unknown
Red Knot (*Calidris canutus rufa*)	FT	SCP III	Natural wetland features such as freshwater lakeshores and alkali lakes for migration stopover habitat.	Unknown
Bald Eagle (*Haliaeetus leucocephalus*)	BGEPA; BCC[e]	SCP II	Inhabits isolated and undisturbed areas near large waterbodies. Nests in forest stands with large trees near open water, wetlands, or rivers.	High
Golden Eagle (*Aquila chrysaetos*)	BGEPA	SCP II	Open habitats with nesting often occurring in association with cliffs.	High
American Bittern (*Botaurus lentiginosus*)	BCC[e]	SCP I	Wetlands with tall emergent vegetation or tall grasslands adjacent to wetlands.	Moderate
Black Tern (*Chlidonias niger*)	BCC	SCP I	A variety of wetland types with relatively shallow water and an even mix of open water and emergent vegetation, preferably surrounded by grassland.	Moderate
Bobolink (*Dolichonyx oryzivorus*)	BCC	SCP II	A variety of open grassland habitats, including native and tame grasslands, hayfields, no-till croplands, wet meadows, etc., with moderate-to-tall dense vegetation.	High
Canvasback (*Aythya valisineria*)	N/A	SCP II	Deep, semipermanent wetlands and lakes with emergent vegetation.	Moderate
Chestnut-collared Longspur (*Calcarius ornatus*)	BCC	SCP I	Shortgrass prairie or mixed-grass prairie that has been grazed or mowed.	High

Common Name (Scientific Name)	Federal Status[a]	State Status[b]	Habitat Requirements[c]	Likelihood of Occurrence[d]
Ferruginous Hawk (*Buteo regalis*)	N/A	SCP I	Expansive open grasslands and shrublands; often nests in solitary trees or shrubs, though will sometimes nest on the ground.	High
Franklin's Gull (*Leucophaeus pipixcan*)	BCC	SCP I	Large prairie wetlands with a mix of open water and emergent vegetation; will use agricultural fields for foraging.	High
Lesser Scaup (Aythya affinis)	N/A	SCP II	Large wetlands with emergent vegetation and associated upland habitat.	Moderate
Marbled Godwit (*Limosa fedoa*)	BCC	SCP I	Expansive wetland complexes with associated grasslands; will also use uplands and roadside ditches for foraging.	Moderate
Nelson's Sparrow* (*Ammospiza nelsoni*)	BCC[e]	SCP I	Freshwater wetlands or moist areas with dense emergent vegetation or dense grass.	Moderate
Northern Harrier (*Circus hudsonius*)	BCC[f]	SCP II	Large, open grasslands or marshes with tall, dense vegetation; will also use cropland, pastures, shrubby fields, and fallow fields for foraging.	High
Northern Pintail (*Anas acuta*)	N/A	SCP II	Wetland complexes with open water and associated upland prairie; prefers native prairie but will also use Conservation Reserve Program (CRP) lands, hayfields, pastures, and weedy field borders.	Moderate
Sharp-tailed Grouse (*Tympanuchus phasianellus*)	N/A	SCP II	Mixed-grass prairie with scattered shrubs or small trees; leks are generally found on elevated, less vegetated areas compared to the surrounding area.	Moderate
Swainson's Hawk (*Buteo swainsoni*)	BCC[e]	SCP I	A variety of open grasslands with scattered trees and shrubs; will also use cropland and pastures. Nests may be placed in small clumps of isolated trees or shelterbelts, though will sometimes nest on the ground.	High
Willet (*Tringa semipalmata*)	BCC	SCP II	Expansive wetland complexes with associated grasslands; prefers shallow wetlands without dense emergent vegetation.	Moderate

Common Name (Scientific Name)	Federal Status[a]	State Status[b]	Habitat Requirements[c]	Likelihood of Occurrence[d]
Wilson's Phalarope (*Phalaropus tricolor*)	N/A	SCP I	Open wetlands with associated upland grasslands or wet meadows.	Moderate
BATS				
Northern Long-eared Bat (*Myotis septentrionalis*)	FT	SCP I	Interior forest species; however, will use a variety of woodland habitats. Roost generalist. Roosts under bark, cavities, or crevices of dead and living trees during summer. Colonies can be found in fabricated structures as well.	Low
Big Brown Bat (*Eptesicus fuscus*)	N/A	SCP I	Habitat generalist, including urban and rural habitats, but often associated with trees; will also use fabricated structures for roosting.	High
Little Brown Bat (*Myotis lucifugus*)	N/A	SCP I	Inhabits caves, mines, forests, and agricultural areas. Colonies can be found in fabricated structures as well.	Moderate

[a] Federal status: BCC= Bird of Conservation Concern (USFWS 2008); BGEPA = Bald and Golden Eagle Protection Act; FE = ESA-listed as endangered; FT = ESA-listed as threatened; N/A = No federal and/or state status.
[b] State status indicates North Dakota SWAP (Dyke et al. 2015) SCP Level I, II, or III.
[c] (Dyke et al. 2015).
[d] Likelihood of Occurrence: Low = species range intersects the 2019 Study Area but no or minimal suitable habitat is present; Moderate = species range intersects the 2019 Study Area and suitable habitat is likely present or the species is known to have occurred within the 2019 Study Area or the general vicinity; High = species range intersects the 2019 Study Area and high-quality suitable habitat is present within and/or populations are known to exist within the general vicinity of the 2019 Study Area; Unknown = species range intersects the 2019 Study Area but the extent of suitable habitat within the 2019 Study Area is unknown.
[e] At the time of Tier 1 through 3 studies, this species was considered BCC (USFWS 2008). However, the USFWS has since removed this species from their list of BCC for the Prairie Pothole BCR (USFWS 2021a).
[f] At the time of Tier 1 through 3 studies, this species was not considered BCC (USFWS 2008). However, the USFWS has since added this species to their list of BCC for the Prairie Pothole BCR (USFWS 2021a).

Northern long-eared bat: The northern long-eared bat is a ESA-listed threatened species and is considered a rare species in North Dakota (NDGF 2016a). The USFWS recognizes every county in North Dakota as being within the range of northern long-eared bat (USFWS 2018a); however, no maternity roost trees or hibernacula have been reported for this species in North Dakota (USFWS 2019b), and the Project Area is located outside of the core range for this species. The SWAP identifies the Turtle Mountains and riparian corridors of the Little Missouri and Missouri Rivers as key areas of northern long-eared bat habitat. The Turtle Mountains are approximately 180 miles north of the 2019 Study Area; the Missouri River is approximately 33 miles west.

Publicly documented northern long-eared bat presence in North Dakota is west of the Missouri River within the Missouri River Valley, the Badlands of North Dakota, and the Moreau Prairie. Confirmed northern long-eared presence via acoustic recordings or mist netting ranged from approximately 53 to 187 miles west and northwest of the 2019 Study Area (Nelson et al. 2015; Shank et al. 2015).

Suitable summer habitat for northern long-eared bats consists of a wide variety of forested/wooded habitats, as well as interspersed non-forested habitats (i.e., emergent wetlands, shelterbelts adjacent to agriculture fields, and pastures). Northern long-eared bats prefer mature forest as foraging habitat but can also use younger riparian forests, open forest corridors, wooded ponds, emergent wetlands, adjacent agriculture fields, and wooded shelterbelts (Foster and Kurta 1999). Linear features, such as fencerows, riparian forests, and other wooded corridors, can serve as suitable habitat for northern long-eared bat. The 2019 Study Area does contain wooded shelterbelts and limited forested area adjacent to agriculture fields.

Northern long-eared bats are roost generalists and utilize a broad array of roost characteristics, including roost types (e.g., cavities, crevices, exfoliating bark) and tree species (Carter and Feldhamer 2005; Timpone et al. 2010). Northern long-eared bat roost species can vary by geographic location and site characteristics (Whalen and Krusac 2014).

USFWS guidelines define suitable northern long-eared bat habitat as forests and woodlots containing potential roost trees; however, buildings, barns, bridges, and bat houses may also be considered potential summer habitat for northern long-eared bat. Trees with a diameter at breast height greater than or equal to 3.0 inches (7.6 centimeters) and that have exfoliating bark and/or cavities are defined as potential roosts. Northern long-eared bat roost trees may include individual trees when they exhibit characteristics of a potential roost and are within 1,000 feet (ft; 305 meters [m]) of other forested/wooded habitat (USFWS 2019c).

Tier 2 desktop analysis identified 426.9 acres (approximately 0.35 percent of the 2019 Study Area) of potentially suitable northern long-eared bat habitat from 248 forested areas and wooded shelterbelts (**Figure 6, Bat Resources**). The median forested area of potential suitable habitat was 1.4 acres. The size of woodlots ranges from 0.09 to 8.65 acres. On-site reconnaissance confirmed that forested area within the 2019 Study Area has low connectivity and high fragmentation, which limits the potential for foraging, commuting, and suitable northern long-eared bat habitat. However, as previously mentioned, northern long-eared bats are roost generalists, and roost tree species exhibiting preferential roost characteristics were documented within the 2019 Study Area

during a site visit on June 12–June 13, 2019 (Atwell 2020a). Therefore, occurrence of northern long-eared bat within the 2019 Study Area is possible, though unlikely.

Whooping crane: The whooping crane is ESA-listed as endangered. Designated critical habitat for whooping crane is not present within Logan or McIntosh Counties, North Dakota (USFWS 2016a; USFWS 2019d). The Aransas/Wood Buffalo population (AWP) is the only self-sustaining population in existence (Urbanek and Lewis 2015) and was estimated at 505 individuals in 2017 (Devokaitis 2018). Whooping cranes that constitute the AWP winter at locations in the Texas Gulf Coast, including the Aransas National Wildlife Refuge. In the spring, the population migrates northward to its nesting grounds at Wood Buffalo National Park in Alberta and the Northwest Territories of Canada, passing through North Dakota en route. Cranes return to Texas in the fall, following approximately the same pathway on both their northern and southern migrations. Whooping cranes occur in North Dakota in the spring from April into May and in the fall from October into November. However, this species does not breed in North Dakota (Urbanek and Lewis 2015).

Concentrated stopover use within North Dakota appears to be located within the northwestern part of the state (Pearse et al. 2015). Cranes are known to utilize a variety of wetland habitats within an agricultural landscape during migration stopover (USFWS 2009). Potentially suitable stopover habitat exists within the 2019 Study Area. Mapped NWI wetlands associated with stream corridors are present throughout the 2019 Study Area, particularly in the southern and northeastern portions of the 2019 Study Area. The northeastern portion of the 2019 Study Area appears to have the heaviest concentration of prairie pothole features with associated emergent wetlands (**Figure 7, Avian Resources**).

Researchers have defined whooping crane migration corridors using accrued sightings reported by the public from 1942 to present, including locations from telemetered birds between 2010 and 2016. The migration corridor has been delineated with 50 percent, 75 percent, and 95 percent core areas. The 95 percent core area (i.e., the area containing 95 percent of all recorded observations) averages 183 miles (294 kilometers [km]) in width (Pearse et al. 2018). The 2019 Study Area is located within the 75 percent migration corridor (**Figure 7, Avian Resources**). Stopover data (USFWS unpublished data) indicate that whooping crane observations have occurred within relatively close proximity to the 2019 Study Area (i.e., within 5 miles). The observations occurred between October 31 and November 6, 2011 and consisted of four individuals loafing in a pond and feeding in nearby fields approximately 5 miles southwest of the 2019 Study Area. Whooping crane observations have not been previously reported from within the 2019 Study Area boundaries.

Other publicly available data sources, such as the Avian Knowledge Network (AKN) have not reported observations of whooping cranes in McIntosh County (AKN 2019). The federal crane observation database does not indicate that whooping cranes historically congregated at NWI wetlands within 5 miles of the 2019 Study Area, despite the presence of potential stopover habitat (USFWS unpublished data). Sizable wetland complexes occur within at least 5 miles of the eastern boundary of the 2019 Study Area (**Figure 5, Site Evaluation**).

In sum, there is a moderate likelihood that whooping cranes could utilize available stopover habitat within the 2019 Study Area.

Piping plover and red knot: In the Northern Great Plains, piping plovers utilize alkali lakes, freshwater lakes, reservoirs, and rivers. No critical habitat occurs within the 2019 Study Area; however, Logan County does contain designated critical habitat for the piping plover within Baltzer WPA, approximately 3 miles northeast of the 2019 Study Area (**Figure 5, Site Evaluation**). McIntosh County also contains critical habitat for this species, approximately 10.5 miles east of the 2019 Study Area (USFWS 2019d).

Similarly, natural wetland features such as freshwater lakeshores and alkali lakes may also provide suitable migration stopover habitat for red knot, another ESA-listed threatened migratory shorebird species. Red knots do not breed in North Dakota, and critical habitat has not been designated for this species (USFWS 2019a). In general, the red knot is a scarce migrant within the state (AKN 2019); however, it is possible that red knots could use similar alkaline wetland features within piping plover designated critical habitat in Logan or McIntosh Counties.

It is unclear whether the 2019 Study Area includes alkali wetland features that could provide suitable stopover habitat for piping plover or red knot. Tier 3 field studies would help to identify use of habitat within the 2019 Study Area by these two ESA-listed species.

Bald eagle: Bald eagles require large mature trees in which to build their nests, typically near open water. They have strong nest site fidelity and will often build more than one nest within their territory (Buehler 2000). Bald eagles likely utilize the 2019 Study Area across multiple seasons within the annual cycle, particularly during spring and fall migration periods (AKN 2019).

A 2009 statewide census did not document any bald eagle nests in Logan or McIntosh Counties; however, two occupied nests were documented in southern Kidder County, north of the 2019 Study Area along the Missouri River (Johnson 2009) (specific locations within the county were not disclosed in this report). Since the publication of this report, the nesting bald eagle population in North Dakota has more than doubled (NDGF 2016b). It is possible that eagles may have begun nesting in Logan or McIntosh County since data was last published. For example, citizen science data from Logan County indicates some small lakes, such as Beaver Lake, may host one or more nesting pairs (AKN 2019). Small, isolated patches of trees associated with wetlands or riparian areas within the 2019 Study Area may also provide suitable bald eagle breeding habitat.

Golden eagle: The western population of golden eagle prefers open habitats during migration and winter (Kochert et al. 2002), and this habitat signature is prevalent in the vicinity of the 2019 Study Area. Golden eagles likely breed farther west of the 2019 Study Area as the primary breeding range has been delineated mainly in the western half of the state (Dyke et al. 2015; AKN 2019). Golden eagles likely migrate through the 2019 Study Area and are known to winter within south-central counties of North Dakota (Kochert et al. 2002; AKN 2019). As such, it is possible that golden eagles could occur within the 2019 Study Area across multiple seasons.

4.1.1. North Dakota Species of Conservation Priority

In addition to the TES and BGEPA species above, Tier 1 and 2 analyses identified 18 additional species designated as North Dakota SCP that may occur within the 2019 Study Area as potential breeding species (see **Table 2**). As previously mentioned, SCP species are not afforded any additional regulatory protection under the ESA or North Dakota state law.

An IPaC analysis conducted in 2019 during the initial planning stages of the project indicated 10 avian species classified as BCC (see **Table 2; Appendix A**) (USFWS 2019a) had the potential to occur in the Project Area, eight of which were also listed as North Dakota SCP (Dyke et al. 2015). Atwell assessed the potential for these species to occur within the 2019 Study Area based on habitat requirements and aerial photograph interpretation.

A majority of BCC species identified in the 2019 IPaC report (USFWS 2019a) are designated as breeders (species that may breed in the Project Area or its vicinity), including the following: American bittern (*Botaurus lentiginosus*; SCP Level I), black tern (*Chlidonias niger*; SCP Level I), bobolink (*Dolichonyx oryzivorus*; SCP Level II), chestnut-collared longspur (*Calcarius ornatus*; SCP Level I), Franklin's gull (*Leucophaeus pipixcan*; SCP Level I), marbled godwit (*Limosa fedoa*; SCP Level I), Nelson's sparrow (*Ammospiza nelsoni*; SCP Level I), and willet (*Tringa semipalmata*; SCP Level II). These species all have a moderate-to-high likelihood of occurrence within the 2019 Study Area. The 2019 Study Area also intersects the primary breeding range for most of these species, though it is not within the primary range of chestnut-collared longspur and Nelson's sparrow. The 2019 Study Area is, however, within the secondary range of these two species (Dyke et al. 2015). Two species, the American golden-plover (*Pluvialis dominica*; no SCP designation) and lesser yellowlegs (*Tringa flavipes*; no SCP designation), do not nest within North Dakota and are transient migrants that occur within this region of the Northern Great Plains on an annual basis. There is potential for these species to occur within the 2019 Study Area during spring and/or fall migration. In 2021, the USFWS updated their list of BCC and, of the species listed above, American bittern and Nelson's sparrow are no longer included as BCC (USFWS 2021b). One species, golden-winged warbler (*Vermivora chrysoptera*), was a new addition to the BCC list for the Prairie Potholes BCR and is included in the updated IPaC analysis (USFWS 2021b; USFWS 2022); however, this species is not considered a North Dakota SCP.

The northeastern portion of the 2019 Study Area contains the relatively highest density of grassland habitat and pothole wetlands compared to the remainder of the 2019 Study Area. As a result, this portion of the 2019 Study Area is likely to see relatively higher abundance of grassland and wetland avian species, such as sharp-tailed grouse (*Tympanuchus phasianellus*; SCP Level II); Wilson's phalarope (*Phalaropus tricolor*; SCP Level I); a variety of duck species like northern pintail (*Anas acuta*; SCP Level II), lesser scaup (*Aythya affinis*; SCP Level II), and canvasback (*Aythya valisineria*; SCP Level II); and many of the SCP species listed above, such as chestnut-collared longspur, marbled godwit, and willet.

Raptor species have historically received more attention in collision analyses, due to an apparent higher probability of collision than other bird species given equal exposure to operating turbines (Strickland et al. 2011). Non-eagle raptor SCP species that may occur within the 2019 Study Area, particularly as breeding species, include ferruginous hawks (*Buteo regalis*; SCP Level I), Swainson's hawks (*Buteo swainsoni*; SCP Level I), and northern harriers (*Circus hudsonius*; SCP Level II).

Eleven bat species are known to occur in North Dakota, six of which may occur within the 2019 Study Area. Of the six species with ranges intersecting the 2019 Study Area, two species—big brown bat (*Eptesicus fuscus*) and little brown bat (*Myotis lucifugus*)—are considered Level I North Dakota SCP (Dyke et al. 2015; NDGF 2016c; NDGF 2016d; BCI 2019). Given the habitat requirements of these species and the presence of potentially suitable habitat within the 2019 Study Area, there is

a moderate-to-high likelihood of occurrence of big brown and little brown bat within the 2019 Study Area.

Designated Critical Habitat and habitat for species of concern: There is no Designated Critical Habitat for birds or bats within the 2019 Study Area. The nearest Designated Critical Habitat (piping plovers) is approximately 3 miles northeast of the 2019 Study Area in Logan County (**Figure 5, Site Evaluation**).

Patches of habitat that may be potentially used by TES and SCP may be found within the 2019 Study Area. The LF dataset indicated the 2019 Study Area contains approximately 22,529 acres (17.9 percent of the 2019 Study Area) of mixed-grass prairie, approximately 13,388 acres (10.6 percent of the 2019 Study Area) of planted grassland, and approximately 5,253 acres (4.2 percent of the 2019 Study Area) of pasture/hayland cover (USGS 2020a). TES and North Dakota SPC such as bobolink, chestnut-collared longspur, and northern harrier may utilize these hay/pasture areas.

The Project Area is dominated by cultivated cropland and herbaceous land cover with very little wooded habitat and no known caves or other karst landforms. Wooded bat habitat is limited to approximately 62.4 acres (wooded parcels and wooded shelterbelts or tree lines were manually delineated using satellite imagery), primarily consisting of small woodlots and shelterbelts scattered throughout the Project Area. Available wooded areas within the Project Area are highly fragmented and are all less than 10 acres in area. Most riparian areas in the Project Area do not support adjacent woodlands. Although it is possible that TES such as northern long-eared bat could use these wooded habitats, because of the limited size and fragmentation of woodlands within the Project Area, there is low potential for TES species to use these areas.

In general, use of the 2019 Study Area by species of concern is not anticipated to be higher than the surrounding regional landscape. Some species have potential to move through the 2019 Study Area during spring and fall migration, though potential stopover habitat that might cause congregations of large groups of migrating birds and bats is generally limited within the 2019 Study Area and is more prevalent northeast of the 2019 Study Area.

4.2. Question 2 and Response

Does the landscape contain areas where development is precluded by law or designated as sensitive according to scientifically credible information?

At the time of the Tier 1 and 2 analyses, USGS PAD-US version 2.0 identified one USFWS Waterfowl Production Area (WPA), two North Dakota State Lands parcels, and one USFWS Wildlife Management Area (WMA) that intersect the 2019 Study Area (USGS 2018). WPAs are public lands managed by the USFWS to preserve habitat for waterfowl and other wildlife, whereas WMAs are owned by the state of North Dakota and were established to protect and manage lands and waters for wildlife production, public hunting, trapping, fishing, and other recreational activities. Additionally, review of spatial data from NDGF indicated that four Private Lands Open to Sportsmen (PLOTS) parcels were located within or intersect the 2019 Study Area (NDGF 2021). All four of these PLOTS parcels were cross listed as Conservation Reserve Enhancement Program (CREP) easements. The NDGF holds PLOTS agreements with private landowners to conserve habitat for fish and wildlife

populations while also allowing walk-in public access for hunting. Normal farming and ranching activities are allowed in these PLOTS parcels.

Review of the USGS PAD-US version 2.1 (USGS 2020b) for the current Project Area boundary identified 10 locations within or partially within the Project Area where development is precluded by law of where the areas are identified as sensitive according to scientifically credible information. An approximately 14.6-acre portion of a parcel identified as North Dakota Surface Trust land overlaps the central portion of the Project Area (USGS 2020b). In addition, nine areas contain USFWS wetland or grassland easements, some of which contain both. In total, approximately 2,228 acres of USFWS easements were identified within the Project Area, including approximately 276 acres of USFWS grassland easements and 2,142 acres of USFWS wetland easements. Note that in some locations, grassland and wetland easements overlap (USGS 2020b). Refer to **Figure 3, Public Lands**.

Publicly available CRP spatial data were not readily available for Tier 2 studies.

4.3. Question 3 and Response

Are there plant communities of concern present or likely to be present within the site(s)?

The North Dakota Parks and Recreation Department maintains the North Dakota Natural Heritage Inventory database containing the known locations of rare animal and plant species and significant ecological communities within the state. In a November 2021 guidance letter, the Department indicates there are no known rare species or significant ecological communities documented within or immediately adjacent to the Project Area.

Some communities dominated by grasses have been described as native, or unbroken, prairie by NDGF. These areas are used as a proxy to estimate potential impacts to grassland breeding bird habitat, as discussed in **Section 6.15.2.1** of the Badger Wind CSC Permit Application. However, these areas have no jurisdictional protection or management mandates. Field verification of grassland habitat conditions further refined an understanding of where areas defined by NDGF as unbroken have been converted to agricultural production (WEST 2021). These areas were used to focus siting project infrastructure to avoid impacts to unbroken grassland habitat to the extent practical.

Badger Wind continues to coordinate with USFWS and NDGF to refine a site layout that minimizes impacts to unbroken grassland habitat (for upland game birds) and wetlands (for waterfowl) to the extent practical.

4.4. Question 4 and Response

Are there known critical areas of congregation of species of concern, including, but not limited to: maternity roosts, hibernacula, staging areas, winter ranges, nesting sites, migration stopovers or corridors, leks, or other areas of seasonal importance?

Based on Tier 2 site reconnaissance and desktop study, no known critical areas of congregation for species of concern were identified within the 2019 Study Area, though it is possible that the 2019

Study Area supports potential stopover habitat for ESA-listed endangered whooping cranes lek/nesting habitat for sharp-tailed grouse, and nesting sites for raptors.

As previously mentioned, no maternity roost trees or hibernacula have been reported for northern long-eared bats in North Dakota (USFWS 2019b). While some small forests, woodlots, and shelterbelts may provide suitable summer habitat for northern long-eared bats, maternity roosts are unlikely within the 2019 Study Area given a lack of available forested habitat. This species may occur as spring or fall migrants within the 2019 Study Area.

While whooping cranes do not breed in North Dakota, potentially suitable stopover habitat may exist within the 2019 Study Area. A Tier 2 desktop stopover habitat assessment was conducted to assess the likelihood of whooping crane stopover use within the current Project Area relative to four reference areas (Atwell 2021a). This assessment was conducted for a December 2020 Project Area (hereafter referred to as the whooping crane assessment area) that is similar in size and location to the current Project Area boundary. The reference areas were of equal shape and dimension at equal distances from the Project's centroid in each of the four cardinal directions (north, south, east, and west). The reference areas were spaced to be adjacent to, but without overlapping, the whooping crane assessment area. Due to the whooping crane assessment area configuration and to avoid overlap, the west and east reference areas were slightly farther from the whooping crane assessment area than the north and south reference areas. The results of the analysis generally confirmed that on a regional basis, and in comparison, to four reference areas adjacent to the whooping crane assessment area, the Project had been sited in an area that has relatively lower quality and quantity whooping crane stopover habitat. The whooping crane assessment area primarily comprises croplands, has the relatively lowest portion of wetland and water habitat, and is located in the 75th percentile of the whooping crane migration corridor. Areas to the west (which are located in the 50th percentile migration corridor) and to the north and east (which have a relatively higher percentage of wetlands and waters) have relatively more potentially suitable whooping crane stopover habitat (Atwell 2021a).

Sharp-tailed grouse is a North Dakota SCP Level II species that likely occurs year-round within the 2019 Study Area (Dyke et al. 2015). This species utilizes a breeding strategy known as "lekking" in which multiple males gather at a particular site to display and compete for spectating females (i.e., potential mates) (NDGF 2019). The North Dakota SWAP identified Logan and McIntosh Counties as being entirely within the primary range for this species and indicates that sharp-tailed grouse are most common within the Missouri Slope region. Preferred habitat includes mixed-grass prairie with scattered shrubs or small trees. Leks are generally found on elevated, less vegetated areas compared to the surrounding area (Dyke et al. 2015). As such, the 2019 Study Area is likely to contain habitat to support sharp-tailed grouse leks, particularly in the north and northeastern portions of the 2019 Study Area.

Raptors may migrate over the 2019 Study Area but are generally expected to be dispersed over the broader landscape prior to reaching the 2019 Study Area. Migrating raptor species will often use ridgelines and shorelines of large bodies of water to assist with thermal lift and navigation during migration (Liguori 2005), potentially resulting in high concentrations near these features during migration. Topography throughout most of the 2019 Study Area is generally similar to the surrounding landscape and is not expected to attract or concentrate migrating raptors. However,

steeper topographic relief associated with the Missouri Coteau in the northern and northeastern portions of the Project has potential to create thermals and attract migrating raptors. Furthermore, grassland and wetland habitats located in the northern and northeastern portions of the 2019 Study Area may provide a larger prey base for raptors compared to the more cropland-heavy areas in the southern portion of the 2019 Study Area. Therefore, raptor use may be relatively higher in northern and northeastern portions of the 2019 Study Area. Tier 3 avian use studies would help to identify whether raptor use is concentrated within any particular region of the 2019 Study Area.

No landscape features identified within the 2019 Study Area are expected to concentrate migrating passerines, which could result in higher-than-expected fatality rates. The 2019 Study Area is predominantly covered by cultivated cropland and herbaceous land cover and contains very little forested and wetland habitat. No particular habitat resources are likely to attract passerine migrants to the 2019 Study Area.

No globally or state recognized Important Bird Areas (IBA) are within 10 miles of the 2019 Study Area. The closest IBA is Appam Lake Waterfowl Protection Area (located approximately 16 miles to the north of the 2019 Study Area in Kidder and Logan Counties, N46.655954° W99.56191°). This IBA is a state-recognized IBA (National Audubon Society 2019) and provides important breeding habitat for piping plovers (Chipley et al. 2003).

4.5. Question 5 and Response

Using best available scientific information has the developer or relevant federal, state, tribal, and/or local agency identified the potential presence of a population of a species of habitat fragmentation concern?

Existing vegetation in the Study and Project Areas is summarized using LF's EVT dataset (USGS 2020a). Ruderal or semi-natural vegetation types are classified using the U.S. National Vegetation Classification (Comer et al. 2003; NCSU 2021). The results of this analysis show that the Project Area is dominated by cropland (approximately 39.4 percent) (**Figure 6, Bat Resources**).

Mixedgrass prairie accounts for approximately 29.2 percent of cover in the Project Area. Planted grasslands represent approximately 14.7 percent of cover within the Project Area. Herbaceous riparian areas account for approximately 6.7 percent cover of the Project Area. These grassland and riparian areas are particularly prevalent in the northern and northeastern portions of the Project Area (**Figure 6, Bat Resources**). These areas may be susceptible to fragmentation from location of project infrastructure. Tier 1 and 2 analyses have identified several grassland bird species susceptible to habitat fragmentation that may be present within the Project Area, including SCP such as bobolink, chestnut-collared longspur, northern harrier, and sharp-tailed grouse (WEST 2021).

4.6. Question 6 and Response

Which species of birds and bats, especially those known to be at risk by wind energy facilities, are likely to use the proposed site based on an assessment of site attributes?

Landscape characteristics within the 2019 Study Area and publicly available information of distribution ranges, habitat requirements, and known occurrences in North Dakota collectively indicate that several species of birds and bats known to be vulnerable to impacts from wind energy facilities may use the 2019 Study Area on a limited basis. These species also have potential to use relatively higher quality habitat in the vicinity of the 2019 Study Area. These species include, but are not limited to, cave and tree-roosting migratory bats, nesting and migrating raptors, and breeding and migratory land birds.

4.6.1. Cave and Tree-roosting Migratory Bats

As previously mentioned, 11 species of bats are known to occur in North Dakota, six of which may occur within the 2019 Study Area. This includes big brown bat, eastern red bat (*Lasiurus borealis*), hoary bat (*Lasiurus cinereus*), little brown bat, northern long-eared bat, and silver-haired bat (*Lasiurus cinereus*) (NDGF 2016c; NDGF 2016d; BCI 2019). One of these species, northern long-eared bat, is ESA-listed as threatened (USFWS 2019a) and is also considered a Level I North Dakota SCP. Two additional species, big brown bat and little brown bat are also considered Level I North Dakota SCP. SCP are a conservation priority for the state under the North Dakota SWAP (Dyke et al. 2015) but are not protected under state law. The little brown bat is known for forming maternity colonies in artificial structures and foraging over water (BCI 2019). The little brown bat was heavily impacted by white-nose syndrome (WNS) in the eastern part of its range and is currently under review for federal listing (USFWS 2019e).

Arnett and Baerwald (2013) summarized the results of post-construction bat mortality monitoring studies at wind facilities across five regions in the United States and Canada between 2000 and 2011. The Great Plains region (which includes North Dakota) had moderately high fatality rates on average, though results were highly variable. This region had the second lowest fatality estimate of the five regions examined (Arnett and Baerwald 2013). While Arnett and Baerwald (2013) do not focus heavily on habitat features, they note that wind facilities within the Great Basin/Southwest Open Range-Desert region typically reported the lowest mean fatality rates and were generally located in areas with few roosting and foraging areas, and possibly outside of migratory pathways (Arnett and Baerwald 2013). This suggests that placing turbines away from potential roosting and foraging areas may help to reduce bat fatalities. Given the overall land cover within the 2019 Study Area, the Project is not expected to take bats at a greater rate than other wind facilities in the Great Plains region.

Migratory tree bats are among the most affected species at wind farms across North America and Canada (Arnett and Baerwald 2013). Collision risk for bats within the 2019 Study Area is expected to follow national trends with migratory tree bats, such as eastern red, hoary, and silver-haired bats, comprising a majority of fatalities. It is unlikely that bats would utilize the 2019 Study Area for summer roosting given the relative lack of forested roosting habitat within the 2019 Study Area. More likely utilization of the 2019 Study Area would be during migration.

The known distribution and specific habitat requirements of northern long-eared bats indicate that this species could potentially occur within the 2019 Study Area (USFWS 2019f). In particular, this species may occur as a migrant within the 2019 Study Area, but the absence of high-quality woodlands within the 2019 Study Area and Project Area and climate limit the species' likelihood to

occur as summering or wintering species. Limited patches of deciduous woodland that may provide summer roosting habitat and foraging habitat exist within the 2019 Study Area.

The 2019 Study Area is within the WNS zone, per the USFWS WNS Zone Final 4(d) Rule and the current WNS zone map issued on May 31, 2019 (USFWS 2019g). As such, incidental take is prohibited under the following circumstances:

1. If it occurs within a hibernaculum.
2. If it results from tree removal activities, and
    a. the activity occurs within 0.25 miles of a known, occupied hibernaculum, or
    b. the activity cuts or destroys a known, occupied maternity roost tree or other trees within a 150-ft radius from the maternity roost tree during the pup season from June 1 through July 31 (USFWS 2016b).

Impacts to woodland habitat will be avoided where feasible. If some tree removal is unavoidable, this removal will be completed in accordance with tree clearing restrictions for northern long-eared bat as described in the USFWS 4(d) rule (USFWS 2015a) or coordinated with USFWS prior to tree clearing activities.

As noted by USFWS, deaths of northern long-eared bats caused by wind turbines have been documented (USFWS 2015b), though relatively few individuals of this species are generally found as fatalities during post-construction monitoring surveys. For example, the American Wind Wildlife Institute (AWWI) found that, based on 190 post-construction studies between 2006 and 2016, only six northern long-eared bat fatalities were discovered at wind farms, representing approximately 0.05 percent of fatality incidents (Allison 2018).

The 2019 Study Area is dominated by cultivated cropland, a non-ideal habitat for bats. Using aerial imagery, Badger Wind delineated bat habitat within the 2019 Study Area by using a 1,000-ft buffer around forested areas greater than 5 acres and around connective woodlands (i.e., forest patches of less than 5 acres connected to the larger forest parcels; **Figure 6, Bat Resources**). The highest concentration of bat habitat occurs in the southern portion of the 2019 Study Area, generally associated with shelterbelts (**Figure 6, Bat Resources**). Reducing turbine placement within this 1,000-ft buffer to the greatest extent feasible may help to reduce bat fatalities during project operation.

4.6.2. Nesting and Migratory Raptors

The predominance of open, agricultural cropland and herbaceous habitat greatly reduces the 2019 2019 Study Area's suitability for tree-nesting raptors. Occasional shelterbelts and small woodlots identified during site reconnaissance may provide suitable raptor nesting habitat, but the overall density of breeding raptors in the 2019 Study Area is expected to be low. BGEPA species and state raptor SCP with potential to occur within the 2019 Study Area are discussed in more detail below.

Bald eagles are known to occur within Logan and McIntosh Counties (AKN 2019). This species prefers to nest in tall trees near bodies of water where prey resources (e.g., fish, waterfowl) are

available (Buehler 2000). While the 2019 Study Area generally lacks the habitat features typical for nesting bald eagles, the NDGF indicated that bald eagles have nested in Kidder County, north of the 2019 Study Area (Johnson 2009), and an increasing bald eagle population in the state (NDGF 2016b) may indicate a possibility that bald eagle nests exist in Logan and McIntosh Counties. Therefore, this species may use the 2019 Study Area, most likely during both spring and fall migration periods. The absence of large riparian zones, lakes, and other concentrating natural features may decrease bald eagle use of the 2019 Study Area. Bald eagle winter roosts likely do not occur within the 2019 Study Area because few habitat features conducive to large winter roosts, such as larger super-canopy trees within a woodland tract near water, are present (Buehler 2000).

As previously mentioned, golden eagles are more likely to nest in the western portion of North Dakota (Dyke et al. 2015; AKN 2019); however, this species is known to have a limited and scattered presence in the vicinity of the 2019 Study Area and may occur within the 2019 Study Area during spring and fall migratory periods, as well as in winter (AKN 2019).

The 2019 Study Area also has potential habitat to support other species of breeding and migratory raptors, such as red-tailed hawk (*Buteo jamaicensis*), ferruginous hawks (SCP Level I), Swainson's hawks (SCP Level I), and northern harriers (SCP Level II) among others. Beston et al. (2016) found that in general, Accipitriformes (i.e., diurnal birds of prey) tended to have a higher proportion of fatalities due to turbines and a higher risk of turbine-caused fatality compared to other species groups. The risk of collision mortality for some raptor species, such as northern harrier, tended to be rather low (Smith et al. 2011; Beston et al. 2016)

4.6.3. Breeding and Migratory Land Birds

A variety of migratory birds may move through and utilize the 2019 Study Area seasonally. Neotropical migrant species likely move over the 2019 Study Area during both during the day and nocturnally (AKN 2021). The 2019 Study Area includes limited woodland and/or shrubland habitat that could be used by neotropical migrants during stopover events. Habitat and topographical features found within the 2019 Study Area are not expected to attract large congregations of birds during migration at a rate greater than the surrounding landscape. Although habitat features (e.g., water bodies, escarpments, conservation areas) that would concentrate large numbers of birds are minimal throughout most of the 2019 Study Area, the occurrence of any scattered wetlands, small open water features, or seasonally flooded agricultural fields could potentially provide some stopover or breeding habitat for shorebirds, waterbirds, and waterfowl species. The northeastern portion of the 2019 Study Area contains prairie pothole ponds and relatively larger tracts of herbaceous land cover. This area may see a higher proportion of waterfowl, waterbirds, shorebirds, and grassland birds compared to more southern portions of the 2019 Study Area. Minimizing turbine placement within the vicinity of this wetland-grassland complex to the greatest extent feasible will help to reduce direct impacts to avian species, such as collisions with turbines and habitat loss, as well as indirect impacts, such as displacement (Shaffer and Buhl 2016).

At the time of Tier 1 and 2 studies, the USFWS list of BCC species for the Prairie Potholes BCR contained 27 species. IPaC analyses for the 2019 Study Area specifically indicate 10 BCC species that are either BCC for the Prairie Potholes BCR or BCC throughout their ranges within the continental United States and Alaska. These include species with potential to breed within the 2019

Study Area, such as American bittern, black tern, bobolink, chestnut-collared longspur, Franklin's gull, marbled godwit, Nelson's sparrow, and willet, as well as species considered transient, such as American golden-plover and lesser yellowlegs (**Appendix A**) (USFWS 2019a). American bittern and Nelson's sparrow have since been removed from the USFWS BCC list for the Prairie Potholes BCR (USFWS 2021b).

