Consolidated Application to the North Dakota Public Service Commission for a Certificate of Corridor Compatibility and Transmission Facility Route Permit

Burke Wind Transmission Line
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Burke and Mountrail Counties, North Dakota

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1.0 INTRODUCTION

Pursuant to North Dakota Century Code section 49-22-08.2, Burke Wind, LLC (Burke Wind or Applicant), a wholly-owned, indirect subsidiary of NextEra Energy Resources, LLC (NEER), submits this Consolidated Application for a Certificate of Corridor Compatibility and Transmission Facility Route Permit (Application) to construct the proposed Burke Wind Transmission Line (Project). The proposed Project consists of a new, approximately 37-mile-long, 345-kilovolt (kV) overhead transmission line to be located on private property in Burke and Mountrail Counties, North Dakota, as shown in **Figures 1 and 2**. The Project will connect to an associated substation that will be constructed at the north terminus of the transmission line and will be permitted separately. At the south terminus, the Project will connect to the existing Tande Substation owned by Basin Electric Power Cooperative (BEPC).

The Project will deliver power from the proposed Burke Wind Energy Center to the electrical grid by connecting to the existing Tande Substation. The Burke Wind Energy Center is a proposed wind farm that will consist of the construction and operation of up to 114 wind turbines to be located in Burke County, North Dakota. The Burke Wind Energy Center will produce approximately 300 megawatts (MW) of renewable wind energy and requires a separate permit. Thus, Burke Wind plans to submit a separate Application for a Certificate of Site Compatibility to the North Dakota Public Service Commission (Commission) for the Burke Wind Energy Center. Burke Wind respectfully requests that, pursuant to N.D.C.C. § 49-22-13, the Commission issue notice for a consolidated hearing on this Application to be held in Burke County, North Dakota, and additionally, consolidate the Project's hearing along with the separate application for the Burke Wind Energy Center.

NEER, through its affiliates, develops renewable energy projects throughout the United States and Canada and is the largest generator of wind powered electricity in North America. NEER and its affiliates have generated over 12,885 MW of capacity throughout 32 states and Canada as of 2017. In North Dakota specifically, NEER and associated affiliates own and operate approximately 1,078 MW of wind generation. NEER designs, constructs, and operates its facilities in an environmentally sound and responsible manner. **Appendix A** provides sections from NEER's 2017 Corporate Responsibility Report which describes NEER's environmental accountability, management, and stewardship policies that are intended to:

- Design, construct, operate, and maintain NEER facilities in an environmentally sound and responsible manner;
- Prevent pollution, minimize waste, and conserve natural resources;
- Avoid, minimize, and/or mitigate impacts to habitat and wildlife; and
- Engage stakeholders to build trust and partner toward common goals for environmental stewardship and protection.

1.1. Compliance with the Energy Conversion and Transmission Facility Siting Act

As required by the North Dakota Energy Conversion and Transmission Facility Siting Act (Siting Act), an application for a Certificate of Corridor Compatibility and Transmission Facility Route Permit (Corridor Certificate and Route Permit) must meet the criteria set for in the North Dakota Century Code (N.D.C.C.) Chapter 49-22 and North Dakota Administrative Code (N.D. Admin. Code) Article 69-06. Pursuant to the Siting Act, this application presents information required by the Siting Act and follows the Commission's administrative rules for a Certificate of Corridor Compatibility and Route Permit.

The Application demonstrates that Burke Wind has considered the exclusion areas, avoidance areas and selection criteria and policy criteria set forth in N.D. Admin. Code section 69-06-08-02. Burke Wind has provided siting, design and technical information in this application so as to allow a comprehensive evaluation of the Project.

1.1.1 Application Format

The Application follows the format outlined in the Commission's application requirements promulgated pursuant to the Siting Act. **Section 1** of the Application provides a Project and Application overview. **Sections 2-7** of the Application provide a summary of the analyses conducted for the Project and demonstrates how the Project adheres to the Commission's statutes and regulations.

Table 1-1 lists the information required to satisfy the requirements for an Application based on the Siting Act (N.D.C.C. Chapter 49-22) and N.D. Admin. Code Chapter 69-06, and identifies which section of the Application addresses each topic.

Table 1-1 Certificate of Corridor Compatibility and Route Permit Checklist

Code and Subsection	Description	Section
N.D. Admin. Code § 69-06-05-01	**Transmission Facility Permit**	
Subsection 2	**Contents**	
a.	A description of:	
	(1) The type of facility proposed	1.0, 2.0
	(2) Purpose of the facility	1.0, 2.0
	(3) The technology to be used	1.0, 2.0
	(4) The type of product to be transmitted	2.1, 2.2
	(5) The source of the product to be transmitted	2.1, 2.2
	(6) The final destination of the transmission line	2.1, 2.2
	(7) The proposed size and design, including: a. Right-of-way width b. Length of the facility c. The span length for electric facilities d. Proposed type of structure for electric facilities e. The voltage for electric facilities f. The requirement for, and location of, any new associated facilities	1.0, 2.1, 2.2, 2.3, 2.4
b.	The anticipated time schedule for accomplishing major events, including:	

Code and Subsection	Description	Section
	(1) Obtaining the certification of corridor compatibility; (2) Obtaining the route permit; (3) Completing right-of-way acquisition; (4) Starting construction; (5) Completing construction; (6) Testing operations; (7) Commencing operations.	2.5, Table 2-4
c.	A copy of each evaluative study or assessment of the environmental impact of the proposed facility submitted to the agencies listed in section 69-06-01-05 and each response received.	Appendix B
d.	An analysis of the need for the proposed facility based on present and projected demand for the product transmitted, including the most recent system studies supporting the analysis of the need.	3.1
e.	A description of any feasible alternative methods for serving the need	3.3
f.	The width of a corridor must be at least ten percent of its length, but not less than one mile [1.61 kilometers] or greater than six (6) miles [9.66 kilometers] unless another appropriate width is determined by the Commission.	2.1
g.	A study area that includes a proposed corridor of sufficient width to enable the Commission to evaluate the factors addressed in N.D.C.C section 49-22-09.	2.1, 2.3, Figures 1 and 2
h.	A discussion of the factors in N.D.C.C. section 49-22-09 to aid the Commission's evaluation of the proposed route.	7.0
i.	A discussion of the applicant's policies and commitments to limit the environmental impact of its facilities, including copies of board resolutions and management directives.	1.0, 5.0, Appendix A
j.	Identification and map of the criteria that led to the proposed route location within the designated corridor, including exclusion areas, avoidance areas, selection criteria, policy criteria, design construction limitations, and economic considerations.	4.0, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 5.0, Table 4-1, Table 4-2, Table 4-3, Table 4-4, Figure 3(a-n)
k.	A discussion of the relative value of each criterion and how the applicant selected the proposed corridor location, giving consideration to all criteria and how the location, construction, and operation of the facility will affect each criterion.	4.0, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6

Code and Subsection	Description	Section
l.	A discussion of the general mitigative measures that the applicant will take to minimize adverse impacts that result from a route location in the proposed corridor and the construction and operation of the facility.	5.1, 5.2, 5.3, 5.4, 5.5, 5.6, 5.7, 5.8
m.	Qualifications of each person involved in the corridor location study.	8.0
n.	A map identifying the criteria that led to the proposed route location within the designated corridor and the location of any new associated facilities. Several different criteria may be shown on each map depending on the map scale and the density and nature of the criteria.	Figures 1-3(a-f)
o.	An eight and one-half-inch by eleven-inch black and white map suitable for newspaper publication depicting the site area	A map for newspaper publication will be provided under a separate CD
p.	A discussion of present and future natural resource development in the area	5.0
q.	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.	Figures 1-5
N.D. Admin. Code § 69-06-08-02	**Transmission facility corridor and route criteria**	
	The following criteria must guide and govern the preparation of the inventory of exclusion and avoidance areas, and the corridor and route suitability evaluation process:	4.0, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6, Table 4-1, Table 4-2, Table 4-3, Table 4-4
1.	Exclusion Areas	4.0, Table 4-1
2.	Avoidance Areas	4.2, Table 4-2
3.	Selection Criteria	4.3, Table 4-3
4.	Policy Criteria	4.4, Table 4-4
N.D.C.C. § 49-22-08	**Application for a certificate – Notice of filing – Amendment – Designation of a site or corridor.**	
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, 2.0, Table 2-2
b.	A summary of any studies which have been made of the environmental impact of the facility.	5.0, 6.0, Appendix B
c.	A statement explaining the need for the facility.	3.0

Code and Subsection	Description	Section
d.	An identification of the location of the preferred site for any energy conversion facility.	2.1, Figures 1-3(a-f)
e.	An identification of the location of the preferred corridor for any transmission facility.	2.3, Figures 1-3(a-f)
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.	2.0
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.	5.0, 6.0, 7.10
h.	An evaluation of the proposed site or corridor with regard to the applicable considerations set out in section 49-22-05.1.	4.0, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6, Table 4-1, Table 4-2, Table 4-3, Table 4-4
N.D.C.C. § 49-22-08.1	**Application for a permit – Notice of filing – Amendment – Designation of a route**	
Subsection 1	**Application for a route permit for an electric transmission facility within a designated corridor must be filed no later than two years after the issuance of the certificate containing the following information:**	
a.	Type, size, and design of the proposed facility	1.0, 2.2
b.	Location of the proposed facility	2.1, Table 2-1
c.	An evaluation of the proposed corridor/route with regard to the applicable criteria established in accordance with N.D.C.C. § 49-22-05.1	2.1, 2.2, 2.3, 2.4, 2.5 2.6, 2.7, 7.0, Tables 2.1-2.4
d.	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	5.1, 5.2, 5.3, 5.4, 5.5, 5.6, 5.7, 5.8
e.	A description of the right-of-way preparation and construction and reclamation procedures.	2.7
f.	A statement setting forth the manner in which: (1) The utility will inform affected landowners of easement acquisition, and necessary easement conditions and restrictions. (2) The utility will compensate landowners for easements, without reference to the actual consideration to be paid.	2.6
g.	Such other information as the utility may consider relevant or the Commission may require.	7.0

Code and Subsection	Description	Section
N.D.C.C. § 49-22-09	**Factors to be considered in evaluated applications and designation of sites, corridors, and routes.**	
1.	Available research and investigations relating to the effects of the location, construction, and operation of the proposed facility on public	7.1
2.	The effects of new energy conversion and transmission technologies and systems designed to minimize adverse environmental effects.	7.2, Appendix A
3.	The potential for beneficial uses of waste energy from a proposed energy conversion facility.	Not Applicable
4.	Adverse direct and indirect environmental effects which cannot be avoided should the proposed site or route be designated.	7.4
5.	Alternatives to the proposed site, corridor, or route which are developed during the hearing process and which minimize adverse effects.	7.5
6.	Irreversible and irretrievable commitments of natural resources should the proposed site, corridor, or route be designated.	7.6
7.	The direct and indirect economic impacts of the proposed facility.	7.7
8.	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.	7.8
9.	The effect of the proposed site or route on an existing scenic areas, historic sites and structures, and paleontological or archaeological sites.	7.9
10.	The effect of the proposed site or route on areas which are unique because of biological wealth or because they are habitats for rare and endangered species.	7.10
11.	Problems raised by federal agencies, other state agencies, and local entities.	7.11

2.0 PROJECT DESCRIPTION

2.1. Project Location

The Project will connect the proposed Burke Wind Energy Center's collection substation with the existing Tande Substation owned by BEPC, which is located approximately four (4) miles east of Tioga, North Dakota. The Project transmission line is 36.9 miles long and runs in a north-south direction. At its closest point, a portion of the 37-mile line is located approximately 1.8 miles north of the City of White Earth, approximately 20 miles southwest of Bowbells, approximately three (3) miles east of Tioga, and approximately 25 miles west of Kenmare.

Terminology associated with the Project and impact analysis are defined in **Table 2-1** and shown on **Figures 1(a-f) and 2(a-f)**.

Table 2-1 Project Terminology

Term	Definition/Description
Study Area	The area that was studied to determine the best route for the Project. The Project Study Area is one mile wide (0.5 mile on either side of the Project Route).
Project Corridor	In accordance with N.D.C.C. § 49-22-03(4), the Project Corridor is an area of land in which a designated route may be established for a transmission facility. The Project Corridor has a width of 150 feet for the length of the Project Route and widens to 200 feet at each turn and at each terminus.
Project Route	In accordance with N.D.C.C. § 49-22-03(12), the Project Route is the location and centerline of a transmission facility within a designated corridor.

2.2. Project Design and Product Delivery

The approximately 37-mile long 345-kV overhead transmission line will be constructed with steel monopole structures. The structures will include tangent, guyed light running angle, guyed medium angle, and guyed deadend structures. The average height of the monopole structures will range from 80 to 160 feet, depending on final engineering design. Please refer to **Table 2-2** for specifications on the heights for each monopole structure type. The span between monopole structures will typically be approximately 800 feet but may range from 400 to 1,200 feet depending on the length needed to avoid constraints. Final monopole structure placement and actual span lengths between monopole structures will vary depending on geological, ecological, or engineering constraints identified during the final design. Typically, the Project Corridor used during construction and maintained throughout the life of the Project will be 150 feet in width and will widen to 200 feet at turns and near each terminus. The cost associated with constructing the transmission line and accompanying facilities is estimated at $19.53 million.

Preliminary monopole structure locations indicate guyed monopole structures may be used at approximately 48 turns. Up to eight (8) guy wires may be required per turn and the guy wires will range from 100 to 150 feet and on average 125 feet from the base of the monopole structure (**Figure 10**).

Please refer to **Table 2-2** for specifications on the guyed monopole structures. Specialty monopole structures and foundations may be required in certain locations.

Table 2-2 Transmission Line Monopole Structures

Monopole Structure	Structure Heights	Number of Guy Wires Per Turn
Tangent	Anticipated Range 80-160 feet Above Ground Height and are Typically 110 feet	Not Applicable
Guyed Light Running Angle	Anticipated Range 110-150 feet Above Ground Height; and are Typically 120 feet	Four (4) total guy wires located on the bisector of the structure
Guyed Medium Angle	Anticipated Range 100-150 feet Above Ground Height and are Typically 125 feet	Four (4) total guy wires located on the bisector of the structure
Guyed Deadend	Anticipated Range 100-150 feet Above Ground Height and are Typically 120 feet	Eight (8) total guy wires backing up each conductor/shield wire

The Project will allow the Burke Wind Energy Center, located in Burke County, North Dakota, to provide approximately 300 MW of renewable wind energy to the power grid by connecting the collector substation located in the northwestern quarter of Section 25, Township 161 North, Range 93 West to the existing Tande Substation. No new impacts are expected at the Tande Substation and all interconnection components will be located within the existing Tande Substation footprint that is fenced and graveled.

The construction of the Project will occur within the Project Corridor shown in **Figures 1(a-f) and 2(a-f)**. The Project Route, also shown in **Figures 1(a-f) and 2(a-f)**, was identified by addressing the factors identified in N.D.C.C. § 49-22-09 and pursuant to the criteria in N.D. Admin. Code § 69-06-08-02.

2.3. Project Corridor

The majority of the Project Corridor is 150 feet in width. However, near the north and south terminuses and at each turn, the Project Corridor is 200 feet in width so as to accommodate room for turning structures and guy wires. The Project Corridor was developed by identifying landowners interested in participating in the Project between the north and south terminuses of the Project, taking into consideration the exclusion and avoidance areas set forth in N.D. Admin. Code § 69-06-08-02, adhering to sound engineering and construction principles (safety, reliability, accessibility), and cost effectiveness. **Section 2.6** describes in detail the corridor and routing selection process. Particular care was taken to avoid sensitive ecological resources such as wetlands and U.S. Fish and Wildlife Service (USFWS) easements through coordination with resource agencies and pole micro siting.

The Project Corridor is located on privately owned lands within a rural setting and is predominantly composed of agricultural lands (cultivated crops and hay and pasture land), prairie pothole wetlands and grassland. Much of the landscape is relatively flat with gently rolling hills. Intermittent streams and forested riparian corridors are present throughout the central and southern portions of the area.

The Project Corridor is situated along 28.4 miles (77% of the Project Route) of existing roadways and field lines. Land descriptions of the sections in which the Project Corridor is situated are provided in **Table 2-3** and is shown on **Figures 1(a-f) and 2(a-f)**.

Table 2-3: Project Corridor and Project Route Land Description

Township	Range	Sections
157N	93W	3, 4, 7-9, 18
157N	94W	13-15, 20-22, 29
158N	93W	3, 4, 9, 10, 15, 21, 22, 28, 33, 34
159N	93W	3, 4, 8, 9, 17, 20, 29, 32, 33, 34
160N	93W	4, 9, 10, 15, 22, 26, 27, 34, 35
161N	93W	25, 26, 35

2.4. Project Route

The Applicant identified the Project Route after evaluating the avoidance and exclusion criteria outlined in N.D. Admin. Code § 69-06-08-02, detailed in **Section 4.0** of this Application, and after considering public and agency input as detailed in **Section 6.0** of this Application.