Several avian species are common in agricultural areas of North Dakota and have potential to occur in the 2019 Study Area. In particular, the horned lark (*Eremophila alpestris*) is one of the most widely distributed species in North America (Beason 1995), and dramatic declines are widespread (Sauer et al. 2017). Horned Larks are one of the most commonly recorded mortalities at North American wind farms (Erickson et al. 2001; Erickson et al. 2014).

4.7. Question 7 and Response

Is there a potential for significant impacts to species of concern based on the answers to the questions above, and considering the design of the proposed site?

The potential for significant impacts to species of concern within the 2019 Study Area is expected to be low. Like other wind energy projects in the Midwest, there is potential for the Project to impact some bird and bat species of conservation concern, including TES and SCP, migratory bat species, migrating and nesting raptors, and grassland birds. Potential impacts are more likely to occur within the northern and northeastern portions of the 2019 Study Area due to the presence of relatively larger tracts of herbaceous land cover and a greater presence of wetlands. This is compared to the southern portion of the 2019 Study Area where agricultural habitat dominates and the landscape is more fragmented. Siting of project infrastructure in agricultural lands and away from proximate areas of relatively higher quality habitat and the avoidance of relatively higher quality patches of habitat is expected to reduce impacts to species of concern. Adverse population-level impacts to species of concern are unlikely to occur.

4.8. Tiers 1 and 2 Decision Point

Tier 3 pre-construction studies were concluded to be warranted to further assess the potential for direct and indirect impacts from the Project on bird and bat species. Tier 1 and Tier 2 review indicated that ESA-listed species have known ranges that intersect the 2019 Study Area and habitat for these species may exist within the 2019 Study Area. While a large portion (approximately 39.4 percent) of the Project Area consists of active croplands; mixedgrass prairie, planted grasslands, and herbaceous riparian areas accounts for approximately 50.6 percent of the Project Area. These communities are present particularly in the northern and northeastern portions of the 2019 Study Area. Open water and wetland habitat (approximately 0.4 percent of the Project Area) is also present, including prairie potholes in the northeastern portion of the 2019 Study Area (USGS 2020a). These habitats may attract a variety of avian species of concern, including TES and SCP. Several species identified as SCP are also susceptible to grassland habitat fragmentation.

The potential for maternity roosts of protected bat species to occur within the 2019 Study Area is low, as minimal habitat exists within the 2019 Study Area. Several bat species are likely to migrate through the 2019 Study Area. While bald eagle nests are not known from Logan or McIntosh Counties, the nesting bald eagle population in North Dakota is increasing, and habitat within the

vicinity of the 2019 Study Area may support nests that were not previously known. Furthermore, bald eagles may move through the 2019 Study Area during migration or travel between foraging and breeding or roosting sites. Similarly, a variety of other breeding and migratory raptors, land birds, waterfowl, and shorebirds are likely to use the 2019 Study Area and surrounding region.

Tier 3 field studies provide additional information to further assess potential impact risk to bird and bat species that may use the 2019 Study Area, such as migratory tree bats, breeding and migratory land birds, sharp-tailed grouse, and nesting and migratory raptors. Tier 3 surveys also help to determine whether the habitat is being used by any protected species. Therefore, based on Tier 1 and 2 analysis, Tier 3 pre-construction studies were concluded to be warranted to further assess the potential for direct and indirect impacts from the Project on bird and bat species. In the interest of completing a more robust due diligence Badger Wind completed a full suite of Tier 3 field studies including bat acoustic surveys, nesting eagle and raptor surveys, grouse lek surveys, avian point count surveys for a more robust due diligence.

5. TIER 3—FIELD STUDIES TO DOCUMENT SITE WILDLIFE AND HABITAT AND PREDICT PROJECT IMPACTS

As described previously, the Badger Wind Project Area boundary has been reconfigured over the course of project development. Tier 3 field studies that are described in **Section 5** were designed in April 2019 for a larger survey area that has since been refined to the current Project Area (referred to as the 2019 Study Area). Approximately 97 percent of the current project boundary is contained within the 2019 Study Area. All map figures included in this BBCS show the current project boundary in relation to the 2019 Study Area boundary that was used during Tier 3 field studies.

Avian and bat pre-construction studies for the Project were conducted from May 2019 to April 2021, based on Tier 1 and Tier 2 analyses and coordination with USFWS and NDGF (see **Table 1**). Final reports for these studies are provided in **Appendix B**.

Tier 3 studies completed for the Project included the following studies:

- Bat Acoustic Survey, Year 1: Acoustic bat monitoring occurred within the 2019 Study Area from May 23–October 16, 2019, at one meteorological evaluation tower (MET tower) and at four ground-based locations representative of potential turbine locations within the Project (**Figure 6, Bat Resources**). The raised MET tower location was paired with a ground-based location. Two of the four ground locations were within the current Project Area boundary and the raised MET tower location was located just south of the current Project Area boundary. Song Meter full spectrum ultrasonic detectors (SM3 or SM4) were used throughout the duration of the study. The four ground-based units were deployed on May 23rd and remained in place over the course of the entire survey period (with the exception of one unit, which only recorded through October 9th due to technical issues). The one raised MET tower unit was not deployed until July 30, 2019, due to damaged MET tower components that delayed deployment until repairs were made. Calls were recorded from ½ hour before sunset to ½ hour after sunrise. Calls were then analyzed for species identification using Kaleidoscope Pro 4.2.0 (Kaleidoscope), which is approved for analysis by the USFWS. All calls underwent qualitative analysis by a biologist with sufficient bat acoustic call vetting experience through visual comparison of echolocation call metrics (i.e., call sequence activity and call duration, call slope, minimum frequency, and individual call characteristics representative of individual species) (Atwell 2020b).

- Bat Acoustic Survey, Year 2: Acoustic bat monitoring occurred within the 2019 Study Area from April 14–October 15, 2020, at two MET towers and at four ground-based locations representative of potential turbine locations within the Project (**Figure 6, Bat Resources).** Raised MET tower locations were paired with ground-based locations. Two of the four ground locations and one MET tower location were within the current Project Area boundary. Song Meter full spectrum ultrasonic detectors (SM3 or SM4) were used throughout the duration of the study. The one raised MET tower was deployed on April 14, 2020, and the four ground-based units were deployed on April

15, 2020. All detectors remained in place over the course of the entire survey period. Calls were recorded from ½ hour before sunset to ½ hour after sunrise. Calls were then analyzed for species identification using Kaleidoscope, which is approved for analysis by the USFWS. All calls identified by the software as a potential *Myotis* species or unidentified species underwent qualitative analysis by a biologist with sufficient bat acoustic call vetting experience through visual comparison of echolocation call metrics (i.e., call sequence activity and call duration, call slope, minimum frequency, and individual call characteristics representative of individual species) (Atwell 2021b).

- Eagle Use and Diurnal Avian Activity Surveys, Year 1: Eagle use and avian use point count studies occurred between May 2019 and April 2020. During year-1 eagle use surveys, all 53 point-count stations within the 2019 Study Area were surveyed for eagles and other raptors out to 800 m (meters) (the sample plot) for 60 minutes, typically once per month, when feasible. Due to the inaccessibility of some point count stations between late fall and early spring, some points were not surveyed every month, whereas others were surveyed twice per month to achieve survey effort goals. For avian use surveys, the same 53 point count stations were surveyed for all avian species out to 150 m for small-bodied bird species and 800 m for larger-bodied bird species for 10 minutes, typically once per month (when feasible) during the spring (May 2019 and March and April 2020) and fall (August through November 2019) monitoring periods (Atwell 2020c).

- Eagle Use and Diurnal Avian Activity Surveys, Year 2: Eagle use and avian use studies occurred between May 2020 and April 2021. During year-2 eagle use surveys, all 53 point-count stations within the 2019 Study Area were surveyed for eagles and other raptors out to 800 m (the sample plot) for 60 minutes, typically once per month, when feasible. Due to the inaccessibility of some point count stations between late fall and early spring, some points were not surveyed every month, whereas others were surveyed twice per month to achieve survey effort goals. For diurnal avian activity surveys, the same 53 point count stations were surveyed for all avian species out to 300 m for small-bodied bird species and 800 m for larger-bodied bird species for 10 minutes, typically once per month (when feasible) during the spring (May 2020 and March and April 2021) and fall (August through November 2020) monitoring periods (Atwell 2021c).

- Bald Eagle and Raptor Nest Surveys, Year-1: Eagle and raptor nest surveys were conducted on May 1–3, 2019, for the 2019 Study Area and a 10-mile buffer of the 2019 Study Area (i.e., eagle nest survey area). Nests for all raptor species were recorded within the 2019 Study Area and a surrounding 2-mile buffer area (i.e., raptor nest survey area). All eagle nests were recorded within 10 miles from the 2019 Study Area boundary. Aerial transect surveys were flown via a fixed-wing Cessna Skyhawk 172M, with transects spaced 0.5 miles apart (Atwell 2020c).

- Bald Eagle and Raptor Nest Surveys, Year-2: Eagle and raptor nest surveys were conducted during April and May of 2020 through a combination of targeted aerial

surveys conducted on April 10, 2020, and ground-based surveys that continued through May 15, 2020. Flight time was restricted to one day of aerial surveys due to safety concerns regarding: (a) the COVID-19 coronavirus outbreak across the United States, and (b) recent aircraft incidents associated with aerial wildlife surveys at other proposed wind facilities in the region. Areas targeted for aerial surveys included the following:

  - Roadless portions of the eagle nest survey area.
  - Habitat-based focal areas within the eagle nest survey area, which were identified using desktop analysis of the eagle nest survey area. Large bodies of water, riparian areas, and areas with large trees that could serve as potential eagle nesting sites were prioritized when identifying target areas.
  - Known eagle nests and nests of other raptor species that were found during the year 1 survey in 2019.

- Within most targeted areas, north–south oriented transects were flown via a fixed-wing Cessna Skyhawk 172M with transects spaced 0.5 miles apart. However, riparian-based transects were flown along the northern and southern edges of the Beaver Creek riparian corridor between Beaver Lake and the western edge of the eagle nest survey area.

- In addition to aerial nest surveys, all raptor nests that were found during ground-based activities, including ground-based lek surveys (discussed below), avian use surveys, and incidentally were mapped, assessed for nesting status, and were added to the project nest database. Ground-based follow-up surveys were conducted to confirm species and status for nests that could not be attributed to species during the aerial survey (Atwell 2021c).

- Sharp-tailed Grouse Lek Surveys, Year 1: Sharp-tailed grouse lek surveys were conducted between May 2 and May 10, 2019. The grouse survey area included the 2019 Study Area and extended 1 mile from the 2019 Study Area boundary. Aerial transect surveys were flown via a fixed-wing Cessna Skyhawk 172M with transects spaced 0.5 miles apart. Surveys began approximately 10 minutes before sunrise and ended approximately two hours after sunrise. Confirmed leks were defined as two or more birds together, with at least one male displaying. Possible leks were defined as auditory detections of multiple grouse that could not be verified visually after their initial detection on a ground-based survey (Atwell 2020c).

- Sharp-tailed Grouse Lek Surveys, Year 2: Similar to the year 2 eagle and raptor nest surveys, year 2 sharp-tailed grouse lek surveys were also conducted using both aerial and ground-based survey methods. Targeted portions of the grouse survey area (specifically the 2019 Study Area plus a 1-mile buffer zone around the 2019 Study Area boundary) were assessed via aerial transects on April 10, 2020. As described above, safety concerns limited flight time to one morning of aerial surveys that targeted

specific areas within the broader grouse survey area and focused on portions of the grouse survey area that could not be reached or observed from publicly accessible roadside vantage points. Targeted aerial survey areas were believed to have a higher likelihood of harboring grouse leks based on the following:

  - Results from 2019 aerial grouse lek surveys.
  - Observations of grouse recorded incidentally during year 1 and avian use surveys.
  - Identification of potential sharp-tailed grouse breeding habitat through desktop review.

- Additional portions of the grouse survey area were sampled using three rounds of ground-based surveys between April 11 and May 15, 2020. Each round of surveys was spaced approximately 8 to 10 days apart. During each survey round, a biologist surveyed 77 publicly accessible roadside points spaced 0.5 miles (800 m) apart for two minutes, scanning visually and listening for sharp-tailed grouse vocalizations and other non-vocal sounds associated with lekking behavior.

The results of these studies are further discussed on the following sections.

5.1. Question 1 and Response

Do field studies indicate that species of concern are present on or likely to use the proposed site?

In total, 37 species of concern, including ESA-listed threatened or endangered species, eagle species listed under the BGEPA, and species listed as SCP per North Dakota's SWAP, were detected during Tier 3 field studies (**Table 3**). One unknown *Myotis* bat species (little brown bat or northern long-eared) was detected during bat acoustic studies but could not be identified to species as the calls contained characteristics of both species. One bird species listed as endangered under the ESA (whooping crane) was detected within the 2019 Study Area during Tier 3 studies.

Table 3. Seasonal Occurrence of Species of Concern Detected during Tier 3 Field Studies (2019–2021)

Common Name[a] (*Scientific Name*)	Federal Status[b]	State Status[c]	Expected Seasonal Occurrence	Seasons Detected (Year 1)[d]	Seasons Detected (Year 2)[d]	References
Birds						
Whooping Crane* (*Grus americana*)	FE	SCP III	Spring/Fall Migration	SP	Not Detected	(Atwell 2020c)
Bald Eagle (*Haliaeetus leucocephalus*)	BGEPA; BCC[e]	SCP II	Year-round	SP, SU, FA, WI	SP, SU, FA, WI	(Atwell 2020c; Atwell 2021c)
Golden Eagle (*Aquila chrysaetos*)	BGEPA	SCP II	Spring/Fall Migration and Winter	SP, FA, WI	SP, FA, WI	(Atwell 2020c; Atwell 2021c)
American Avocet* (*Recurvirostra americana*)	N/A	SCP II	Spring/Fall Migration and Summer	SU, FA	FA	(Atwell 2020c; Atwell 2021c)
American Bittern (*Botaurus lentiginosus*)	BCC[e]	SCP I	Spring/Fall Migration and Summer	SU, FA	SP, SU, FA	(Atwell 2020c; Atwell 2021c)
American Kestrel (*Falco sparverius*)	N/A	SCP II	Spring/Fall Migration and Summer	SP, SU, FA	SP, SU, FA	(Atwell 2020c; Atwell 2021c)
American White Pelican (*Pelecanus erythrorhynchos*)	N/A	SCP II	Spring/Fall Migration and Summer	SU, FA	SP, SU, FA	(Atwell 2020c; Atwell 2021c)
Baird's Sparrow* (*Centronyx bairdii*)	BCC	SCP I	Spring/Fall Migration and Summer	SP	Not Detected	(Atwell 2020c)
Black Tern (*Chlidonias niger*)	BCC	SCP I	Spring/Fall Migration and Summer	SP, SU, FA	SP, SU, FA	(Atwell 2020c; Atwell 2021c)
Bobolink (*Dolichonyx oryzivorus*)	BCC	SCP II	Spring/Fall Migration and Summer	SP, SU, FA	SP, SU, FA	(Atwell 2020c; Atwell 2021c)
Burrowing Owl* (*Athene cunicularia*)	N/A	SCP II	Spring/Fall Migration and Summer	FA	Not Detected	(Atwell 2020c)
Canvasback (*Aythya valisineria*)	N/A	SCP II	Spring/Fall Migration and Summer	SU	SP, SU	(Atwell 2020c; Atwell 2021c)
Chestnut-collared Longspur (*Calcarius ornatus*)	BCC	SCP I	Spring/Fall Migration and Summer	SP, SU, FA	SP, SU, FA	(Atwell 2020c; Atwell 2021c)

Common Name[a] (*Scientific Name*)	Federal Status[b]	State Status[c]	Expected Seasonal Occurrence	Seasons Detected (Year 1)[d]	Seasons Detected (Year 2)[d]	References
Dickcissel* (*Spiza americana*)	BCC[e]	SCP II	Spring/Fall Migration and Summer	SU	SU, FA	(Atwell 2020c; Atwell 2021c)
Ferruginous Hawk (*Buteo regalis*)	N/A	SCP I	Spring/Fall Migration and Summer	SP, SU, FA	SP, SU, FA	(Atwell 2020c; Atwell 2021c)
Franklin's Gull (*Leucophaeus pipixcan*)	BCC	SCP I	Spring/Fall Migration and Summer	SP, SU, FA	SP, SU, FA	(Atwell 2020c; Atwell 2021c)
Grasshopper Sparrow (*Ammodramus savannarum*)	BCC	SCP I	Spring/Fall Migration and Summer	SP, SU, FA	SP, SU, FA	(Atwell 2020c; Atwell 2021c)
Horned Grebe (*Podiceps auritus*)	BCC[e]	SCP I	Spring/Fall Migration and Summer	SP, SU	SP, SU	(Atwell 2020c; Atwell 2021c)
LeConte's Sparrow* (*Ammospiza leconteii*)	BCC[f]	SCP II	Spring/Fall Migration and Summer	Not Detected	SU, FA	(Atwell 2021c)
Lesser Scaup (*Aythya affinis*)	N/A	SCP II	Spring/Fall Migration and Summer	SP, SU	SP, SU	(Atwell 2020c; Atwell 2021c)
Loggerhead Shrike* (*Lanius ludovicianus*)	N/A	SCP II	Spring/Fall Migration and Summer	Not Detected	SP, SU	(Atwell 2021c)
Marbled Godwit (*Limosa fedoa*)	BCC	SCP I	Spring/Fall Migration and Summer	SP, SU	SP, SU	(Atwell 2020c; Atwell 2021c)
Nelson's Sparrow* (*Ammospiza nelsoni*)	BCC[e]	SCP I	Spring/Fall Migration and Summer	SU	SU, FA	(Atwell 2020c; Atwell 2021c)
Northern Harrier (*Circus hudsonius*)	BCC[f]	SCP II	Spring/Fall Migration and Summer	SP, SU, FA	SP, SU, FA	(Atwell 2020c; Atwell 2021c)
Northern Pintail (*Anas acuta*)	N/A	SCP II	Spring/Fall Migration and Summer	SP, SU	SP, SU, FA	(Atwell 2020c; Atwell 2021c)
Peregrine Falcon (*Falco peregrinus*)	BCC[e]	SCP III	Spring/Fall Migration	SP	SP	(Atwell 2020c; Atwell 2021c)
Prairie Falcon (*Falco mexicanus*)	N/A	SCP II	Year-round	FA	SU, FA, WI	(Atwell 2020c; Atwell 2021c)

Common Name[a] (*Scientific Name*)	Federal Status[b]	State Status[c]	Expected Seasonal Occurrence	Seasons Detected (Year 1)[d]	Seasons Detected (Year 2)[d]	References
Red-headed Woodpecker (*Melanerpes erythrocephalus*)	BCC	SCP I	Spring/Fall Migration and Summer	SU, FA	SU, FA	(Atwell 2020c; Atwell 2021c)
Sharp-tailed Grouse (*Tympanuchus phasianellus*)	N/A	SCP II	Year-round	SP, SU, FA, WI	SP, SU, FA, WI	(Atwell 2020c; Atwell 2021c)
Sprague's Pipit (*Anthus spragueii*)	BCC	SCP I	Spring/Fall Migration and Summer	SU, FA	SU, FA	(Atwell 2020c; Atwell 2021c)
Swainson's Hawk (*Buteo swainsoni*)	BCC[e]	SCP I	Spring/Fall Migration and Summer	SP, SU, FA	SP, SU, FA	(Atwell 2020c; Atwell 2021c)
Upland Sandpiper (*Bartramia longicauda*)	BCC[e]	SCP II	Spring/Fall Migration and Summer	SP, SU	SP, SU, FA	(Atwell 2020c; Atwell 2021c)
Western Meadowlark (*Sturnella neglecta*)	N/A	SCP II	Spring/Fall Migration and Summer	SP, SU, FA	SP, SU, FA	(Atwell 2020c; Atwell 2021c)
Willet (*Tringa semipalmata*)	BCC	SCP II	Spring/Fall Migration and Summer	SP, SU, FA	SP, SU, FA	(Atwell 2020c; Atwell 2021c)
Wilson's Phalarope (*Phalaropus tricolor*)	N/A	SCP I	Spring/Fall Migration and Summer	SP, SU	SP, SU	(Atwell 2020c; Atwell 2021c)
Bats						
Big Brown Bat/ Silver-haired Bat[g] (*Eptesicus fuscus/ Lasionycteris noctivagans*)	N/A	SCP I	Spring/Fall Migration and Summer	SU, FA	SP, SU, FA	(Atwell 2020c; Atwell 2021c)
Little Brown Bat (*Myotis lucifugus*)	N/A	SCP I	Spring/Fall Migration and Summer	SU, FA	SU, FA	(Atwell 2020c; Atwell 2021c)
Unknown *Myotis* Species[h] (*Myotis sp.*)	N/A	SCP I	Spring/Fall Migration and Summer	Not Detected	FA	(Atwell 2021c)

Common Name[a] (*Scientific Name*)	Federal Status[b]	State Status[c]	Expected Seasonal Occurrence	Seasons Detected (Year 1)[d]	Seasons Detected (Year 2)[d]	References

[a] Common names marked with an asterisk indicate that the species was as an incidental observation only during two years of avian surveys.
[b] Federal and state status: BCC= Bird of Conservation Concern (USFWS 2008); BGEPA = Bald and Golden Eagle Protection Act; FE = ESA Endangered; N/A = No federal and/or state status.
[c] State conservation listing status indicates North Dakota State Wildlife Action Plan (SWAP) (Dyke et al. 2015) Species of Conservation Priority (SCP) Level I, II, or III.
[d] For birds: SP = March–May; SU = June–July; FA = August–November; WI = December–February. Includes species detected incidentally within the 2019 Study Area. For bats: SP = April 1–May 15; SU = May 16–July 31; FA = August 1–October 16. Bat acoustic surveys were not conducted in the spring during year 1 studies.
[e] At the time of Tier 1 through 3 studies, this species was considered BCC (USFWS 2008). However, the USFWS has since removed this species from their list of BCC for the Prairie Pothole BCR (USFWS 2021a)
[f] At the time of Tier 1 through 3 studies, this species was not considered BCC (USFWS 2008). However, the USFWS has since added this species to their list of BCC for the Prairie Pothole BCR (USFWS 2021a)
[g] Big brown and silver-haired bats were lumped during analysis due to similarities in call characteristics between the two species. Big brown bat is considered a North Dakota SCP, but silver-haired bat is not currently listed as such.
[h] Calls had characteristics of northern long-eared bat and little brown bat so a species-level classification could not be determined.

Bat acoustic surveys confirmed the presence of one bat SCP (little brown bat) and the likely presence of a second bat SCP (big brown bat) (see **Table 3**). Big brown and silver-haired bat calls were lumped during analysis due to similarities in call characteristics between the two species. This group was one of the more commonly detected species during acoustic surveys; however, while big brown bat is considered a North Dakota SCP, silver-haired bat is not currently listed as such. After excluding "noise", analysis of acoustic data with Kaleidoscope software identified 2,026 bat calls in 2019 and 1,134 calls in 2020. In 2019, this included 757 big brown bat/silver-haired bat calls and four little brown bat calls. In 2020, this included 485 big brown bat/silver-haired bat calls and three little brown bat calls. Two calls identified as an unknown *Myotis* species were also recorded but, as previously mentioned, were not identified to species as they contained characteristics of both northern long-eared and little brown bat and there were not a sufficient number of passes to identify to species (Atwell 2020b; Atwell 2021b).

One ESA-listed endangered bird species (whooping crane), two species protected under BGEPA (bald and golden eagle), and 35 North Dakota SCP (including whooping crane, bald eagle, and golden eagle) were detected incidentally and during avian use surveys (see **Table 3**).

Twelve SCP species in **Table 3** are also listed by the USFWS as BCC species for the Prairie Pothole BCR and/or throughout its range in the continental United States and Alaska (USFWS 2021b). An additional eight species were considered BCC at the time of Tier 1 through 3 studies (USFWS 2008) but have since been removed from the BCC list (USFWS 2021b). Although protected under the MBTA, similar to SCP, these species are not afforded additional protection under federal or state regulations but have been identified as part of conservation planning efforts by the USFWS.

Additional discussions of species listed in **Table 3** are included in **Section 5.3**.

5.2. Question 2 and Response

Do field studies indicate the potential for significant adverse impacts on affected populations of species of habitat fragmentation concern?

Based on Tier 3 studies, there is potential for impacts to species of habitat fragmentation concern. Although the Project Area comprises primarily cultivated croplands and pasture lands, approximately 43.9 percent of the Project Area is classified as mixed-grass prairie or planted grasslands (USGS 2020a); relatively large tracts of grassland are present, particularly within the northern and northeastern portions of the Project Area. In total, seven grassland bird SCP potentially susceptible to habitat fragmentation (WEST 2021) and likely to breed within the Project Area were documented during Tier 3 studies:

- Bobolink
- Chestnut-collared longspur
- Grasshopper sparrow (*Ammodramus savannarum*)
- Northern harrier

- Sharp-tailed grouse
- Sprague's pipit (*Anthus spragueii*)
- Upland sandpiper (Bartramia longicauda)

Habitat fragmentation is primarily relevant for these species during the breeding season.

The Project is not expected to have significant impacts on populations of species of habitat fragmentation concern because most infrastructure will be constructed within a previously fragmented agricultural landscape dominated by cultivated cropland. In these areas, habitat fragmentation impacts will have, for the most part, occurred prior to project development, and the Project is not expected to contribute additional cumulative impacts to habitat fragmentation. Some infrastructure may be placed within relatively larger tracts of grassland habitat; however, Badger Wind continues to coordinate with the USFWS and NDGF to refine design of the site layout to minimize grassland impacts. Furthermore, Badger Wind is working with NDGF to also address potential impacts to unbroken grasslands for upland game birds and wetlands for waterfowl.

Tier 1 and 2 desktop studies found that extensive forested habitat is not generally found within the 2019 Study Area and a high degree of woodland habitat fragmentation already exists (Atwell 2019; Atwell 2020a). Therefore, impacts to woodland species of habitat fragmentation concern are not likely to occur. Furthermore, results from Tier 3 bat surveys do not indicate that the Project will significantly and adversely impact threatened or endangered bat species by fragmenting roosting habitat.

5.3. Questions 3 and 4 and Responses

Question 3: What is the distribution, relative abundance, behavior, and site use of species of concern identified in Tiers 1 or 2, and to what extent do these factors expose these species to risk from the proposed wind energy site?

Question 4: What are the potential risks of adverse impacts of the proposed wind energy site to individuals and local populations of species of concern and their habitats? (In the case of rare or endangered species, what are the possible impacts to such species and their habitats?)

Species of concern identified in Tiers 1 and 2 and documented within the 2019 Study Area as part of Tier 3 studies are summarized in **Tables 2 and 3**. Of the TES and eagle species protected under the BGEPA that were identified during the Tier 1 and 2 analyses, whooping crane, bald eagle, and golden eagle were observed within the 2019 Study Area during Tier 3 studies. Piping plover and red knot were identified as potentially present as part of Tier 1 and 2 analyses but were not observed within the 2019 Study Area during Tier 3 studies. Similarly, northern long-eared bats were not confirmed during Tier 3 bat acoustics studies, though calls of an unknown *Myotis* species were detected, as previously discussed.

Discussion of avian and bat TES currently afforded protection under the ESA and BGEPA, as well as North Dakota SCP (including species of habitat fragmentation concern listed in **Section 5.2**), observed during Tier 3 studies is provided below.

5.3.1. ESA-Listed Avian Species

Whooping crane (ESA-listed endangered): Whooping crane was the only bird species listed as threatened or endangered under the ESA that was observed during Tier 3 field studies. As previously mentioned, the Project Area is located within the 75 percent migration corridor for this species (i.e., the area containing 75 percent of all recorded observations). During year 1 avian use studies, three adult whooping cranes were detected within the 2019 Study Area during surveys on April 15, 2020. The cranes were initially observed flying north at heights ranging from 2 to 7 m above the ground (i.e., below the rotor-swept zone [RSZ]) but were observed foraging in corn throughout the day. The whooping cranes were again present on April 16 and 17, 2020, and they roosted 0.7 miles (1.1 km) from their foraging location on those days. The roosting location was at the confluence of two riverine wetlands with seasonally flooded water regime classifications within the western portion of the current Project Area.

Of note, due to poor harvesting conditions during the fall of 2019, the whooping cranes were foraging in unharvested stands of corn. Other areas of unharvested corn were also noted within the 2019 Study Area in April 2020, perhaps dispersing whooping crane stopover use farther from the migration corridor's centerline than expected.

Some data indicate that cranes in general are at low risk of collision with wind turbines (Nagy et al. 2012). To date, no known whooping crane mortality event has occurred at an operational wind turbine (USFWS 2009; NGPC 2018). Currently, the USFWS (2009) accepts that whooping cranes actively avoid wind energy facility infrastructure out to at least 0.5 miles. Similarly, USFWS acknowledges that whooping cranes typically migrate above typical industry standard rotor-swept heights. However, data and expert biologist opinion indicate that daily forage-to-roosting flights do occur at risky flight heights, and these low flights can occur for distances up to 2 miles. If visibility conditions are poor, USFWS indicates that risky flights may occur up to 5 miles from migration stopover sites.

In contrast, power-line collision represents a notable cause of mortality events during active migration (USFWS 2009; NGPC 2018). While the overhead electric transmission line is relatively short (approximately 0.75 miles), transmission line infrastructure associated with the Project could represent potential risk to migrating cranes. Badger Wind will follow Avian Power-Line Interaction Committee (APLIC) recommendations to reduce the potential for collisions with the Project's proposed 0.75-mile transmission line. In addition, if MET towers will require guy wires, these will be marked with avian flight diverters to reduce the potential for collisions. Limiting areas of unharvested crops, where feasible, would also help limit the potential to attract whooping cranes into the Project Area during operations. In addition, if a whooping crane is sighted within the Project Area during construction, construction activities will cease within a mile of the sighting until the whooping crane has left the area, further reducing the potential for impacts to this species.

Bald eagle (BGEPA and SCP II): Over the course of pre-construction eagle use studies, 69 bald eagle detections were recorded (34 during the first year of surveys and 35 during the second year of surveys) (Atwell 2020c; Atwell 2021c). Observations occurred throughout each year of eagle use

studies, though most detections occurred during the spring and fall migratory periods. Observations refer to detections recorded during eagle use surveys.

Bald eagle mean use rates were generally low across the 2019 Study Area. Thirteen of the 69 (19 percent) bald eagle observations across the 2019 Study Area in year 1 and year 2 were recorded at station 4 and were of individuals associated with an in-use nest that was occupied in 2019 and 2020.

Among the other 52 stations, stations 11 and 18 each recorded six bald eagle observations over year 1 and year 2 surveys cumulatively. Station 12 recorded five detections over the 2-year period. Observations of small migrating groups of two to three bald eagles, which were infrequent events during the year 1 and year 2 surveys, contributed to the relatively higher numbers recorded at these three stations. The remaining 39 bald eagle detections were recorded at 26 other point count stations.

Stations 11, 12, and 18 are proximate to one another, and all three points are within 2 miles of a creek that flows northward from Wishek to Beaver Lake. All of the eagles observed at these three stations appeared to be in active migration. It is possible that migrating eagles may loosely follow this watercourse while moving through the area, slightly increasing use rates in this portion of the 2019 Study Area (Atwell 2020c; Atwell 2021c).

One in-use bald eagle nest was found within the 2019 Study Area during both the 2019 and 2020 eagle and raptor nest surveys (**Figure 7, Avian Resources; and Figure 8, Eagle and Raptor Nest Survey Results**). This nest is also located within the current Project Area boundary. No other eagle nests were found throughout the eagle nest survey area during 2019 and 2020 eagle and raptor nest surveys (Atwell 2020c; Atwell 2021c). However, on March 10, 2021, a new in-use bald eagle nest was located within the Project Area (**Figure 7, Avian Resources; and Figure 8, Eagle and Raptor Nest Survey Results**). The nest was found incidentally during eagle use surveys. The 2019–2020 and 2021 nests are believed to belong to the same nesting territory. The 2021 bald eagle in-use nest is approximately 1.98 miles (3.19 km) east of the 2019–2020 nest. The 2019–2020 nest is now classified as an alternate nest site (USFWS 2013; USFWS 2016c). The 2019–2020 nest was checked repeatedly after the March 10 discovery of the 2021 nest, and it was found to be missing and may have fallen from its substrate. Bald eagles were not observed at the old nest site during these subsequent checks. Recent guidance issued by the USFWS notes that nesting bald eagles are not expected to roam beyond 2 miles from nest sites (USFWS 2020b). The 2019–2020 alternate nest site and the 2021 in-use nest are located 2.0 miles and 2.1 miles from the nearest proposed turbine locations, respectively.

Bald eagle collision mortality associated with wind farm operations within the United States has not been widely documented (Bay et al. 2016; USFWS 2018b). However, eagles migrating through the Project Area or using the Project Area for breeding or wintering are at risk of collision with turbines. Cumulatively, 157 total bald eagle flight minutes were recorded over two years of surveys, and bald eagles were often observed within the RSZ. Tier 4 post-construction monitoring will provide more clarity regarding any impacts to bald eagles. Badger Wind has sited turbines at least 2 miles from the known bald eagle nest to reduce the risk of collision with turbines. Badger Wind

continues to coordinate with USFWS to avoid and minimize potential impacts to eagles to the extent practical.

Golden eagle (BGEPA and SCP II): Over the course of pre-construction eagle use studies, 12 golden eagle detections were recorded, including six observations during both year 1 and year 2 surveys (Atwell 2020c; Atwell 2021c). During year 1, observations occurred across the spring, fall, and winter, whereas in year 2, observations only occurred in fall and winter. Standardized observations refer to detections recorded during eagle use surveys. There was no apparent spatial pattern to golden eagle detections during year 1 or year 2 surveys. The 12 golden eagle sightings were distributed across the 2019 Study Area (Atwell 2020c; Atwell 2021c).

Indirect impacts to golden eagles due to habitat loss are not expected to occur throughout construction of the Project. Cumulatively, 47 total golden eagle flight minutes were recorded over two years of surveys, and golden eagles were often observed within the RSZ. While studies conducted in the western United States have shown golden eagles to be susceptible to collision mortality at wind farms (Smallwood and Thelander 2008), low observed mean use rates (12 observations over 1,272 hours of survey effort) suggest that golden eagle use of the Project Area is minimal. Tier 4 post-construction monitoring will provide more clarity regarding impacts to golden eagles. Badger Wind continues to coordinate with USFWS to avoid and minimize potential impacts to eagles to the extent practical.

5.3.2. North Dakota Avian Species of Conservation Priority

Several non-raptor species that are listed as North Dakota SCP were detected during 10-minute diurnal avian activity point count surveys or incidentally (Atwell 2020c; Atwell 2021c). These species are summarized below:

Non-Passerines and Passerines

Red-headed woodpecker (SCP Level I): One red-headed woodpecker (*Melanerpes erythrocephalus*) was observed over the course of two years of avian use surveys. This observation occurred on August 6, 2020 (year 2), at station 37. This species was detected within the 2019 Study Area incidentally on several occasions, typically in the fall during year 1 and year 2 surveys. Observations occurred exclusively at stations 37, 41, and 48, which are all in the southwestern portion of the 2019 Study Area. Red-headed woodpeckers prefer deciduous woodlots and may use shelterbelts within agricultural landscapes for breeding (Dyke et al. 2015). While nesting is possible within the Project Area, it is not anticipated that this species will be a common breeder or will experience significant impacts, given the presence of limited habitat and general lack of detections within the 2019 Study Area.

Sprague's pipit (SCP Level I): No spring detections and two fall detections were recorded incidentally and during year 2 avian use surveys. All observations occurred during fall migration, after July 28, 2020. Eleven of the 13 year 2 observations of individuals or groups occurred in the northern half of the 2019 Study Area, within Logan County. It was not apparent why more observations were recorded over the year 2 study period than during year 1, when Sprague's pipits were observed on only two occasions (also in the fall). Behaviors that would confirm local breeding

(e.g., song displays, nesting material carries, food carries to dependent young, dependent fledglings) were not observed during the 13 detections. Observations occurred in wheat stubble and on grassy hilltops, habitat features found throughout the 2019 Study Area. While nesting is possible within the Project Area, it is not anticipated that this species will be a common breeder or would experience significant impacts, given the general lack of detections within the 2019 Study Area. Furthermore, Badger Wind intends to minimize impacts to native grasslands to the greatest extent feasible.

Baird's sparrow (SCP Level I): Baird's sparrow (*Centronyx bairdii*) was not observed during avian use surveys. During year 1, two individuals were detected incidentally in May of 2019, one each at stations 3 and 53 in the northern and northeastern portions of the 2019 Study Area. This species prefers large, contiguous tracts of native prairie, though it will also use non-native grasslands and pastures (Dyke et al. 2015). Suitable nesting habitat may exist within the 2019 Study Area, particularly in the northern and northeastern portions, but the lack of observations over the course of two years of surveys indicates that breeding is unlikely and the observed individuals likely represented migrants. Therefore, this species is not likely to experience significant impacts as a result of the Project given the general lack of detections within the 2019 Study Area.

Grasshopper sparrow (SCP Level I): Four spring detections and one fall detection were recorded during year 1 avian use surveys, and four spring detections and zero fall detections were made during year 2 avian use surveys. Grasshopper sparrows were also incidentally observed at approximately 50 percent of point count stations during year 2, were observed throughout the 2019 Study Area, and were often associated with grassland habitats. Grasshopper sparrows were detected much more frequently during the summer survey period and likely breed within the Project Area. The majority of incidental observations occurred in June or July, which was outside of the spring and fall survey periods. Given this species' level of use of the 2019 Study Area and the presence of suitable habitat throughout much of the Project Area, development and operation of the Project may impact this species. Badger Wind intends to minimize impacts to native grasslands to the greatest extent feasible, though collisions with turbines are still possible. Tier 4 post-construction monitoring will provide more clarity regarding any impacts to grasshopper sparrows.