The Project Route was decided on using multiple considerations, such as:

- Minimizing total length and construction costs;
- Minimizing impacts on residents, including (but not limited to) displacement, noise, aesthetics, recreation, agricultural production, and public services;
- Factoring in public health and safety;
- Offsetting existing right-of-way (ROW) (*e.g.*, roadway or other utility ROW) or section lines to minimize impacts on current land use and to comply with Mountrail and Burke County requirements unless otherwise allowed by the pertinent County;
- Minimizing effects on archaeological and historic resources;
- Minimizing effects on wetlands and surface waters;
- Minimizing effects on wildlife, rare or endangered species, and unique natural resources; and
- Avoiding all direct impacts to USFWS easements.

Figure 3(a-n) shows the proposed Project Route within the Project Corridor, along with the avoidance criteria and **Figure 3(a-n)** shows the Project Route and Project Corridor, along with the exclusion criteria. Land descriptions of the sections in which the Project Route is situated are the same as the land descriptions for the Project Corridor and are provided in **Table 2-3** and are shown on **Figures 1(a-f) and 2(a-f)**.

2.5. Project Schedule

The preliminary Project schedule summarized in **Table 2-4** is based upon information known as of the date of this filing. The operation date is dependent upon permitting, equipment deliveries, and other development activities. Construction will commence according to the preliminary Project schedule provided all pre-construction permits and approvals have been obtained.

Table 2-4: Estimated Project Schedule

Milestone	Date
Execute Option Agreements for Construction Easement	July 2018
Material Procurement	September 2018
Certificate of Corridor Compatibility and Route Permit	December 2018
Construction Start	May 2019
Testing Operations	November 2019
In-Service Operations	December 2019

2.6. Land Easement Status

The Applicant has worked with willing, voluntary landowners to secure easements along the Project Route. There are currently a total of 48 landowners easements needed for the transmission line and, of those, 46 (or 96%) have signed an option agreement. The Applicant is pursuing easements with the remaining landowners and expects to have them completed in August 2018. The participating and non-participating landowners are shown on **Figure 4(a-f)**. Landowners will be compensated by the Applicant for the easements based on easement terms and conditions, the land within the construction easement, and for the placement of facilities within the easement area.

2.7. Project Construction

Construction of a transmission line in North Dakota is a multi-phase process. In order for Burke Wind to responsibly and successfully construct the Project, activities will include the completion of pre-construction studies and surveys, acquiring required construction permits, ROW preparation and clearing, delivery and assembly of transmission structures, final structure assembly, conductor installation, and restoration. Each phase is described in greater detail below.

Pre-construction activities have included conducting desktop studies and field surveys to support permitting and construction planning. Pre-construction studies and surveys will be used to identify features to be avoided in accordance with applicable state and federal regulations; public input; and applicable county regulations including Burke County Wind Siting Best Management Practices. As such, the following studies and surveys will be conducted prior to construction:

- environmental and cultural resources,
- geotechnical sub-surface investigation,
- micro-siting of pole locations,
- engineering and design of the transmission line,

- land procurement studies and surveys, and
- various power systems studies.

Additionally, pre-construction activities will include initial line-survey work and will consist of using aerial photography or Light Detection and Ranging (LIDAR), survey control, route centerline location, profile surveys, and access surveys. Dependent on proposed monopole structure locations, analysis of soil properties may be required for engineering purposes to determine monopole structure location feasibility prior to construction. Soil borings will be taken by an experienced geotechnical testing laboratory. Also, the Applicant will submit a Notice of Intent for a National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges Associated with Construction Activity to the North Dakota Department of Health (NDDH) prior to ground disturbing activities for construction. Burke County Wind will develop a Stormwater Pollution Prevention Plan (SWPPP) that will detail the erosion control measures to be followed throughout the construction process in conjunction with the NPDES General Permit conditions and a construction Spill Prevention, Control and Countermeasure (SPCC) and a separate SPCC for operations will be implemented to avoid impacts to wetlands or waters quality.

During preparation of the Project Corridor for construction of the transmission line, existing vegetation will be cleared as required. This includes trees and tall shrubs that may interfere with the future operation or maintenance of the Project. The use of herbicides and mechanical means may be used to control vegetation growth within the Project Corridor, both during preparation, construction, and operation time periods. During construction, Project Corridor disturbance areas will primarily consist of pole locations, temporary travel lanes, and temporary staging areas. Vegetation within the Project Corridor will be permanently removed at monopole structure locations and may be temporarily impacted from vehicle traffic and equipment storage. Monopole structures will be designed for installation at existing grades to minimize ground disturbance where feasible and no permanent roads will be needed. Following completion of construction activities, vegetation will be allowed to regrow and ongoing maintenance will be performed to keep the new growth at appropriate clearances from the line in order to meet electrical and safety standards. Routine monitoring of vegetation regrowth within the Project Corridor will occur to ensure the safe operation of the transmission line over the life of the Project.

The monopole structures will be transported on flatbed trucks to the erection sites and assembled. Monopole structures will be offloaded and lifted with lift points or lifting methods that are typically defined by the manufacturer. Temporary laydown areas will be located within mostly agricultural and cultivated fields on leased land. Monopole structures are typically framed on the ground prior to erection. The typical monopole structures for the Project will utilize a direct-embed foundation. The direct-embed foundation of each monopole structure will be backfilled with American Society for Testing and Materials (ASTM) C33 #57 grade crushed rock and tamped into place to prevent structure movement or settling. Where drilled pier foundations are required, they will be installed as specified, and the monopole structures will be installed on top of the foundations. The engineer of record specifies the design for foundations, which includes re-enforcement, depth, concrete mix and spacing requirements. Geotechnical studies are in progress and a geotechnical report will be completed to support direct-embed installation prior to construction. Based on previous project experience, soil borings are approximately five (5) to seven (7) feet in diameter for direct-embed installations. However, there are some locations where drilled shaft foundations may be required. Based on previous project experience, soil borings are approximately six (6) to ten (10) feet in diameter for drilled shaft foundations.

Once vegetation is removed, the Project Corridor is prepped, and the monopole structures are assembled at their locations. Holes will be drilled for monopole structures using a truck-mounted auger. The material extracted from the hole will be spread around the monopole structure within the Project Corridor unless prohibited by permit conditions or landowner request.

Final monopole structure assembly and hardware placement will be completed using cranes and bucket trucks. Burke Wind requires that monopole structures be assembled and erected in compliance with the monopole structure manufacturer's specifications. These requirements include cribbing to provide adequate support for the monopole structures during assembly and framing on the ground. Monopole structure sections will be jacked together or bolted according to the manufacturer's requirements.

Following erection of all monopole structures, conductor and ground/shield wires will be installed. Burke Wind requires that the conductor be installed in compliance with Institute of Electrical and Electronic Engineers, Inc. (IEEE) 524 Guide to the Installation of Overhead Transmission Line Conductors using the controlled tension method, which ensures that the cable comes off the reel at a constant tension without backlashes. Conductor stringing operations will require brief access to each monopole structure to secure the conductor wires to the insulators or shield wire clamps once final line sag is established. Stringing equipment generally consists of wire pullers, tensioners, conductor reels, shield wire reels, and stringing blocks. Stringing blocks will be installed at each conductor and shield wire attachment point. A pulling line will be fed through the blocks at each monopole structure in the stringing section to facilitate each cable pull. The conductor will be pulled and tensioned for each stringing section, which is typically two (2) to three (3) miles along the Project Route. Cables will be brought in on reel trailers and placed behind the tensioner. Heavy, truck-mounted winches will be used for pulling. The bullwheel tensioner will control the tension of the conductor. Communication between the puller and tensioner is established to coordinate the speed and control of the pull. A spotter will follow the conductor installation and can require the operation to be stopped at any time. After installation, the conductor will be tensioned using sag charts at spans, consistent with the IEEE stringing guide. After tensioning, the conductor will be clipped in. All sections of the conductor within one (1) mile of suitable Whooping Crane habitat will be outfitted with Avian Power Line Interaction Committee (APLIC) approved bird flight diverters.

Once construction is completed, all temporary facilities and debris will be removed. Debris, which may include construction materials such as packaging material, insulator crates, conductor reels, and wrapping, will be disposed of in accordance with local, state, and federal regulations. In accordance with the SWPPP, excess soil and vegetation may be spread within the Project Corridor but away from all aquatic resources. If excess soil and vegetation must be hauled off the Project Corridor, it will be disposed of at an approved site.

Disturbance to areas in the Project Corridor will be restored to their previous condition to the maximum extent possible in accordance with the approved SWPPP conditions. Restoration will include, but is not limited to, grooming, reseeding, and replacing trees and shrubs as necessary. A tree replacement policy will be implemented by the Applicant based on the Commission's Tree and Shrub Mitigation Specifications.

3.0 NEED FOR FACILITY

3.1. Need Analysis

In order to transmit energy generated at the Burke Wind Energy Center, the wind facility must be connected to the electrical grid. Burke Wind has a power purchase agreement with BEPC to deliver power for 30 years from the Burke Wind Energy Center to the electrical grid via connection to the existing Tande Substation. BEPC completed the construction of the Tande Substation in 2017. The Tande Substation was constructed to meet the projected future electricity demand and to maintain electric transmission reliability standards in accordance with the requirements of the North American Reliability Council. The existing Tande Substation is located approximately 25 miles from the Burke Wind Energy Center's Project substation. Preliminary BEPC interconnection studies determined, based on the proximity of the Burke Wind Energy Center to the north, that Tande Substation was the optimized point of interconnection.

3.2. Description of Studies Developed

Various factors influenced the location of the Project Corridor, Project Route, and final design. These factors include the willingness of landowners to enter into easement agreements with the Applicant, landowner input, agency coordination, desktop analyses, evaluation of exclusion and avoidances areas and selection and policy criteria, and pre-construction surveys. Various environmental and cultural studies have been conducted and various studies are underway. Results of the completed environmental and cultural studies are located in **Section 5.**

3.3. No Action and Feasible Alternative Methods

There is no existing infrastructure connecting the proposed location of the Burke Wind Energy Center to the existing Tande Substation. The location of the Burke Wind Energy Center was identified as an optimal site from a wind resource, transmission, landowner participation, environmental, cultural, and economic standpoint. Preliminary BEPC interconnection studies determined, based on the proximity of the Burke Wind Energy Center to the north, that Tande Substation was the optimized point of interconnection. Therefore, there is no feasible alternative method to serving the facility need.

3.4. Ten-Year Plan

Burke Wind will file a Ten-Year Plan with the Commission in compliance with N.D.C.C. Section 49-22-04.

4.0 TRANSMISSION FACILITY CORRIDOR AND ROUTE CRITERIA

To determine the Project Route, the Applicant evaluated a one-mile-wide Study Area between the north and south terminuses of the Project. Within the Study Area, a Project Corridor was identified taking into account the exclusion and avoidance areas, and selection and policy criteria as set forth in N.D. Admin. Code § 69-06-08-02. Then, the Project Route was developed within the Project Corridor to meet the Commission's siting criteria. The selection criteria were used to minimize potential land use impacts, environmental impacts, and impacts to the public. The Applicant's policies regarding health, safety, labor relations, and coordination with other interests relates to the policy criteria in **Section 4.4**. In addition, design and construction limitations present in the Project Corridor were also factored into identification the proposed Project Route.

To identify the locations of exclusion and avoidance areas and to determine the potential impact of the Project on selection and policy criteria, the Applicant gathered data from multiple sources. Also, detailed desktop analysis and field surveys were conducted to identify data to assist in routing refinements. The Applicant gathered data related to many features including, but not limited to occupied residences, wetlands and water features, cultural resources, threatened and endangered species habitat, and hazardous materials. A geographic information system (GIS) was utilized to compile and analyze much of the data. Specific sources included:

- North Dakota Department of Transportation Landmarks;
- North Dakota Public Service Commission – Abandoned Mines;
- North Dakota State Historic Preservation Office (SHPO) – archaeology sites and architectural sites;
- North Dakota Geological Survey (NDGS) – landslide deposits;
- USFWS National Wetland Inventory maps;
- USFWS - Information, Planning, and Consultation System (IPaC)
- U.S. Geological Survey – protected areas, watercourses;
- Residences and homesteads within Project Corridor provided by surveyors;
- National Land Cover Dataset for woodlands data; and
- National Resources Conservation Service – prime farmland.

Structures and other constraints (including extractable resources, cemeteries, communication towers, and other infrastructure) derived from data obtained from the North Dakota GIS Hub as well as aerial photo interpretation, discussions with landowners, and field verification.

4.1. Exclusion Areas

In accordance with N.D. Admin. Code § 69-06-08-02(1), the geographical areas listed in **Table 4-1** shall be excluded in the consideration of a route for a transmission facility. A buffer zone of a reasonable width to protect the integrity of the area must be included. Exclusion areas are mapped for on **Figure 3(a-n)**.

Table 4-1: Exclusion Areas

N.D. Admin. Code § 69-06-08-02(1)	Exclusion Area	Present within 1-Mile Study Area?	Present within Project Corridor?	Description	Section Addressed
a.	Designated or registered national: parks; memorial parks; historic sites; landmarks; natural landmarks; historic districts; monuments; wilderness areas.	None	None	Not Applicable	5.1, 7.8, 7.9
b.	Designated or registered state: parks; historic sites; monuments; historical markers; archaeological sites; and nature preserves.	Yes – two (2) arch-aeological sites and 54 archaeologi-cal site leads.	Yes – 20 archaeological site leads.	Archaeological site leads will be examined during the Class III archaeological inventory for further evaluation see **Section 5.1.** Identified significant archaeological sites will be avoided or spanned. National Register-eligible sites within the Project Corridor will be protected during construction to avoid impacts.	5.1, 7.9
c.	County parks and recreational areas; municipal parks; and parks owned or administered by other governmental subdivisions;	None	None	Not Applicable	7.8

N.D. Admin. Code § 69-06-08-02(1)	Exclusion Area	Present within 1-Mile Study Area?	Present within Project Corridor?	Description	Section Addressed
d.	Areas critical to the life stages of threatened or endangered animal or plant species.	None	None	The Project Corridor is within the whooping crane migration corridor, but there is no designated critical habitat within the Project Corridor for any federally listed species.	5.3, 7.10
e.	Areas where animal or plant species that are unique or rare to this state would be irreversibly damaged.	None	None	Not Applicable	5.3, 7.10
f.	Areas within 1,200 feet of the geographic center of an intercontinental ballistic missile launch or launch control facility.	None	None	Not Applicable	Not Applicable
g.	Areas within 30 feet on either side of a direct line between ICBM launch or launch control facilities to avoid microwave interference	None	None	Not Applicable	Not Applicable

4.2. Avoidance Areas

In accordance with N.D. Admin. Code § 69-06-08-02(2), the Commission will not approve certain avoidances areas as a site for a transmission 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 transmission 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. **Table 4-2** lists these avoidance areas and provides detail

of the areas in relation to the Project. **Figure 3(a-n)** provides mapping of the avoidance areas in relation to the Project.

Table 4-2: Avoidance Areas

N.D. Admin. Code § 69-06-08-02(2)	Avoidance Area	Present within 1-Mile Study Area	Present within Project Corridor	Description	Section Addressed
a.	Designated or registered national: historic districts; wildlife areas; wild, scenic or recreational rivers; wildlife refuges; and grassland	None	None	Not Applicable	5.1, 7.8, 7.9
b.	Designated or registered state: wild, scenic, or recreational rivers; game refuges; game management areas; forests; forest management lands; and grasslands	None	None	Not Applicable	7.8, 7.9
c.	Historical resources which are not specifically designated as exclusion or avoidance areas	Yes – one (1) historical railroad within the Study Area, but not present within the Project Corridor	None	The historical railroad is located within the Study Area but outside the Project Corridor and will be avoided.	5.1, 7.9

N.D. Admin. Code § 69-06-08-02(2)	Avoidance Area	Present within 1-Mile Study Area	Present within Project Corridor	Description	Section Addressed
d.	Areas that are geologically unstable	Yes – one (1) reclaimed Quarry within the Study Area but not present within the Project Corridor. Several landslide areas within Study Area and one within the Project Corridor.	Yes – one (1) land-slide area within the Project Corridor but not within the Project Route.	No quarry features were identified within the Project Corridor. One (1) landslide area is within the Project Corridor but will be not be impacted as the transmission line will span the area.	6.1
e.	Within 500 feet of a residence, school, or place of business	Yes –21 residences, schools, or places of business within the Study Area	Yes – one (1) occupied farmstead within the Project Corridor and within 500 feet of the Project Route	In accordance with N.D.C.C. Section 49-22-05.1(2), Burke Wind has obtained a written waiver from the owner of the one residence located within 500 feet of the Project Route	
f.	Reservoirs and municipal water supplies	None	None	Not Applicable	5.2
g.	Water Sources for Organized Rural Water Districts	None	None	Not Applicable	Not Applicable
h.	Irrigated land	None	None	Not Applicable	Not Applicable
i.	Areas of recreational significance which are not designated as exclusion areas	None	None	Not Applicable	7.8

4.3. Selection Criteria

In accordance with N.D. Admin. Code § 69-06-08-02(3), a corridor or route shall be designated only when it is demonstrated to the Commission by the applicant that any significant adverse effects which will result from the location, construction, and maintenance of the transmission facility as they relate to the **Table 4-3**, will be at an acceptable minimum, or that those effects will be managed and maintained at an acceptable minimum.

Table 4-3: Selection Criteria

N.D. Admin. Code § 69-06-08-02(3)	Selection Criteria	Potential Adverse Effects
a.	**The impact upon agriculture:**	
(1)	Agricultural production	Monopole structure placement and guy wires will remove areas from agricultural production. Permanent impacts will be a maximum of 0.0009 acres per monopole structure for direct-embed installations, and a maximum of 0.0018 acres per monopole structure for drilled shaft foundations. Areas temporarily disturbed will be restored to either crop or native prairie pending original condition and landowner preference following terms and conditions of the SWPPP. Landowners will be compensated for any loss in crop damage or agricultural production due to construction or operation.
(2)	Family farms and ranches	The Project will comply with local and state setbacks. Siting will be compatible with existing farming and ranching uses. Areas within the construction easement may be temporarily disturbed during construction, but will be restored as practicable. Landowners will be compensated through an easement payment and for loss of agricultural
(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	No areas of the construction easement are irrigated. While some lands may be economically suitable for irrigation, no participating landowners have expressed concerns related to the Project and plans for irrigation.

N.D. Admin. Code § 69-06-08-02(3)	Selection Criteria	Potential Adverse Effects
(4)	Surface drainage patterns and ground water flow patterns	The Project will be constructed to avoid impacts to wetlands and waters to the extent practicable. Temporarily disturbed areas will be returned to their original contours and restored following the terms and conditions of the SWPPP. Surveys to delineate wetlands and waters of U.S. Army Corps of Engineers (USACE) jurisdiction for the Project were completed in June 2018.
b.	**The impact upon:**	
(1)	Noise sensitive land uses	Typical construction sounds will be generated by the Project during construction. During operations, corona effects, i.e., ionization due to changes in electric field intensity at the conductor surfaces, may create sound in the immediate vicinity of the line, but will meet the required setback of 500 feet at all occupied residences except one near the existing Tande substation where the landowner is a participant and a waiver has been obtained. Sound from corona effects, albeit minimal, is most noticeable when conductors are wet.
(2)	Visual effect on the adjacent area	The Project will be visible to landowners and travelers along roadways adjacent to the Project Route. Other transmission lines are present in the viewshed; therefore, the Project adds to the existing utility infrastructure and does not introduce a new visual element that is not already present. Velocity Suite data identified the following transmission lines within the Study Area: • BEPC – Tioga to Logan 230 kV • BEPC – Judson to Tande 345 kV • BEPC – Tande to Neset 230 kV • MDU Resources Group Inc. – Battleview Junction to Tap 57 kV • MDU Resources Group Inc. – Stanley to Tioga 115kV Additionally, several existing oil and gas well pads, associated access roads, and natural gas pipelines are present within and adjacent to the Project Corridor. These additional disturbances contribute to existing visual effects on the surrounding area.

N.D. Admin. Code § 69-06-08-02(3)	Selection Criteria	Potential Adverse Effects
(3)	Extractive and storage resources	Several oil and gas well pads are located within the Project Corridor and access roads to the oil and gas well pads and located within the Project Route. Impacts to well pads will be avoided through siting of Project facilities and coordination with well pad owners. There is one (1) gravel pit within the Study Area that is located approximately 804 feet from the Project Route. The gravel pit is not located within the Project Corridor and impacts to this site are not anticipated.
(4)	Wetlands, woodlands, and wooded areas	A wetland delineation was completed in June 2018. A wetland delineation report will be prepared and submitted to the Commission. The Project will avoid impacts to surface waters to the greatest extent feasible. Permanent impacts to jurisdictional wetlands will be minimized as practicable and are anticipated to remain under one-tenth of an acre per single and complete crossing. Small isolated deciduous forest patches occur within the Project Corridor. Field verification identified a few small patches of trees along wetlands and drainages associated with White Earth River, and waterways. If impacts to trees and shrubs cannot be avoided, they will be replaced according to the Commission's tree and shrub mitigation specifications.
(5)	Radio and television reception, and other communication or electronic control facilities	Tall structures such as buildings, communication towers, and transmission lines can create minor obstructions to nearby communications systems. Television reception disruption is not anticipated.

N.D. Admin. Code § 69-06-08-02(3)	Selection Criteria	Potential Adverse Effects
(6)	Human health and safety	The proposed facility will be designed and constructed to meet or exceed the standards of the National Electrical Safety Code (NESC). Regular maintenance and inspections will be performed during the life of the facility to ensure its continued integrity. All residences are at least 500 feet or the required setback away from the Project Route except one (1) participating landowner where the residence is located approximately 406 feet from the Project Route; Burke Wind obtained a waiver from this landowner. Electromagnetic fields typically fall off rapidly with distance and are typically at background levels 300 feet away, which is less than the required 500-foot setback (NIH 2017) that can also be waived by a landowner. Safety precautions will be taken during construction and line installation.
(7)	Animal health and safety	Construction work will be coordinated with landowners to avoid direct impacts to livestock or interference with livestock management operations. For wildlife health and safety, please refer to **Sections 5.1-5.8.**
(8)	Plant life	The Applicant will avoid sensitive vegetation, existing trees, and shrubs to the extent feasible. If impacts to trees and shrubs cannot be avoided, they will be replaced according to the Commission's tree and shrub mitigation specifications. Temporarily disturbed areas will be reseeded.

4.4. Policy Criteria

In accordance with N.D. Admin. Code § 69-06-08-02(4), the Commission may give preference to an applicant that will maximize benefits that result from the adoption of the following practices, and in a proper case may require the adoption of such policies and practices. The Commission may also give preference to an applicant that will maximize interstate benefits. Table 4-4 summarizes the benefits to be considered for the Project Corridor and Project Route.

Table 4-4: Policy Criteria

N.D. Admin. Code § 69-06-08-02(4)	Policy Criteria	Suitable Policy or Burke Wind Practice
a.	Location and design	Extensive studies have been conducted to inform the Applicant of the optimal location for the Project and the sensitivities within the Study Area to be avoided during construction and operations. The Applicant has committed to minimizing and mitigating environmental impacts, following NESC requirements and polices, designing the Project to efficiently transfer electricity, ensuring worker and public health and safety, and constructing facilities to most effectively and efficiently meet its deliver obligations. The Applicant will also work with owners and operators of any natural gas pipelines near the Project corridor to avoid impacts and obtain crossing agreements where required.
b.	Training and utilization of available labor in this state for the general and specialized skill required	Local contractors, suppliers and laborers will be utilized for the Project as applicable and feasible during construction and operations. An Engineering, Procurement, and Construction (EPC) contractor will be selected and be responsible for the construction management of the Project. The EPC contractor will use the services of local contractors where possible to assist in construction.
c.	Economies of construction and operation	The Applicant has evaluated feasible alternatives and selected a Project Route that minimizes impacts to the social, economic, and natural environment to the extent practicable. Overall, the Project will positively impact the region by adding infrastructure, temporary and permanent jobs, increasing the counties' tax base by an estimated at $44 million dollars, and providing lease payments to Project participants amounting to $50 million dollars.

N.D. Admin. Code § 69-06-08-02(4)	Policy Criteria	Suitable Policy or Burke Wind Practice
d.	Use of citizen coordinating committees	No citizen coordinating committees were used for the development of the Project. The Applicant has worked with landowners within the region and local governments to solicit input regarding the Project. Events were held to inform participating landowners about Project updates in March 2017, June 2017 and June 2018 and letters to provide Project updates required for the Burke County Conditional Use Permit (CUP) public hearings were mailed in June 2018. Local County meetings with Planning and Zoning, and County Commissioners have been held on a bi-monthly basis. A public open house for the Project was held on March 9, 2018 in Bowbells, ND.
e.	A commitment of a portion of the transmitted product for use in this state	The Project will transmit up to approximately 300 MW of energy from the Burke Wind Energy Center in Burke County, North Dakota to the Tande Substation owned by BEPC to serve their customers.
f.	Labor relations	No labor relations will be affected by the proposed Project.
g.	The coordination of facilities	The location of existing facilities and infrastructure was considered in determining the optimal location of the Project Corridor, Project Route and the design of the Project. The Project will avoid impacts to existing infrastructure and will interconnect to the existing Tande Substation. The Applicant is coordinating all aspects of the interconnection with BEPC.
h.	Monitoring of impacts	A SWPPP will be implemented for the Project to assist in preventing soil erosion and a construction SPCC and a separate SPCC for operations will be implemented to avoid impacts to wetlands or waters quality. The Applicant and the EPC Contractor will monitor soil impacts, topsoil segregation, and soil redistribution during the construction process.
i.	Utilization of existing and proposed rights-of-way and corridors	The Applicant has routed the Project Route parallel to 28.4 miles (77% of the Project Route) of existing road ROWs and field lines where feasible and in coordination with landowner input.
j.	Other existing or proposed transmission facilities	The Applicant is open to utilizing or paralleling existing utility ROWs when siting the Project Route to the extent practicable.

4.5. Design and Construction Limitations

Pursuant to N.D. Admin. Code § 69-06-05-01(2)(j), the proposed 37-mile Project Route was the most direct route that minimized impacts on exclusion areas, avoidance areas, selection and policy criteria identified in N.D. Admin. Code § 69-06-08-02. The Project Route follows existing road ROWs and field lines to the extent practicable and avoids existing utilities, such as natural gas pipelines. The Project Corridor options were limited due to the location of the Tande Substation and the location of proposed Burke Wind Energy Center substation. The Project Corridor location was further refined by identifying interested landowners between the Burke Wind Energy Center and the Tande Substation. The Study Area was identified due to these constricting factors, the topography, location of existing utilities (i.e., natural gas pipelines), existing transmission lines and substations, existing facilities (i.e., well pads and pump stations), land ownership, location of natural resources, and economics. Avoidance of sensitive ecological features such as wetlands and USFWS easements were utilized as key design constraints during Project siting to avoid and minimize impacts where feasible.

4.6. Economic Considerations

The Applicant considered many economic factors when deciding where to route the Project. Generally, minimizing the length of a transmission line decreases its costs because it requires fewer materials, land easements, less maintenance, and it reduces the risk of transmission line loss. Landowner willingness to participate also played a key role. Landowners will be compensated through an easement payment to offset the economic impact of any potential loss of land and agricultural production. The Project Route was designed to be as straight as possible while considering willing landowner participation, constructability, exclusion areas, avoidance areas, and selection and policy criteria.

5.0 ENVIRONMENTAL ANALYSIS

The Applicant evaluated and considered the topography, location of existing utilities (i.e., natural gas pipelines), existing transmission lines and substations, existing facilities (i.e., well pads and pump stations), an existing oil spill, land ownership, natural resources constraints, and economics to identify the Study Area. The final design of the Project will be based upon landowner participation and input, on-site pre-construction surveys, and agency coordination.

Section 5.0 includes a summary of the environmental studies that have been completed and are in process for the Project Corridor and Project Route. Potential impacts to exclusion and avoidance areas, and selection and policy criteria are described in **Section 5.8** below. Studies have been conducted for the following resources:

- Cultural Resources
    - Desktop Class I Cultural Resources Inventory; Completed: November 2017 (Atwell)
    - Class III Cultural Resources Inventory for Archaeological Sites; surveys completed July 2018; report expected in August 2018 (AECOM)
- Wetlands/Waters of the U.S.
    - Wetland Delineation Report; surveys completed in July; report expected in August 2018 (Atwell)
- Whooping Crane
    - Desktop Whooping Crane Habitat Assessment; Completed: June 2018 (Watershed Institute, Inc.)
- Bat Habitat Assessment for Burke County Wind Transmission Line Assessment Area; Completed: June 2018 (Atwell)
- Dakota Skipper Assessment Report and Native Prairie mapping; Underway: surveys completed in summer 2017 and June/July 2018 and Native Prairie mapping completed between December 2017 and June 2018 (SWCA Environmental Consultants)
- Sharp-tailed Grouse
    - Transmission Line Grouse Lek & Raptor Nest Survey Results; Completed: June 2018 (Atwell)
- Eagles and Raptors
    - Transmission Line Grouse Lek & Raptor Nest Survey Results; Completed: June 2018 (Atwell)

Summaries of completed surveys addressing avoidance and exclusion areas, and selection and policy criteria have been included in this application. Completed reports are included in **Appendix C**. Additional desktop reports and field survey reports will be filed when completed in support of the application.. To protect the confidentiality of cultural resource location data, summaries of cultural investigations are included in this application and a management summary excerpt from the final report will be submitted to the Commission prior to the hearing, and full reports will be submitted to SHPO separately.

5.1. Cultural Resources

5.1.1. Description of Resources

Class I Literature Review

Atwell, LLC (Atwell) performed a Class I Cultural Resources Inventory (Class I) of a larger Transmission Line Assessment Area used to initially site the Project (Atwell 2017). The Transmission Line Assessment Area examined at that time was approximately 124,786 acres in size and included a minimum four-mile-wide corridor. The Transmission Line Assessment Area included the Project Corridor and a one-mile-buffer of the Project Route. The Class I included a file review completed at the State Historical Society of North Dakota (SHSND) in February, 2017. This file search was updated in June 2018 by AECOM. The file review identified previously recorded archaeological, historical, and architectural sites and leads identified within the Project Corridor and within one mile of the Project Route. A one mile buffer of the Project Route is typically examined as part of Class I reviews to account for cultural resources that may extend into the Project Corridor but whose currently delineated location is not within the Project Corridor.

The Class I identified two (2) previously recorded archaeological sites, 54 site leads, and one (1) architectural site within one (1) mile of the Project Route (**Table 5-1**). Site leads refer to resources that lack sufficient information to fully record and complete all necessary data fields on the North Dakota Cultural Resources Survey (NDCRS) site forms. Examples of site leads include: (1) locations recorded from various historic documents, (2) locations reported by a landowner or other non-professional, (3) isolates, a location with five or fewer surface visible artifacts which, in the professional judgment of the archaeologist, is likely to be a limited surface expression of a former occupation area where most of the artifacts are still buried, and/or (4) locations recorded by a cultural resource specialist outside of the project area(s), and thus not fully recorded.

Of the 57 previously recorded cultural resources, 52 are Native American sites or site leads, four (4) are Euro-American sites or site leads, and one (1) is an archaeological site of unknown cultural affiliation. Nearly all of the Native American sites are cultural material (CM) scatters. The Euro-American site or site leads include mines/quarries and a railroad (**Table 5-1**). The Class I identified 20 previously documented cultural resources within the Project Corridor. Of these 19 are Native American site leads and one (1) is a Euro-American site lead. All of the Native American site leads are CM scatters. The Euro-American site lead is a mine or quarry (**Table 5-1**).