Nelson's sparrow (SCP Level I): Nelson's sparrow was not observed during avian use surveys. During year 1, one individual was detected incidentally at station 6, and two detections (representing 1–2 individuals) occurred at station 37. During year 2, one individual was detected incidentally at station 37. This species prefers shallow marsh edges and wet meadows (Dyke et al. 2015) and may nest locally in appropriate habitats within the Project Area. Station 6 is near a riverine wetland that flows into Doyles Lake. Station 37 is near riverine wetland associated with a tributary of the south branch of Beaver Creek. Riparian areas north and west of Wishek may also support riverine wetlands that are favorable to this species. While nesting is possible within the Project Area, it is not anticipated that this species will be a common breeder or experience significant impacts, given the general lack of detections within the 2019 Study Area.

Chestnut-collared longspur (SCP Level I): In total, 22 spring detections and 11 fall detections occurred during year 1 avian use surveys, and 55 spring detections and 92 fall detections were made during year 2 avian use surveys. Chestnut-collared longspur were also incidentally observed

at 70 percent of point count stations in year 2. Over the year 1 study period, chestnut-collared longspur mean use rates were 0.14 detections/10-minute survey/150 m plot during the spring and 0.05 detections/10-minute survey/150 m plot during the fall. Over the year 2 study period, chestnut-collared longspur mean use rates were 0.35 detections/10-minute survey/300 m plot during the spring and 0.43 detections/10-minute survey/300 m plot during the fall. Males were frequently seen singing, and this species likely breeds within the Project Area. While observed throughout the 2019 Study Area, chestnut-collared longspurs were most frequently observed in the northern and northeastern portions of the 2019 Study Area that are higher in elevation and are dominated by herbaceous cover as shown in **Figure 2, Land Cover Types within the Project Area**. Given this species level of use of the 2019 Study Area and the presence of suitable habitat throughout much of the Project Area, development and operation of the Project may impact this species. Badger Wind intends to minimize impacts to native grasslands to the greatest extent feasible, though collisions with turbines are still possible. Tier 4 post-construction monitoring will provide more clarity regarding any impacts to chestnut-collared longspurs.

Loggerhead shrike (SCP Level II): One incidental detection of loggerhead shrike (*Lanius ludovicianus*) occurred on April 17, 2021 (year 2), at station 30 in the central portion of the 2019 Study Area. This species was also detected incidentally in the summer while traveling between points during year 1 surveys, but no detections occurred during year 2. These observations likely represent migrating individuals. While nesting is possible within the Project Area, it is not anticipated that this species will be a common breeder or experience significant impacts, given the general lack of detections within the 2019 Study Area.

LeConte's sparrow (SCP Level II): LeConte's sparrow (*Ammospiza leconteii*) was not observed during avian use surveys; however, singing males were detected incidentally in July at stations 37 and 57 during year 2 avian use surveys. Stations 37 and 57 are near riverine wetlands associated with tributaries of Beaver Creek. The wet/riparian areas associated with station 57 are west and outside of the current Project Area. Similar to Nelson's sparrow, LeConte's sparrows may nest locally in and near riverine habitats similar to those within the Project Area. While nesting is possible within the Project Area, it is not anticipated that this species will be a common breeder or experience significant impacts, given the general lack of detections within the 2019 Study Area.

Dickcissel (SCP Level II): Dickcissels (*Spiza americana*) were not observed during avian use surveys during year 1 or year 2; however, this species was observed on multiple occasions throughout the 2019 Study Area during the summer season when surveys for small-bodied species did not take place. As such, this species is likely to breed within the 2019 Study Area. Dickcissel is a fairly common to uncommon species that will nest in a variety of grassland types, including hayfields and road ROW (Dyke et al. 2015). Given this species' level of use of the 2019 Study Area and presence of suitable habitat throughout much of the Project Area, development and operation of the Project may impact this species. Tier 4 post-construction monitoring will provide more clarity regarding any impacts to Dickcissels.

Bobolink (SCP Level II): During year 1 surveys, bobolink was detected 11 times in the fall and 22 times in spring. During year 2 surveys, bobolink was detected 22 times in the fall and 30 times in spring. During year 2 surveys, bobolinks were incidentally observed at 98 percent of point count

stations in June and July, and dependent fledglings were observed in early August at station 32, confirming breeding. Bobolink mean use rates during year 1 surveys were 0.12 detections/10-minute survey/150 m plot in the spring and 0.02 detections/10-minute survey/150 m plot in the fall. Bobolink mean use rates during year 2 surveys were 0.14 detections/10-minute survey/300 m plot during both the spring and fall. Bobolink is a fairly common to abundant species that will use a variety of open habitats, including native grasslands, hayfields and pastures, old fields, and no-till cropland (Dyke et al. 2015). Given this species' level of use of the 2019 Study Area and presence of suitable habitat throughout much of the Project Area, development and operation of the Project may impact this species. Tier 4 post-construction monitoring will provide more clarity regarding any impacts to bobolinks.

Western meadowlark (SCP Level II): In total, 66 spring detections and 22 fall detections of western meadowlark (*Sturnella neglecta*) were recorded during avian use surveys in year 1. In year 2, 171 spring detections and 114 fall detections of western meadowlark were recorded during avian use surveys. During year 2, western meadowlarks were incidentally observed at all point count stations in June and July. Western meadowlark mean use rates during year 1 were 0.42 detections/10-minute survey/150 m plot during the spring and 0.10 detections/10-minute survey/150 m plot during the fall. Western meadowlark mean use rates during year 2 were 1.08 detections/10-minute survey/300 m plot during the spring and 0.54 detections/10-minute survey/300 m plot during the fall. Western meadowlark is a common to uncommon species that prefers native grasslands but will also occur in hayfields, weedy fields, and within the grassy margins of croplands and roadsides (Davis and Lanyon 2008; Dyke et al. 2015). Given this species' level of use of the 2019 Study Area and presence of suitable habitat throughout much of the Project Area, development and operation of the Project may impact this species. Tier 4 post-construction monitoring will provide more clarity regarding any impacts to western meadowlarks.

Shorebirds

Marbled godwit (SCP Level I): Four spring detections of five individuals and no fall detections of marbled godwit were made during year 1 avian use surveys. During year 2, seven spring detections of nine individuals and no fall detections of marbled godwit were made. During year 2, marbled godwits were observed incidentally at 19 percent of point count stations. Marbled godwits may nest within the Project Area in low numbers, but specific favored locations were not apparent during year 1 and year 2 surveys. During the year 1 study period, agitated behavior was recorded at station 16 on June 10, 2019, suggesting that a nest or brood was nearby. Breeding behaviors were not observed during year 2 surveys, and godwits were not observed at station 16 during the year 2 study period. Similarly, during year 2, agitated behavior was recorded at station 5 in the northern portion of the 2019 Study Area on June 11, 2021, suggesting that breeding was possible at a wetland west of the station. However, no marbled godwits were detected from this point count station during year 1 surveys. It is not anticipated that this species would experience significant impacts given the relatively low number of detections during avian use surveys; however, this species moves through the Project Area while migrating and foraging and may be at risk of collision with operational turbines. Breeding is likely within the Project Area and impacts to wetland habitat from project infrastructure may affect this species; however, Badger Wind has sited project

infrastructure to generally avoid wetlands. Tier 4 post-construction monitoring will provide more clarity regarding any impacts to marbled godwits.

Wilson's phalarope (SCP Level I): Two detections of six Wilson's phalarope individuals were made during avian use surveys in year 1, and three detections of four individuals were made in year 2. Wilson's phalaropes were observed at stations 15 and 22 in both year 1 and year 2, suggesting that they may locally breed at some wetlands within the Project Area. It is not anticipated that this species will experience significant impacts given the limited number of detections during avian use surveys; however, breeding is likely within the Project Area, and impacts to wetland habitat would affect this species although, as previously mentioned, impacts to wetland habitat will be avoided to the extent feasible.

American avocet (SCP Level II): American avocets (*Recurvirostra americana*) were only observed incidentally during year 1 and year 2 avian use surveys at scattered locations throughout the 2019 Study Area, typically during the fall. One summer observation of four birds flying to the northeast occurred at station 5 in the northeastern portion of the Project. This species generally prefers to nest in sparsely vegetated areas on exposed shorelines of wetlands or lakes (Dyke et al. 2015). Nesting habitat for American avocets is more prevalent outside of the 2019 Study Area to the northeast; however, wetlands in the northeastern portion of the 2019 Study Area may provide suitable habitat as well. It is not anticipated that this species will experience significant impacts given the overall low number of detections (incidentals only) and the fact that breeding habitat appears limited within the Project Area. Construction of project infrastructure is also not anticipated in the vicinity of prairie potholes where breeding habitat is most prevalent.

Willet (SCP Level II): One willet was observed over the course of two years of avian use surveys. This observation occurred on May 15, 2020 (year 2), at station 52. This species was detected within the 2019 Study Area incidentally on multiple occasions throughout the spring, summer, and fall during year 1 and year 2 surveys. Most observations occurred in the northern and northeastern portions of the 2019 Study Area, particularly at stations 51, 52, and 53, which are located outside of the current Project Area boundary and contain the highest degree of suitable breeding habitat (i.e., large tracts of grassland habitat with adjacent shallow, wetland features with sparsely vegetated shoreline) (Dyke et al. 2015). However, one individual at station 7 (northern portion of the 2019 Study Area) appeared to display territorial behavior and may have been nesting nearby. Therefore, while breeding habitat primarily occurs outside of the 2019 Study Area to the northeast, limited suitable breeding habitat within the 2019 Study Area may support nesting willets. It is not anticipated that this species will experience significant impacts given that breeding habitat appears limited within the Project Area and construction of project infrastructure is not anticipated in the vicinity of prairie potholes where most detections of this species occurred.

Upland sandpiper (SCP Level II): During year 1 avian use surveys, 9 detections of 11 individual upland sandpipers were observed in the spring only. During year 2 avian use surveys, 26 detections of 34 individual upland sandpipers were observed in the spring and fall into mid-August of year 2. Upland sandpipers were detected at 36 percent of point count stations in year 2. Upland sandpipers likely nest in roadside habitats/ditches, grasslands, and cropland (particularly no-till) habitats throughout the 2019 Study Area. Given this species level of use of the 2019 Study Area and

presence of suitable habitat throughout much of the Project Area, development and operation of the Project may impact this species. Tier 4 post-construction monitoring will provide more clarity regarding any impacts to upland sandpipers.

Waders

American bittern (SCP Level I): American bitterns nest in wetlands with tall emergent vegetation (Dyke et al. 2015), and one was observed vocalizing at a wetland near station 53 on May 15, 2020 (during year 2 surveys). Bitterns were not observed at this location on subsequent surveys, but individuals are difficult to detect from roadsides when silent and may nonetheless nest at this location. Station 53 is outside of the current Project Area boundary, though this species may nest in similar habitats within the current Project Area. American bitterns were also detected as incidental observations during year 1 surveys near station 52 (July 26, 2019; outside current Project Area boundary) and station 8 (August 28, 2019; adjacent to current Project Area boundary). It is not anticipated that this species will experience significant impacts given the overall low number of detections and the fact that breeding habitat appears limited within the Project Area. Construction of project infrastructure is not anticipated in areas where this species was detected, particularly in the vicinity of prairie potholes where breeding habitat is most prevalent.

Waterbirds

Horned grebe (SCP Level I): Horned grebe (*Podiceps auritus*) was only observed during avian use surveys in the spring and summer in year 1 at station 52. Station 52 is near several prairie potholes and is not within the current Project Area boundary. This species was also observed incidentally within the 2019 Study Area during the spring and summer in year 2 but not during surveys (i.e., while driving between survey points). It is not anticipated that this species will experience significant impacts given the general lack of detections within the 2019 Study Area. Construction of project infrastructure is not anticipated in the vicinity of prairie potholes where this species is most likely to breed.

American white pelican (SCP Level II): Two spring detections of 7 individuals and one fall detection of 21 individuals were recorded during year 1 avian use surveys for American white pelican (*Pelecanus erythrorhynchos*). Three spring detections of 62 individuals and one fall detection of two individuals were recorded during year 2 avian use surveys. American white pelicans were also incidentally observed in the spring, summer, and fall. Nesting colonies were not observed and are not known to exist within the 2019 Study Area. Flocks of up to 60 individuals were encountered at 20 of 53 point count stations (38 percent) throughout the 2019 Study Area during year 2 surveys. While breeding is not likely within the Project Area, this species can migrate through the Project Area in large numbers and may be at risk of collision with operational turbines. Tier 4 post-construction monitoring will provide more clarity regarding any impacts to American white pelicans.

Black tern (SCP Level I): One fall detection of black tern occurred during year 1 avian use surveys, and five spring detections and one fall detection occurred during year 2 avian use surveys. This species was also observed on numerous occasions throughout the 2019 Study Area incidentally in the spring, summer, and fall. Black terns were generally observed in low numbers in the

northeastern portion of the 2019 Study Area in association with greater wetland density. Nesting colonies were not observed within the 2019 Study Area. While breeding is not likely within the Project Area, this species moves through the Project Area while migrating and foraging and may be at risk of collision with operational turbines. Tier 4 post-construction monitoring will provide more clarity regarding any impacts to black terns.

Franklin's gull (SCP Level I): Franklin's gulls were observed flying through the 2019 Study Area more frequently in the fall than the spring over both the year 1 and year 2 study periods (year 1: 2 spring detections and 2,023 fall detections; year 2: 199 spring detections and 342 fall detections). There are no known Franklin's gull nesting colony sites within the 2019 Study Area, and fall detections appear to represent post-breeding movements from locations beyond the 2019 Study Area. Reasons for diminished numbers observed during the fall period in year 2 are unclear. During year 1, large flocks were found opportunistically foraging in agricultural habitats following harvesting and haying activities (e.g., single flock of 500 individuals observed on August 27, 2019). This is an expected observation for gulls moving in large numbers over agricultural cropland habitats, yet one not observed during surveys during the fall period in year 2. The observed decrease in fall Franklin's gull detections may have been due to chance. A large group of approximately 1,000 individuals was detected incidentally on September 22, 2020, at station 23, demonstrating the presence of Franklin's gull flocks during year 2 surveys. While breeding is not likely within the Project Area, this species moves through the Project Area while migrating and foraging and may be at risk of collision with operational turbines. Tier 4 post-construction monitoring will provide more clarity regarding any impacts to Franklin's gulls.

Waterfowl

Northern Pintail (SCP Level II): A total of 109 spring detections of northern pintail were documented during year 1 avian use surveys. A total of 31 spring detections and five fall detections of northern pintail were documented during year 2 avian use surveys. Northern pintails were also observed at 66 percent of point count stations during the year 2 study period. Northern pintails were usually observed singly or in small groups of less than five individuals in wetlands and cropland habitats throughout the 2019 Study Area, though groups of up to 20 were occasionally observed. Pintail fledglings were not noted during year 1 or year 2 surveys, but this species may nest near wetland complexes in associated prairie habitats. While breeding has not been confirmed within the Project Area, this species is relatively common and moves through the Project Area while migrating and foraging. Therefore, it may be at risk of collision with operational turbines. Tier 4 post-construction monitoring will provide more clarity regarding any impacts to northern pintail.

Canvasback (SCP Level II): Four canvasback were observed during year 1 surveys, and two canvasback were observed during year 2 surveys. All four individuals detected during year 1 surveys were at station 16 in the western portion of the 2019 Study Area in early April. Both year 2 observations occurred in the northeastern portion of the 2019 Study Area at stations 5 and 53 in May. No evidence of breeding within the 2019 Study Area was observed. It is not anticipated that this species will experience significant impacts given the general lack of detections within the 2019 Study Area. Construction of project infrastructure is not anticipated in the vicinity of prairie potholes where this species is most likely to breed.

Lesser Scaup (SCP Level II): Five lesser scaup were observed during year 1 surveys. All five individuals were observed in the northeastern portion of the 2019 Study Area at stations 5 and 53 in May. This species was also observed incidentally in the summer during year 1 surveys. During year 2 surveys, lesser scaup were only observed incidentally in the northeastern portion of the 2019 Study Area in spring and summer. It is not anticipated that this species will experience significant impacts given the general lack of detections within the 2019 Study Area. Construction of project infrastructure is not anticipated in the vicinity of prairie potholes where this species is most likely to breed.

Prairie Grouse (Sharp-tailed Grouse)

One confirmed sharp-tailed grouse lek location and two possible lek locations were observed within the grouse survey area during the year 1 grouse lek surveys. All three lek locations were along the edge of the 2019 Study Area boundary (**Figure 7, Avian Resources**) (Atwell 2020c).

Thirteen confirmed sharp-tailed grouse lek locations and two possible lek locations were found within the grouse survey area through a combination of aerial and ground-based efforts during the year 2 lek survey (**Figure 7, Avian Resources**). The same area was surveyed in 2019 and 2020, which included the 2019 Study Area and a surrounding 1-mile survey buffer (Atwell 2021c).

Two confirmed lek locations were observed within the current Project Area boundary, four confirmed and one possible lek location were observed within 1 mile of the current Project Area boundary, and seven confirmed and one possible lek location were observed beyond the current Project Area's 1-mile buffer (**Figure 7, Avian Resources**). Confirmed leks held 4 to 27 individuals (Atwell 2021c). Confirmed and possible leks are depicted in **Figure 7, Avian Resources** with 0.5-mile-radius buffers to represent likely nesting areas for females (Dyke et al. 2015).

During year 1 diurnal avian activity surveys, 38 sharp-tailed grouse were detected: 32 in the spring and six in the fall. This resulted in a mean use of 0.20 detections/10-minute survey/800-m plot in the spring and 0.03 detections/10-minute survey/800-m plot in the fall. During year 2 diurnal avian activity surveys, 18 sharp-tailed grouse were detected: 9 in the spring and 9 in the fall. This resulted in a mean use of 0.06 detections/10-minute survey/800 m plot in the spring and 0.04 detections/10-minute survey/800 m plot in the fall (Atwell 2020c; Atwell 2021c).

It is not anticipated that this species will experience significant impacts. While this species is relatively common within the 2019 Study Area, sharp-tailed grouse tend to remain below RSZ. Also, wind turbines were sited within agricultural areas and a 1-mile buffer was established for leks to the extent feasible to limit potential impacts to sharp-tailed grouse lek and nesting habitat. This species may experience impacts via displacement (Shaffer and Buhl 2016). However, Badger Wind intends to avoid siting wind turbines within native grasslands to the greatest extent feasible, thereby reducing displacement impacts.

Nesting Raptor Species

The 2019 Study Area was surveyed for nesting raptors in May 2019 and April and May 2020 via aerial and ground-based surveys. Nests of the following non-eagle raptor species were identified

within the raptor nest survey area during the 2019 survey (**Figure 8a, Year 1 Eagle and Raptor Nest Survey Results):** ferruginous hawk (*n*=5), red-tailed hawk (*n*=4), great horned owl (*Bubo virginianus;* *n*=2,), Swainson's Hawk (*n*=1), and unknown raptor (*n*=1) (Atwell 2020c; Atwell 2021c). Non-eagle raptor nests identified during the 2020 eagle and raptor nest survey that are within the current Project Area boundary and a surrounding 2-mile buffer (**Figure 8b, Year 2 Eagle and Raptor Nest Survey Results**) include red-tailed hawk (*n*=8), great horned owl (*n*=5), ferruginous hawk (*n*=4; a fifth occupied nest was found in May 2021), Swainson's hawk (n=4), and unknown raptor (*n*=9; two additional nests were found in May 2021).

Of the non-eagle nests located during year 1 studies, three ferruginous hawk nests, three red-tailed hawk nests, one Swainson's hawk nest, one great horned owl nest, and one unknown raptor species nest were found within the 2019 Study Area boundary. Of the nests located during year 2 studies and 2021 micrositing activities, one bald eagle nest, one great horned owl nest, one red-tailed hawk nest, one Swainson's hawk nest, and six unknown raptor nests were found within the current Project Area boundary. Recommended setbacks to raptor nests were used to assist with siting project infrastructure.

Non-eagle raptor species of concern observed within the 2019 Study Area during Tier 3 field studies included American kestrel (*Falco sparverius*; SCP Level II), burrowing owl (*Athene cunicularia*; SCP Level II), ferruginous hawk (SCP Level I), northern harrier (SCP Level II), peregrine falcon (*Falco peregrinus*; SCP Level III), prairie falcon (*Falco mexicanus;* SCP Level II), and Swainson's hawk (SCP Level I). Standardized observations of peregrine falcon and prairie falcon were relatively infrequent, and burrowing owl was only detected once incidentally within the 2019 Study Area while traveling between point count stations. These species are likely uncommon migrants through the Project Area, and significant impacts from project operation are not anticipated.

Raptor mean use recorded during avian use surveys was primarily driven by detections of red-tailed hawks, Swainson's hawks, and northern harriers. During year 1, these species collectively accounted for approximately 68 percent of raptor detections in the spring season and 82 percent of detections in the fall season (Atwell 2020c). During year 2, these species collectively accounted for approximately 66 percent of raptor detections in the spring season and about 65 percent of detections in the fall (Atwell 2021c). Ferruginous hawks accounted for approximately 4.5 percent of raptor detections in the spring and about 0.7 percent of detections in the fall of year 1 surveys, and approximately 4.9 percent of detections in spring of year 2 surveys. No ferruginous hawks were detected during the fall year 2 surveys. American kestrels accounted for approximately 4.5 percent of raptor detections during spring and approximately 2.2 percent of detections in the fall of year 1 surveys. During year 2 surveys American kestrels represented about 7.3 percent of raptor detections in the spring and 5.5 percent of detections in the fall (Atwell 2020c; Atwell 2021c).

In particular, red-tailed hawks, Swainson's hawks, and ferruginous hawks are often found within the RSZ, though northern harriers and American kestrels tend to fly below the RSZ (Atwell 2020c; Atwell 2021c). These species may be at relatively higher risk because of their level of use of the 2019 Study Area; however, measures taken to avoid and minimize potential impacts of the Project to non-cultivated habitat along with proposed measures to avoid and minimize potential impacts, including establishing species-specific raptor nest buffers for wind turbines, are expected to reduce

this risk, and population-level impacts are not expected when accounting for these measures. Collisions with project infrastructure may occur, though population-level risk is not anticipated.

5.3.3. ESA- Listed Bat Species

Northern long-eared bat (Threatened): Tier 1 and 2 studies found that ESA-listed threatened northern long-eared bats could occur within the 2019 Study Area. However, the Project is located outside of the core range for northern long-eared bats. Acoustic monitoring was conducted in 2019 and 2020 at one MET tower location, and some ground-based monitoring was conducted in the vicinity of woodlot patches. Northern long-eared bats were not detected during acoustic monitoring in 2019 and 2020 (Atwell 2020b; Atwell 2021b), though unknown *Myotis* species calls were detected. While the potential for these calls to be attributed to northern long-eared bats could not be ruled out, there was not a sufficient number of pulse calls to attribute these calls to species.

Badger Wind considered establishing 1,000-foot buffers from all woodland patches greater than 10 acres in size, which is a standard practice for minimizing potential impacts associated with potential roost habitat for projects located outside of core range for northern long-eared bats. The habitat assessment indicated, as previously mentioned, that potential roosting habitat is highly fragmented and found that no woodland patches were greater than 10 acres. It is noted, however, that that majority of wind turbines are sited at least 1,000 feet from smaller, fragmented woodlot patches (**Figure 6, Bat Resources**).

Given that the Project is located outside of core range, that summer roosting habitat for this species is highly fragmented within the Project Area, that direct and indirect impacts to woodlots will generally be avoided, and that Tier 3 studies did not confirm use by this species within the 2019 Study Area, the Project is not expected to pose notable risk to northern long-eared bats. Operation of the Project is not expected to result in take of northern long-eared bats over the lifespan of the Project. Most wind turbines are located at least 1,000 feet from the smaller, fragmented woodlots that are present in the Project Area, and direct disturbance to woodlots with trees that contain potential roost trees (snags with diameter at breast height greater than 3 inches and exfoliating bark/cavities) will be avoided to the extent feasible. Any unavoidable tree removal that may occur within the Project Area will follow guidelines in accordance with the 4(d) rule for northern long-eared bat, as presented in **Section 6.2**. Once construction is complete, no further loss of summer bat habitat due to project activities is expected to occur for the remainder of the 30-year life of the Project. Tier 4 post-construction monitoring will also provide more clarity regarding any impacts to northern long-eared bats.

5.3.4. North Dakota Bat Species of Conservation Priority

Big brown bat (SCP Level I): Due to similarities in call signatures between big brown bat and silver-haired bat (non-SCP), these two species were grouped during acoustic analysis. This group had the highest frequency of bat calls (485 calls; 42.8 percent of bat calls) during year 2 studies and the second highest frequency of bat calls during year 1 studies (757 calls; 37.3 percent of bat calls). Big brown bat/silver-haired bat activity was detected at all acoustic monitoring stations during year 1 and year 2 surveys. While peaks in activity during spring and fall are likely attributable to silver-

haired bat activity, which are not year-round residents in the 2019 Study Area, summer activity is likely from big brown bats as they are year-round residents throughout North Dakota (Atwell 2020b; Atwell 2021b). Big brown bat mortality is possible as a result of project operation, particularly during migration or summer periods; however, it is expected to reflect the national trends of mortality for this species (Arnett and Baerwald 2013; Allison 2018; AWWI 2018), and no population-level effects are expected to occur as a result of project operation.

To reduce the risk of turbine collision to bat species, Badger Wind established a 1,000-foot forest buffer around suitable bat habitat. The number of turbines within this forest buffer will be reduced to the extent feasible, and tree clearing of suitable bat habitat is expected to be minimal. Any proposed tree clearing will follow guidelines presented in **Section 6.2**. Tier 4 post-construction monitoring will provide more clarity regarding any impacts to big brown bats.

Little brown bat (SCP Level I): Little brown bats were infrequently detected during Tier 3 acoustic monitoring studies. In total, four calls (0.2 percent of bat calls) attributed to this species were recorded during year 1 studies, and three calls (0.3 percent of bat calls) were recorded during year 2 studies. Calls were recorded at acoustic monitoring stations BMg1 (south of the current Project Area boundary) and BMg2 (in the southern portion of the current Project Area boundary) in year 1. In year 2, calls were recorded at acoustic monitoring stations BMg1 (in the northeastern portion of the current Project Area boundary), BMg2 (same location as year 1), and BMg3 (same location as BMg1 in year 1) (**Figure 6, Bat Resources**) (Atwell 2020b; Atwell 2021b). Little brown bat mortality due to project operation is possible, particularly during migration or summer periods; however, it is expected to reflect the relatively low national trends of mortality for this species (Arnett and Baerwald 2013; Allison 2018; AWWI 2018), and no population-level effects are expected to occur as a result of project operation.

As previously mentioned, to reduce the risk of turbine collision to bat species, Badger Wind will avoid direct impacts to bat habitat to the extent feasible. The number of turbines located near woodlots has been limited to the extent feasible, and tree clearing of suitable bat habitat and specifically removal of potential roost trees is expected to be minimal. Any proposed tree clearing will follow guidelines presented in **Section 6.2**. Tier 4 post-construction monitoring will provide more clarity regarding any impacts to little brown bats.

5.4. Question 5 and Response

How can developers mitigate identified significant adverse impacts?

Badger Wind is voluntarily adhering to guidance included in the WEG, ECPG, and 2016 Eagle Rule revision to minimize potential effects from the Project on birds and bats through development and implementation of this BBCS. A Critical Issues Analysis and agency coordination were used to inform Tier 3 study design. Results from Tier 3 studies and agency coordination were then used to develop and refine the Project Area boundary and locations of project infrastructure. The Project was designed to avoid and minimize use of high-quality habitat and/or areas that may be suitable for TES and other sensitive species of concern to the greatest extent feasible. Badger Wind intends to site most infrastructure in locations that are predominantly agricultural and lack large tracts of

contiguous woodland habitat; such areas generally do not include conservation areas where development is precluded by law.

Placement of turbines and associated infrastructure within large tracts of grassland may result in the displacement of some grassland bird species (Shaffer and Buhl 2016). Badger Wind has conducted field verification of grassland habitat conditions to refine understanding of areas defined by NDGF as unbroken that have been converted to agricultural use (WEST 2021). Badger Wind has used the results of this study, in coordination with USFWS and NDGF to design a project layout that minimizes potential impacts to unbroken grasslands. Badger Wind is also coordinating with USFWS and NDGF to determine potential voluntary offsets for indirect impacts to grassland species. The results of this analysis will help to guide additional conservation measures that can be implemented such as the preservation of existing grassland habitat or creation of new habitat that can support grassland bird species.

Approximately 1,453.7 acres (approximately 4.6 percent of the Project Area) will be disturbed during construction, with approximately 1,361.4 acres of temporary disturbance that will be reclaimed, and a permanent disturbance footprint of 92.3 acres. Badger Wind has employed avoidance and minimization strategies to mitigate minor temporary and permanent impacts as well as identified potential impacts to potential breeding and roosting habitat for birds and bats. These include, but are not limited to, re-siting several construction access roads and turbines to be located outside non-cultivated areas to the extent practical, establishing setback buffers for raptor nests, and minimizing tree removal. Additional measures employed to avoid and reduce impacts are further discussed in **Section 6** of this BBCS.

5.5. Question 6 and Response

Are there studies that should be initiated at this stage that would be continued in post-construction?

Other than those studies conducted adhering to the WEG, no other Tier 3 studies are proposed at this time. While the Project is not likely to have significant impacts to species of concern based on Tier 1, 2, and 3 analyses, the Project will conduct post-construction avian and bat mortality monitoring for at least one year following construction and adhering to the WEG. Post-construction surveys will serve to estimate mortality rates of birds and bats for the Project to further assess potential impacts and validate the efficacy of avoidance, minimization, and mitigation measures. Tier 4 monitoring methods are summarized in **Section 7.1**.

5.6. Tier 3 Decision Point

Tier 3 analyses indicate that the Project presents a low to moderate risk to TES and other sensitive species of concern. Grassland bird species may be impacted if turbine infrastructure is placed within grassland habitat; however, Badger Wind proposes to minimize impacts to native grasslands to the extent feasible and mitigate for unavoidable impacts through the use of a biodiversity offset. Badger Wind has decided to voluntarily proceed to Tier 4 surveys per WEG recommendations to further assess potential impacts to birds and bats and validate the efficacy of avoidance, minimization, and mitigation measures. Mortality monitoring will be based upon USFWS and NDGF

recommendations and industry standards. **Table 4** summarizes specific Tier 3 results and Badger Wind's decision to continue with further Tier 4 studies and analysis.

Table 4. WEG Tier 3 Decision Analysis per Ecological Constraint

Species/Resource	Resource Constraints within the Project Area	Status of Resource Constraint within the Project Area	Tier 3 Decision Point	Direct Impact Avoidance	Tier 4 Analysis Procedure
Avian Resources					
Grasslands	Presence of herbaceous grassland habitat through Tier 2 land-cover analysis (e.g., **Figure 2**).	Present as contiguous grassland parcels, particularly within the northern and northeastern portions of the 2019 Study Area.	Proceed to Tier 4b through assessment of resource impact to specific wildlife species. Proceed to Tier 4a to help validate predictions about likely minimal direct impacts to grassland avian species.	Avoid operational infrastructure development within grassland habitat to greatest extent feasible; implement habitat mitigation protocols including voluntary offsets for impacts to native prairie.	Incorporate avoidance and minimization measures for herbaceous grassland into BBCS; Preliminary Post-Construction Fatality Monitoring; revision of BBCS, as needed.
Whooping Crane	Project is within 75 percent migration corridor for this species. Stopover habitat quantity and quality generally lower than reference areas.	Rare. One incidental detection of four whooping cranes.	Proceed to Tier 4a to help validate predictions about likely minimal direct impacts to the species. Conduct post-construction mortality monitoring and build adaptive response.	Avoid operational infrastructure development near high-quality stopover habitat to greatest extent feasible; Adhere to APLIC guidelines.	Conduct preliminary post-construction fatality monitoring; revision of BBCS, as needed. Badger Wind will also develop a Whooping Crane Contingency Plan that outlines measures to be taken in the event that whooping cranes are observed in the project vicinity during operations.

Species/Resource	Resource Constraints within the Project Area	Status of Resource Constraint within the Project Area	Tier 3 Decision Point	Direct Impact Avoidance	Tier 4 Analysis Procedure
Bald Eagle	Primarily spring and fall use of Project Area, with less summer and winter use. One known nest within the Project Area.	Uncommon to rare seasonally. One in-use nest within Project Area.	Proceed to Tier 4a to help validate predictions about likely minimal direct impacts to the species. Conduct post-construction mortality monitoring and build adaptive response.	Situate Project to avoid construction of turbines within 2 miles of known eagle nest.	Conduct preliminary post-construction fatality monitoring; revision of BBCS, as needed. Badger Wind continues to coordinate with USFWS to avoid and minimize potential impacts to eagles to the extent practical.
Golden Eagle	Primarily fall and spring use of Project Area. Not likely to breed within Project Area.	Relatively rare within the Project Area, but occurrence in small numbers likely regular.	Proceed to Tier 4a to help validate predictions about likely minimal direct impacts to the species. Conduct post-construction mortality monitoring and build adaptive response.	Situate project operational infrastructure to avoid potential foraging habitat.	Conduct preliminary post-construction fatality monitoring; revision of BBCS, as needed.

Species/Resource	Resource Constraints within the Project Area	Status of Resource Constraint within the Project Area	Tier 3 Decision Point	Direct Impact Avoidance	Tier 4 Analysis Procedure
Other Nesting Raptors (including North Dakota SCP)	Known nesting raptors within Project Area, primarily red-tailed hawks, ferruginous hawks, Swainson's hawks and great horned owls.	Uncommon and sparsely distributed within isolated woodlots.	Proceed to Tier 4a to help validate predictions about likely minimal direct impacts to the species. Conduct post-construction mortality monitoring and build adaptive response.	Site wind turbines away from known nests. Review on case-by-case basis if woodland habitat is proposed for removal. Site infrastructure outside of recommended nest setback buffers. Monitor nests for disturbance during construction when timeline overlaps with nesting season.	Conduct preliminary post-construction fatality monitoring; revision of BBCS, as needed.
North Dakota Avian Species of Conservation Priority	Thirty-two avian SCP detected within the 2019 Study Area during Tier 3 surveys and incidentally (excluding species list above). Primarily grassland and wetland species.	Rare to common within the Project Area, depending on species and time of year. Many are likely breeders, particularly in the northern and northeastern portions of the Project Area.	Proceed to Tier 4a to help validate predictions about likely minimal direct impacts to the species. Conduct post-construction mortality monitoring and build adaptive response.	Avoid operational infrastructure development within grasslands and wetlands to greatest extent feasible.	Conduct preliminary post-construction fatality monitoring; revision of BBCS, as needed.

Species/Resource	Resource Constraints within the Project Area	Status of Resource Constraint within the Project Area	Tier 3 Decision Point	Direct Impact Avoidance	Tier 4 Analysis Procedure
Bat Resources					
Deciduous Woodland	Presence of some deciduous woodland (about 0.2 percent of total Project Area acreage).	Few isolated deciduous woodlots and shelterbelts scattered throughout Project Area; largest woodlots in southern portion of Project Area.	No need to proceed to Tier 4b through assessment of resource impact to specific wildlife species. Bat impacts already assessed in Tier 2.	Adhere to 4(d) rule; avoid forested habitat removal during June through July; avoid siting infrastructure in the vicinity of potential bat habitat. Avoid tree removal and specifically removal of potential roost trees to extent feasible.	Incorporate avoidance and minimization measures for deciduous woodland into BBCS. In cases where tree removal cannot be avoided, 4(d) rule would inform tree removal. Revision of BBCS, as needed.
Northern long-eared bat	Potential migration through project airspace; summer roosting possible but not likely.	Not confirmed during Tier 3 field studies.	Proceed to Tier 4a to validate predictions of low impacts from operation of the Project and efficacy of avoidance and minimization measures. The 4(d) rule would apply in this development scenario.	Adhere to 4(d) rule; avoid forested habitat removal during June through July; avoid siting infrastructure in the vicinity of potential bat habitat. Avoid tree removal and specifically removal of potential roost trees to extent feasible.	Conduct preliminary post-construction fatality monitoring; revision of BBCS, as needed.

Species/Resource	Resource Constraints within the Project Area	Status of Resource Constraint within the Project Area	Tier 3 Decision Point	Direct Impact Avoidance	Tier 4 Analysis Procedure
North Dakota bat Species of Conservation Priority	Potential use of project air space while foraging or migrating.	Little brown bat confirmed during Tier 3 acoustic studies. Big brown bat likely present but difficult to separate calls from silver-haired bat (not SCP).	Proceed to Tier 4a to validate predictions of low impacts from operation of the Project and efficacy of avoidance and minimization measures. The 4(d) rule would apply in this development scenario.	Adhere to 4(d) rule; avoid forested habitat removal during June through July; avoid siting infrastructure in the vicinity of potential bat habitat. Avoid tree removal and specifically removal of potential roost trees to extent feasible.	Conduct preliminary post-construction fatality monitoring; revision of BBCS, as needed.

6. FACILITY DESIGN TO REDUCE WILDLIFE CONFLICT

6.1. Project Facilities Design and Consideration

6.1.1. Turbine Locations and Design

The project layout includes 74 primary and 5 alternate WTG locations. Turbines are primarily sited within upland and agricultural portions of the Project Area. The WTG site layout has been configured to avoid areas with higher documented use by raptors and other species of wildlife protected under the ESA, BGEPA, and MBTA, to the extent feasible. Habitat that was identified as potentially suitable for species of concern was also avoided to the maximum extent feasible when siting the Project. The Project will also use state-of-the-art wind turbines, which yield more megawatts per turbine, resulting in a lower number of turbines on the landscape to achieve the same level of electricity production. In addition, un-guyed tubular towers will be used for the Project wind turbines, which are documented to lower the potential for raptor and other bird collisions (Gehring et al. 2009). Bird flight diverters will be installed in the event that guyed MET towers are used for the Project.

6.1.2. Facilities

The Project's associated facilities will be sited and designed to avoid and reduce potential impacts to birds and bats, and the collection and communication system will be buried underground in accordance with industry standards. Impacts of these systems on birds and bats will be eliminated since they are underground. The Project Area and associated project infrastructure will be primarily located within cultivated agriculture areas, thereby minimizing project-related land disturbance of habitat for sensitive species. New land disturbance will be limited to the extent feasible. The existing road system will be utilized to the maximum extent feasible, thereby reducing additional land disturbance. Newly constructed access roads will be placed along section lines, within agricultural fields, and outside of wetlands and waterbodies to the extent practicable to reduce habitat fragmentation. The short (0.75-mile) overhead transmission line will be located primarily within agricultural upland habitat. Some wetlands and small forested patches will be encountered along the route; pole placement in wetlands will be avoided to the extent possible. The transmission line will parallel existing roadways and transmission lines for large portions of the route, thereby helping to reduce additional disturbance to bird and bat habitat. Furthermore, the transmission line will be designed to APLIC standards, including the use of avian flight diverters, in order to reduce the risk of electrocution and collision to birds.

6.1.3. Lighting

Wind Turbines: The Project will comply with Federal Aviation Administration (FAA) guidelines. Gehring et al. (2009) reported that flashing red lights attract much lower numbers of nocturnal migrants compared to steady red lights and, in turn, should reduce avian and bat fatalities. The FAA recently amended its recommended lighting standards for wind facilities to follow this recommendation of utilizing flashing red lights in an effort to reduce the potential impacts to migratory species (FAA 2015), and the Project will comply with this standard. Furthermore, the

Project will utilize an Aircraft Detection Lighting System (ADLS), which will turn on lights when and aircraft is in proximity to the Project. As such, the amount of time lights are on will be reduced, thereby reducing the potential for lighting to attract birds.

Project Facilities: Lighting of ancillary structures will be minimized and downward-facing lights and/or motion-sensing lights will be installed, as practicable, to minimize attracting birds/bats. This approach to lighting should further minimize the attractiveness of the Project Area to nocturnal avian and bat migrants and thus reduce bird and bat mortalities (Gehring et al. 2009).

6.2. Specific Avoidance and Minimization Measures

The following measures will be implemented to avoid and minimize potential impacts to birds and bats:

- Electrocution
    - APLIC best practices will be followed to reduce potential for electrocution and collision.
    - Electrical collection lines will be buried.
- Collision
    - Tubular wind turbine towers will be used (not lattice towers) to minimize perching opportunities.
    - All guy wires on MET towers (if applicable) and aboveground transmission lines will be marked with avian flight diverters.
    - Wind turbine and MET tower lighting will comply with FAA requirements, including use of an FAA-approved ADLS, which will activate lights when an aircraft is detected in the vicinity of the Project. As such lighting that may attract birds will be reduced. Lighting of ancillary structures will be minimized and downward-facing lights and/or motion-sensing lights will be installed, as practicable, to minimize attracting birds/bats.
- Habitat Loss
    - Surface disturbance footprints will be limited to the extent feasible to minimize habitat disturbance.
    - Existing roads will be used wherever possible.
    - Badger Wind has voluntarily implemented the following avoidance and minimization measures for unbroken grasslands

- Results of the grassland field verification study (WEST 2021) were used to evaluate and inform project infrastructure siting decisions to avoid and minimize potential impacts to unbroken grassland habitat.
- The Project Area was revised to avoid large areas of intact unbroken grasslands.
- Focused leasing efforts on more actively managed agricultural lands.
- Placed access roads along section lines and within agricultural fields, to the extent practicable, to minimize further fragmentation.
- Sited the majority of wind turbines within agricultural lands.

  - Access roads have been sited outside of wetlands and waterbodies to the extent feasible. Where impacts are unavoidable, potential impacts to potential wildlife habitat, wetlands, and forested areas will be limited to the extent feasible.
  - Impacts to jurisdictional wetlands and waters will be limited to the maximum extent feasible.
  - The final site plan for the Project will exclude all WMAs, WPAs, PLOTs, and other protected federal and state lands.
  - The final site plan for the Project will avoid protected USFWS easements, including wetland and grassland easements. Coordination with the USFWS Kulm Office is ongoing.
  - Badger Wind is coordinating with USFWS and NDGF on potential offsets.
  - A Stormwater Pollution Prevention Plan will be developed and implemented to limit potential for erosion-related impacts to wildlife or sensitive habitats.

- Tree Removal

  - Removal of trees will be avoided to the extent feasible.
  - As appropriate, wooded areas will be checked for potential bat roosts prior to disturbance. If northern long-eared bat (NLEB) presence is detected, the following voluntary measures will be undertaken by Badger Wind in accordance with the USFWS 4(d) rule:

    - Tree removal can occur at distances greater than 0.25 miles (0.4 km) from a known, occupied hibernaculum.
    - Tree removal will avoid cutting or destroying known, occupied roost trees during the pup season (June 1 – July 31).

- Tree removal will avoid clear-cuts (and similar harvest methods – e.g., seed tree, shelterwood, and coppice) within 0.25 miles (0.4 km) of a known, occupied roost tree during the pup season (June 1 – July 31).

- Construction Measures
  - As appropriate, areas will be checked for nests and potential bat roosts prior to disturbance and/or surface disturbance, and tree removal will be completed outside the nesting season.
    - The following measures will be implemented to avoid and minimize potential impacts to sharp-tailed grouse leks:
      - Badger Wind has voluntarily sited all wind turbines away from known sharp-tailed grouse leks and within previously fragmented areas in coordination with USFWS and NDGF.
      - The above-ground transmission line was not sited within one mile of sharp-tailed grouse leks, to the extent practical.
      - The area disturbed for siting and construction activities will be minimized to the extent practical.
      - Off-road travel will be minimized and on-site speed limits on roads will be implemented
  - The following measures will be implemented to avoid and minimize potential impacts to nests:
    - Direct impacts to bird nests will be avoided to the extent feasible.
    - Roads and laydown areas will be located in previously disturbed areas, such as cultivated agricultural areas, to the extent practical.
    - Wind turbines were sited at least two miles from eagle nests and 0.25 mile from identified active, occupied raptor nests to the extent practical.
    - Construction activities will be limited in the vicinity of raptor nests during the construction season to the extent practical.
    - Construction activities will be initiated prior to the raptor nesting season, to the extent practical.
    - In cases where construction activity occurs in proximity to active nests, the nest activity will be monitored during the nesting season by a qualified biologist.
    - Where turbines cannot be sited away from a raptor nest, Badger Wind will consult with USFWS and NDGF to determine appropriate mitigation measures,

including potentially removing or relocating the nest outside of the nesting season.

- If a whooping crane is sighted in the Project Area during construction, construction will stop within one mile until the whooping crane has left the area.
- Temporary disturbance areas will be reclaimed, fertilized, and reseeded according to Natural Resource Conservation Service recommendations, unless otherwise specified by the landowner and approved by the North Dakota Public Service Commission, as detailed in the Badger Wind Reclamation and Weed Management Plan.

- Construction/Operational Measures
  - All contractors and sub-contractors will be required to attend wildlife awareness training.
  - Vehicles will be limited to roads or specific construction paths and will adhere to established on-site speed limits.
  - Good housekeeping measures will be implemented during the construction period and over the operational life of the Project (e.g., collection and disposal of trash, debris, and limiting unharvested crops, as feasible).
  - Wildlife carrion and/or roadkill identified by operations and maintenance (O&M) staff within the project footprint will be promptly removed and disposed of to avoid attracting scavenger wildlife or prey species.
  - Noxious weeds will be managed in accordance with applicable regulations and the Badger Wind Reclamation and Noxious Weed Management Plan.
  - Pesticide, herbicide, fertilizer, and other chemical treatments will be used in accordance with federal and state regulations and laws to minimize drift and other potential impacts on native habitat.
  - A Spill Prevention, Control, and Countermeasure (SPCC) Plan will be developed to outline spill response/containment and clean up procedures.
  - Post-Construction Mortality Monitoring (PCMM) will be conducted for at least one-year after construction. The PCMM program will include searches for bird and bat carcasses and will correct for potential searcher efficiency and carcass removal biases.
  - An adaptive management program will be implemented in accordance with this BBCS.

This BBCS is considered a living document and will be updated over the operational life of the Project as deemed necessary.

6.3. Bird and Bat Conservation Strategy

As part of due diligence efforts and the adaptive management program Badger Wind is implementing for the Project, this BBCS has been developed to document the studies completed to help understand potential risk to avian and bat species from the Project and measures to avoid and minimize these potential impacts, including conservation strategies that will be implemented over the life of the Project. The BBCS outlines the progression of the Project from the preliminary due diligence phases of site assessment through the field studies and discusses minimization measures implemented by Badger Wind based on the results of the Tier 1 desktop analysis through Tier 3 field studies. Tier 4 studies (**Section 7**) will be used to evaluate the efficacy of avoidance and minimization measures designed to limit potential impacts to birds and bats. This document is considered a living document and will be updated as deemed necessary.

7. TIER 4—POST-CONSTRUCTION STUDIES TO ESTIMATE IMPACTS

To substantiate the findings of the Tier 1 through Tier 3 assessment process, Badger Wind proposes to conduct PCMM studies, following completion of construction, to assess risk and estimate impacts to avian and bat species, including TES and other species of concern. The Tier 4 PCMM study design will incorporate guidelines presented in the USFWS Land-based WEG (USFWS 2012).

7.1. Monitoring Methods

Once the Project is operational, PCMM studies will be conducted for one year, as follows:

- Searches for birds and bats will occur in the spring, summer, and fall.
- Searches will occur on roads and pads at 33 percent of project turbines.
- Mortality rates will be calculated for both birds and bats on a per megawatt and per turbine basis, accounting for potential searcher efficiency and carcass removal biases.

Importantly, the complex task of determining fatality rate estimates will follow a rigorous approach to provide the best possible data for calculating these statistics. An annual report will be compiled upon completion of the mortality monitoring study. Items discussed will include:

- Standardized carcass searches of search plots at selected turbines.
- Combined searcher efficiency and carcass removal/persistence bias trials to estimate the probability that a carcass was available to be detected.

Estimates of project-related fatalities will be based on:

- Latest available estimator models (e.g., Generalized Mortality Estimator) (Dalthorp et al. 2018).
- Observed number of carcasses found during searches within the monitoring survey period for which the cause of death is either unknown or is probably project related.
- Measured rates of availability and detectability (by taxa size class).
- Area searched.

Generalized Mortality Estimator (GenEst) software (Dalthorp et al. 2018) or other appropriate estimator will be used to calculate estimates.

7.2. Reporting Mechanisms

The proposed avian and bat mortality monitoring studies will follow parameters set forth within a study plan completed prior to the start of monitoring. An annual report will be compiled detailing findings for the current year's mortality study. The annual report will be shared with the USFWS and NDGF and Badger Wind will coordinate with these agencies to determine if adaptive

management measures are warranted. Should operations staff or contractors confirm fatality of a species protected under the ESA or BGEPA, USFWS and NDGF will be notified within 24 hours. Key contacts for reporting avian and bat wildlife incidents, if applicable, are included in **Appendix C**.

7.3. Adaptive Management

This BBCS addresses the potential for "*significant adverse impacts*" (i.e., USFWS 2012) to species of concern and their habitats. Potential significant adverse impacts to a broad spectrum of wildlife resources have not been identified as a possible outcome of developing and operating the Project, and this BBCS was created to provide an efficient means of navigating through project operations. If significant adverse impacts are found to have occurred, adaptive management measures may be used to develop new measures to avoid, minimize, and mitigate these impacts and to monitor the efficacy of these measures. Federal and state wildlife agencies have not set potential impact threshold scenarios (e.g., species group per-megawatt collision mortality thresholds) that would qualify as significant adverse impacts in this region of North Dakota. However, certain scenarios, such as the discovery of a new eagle nest within the Project Area or the discovery of a fatality confirmed to be an ESA-listed TES or eagle species, will trigger agency coordination to assess whether adaptive management responses are warranted.

Similarly, population-level bird and bat effects and significant avian-bat mortality events (e.g., "mass mortality events") at the Project are not expected based on the analysis of Tier 3 study data as presented within this BBCS. A certain level of avian-bat fatality is expected at any modern wind energy generation facility (Arnett et al. 2008; Loss et al. 2013), and residual fatality events do not necessarily equate to significant adverse impacts, as described by USFWS (2012). This BBCS has laid out a comprehensive pathway by which Badger Wind has taken a multi-tiered approach toward reducing potential direct and indirect impacts to both birds and bats.

Relatively speaking "mass mortality events" at operational wind energy facilities remain rare events (e.g., Loss et al. 2013). The occurrence of abnormally large mortality events often have been associated with inclement weather conditions and deviations from facility lighting best management practices (Johnson et al. 2000; Kerns and Kerlinger 2004; American Bird Conservancy 2011). In the unlikely event of a mass fatality, the wind site manager will determine a best course of action regarding communication to appropriate agency personnel. Recurring mortality of species of concern or species susceptible to population-level impacts (see Beston et al. 2016) will also be considered when coordinating with appropriate agency personnel.

8. IMPLEMENTAION OF THE BADGER WIND PROJECT BBCS

8.1. Document Availability

This BBCS is subject to future revisions, as needed, and will be maintained by Badger Wind environmental staff. This BBCS will be kept on site throughout the operation of the Project.

8.1. Reporting

Any documented mortality of ESA-listed species or of either eagle species will be reported to the USFWS within 24 hours of discovery for the life of the Project. Badger Wind will communicate and coordinate with the USFWS and/or NDGF, as appropriate.

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FIGURES

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APPENDICES

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APPENDIX A

2019 AND 2022 IPAC ANALYSES

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APPENDIX B

SELECTED TIER 2 AND 3 BIRD AND BAT STUDY REPORTS FOR THE BADGER WIND PROJECT

YEAR 1 ACOUSTIC BAT MONITORING
YEAR 1 PRE-CONSTRUCTION AVIAN STUDIES
WHOOPING CRANE STOPOVER HABITAT ASSESSMENT
YEAR 2 ACOUSTIC BAT MONITORING
YEAR 2 PRE-CONSTRUCTION AVIAN STUDIES

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APPENDIX C

KEY CONTACTS

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IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

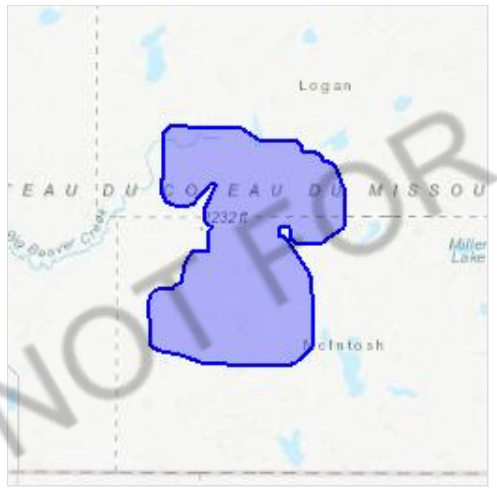
This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

NOT FOR CONSULTATION

Location

Logan and McIntosh counties, North Dakota



Local office

North Dakota Ecological Services Field Office

(701) 250-4481
(701) 355-8513

3425 Miriam Avenue
Bismarck, ND 58501-7926

http://www.fws.gov/northdakotafieldoffice/endspecies/endangered_species.htm

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

NOT FOR CONSULTATION

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information.
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS

NAME	STATUS
Northern Long-eared Bat Myotis septentrionalis No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9045	Threatened

Birds

NAME	STATUS
Piping Plover Charadrius melodus There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/6039	Threatened
Red Knot Calidris canutus rufa No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/1864	Threatened
Whooping Crane Grus americana There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/758	Endangered

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

NOT FOR CONSULTATION

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php

- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NOT FOR CONSULTATION

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)
American Bittern Botaurus lentiginosus This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/6582	Breeds Apr 1 to Aug 31
American Golden-plover Pluvialis dominica This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere

Black Tern Chlidonias niger This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/3093	Breeds May 15 to Aug 20
Bobolink Dolichonyx oryzivorus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Jul 31
Chestnut-collared Longspur Calcarius ornatus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Aug 10
Franklin's Gull Leucophaeus pipixcan This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Jul 31
Lesser Yellowlegs Tringa flavipes This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Marbled Godwit Limosa fedoa This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9481	Breeds May 1 to Jul 31
Nelson's Sparrow Ammodramus nelsoni This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 15 to Sep 5
Willet Tringa semipalmata This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 5

NOT FOR CONSULTATION

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be

used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

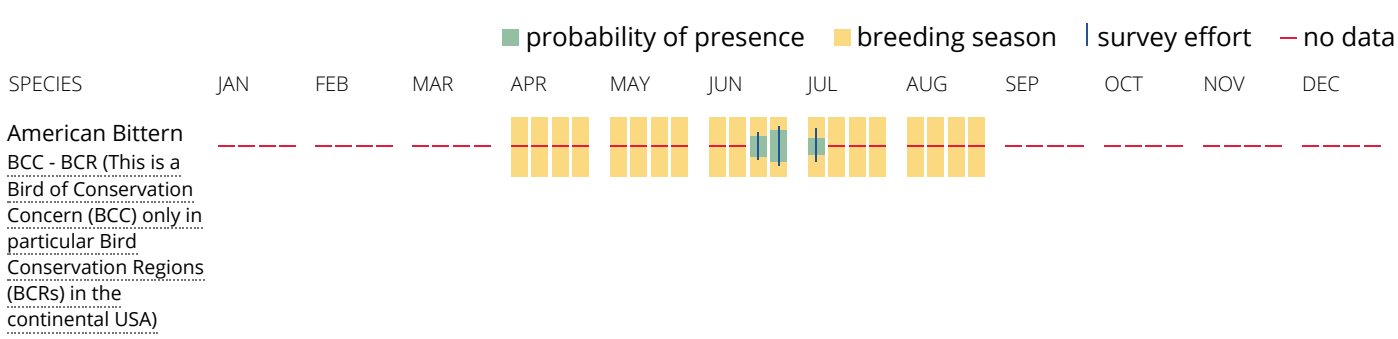
Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

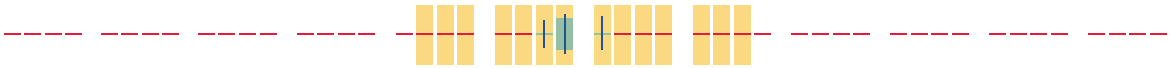


NOT FOR CONSULTATION

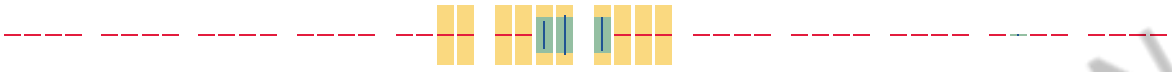
American Golden-plover
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



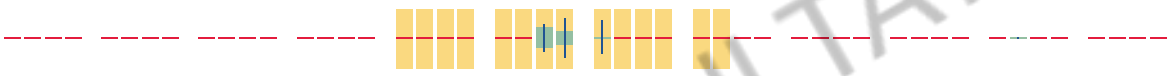
Black Tern
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)



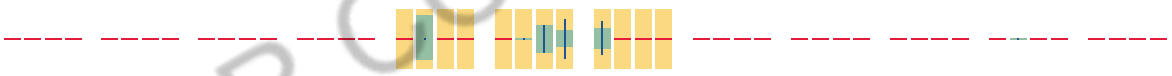
Bobolink
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Chestnut-collared Longspur
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



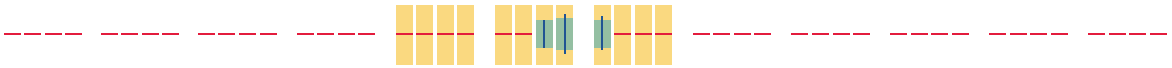
Franklin's Gull
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



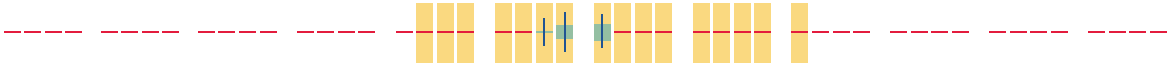
Lesser Yellowlegs
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Marbled Godwit
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

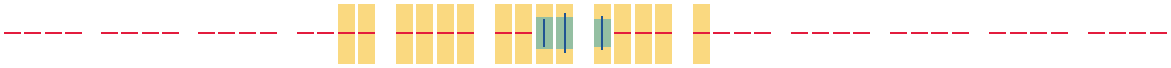


Nelson's Sparrow
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



NOT FOR CONSULTATION

Willet
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures and/or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

NOT FOR CONSULTATION

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ “What does IPaC use to generate the migratory birds potentially occurring in my specified location”. Please be aware this report provides the “probability of presence” of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the “no data” indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ “Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds” at the bottom of your migratory bird trust resources page.

NOT FOR CONSULTATION

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

This location overlaps the following National Wildlife Refuge lands:

LAND	ACRES
Kulm Wetland Management District	1,358.57 acres

(701) 647-2866
(701) 647-2221

MAILING ADDRESS
P.O. Box E
Kulm, ND 58456-0170

PHYSICAL ADDRESS
1 First Street Sw
Kulm, ND 58456-7112

https://www.fws.gov/refuges/profiles/index.cfm?id=62630

NOT FOR CONSULTATION

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

The area of this project is too large for IPaC to load all NWI wetlands in the area. The list below may be incomplete. Please contact the local U.S. Fish and Wildlife Service office or visit the NWI map for a full list.

FRESHWATER EMERGENT WETLAND

- PEM1A
- PEM1C
- PEM1Ax
- PEM1F
- PEM1Cx

FRESHWATER FORESTED/SHRUB WETLAND

- PFOA

FRESHWATER POND

- PABFh
- PABFx

RIVERINE

- R4SBC
- R5UBH

A full description for each wetland code can be found at the National Wetlands Inventory website

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

NOT FOR CONSULTATION

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

NOT FOR CONSULTATION

Location

Logan and McIntosh counties, North Dakota



Local office

North Dakota Ecological Services Field Office

(701) 250-4481
(701) 355-8513

3425 Miriam Avenue
Bismarck, ND 58501-7926

http://www.fws.gov/northdakotafieldoffice/endspecies/endangered_species.htm

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

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1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NOT FOR CONSULTATION

NAME	STATUS
Northern Long-eared Bat Myotis septentrionalis Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9045	Threatened

Birds

NAME	STATUS
Piping Plover Charadrius melodus There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/6039	Threatened
Red Knot Calidris canutus rufa Wherever found There is **proposed** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/1864	Threatened
Whooping Crane Grus americana There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/758	Endangered

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9743	Candidate

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

NOT FOR CONSULTATION

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

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NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES

	THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)
American Golden-plover Pluvialis dominica This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Black Tern Chlidonias niger This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3093	Breeds May 15 to Aug 20
Bobolink Dolichonyx oryzivorus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Jul 31
Chestnut-collared Longspur Calcarius ornatus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Aug 10
Franklin's Gull Leucophaeus pipixcan This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Jul 31
Golden-winged Warbler Vermivora chrysoptera This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8745	Breeds May 1 to Jul 20
Lesser Yellowlegs Tringa flavipes This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Marbled Godwit Limosa fedoa This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9481	Breeds May 1 to Jul 31
Willet Tringa semipalmata This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 5

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Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

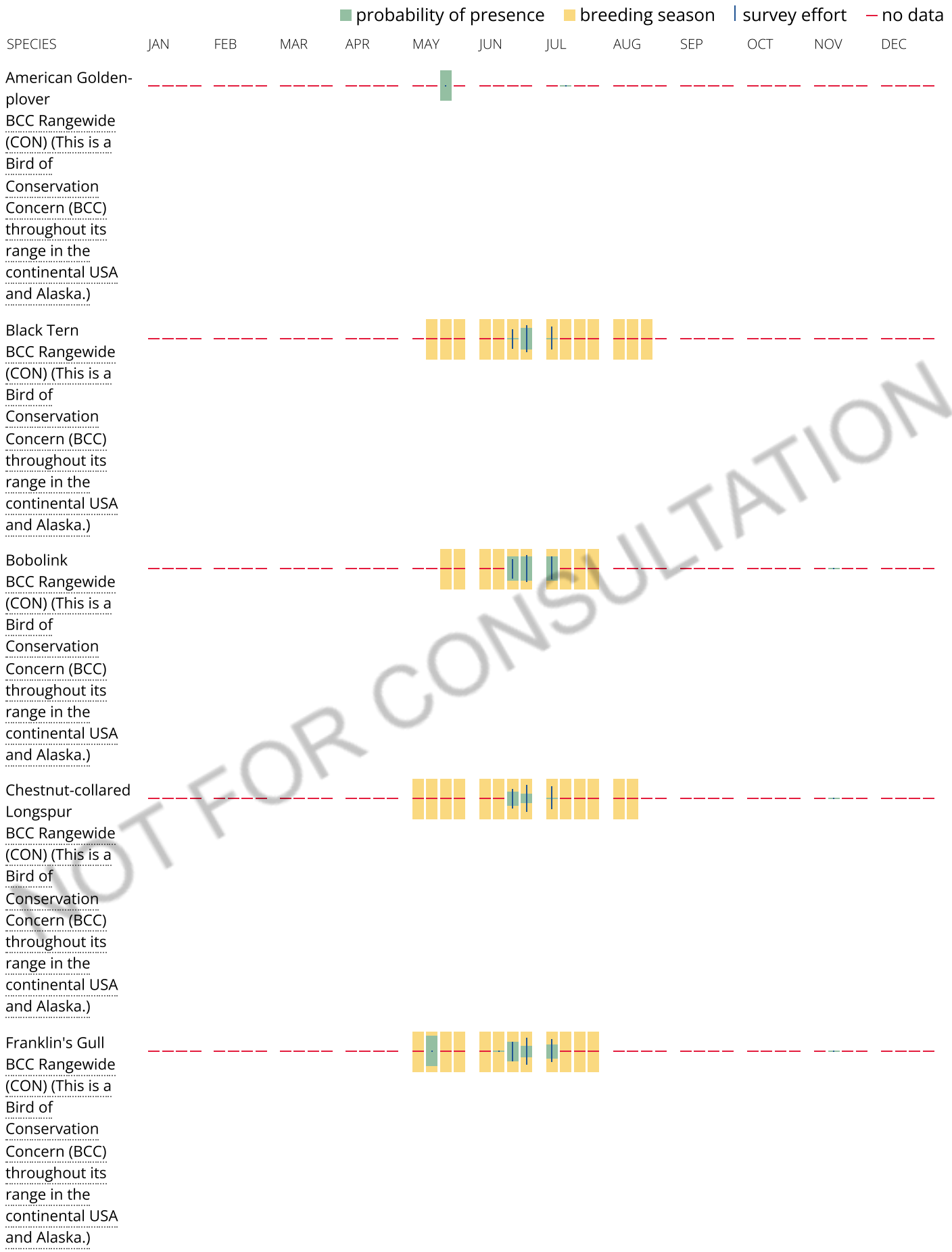
Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

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Golden-winged Warbler BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Lesser Yellowlegs BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Marbled Godwit BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Willet BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



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Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review.

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Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

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Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

This location overlaps the following National Wildlife Refuge lands:

LAND	ACRES
LOGAN COUNTY WATERFOWL PRODUCTION AREA	1,358.57 acres

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

The area of this project is too large for IPaC to load all NWI wetlands in the area. The list below may be incomplete. Please contact the local U.S. Fish and Wildlife Service office or visit the NWI map for a full list.

FRESHWATER EMERGENT WETLAND

- PEM1A
- PEM1/ABF

FRESHWATER POND

- PAB/EM1F
- PABFh
- PABFx
- PABF

LAKE

- L1UBG
- L2ABG

A full description for each wetland code can be found at the National Wetlands Inventory website

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

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The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

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Key Contacts

Company	Name	Title	Email	Phone
Badger Wind Environmental Operations Support	Sarah Aftergood	Director of Environmental Permitting	SARAF@orsted.com	(512) 230-2148
	Charles Smith	Senior Director, Development	CHASM@orsted.com	(402) 290-6500
	Francessca Martella	Project Developer	FRKEH@orsted.com	(347) 522-0931
Badger Wind Operations and Maintence	To Be Determined	To Be Determined	To Be Determined	To Be Determined
U.S. Fish and Wildlife Service (USFWS)	Heidi Riddle	Fish and Wildlife Biologist	heidi_riddle@fws.gov	(701) 355-8545
North Dakota Department of Game and Fish (NDGFD)	Elisha Mueller	Conservation Biologist	ekmueller@nd.gov	(701) 328-6348
	Sandra Johnson	Conservation Biologist	sajohnson@nd.gov	(701) 328-6382
Environmental Incident Reporting	North Dakota Department of Environmental Quality (DEQ)	N/A	N/A	(701) 328-5210
	Federal National Response Center (NRC) for the U.S. Environmental Protection Agency (USEPA) and the United States Coast Guard (USCG)	N/A	N/A	(800) 424-8802

FIGURES

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Badger Wind

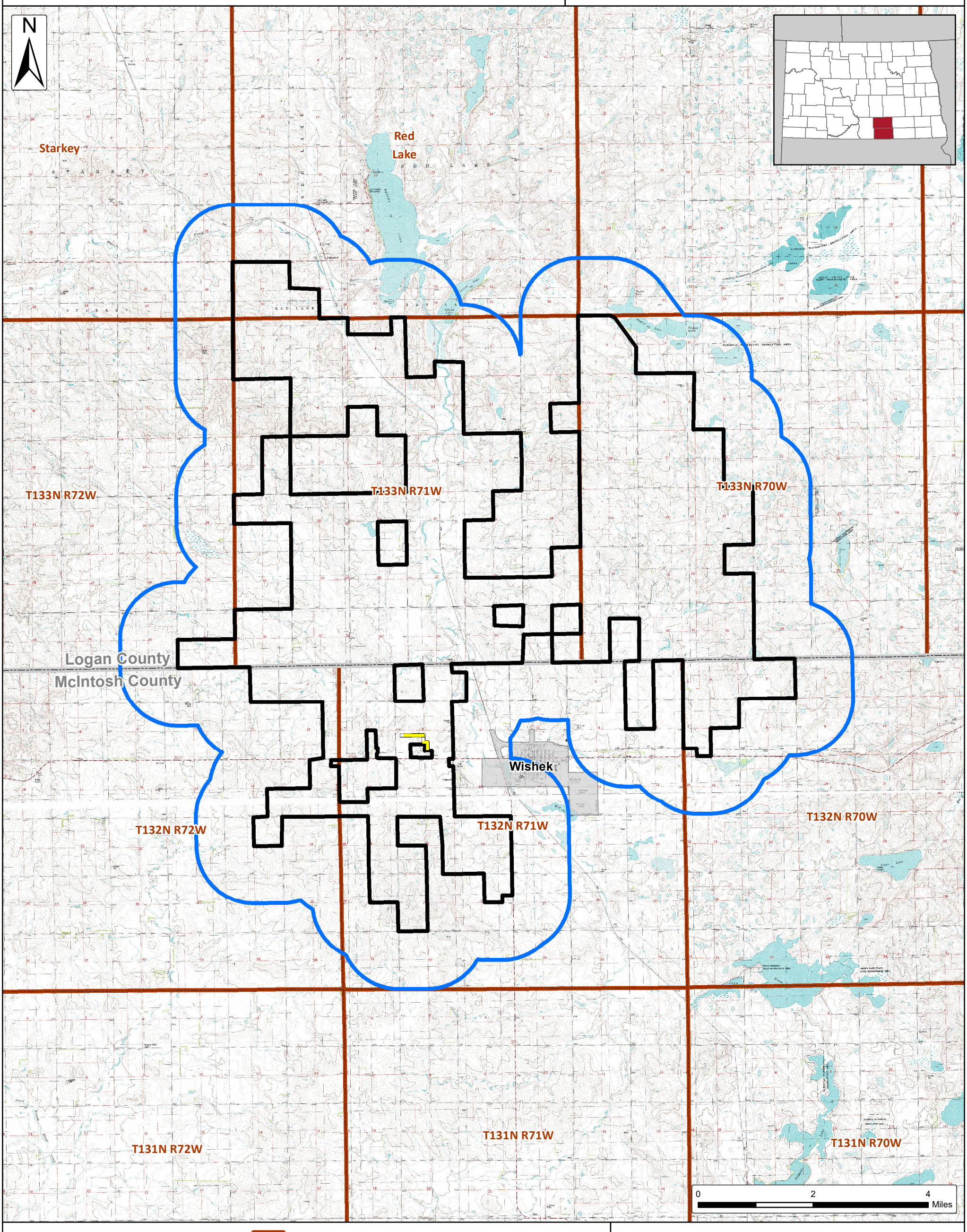
Figure 1. Site Location

Logan and McIntosh Counties, North Dakota

Client:
Badger Wind, LLC

Issue Date:
2/11/2022

Atwell, LLC Project:
19000785



Project Area
02/10/2022 (~31,514 acres)
1-mile Buffer
Proposed Transmission Line
Township
City/Village
Counties

Source: USGS Topographic Quadrangle

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Badger Wind

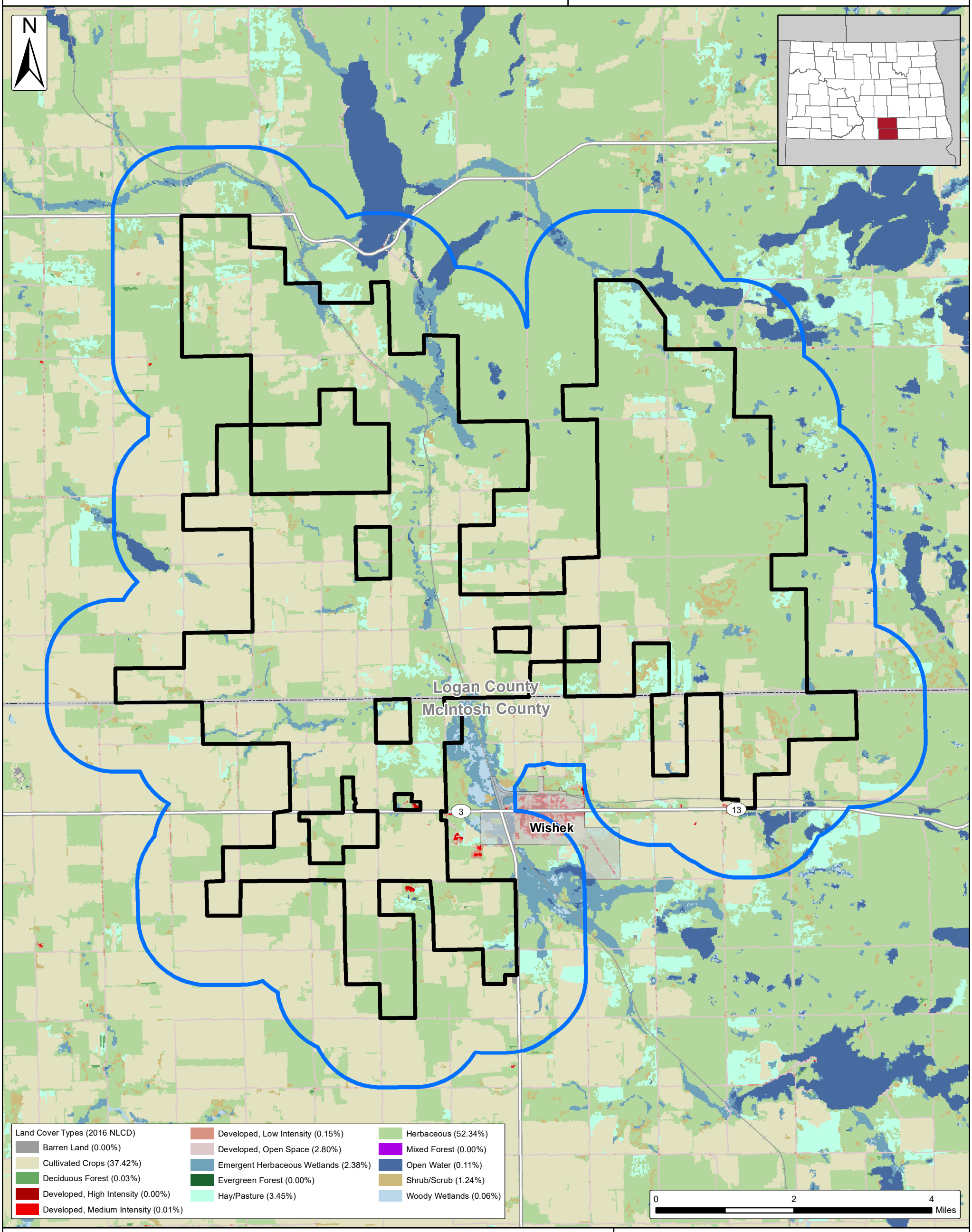
Figure 2. Land Cover Types within the Project Area

Logan and McIntosh Counties, North Dakota

Client:
Badger Wind, LLC

Issue Date:
2/11/2022

Atwell, LLC Project:
19000785



Project Area
02/10/2022 (~31,514 acres)

1-mile Buffer

City/Village

Counties

Source: National Land Cover Database (USGS, 2016)