Table 5-1 Previously Recorded Sites Within the Project Corridor and Within One Mile of the Project Route

Site Number	Site Type	National Register of Historic Places Status	Cultural Affiliation
Sites within Project Corridor			
32BKX221*	Site Lead: CM Scatter	Undetermined	Native American
32BKX222*	Site Lead: CM Scatter	Undetermined	Native American
32BKX224*	Site Lead: CM Scatter	Undetermined	Native American
32BKX241*	Site Lead: CM Scatter	Undetermined	Native American
32BKX481*	Site Lead: CM Scatter	Undetermined	Native American

Site Number	Site Type	National Register of Historic Places Status	Cultural Affiliation
32BKX483*	Site Lead: CM Scatter	Undetermined	Native American
32BKX484*	Site Lead: CM Scatter	Undetermined	Native American
32BKX486*	Site Lead: CM Scatter	Undetermined	Native American
32BKX499*	Site Lead: CM Scatter	Undetermined	Native American
32BKX500*	Site Lead: CM Scatter	Undetermined	Native American
32BKX516*	Site Lead: CM Scatter	Undetermined	Native American
32BKX517*	Site Lead: CM Scatter	Undetermined	Native American
32BKX525*	Site Lead: CM Scatter	Undetermined	Native American
32BKX526*	Site Lead: CM Scatter	Undetermined	Native American
32BKX532*	Site Lead: CM Scatter	Undetermined	Native American
32BKX712*	Site Lead: CM Scatter	Undetermined	Native American
32BKX713*	Site Lead: CM Scatter	Undetermined	Native American
32BKX726*	Site Lead: CM Scatter	Undetermined	Native American
32MNX464*	Site Lead: Quarry/ Mine	Undetermined	Euro-American
32MNX487*	Site Lead: CM Scatter	Undetermined	Native American
Sites within one mile of the Project Route			
32BK68*	Historical Railroad	Not Eligible	Euro-American
32BKX219*	Site Lead: CM Scatter	Undetermined	Native American
32BKX221*	**Site Lead: CM Scatter**	**Undetermined**	**Native American**
32BKX222*	**Site Lead: CM Scatter**	**Undetermined**	**Native American**
32BKX223*	Site Lead: CM Scatter	Undetermined	Native American
32BKX224*	**Site Lead: CM Scatter**	**Undetermined**	**Native American**
32BKX225*	Site Lead: CM Scatter	Undetermined	Native American
32BKX237*	Site Lead: CM Scatter	Undetermined	Native American
32BKX238*	Site Lead: CM Scatter	Undetermined	Native American
32BKX240	Site Lead: CM Scatter	Undetermined	Native American
32BKX241	**Site Lead: CM Scatter**	**Undetermined**	**Native American**
32BKX242*	Site Lead: CM Scatter	Undetermined	Native American
32BKX245*	Site Lead: CM Scatter	Undetermined	Native American
32BKX247	Site Lead: CM Scatter	Undetermined	Native American
32BKX248*	Site Lead: CM Scatter	Undetermined	Native American
32BKX251	Site Lead: CM Scatter	Undetermined	Native American
32BKX481*	**Site Lead: CM Scatter**	**Undetermined**	**Native American**
32BKX482*	Site Lead: CM Scatter	Undetermined	Native American
32BKX483	**Site Lead: CM Scatter**	**Undetermined**	**Native American**
32BKX484	**Site Lead: CM Scatter**	**Undetermined**	**Native American**
32BKX485*	Site Lead: CM Scatter	Undetermined	Native American
32BKX486*	**Site Lead: CM Scatter**	**Undetermined**	**Native American**
32BKX487*	Site Lead: CM Scatter	Undetermined	Native American
32BKX496*	Site Lead: CM Scatter	Undetermined	Native American

Site Number	Site Type	National Register of Historic Places Status	Cultural Affiliation
32BKX499	**Site Lead: CM Scatter**	**Undetermined**	**Native American**
32BKX500	**Site Lead: CM Scatter**	**Undetermined**	**Native American**
32BKX501*	Site Lead: CM Scatter	Undetermined	Native American
32BKX502*	Site Lead: CM Scatter	Undetermined	Native American
32BKX504*	Site Lead: CM Scatter	Undetermined	Native American
32BKX505*	Site Lead: CM Scatter	Undetermined	Native American
32BKX516	**Site Lead: CM Scatter**	**Undetermined**	**Native American**
32BKX517	**Site Lead: CM Scatter**	**Undetermined**	**Native American**
32BKX525*	**Site Lead: CM Scatter**	**Undetermined**	**Native American**
32BKX526	**Site Lead: CM Scatter**	**Undetermined**	**Native American**
32BKX527*	Site Lead: CM Scatter	Undetermined	Native American
32BKX528*	Site Lead: CM Scatter	Undetermined	Native American
32BKX532	**Site Lead: CM Scatter**	**Undetermined**	**Native American**
32BKX711*	Site Lead: CM Scatter	Undetermined	Native American
32BKX712	**Site Lead: CM Scatter**	**Undetermined**	**Native American**
32BKX713*	**Site Lead: CM Scatter**	**Undetermined**	**Native American**
32BKX725*	Site Lead: CM Scatter	Undetermined	Native American
32BKX726	**Site Lead: CM Scatter**	**Undetermined**	**Native American**
32BKX727*	Site Lead: CM Scatter	Undetermined	Native American
32MN43	Other Rock Features	Undetermined	Native American
32MN44	CM Scatter	Undetermined	Native American
32MNX464	**Site Lead: Quarry/ Mine**	**Undetermined**	**Euro-American**
32MNX468	Site Lead: CM Scatter	Undetermined	Native American
32MNX480*	Site Lead: CM Scatter	Undetermined	Native American
32MNX485	Site Lead: CM Scatter	Undetermined	Native American
32MNX486*	Site Lead: CM Scatter	Undetermined	Native American
32MNX487*	**Site Lead: CM Scatter**	**Undetermined**	**Native American**
32MNX492*	Site Lead: CM Scatter	Undetermined	Native American
32MNX493*	Site Lead: CM Scatter	Undetermined	Native American
32MNX573*	Site Lead: CM Scatter	Undetermined	Native American
32MNX794*	Site Lead: Quarry/ Mine	Undetermined	Euro-American
32MNX798*	Site Lead: Quarry/ Mine	Undetermined	Euro-American

Bolding indicates the site number is in both the Project Corridor and within one mile of the Project Route
* Asterisk indicates only portions of these sites are located in the Project Corridor or within one mile of the Project Route.

Class III Cultural Resources Inventory for Archaeological Resources

The Project Corridor has been surveyed via pedestrian walk for cultural resources. Burke Wind has coordinated with the SHSND on the appropriate scope and level of survey for the proposed Project. A Class III Intensive Cultural Resources Inventory of the Project Corridor has been completed to identify

archaeological resources and a Class III Cultural Resources Inventory Report is currently underway. Once complete, the Class III Cultural Resources Inventory Report will be submitted to the SHSND for review and concurrence, and a management summary will be provided to the Commission.

Native American Coordination

Burke Wind sent an outreach letter to the following 24 Native American Tribes on July 20, 2017 for both the Project and the associated Burke County Wind Energy Center:

- Cheyenne River Sioux Tribe
- Chippewa Cree-Rocky Boy's
- Crow Creek Sioux Tribe
- Crow Nation
- Flandreau Santee Sioux Tribe
- Fort Peck Assiniboine and Sioux Tribes
- Lower Brule Sioux Tribe
- Lower Sioux Indian Community
- Manda, Hidatsa, and Arikara Nations
- Northern Arapaho
- Northern Cheyenne Tribe
- Oglala Lakota Nation
- Prairie Island Indian Community
- Red Lake Band of Chippewa Indians
- Rosebud Sioux Tribe
- Santee Sioux Nation
- Sisseton-Wahpeton Oyate
- Spirit Lake Tribe
- Standing Rock Sioux Tribe
- Turtle Mountain Band of Chippewa Indians
- Upper Sioux Community
- White Earth Nation of Minnesota Chippewa
- Yankton Sioux Tribe

Since that time, numerous discussions have taken place with the following eight (8) interested Tribes to discuss the Project, survey plans, and cultural resource report content and format:

- Cheyenne River Sioux Tribe
- Northern Cheyenne Tribe
- Rosebud Sioux Tribe
- Sisseton Wahpeton Oyate
- Spirit Lake Tribe
- Standing Rock Sioux Tribe
- Turtle Mountain Band of Chippewa Indians
- Yankton Sioux Tribe

The first stage of tribal participation in the Project focused on assisting with the micrositing of the proposed Project Route. During this stage, representatives from the Standing Rock Sioux Tribe and the

Rosebud Sioux Tribe visited the Project Route location with representatives from Burke Wind to assess the locations for potential cultural resources and sites of cultural and religious significance to the tribe (SCRSTT). In December 2017, stage two of the tribal study, focusing on field survey of the Project, was completed. During this stage Traditional Cultural Surveyors (TCS) from the Rosebud Sioux Tribe, Turtle Mountain Band of Chippewa Indians, Cheyenne River Sioux Tribe, and the Spirit Lake Tribe completed a joint field survey together with cultural resources consultants for SCRSTT and cultural resources. The results and avoidance recommendations from this phase of the survey were provided to Burke Wind for consideration during revisions of the Project layout in late December.

The revised transmission line layout was surveyed during a second round of micrositing in May 2018. A tribal representative from the Rosebud Sioux Tribe of Indians participated in this effort. Further field work was completed in June 2018. TCS from the Rosebud Sioux Tribe, Turtle Mountain Band of Chippewa Indians, Cheyenne River Sioux Tribe, and the Spirit Lake Tribe of Fort Totten assisted in joint tribal and cultural resource field surveys.

Burke Wind, participating Tribal Historic Preservation Officers, cultural resource consultants and the SHSND are coordinating a report that includes the results of the joint surveys into a Class III Cultural Resources Inventory Report for the Project. Upon completion of the report, a management summary will be provided to the Commission. Summaries of the Class I study are provided in this application.

5.1.2. Impacts

Burke Wind utilizes an avoidance strategy and will avoid direct effects to newly documented archaeological sites and previously documented archaeological sites within the Project Corridor. Because numerous archaeological leads within one mile of the Project Route are mapped at the quarter section (160 acres) level, avoidance of archaeological lead locations was not possible. However, Class III cultural resources surveys have been conducted to identify any features within the Project Corridor that are associated with archaeological leads. These features will be recorded as new archaeological sites. The pedestrian survey associated with the Class III archaeological resources inventory was conducted in conjunction with TCS from the Rosebud Sioux Tribe, Turtle Mountain Band of Chippewa Indians, Cheyenne River Sioux Tribe, and the Spirit Lake Tribe to identify SCRSTT and a final report is underway. Once complete, the resulting cultural resources report will be submitted to the SHSND for review and concurrence and a management summary will be submitted to the Commission.

5.1.3. Mitigative Measures

Burke Wind will create avoidance buffers for previously recorded archaeological sites and newly recorded archaeological sites; including those associated with archaeological leads. The buffers will be delineated prior to construction to ensure avoidance of direct effects to archaeological resources. Archaeological sites that are in close proximity to the Project Corridor will be fenced to reduce the potential for inadvertent disturbance. An Unanticipated Discoveries Plan will be prepared for the Project and will outline the procedure utilized to address any unanticipated discoveries of cultural resources, including possible human remains. In the event that unanticipated discoveries are made during construction of the Project, the Unanticipated Discoveries Plan will provide direction to on-site personnel and their consultants regarding proper procedures for addressing the discoveries. Therefore, no significant impacts to undiscovered archaeological sites are anticipated for the Project.

In the event that burials or cultural sites with Native American religious values are discovered during construction of the Project, construction will stop within 100 feet of the site and the site will be

protected until the SHSND and the North Dakota Indian Affairs Commission are consulted. If confirmed or potential human skeletal remains are discovered, the Burke or Mountrail County Sheriff's office will be contacted. The Sheriff will contact the North Dakota State Forensic Examiner to determine if the remains are associated with a crime scene. If the remains are determined not to be part of an active crime scene or investigation, the North Dakota Chief Archaeologist will be contacted.

5.2. Wetlands/ Waters of the U.S.

5.2.1. Description of Resources

A wetland is a low area of land that holds water. Wetlands play a critical role in the natural environment and have many functions, including: improving water quality, water supply, ground recharge, flood control, and erosion control. They provide food supply to birds and other wildlife, nesting habitat, sites for human recreation, education, and aesthetic enjoyment. The Project is located within the Prairie Pothole Region. Prairie potholes (i.e., emergent wetlands, freshwater ponds) are scattered throughout the northern portion of the Project Corridor and are fringed with a variety of vegetative cover types. Intermittent drainages associated with the White Earth River (and including Paulsen Creek) are present in the southern portion of the Project Corridor.

An aerial desktop review was completed and included examination of Geographic Information Systems (GIS)-identified wetland features, interpretation of topography and associated drainage patterns, position in the landscape, vegetative cover, and soils. Current and historic aerial photographs, U.S. Geological Survey Topographic maps, National Wetland Inventory maps, National Hydrography Datasets, US Department of Agriculture – National Cooperative Soil Survey maps, Hydrologic Unit Code 12 Sub Watershed Boundary Dataset maps, and Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps floodplain maps available for the Project Corridor were also reviewed in order to evaluate overall site characteristics of the Study Area.

A wetland boundary and watercourse determination and delineation was conducted in November 2017 on a portion of the Project. Additional field surveys to delineate wetlands for the Project were completed in July 2018. The delineations were conducted in accordance with the Corps of Engineers Wetland Delineation Manual (Environmental Laboratory 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (USACE 2010). Wetland polygons were mapped in the field with a Trimble Geo 7X GPS unit within the Project Corridor and, where necessary, were aerially extended throughout the Study Area. Representative feature photographs were also obtained. Approximately 2,047 acres of potentially jurisdictional wetlands were identified during the aerial desktop review as depicted on **Figure 3(a-n)** (Atwell 2018a). However, wetland delineations have confirmed that only seven (7) potentially jurisdictional wetlands are located within the Project Corridor. The remainder of the wetlands are isolated "prairie potholes" and are not within the jurisdiction of the USACE.

Burke Wind is committed to minimizing impacts to wetlands of USACE jurisdiction and other Waters of the U.S. to the extent practicable. Transmission lines have limited permanent impact area related to monopole structures, monopole structure foundations, and guy wires with all other disturbance areas being temporarily disturbed. Project infrastructure will be designed and sited to avoid or minimize impacts to wetlands to the greatest extent possible. If all impacts to jurisdictional wetlands are not avoidable, the Project will be designed to qualify for Nationwide permits without pre-construction notification where permanent impacts do not exceed more than 0.10 acres of permanent impacts per

single and complete crossing. Temporary impacts associated with access roads or temporary work space may occur and will be minimized through the use of crane matting to minimize potential impacts to wetland and waters.

Construction BMPs will be employed to protect topsoil, minimize soil erosion, and protect wetland resources from direct and indirect impacts. Minimizing soil erosion near wetlands helps to protect the wetland water quality, reduces the likelihood for fill of the wetland, and helps to maintain the integrity of the wetland. Wetland soils and moderately to steeply sloped ground can also be subject to sheet and rill erosion or slumping. Depending on Project specific needs, cutting trees where the stumps remain, temporary timber matting, erosion control blankets, mulch, straw bales, rolls, temporary seeding, hydromulch, and/or sediment fencing may be used to manage soil erosion. Significant adverse Project-related impacts to wetlands are not anticipated because of design considerations and the implementation of stormwater BMPs. In addition, the Project will comply with all pertinent requirements by the Commission for topsoil handling and storage and the conditions of the stormwater construction permit and associated SWPPP.

5.2.2. Impacts

Burke Wind is committed to minimizing impacts to wetlands of USACE jurisdiction and other WOUS to the extent practicable. The Project will not impact wetland features as all wetlands, regardless of jurisdictionally, will be spanned by the Project Route and no new monopole structures will be placed in wetland features. Permanent impacts to jurisdictional wetlands, if necessary, will remain under 0.10 acres per impact and will be minimized to the greatest extent practicable. Temporary impacts to wetlands may occur based on Project Corridor extents. All wetlands protected by USFWS wetland easements will be avoided and will not be impacted.

5.2.3. Mitigative Measures

Burke Wind is committed to avoiding and minimizing impacts to all wetlands to the extent feasible. Project-related infrastructure will be designed and sited to avoid or minimize permanent impacts to wetlands. Construction BMPs outlined in the SWPPP (such as temporary matting) and a SPCC for operation will also protect topsoil, prevent soil erosion, and prevent impacts to wetlands and streams. Field work to delineate wetlands was completed in June 2018.

5.3. Wildlife

5.3.1. Description of Resources

Avian Resources

Based on the field observations of the habitat present within the Project Corridor location, most avian species that are likely to occur within the Project Corridor are likely to be those which are found in grassland, wetland, and agricultural habitats. Over the course of a year, a wide range of avian use field surveys were conducted in the Burke County Wind Energy Center immediately north of the Project Corridor. During the course of these surveys conducted between April 2017 and March 2018, over 150 species were recorded and one federally listed species (whooping crane) was recorded migrating at least 150 meters overhead.

Sharp-tailed grouse (*Tympanuchus phasianellus*) lek surveys resulted in the identification of a total of seven (7) confirmed leks and one (1) possible lek within a 0.5 mile radius buffer of the Project Corridor as shown on **Figure 6(a-f)** (Atwell 2018b). Additionally, individuals (sightings of one [1] or two [2] sharp-tailed grouse that were not linked directly to a lek) or flushing flocks, that appeared to be foraging or associated with shelter vegetation, were recorded on five (5) instances within the Project Corridor. Confirmed leks are defined as three (3) or more birds together with at least one (1) male displaying. Possible leks are defined as auditory detections of multiple grouse that could not be verified visually after their initial detection on a ground-based survey. Additional details on these results are provided in the Transmission Line Grouse Lek & Raptor Nest Survey Results (**Appendix C**).

Aerial raptor nest surveys resulted in no detections of any bald eagle (*Haliaeetus leucocephalus*) or golden eagle (*Aquila chrysaetos*) nests within the Project Corridor. The 2018 aerial raptor nest survey identified four (4) active nests of two (2) species: great horned owl (*Bubo virginianus*) and ferruginous hawk (*Buteo regalis*), and 14 raptor nests that were associated with an unknown raptor species, as shown on **Figure 7(a-f)**. A probable ferruginous hawk nest occurs on the Project Route within Mountrail County. In April 2018, 21 raptor nest structures that had been identified in a 2017 survey were spot checked. The results of the spot check indicated the presence of 20 active nests and one (1) ferruginous hawk nest was no longer present within one mile of the Project Corridor. Additional details on these results are provided in the Transmission Line Grouse Lek & Raptor Nest Survey Results (**Appendix C**).

Bat Resources

North Dakota is home to eleven (11) species of bats; of which, the northern long-eared bat (NLEB; *Myotis septentrionalis*) is the only federally listed species (threatened) (NDGFD 2016a). Based on a review of publically available publications, datasets, agency occurrence maps, and field observations, a bat habitat assessment was conducted to determine the amount of suitable habitat for bats within the Project Corridor (Atwell 2018c). The bat habitat assessment evaluation indicates that the bat community within the Project Corridor is likely to include the big brown bat (*Eptesicus fuscus*), little brown bat (*Myotis lucifugus*), eastern red bat (*Lasiurus borealis*), hoary bat (*Lasiurus cinereus*), and silver-haired bat (*Lasionycteris noctivagans*).