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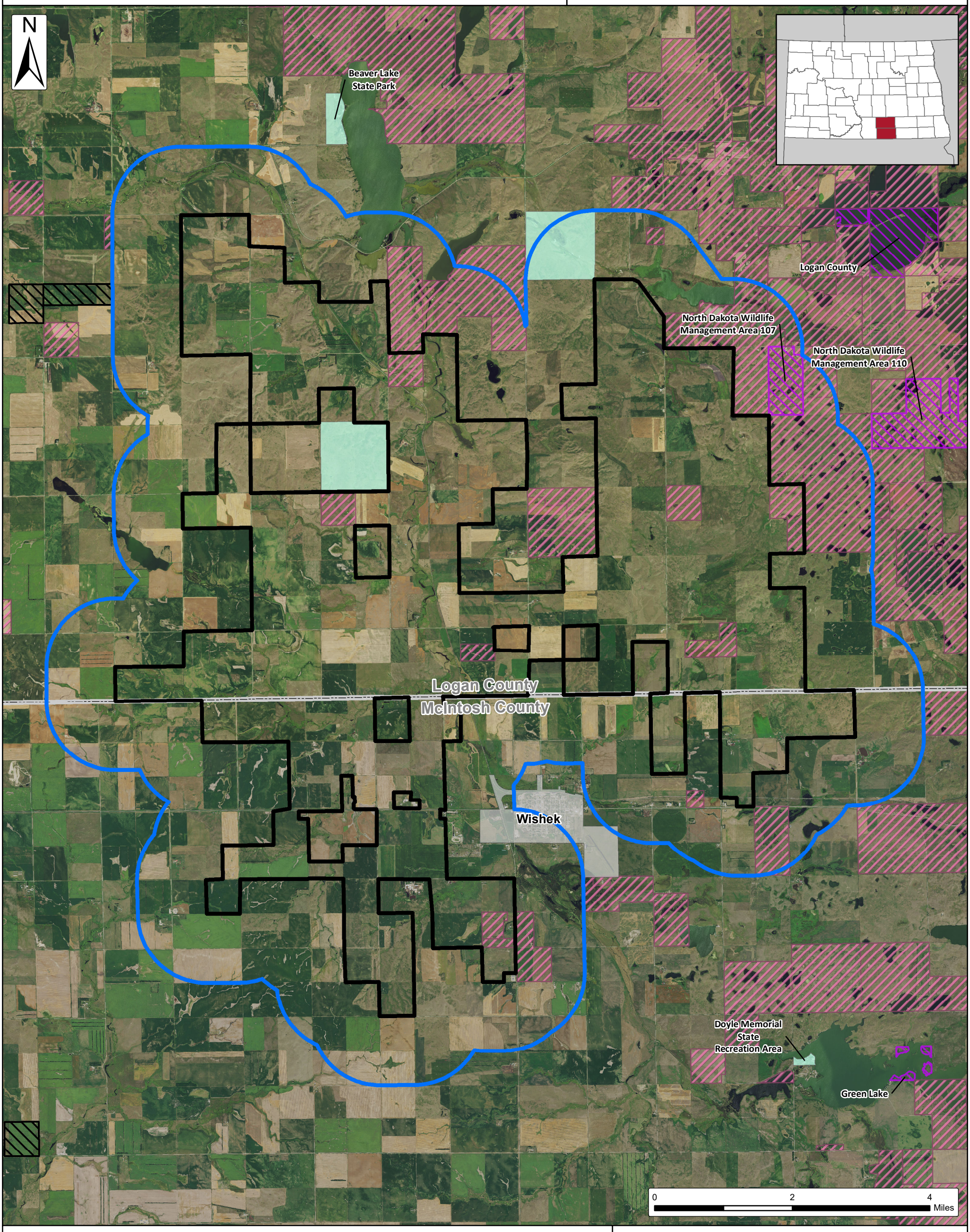
Figure 3. Public Lands

Logan and McIntosh Counties, North Dakota

Client:
Badger Wind, LLC

Issue Date:
2/11/2022

Atwell, LLC Project:
19000785



Project Area 02/10/2022 (~31,514 acres)
1-mile Buffer
PLOTS (NDGF)
North Dakota Wildlife Management Area
Waterfowl Production Area
State Lands
City/Village
Counties

Source: National Agriculture Imagery Program (2020)

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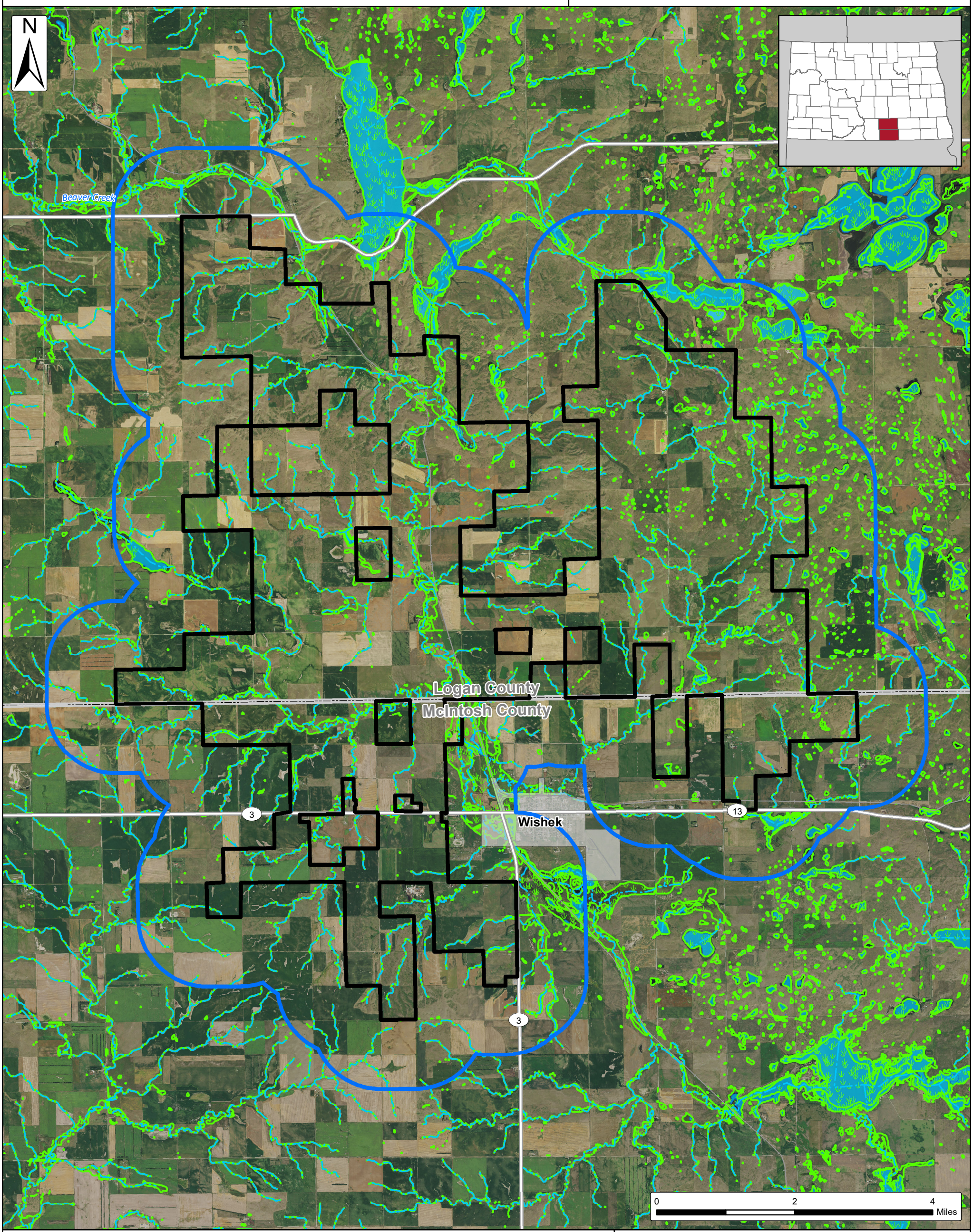
Figure 4. Water Resources

Logan and McIntosh Counties, North Dakota

Client:
Badger Wind, LLC

Issue Date:
2/11/2022

Atwell, LLC Project:
19000785



Project Area
02/10/2022 (~31,514 acres)
1-mile Buffer
Watercourse (NHD)
Waterbody (NHD)
Wetland (NWI)
City/Village
Counties

Source: National Agriculture Imagery Program (2020)

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Badger Wind

Figure 5. Site Evaluation

Logan and McIntosh Counties, North Dakota

Client:
Badger Wind, LLC

Issue Date:
2/11/2022

Atwell, LLC Project:
19000785

N

Napoleon
Wishek
Lehr
Logan County
McIntosh County
Emmons County
Hague
Zeeland
Venturia
Ashley
Long Lake Creek
Beaver Creek
South Branch Beaver Creek

0 2 4 Miles

Project Area
01/28/2022 (~31,590 acres)
Study Area (2019)
10-mile Buffer
Watercourse (NHD)
Wetland (NWI)
Critical Habitat

PLOTS (NDGF)
North Dakota Wildlife Management Area
Waterfowl Production Area
State Lands
Wetland Reserve Program
City/Village
Counties

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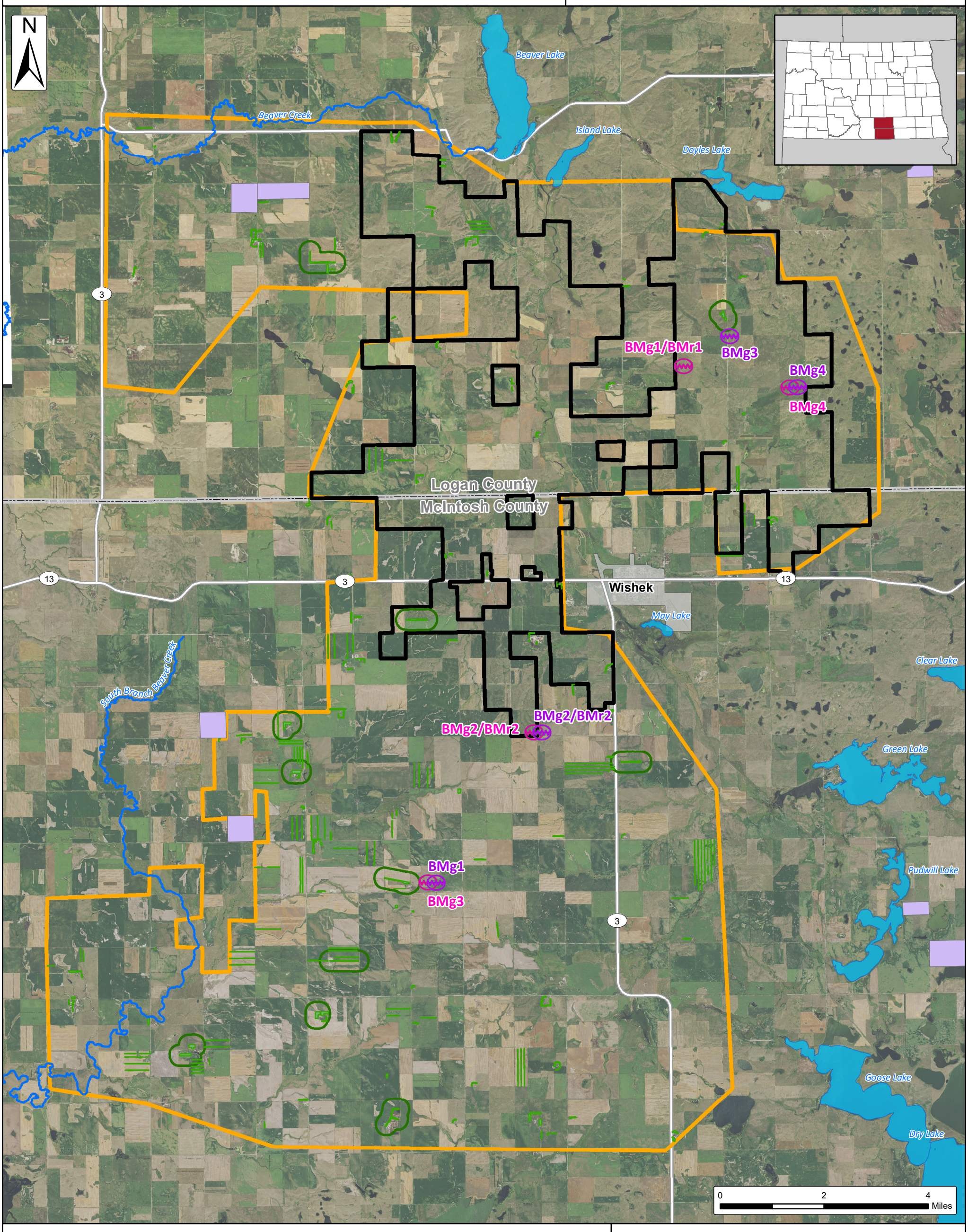
Figure 6. Bat Resources

Logan and McIntosh Counties, North Dakota

Client:
Badger Wind, LLC

Issue Date:
2/11/2022

Atwell, LLC Project:
19000785



Project Area
02/10/2022 (~31,514 acres)

Study Area (2019)

City/Village

Counties

Bat Habitat

Forested Areas Greater than 5 Acres and Connective Woodlots 1,000-foot Buffer

Major Watercourse (NHD)

Waterbody (NHD)

Acoustic Monitor (2019)

Acoustic Monitor (2020)

Source: National Agriculture Imagery Program (2020)

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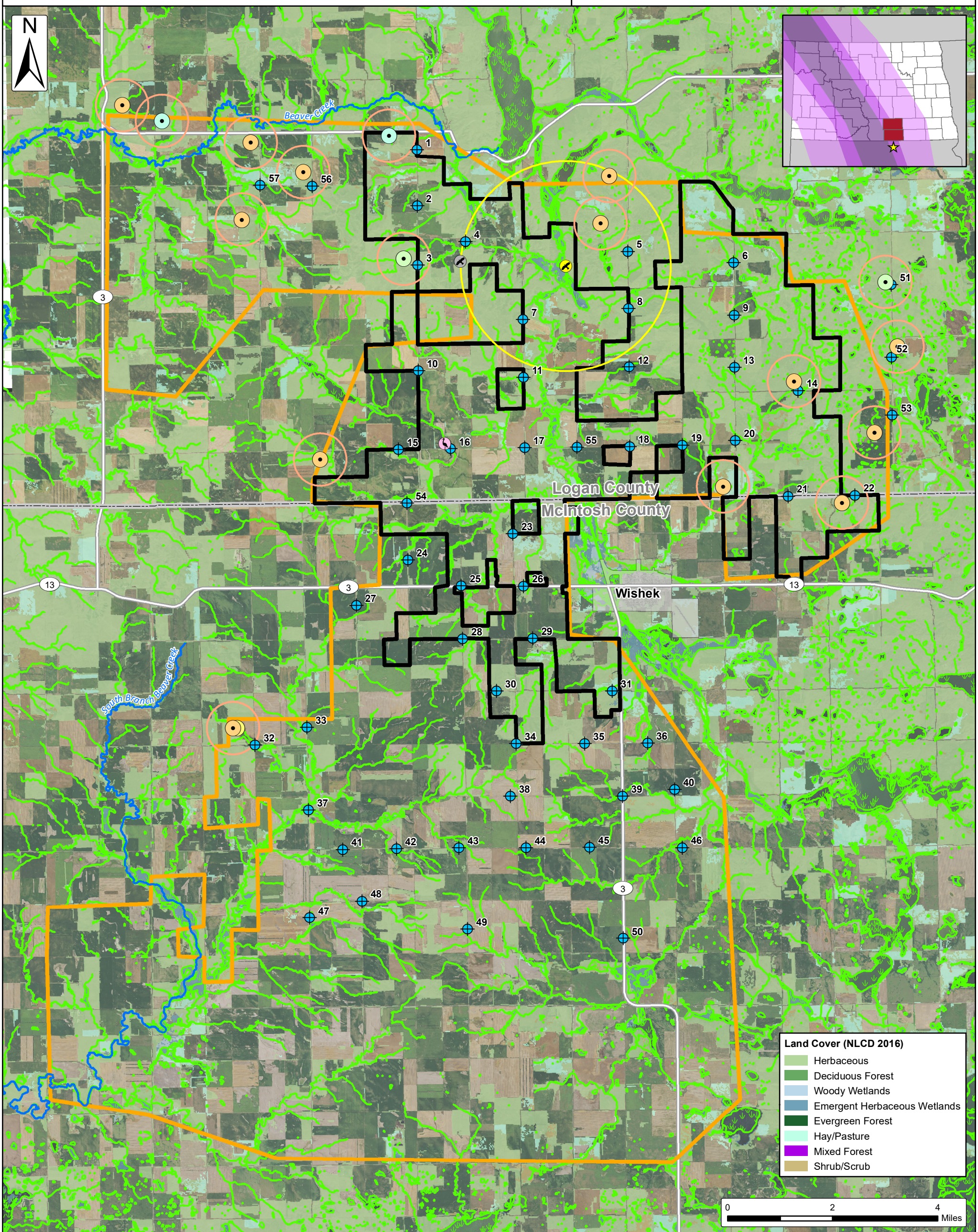
Figure 7. Avian Resources

Logan and McIntosh Counties, North Dakota

Client:
Badger Wind, LLC

Issue Date:
2/11/2022

Atwell, LLC Project:
19000785



Confirmed Lek (2019)
Possible Lek (2019)
Confirmed Lek (2020)
Possible Lek (2020)
Lek 0.5-mile Buffer
Whooping Crane Sighting (2020)

Bald Eagle Nest (In-Use)
Bald Eagle Nest (Alternate Site)
Bald Eagle Active Nest 2-mile Buffer
Major Watercourse (NHD)
Waterbody (NHD)
Wetland (NWI)
Avian Point Count Location

Stations 27 and 28 replaced with 54 and 55 in August 2019.
Stations 35 and 36 replaced with 56 and 57 in May 2020.

Project Area
02/10/2022 (~31,514 acres)
Study Area (2019)
City/Village
Counties

Whooping Crane Migration Corridor (USFWS)
50%
75%
95%

Source: National Agriculture Imagery Program (2020)

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Badger Wind

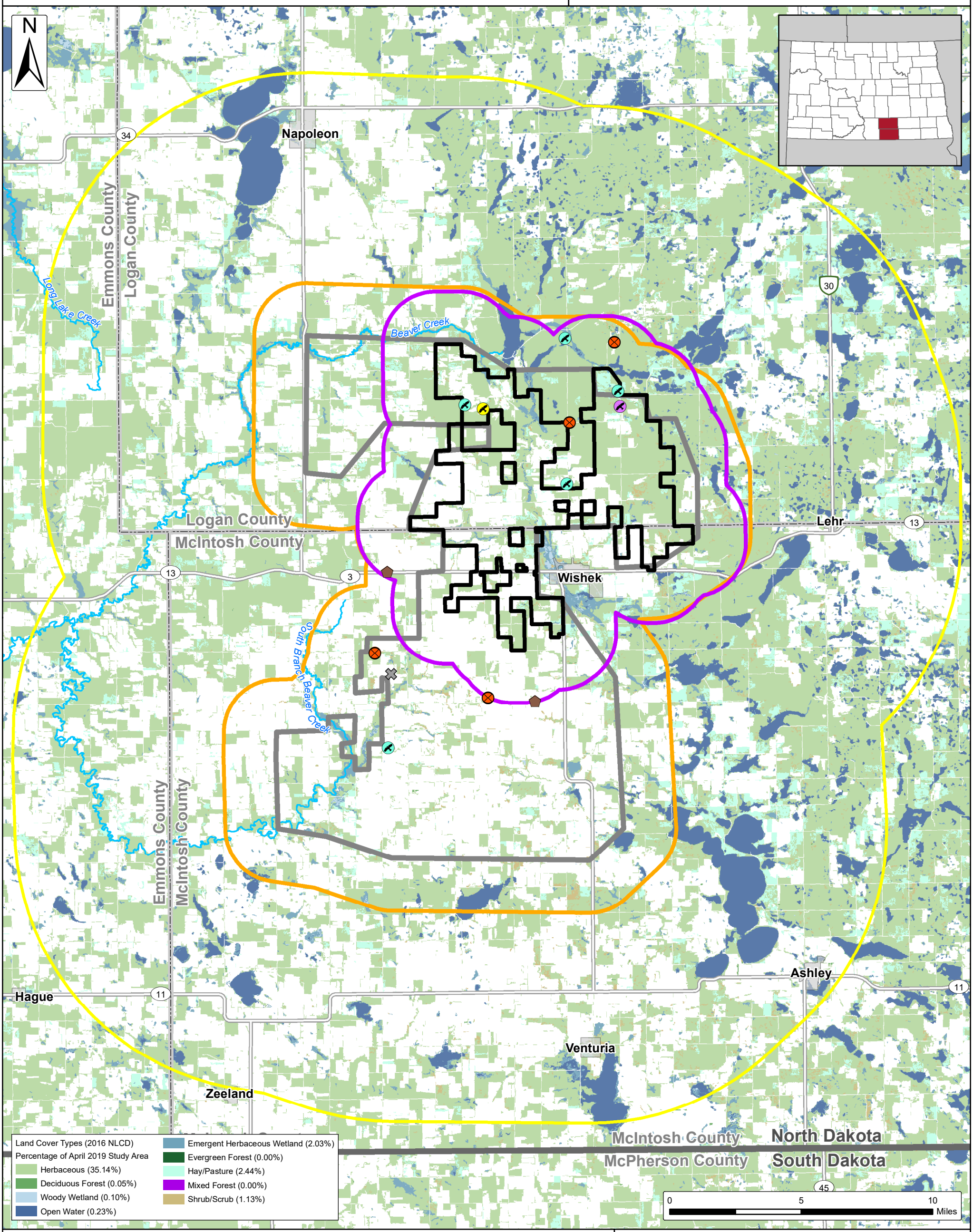
Figure 8a. Year 1 Eagle and Raptor Nest Survey Results

Logan and McIntosh Counties, North Dakota

Client:
Badger Wind, LLC

Issue Date:
2/11/2022

Atwell, LLC Project:
19000785



Raptor Nests Identified during Year 1 Surveys
- Bald Eagle, In-Use
- Ferruginous Hawk, In-Use
- Great Horned Owl, In-Use
- Red-tailed Hawk, In-Use
- Swainson's Hawk, Nest Building
- Unknown, Not Occupied

- Major Watercourse (National Hydrography Dataset)
- Project Area 01/28/2022 (~31,590 acres)
- Project Area 2-mile Buffer
- Study Area (2019)
- Raptor Nest Survey Area (2-mile Buffer)
- Eagle Nest Survey Area (10-Mile Buffer)
- City/Village
- County
- State Boundary

SOURCE: USGS NATIONAL LAND COVER DATABASE (NLCD) 2016

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Badger Wind

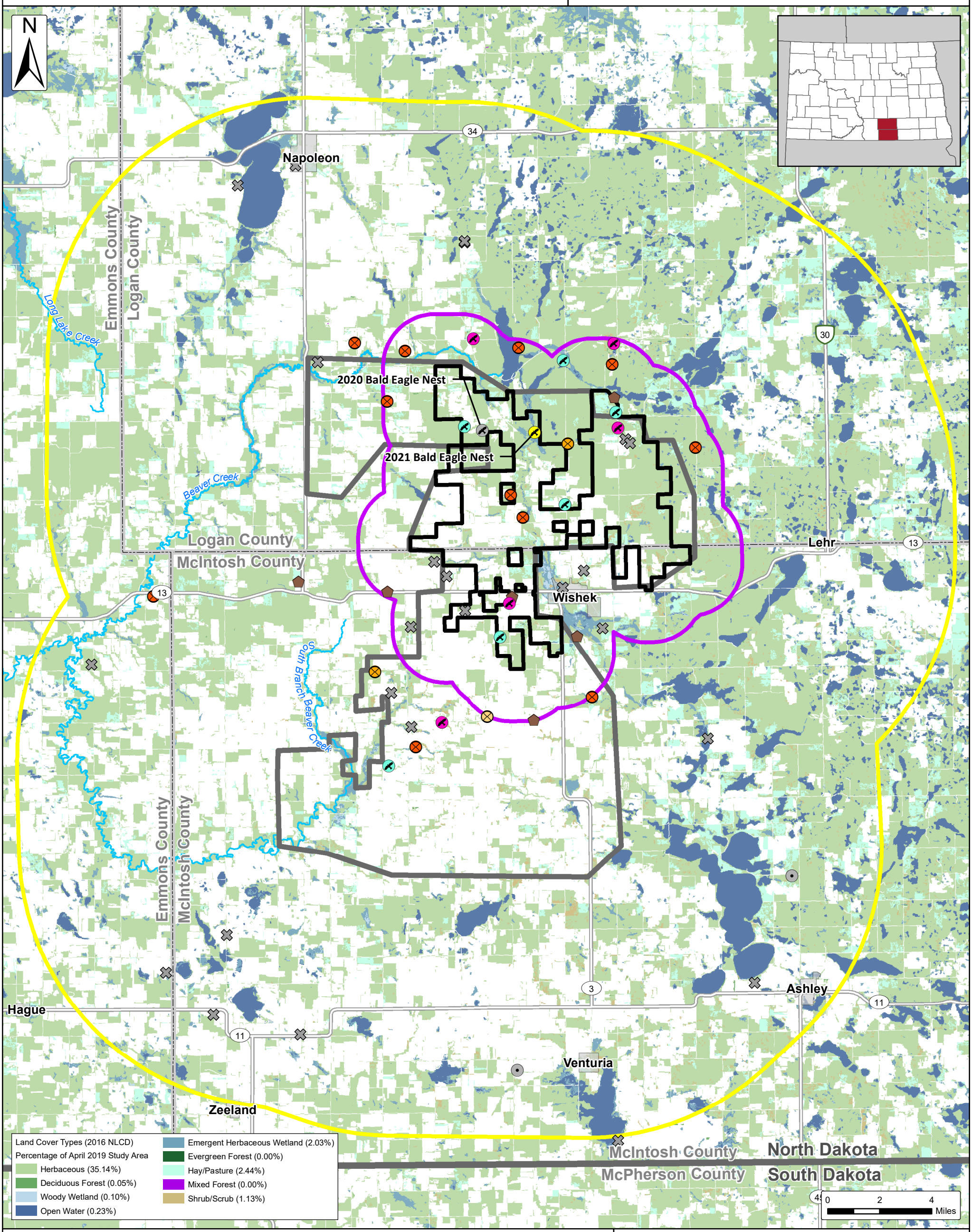
Figure 8b. Year 2 Eagle and Raptor Nest Survey Results

Logan and McIntosh Counties, North Dakota

Client:
Badger Wind, LLC

Issue Date:
2/11/2022

Atwell, LLC Project:
19000785



Raptor Nests Identified during Year 2 Surveys

- Bald Eagle, In-Use
- Bald Eagle, Unoccupied*
- Ferruginous Hawk, In-Use
- Great Horned Owl, In-Use
- Red-tailed Hawk, Missing
- Red-tailed Hawk, In-Use
- Red-tailed Hawk, Status Unknown
- Swainson's Hawk, In-Use
- Unknown raptor, In-Use
- Unknown raptor, Status Unknown

- Major Watercourse (NHD)
- Project Area 02/10/2022 (~31,514 acres)
- Project Area 2-mile Buffer
- Study Area (2019)
- Eagle Nest Survey Area (4/15/2019 10-mile Buffer)

- City/Village
- County
- State Boundary

* This bald eagle nest was occupied during year 2 raptor nest surveys but went missing prior to spring 2021 point count surveys. The 2020 and 2021 bald eagle nests indicated on the map are believed to belong to the same nesting territory.

Source: National Land Cover Database (USGS, 2016)

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Appendix I

Badger Wind Reclamation and Weed Management Plan

Badger Wind, LLC
February 2022

BADGER WIND
RECLAMATION AND WEED MANAGEMENT PLAN

Prepared for

Badger Wind, LLC
401 N. Michigan Avenue, Suite 501
Chicago, IL 60611

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ATWELL

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1 INTRODUCTION

This document includes reclamation and weed management plans developed in support of the proposed Badger Wind, LLC (Badger Wind) wind energy conversion project (Project) in Logan County and McIntosh County, North Dakota.

The Project would comprise a nameplate capacity of up to 251.6 megawatts (MW). This would be accomplished by construction and operation of up to 74 wind turbines within an approximately 55,745-acre Project Area. The Project is bisected by the Logan and McIntosh County line, in south-central North Dakota, near the City of Wishek. Project infrastructure includes turbines, access roads, a collector substation, collection lines, a transmission line, meteorological evaluation towers (MET towers), an Aircraft Detection Lighting System (ADLS) tower, and an operation and maintenance (O&M) facility. Crane walk paths will be employed during Project construction.

2 RECLAMATION PLAN

2.1 INTRODUCTION

The objectives for this reclamation effort are to:

- Reclaim areas affected by surface-disturbing activities to as near as practicable to the conditions as it existed prior to the beginning of Project construction
- Prevent soil and water erosion on the Project site
- Prevent the introduction and spread of noxious weeds on the Project site.

The Project Area currently supports a matrix of grasslands, pastures, hayfields, and croplands. Because the duration of construction is expected to be relatively short, Badger Wind's revegetation approach places a strong emphasis on conservation and the re-use of existing site resources such as topsoil. Strategic implementation of revegetation activities will have the goal of minimizing changes to native soil conditions as well as the number of equipment passes through the project area to accomplish successful revegetation. Revegetation will include seeding with vegetation similar in composition to surrounding areas and free of noxious weeds. Revegetation with appropriate seed mix will be conducted immediately upon completion of the project installation.

Fertilizer and soil amendments will not be applied. Soil that is currently supporting native vegetation or agricultural crops within the Project Area indicates that sufficient soil nutrient content is present. Even slow-release organic fertilizers can stimulate weed establishment, and in keeping with the strategy of changing native soil conditions the least amount possible, soil amendments are not warranted in this situation. However, application of granular humate and an endomycorrhizal inoculum are recommended to increase the potential of local topsoil to support germination and establishment of seeded plant species.

The methods for accomplishing this approach are described below.

2.2 TOPSOIL CARE

Living organisms in healthy topsoil improve the ability of native plants to capture and uptake water and nutrients, establish, and reproduce. Preservation of soil structure and organisms during construction enhances revegetation success. Topsoil will be treated with care, as a resource for successful vegetation. Topsoil will be salvaged, segregated from subsoil, stored, and replaced as described below.

- A Public Service Commission (Commission) third party construction inspector will be present on the Project site during initial topsoil removal/segregation to observe that topsoil is being properly removed and kept segregated from subsoil.
- Badger Wind will establish the date and time for the third party construction inspector's topsoil removal oversight in the preconstruction conference.
- To the extent practicable, erosion and sediment control measures shall be installed prior to any required grading activities. At all times during Project construction, all temporary and permanent erosion and sediment control measures shall be maintained and repaired as needed to prevent accelerated erosion on the site and any adjacent properties.
- All topsoil to a depth of up to 12 inches, or to the depth of cultivation, whichever is greater, will be salvaged from all areas of temporary and permanent surface disturbance. This should include any rooted herbaceous plants, roots, shrub twigs, and branches that are present.
- Unless otherwise approved by the Commission, topsoil must be removed before topsoil freezes in the late fall/ early winter to the point that frost inhibits proper soil segregation.
- Any area on which excavated subsoil will be placed must be first stripped of topsoil, to the specified depth.
- Topsoil will be carefully stripped to the specified depth and segregated from subsoil.
- Stripped and segregated topsoil will be stockpiled for storage. No topsoil shall be removed from the site. Topsoil stockpiles must not be placed in natural drainages and will be protected from water erosion and compaction by heavy machinery.
- Runoff from stockpiled topsoil areas will be controlled to prevent erosion.
- For collection line trenches, topsoil will be stripped to the specified depth, including any rooted herbaceous plants, roots, shrub twigs, and branches that are present, and will be bladed from Project disturbance areas into windrows at each outer edge of temporary construction limits. Topsoil windrows will be constructed to lie parallel to slopes.
- After backfilling excavation areas with subsoil is complete, any excess subsoil must be placed over the excavation area, blending the grade into existing topography.
- Topsoil will be redistributed after subsoils have been integrated into the disturbed areas. This surface will be rough graded to provide a suitable base for topsoil. Topsoil will be evenly distributed and lightly raked or harrowed to provide an appropriate surface to be seeded and/or planted.

2.3 CONSTRUCTION SEQUENCING

Sequence of Project construction activities will generally be as follows, and may vary depending on Project constraints:

1) Grading of access roads and installation/replacement of culverts, as necessary
2) Construction of access roads
3) Preparation of crane walk paths
4) Trenching for collection lines, including boring protected areas such as wetlands, waterways, and other natural areas
5) Construction/installation of Project infrastructure, including establishment of permanent, non-vegetated surface cover, as necessary
6) Temporary reclamation in areas with anticipated further surface disturbance
7) Final reclamation of all temporary disturbance areas not included in permanent infrastructure footprints.

2.4 PREVENTION OF SOIL LOSS DUE TO WATER EROSION

- A National Pollutant Discharge Elimination System (NPDES) permit, Storm Water Pollution Prevention Plan (SWPPP), and associated best management practices (BMPs) will be developed and implemented prior to the commencement of construction. Erosion and sedimentation will be reduced through the use of BMPs, which may include mulching, hydroseeding, erosion control blankets, silt fence installation, jute matting, revegetation, and/or interim reclamation.
- Silt fences are used to intercept sediment and sheet flow from disturbed areas during construction. They shall also be used for perimeter control across the site. Silt fences should be placed prior to any site grading and regularly checked to ensure that runoff has not eroded a channel beneath the fence. The fence itself should also be checked for tears and sagging that can occur during construction activities. Regular maintenance shall be provided at a minimum of once every 14 days or when deficiencies in the fencing are found.
- Straw bales are used to intercept and filter sediment in the runoff and prevent it from entering local drainage systems. Straw bales shall be installed prior to any site grading and shall remain in place until the upstream disturbed area is stabilized.
- Surface flows will be directed away from cut-and-fill slopes and into ditches that discharge into natural drainages.

2.5 PREVENTION OF SOIL LOSS DUE TO WIND EROSION

- Fugitive dust emissions resulting from grading activities and/or wind shall be controlled using the best available control technology as defined by the North Dakota Department of Health at the time of grading.
- Sediment control logs (which may act as perimeter control if silt fencing is not used) shall be installed prior to any up-gradient land-disturbing activities.

2.6 RECLAMATION SOIL PREPARATION

- Following the completion of construction, impacted soils that will not continue to be used for operation of Project facilities will be restored to pre-construction condition in accordance with landowner lease agreements and Commission requirements.
- Subsoil to be used as backfill will be spread out around the construction areas, graded in some locations to drain away from turbines or other infrastructure, and topped with gravel or topsoil as appropriate. As part of the post-construction reclamation efforts, compacted soils in areas where Project infrastructure is not located will be ripped with a grader, spread with topsoil stockpiled during construction, and revegetated by seeding. Depending upon the timing of reclamation activity, these areas may be reseeded with temporary cover crops or planted with row crops.
- At the end of the Project's life, Project facilities will be decommissioned, and soils will be returned back to agricultural or other desired use in accordance with the Commission's requirements and the Project's Decommissioning Plan.

2.7 SEEDING PREPARATION AND SEEDING

Successful site reclamation via seeding is most successful when the following steps are taken, in order described.

- Temporary soil stabilization measures shall be applied as quickly as reasonably possible to disturbed areas. Permanent soil stabilization measures shall be applied to disturbed areas as quickly as reasonably possible after final grade is reached on any portion of the site.
- Any areas severely compacted by machinery and equipment during construction should be ripped by tractor or backhoe to loosen soils and allow for water infiltration and root growth.
- Disturbed surface areas will be final-graded to match previous conditions and tied into new parking and road areas in a natural grade, as possible.

- Topsoil and composite plant debris will be redistributed within the graded areas to be revegetated after rough grading to provide a suitable base for areas that will be seeded.
- Following seed bed preparation, soil surface stabilization will comprise seeding with a seed mix appropriate to site-specific conditions:
  - a temporary cover crop when additional surface-disturbing activities are anticipated;
  - a pasture seed mix, developed in coordination with local Natural Resource Conservation Service office (NRCS) and landowners (subject to Commission approval, as needed); or
  - a mix of native grass and forb species common to natural local grasslands, developed in coordination with local NRCS office and landowners (subject to Commission approval, as needed).
- Per NRCS recommendations, as necessary, temporary soil stabilization shall consist of seeding with Canada wildrye (*Elymus canadensis)* at 40 pounds pure live seed (PLS)/acre. Temporary seeding areas will be hydromulched with wood fiber/tackifier at one ton/acre.
- Following soil surface preparation, areas of permanent reclamation will be drill seeded with the appropriate seed mix at the specified seeding rate. Smaller areas may also be broadcast seeded at double the seeding rate used for drill seeding.
- Seeding areas will be hydromulched with wood fiber with tackifier at a rate of one ton/acre. Alternative acceptable mulching will be 1.5 tons of weed-free straw per acre, mechanically or hand crimped into topsoil.

3 WEED MANAGEMENT PLAN

3.1 INTRODUCTION

This weed management plan provides general information on an integrated approach to noxious weed management during the construction and operation of the Project.

3.2 PLAN GOALS

Noxious weeds and other invasive plant species pose an increasing threat to native ecosystems, croplands, and other plant communities. Invasive and noxious weeds are not only a problem on disturbed sites, but they can also easily become established within relatively undisturbed ecosystems. Because they have few, if any, natural predators, competitors, or pathogens, the growth of invasive and noxious weeds can increase unchecked, removing moisture, nutrients, and sunlight from surrounding plant communities. In addition, invasive and noxious weeds can alter ecosystem structure and function, threatening wildlife biodiversity and ecosystem integrity.

The overall goal of this plan is to describe weed management practices to prevent and control the spread of noxious weeds and other nonnative invasive plant species on lands owned, leased, and managed by Badger Wind.

3.3 STATE AND COUNTY NOXIOUS WEED LAW AND POLICY

North Dakota Law (NDCC § 4.1-47-02) requires every person to do all things necessary and proper to control the spread of noxious weeds. The North Dakota Department of Agriculture coordinates the efforts of county and city weed boards and state and federal land managers to implement integrated weed management programs. The agricultural commissioner is required to create and maintain a list of noxious weeds within the state. There are currently 13 noxious weeds on the list that require management, as follows:

- Absinth wormwood (*Artemisia absinthium*)
- Canada thistle (*Cirsium arvense*)
- Dalmatian toadflax *(Linaria genistifolia* spp. *dalmatica*)
- Diffuse knapweed (*Centaurea diffusa*)
- Houndstongue (*Cynoglossum officinale*)
- Leafy spurge (*Euphorbia esula*)
- Musk thistle (*Carduus nutans*)

- Palmer amaranth (*Amaranthus palmeri*)
- Purple loosestrife (*Lythrum salicaria*, *Lythrum virgatum*, and all cultivars)
- Russian knapweed (*Centaurea repens*)
- Salt cedar or tamarisk (*Tamarix* spp.)
- Spotted knapweed (*Centaurea maculosa*)
- Yellow toadflax (*Linaria vulgaris*)

Counties have the option to add additional weeds to the noxious weeds list for enforcement within their jurisdiction. Logan County designates black henbane (*Hyoscyamus niger*) as a noxious weed. McIntosh County has no additional noxious weed designations.

3.4 WEED MANAGEMENT STRATEGY

Weed management is a constant and iterative process that accommodates the specific ecological conditions, weed species, and land uses of a site. To control activities of extensive existing populations requires an integration of techniques that will be implemented for multiple years. However, in the meantime, small, incipient populations will be eradicated to prevent them from expanding and requiring additional, large management efforts.

Weed management must be accomplished through several integrated actions that address the varied aspects of weed incidence, occurrence, and management. These actions are discussed in the context of their application at the Project in greater detail below:

- Prevent new weed infestations with scrupulous use of best land management practices and increased public awareness
- Monitor site for incipient weed infestations
- Detect and eradicate small and incipient weed populations
- Prioritize and rigorously manage large weed populations emphasizing integrated weed management methods with the intention of containment and control.