Preferred bat roosting and foraging habitat in North Dakota consists of woodlands (primarily coniferous) with a nearby water source, riparian corridors, and rock crevices (Gillam et al. 2012) Snags and trees with loose bark to roost under are commonly used; large cottonwood trees (>1 m diameter at breast height) tend to be a preferred tree of choice for several roosting species (Gillam et al. 2012). Some species will also utilize buildings and bridges for roosting.

Though small, isolated woodlots and old, dilapidated structures may exist within the northern portion of the Project Corridor, possible bat habitat impacts could be more likely to occur in the southern portion of the Project Corridor where the transmission line would need to cross the north-south oriented White Earth River. This southern region likely contains better bat habitat in comparison to the remainder of the Project Corridor, since there are numerous ravines and sheltered hills with large mature trees that could potentially support summer bat roosts and maternity colonies. The close proximity of forests to waterbodies, as well as the presence of a few rocky outcroppings and cliffs, may also provide additional foraging and roosting opportunities in this area. The rocky, cliff-face substrate in the Mountrail County portion of the Project Corridor could support hibernacula for some bat species (Atwell 2018c). Additional details regarding bat habitat and the Project Corridor is provided in the Bat Habitat Assessment for Burke County Wind Transmission Line Assessment Area in **Appendix C**.

5.3.2. Impacts

Potential impacts to wildlife resources from the Project include the temporary and permanent habitat impacts from the construction of the transmission line as well as the potential for birds and bats to collide with transmission lines. Potential impacts to sensitive species are described in Section 5.4.2.

Avian Resources

Potential impacts to sharp-tailed grouse leks were minimized to the greatest extent practicable through site planning and avoidance of documented lek locations. In addition, impacts to raptor nest locations were minimized to the greatest extent practicable through site planning and avoidance of documented active nest locations. There are two (2) raptor nests within 0.25 miles of the Project Route. These nests will be avoided to the extent practicable and disturbance minimized between March and July. Vegetative removal will be conducted outside of this March through July period to the extent practicable.

Bat Resources

Impacts to bats are expected to be low based on the low amount of impacts to forested habitat (11.55 acres of forested habitat are located within the participating landowner footprint of the Project Corridor). Furthermore, there are no known hibernacula within the Project Corridor.

5.3.3. Mitigative Measures

As part of the pre-construction due diligence conducted by Burke Wind, multiple habitat assessments and wildlife survey tasks were conducted for the Project Corridor. These environmental study results informed the design of the Project Corridor in an effort to reduce the impacts on wildlife and native habitats. The following measures will be implemented to the extent practicable in order to reduce impacts within the Project Corridor:

- Overhead transmission lines within one (1) mile of the Watershed Institute's modeled whooping crane stopover habitat (Watershed Institute, Inc. 2018) will be marked with bird flight diverters in keeping with the Avian Power Line Interaction Committee guidelines (APLIC 2012).
- Temporarily disturbed areas will be reseeded or restored to crop, based on the conditions of the area prior to construction and based on landowner preference.
- Implementation of noxious weed prevention BMPs
- Development and implementation of a voluntary Wildlife Conservation Strategy (WCS) which covers both the Project Corridor and the adjacent Wind Energy Center.
- No construction activities will take place within 0.5 miles of active sharp-tailed grouse lek locations from April through July to the extent practicable.
- No construction activities will take place within 0.25 miles of active raptor nest structures from March through July to the extent practicable.
- If any active raptor nests are discovered during the course of construction activities, the nest(s) will be monitored to determine if there is a change in the nests activity status in order to avoid impacts that might have the potential to precipitate nest abandonment.
- Limiting road speeds to 25 miles per hour (MPH) within the Project Corridor during construction activities to minimize wildlife collisions.

5.4. Federally-protected Species

5.4.1. Description of Resources

The USFWS provides distribution lists of federally-listed threatened and endangered species (TES) on a county-by-county basis. The USFWS Information for Planning and Conservation (IPaC) tool (USFWS 2018a) indicated that the Project Corridor is within the range (i.e., has documented records) of eight (8) TES. These species include two (2) mammals, four (4) birds, one (1) fish, and one (1) insect: gray wolf (*Canis lupus*), NLEB, piping plover (*Charadrius melodus*), red knot (*Calidris canutus rufa*), whooping crane (*Grus americana*), pallid sturgeon (*Scaphirhynchus albus*), and Dakota skipper (*Hesperia dacotae*).

No federally listed species were observed within the Project Corridor during the course of the pre-construction surveys that were conducted. There is one USFWS sighting record of whooping crane from the fall of 2015 located in the Study Area but west of and outside the Project Corridor. There is no federally designated Critical Habitat within the Project Corridor or Project Route, so no impacts to areas critical for the life stages of threatened or endangered species are expected. North Dakota does not have a state threatened and endangered species list; it does however recognize all federally listed species under the ESA.

Bald and golden eagles (*Haliaeetus leucocephalus* and *Aquila chrysaetos*, respectively) are protected under the Bald and Golden Eagle Protection Act (BGEPA). Both species were detected within the Transmission Raptor Nest Study Area during Spring 2018, but no nests were found for either species (Atwell 2018b).

Piping Plover (Federally Threatened)

In the Northern Great Plains, piping plovers inhabit barren sand and gravel shores of rivers and alkaline lakes. Nearly all natural lakes used by plovers in North Dakota are alkaline in nature and have salt-encrusted, white beaches that are typically up to 35 meters wide. These lakes in particular provide sparsely-vegetated beaches that are well suited to nesting habitat requirements for this shorebird (Elliott-Smith and Haig 2004).

Migrating piping plovers may use pothole wetlands found within the Project Corridor as stopover habitat. Pothole wetlands may have suitably wide beaches that have the potential to also serve as piping plover nesting habitat, and piping plovers nest regularly within alkaline flats at Lostwood NWR, just northeast of the Project Corridor. No suitable nesting habitat within the Project Corridor was recorded during the course of the Tier III field studies for the Project.

Red Knot (Federally Threatened)

The '*rufa*' subspecies of red knot is federally-listed as threatened and migrates through the northern Great Plains region during spring and fall (Baker et al. 2013, USFWS 2014a). This shorebird is, in general, a scarce migrant and does not breed within North Dakota (USFWS 2014b). Geolocator data indicate that birds have utilized stopover habitat within saline/alkaline lake environments in northern North Dakota (USFWS 2014a), and it is reasonable to assume that red knots may use similar features found within Lostwood NWR. Despite this, the USFWS currently has not published critical habitat designations for '*rufa'* red knot anywhere within its occurrence corridor in the continental United States, and it is unclear whether red knots use the Project Corridor for migratory stopover habitat.

Least Tern (Federally Endangered)

The Project Corridor lacks the rocky sandbar and islands in rivers that the least tern (*Sternula antillarum*) utilizes in the upper Great Plains. The species may utilize scattered pothole wetlands during migratory periods, but it is unlikely that the Project Corridor and any of its associated infrastructure will have an impact on this species.

Whooping Crane (Federally Endangered)

A Desktop Whooping Crane Habitat Assessment was conducted for the Project (Watershed Institute, Inc. 2018) (included in **Appendix C**). The desktop habitat assessment used a variety of parameters including (but not limited to): wetland size, visual obstruction, disturbance obstructions, habitat suitability based on water regime, distance to food, wetland size, wetland type (natural or created), and wetland density. These parameters were used to model suitable habitat on a scale of eight (8) to 17 (12 or higher representing potential habitat for whooping cranes; Watershed Institute, Inc. 2018). As depicted on **Figure 5**, the Project is located within the USFWS-defined 75% occurrence frequency band of the whooping crane migration corridor (USFWS 2010a). The southernmost mile of the Project Route intersects the centerline of the 75% migratory corridor (with the remainder of the Project Corridor located just east of the migratory corridor centerline). Approximately 39 (465 acres) wetlands within the Study Area were identified as having a score of 12 or higher (a score of 12 or greater represents potential habitat for whooping crane). However, only nine (9) (7.2 acres; 1% of Project Corridor) wetlands with scores of 12 or higher were identified in the Project Corridor and only six (6) wetlands with a score of 12 or higher intersect the Project Route. The potential stopover whooping crane habitat areas within the Study Area are shown on **Figure 5(a-f).** Per USFWS recommendations (Moore et al. 2017), the stopover habitat has been drawn with one-mile buffers on **Figure 5(a-f)** to illustrate portions of the Project Route that will be marked with bird diverters meeting APLIC guidelines.

On April 10, 2017, a group of three (3) actively migrating whooping cranes were observed flying north through airspace within the Burke Wind Energy Center boundary approximately four (4) miles northwest of the northern terminus of the Project Corridor. Specifically, these cranes were first detected at an altitude of approximately 250 meters (i.e., above transmission line height) and gradually gained altitude to a height of approximately 350 meters as they continued in a glide away from the observer. Other whooping crane observations have been made by the USFWS as of fall 2015, as shown on **Figure 5(a-f),** but altitude data is not included in USFWS observation data. Whooping cranes are known to utilize a variety of wetland habitats within an agricultural landscape during migration stopover (USFWS 2009). In states such as North Dakota, whooping cranes regularly use shallow palustrine wetlands for roosting, and various cropland and emergent wetlands for foraging (Austin and Richert 2013). Upland grain

cropland around suitable wetlands has been demonstrated to be an important component of stopover foraging habitat for whooping cranes.

Gray Wolf (Federally Endangered)

The gray wolf is federally listed as an endangered species in North Dakota. It occupies a wide range of habitats, though they are more expected in forested areas in north-central and northeastern regions of the state, particularly in areas with reasonable habitat connectivity. Wolves are rare in North Dakota (NDGFD 2016b). They appear to be most likely found in forested areas in the north-central and northeastern regions of the state; however, wolves may appear anywhere, especially in regions with reasonable habitat connectivity.

The *Upper Great Plains Wind Energy Programmatic Environmental Impact Statement* (PEIS) lists Burke County among counties from which gray wolves have been reported; however, the date(s) and whether these records are from within the vicinity of the Project Corridor are unknown (WAPA and USFWS 2015). Currently, there is no known breeding wolf population in North Dakota (NDGFD 2016b). Though there are previous records of gray wolves from Burke County, it appears unlikely that Project construction and operation will have negative impacts on this species due to the species' rarity, the lack of a known breeding population within the state, and because transmission line poles will be sited in locations not considered to be high-quality gray wolf habitat. Therefore, it is a low likelihood that the species will be within the Project Corridor.

Northern Long-Eared Bat (Federally Threatened)

The northern long-eared bat (NLEB) is federally listed as a threatened species and is considered rare in North Dakota (NDGFD 2016c). Northern long-eared bats may be encountered roosting and foraging in forested habitats in North Dakota during the late spring and summer (Owen et al. 2003). Roost locations include under loose or peeling bark or in cavities and crevices of dead and living trees (USFWS 2015a). Preferred roosts in North Dakota are silver maple (*Acer saccharinum*), green ash (*Fraxinus pennsylvanica*), and eastern cottonwood (*Populus deltoides*) (Gillam and Barnhart 2012). To date, no hibernacula or maternity trees have been identified in North Dakota (NDGFD 2016c; USFWS pers. comm. 2017).

The USFWS recognizes the NLEB as potentially occurring in every county of North Dakota (USFWS 2018b). The Project Corridor is located within the range of this species, although the lack of suitable wooded habitat within the Project Corridor reduces the species' occurrence probability down to unlikely. A bat habitat assessment was completed for the Project as part of the pre-construction due diligence. The bat habitat assessment concluded that the NLEB is unlikely to occur within the Project based on the habitat characteristics within the Project Corridor, and state-wide and regional mist-netting survey results conducted by others (Nelson et al. 2015).

The NLEB was listed as federally threatened by the USFWS primarily due to the threat posed by white-nose syndrome (WNS), a fungal disease that has affected several bat populations (USFWS 2015b, c). The Project Corridor is approximately 245 miles west of the edge of the WNS zone, per the USFWS WNS Zone Final 4(d) Rule (USFWS 2018b). The final 4(d) rule prohibits incidental take that occurs in hibernacula or that results from tree removal activities near maternity roost trees or hibernacula within the WNS zone (USFWS 2016b:90). As such, an incidental take resulting from these activities may be allowed within the Project Corridor.

Overall use of the Project Corridor by the NLEB is predicted to be low to moderately-low because of the fragmented and relatively limited extent of forested habitat and riparian corridors present within the Project Corridor.

Pallid Sturgeon (Federally Endangered)

The Project Corridor does not intersect any large tributaries of the Missouri River where pallid sturgeon are known to occur. Given this absence of suitable habitat for this fish, the Project Corridor is unlikely to have any adverse impacts on the species.

Dakota Skipper (Federally Threatened)

On October 23, 2014, the USFWS listed the Dakota skipper as federally threatened and finalized designation of its critical habitat on October 1, 2015 (USFWS 2016a). An initial Dakota skipper desktop habitat assessment was conducted in tandem with a desktop native prairie analysis conducted by Atwell during winter 2017 as part of the pre-construction due diligence and potentially suitable habitat was identified. Based upon the findings of the desktop analysis, the location of the Project Corridor was sited to avoid potentially suitable Dakota skipper habitat to the extent feasible (see **Figure 6(a-f)**). Then, a field survey for potentially suitable Dakota skipper habitat was conducted in May and June 2018 within the Project Corridor. The Dakota skipper is a small orange butterfly that prefers undisturbed alkaline tallgrass prairie (Brock and Kaufman 2003). It is typically found in two (2) types of prairie habitats within North Dakota (Dyke et al. 2015). The first habitat type is characterized by moist soils dominated by bluestem grass species (*Schizachyrium* and *Andropogon* spp.) with three (3) wildflower species: wood lily (*Lilium philadelphicum*), harebell (*Campanula rotundifolia*) and smooth camas (*Zygadenus elegans*) (Dyke et al. 2015). The second habitat type is mesic upland prairie that is typically found on ridges and hillsides dominated by bluestem, needle grasses (*Nassella* sp.), and purple coneflower (*Echinacea angustifolia*). Each of these two (2) prairie habitats are considered highly fragmented within North Dakota (Dyke et al. 2015).

A desktop analysis utilizing SWCA Environmental Consultants habitat modeled data was combined with review of numerous GIS databases and aerial interpretation to determine the potential native prairie habitat within the Project Corridor. An in-field assessment was then conducted to confirm the findings from the desktop review. Based on the findings from the assessments, the GIS dataset for native prairie was modified to remove non-native prairie areas and all previously impacted areas. The aforementioned methodology resulted in the identification of scattered portions of potential native prairie within the Project Corridor. Additional habitat suitability in-field assessments were conducted by SWCA Environmental Consultants in May and June 2018 and confirmed that suitable habitat was present in portions of the Project Corridor. These surveys are ongoing during the summer of 2018 and the survey results and reports will be submitted to the Commission.

The Dakota skipper is usually absent from native grasslands that are intensively grazed or frequently burned. Encroachment of invasive species also contributes to degradation of Dakota skipper habitat (USFWS 2016c).

Bald Eagle (Federally Protected under BGEPA)

The bald eagle was removed from the federal list of threatened and endangered species in 2007 but is protected under the BGEPA. The bald eagle breeds throughout nearly all of the United States. A 2009 statewide census documented single bald eagle nests in southern Burke County and northwestern Mountrail County (specific locations were not disclosed) (Johnson 2009). This study found that a relatively high density of bald eagle nests occurred along the Missouri River, approximately 80 miles south of the Project Corridor (Johnson 2009). In addition, nesting bald eagles were also found approximately 100 miles east of the Project Corridor, along the Souris River in McHenry County (Johnson 2009).

Bald eagle nesting populations are expanding in North Dakota and this species has the potential to establish nesting territories in Burke County. Bald eagles typically require mature trees in which to build their nests, and nests are usually placed near open water (Johnson 2009). They have strong nest site fidelity and will often build more than one nest within their territory. No bald eagle nests were observed during an April 2018 aerial nest survey of the Project Corridor and a three-mile eagle nest assessment area (Atwell 2018b), and no eagle nests were provided by NDGFD when Atwell requested the data.

Golden Eagle (Federally Protected under BGEPA)

The golden eagle is protected under the BGEPA. Golden eagles are not known to not nest within Burke County (Dyke et al. 2015), but they breed in the Lake Sakakawea breaks, approximately 30 miles south from the Project Corridor No golden eagle nests were located within three miles of the Project Corridor based on a review of the NDGFD provided data sharing agreement. In addition, no golden eagle nests were located during the course of aerial survey efforts within three (3) miles of the Project Corridor during April 2018 (Atwell 2018b). Additional details on these aerial survey results are provided in the Grouse Lek & Raptor Nest Survey Results Memo (**Appendix C**).

5.4.2. Impacts

Whooping Crane

Power lines represent a documented collision mortality risk for whooping cranes (Stehn and Wassenich 2008). Impacts to whooping cranes are minimized by utilizing the Watershed Institute's desktop modeling of suitable habitat within the Project Corridor to identify potentially suitable whooping crane stopover habitat. All transmission lines within one mile of modeled suitable whooping crane habitat will be marked with bird flight diverters per APLIC recommendations and USFWS guidance (USFWS 2010b).

The Applicant has implemented a number of mitigative measures to avoid, minimize, and mitigate potential risk to whooping cranes. These measures included conducting suitable habitat modeling that was then used to inform the Project Route and monopole structure placement design. All wetlands protected by USFWS easements have been avoided by aerial spanning the conductor over the wetlands and no monopole structures will be placed in these wetland areas. The project has been designed to avoid many other wetlands and they will be avoided to the extent feasible. In addition to these ongoing efforts, the Project will be built following APLIC suggested practices including using pad-mounted transformers and line marking to reduce potential injury, collision, and electrocution risk to whooping crane. The Applicant also will mark all sections of the Project that are within one mile of potentially

suitable whooping crane stopover habitat with bird diverters, following USFWS recommendations (USFWS 2010b).

Northern Long-eared Bat

Northern long-eared bats appear to represent small numbers of cumulative fatalities across the United States and Canada (Arnett and Baerwald 2013) and mortality for this species across the United States appears to be low during migration (Erickson et al. 2002). The species typically avoids wide open habitat (at least during the summer), tends to be found outside of forested habitat only when moving to or from a favored roost location, and generally shows strong preferences for moving long distances in close proximity to forest cover (Henderson and Broders 2008).

The NLEB was listed as federally threatened by the USFWS primarily due to the threat posed by white-nose syndrome (WNS), a fungal disease that has affected several bat populations (USFWS 2015b, c). The Project Corridor is approximately 245 miles west of the edge of the WNS zone, per the USFWS WNS Zone Final 4(d) Rule (USFWS 2017, 2018b). The final 4(d) rule prohibits incidental take that occurs in hibernacula or that results from tree removal activities near maternity roost trees or hibernacula within the WNS zone (USFWS 2016b). The Project Corridor is located outside of the WNS Zone (USFWS 2018b) and there are no known maternity roost trees or hibernacula in close proximity to the Project Corridor. As such, an incidental take resulting from these activities may be allowed within the Project Corridor.

The Bat Habitat Assessment for Burke County Wind Transmission Line Assessment Area (Atwell 2018c) concluded that the NLEB is unlikely to occur within the Project Corridor based on the habitat characteristics within the Project Corridor, and state-wide and regional mist-netting survey results.

Dakota Skipper

Dakota skippers require plant communities with a species richness and diversity that are most commonly found in relic native prairies. Native forbs and grasses are a vital component that provide water, nutrients, and protection of the species' eggs during the Dakota skipper's short two to four week active flight period (USFWS 2016a).

Approximately 45 acres (six [6] percent of the Project Corridor) was identified as potentially suitable Dakota skipper habitat during the May and June 2018 field survey of the Project Corridor. The Project was sited to avoid impacts to potentially suitable Dakota skipper habitat to the greatest extent practicable. Based on preliminary design, impacts to potentially suitable habitat will be no more than approximately 0.029 acres, if not less. No Project construction activities will occur within identified potentially suitable habitat areas during the Dakota skipper's active flight period (June 15 to July 18). Temporary Project impacts occurring outside of the Dakota skipper's brief flight period are unlikely to impact the species' population and these areas will be reseeded with the appropriate native seed mix.

Bald and Golden Eagles

No nest locations of either eagle species occur within three (3) miles of the Project Corridor; as such no impacts are anticipated for either species. In addition, portions of the transmission line corridor will be marked with bird flight diverters per APLIC standards (see whooping crane impacts discussion above), which will also increase visibility of the lines for large raptors such as eagles, thereby reducing collision risk with the transmission lines for both eagle species.

5.4.3. Mitigative Measures

As part of the pre-construction due diligence conducted by Burke Wind, multiple habitat assessments and wildlife survey tasks were conducted for the Project Corridor. These environmental study results informed the design of the Project Corridor in an effort to reduce the impacts on wildlife and native habitats. The following measures will be implemented in order to reduce wildlife impacts within the Project Corridor:

- Overhead transmission lines within one (1) mile of the Watershed Institute's modeled whooping crane stopover habitat will be marked with bird flight diverters in keeping with the Avian Power Line Interaction Committee guidelines (APLIC 2012).
- Temporarily disturbed areas will be reseeded or restored to crop, based on the conditions of the area prior to construction and based on landowner preference
- Implementation of noxious weed prevention BMPs
- Development and implementation of a voluntary Wildlife Conservation Strategy (WCS) which covers both the Project Corridor and the adjacent Burke Wind Energy Center
- No construction activities will take place within 0.5 miles of active sharp-tailed grouse lek locations from April through July to the extent practicable.
- No construction activities will take place within 0.25 miles of active raptor nest structures from March through July to the extent practicable.
- If any active raptor nests are discovered during the course of construction activities, the nest(s) will be monitored to determine if there is a change in the nests activity status in order to avoid impacts that might have the potential to precipitate nest abandonment.
- Shorten or lengthen transmission pole spans and adjust pole spacing to avoid field-verified suitable Dakota skipper habitat where feasible.
- Burke Wind will reduce the width of the construction easement in portions of the Project Corridor which intersect with field-verified suitable Dakota skipper habitat
- The route location and monopole structure spacing were adjusted to further avoid locations of field-verified suitable Dakota skipper habitat to the greatest extent feasible during Project design.
- High visibility fencing (e.g., snow fence) will be placed around field-verified suitable Dakota skipper habitat areas that are to be avoided to restrict construction equipment from disturbing these areas.
- In all areas where field-verified Dakota skipper habitat has been identified, no construction will occur between June 15 and July 18, i.e., during the Dakota skipper adult flight period.
- Provide contractor(s) with spatial data and static constraints maps that identify where field-verified suitable Dakota skipper habitat is located and where construction equipment is restricted.
- Educate construction contractor(s) about all threatened and endangered species and the associated mitigative measures being implemented for each respective species.

- Limit vehicle speeds to 25 MPH within the Project Corridor during construction to minimize wildlife collisions.
- Reclaim disturbed field-verified suitable Dakota skipper habitat areas with an appropriate native seed mix.

6.0 PUBLIC AGENCY COORDINATION AND IDENTIFICATION OF PERMITS AND APPROVALS

6.1. Agency Coordination

Burke Wind contacted 32 state and federal agencies and officers that are entitled to the notice of the Burke Wind Energy Center and associated transmission line per N.D. Admin. Code § 69-06-01-05. Formal communication with the agencies consisted of letters and maps detailing the Project. Agency correspondence and responses received as of June 15, 2018 are included in **Appendix B; Table 6-1** summarizes the responses received from agencies to date.

Burke Wind has coordinated with several agencies and Native American Tribes since Project inception, including the USACE, NDGFD, USFWS, and Burke and Mountrail counties. Landowner dinners were held in March 2017, June 2017, and June 2018. Local County meetings with Planning and Zoning County Commissioners have been held on a bi-monthly basis. A public open house was held on March 9, 2018 in Bowbells, ND. The Burke County CUP application for the transmission line was submitted on June 7, 2018; a public hearing was held on July 10, 2018; a follow-up Burke County Planning and Zoning meeting was held on July 17, 2018; and a subsequent follow-up Planning and Zoning meeting is scheduled for August 1, 2018. The Mountrail County CUP application was submitted on November 7, 2017, the public hearing was held on February 26, 2018, and Mountrail County Commission is expected to vote on issuance of the CUP on July 17, 2018, conditioned on receiving Burke County CUP approval.

Table 6-1 Summary of Agency Correspondence

Agency	Response Date	Response Summary
Department of Defense (DoD)	05/01/2018	Please direct questions to the DoD Military Aviation and Installation Siting Clearinghouse at https://www.acq.osd.mil/dodsc/
	05/31/2018	Confirmation of receipt of request for formal review by the Siting Clearinghouse.
	07/11/2018	The DoD informally reviewed the Project and indicated that the Project, as proposed, may have an impact on military operations and low-level flight training. The DoD requested that Burke Wind further coordinate with DoD.
	07/26/2018	DoD issued a letter indicating that DoD conducted further analysis and determined that the Project will have minimal impact on military operations.
North Dakota Department of Health	05/07/2018	North Dakota Department of Health recommends minimizing impacts to water bodies during construction. Projects disturbing one or more acres must have a permit to discharge storm water. North Dakota Department of Health recommends avoiding impacts to groundwater quality and to report all spills immediately.
North Dakota Department of Transportation	05/14/2018	If any work is proposed within the highway ROW, then appropriate permits and risk management documents will need to be obtained.

Agency	Response Date	Response Summary
North Dakota Department of Trust Lands (NDDTL)	05/08/2018	NDDTL indicated there are no common school trust fund surface interests they manage located within the Project Corridor.
North Dakota Game and Fish Department (NDGFD)	09/27/2016	Meeting with NDGFD to introduce project and discuss resources and approaches to documenting existing conditions.
	01/11/2017	NDGFD confirmed that there are no known bald/golden eagle nests sites in Burke County within the NDGFD database. There are ferruginous hawk nest observations. NDGFD suggests downloading the whooping crane intensity use layer and ND State Wildlife Action Plan Focus Areas (used in conjunction with native prairie & woodland layers).
	01/29/2018	Burke Wind met with NDGFD and USFWS to provide an update on Project details. Discussed powerline marking, infrastructure placement in grassland easements, upcoming field study result deliverables, and anticipated summer PSC application submittal.
	02/24/2017	NDGFD provided a data sharing agreement and additional details on wetland resources. NDGFD recommended review of the "waterfowl thunderstorm map" and the Missouri Coteau Breaks focus area from the ND State Wildlife Action Plan.
	02/28/2017	NDGFD provided shapefiles of point locations for hawk nest and waterbird sites.
	11/16/2017	NDGFD response to the comprehensive avian resources and use study for the Burke WEC.
	05/22/2018	NDGFD letter expressing concern about Burke wind and transmission line project related to: project location; the amount of native prairie present and transmission line construction impacts to native prairie; project location within the whooping crane corridor; the existing breeding waterfowl density in the area; bald and golden eagle use within the area; sharp-tailed grouse lek density; and SWAP species of concern that were detected in the area during pre-construction surveys. Suggested voluntary offset packages be developed
North Dakota Geological Survey (NDGS)	05/07/2018	The NDGS reviewed the Project Corridor and compared it to their landslide database and found the proposed Project Corridor, along the reach that traverses the White Earth River valley north of White Earth and northeast of Tioga, travels near previously mapped landslide areas in northwestern Mountrail County. Geotechnical analysis prior to pole placement will be used to further study and avoid potentially unstable areas.

Agency	Response Date	Response Summary
North Dakota Industrial Commission (NDIC)	05/03/2018	NDIC is currently reviewing the request but needs additional information. Please supply a shapefile of each map. Atwell supplied shapefiles on June 29, 2018.
North Dakota State Water Commission	01/25/2018	If surface or groundwater is diverted, then a water permit will be required per N.D.C.C. § 61-04-02. If an observation well is encountered and must be removed, contact the Water Appropriation Division. A floodplain permit is required for all development that takes place within a Special Flood Hazard Area, as defined by the FEMA. No Project development is planned within Special Flood Hazard Area, as defined by FEMA.
Western Area Water Supply Authority	7/13/18	The Western Area Water Supply Authority was contacted about the wells that are located in the City of Ray water treatment plant compound. The wells will be miles away from the Project. The Missouri River intake is located at the Williston water treatment plant in Williston and also would be several miles away.
Standing Rock Sioux Tribe, Sisseton-Wahpeton Oyate, and Rosebud Sioux Tribe Tribal Historic Preservation Officers (THPO)	01/29/2018	The Applicant, AECOM, and Standing Rock Sioux Tribe and had a conference call with Sisseton-Wahpeton Oyate and Rosebud Sioux Tribe to discuss the reporting methods for the combined Tribal and AECOM surveys. A methodology for a joint Archaeology-Tribal report was agreed upon to discuss with SHPO on Jan. 30, 2018.
State Historic Preservation Offices (SHPO)	01/30/2018	The Applicant and AECOM met with SHPO to discuss the reporting methods discussed with the Tribes for the combined tribal and AECOM surveys. A methodology for a joint Archaeology-Tribal report was agreed upon.
	02/09/2018	The Applicant and AECOM had a conference call with SHPO concerning the handling of sites which were microsited, but not further documented during field survey. It was agreed that microsited sites will be included in the report as Areas of Concern.
State Historical Society of North Dakota	05/02/2018	The SHSND recommended a current Class I file search for the Study Area and a Class III archeological survey of all areas of direct impact.
U.S. Army Corps of Engineers (USACE)	12/13/2016	Burke Wind met with USACE in Bismarck to introduce the Project and determine the recommended next steps.
	12/16/2016	Follow-up on 401 Water Quality Certification & delivery of USACE minimum standards special public notice. 401 Water Quality Certification will be included in Nationwide 12 or 14 permit.
	05/21/2018	A description of Section 404 of the Clean Water Act as well as a fact sheet for Nationwide Permit 12 and ENG Form 4345.

Agency	Response Date	Response Summary
U.S. Fish and Wildlife Service (USFWS)	01/31/2017	USFWS requested a call between Burke Wind and USFWS to review USFWS easements and PEIS.
	02/23/2017	USFWS provided spatial data of USFWS Easements for areas requested.
	03/08/2017	Burke Wind met with USFWS in Bismarck to discuss grassland easements, PEIS, and next steps of the Project review and timelines for the Project.
U.S. Fish and Wildlife Service (USFWS)	04/25/2017	Burke Wind met with USFWS in Bismarck: Project Discussion, Easement Discussion, Proposal and Review Process Discussion. Next Step is to submit proposed infrastructure for easement review by USFWS
	04/26/2017	USFWS provided spatial data of USFWS easements.
	05/22/2017	USFWS provided threatened and endangered species regional occurrence maps for whooping crane, Dakota skipper and piping plover.
	01/29/2018	Burke Wind met with USFWS and NDGFD to provide an update on Project details. Discussed powerline marking, infrastructure placement in grassland easements, upcoming field study result deliverables, and anticipated summer PSC submittal.
	03/21/2018	USFWS provided map of Dakota skipper occurrence records in the vicinity of the Project.
	04/23/2018	Burke Wind met with USFWS in Bismarck and discussed the Loesch and Niemuth wetland/waterfowl/crane/grassland modeling publications.
	04/27/2018	In press grassland manuscript provided by USFWS to help with modeling of habitat for sensitive grassland species.
	04/27/2018	Condor grassland modeling manuscript provided by USFWS
	04/27/2018	Waterfowl spatial data share from USFWS.
	05/09/2018	USFWS response to native prairie and ephemeral wetland maps provided by Burke Wind
	06/12/2018	USFWS response regarding wetland and grassland easements along transmission line route.
Mountrail County	02/26/2018	A CUP application hearing with Mountrail County. Final Commission approval subject to Burke County CUP approval.

The following agencies have been contacted and informed about the Project. No responses have been received.

- North Dakota Department of Agriculture
- North Dakota Aeronautics Commission
- North Dakota Parks and Recreational Department
- North Dakota Township Officers Association

- Department of Human Services
- North Dakota Department of Labor and Human Rights
- North Dakota Department of Career and Technical Education
- Department of Commerce
- Office of Governor, State of North Dakota
- Job Service of North Dakota
- Soil Conservation Committee
- Federal Aviation Administration
- North Dakota Transmission Authority
- North Dakota Pipeline Authority
- Burke County Commission
- North Dakota Bureau of Indian Affairs

6.2. Potential Permits/Approvals

The federal and state permits that apply to the Project are dependent on several factors, such as the final location and layout, generation and transmission capacity, presence of threatened and endangered species, and impacts to surface water resources. **Table 6-2** identifies federal, state, and local permits that may be required for Project development.

Table 6-2 Potential Permits and Approvals Required for Construction and Operation of the Project

Agency	Permit Approval	Agency Type	Comments
U.S. Army Corps of Engineers	Nationwide Permit 12 and 14	Federal	Wetland surveys were completed June 2018. Project will minimize impacts to the Waters of the US and will be designed to keep permanent impacts below 0.10 acres per crossing to qualify for NWP 12 and 14 without pre construction notification.
U.S. Environmental Protection Agency	Spill Prevention, Control, and Countermeasure	Federal	A SPCC plan will be used for construction and then a separate SPCC plan will be used for operations by the Applicant.
North Dakota Public Service Commission	Certificate of Corridor Compatibility and Route Permit	State	Required for proposed electric transmission lines that carry voltages in excess of 115kVs and extends one or miles in length.
State Historic Society of North Dakota	Concurrence with effect determination	State	Class I file search complete. Class III Archeological Cultural Resources Inventory for is complete and reporting is currently underway.
North Dakota Department of Health	National Pollution Discharge Elimination System (NPDES) Notice of Intent (NOI)	State	A SWPPP is required.