3.4.1 Prevent New Weed Infestations

Prevention is a proactive control measure with long-term ecological and economic benefits. If new weed populations are prevented from establishing, ecological health is encouraged, and future control actions are considerably minimized.

Weed prevention can be addressed by**:**

- Limiting opportunities for weed propagules (e.g., seeds, shoots, root fragments) to enter the property
- Reducing negative human impacts to existing vegetation
- Maintaining healthy and vigorous plant communities that can exclude weeds, should they enter the local system.

Many weeds enter a location via seeds or other propagules in contaminated construction and fill material, sand and gravel, or topsoil. Weeds can also be transported from colonized areas to weed-free areas through maintenance activities. Weeds and plant propagules can be transported on vehicles or human workers.

Human visitors may also inadvertently transport problem plant species on vehicles, clothing, shoes, and dogs. Human transportation corridors such as roads and trails are often the point source of weed infestations into natural plant communities. Making these areas a high priority for monitoring and spot treatment will reduce the chance that additional weeds that enter as point infestations will spread into adjacent areas and become large management issues.

Some noxious weeds have been known to enter new sites as planted ornamentals in landscaped areas and gardens. These types of plants are usually well adapted to local conditions, which make them appealing to landscapers and gardeners. However, these characteristics also allow some plant species to escape cultivation, naturalize, and spread in the surrounding open lands. Raising the awareness of residents to this problem may prevent similar infestations in the future. The invasive nature of any ornamental plants used in future site landscaping should be investigated before planting.

Several sources have noted that thick cover of a healthy, strongly competing native plant community can be an important component of weed control. Management practices that minimize disturbance to native plant communities reduce opportunities for weeds to invade the site. This includes careful use of off-road vehicles and avoiding soil disturbances in natural vegetation areas whenever possible.

Careful revegetation of surface disturbed areas will also help prevent new weed infestations by using certified weed-free fill, topsoil, seeds, mulch, and vigorous native plant materials. A seed mix of native grasses found to grow well on, or in the vicinity of the Project, will be developed in coordination with the NRCS for revegetation of disturbed areas.

Construction activities for the Project will be conducted in a manner that supports the goal of preventing new weed infestations. The following best management practices will be employed during construction and will be included in the Final Plat and plans for site grading, drainage, and erosion control as notes:

- Other than vehicles essential to construction and maintenance activities, no motorized vehicles will be allowed off-road on open space or any other common property.
- Soil from areas with noxious weed populations will not be removed or introduced to the construction site, to avoid transport of weed seeds or other propagules.
- Construction activities will not be conducted such that noxious weeds are disturbed when they bear mature seed heads (to prevent release of seed into other areas). Or, before construction activities in such areas the weed plants will be cut or mown, and the material removed and disposed of before plants set seed.
- All earth moving equipment will be washed at a controlled location prior to being moved onto the Project site.
- All seed, soil, and mulch imported onto the Project site will be certified as weed-free.
- All excavations, placement of fill soil, or other areas of surface disturbance will be revegetated with appropriate site seed mix within 14 days of completion of grading, in order to facilitate establishment of desirable vegetation and discourage weed infestation.

3.4.2 Monitor for Incipient Weed Populations

Studies have shown that most weed infestations begin as small points of one or a few individual plants. These point infestations tend to gradually expand over time, then spread explosively into large populations with the potential to seriously impact native vegetation. Control at the point infestation stage is easier, more economical, and more effective than after a weed population becomes established.

Monitoring known weed populations and checking for new introductions should be done throughout the growing season. This is especially important along road and parking lot edges and other heavily used areas. This process is facilitated if all maintenance personnel are trained to recognize the potential noxious weeds in the area and keep track of new point infestations, the boundaries of established weed populations, and monitoring the success of management activities.

3.4.3 Detect and Eradicate New Weed Populations

Small weed infestations are much easier to control than larger ones because they have less-developed root systems, smaller seed reserves in the soil, and fewer resources accumulated in roots and rhizomes. The goal of managing small, focal weed populations can appropriately complete eradication. This can be accomplished with any of the methods described below in Section 3.4 that are appropriate for a specific weed. Mechanical methods are often very effective at this stage of a weed infestation, as are spot herbicide treatments of individual plants. Any

particular treatment will need to be repeated several times to eradicate new point infestations. These areas should continue to be monitored following control activities and treatment methods should be reevaluated if the populations do not respond or increase in size.

3.4.4 Treatment Method

Expansion of noxious weeds is a dynamic process. Existing infestations of weeds can continue to spread and new infestations can become established. Reducing the spread of noxious weeds requires a timely, adaptive, and integrated approach. Due to the dynamics of noxious weeds, treatment areas and approaches vary from year to year. The following sections describe the methods that may be employed to control invasive and noxious weed species.

Manual or Mechanical Removal

Manual techniques involve the use of tools such as shovels, axes, rakes, grubbing hoes, and hand clippers to expose, cut, and remove most of the target plant's central root mass. Hand grubbing (uprooting individual plants by hand) is another technique used where soil disturbance must be held to a minimum. Manual treatments can be far more species-selective and can be used in sensitive habitats where herbicides would not be appropriate or in areas not accessible to ground vehicles.

Mechanical methods primarily include mowing to cut herbaceous vegetation above the ground surface. Tillage for noxious weed control generally involves plowing, sweeping, or disking of a site to kill and incorporate existing vegetation in preparation of a seedbed. However, these methods involve a significant amount of ground disturbance and are generally not recommended.

Biological Control

Biological noxious weed control programs employ living organisms to selectively suppress noxious weed populations. Primary techniques include controlled foraging by herbivorous animals (e.g., sheep or goats) and introduction of host-specific pathogens or insects.

Grazing can aid in control of noxious weeds through removal of herbaceous vegetation. Also, by timing grazing to correspond with the peak palatability of a noxious weed species or peak vulnerability of a species, effects on surrounding vegetation can be minimized. In addition, depending on the species and the site conditions, grazing can be used to remove decadent aboveground biomass and noxious weed litter. This can temporarily decrease soil surface moisture and open the canopy, which may be favorable for native species competition and regeneration.

Insects, pathogens, or a combination of the two may be released in an area infested by noxious weeds to selectively feed on or infect target plants. Introduced insects and or pathogens can

weaken the target species directly by attacking vital plant parts (e.g., roots, seeds, or leaves) or indirectly by creating an environment that reduces the species' competitive advantage. The insects to be introduced must be approved and recommended for use by the U.S. Department of Agriculture Animal and Plant Health Inspection Service. Any proposed inoculation of noxious weeds with larval stage insects will require specific approval from County Weed Coordinators, depending on the location of the proposed release.

Herbicide Treatments

Chemical treatment methods employ herbicides to control noxious weeds. All applications of herbicides will adhere to required and recommended restrictions on herbicide labels. A communication plan will be implemented to provide notification of treatment activities. Herbicides will be applied from ground vehicles (e.g., trucks, all-terrain vehicles, and tractors), from backpack equipment, or small hand sprayers. Target species will be spot treated where this method is practical and effective. Ground vehicles and backpack applicators will be equipped with handheld spraying equipment (e.g., wands and spray guns) for spot treatment. Additional items in backpack equipment may include drip and wick applicators, or whirling disk applicators. Dry formulations may be applied with mechanical broadcast equipment, or by hand. Truck mounted boom sprayers or broadcast spreaders would be used only where target vegetation is dense enough and infestation size large enough (usually >1 acre) to warrant such methods.

All herbicides used in weed control on the Project Area will be registered by the U.S. Environmental Protection Agency (EPA) for forestry, right-of-way, and rangeland uses. Specific chemicals will be selected for each treatment area based on efficacy of control for the target species, relative risks to non-target species (both plant and animal), and human safety.

In the event of an herbicide spill, the emergency spill plan outlined in **Section 3.5** will be followed. All workers, including contractors, will have the appropriate knowledge and equipment to carry out the plan, and a copy of the spill plan will be kept in all project-related transport vehicles.

All herbicide applications will follow EPA label instructions. Application of herbicides will be suspended when any of the following conditions exist: wind velocity exceeds six miles per hour during application of liquid or granular herbicides; snow or ice covers the foliage of noxious weeds; or precipitation is occurring or is imminent.

Vehicle-mounted sprayers (e.g., handgun, boom, injector) will be used mainly in open areas that are readily accessible by vehicle. Hand application methods (e.g., backpack spraying) that target individual plants will be used to treat small or scattered weed populations in rough terrain. Calibration checks of equipment will be conducted at the beginning of spraying and periodically to ensure that proper application rates are achieved.

Herbicides will be transported to, and applied within, the Project site with the following provisions:

- All herbicide use will be conducted in compliance with the North Dakota Department of Agriculture Pesticide Program, under delegated authority to enforce the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) under state laws and administrative rules.
- Herbicides will be transported to the Project site daily or will be stored under proper precautions at the Project O&M facility.
- On-site herbicide quantities will be limited as practicable.
- Concentrate will be transported in approved containers only and in a manner that will prevent tipping or spilling, and in a compartment that is isolated from food, clothing, and safety equipment.
- Mixing will be conducted in an upland area and at a distance greater than 100 feet from open or flowing water or wetlands, greater than 200 feet from private wells, and greater than 400 feet from public wells.
- All herbicide equipment and containers will be inspected for leaks daily.
- All herbicide applicators will have a Commercial Applicator's license with the State of North Dakota for the use of restricted use herbicides and have adequate training for the use of general herbicides.
- Exercise "safety first" at all times.
- Herbicide will be applied only as intended and consistent with state and federal pesticide use laws.
- Herbicide will only be applied as directed by the product label.

Safety Considerations and Herbicide Restrictions

Always wear gloves and eye protection when hand pulling or digging. Several weed species have irritating effects to human skin and eyes. Weeds removed through pulling, digging, or cutting should be bagged and removed from the site. County Weed Coordinators may be able to provide a disposal site, or suggestions for such a site, depending on location.

If chemical weed control methods (herbicides) are chosen for integration into the weed management program, the physical characteristics of each specific site must be carefully considered. Incorrect application of an herbicide can cause severe damage to native plant species as well as the physical environment. Particular attention should be paid to soils, water table

depth, surface water locations, and specific native plants that occur alongside the target weed species.

Only experienced personnel, using calibrated equipment and appropriate personal protection, should apply herbicide treatments. Before using any herbicide, all label instructions and restrictions must be read, understood, and followed precisely. Please note that herbicide labels are changed regularly and should be reviewed often. Supplemental labels are also often available for specific areas and environmental conditions. Herbicides must be applied in conformance with every aspect of their label. Herbicide application beyond the bounds specified on the label is illegal.

3.4.5 Control Existing Populations

To successfully control or manage established weed populations, several factors need to be examined and understood. Priorities for control must be established and management activities should be planned for efficient use of resources and optimal control results. The planning process must consider the physical characteristics of each site, the surrounding non-target plant species, and the life history and phenology of each target weed species, which provides windows of vulnerability to different mechanical, biological, or chemical control methods. Timing of all control techniques must be carefully considered and implemented to maximize effectiveness and minimize risk to non-target organisms.

Types of noxious weed species that could be found on the Badger Wind site are discussed below. Appropriate control measures are discussed in terms of life histories and specific site conditions.

Annual Species

Annual species complete their entire life cycle (germinating, growing, flowering, and producing seeds) in one year. Because annual plants depend entirely on seeds for reproduction, seeds are the focus of most control measures. Mechanical control methods include preventing seed set, blocking entrance of seeds into the soil seed bank, and optimizing conditions that will hasten the depletion of viable seeds from the seed bank.

The single listed annual in North Dakota is Palmer amaranth.

Biennial Species

Biennial plants complete their entire life cycle in two growing seasons. The first year an individual biennial plant grows as a cluster of basal leaves or a rosette without producing flowers its first growing season. The rosette over-winters and in the second year the plant produces a flowering stalk, seeds, and dies. This life history strategy implies a large dependence upon seeds, and the

two-year old seed-bearing individuals, for continuing in current locations and colonizing new sites.

Removing the seed head buds before flowering by cutting the stalks, mowing, or hand-pulling is an effective way to reduce or eliminate seed formation. These activities should begin in the late spring and summer and must be repeated throughout the growing season, as the plants will continue to produce flower buds in an attempt to reproduce. Assiduous mechanical control that involves prevention of seed set by biennial weeds for multiple growing seasons will eventually exhaust the viable seed bank in the soil and reduce or eliminate additional seeds from entering the plant community.

Biological control agents also usually target seed production, or seed producing individuals, in biennial species.

Herbicides are usually applied to biennials at the rosette stage, either in the fall or spring, depending on the species. Herbicide treatments are particularly effective when combined with mechanical methods that have weakened individual plants and reduced the number of seeds entering the system.

Biennial species listed in North Dakota include diffuse knapweed, houndstongue, musk thistle, spotted knapweed (or a short-lived perennial), and black henbane.

Perennial Species

Individuals of perennial species persist for several years due to their formation of extensive root systems. Many perennials are able to reproduce both by seed and vegetatively. These life history traits make control of perennial weed species more difficult than annuals or biennials as individual plants must be eradicated both above- and below-ground. Seeds and growing plants (including the belowground component) must be destroyed at the same time for effective control. Because of this, mechanical methods are often not sufficient in themselves for control. But mowing or pulling throughout the growing season do weaken perennials, making them more susceptible to herbicides applied in the fall.

Perennial species listed in North Dakota include absinth wormwood, Canada thistle, Dalmatian toadflax, leafy spurge, purple loosestrife, Russian knapweed, tamarisk, spotted knapweed (can also be a biennial), and yellow toadflax.

3.4.6 Monitoring

Weed management is a constant and iterative process. Continual monitoring of treated populations, and the entire Project site, is strongly recommended. If weed management goals are not being met, or new species or populations are observed, the control strategies may need to be

recalculated. Likewise, species may be shifted to different priority-to-control groups based on response to control treatments and behavior within the surrounding plant community. It is important to note that research on weed ecology and management techniques is on-going. The methods discussed below only include those known at the time of the writing of this plan. New techniques should be integrated into this plan, as information is available.

3.5 Emergency Spill Plan for Herbicides

Badger Wind will implement a Spill Preservation, Containment, and Control Plan (SPCC) for construction and operations that incorporates all reasonable precautions to be taken to avoid herbicide spills. In the event of a spill, cleanup will be immediate. Employees and contractors will keep spill kits in their vehicles and in herbicide storage areas to allow for a quick and effective response to spills. Items to be included in the spill kit are:

- Protective clothing and gloves
- A minimum of 10 pounds of suitable commercial adsorbent and barrier materials
- Plastic bags and bucket
- Shovel
- Fiber brush and screw-in handle
- Dustpan
- Caution tape
- Detergent

The response to an herbicide spill will vary depending on the material spilled, and the size and location of the spill. The order of priorities after discovering a spill are to protect the safety of personnel and the public, minimize damage to the environment, and conduct cleanup and remediation activities.

All herbicide contractors and employees will obtain and have readily available copies of the appropriate material safety data sheets and the herbicide labels for the herbicides used. All herbicide spills will be reported in accordance with applicable laws and requirements.

Appendix J

Badger Wind Noise Waivers

Badger Wind, LLC
February 2022

SPECIAL MESSAGE TO PROPERTY OWNERS
(N.D. Cent. Code §17-04-06)

This is an important agreement our lawyers have drafted that will bind you and your land for up to forty-eight (48) years. We will give you enough time to study and thoroughly understand it. We strongly encourage you to hire a lawyer to explain this agreement to you. You may talk with your neighbors about the wind project and find out if they also received a proposed contract. You and your neighbors may choose to hire the same attorney to review the agreement and negotiate changes on your behalf.

Regards,

Philip Moore
Vice President
Badger Wind, LLC

North Dakota law requires that this document may not be executed by the parties until at least 10 business days after it has been delivered to the property owner ("Owner"). Owner acknowledges that the document was delivered, and if applicable executed, on the dates set forth below.

	Date/Days	**Owner Signature**
Date document delivered to Owner	October 8, 2018	Rolland F Sayler Name: Rolland F. Sayler Joan Sayler Name: Joan Sayler
DO NOT SIGN BEFORE October 23, 2018		
Date document signed by Owner	10-30-, 2018	Rolland F Sayler Name: Rolland F. Sayler Joan Sayler Name: Joan Sayler
Number of business days between delivery and signing (**excluding holidays and weekends**)	16 DAYS	Rolland F Sayler Name: Rolland F. Sayler Joan Sayler Name: Joan Sayler

ORIGINAL

SPECIAL MESSAGE TO PROPERTY OWNERS
(N.D. Cent. Code §17-04-06)

This is an important agreement our lawyers have drafted that will bind you and your land for up to forty-eight (48) years. We will give you enough time to study and thoroughly understand it. We strongly encourage you to hire a lawyer to explain this agreement to you. You may talk with your neighbors about the wind project and find out if they also received a proposed contract. You and your neighbors may choose to hire the same attorney to review the agreement and negotiate changes on your behalf.

Regards,

Philip Moore
Vice President
Badger Wind, LLC

North Dakota law requires that this document may not be executed by the parties until at least 10 business days after it has been delivered to the property owner ("Owner"). Owner acknowledges that the document was delivered, and if applicable executed, on the dates set forth below.

	Date/Days	**Owner Signature**
Date document delivered to Owner	October 8, 2018	Name: Kathy Pfeifle
DO NOT SIGN BEFORE October 23, 2018		
Date document signed by Owner	10/30, 2018	Name: Kathy Pfeifle
Number of business days between delivery and signing (**excluding holidays and weekends**)	16 DAYS	Name: Kathy Pfeifle

ORIGINAL

SPECIAL MESSAGE TO PROPERTY OWNERS
(N.D. Cent. Code §17-04-06)

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Regards,

Philip Moore
Vice President
Badger Wind, LLC

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	Date/Days	Owner Signature
Date document delivered to Owner	October 8, 2018	Name: Rolland Sayler, Jr.
DO NOT SIGN BEFORE October 23, 2018		
Date document signed by Owner	11 13, 2018	Name: Rolland Sayler, Jr.
Number of business days between delivery and signing (**excluding holidays and weekends**)	0 27 DAYS S.S.	Name: Rolland Sayler, Jr.

ORIGINAL

SPECIAL MESSAGE TO PROPERTY OWNERS
(N.D. Cent. Code §17-04-06)

This is an important agreement our lawyers have drafted that will bind you and your land for up to forty-eight (48) years. We will give you enough time to study and thoroughly understand it. We strongly encourage you to hire a lawyer to explain this agreement to you. You may talk with your neighbors about the wind project and find out if they also received a proposed contract. You and your neighbors may choose to hire the same attorney to review the agreement and negotiate changes on your behalf.

Regards,

Philip Moore
Vice President
Badger Wind, LLC

North Dakota law requires that this document may not be executed by the parties until at least 10 business days after it has been delivered to the property owner ("Owner"). Owner acknowledges that the document was delivered, and if applicable executed, on the dates set forth below.

	Date/Days	**Owner Signature**
Date document delivered to Owner	October 8, 2018	Kim Mathwich Name: Kim Mathwich
DO NOT SIGN BEFORE October 23, 2018		
Date document signed by Owner	10/23, 2018	Kim Mathwich Name: Kim Mathwich
Number of business days between delivery and signing (**excluding holidays and weekends**)	15 DAYS	Kim Mathwich Name: Kim Mathwich

WIND ENERGY LEASE AND EASEMENT AGREEMENT

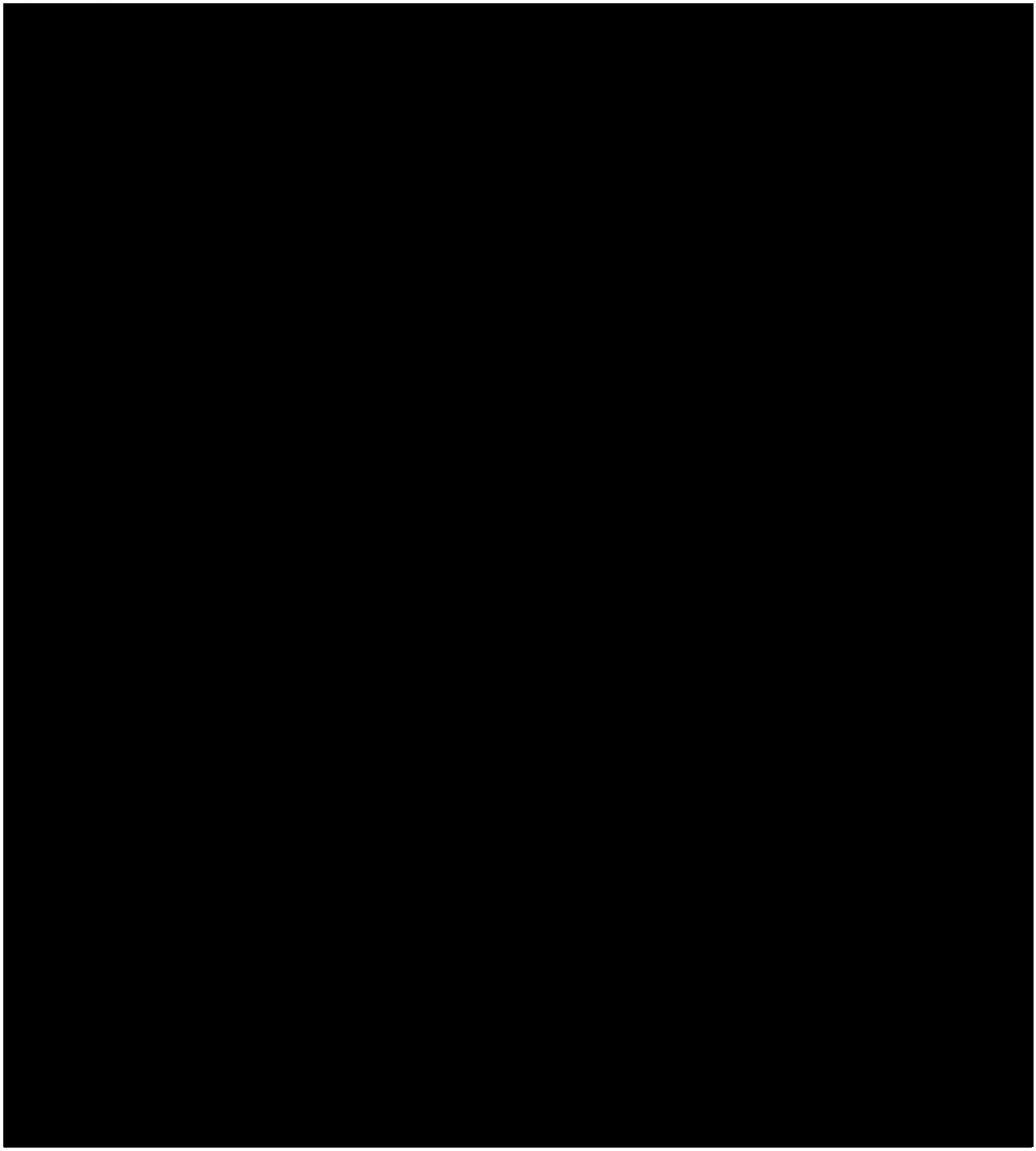
between

A LIFE ESTATE TO ROLLAND F. SAYLER AND JOAN SAYLER, HUSBAND AND WIFE WITH REMAINDER TO KATHY PFEIFLE, A MARRIED WOMAN AND ROLLAND SAYLER, JR., A MARRIED MAN AND KIM MATHWICH, A SINGLE WOMAN

and

BADGER WIND, LLC

ORIGINAL



10.13 Waivers. To the extent that Grantee, its permitted successor, assign or Affiliate owns, leases or holds an easement over land adjacent to the Property, and has installed or constructed or desires to install or construct any Windpower Facilities on said land at and/or near the common boundary between the Property and said land, Owner waives any and all setbacks and setback requirements, whether imposed by law or by any person or entity, including, without limitation, any setback requirements described in the zoning ordinance of the county in which the Property or said land is located or in any governmental entitlement or permit heretofore or hereafter issued to Grantee, its permitted successor, assign or Affiliate ("**Setback Requirements**"). Waiver of Setback

Requirements includes, but is not limited to, waiver of the property line setback in N.D.C.C. § 49-22-05.1(3) and N.D.A.C. § 69-06-08-01(2)(5); the residence setback in N.D.C.C. § 49-22-05.1(3); and the sound level avoidance area criteria in N.D.A.C. § 69-06-08-01(4). Owner further waives any Setback Requirements which may apply to the installation of Windpower Facilities on the Property, including, but not limited to, the sound level avoidance area criteria in N.D.A.C. § 69-06-08-01(4). Further, if so requested by Grantee, its permitted successor, assign, or Affiliate, Owner shall promptly, without demanding additional consideration therefore, execute, and if appropriate cause to be acknowledged and recorded, any setback waiver or other document or instrument required by any governmental authority, and hereby authorizes Grantee to provide a copy of this Agreement to any permitting authority as evidence of Grantor's support for any waiver or variance that may need to be obtained for Grantee to utilize the aforementioned waivers. Owner acknowledges that certain aspects inherent to the operation of the wind energy facilities may result in some nuisance, such as visual impacts, possible increased noise levels, possible shadow flicker on residences, and other possible effects of electrical generation and transmission including without limitation potential interference with radio, television, telephone, mobile telephone or other electronic devices. Grantee shall take reasonable efforts to minimize any impacts to Owner in part by taking commercially reasonable steps to meet or exceed standard U.S. wind industry practices in designing the Windpower Facilities, and abiding by all regulations pertaining to the permitting and design of the Windpower Facilities. Without limiting the grant of easement made in Section 2(ii) of this Agreement, Owner understands and has been informed by Grantee that the Windpower Facilities on the Property may result in some nuisance, and hereby accepts such nuisance, and Owner waives their/its right to object to such nuisance provided that Grantee complies with its obligations in this Agreement. "**Affiliate**" for purposes of this Agreement means any person or entity which directly or indirectly controls, or is under common control with, or is controlled by, Grantee. As used in this definition, "control" (including, "controlled by" and "under common control with") means possession, directly or indirectly, of power to direct or cause the direction of management or policies (whether through ownership of securities or other ownership interests, by contract or otherwise); any person or entity which owns directly or indirectly ten percent (10%) or more of the securities having ordinary voting power for the election of directors or other governing body of an entity will be deemed to control such entity.



OWNER:
A LIFE ESTATE TO ROLLAND F. SAYLER AND JOAN SAYLER, HUSBAND AND WIFE WITH REMAINDER TO KATHY PFEIFLE, A MARRIED WOMAN AND ROLLAND SAYLER, JR., A MARRIED MAN AND KIM MATHWICH, A SINGLE WOMAN

By: Rolland F Sayler
Name: Rolland F. Sayler

By: Joan Sayler
Name: Joan Sayler

GRANTEE:
Badger Wind, LLC
By: Lincoln Clean Energy, LLC
Its sole member

By:
Name: Philip Moore

Its: Vice President of Development

ORIGINAL

OWNER:
A LIFE ESTATE TO ROLLAND F. SAYLER AND JOAN SAYLER, HUSBAND AND WIFE WITH REMAINDER TO KATHY PFEIFLE, A MARRIED WOMAN AND ROLLAND SAYLER, JR., A MARRIED MAN AND KIM MATHWICH, A SINGLE WOMAN

By: _____
Name: Kathy Pfeifle

GRANTEE:
Badger Wind, LLC
By: Lincoln Clean Energy, LLC
Its sole member

By: _____

Name: Philip Moore

Its: Vice President of Development

ORIGINAL

OWNER:
A LIFE ESTATE TO ROLLAND F. SAYLER AND JOAN SAYLER, HUSBAND AND WIFE WITH REMAINDER TO KATHY PFEIFLE, A MARRIED WOMAN AND ROLLAND SAYLER, JR., A MARRIED MAN AND KIM MATHWICH, A SINGLE WOMAN

By: _____
Name: Rolland Sayler, Jr.

GRANTEE:
Badger Wind, LLC
By: Lincoln Clean Energy, LLC
Its sole member

By: _____

Name: Philip Moore

Its: Vice President of Development

OWNER:
A LIFE ESTATE TO ROLLAND F. SAYLER AND JOAN SAYLER, HUSBAND AND WIFE WITH REMAINDER TO KATHY PFEIFLE, A MARRIED WOMAN AND ROLLAND SAYLER, JR., A MARRIED MAN AND KIM MATHWICH, A SINGLE WOMAN

By: Kim Mathwich
Name: Kim Mathwich

GRANTEE:
Badger Wind, LLC
By: Lincoln Clean Energy, LLC
Its sole member

By: _____

Name: Philip Moore

Its: Vice President of Development

ORIGINAL

EXHIBIT "A"

A LIFE ESTATE TO ROLLAND F. SAYLER AND JOAN SAYLER, HUSBAND AND WIFE WITH REMAINDER TO KATHY PFEIFLE ETAL / 798.42 ACRES

Legal Description of Property

The following described land located in Logan County, North Dakota, containing 798.42 acres, more or less:

FIRST TRACT:
All of Section 32-133-71, Logan County, North Dakota

Tax Parcel No.: 00801000 (NEQ)
Estimated Acres: 160.00
Tax Parcel No.: 00802000 (NWQ)
Estimated Acres: 160.00
Tax Parcel No.: 00803000 (SWQ)
Estimated Acres: 160.00
Tax Parcel No.: 00804000 (SEQ)
Estimated Acres: 160.00

SECOND TRACT:
SE ¼ of Section 31-133-71, Logan County, North Dakota

Tax Parcel No.: 00800000 (SEQ)
Estimated Acres: 158.42

SPECIAL MESSAGE TO PROPERTY OWNERS
(N.D. Cent. Code §17-04-06)

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Regards,

Philip Moore
Vice President
Badger Wind, LLC

North Dakota law requires that this document may not be executed by the parties until at least 10 business days after it has been delivered to the property owner ("Owner"). Owner acknowledges that the document was delivered, and if applicable executed, on the dates set forth below.

	Date/Days	**Owner Signature**
Date document delivered to Owner	6.27.18	Mary Wald Mary Wald, Partner
DO NOT SIGN BEFORE		
Date document signed by Owner	7.17, 2018	Mary Wald Mary Wald, Partner
Number of business days between delivery and signing (**excluding holidays and weekends**)	15 DAYS	Mary Wald Mary Wald, Partner

SPECIAL MESSAGE TO PROPERTY OWNERS
(N.D. Cent. Code §17-04-06)

This is an important agreement our lawyers have drafted that will bind you and your land for up to forty-eight (48) years. We will give you enough time to study and thoroughly understand it. We strongly encourage you to hire a lawyer to explain this agreement to you. You may talk with your neighbors about the wind project and find out if they also received a proposed contract. You and your neighbors may choose to hire the same attorney to review the agreement and negotiate changes on your behalf.

Regards,

Philip Moore
Vice President
Badger Wind, LLC

North Dakota law requires that this document may not be executed by the parties until at least 10 business days after it has been delivered to the property owner ("Owner"). Owner acknowledges that the document was delivered, and if applicable executed, on the dates set forth below.

	Date/Days	**Owner Signature**
Date document delivered to Owner	June 28, 2018	Marsha Kauk Name: Marsha Kauk, Partner
DO NOT SIGN BEFORE July 16, 2018		
Date document signed by Owner	July 17, 2018	Marsha Kauk Name: Marsha Kauk, Partner
Number of business days between delivery and signing (**excluding holidays and weekends**)	11 DAYS	Marsha Kauk Name: Marsha Kauk, Partner

SPECIAL MESSAGE TO PROPERTY OWNERS
(N.D. Cent. Code §17-04-06)

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Regards,

Philip Moore
Vice President
Badger Wind, LLC

North Dakota law requires that this document may not be executed by the parties until at least 10 business days after it has been delivered to the property owner ("Owner"). Owner acknowledges that the document was delivered, and if applicable executed, on the dates set forth below.

	Date/Days	**Owner Signature**
Date document delivered to Owner	June 28, 2018	Name: Melissa Klimpel, Partner
DO NOT SIGN BEFORE July 16, 2018		
Date document signed by Owner	July 18, 2018	Name: Melissa Klimpel, Partner
Number of business days between delivery and signing (**excluding holidays and weekends**)	12 DAYS	Name: Melissa Klimpel, Partner

WIND ENERGY LEASE AND EASEMENT AGREEMENT

between

MMM WALD PARTNERSHIP, A NORTH DAKOTA FAMILY PARTNERSHIP

and

BADGER WIND, LLC

[redacted]

10.13 Waivers. To the extent that Grantee, its permitted successor, assign or Affiliate owns, leases or holds an easement over land adjacent to the Property, and has installed or constructed or desires to install or construct any Windpower Facilities on said land at and/or near the common boundary between the Property and said land, Owner waives any and all setbacks and setback requirements, whether imposed by law or by any person or entity, including, without limitation, any setback requirements described in the zoning ordinance of the county in which the Property or said land is located or in any governmental entitlement or permit heretofore or hereafter issued to Grantee, its permitted successor, assign or Affiliate ("**Setback Requirements**"). Waiver of Setback Requirements includes, but is not limited to, waiver of the property line setback in N.D.C.C. § 49-22-05.1(3) and N.D.A.C. § 69-06-08-01(2)(5); the residence setback in N.D.C.C. § 49-22-05.1(3); and the sound level avoidance area criteria in N.D.A.C. § 69-06-08-01(4). Owner further waives any Setback Requirements which may apply to the installation of Windpower Facilities on the Property, including, but not limited to, the sound level avoidance area criteria in N.D.A.C. § 69-06-08-01(4). Further, if so requested by Grantee, its permitted successor, assign, or Affiliate, Owner shall promptly, without demanding additional consideration therefore, execute, and if appropriate cause to be acknowledged and recorded, any setback waiver or other document or instrument required by any governmental authority, and hereby authorizes Grantee to provide a copy of this Agreement to any permitting authority as evidence of Grantor's support for any waiver or variance that may need to be obtained for Grantee to utilize the aforementioned waivers. Owner acknowledges that certain aspects inherent to the operation of the wind energy facilities may result in some nuisance, such as visual impacts, possible increased noise levels, possible shadow flicker on residences, and other possible effects of electrical generation and transmission including without limitation potential interference with radio, television, telephone, mobile telephone or other electronic devices. Grantee shall take reasonable efforts to minimize any impacts to Owner in part by taking commercially reasonable steps to meet or exceed standard U.S. wind industry practices in designing the Windpower Facilities, and abiding by all regulations pertaining to the permitting and design of the Windpower Facilities. Without limiting the grant of easement made in Section 2(ii) of this Agreement, Owner understands and has been informed by Grantee that the Windpower Facilities on the Property may result in some nuisance, and hereby accepts such nuisance, and Owner waives their/its right to object to such nuisance provided that Grantee complies with its obligations in this Agreement. "**Affiliate**" for purposes of this Agreement means any person or entity which directly or indirectly controls, or is under common control with, or is controlled by, Grantee. As used in this definition, "control" (including, "controlled by" and "under common control with") means possession, directly or indirectly, of power to direct or cause the direction of management or policies (whether through ownership of securities or other ownership interests, by contract or otherwise); any person or entity which owns directly or indirectly ten percent (10%) or more of the securities having ordinary voting power for the election of directors or other governing body of an entity will be deemed to control such entity.

[redacted]

OWNER:
MMM WALD PARTNERSHIP, A NORTH DAKOTA FAMILY PARTNERSHIP

By: _____
Name: Mary Wald, Partner

GRANTEE:
Badger Wind, LLC
By: Lincoln Clean Energy, LLC
Its sole member

By: _____

Name: Philip Moore

Its: Vice President

OWNER:
MMM WALD PARTNERSHIP, A NORTH DAKOTA FAMILY PARTNERSHIP

By: Marsha Kauk
Name: Marsha Kauk, Partner

GRANTEE:
Badger Wind, LLC
By: Lincoln Clean Energy, LLC
Its sole member

By: _____
Name: Philip Moore
Its: Vice President

OWNER:
MMM WALD PARTNERSHIP, A NORTH DAKOTA FAMILY PARTNERSHIP

By: _____
Name: Melissa Klimpel, Partner

GRANTEE:
Badger Wind, LLC
By: Lincoln Clean Energy, LLC
Its sole member

By: _____

Name: Philip Moore

Its: Vice President

EXHIBIT "A"

MMM WALD PARTNERSHIP, A NORTH DAKOTA FAMILY PARTNERSHIP / 406.00 ACRES

Legal Description of Property

The following described land located in McIntosh County, North Dakota, containing 406.00 acres, more or less:

FIRST TRACT:
Gov. Lots One (1), Two (2), Three (3), Four (4) of Section Six (6), in Township One Hundred Thirty-two (132) North, Range Seventy-one (71) West of the Fifth Principal Meridian, McIntosh County, North Dakota.

Tax Parcel No.: 02595000 (Lots 1 & 2)
Estimated Acres: 41.00
Tax Parcel No.: 02596000 (Lots 3 & 4)
Estimated Acres: 41.00

SECOND TRACT:
The Southeast Quarter (SE ¼) of Section Six (6),), in Township One Hundred Thirty-two (132) North, Range Seventy-one (71) West of the Fifth Principal Meridian, McIntosh County, North Dakota.

Tax Parcel No.: 02598000
Estimated Acres: 160.00

THIRD TRACT:
Gov. Lots Five (5) and Six (6) and the East Half of the Southwest Quarter (E ½ SW ¼) of Section Six (6), in Township One Hundred Thirty-two (132) North, Range Seventy-one (71) West of the Fifth Principal Meridian, McIntosh County, North Dakota.