Agency	Permit Approval	Agency Type	Comments
Burke County	Conditional Use Permit (CUP)	Local	A CUP for the transmission line was submitted in June 2018.
Burke County	County Road Crossing Permit	Local	County Road Crossing Permits will be submitted September 2018 for installing conduit across a County Road.
Burke County	Utility Occupancy Permit	Local	Required to install a utility within a Road ROW. Will be submitted September 2018.
Burke County	Road Use Agreement	Local	A Road Use Agreement will be submitted September 2018.
Mountrail County	Conditional Use Permit (CUP)	Local	A CUP was submitted November 2017.
Mountrail County	County Road Crossing Permit	Local	County Road Crossing Permits will be submitted September 2018 for installing conduit across a county road.
Mountrail County	Road Use Agreement	Local	A Road Use Agreement will be submitted September 2018.

7.0 FACTORS CONSIDERED

The Siting Act lists 11 factors to guide the Commission in the evaluation and designation of the project corridor and project route. These factors are summarized in relation to the Project in the following subsections.

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

The research, studies, and surveys relating to the potential effects of the proposed facility on public health and welfare, natural resources, and the environment have been previously discussed in **Section 5.0**.

7.2. Technologies to Minimize Adverse Environmental Effects

The Applicant will utilize the most current technologies and industry-standard approaches to minimize environmental impacts, including designing and constructing the proposed Project according to agency recommendations and APLIC recommendations, avoiding cultural resources, minimizing impacts to wetlands and streams, and avoiding threatened or endangered animal or plant species. The Applicant has committed to marking all sections of the Project that are within one (1) mile of potentially suitable stopover habitat for whooping cranes with APLIC approved bird diverters. The Applicant will delineate avoidance buffers for previously recorded archaeological sites and newly recorded archaeological sites prior to construction to ensure avoidance of archaeological resources. An Unanticipated Discoveries Plan will be prepared for the Project and will outline the procedure utilized to address any unanticipated discoveries of cultural resources, including possible human remains. In the event that unanticipated discoveries are made during construction of the Project, the Unanticipated Discoveries Plan will provide direction to on-site personnel and their consultants regarding proper procedures for addressing the discoveries. The Applicant will also comply with all requirements by the Commission for topsoil handling and storage and the conditions of the stormwater construction permit and associated SWPPP. BMPs and a SPCC for operation will also protect topsoil, prevent soil erosion, and prevent impacts to wetlands and streams. The Applicant and the EPC Contractor will monitor soil impacts, topsoil segregation, and soil redistribution during the construction process.

A WCS is being prepared for the Project and the associated Burke Wind Energy Center. Once the environmental studies and analyses that are underway are completed, reports documenting these studies and analyses will be submitted to the Commission. Management summaries documenting completion of the Cultural Resources reports that are underway will be submitted to the Commission following completion.

7.3. Beneficial Uses of Waste Energy

Not applicable to the Project.

7.4. Unavoidable Adverse Environmental Effects

The Project Route will impact the visual resources surrounding the nearby landscape; however, existing electrical transmission and distribution lines, oil and gas development including well pads and associated access roads, a natural gas pipeline, and railroad infrastructure are found in the Project vicinity as shown in **Figures 1 and 2**. Velocity Suite data identified the following transmission lines within the Study Area:

- BEPC – Tioga to Logan 230 kV

- BEPC – Judson to Tande 345 kV
- BEPC – Tande to Neset 230 kV
- MDU Resources Group Inc. – Battleview Junction to Tap 57 kV
- MDU Resources Group Inc. – Stanley to Tioga 115kV

Approximately 0.5 acre of land is anticipated to be impacted permanently by the Project assuming 5-10 feet in diameter per pole depending on what type of foundation (direct imbed or drilled shaft) with an average of 800 linear feet span between structures.

7.5. Alternatives to the Proposed Route

Within the Project Route, other alternatives were considered for the Project Route between the northern terminus (proposed substation) and the southern terminus (Tande Substation). The proposed location is the most viable route alternative based on landowner preferences; agency coordination; the fact that the Project Route follows existing road ROWs and field lines for approximately 28.4 miles (77%); and is the most direct route that also minimizes impacts on the exclusion and avoidance areas, and the selection and policy criteria identified in N.D. Admin. Code § 69-06-08-02.

7.6. Irreversible and Irretrievable Commitment of Natural Resources

The use of nonrenewable resources and the effects on future generations are considered irreversible and irretrievable resource commitments. The use or destruction of an irreplaceable resource within a reasonable time frame would be considered an Irreversible resource commitment. The loss in value of an affected resource that cannot be restored to its original condition as the result of an action would be considered an irretrievable resource commitment. There are few commitments of resources associated with this Project that are irreversible and irretrievable, but these include those resources primarily related to project construction, operation, and maintenance.

Natural resources will be used in the fabrication and preparation of construction materials. These materials are usually not retrievable. Construction resources that will be used for the Project will include, but are not limited to, steel, aggregate resources, concrete, and hydrocarbon fuel. Each steel monopole structure requires the construction of a foundation approximately five (5) -10 feet in diameter per pole depending on what type of foundation. During construction, electricity, gasoline, diesel fuel, oil, and lubricants for construction equipment and vehicles will be used. These resources are not in short supply, and their use will not have an adverse effect on the availability of these resources. In addition, the anticipated economic benefits of the Project will balance the irretrievable commitment of resources resulting from the construction of the Project.

7.7. Direct and Indirect Economic Impact of the Proposed Transmission Facility

The Project will deliver power from the proposed Burke Wind Energy Center to the electrical grid via connecting to the existing Tande Substation. The direct and indirect economic benefits from Burke Wind and associated transmission line are mainly positive. Wind energy development results in minimal permanent impacts and is carefully sited to retain agricultural uses with the participating landowners. Throughout the state of North Dakota the rural economy and energy production is diversified. The money used to pay the local contractors during construction will contribute to the total personal income of the region. Additionally, residents in the counties and the state will add to the additional personal income for the state thought the circulation and recirculation of taxes estimated at $44 million dollars for the wind and transmission projects combined for both Burke and Mountrail Counties. Equipment,

energy, fuel, operating supplies, and other products and services are expenditures that benefit businesses throughout North Dakota. Overall, the combined wind farm and transmission project represent a $400 million dollar capital investment.

Landowners will be paid directly for the transmission line easement and the temporary disturbance of land due to construction will be direct economic impacts of the Project amounting to $50 million dollars. Permanent impacts will include the disturbance of each structures foundation. Direct economic impacts will be minimal due to the construction in agricultural areas and the ability to still farm around the structures, and that the landowner compensation will be established by individual easement agreements.

North Dakota's long-term beneficial impacts to the county's tax base will be a result of the construction and operation of the Burke Wind Energy Center and associated transmission line. As the development of wind energy in this region continues, North Dakota's economic base will diversify and strengthen. Additional revenues are expected from property and income taxes.

7.8. Existing Development Plans in the Vicinity of the Route

The Project Route was developed based on voluntary easement agreements with landowners. Burke Wind has applied for Conditional Use Permits from both Burke County and Mountrail Counties. Therefore, no conflicts are anticipated with existing state and local government and private entities' development plans.

7.9. Effects on Scenic and Cultural Resources

There are no designated recreational or scenic resources that will be affected by the Project. **Section 5.1** describes the cultural resources inventory completed for the Project. No impacts to potentially significant sites are anticipated. A Class III Intensive Cultural Resources Inventory of the Survey Corridor has been completed and the Class III Cultural Resources Inventory Report will be submitted to the SHSND for review and concurrence, and a management summary will be provided to the Commission. Effects to National Register eligible or other significant cultural or tribal resources are expected to be avoided. An Unanticipated Discoveries Plan will be prepared for the Project and will outline the procedure utilized to address any unanticipated discoveries of cultural resources, including possible human remains. In the event that unanticipated discoveries are made during construction of the Project, the Unanticipated Discoveries Plan will provide direction to on-site personnel and their consultants regarding proper procedures for addressing the discoveries.

7.10. Effects on Biological Resources

Biological resources within the Project Corridor are discussed in **Section 5.0**. Effects will be avoided and minimized to the extent practicable. The Project will be designed and constructed following APLIC recommendations to minimize the risk of electrocution for birds. Suitable whooping crane habitat was identified within the Study Area and the Project will be designed to avoid impacts to suitable habitat wetlands to the greatest extent practical. All portions of the Project within one (1) mile of The Watershed Institute modeled whooping crane stopover habitat (Watershed Institute, Inc. 2018) will be marked with bird diverters per APLIC recommendations to minimize the risk of impacts to whooping cranes and other large birds. Impacts to sharp-tailed grouse were minimized to the greatest extent practicable through site planning and avoidance of documented lek locations to avoid any direct impacts. In addition, no construction activities will take place within 0.5 miles of active sharp-tailed

grouse lek locations from April through July. No construction activities will take place within 0.25 miles of active raptor nest structures from March through July. Dakota skipper impacts were minimized to the greatest extent feasible through site planning and avoidance of field-verified suitable Dakota skipper habitat. Construction easements will be narrowed in portions of the Project Corridor which intersect with field-verified suitable Dakota skipper habitat. No construction activities will take place within field-verified Dakota skipper habitat between June 15 and July 18, i.e., during the Dakota skipper adult flight period. In addition, high visibility fencing (e.g., snow fence) will be placed around field-verified suitable Dakota skipper habitat areas that are to be avoided to restrict construction equipment from disturbing these areas.

Additionally, the Project will be designed to avoid impacts to USFWS protected wetland basins, grassland easements, and wetland/grassland easements to avoid impacting habitat protected by USFWS easements. As stated in **Section 7.2**, a WCS is being prepared for the Project.

7.11. Problems Identified by the Agencies

Section 6.1 and **Section 6.2** go into further details on agency coordination. Most of the agencies that responded to Project outreach correspondence generally concluded that the Project will have minimal adverse effects. To address potential impacts the Project may have on wildlife and wildlife habitat, NDGFD has suggested that a voluntary offset package be developed for impacts within native prairie and wetland areas. Please refer **Appendix B** for a copy of agency correspondence.

8.0 QUALIFICATIONS OF CONTRIBUTORS

Table 8-1 Qualifications of Contributors

Name Project Role	Education and Professional Experience
Kimberly Wells, PhD Environmental Services Project Manager NEER	Dr. Wells has 16 years of environmental permitting experience including experience as both a consultant and environmental manager in the renewable industry. Her primary expertise is technically challenging and interdisciplinary projects on private and public land, with a focus on large environmental impact assessment and permitting projects with the National Environmental Policy Act (NEPA) and state equivalents; the Endangered Species Act, the Clean Water Act, and associated natural resource laws. She is a certified wildlife biologist and wetland delineator, and obtained her BS in Natural Resource Management from the University of Arizona, her MS in Fisheries and Wildlife Ecology from Oklahoma State, and her PhD in Fisheries and Wildlife Sciences from the University of Missouri–Columbia. Dr. Wells and her team are responsible for all environmental permitting in the Mid-Continent Region that includes North Dakota.
Barry Lane Early Stage Construction Manager NEER	Mr. Lane is responsible for the management and oversight of early stage phases of project planning, engineering, and construction of wind projects. Duties also include budget development, contract execution, procurement, logistical planning, and ultimately transition to the construction execution team. Barry has more than four years of experience in the development of wind energy projects, including 300 MW of wind projects that were constructed in North Dakota in 2016. Barry also has over 20 years of experience in construction management and holds a Bachelor of Arts in Environmental Geography from the Rutgers University.
Clay Cameron Development Project Manager NEER	Mr. Cameron has over 20 years of experience in development project management including construction, federal, state and local permitting and compliance. His responsibilities include financial feasibility analysis, cost and schedule management, and coordination of functional project team and customer relationship. Clay has 10 years' experience in the utility industry including roles of increasing responsibility in community development, engineering & construction, and project development. Clay studied business management at Louisiana State University, and holds a State of Florida General Contractor license, and a State of California General Engineering license.

Name Project Role	Education and Professional Experience
Jason Utton Director Development NEER	Mr. Utton currently directs all wind energy development efforts in the Midwest ISO and PJM markets. Jason joined NEER in 2007. While with NEER, he has successfully developed over 500 MW of clean, renewable energy, which reflects a total company investment of over $2.0B. Jason is the lead negotiator for all commercial contracts in North Dakota.
Carolyn Stewart Director Tribal Relations NEER	Carolyn Stewart is Director Tribal Relations for NextEra Energy and is responsible for all indigenous and tribal relations efforts in the U.S. and Canada. She has forty years of energy industry experience in conventional and renewable energy development, energy planning, and gas distribution and electric distribution operations, including nearly 20 years of tribal renewable energy project development and tribal relations experience. She earned a B.S. in Finance from the University of Illinois, and an M.B.A. from University of Chicago Graduate School of Business.
Richard Estabrook, Ph.D. RPA Environmental Services Project Manager – Archaeologist NEER	Dr. Estabrook has over 25 years of cultural resources management, including experience as both a consultant and environmental manager in the renewable industry. He obtained his BA in Anthropology from Stony Brook University, his MA in Public Archaeology from University of South Florida, his GIS Certificate from University of South Florida, and his PhD in Applied Anthropology/Archaeology from University of South Florida.
Jeromy Miceli Engineering Manager NEER	Mr. Miceli has over 10 years of experience in wind farm engineering and construction, and direct involvement in projects totaling over 2000 MW. His responsibilities include the management of substation, transmission, and collector system engineering consultants, control of project engineering schedules and budgets, and engineering support during early stage and execution. Jeromy has a Bachelor of Science degree in Chemical Engineering from the University of Illinois, as well as Master's degrees in Environmental Engineering and in Project Management, both from Northwestern University.

Name Project Role	Education and Professional Experience
Bourke Thomas Atwell, LLC Project Manager	Mr. Thomas has 14 years of experience in natural resources consulting and environmental construction management, specializing in field studies and permitting involving wetlands, wildlife, forestry and stream ecology. He has been working as a natural resources consultant in renewable energy for the last 10 years including permitting, environmental compliance, species at risk review, wetlands and watercourses studies, soil erosion and sedimentation control compliance, and agency coordination. M.B.A. DeVos Graduate School of Business at Northwood University B.S. Environmental Studies, Michigan State University
Ethan Jahnke Atwell, LLC Deputy Project Manager	Mr. Jahnke has over 22 years of experience in energy project management, federal, state and local regulatory permitting and compliance, NEPA, evaluation and permitting of energy projects, water management and hydrologic modeling. M.S. Water Resources Science, University of Minnesota 2000 B.S. Natural Resources Management, Colorado State University 1995
Tara Corbett Atwell, LLC Route Permit Task Lead	Mrs. Corbett has over 17 years of experience in environmental planning and project management, federal, state and local regulatory permitting and compliance, and evaluation and permitting of energy projects. M.S. Geography, University of Oregon, 2003 B.A. Hanover College, 1998
Jessica Dudley Atwell, LLC Environmental Consultant	Mrs. Dudley has over 3 years of experience in federal, state and local regulatory permitting and compliance, NEPA, and permitting of energy projects. B.S. Environmental Science, University of Houston 2014

Name Project Role	Education and Professional Experience
Benjamin Banks Atwell, LLC Environmental Consultant/Cultural Resources Specialist	Mr. Banks has over 10 years of experience in cultural resources and environmental compliance projects. He has prepared numerous cultural resources reports and environmental assessments for wind energy and development projects across the contiguous United States. Mr. Banks has experience conducting cultural resources fieldwork and analysis, Phase I environmental site assessments, and cultural resources construction monitoring. Register of Professional Archaeologists M.A. Anthropology, University of Arkansas – Fayetteville 2011 B.S. Sociology, Oklahoma State University 2009
Jeffrey Bunch Atwell, LLC Environmental Consultant/Ecologist	Mr. Bunch has over 20 years of professional experience in the biological, ecological, and environmental consulting fields and is a trained USACE Wetland Delineator. He has conducted over 500 wetland determinations and delineations and has provided scientific and technical expertise to a wide variety of private, municipal, State, and Federal clients. B.S. Natural Resources and Environmental Science, Kansas State University 1998
Kendra Socks Atwell, LLC GIS Analyst	Ms. Socks has over 6 years professional experience in geospatial analysis and cartography in the natural resource management and environmental consulting fields. Ms. Socks specializes in site selection and habitat modeling for transmission line and renewable energy projects. B.A. Geography and Planning, Grand Valley State University 2010
Melinda McCarthy, MA, RPA Archaeologist/GIS Analyst AECOM	Ms. McCarthy has 11 years of cultural resources and historic preservation experience. Her responsibilities included leading the cultural resources archaeology and architecture surveys, GIS, and tribal outreach. She has a Bachelor of Arts in Anthropology with an emphasis in Archeology and a Master of Arts in History with a specialization in Historic Preservation, both from Southeast Missouri State University. She is permitted as a Principle Investigator through North Dakota State Historical Preservation Office.