Tax Parcel No.: 02597000 (SWQ)
Estimated Acres: 164.00

SPECIAL MESSAGE TO PROPERTY OWNERS
(N.D. Cent. Code §17-04-06)

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Regards,

Philip Moore
Vice President
Badger Wind, LLC

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	Date/Days	**Owner Signature**
Date document delivered to Owner	May 29, 2018	Verna Hochhalter Name: Verna Hochhalter
DO NOT SIGN BEFORE June 13, 2018		
Date document signed by Owner	June 13, 2018 2018, 2018	Verna Hochhalter [redacted] Name: Verna Hochhalter
Number of business days between delivery and signing (**excluding holidays and weekends**)	10 DAYS RS	Verna Hochhalter Name: Verna Hochhalter

SPECIAL MESSAGE TO PROPERTY OWNERS
(N.D. Cent. Code §17-04-06)

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Regards,

Philip Moore
Vice President
Badger Wind, LLC

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	Date/Days	**Owner Signature**
Date document delivered to Owner	May 29, 2018	Terry Lee Hochhalter Name: Terry Lee Hochhalter Debra Hochhalter Name: Debra Hochhalter, spouse of Terry Lee Hochhalter
DO NOT SIGN BEFORE June 13, 2018		
Date document signed by Owner	June 13, 2018	Terry Lee Hochhalter 6/13/18 Name: Terry Lee Hochhalter Debra Hochhalter Name: Debra Hochhalter, 6/13/18 spouse of Terry Lee Hochhalter
Number of business days between delivery and signing (**excluding holidays and weekends**)	10 DAYS RS	Terry Lee Hochhalter Name: Terry Lee Hochhalter Debra Hochhalter Name: Debra Hochhalter, 6/13/18 spouse of Terry Lee Hochhalter

WIND ENERGY LEASE AND EASEMENT AGREEMENT

between

A LIFE ESTATE TO VERNA HOCHHALTER, A WIDOWED WOMAN, WITH REMAINDER TO TERRY LEE HOCHHALTER, A MARRIED MAN

and

BADGER WIND, LLC

[redacted]

10.13 Waivers. To the extent that Grantee, its permitted successor, assign or Affiliate owns, leases or holds an easement over land adjacent to the Property, and has installed or constructed or desires to install or construct any Windpower Facilities on said land at and/or near the common boundary between the Property and said land, Owner waives any and all setbacks and setback requirements, whether imposed by law or by any person or entity, including, without limitation, any setback requirements described in the zoning ordinance of the county in which the Property or said land is located or in any governmental entitlement or permit heretofore or hereafter issued to Grantee, its permitted successor, assign or Affiliate ("**Setback Requirements**"). Waiver of Setback Requirements includes, but is not limited to, waiver of the property line setback in N.D.C.C. § 49-22-05.1(3) and N.D.A.C. § 69-06-08-01(2)(5); the residence setback in N.D.C.C. § 49-22-05.1(3); and the sound level avoidance area criteria in N.D.A.C. § 69-06-08-01(4). Owner further waives any Setback Requirements which may apply to the installation of Windpower Facilities on the Property, including, but not limited to, the sound level avoidance area criteria in N.D.A.C. § 69-06-08-01(4). Further, if so requested by Grantee, its permitted successor, assign, or Affiliate, Owner shall promptly, without demanding additional consideration therefore, execute, and if appropriate cause to be acknowledged and recorded, any setback waiver or other document or instrument required by any governmental authority, and hereby authorizes Grantee to provide a copy of this Agreement to any permitting authority as evidence of Grantor's support for any waiver or variance that may need to be obtained for Grantee to utilize the aforementioned waivers. Owner acknowledges that certain aspects inherent to the operation of the wind energy facilities may result in some nuisance, such as visual impacts, possible increased noise levels, possible shadow flicker on residences, and other possible effects of electrical generation and transmission including without limitation potential interference with radio, television, telephone, mobile telephone or other electronic devices. Grantee shall take reasonable efforts to minimize any impacts to Owner in part by taking commercially reasonable steps to meet or exceed standard U.S. wind industry practices in designing the Windpower Facilities, and abiding by all regulations pertaining to the permitting and design of the Windpower Facilities. Without limiting the grant of easement made in Section 2(ii) of this Agreement, Owner understands and has been informed by Grantee that the Windpower Facilities on the Property may result in some nuisance, and hereby accepts such nuisance, and Owner waives their/its right to object to such nuisance provided that Grantee complies with its obligations in this Agreement. "**Affiliate**" for purposes of this Agreement means any person or entity which directly or indirectly controls, or is under common control with, or is controlled by, Grantee. As used in this definition, "control" (including, "controlled by" and "under common control with") means possession, directly or indirectly, of power to direct or cause the direction of management or policies (whether through ownership of securities or other ownership interests, by contract or otherwise); any person or entity which owns directly or indirectly ten percent (10%) or more of the securities having ordinary voting power for the election of directors or other governing body of an entity will be deemed to control such entity.

[redacted]

OWNER:
A LIFE ESTATE TO VERNA HOCHHALTER, A WIDOWED WOMAN, WITH REMAINDER TO TERRY LEE HOCHHALTER, A MARRIED MAN

By: Verna Hochhalter
Name: Verna Hochhalter

GRANTEE:
Badger Wind, LLC
By: Lincoln Clean Energy, LLC
Its sole member

By: _____
Name: Philip Moore
Its: Vice President

OWNER:
A LIFE ESTATE TO VERNA HOCHHALTER, A WIDOWED WOMAN, WITH REMAINDER TO TERRY LEE HOCHHALTER, A MARRIED MAN

By: _____
Name: Terry Lee Hochhalter

By: _____
Name: Debra Hochhalter, spouse of Terry Lee Hochhalter

GRANTEE:
Badger Wind, LLC
By: Lincoln Clean Energy, LLC
Its sole member

By: _____
Name: Philip Moore
Its: Vice President

EXHIBIT "A"

A LIFE ESTATE TO VERNA HOCHHALTER, A WIDOWED WOMAN, WITH REMAINDER TO TERRY LEE HOCHHALTER, A MARRIED MAN / 228.00 ACRES

Legal Description of Property

The following described land located in McIntosh County, North Dakota, containing 228.00 acres, more or less:

FIRST TRACT:
Southeast Quarter (SE ¼) of Section Thirteen (13), Township One Hundred and Thirty-two (132) North, Range Seventy-two (72) West, McIntosh County, North Dakota.

Tax Parcel No.: 2768000
Estimated Acres: 160.00

SECOND TRACT:
East Half of Northeast Quarter (E ½ NE ¼), of Section Thirteen (13), Township One hundred and Thirty-two (132) North, Range Seventy-two (72) West, McIntosh County, North Dakota.

Tax Parcel No.: 02765000
Estimated Acres: 68.00

SPECIAL MESSAGE TO PROPERTY OWNERS
(N.D. Cent. Code §17-04-06)

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Regards,

Philip Moore
Vice President
Badger Wind, LLC

North Dakota law requires that this document may not be executed by the parties until at least 10 business days after it has been delivered to the property owner ("Owner"). Owner acknowledges that the document was delivered, and if applicable executed, on the dates set forth below.

	Date / Days	Owner Signatures
Date document delivered to Owner	6-15, 2018	x Clyde R Meidinger x Anna Meidinger
Date document executed by Owner	6-29, 2018	x Clyde R Meidinger x Anna Meidinger
Number of business days between delivery and execution (excluding holidays and weekends)	11 days	

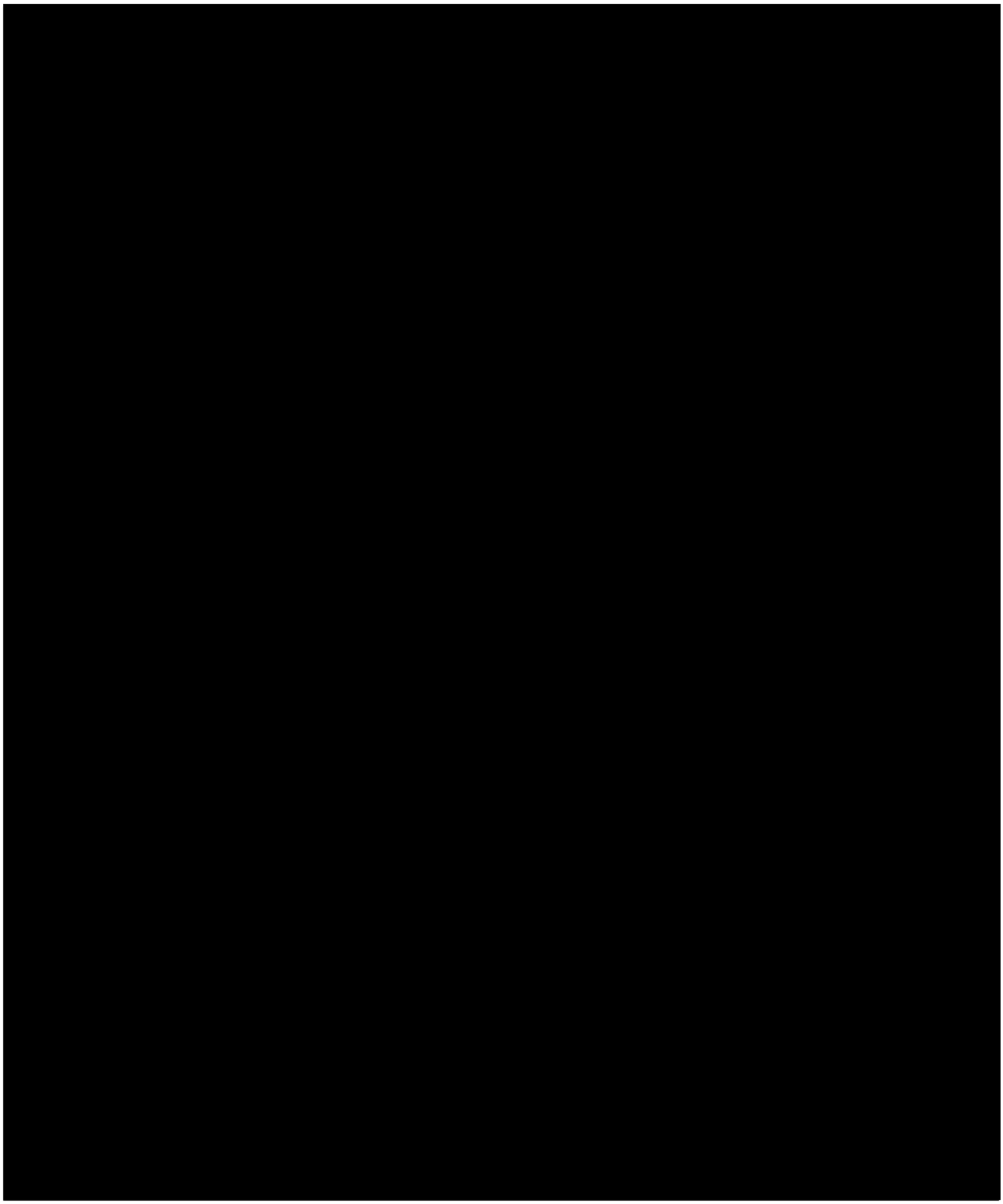
WIND ENERGY LEASE AND EASEMENT AGREEMENT

between

CLYDE MEIDINGER AND ANNA MEIDINGER, HUSBAND AND WIFE

and

BADGER WIND, LLC



10.13 Waivers. To the extent that Grantee, its permitted successor, assign or Affiliate owns, leases or holds an easement over land adjacent to the Property, and has installed or constructed or desires to install or construct any Windpower Facilities on said land at and/or near the common boundary between the Property and said land, Owner waives any and all setbacks and setback requirements, whether imposed by law or by any person or entity,

including, without limitation, any setback requirements described in the zoning ordinance of the county in which the Property or said land is located or in any governmental entitlement or permit heretofore or hereafter issued to Grantee, its permitted successor, assign or Affiliate ("**Setback Requirements**"). Waiver of Setback Requirements includes, but is not limited to, waiver of the property line setback in N.D.C.C. § 49-22-05.1(3) and N.D.A.C. § 69-06-08-01(2)(5); the residence setback in N.D.C.C. § 49-22-05.1(3); and the sound level avoidance area criteria in N.D.A.C. § 69-06-08-01(4). Owner further waives any Setback Requirements which may apply to the installation of Windpower Facilities on the Property, including, but not limited to, the sound level avoidance area criteria in N.D.A.C. § 69-06-08-01(4). Further, if so requested by Grantee, its permitted successor, assign, or Affiliate, Owner shall promptly, without demanding additional consideration therefore, execute, and if appropriate cause to be acknowledged and recorded, any setback waiver or other document or instrument required by any governmental authority, and hereby authorizes Grantee to provide a copy of this Agreement to any permitting authority as evidence of Grantor's support for any waiver or variance that may need to be obtained for Grantee to utilize the aforementioned waivers. Owner acknowledges that certain aspects inherent to the operation of the wind energy facilities may result in some nuisance, such as visual impacts, possible increased noise levels, possible shadow flicker on residences, and other possible effects of electrical generation and transmission including without limitation potential interference with radio, television, telephone, mobile telephone or other electronic devices. Grantee shall take reasonable efforts to minimize any impacts to Owner in part by taking commercially reasonable steps to meet or exceed standard U.S. wind industry practices in designing the Windpower Facilities, and abiding by all regulations pertaining to the permitting and design of the Windpower Facilities. Without limiting the grant of easement made in Section 2(ii) of this Agreement, Owner understands and has been informed by Grantee that the Windpower Facilities on the Property may result in some nuisance, and hereby accepts such nuisance, and Owner waives their/its right to object to such nuisance provided that Grantee complies with its obligations in this Agreement. "**Affiliate**" for purposes of this Agreement means any person or entity which directly or indirectly controls, or is under common control with, or is controlled by, Grantee. As used in this definition, "control" (including, "controlled by" and "under common control with") means possession, directly or indirectly, of power to direct or cause the direction of management or policies (whether through ownership of securities or other ownership interests, by contract or otherwise); any person or entity which owns directly or indirectly ten percent (10%) or more of the securities having ordinary voting power for the election of directors or other governing body of an entity will be deemed to control such entity.



OWNER:
CLYDE MEIDINGER AND ANNA MEIDINGER, HUSBAND AND WIFE

By: _____
Name: Clyde Meidinger

By: _____
Name: Anna Meidinger

GRANTEE:
Badger Wind, LLC
By: Lincoln Clean Energy, LLC
Its sole member

By: _____

Name: Philip Moore

Its: Vice President

EXHIBIT "A"

CLYDE MEIDINGER AND ANNA MEIDINGER, HUSBAND AND WIFE / 480.00 ACRES

Legal Description of Property

The following described land located in McIntosh County, North Dakota, containing 480.00 acres, more or less:

FIRST TRACT:
The Southeast Quarter (SE ¼) of Section Nineteen (19), Township One Hundred and Thirty-two (132) North, Range Seventy-one (71) West, McIntosh County, North Dakota.

Tax Parcel No.: 02648000
Estimated Acres: 160.00

SECOND TRACT:
The Southwest Quarter (SW ¼) of Section Twenty (20), Township One Hundred and Thirty-two (132) North, Range Seventy-one (71) West, McIntosh County, North Dakota.

Tax Parcel No.: 02651000
Estimated Acres: 160.00

THIRD TRACT:
The Northeast Quarter (NE ¼) of Section Thirty (30), Township One Hundred and thirty-two (132) North, Range Seventy-one (71) West, McIntosh County, North Dakota.

Tax Parcel No.: 02689000
Estimated Acres: 160.00

SPECIAL MESSAGE TO PROPERTY OWNERS
(N.D. Cent. Code §17-04-06)

This is an important agreement our lawyers have drafted that will bind you and your land for up to forty-eight (48) years. We will give you enough time to study and thoroughly understand it. We strongly encourage you to hire a lawyer to explain this agreement to you. You may talk with your neighbors about the wind project and find out if they also received a proposed contract. You and your neighbors may choose to hire the same attorney to review the agreement and negotiate changes on your behalf.

Regards,

Philip Moore
Vice President
Badger Wind, LLC

North Dakota law requires that this document may not be executed by the parties until at least 10 business days after it has been delivered to the property owner ("Owner"). Owner acknowledges that the document was delivered, and if applicable executed, on the dates set forth below.

	Date/Days	**Owner Signature**
Date document delivered to Owner	August 7, 2018	Jon F. Stock Name: Jon F. Stock Linda M. Stock Name: Linda M. Stock
DO NOT SIGN BEFORE August 22, 2018		
Date document signed by Owner	9-14, 2018	Jon F. Stock Name: Jon F. Stock Linda M. Stock Name: Linda M. Stock
Number of business days between delivery and signing (**excluding holidays and weekends**)	38 DAYS	Jon F. Stock Name: Jon F. Stock Linda M. Stock Name: Linda M. Stock

WIND ENERGY LEASE AND EASEMENT AGREEMENT

between

JON F. STOCK AND LINDA M. STOCK, HUSBAND AND WIFE AS JOINT TENANTS WITH RIGHT OF SURVIVORSHIP AND NOT AS TENANTS IN COMMON

and

BADGER WIND, LLC

[redacted]

10.13 Waivers. To the extent that Grantee, its permitted successor, assign or Affiliate owns, leases or holds an easement over land adjacent to the Property, and has installed or constructed or desires to install or construct any Windpower Facilities on said land at and/or near the common boundary between the Property and said land, Owner waives any and all setbacks and setback requirements, whether imposed by law or by any person or entity, including, without limitation, any setback requirements described in the zoning ordinance of the county in which the Property or said land is located or in any governmental entitlement or permit heretofore or hereafter issued to Grantee, its permitted successor, assign or Affiliate ("**Setback Requirements**"). Waiver of Setback Requirements includes, but is not limited to, waiver of the property line setback in N.D.C.C. § 49-22-05.1(3) and N.D.A.C. § 69-06-08-01(2)(5); the residence setback in N.D.C.C. § 49-22-05.1(3); and the sound level avoidance area criteria in N.D.A.C. § 69-06-08-01(4). Owner further waives any Setback Requirements which may apply to the installation of Windpower Facilities on the Property, including, but not limited to, the sound level avoidance area criteria in N.D.A.C. § 69-06-08-01(4). Further, if so requested by Grantee, its permitted successor, assign, or Affiliate, Owner shall promptly, without demanding additional consideration therefore, execute, and if appropriate cause to be acknowledged and recorded, any setback waiver or other document or instrument required by any governmental authority, and hereby authorizes Grantee to provide a copy of this Agreement to any permitting authority as evidence of Grantor's support for any waiver or variance that may need to be obtained for Grantee to utilize the aforementioned waivers. Owner acknowledges that certain aspects inherent to the operation of the wind energy facilities may result in some nuisance, such as visual impacts, possible increased noise levels, possible shadow flicker on residences, and other possible effects of electrical generation and transmission including without limitation potential interference with radio, television, telephone, mobile telephone or other electronic devices. Grantee shall take reasonable efforts to minimize any impacts to Owner in part by taking commercially reasonable steps to meet or exceed standard U.S. wind industry practices in designing the Windpower Facilities, and abiding by all regulations pertaining to the permitting and design of the Windpower Facilities. Without limiting the grant of easement made in Section 2(ii) of this Agreement, Owner understands and has been informed by Grantee that the Windpower Facilities on the Property may result in some nuisance, and hereby accepts such nuisance, and Owner waives their/its right to object to such nuisance provided that Grantee complies with its obligations in this Agreement. "**Affiliate**" for purposes of this Agreement means any person or entity which directly or indirectly controls, or is under common control with, or is controlled by, Grantee. As used in this definition, "control" (including, "controlled by" and "under common control with") means possession, directly or indirectly, of power to direct or cause the direction of management or policies (whether through ownership of securities or other ownership interests, by contract or otherwise); any person or entity which owns directly or indirectly ten percent (10%) or more of the securities having ordinary voting power for the election of directors or other governing body of an entity will be deemed to control such entity.

[redacted]

OWNER:
JON F. STOCK AND LINDA M. STOCK, HUSBAND AND WIFE AS JOINT TENANTS WITH RIGHT OF SURVIVORSHIP AND NOT AS TENANTS IN COMMON

By: Jon F. Stock
Name: Jon F. Stock

By: Linda M. Stock
Name: Linda M. Stock

GRANTEE:
Badger Wind, LLC
By: Lincoln Clean Energy, LLC
Its sole member

By: [signature]
Name: Philip Moore
Its: Vice President

EXHIBIT "A"

JON F. STOCK AND LINDA M. STOCK, HUSBAND AND WIFE AS JOINT TENANTS WITH RIGHT OF SURVIVORSHIP AND NOT AS TENANTS IN COMMON / 1120.00 ACRES

Legal Description of Property

The following described land located in Logan County, North Dakota, containing 1120.00 acres, more or less:

FIRST TRACT:
SE ¼ of Section 28, Township 133, Range 70, Logan County, North Dakota.

Tax Parcel No.: 00644000 (SEQ)
Estimated Acres: 160.00

SECOND TRACT:
W ½ of Section 28, Township 133, Range 70, Logan County, North Dakota.

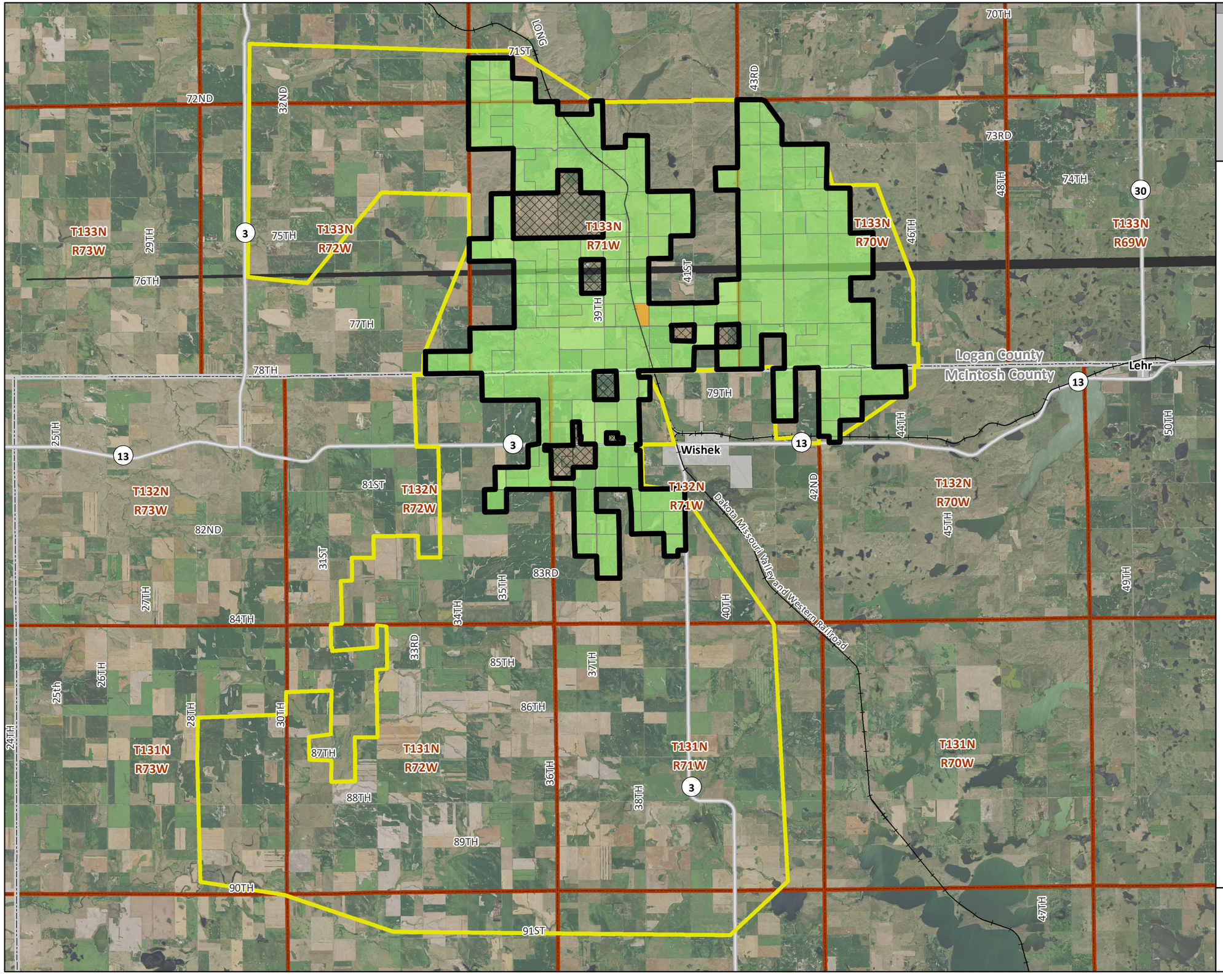
Tax Parcel No.: 00642000 (NWQ)
Estimated Acres: 160.00
Tax Parcel No.: 00643000 (SWQ)
Estimated Acres: 160.00

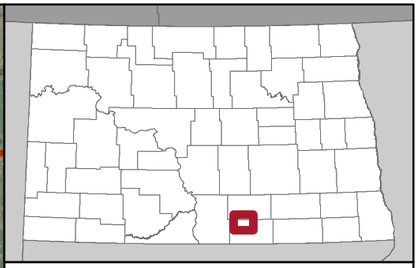
THIRD TRACT:
All of Section 29, Township 133, Range 70, Logan County, North Dakota.

Tax Parcel No.: 00645000 (NEQ)
Estimated Acres: 160.00
Tax Parcel No.: 00646000 (NWQ)
Estimated Acres: 160.00
Tax Parcel No.: 00647000 (SWQ)
Estimated Acres: 160.00
Tax Parcel No.: 00648000 (SEQ)
Estimated Acres: 160.00

Figures

Badger Wind, LLC
February 2022





Legend

- Project Area
- Study Area
- Non-Participating Landowner Property
- Pending Landowner Property
- Participating Landowner Property
- State Road
- Railroad
- City/Village
- Township (PLSS)
- County

Source: National Agriculture Imagery Program (2020)

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Miles

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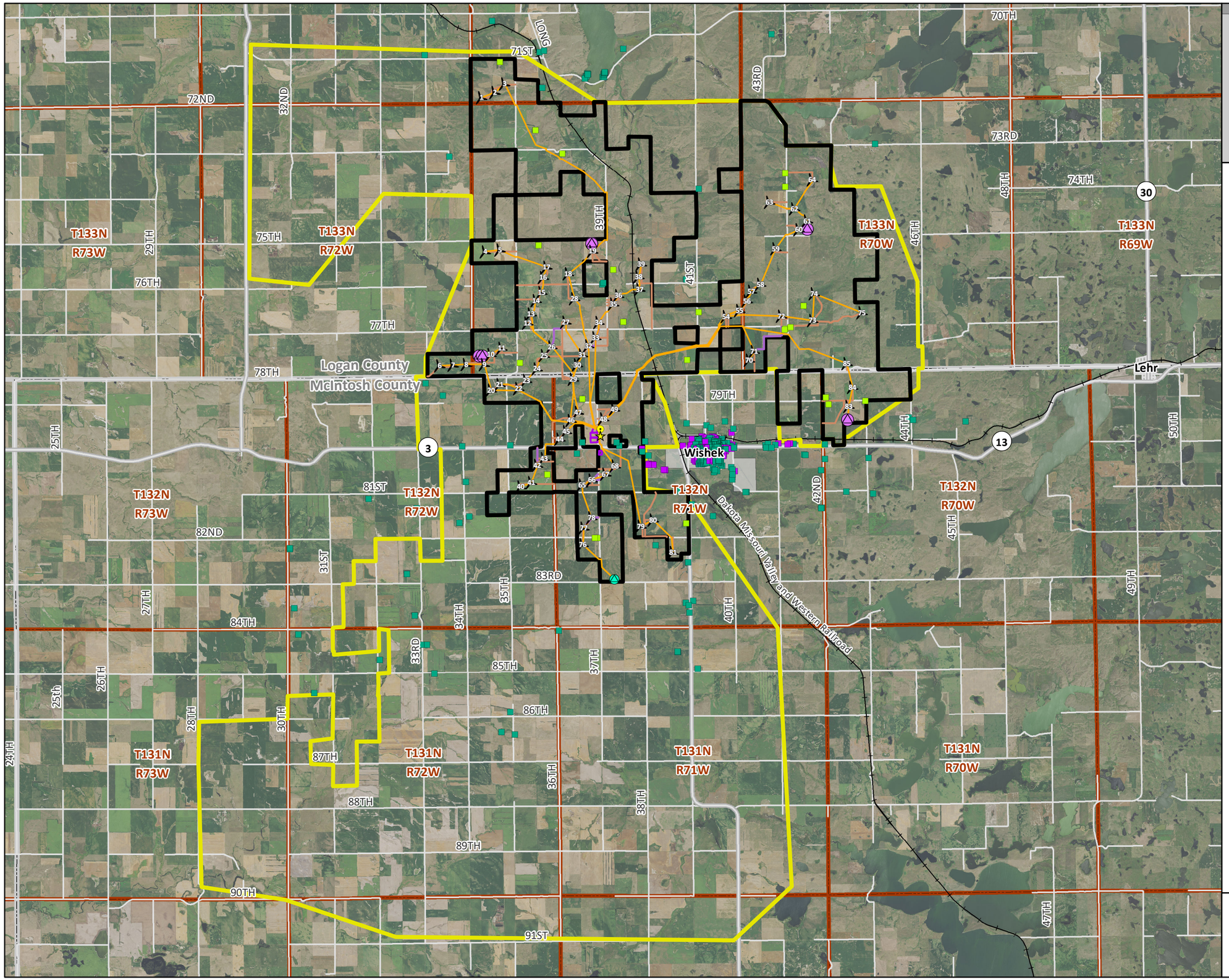
Badger Wind, LLC

2/10/2022

Figure 1

Project Location

Logan and McIntosh Counties, North Dakota





Legend

- Proposed Turbine (symbols not to scale)
- Potential Permanent MET Tower Location
- Proposed ADLS Tower
- Proposed O&M Building
- Proposed Substation
- Proposed Underground Collection Line
- Proposed Crane Path
- Proposed Access Road
- Proposed Laydown Yard
- Project Area
- Study Area
- Participating Occupied Residence
- Non-Participating Occupied Residence
- Community Building
- Highway
- County/Township Road
- Railroad
- City/Village
- Township (PLSS)
- County

Source: National Agriculture Imagery Program (2020)

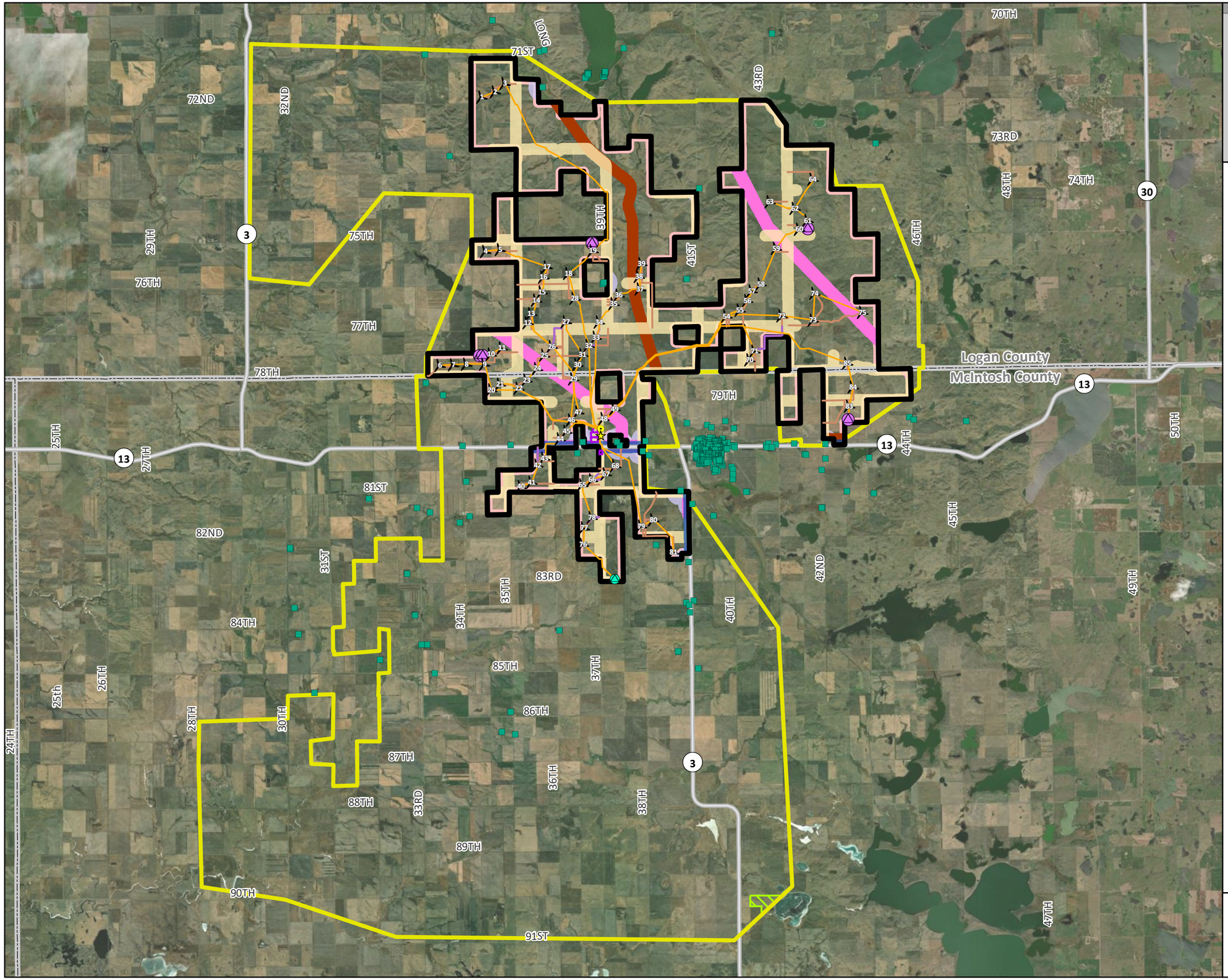
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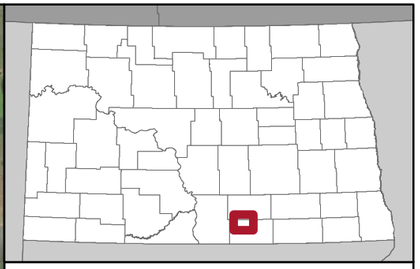
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Badger Wind, LLC
2/10/2022

Figure 2
Project Facilities
Logan and McIntosh Counties, North Dakota





Legend

- Proposed Turbine (symbols not to scale)
- Potential Permanent MET Tower Location
- Proposed ADLS Tower
- Proposed O&M Building
- Proposed Substation
- Proposed Underground Collection Line
- Proposed Crane Path
- Proposed Access Road
- Proposed Laydown Yard
- Project Area
- Study Area
- State Road
- County
- Non-Participating Occupied Residence

Exclusion Area

- Waterfowl Production Area
- Railroad
- State Road
- County and Maintained Township Road
- Existing Transmission Line
- Non-Participating Occupied Residence
- Non-Participating Property Line

Note: Archaeological Sites are omitted.

Source: National Agriculture Imagery Program (2020)

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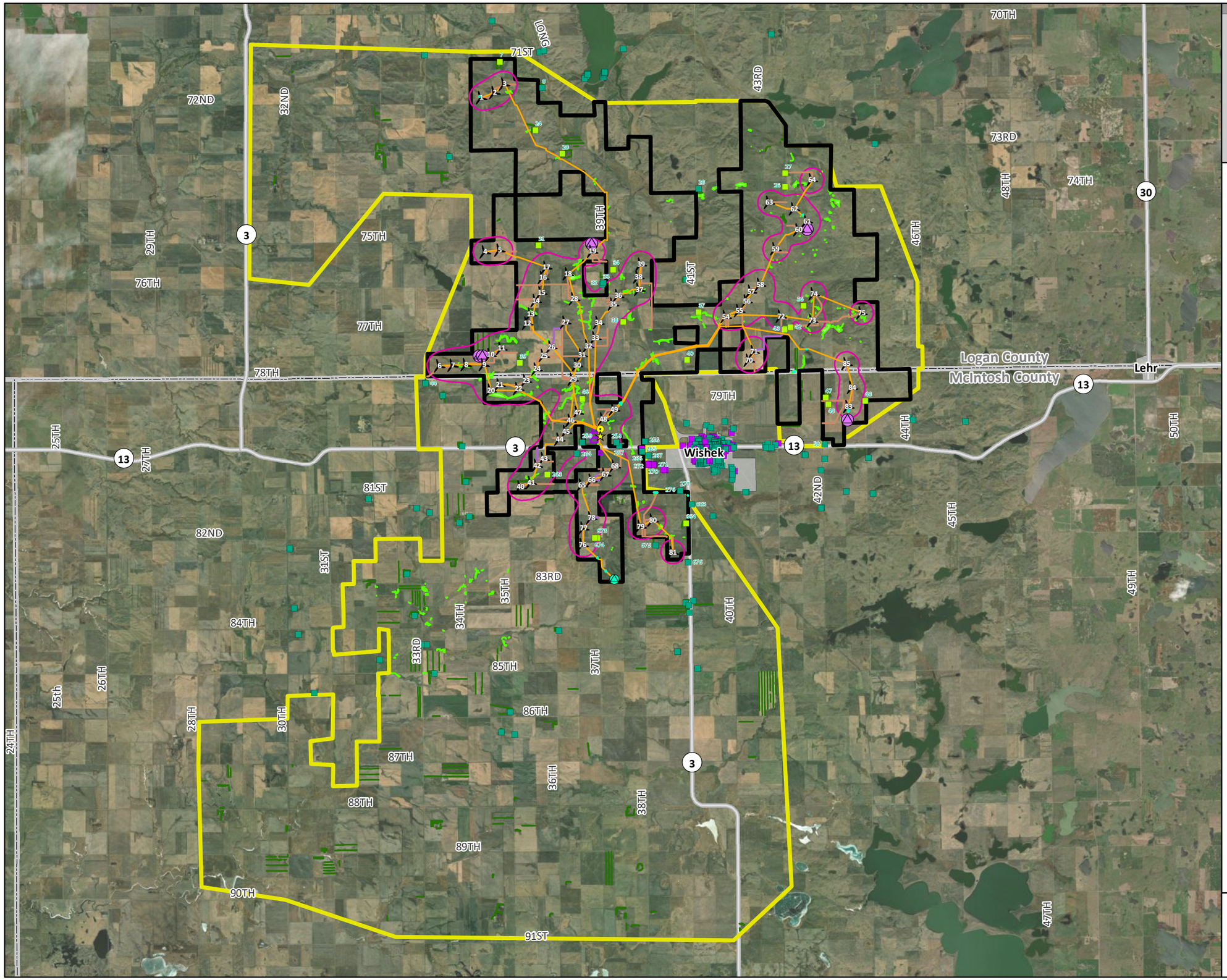
Badger Wind, LLC

2/17/2022

Figure 3

Exclusion Areas

Logan and McIntosh Counties, North Dakota





Legend

- Proposed Turbine (symbols not to scale)
- Potential Permanent MET Tower Location
- Proposed ADLS Tower
- Proposed O&M Building
- Proposed Substation
- Proposed Underground Collection Line
- Proposed Crane Path
- Proposed Access Road
- Proposed Laydown Yard
- Project Area
- Study Area
- State Road
- County

Avoidance_Areas

- Participating Occupied Residence
- Non-Participating Occupied Residence
- Community Building
- 45 dBA Sound Level Isoline
- Woodlands (Desktop Delineation)
- Wetland (Field Verified)
- Wetland (NWI Data)
- City/Village

Source: National Agriculture Imagery Program (2020)

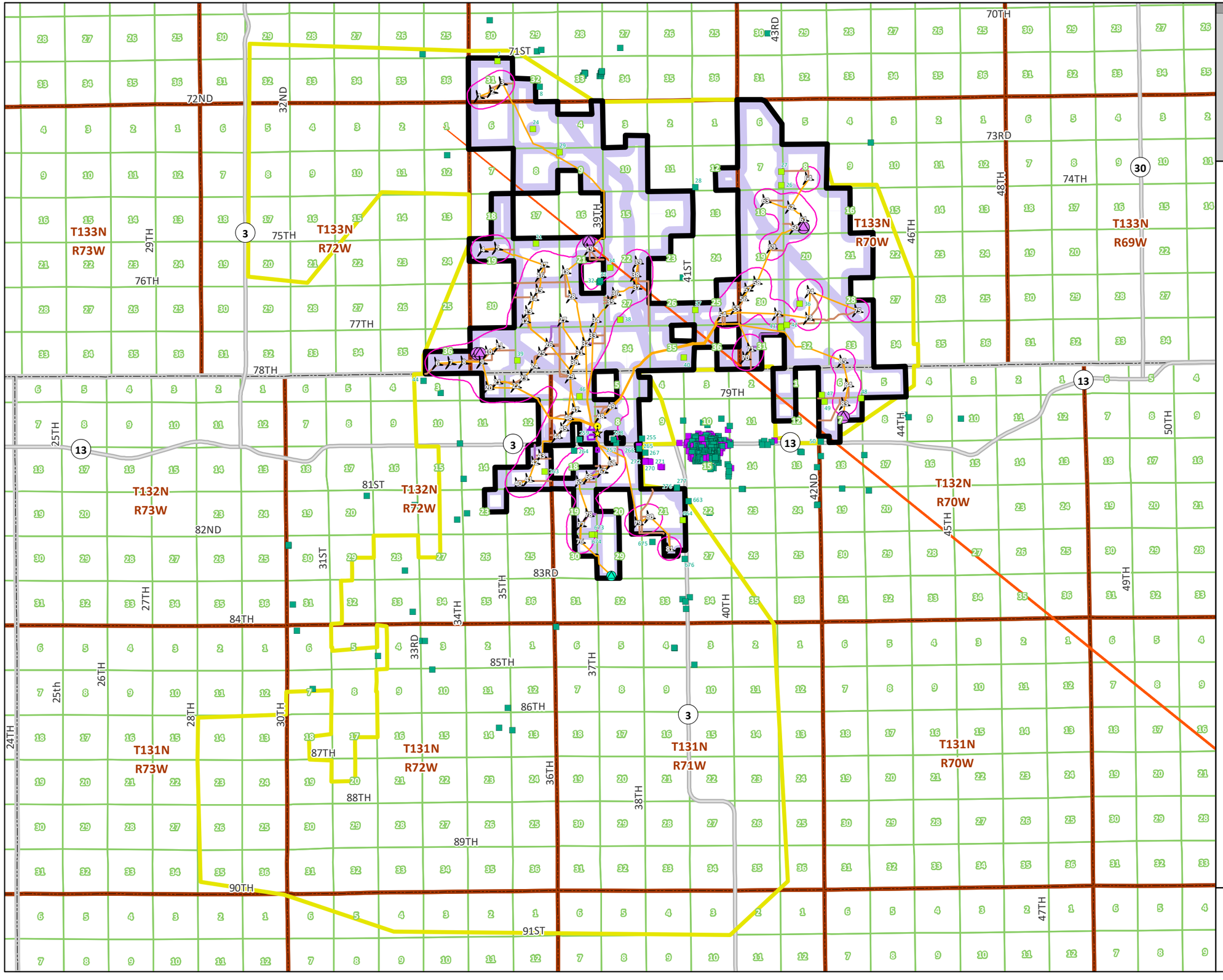
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Badger Wind, LLC
2/17/2022

Figure 4
Avoidance Areas
Logan and McIntosh Counties, North Dakota





Legend

- Proposed Turbine (symbols not to scale)
- Potential Permanent MET Tower Location
- Proposed ADLS Tower
- Proposed O&M Building
- Proposed Substation
- Proposed Underground Collection Line
- Proposed Crane Path
- Proposed Access Road
- Proposed Laydown Yard
- Project Area
- Study Area
- State Road
- Township (PLSS)
- Section (PLSS)
- County
- Participating Occupied Residence
- Non-Participating Occupied Residence
- Community Building
- 45 dBA Sound Level Isoline
- Microwave Beam Path
- Setback

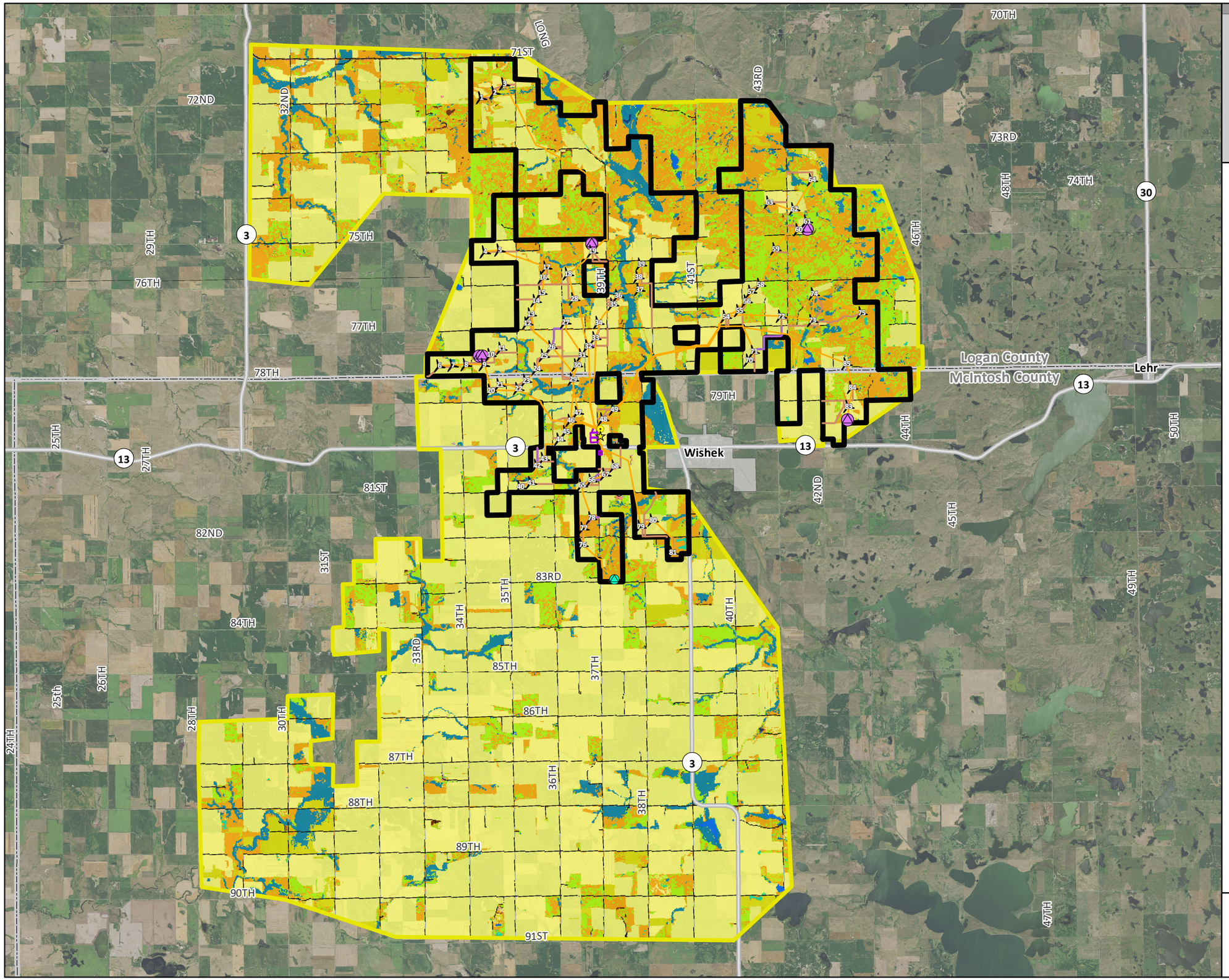
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Badger Wind, LLC
2/17/2022

Figure 5
Project Setbacks
Logan and McIntosh Counties, North Dakota





Legend

- Proposed Turbine (symbols not to scale)
- Potential Permanent MET Tower Location
- Proposed ADLS Tower
- Proposed O&M Building
- Proposed Substation
- Proposed Underground Collection Line
- Proposed Crane Path
- Proposed Access Road
- Proposed Laydown Yard
- Project Area
- Study Area
- State Road
- City/Village
- County

Land Cover (USGS, 2020)

- Badlands
- Cropland
- Developed
- Herbaceous Wetland
- Mixedgrass Prairie
- Open Water
- Pasture/Hayland
- Planted Grassland
- Planted Herbaceous
- Planted Woodland
- Prairie Pothole
- Riparian Herbaceous
- Riparian Woodland
- Roads
- Shrubland
- Tallgrass Prairie
- Wooded Draw/Ravine Woodland

Source: National Agriculture Imagery Program (2020)

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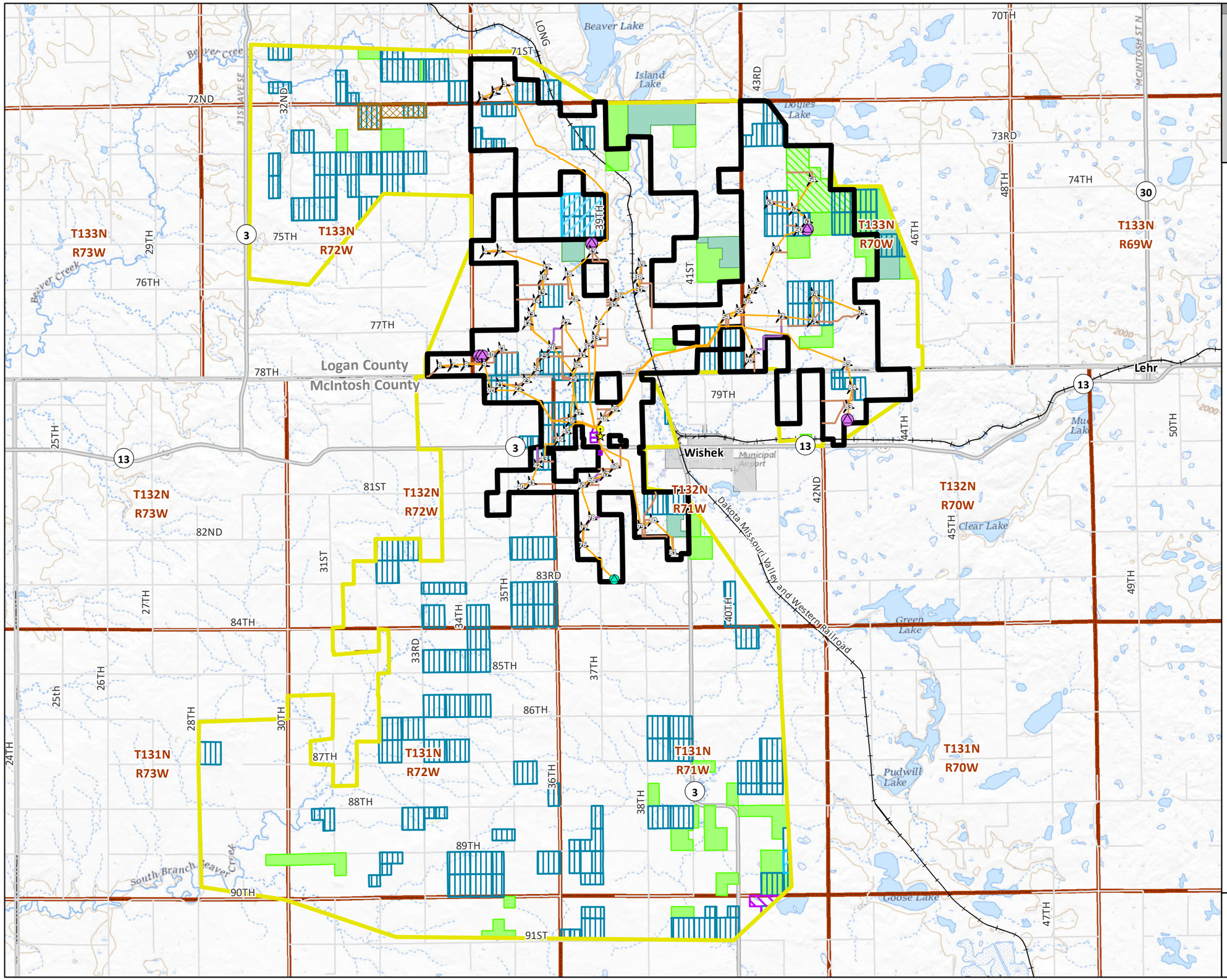
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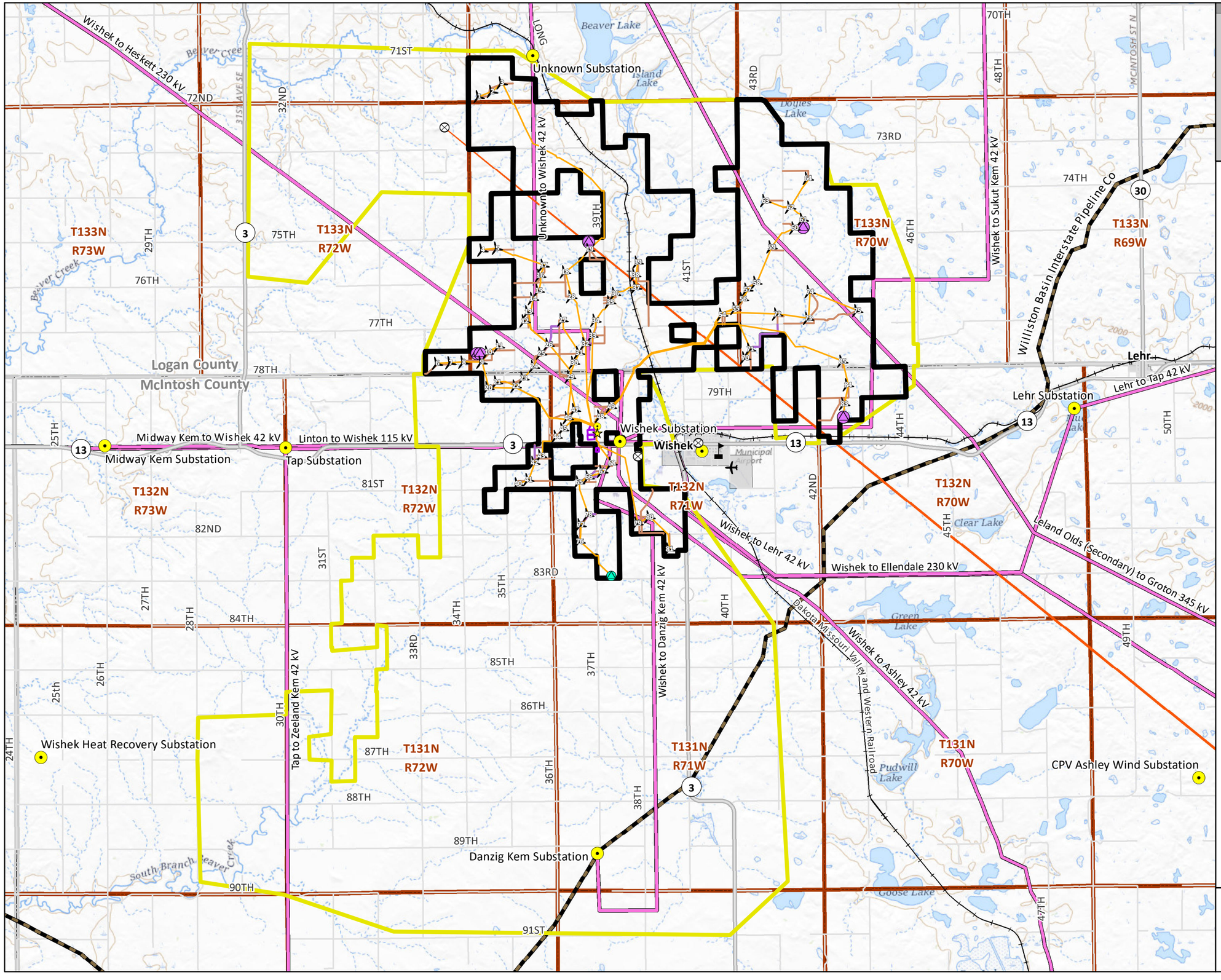
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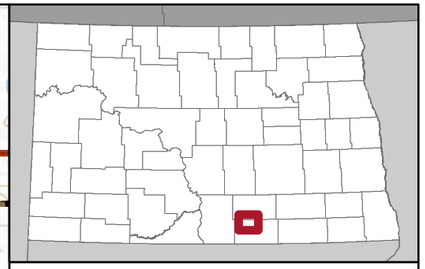
Badger Wind, LLC

2/10/2022

Figure 6
Land Cover and Use
Logan and McIntosh Counties, North Dakota


Beaver Creek
Beaver Lake
Island Lake
Doyles Lake
Clear Lake
Green Lake
Pudwill Lake
Goose Lake
South Branch Beaver Creek
Beaver Creek
Wishek
Municipal Airport
Lehr
Logan County
McIntosh County
Dakota Missouri Valley and Western Railroad
LONG
315 AVE SE
32ND
39TH
41ST
43RD
46TH
48TH
MCINTOSH ST N
42ND
44TH
45TH
50TH
49TH
47TH
40TH
37TH
36TH
35TH
34TH
33RD
31ST
30TH
29TH
28TH
27TH
26TH
25th
25TH
24TH
70TH
71ST
72ND
73RD
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76TH
77TH
78TH
79TH
81ST
82ND
83RD
84TH
85TH
86TH
87TH
88TH
89TH
90TH
91ST
T133N R73W
T133N R72W
T133N R70W
T133N R69W
T132N R73W
T132N R72W
T132N R71W
T132N R70W
T131N R73W
T131N R72W
T131N R71W
T131N R70W
3
13
30
2000
Legend
Proposed Turbine (symbols not to scale)
Potential Permanent MET Tower Location
Proposed ADLS Tower
Proposed O&M Building
Proposed Substation
Proposed Underground Collection Line
Proposed Crane Path
Proposed Access Road
Proposed Laydown Yard
Project Area
Study Area
State Road
County/Township Road
Railroad
City/Village
Township (PLSS)
County
Existing Public Lands and Easements
NDGF PLOTS Land
North Dakota Trust Lands - Surface
North Dakota Trust Lands - Mineral
USFWS Waterfowl Production Area
USFWS Grassland Easement
USFWS Wetland Easement
USFWS Wetland Easement obtained subsequent to Project lease agreement
Source: esri USGS Topo Basemap
0 1 2 3
Miles
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Badger Wind, LLC
2/18/2022
Figure 7
Existing Public Lands and Easements
Logan and McIntosh Counties, North Dakota





Legend

- Proposed Turbine (symbols not to scale)
- Potential Permanent MET Tower Location
- Proposed ADLS Tower
- Proposed O&M Building
- Proposed Substation
- Proposed Underground Collection Line
- Proposed Crane Path
- Proposed Access Road
- Proposed Laydown Yard
- Project Area
- Study Area
- City/Village
- Township (PLSS)
- County

Existing Infrastructure

- Airport
- School
- Communication Towers
- Existing Substation
- Existing Transmission Line
- Microwave Beam Path
- Natural Gas Pipeline
- State Road
- County/Township Road
- Railroad

Source: esri USGS Topo Basemap

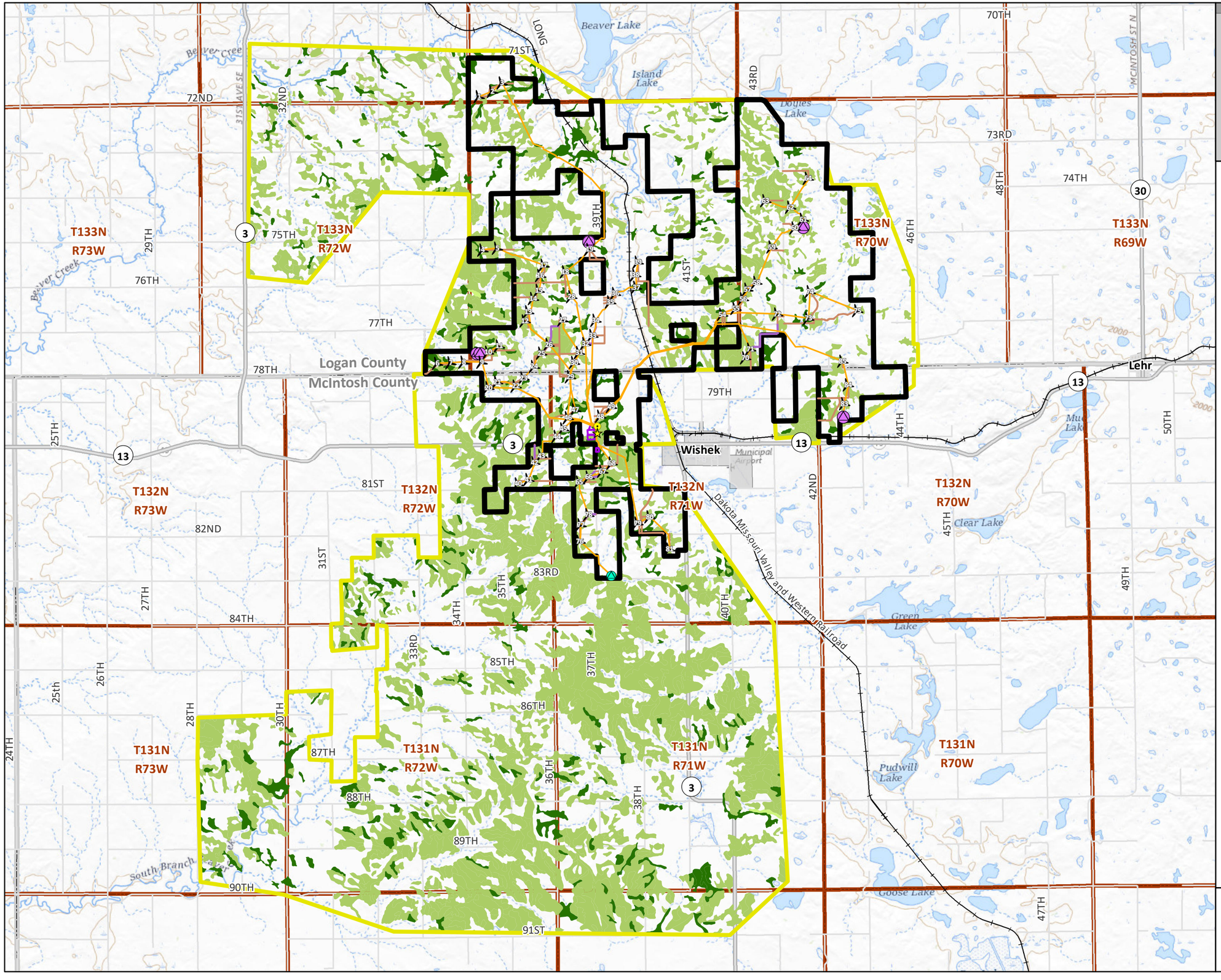
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Badger Wind, LLC
2/10/2022

Figure 8
Existing Infrastructure
Logan and McIntosh Counties, North Dakota



Legend

- Proposed Turbine (symbols not to scale)
- Potential Permanent MET Tower Location
- Proposed ADLS Tower
- Proposed O&M Building
- Proposed Substation
- Proposed Underground Collection Line
- Proposed Crane Path
- Proposed Access Road
- Proposed Laydown Yard
- Project Area
- Study Area
- State Road
- County/Township Road
- Railroad
- City/Village
- Township (PLSS)
- County
- Prime Farmland
- Farmland of Statewide Importance
- Prime farmland if drained

Source: esri USGS Topo Basemap

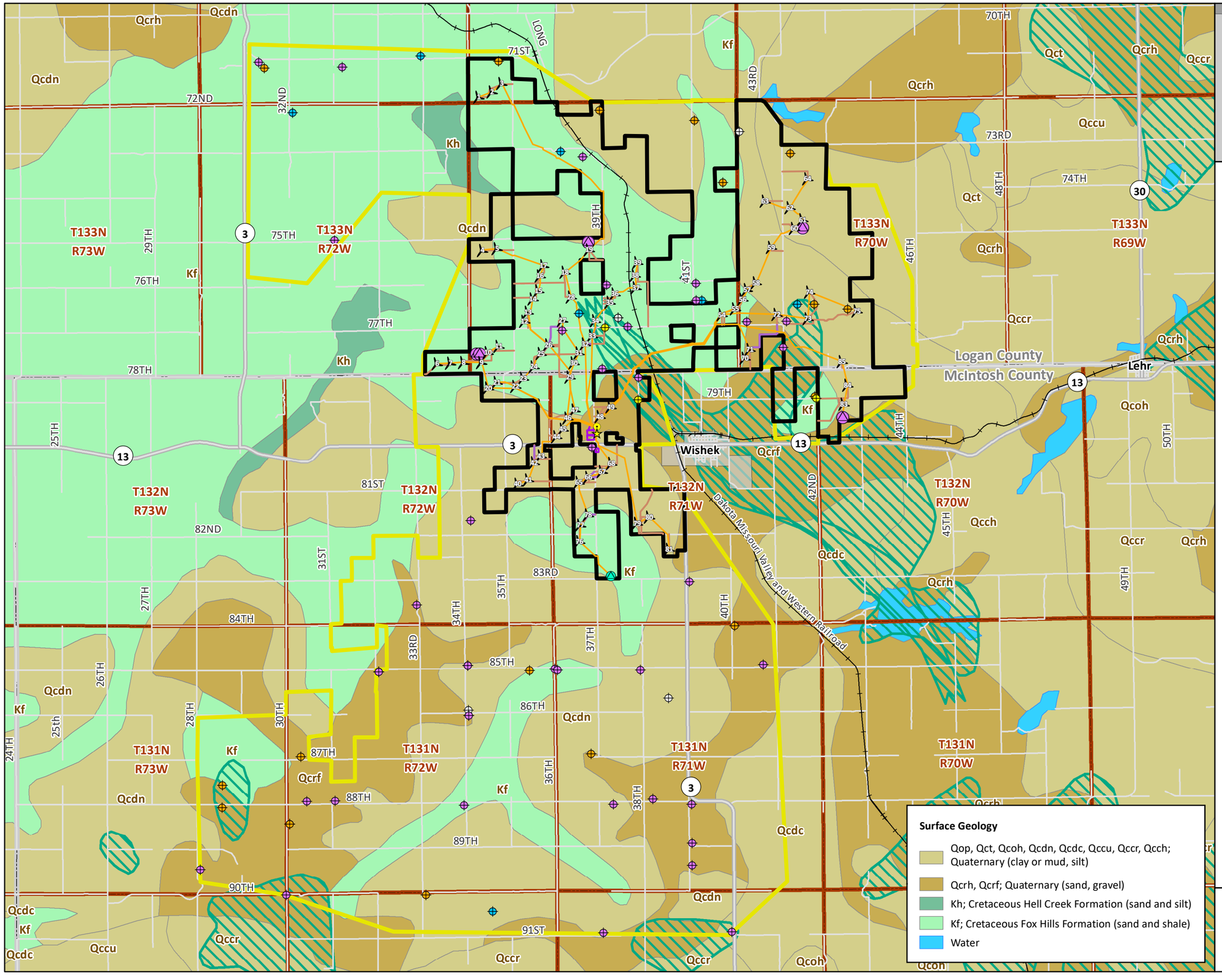
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Badger Wind, LLC
2/14/2022

Figure 9
Prime and Unique Farmland
Logan and McIntosh Counties, North Dakota



Legend

- Proposed Turbine (symbols not to scale)
- Potential Permanent MET Tower Location
- Proposed ADLS Tower
- Proposed O&M Building
- Proposed Substation
- Proposed Underground Collection Line
- Proposed Crane Path
- Proposed Access Road
- Proposed Laydown Yard
- Project Area
- Study Area
- State Road
- County/Township Road
- Railroad
- City/Village
- Township (PLSS)
- County
- Domestic Well
- Observation Well
- Stock Well
- Plugged/Test Well
- Unknown Well
- Surficial Aquifer

Surface Geology

- Qop, Qct, Qcoh, Qcdn, Qcdc, Qccu, Qccr, Qcch; Quaternary (clay or mud, silt)
- Qcrh, Qcrf; Quaternary (sand, gravel)
- Kh; Cretaceous Hell Creek Formation (sand and silt)
- Kf; Cretaceous Fox Hills Formation (sand and shale)
- Water

Source: esri USGS Topo Basemap

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Miles

ATWELL

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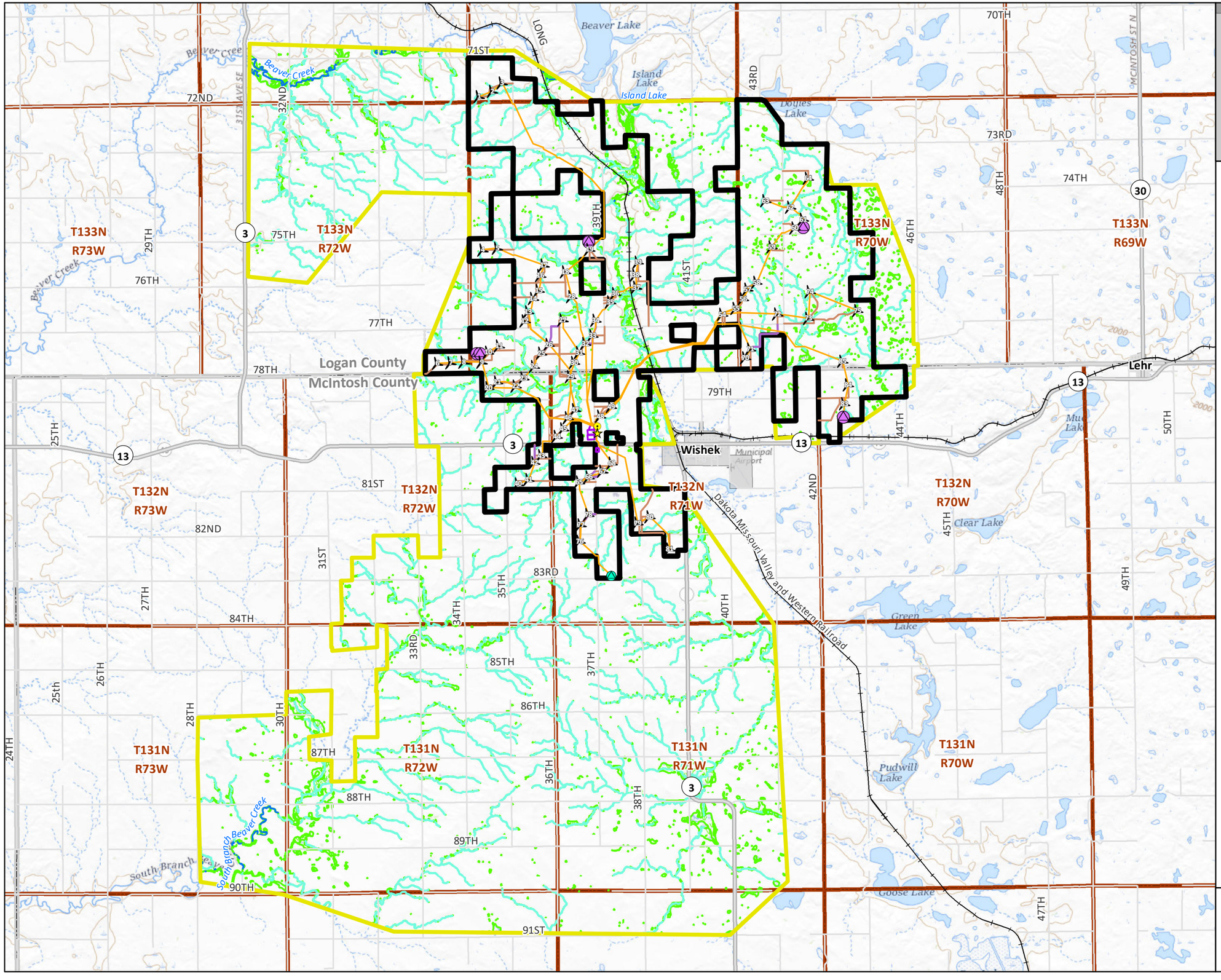
Badger Wind, LLC

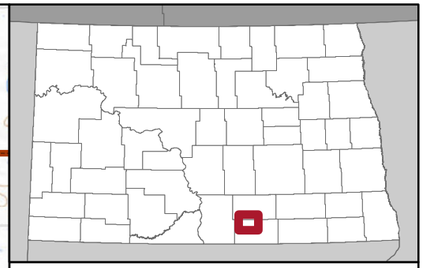
2/10/2022

Figure 10

Geologic and Groundwater Resources

Logan and McIntosh Counties, North Dakota





Legend

- Proposed Turbine (symbols not to scale)
- Potential Permanent MET Tower Location
- Proposed ADLS Tower
- Proposed O&M Building
- Proposed Substation
- Proposed Underground Collection Line
- Proposed Crane Path
- Proposed Access Road
- Proposed Laydown Yard
- Project Area
- Study Area
- State Road
- County/Township Road
- Railroad
- City/Village
- Township (PLSS)
- County
- Perennial Stream (NHD)
- Intermittent Stream (NHD)
- Waterbody (NHD)
- Wetland (NWI)

Source: esri USGS Topo Basemap

0 1 2 3
Miles

ATWELL

The information contained on this map is proprietary and confidential. The use or disclosure of this information by you to third parties is prohibited by law and may give rise to civil or criminal liability.

Badger Wind, LLC
2/10/2022

Figure 11
Surface Water and Wetlands
Logan and McIntosh Counties, North Dakota

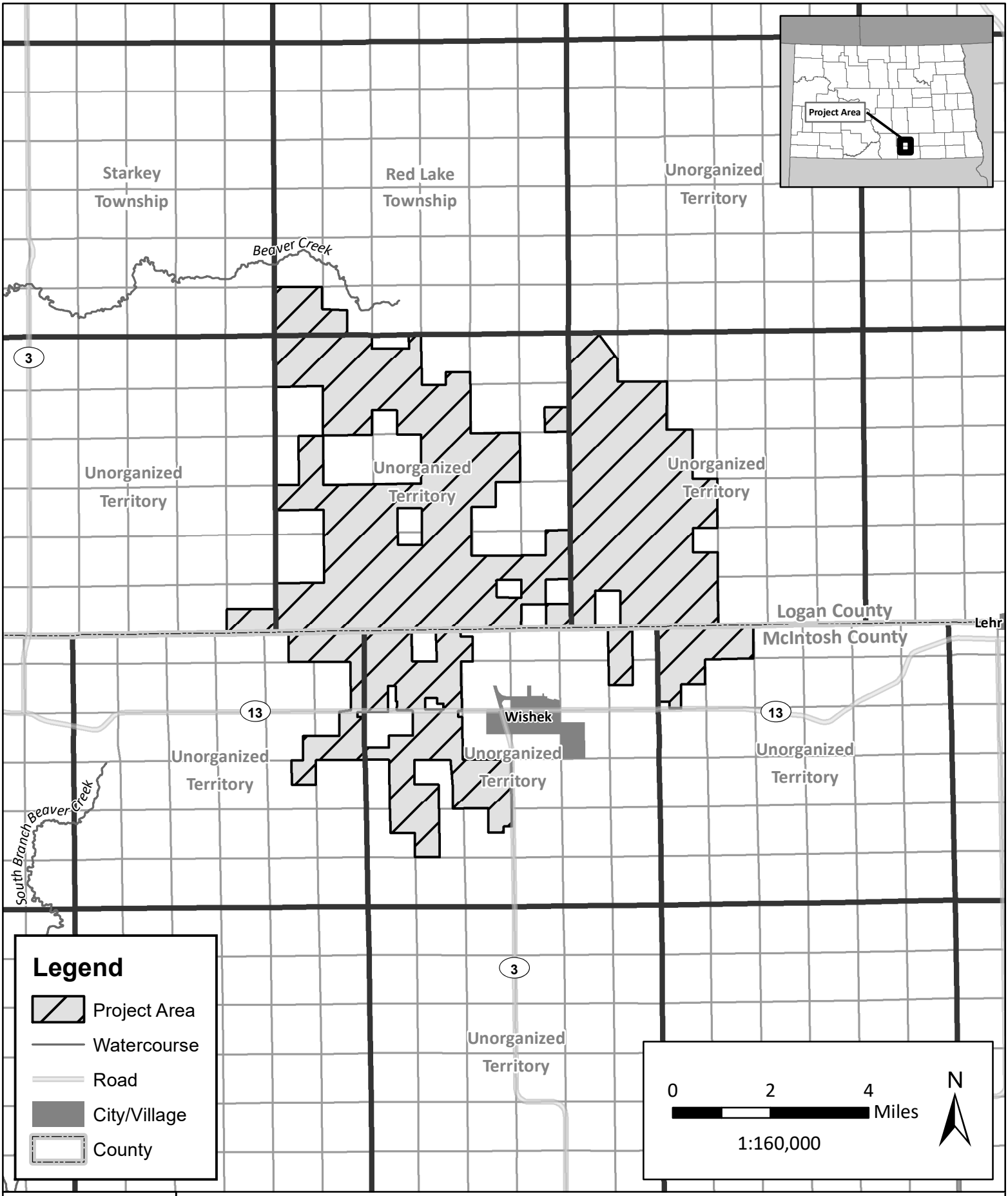


Figure 12

Badger Wind Project

Logan and McIntosh Counties, North Dakota

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