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10.0 ACRONYMS AND ABBREVIATIONS

ACRONYM/TERM	DEFINITION
Applicant	Burke Wind, LLC
Application	Application for Certificate of Corridor Compatibility and Transmission Facility Route Permit
APE	Area of Potential Effects
APLIC	Avian Power Line Interaction Committee
Atwell	Atwell, LLC
BEPC	Basin Electric Power Cooperative
Burke Wind	Burke Wind, LLC
Capacity	The capability of a system, circuit, or device for storing electronic charge
Class I Cultural Resources Inventory	Existing data inventory – a large-scale review and compilation of recorded cultural resource data.
Class III Cultural Resources Inventory	Intensive field inventory to identify cultural resources that could be affected by Project facilities – physical inspection and identification of cultural resources within a specific area.
CM	Cultural Material
Commission	North Dakota Public Service Commission
Corridor Certificate and Route Permit	Certificate of Corridor Compatibility and Transmission Facility Route Permit
CUP	Conditional Use Permit
Distribution	Relatively low-voltage lines that deliver electricity to the retail customer's home or business
DoD	U.S. Department of Defense
EPC	Engineering, Procurement, and Construction
ESA	Endangered Species Act
FEMA	Federal Emergency Management Administration

ACRONYM/TERM	DEFINITION
Geotechnical	A science that deals with the application of geology to engineering
GIS	Geographic Information System
Guidelines	Commission Application Guidelines for a Certificate of Corridor Compatibility
IEEE	Institute of Electrical and Electronic Engineers, Inc.
Interconnection	Location of project connection to the power grid.
kV	kilovolt
LiDAR	Light Detection and Ranging
Micrositing	The process in which potential environmentally sensitive areas, soil conditions, and other site factors, as identified by local, state and federal agencies, are evaluated to locate wind turbines and associated facilities.
MW	megawatt
N.D. Admin. Code	North Dakota Administrative Code
N.D.C.C.	North Dakota Century Code
NDGFD	North Dakota Game and Fish Department
NDGS	North Dakota Geological Survey
NDDH	North Dakota Department of Health
NDDTL	North Dakota Department of Trust Lands
NEER	NextEra Energy Resources, LLC
NERC	North American Reliability Council
NLEB	Northern Long-Eared Bat
NPDES	National Pollutant Discharge Elimination System
Project	Burke Wind Transmission Line
Project Corridor	The area of land in which a designated route may be established for a transmission facility. The Project Corridor has a width of 150 feet for the length of the Project Route and widens to 200 feet at each turn and at each terminus.
Project Route	The location and centerline of a transmission facility within a designated

ACRONYM/TERM	DEFINITION
	corridor.
ROW	Right-of-Way
SCRSTT	Sites of Cultural religious Significance to The Tribe
SHSND	State Historical Society of North Dakota
Siting Act	North Dakota Energy Conversion and Transmission Facility Siting Act
SPCC	Spill Prevention, Control and Countermeasure
Study Area	The one mile wide area (0.5 mile on either side of the Project Route) that was studied to determine the best route for the Project.
SWAP	State Wildlife Action Plan
SWCA	SWCA Environmental Consultants
SWPPP	Stormwater Pollution Prevention Plan
TCS	Traditional Cultural Surveyors
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
WCS	Wildlife Conservation Strategy

Figures:

Figure 1: Aerial Site Location Overview Map

Figure 1(a-f): Aerial Site Location Map

Figure 2: Topographic Site Location Overview Map

Figure 2(a-f): Topographic Site Location Map

Figure 3(a-n): Avoidance & Exclusion Areas Map

Figure 4(a-f): Participating Landowners

Figure 5: Whooping Crane Corridor Map

Figure 5(a-f): Potential Whooping Crane Habitat Map

Figure 6(a-f): Sharp-tailed Grouse Lek Habitat Map

Figure 7(a-f): Raptor Nest Map

Figure 8: Typical Structure Layout Monopole Guyed Deadened

Figure 9: Typical Structure Layout Monopole Tangent

Figure 10: Typical Structure Layout Monopole Guyed Light Running Angle

Figure 11: Typical Structure Layout Monopole Guyed Medium Running Angle

Figure 12: Guy Easement Exhibit Single Circuit Running Angle Structure

Figure 13: Guy Easement Exhibit Single Circuit Deadened Structure

Burke Wind Transmission Line

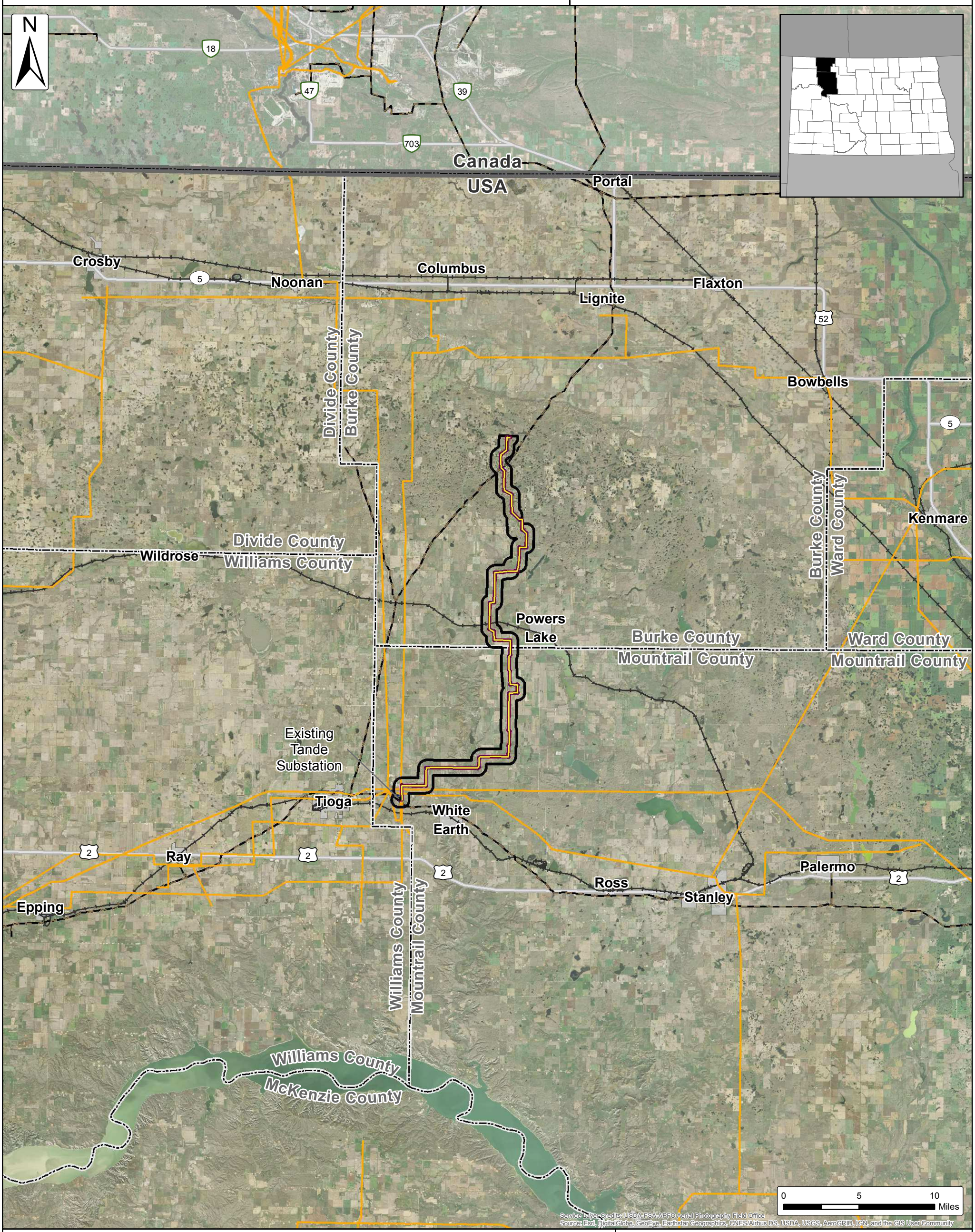
Figure 1: Aerial Site Location Overview Map

Burke County & Mountrail County, North Dakota

Client:
Burke Wind, LLC

Issue Date:
8/2/2018

Atwell, LLC Project:
16000947



Existing Natural Gas Pipeline (Velocity Suite)
Proposed Transmission (Velocity Suite)
Existing Transmission (Velocity Suite)
Project Transmission Line
Project Transmission Line 150 ft. Project Corridor
Project Transmission Line 1 Mile Study Area
Existing Tande Substation
Cities
Counties
International Border

SOURCE: USDA NAIP 2017 IMAGERY & ESRI BASEMAPS

ATWELL

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Burke Wind Transmission Line

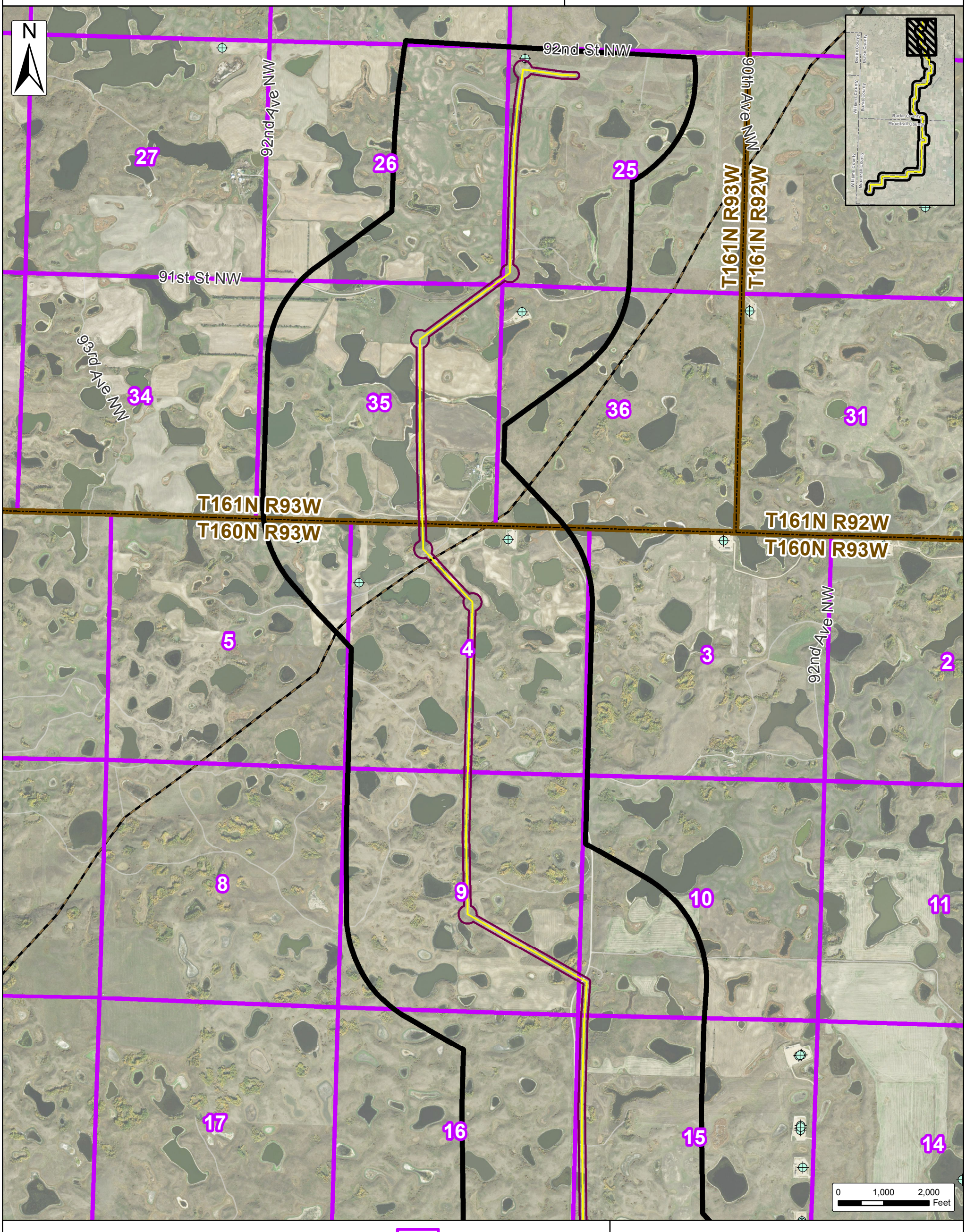
Figure 1a: Aerial Site Location Map

Burke County & Mountrail County, North Dakota

Client:
Burke Wind, LLC

Issue Date:
8/2/2018

Atwell, LLC Project:
16000947



Oil & Gas Wells (NDIC)

Existing Natural Gas Pipeline (Velocity Suite)

Proposed Transmission (Velocity Suite)

Existing Transmission (Velocity Suite)

Project Transmission Line

Project Transmission Line 150 ft. Project Corridor

Project Transmission Line 1 Mile Study Area

Existing Tande Substation

Sections (PLSS)

Townships (PLSS)

Counties

SOURCE: USDA NAIP 2017 IMAGERY

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Burke Wind Transmission Line

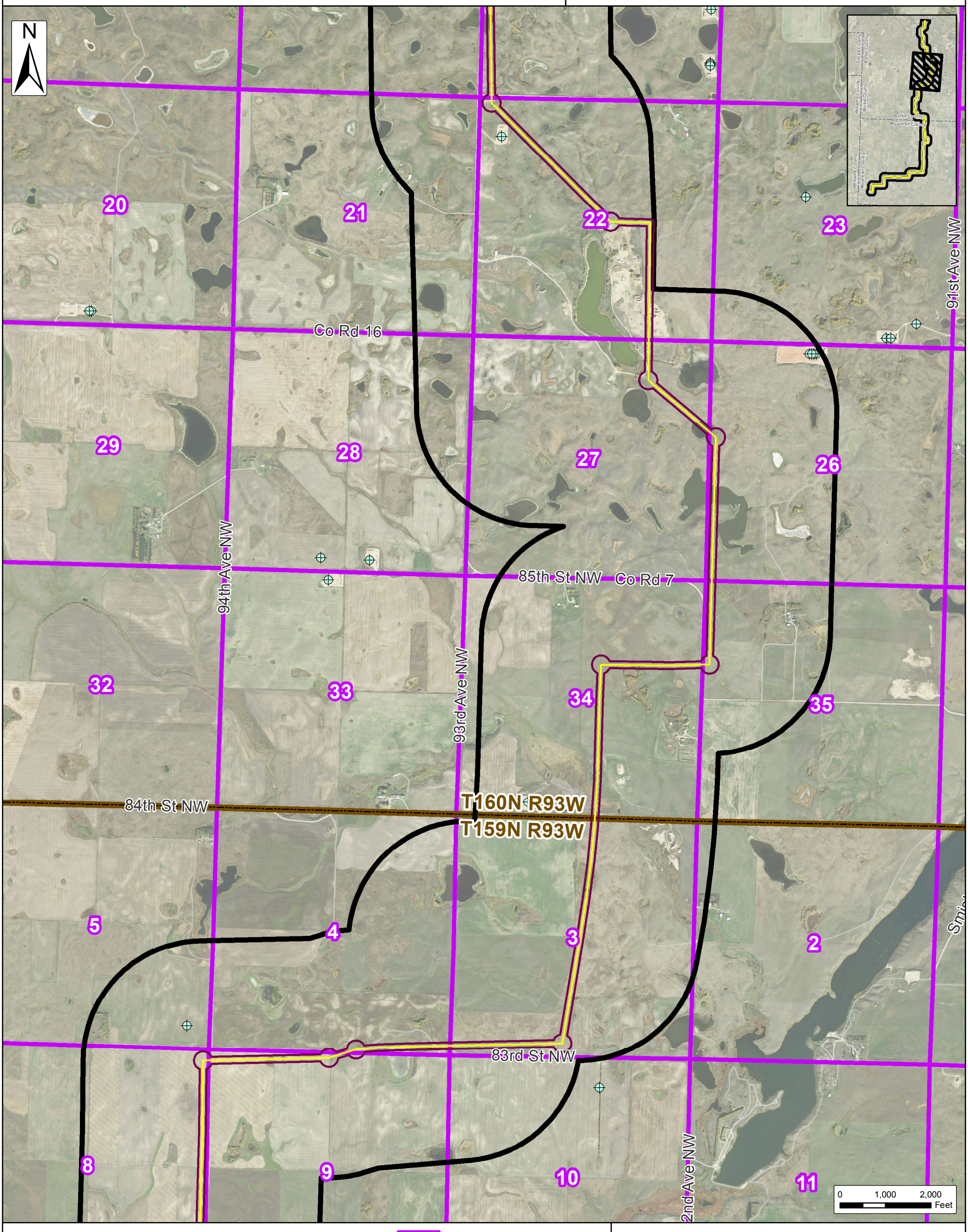
Figure 1b: Aerial Site Location Map

Burke County & Mountrail County, North Dakota

Client:
Burke Wind, LLC

Issue Date:
8/2/2018

Atwell, LLC Project:
16000947



SOURCE: USDA NAIP 2017 IMAGERY

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Burke Wind Transmission Line

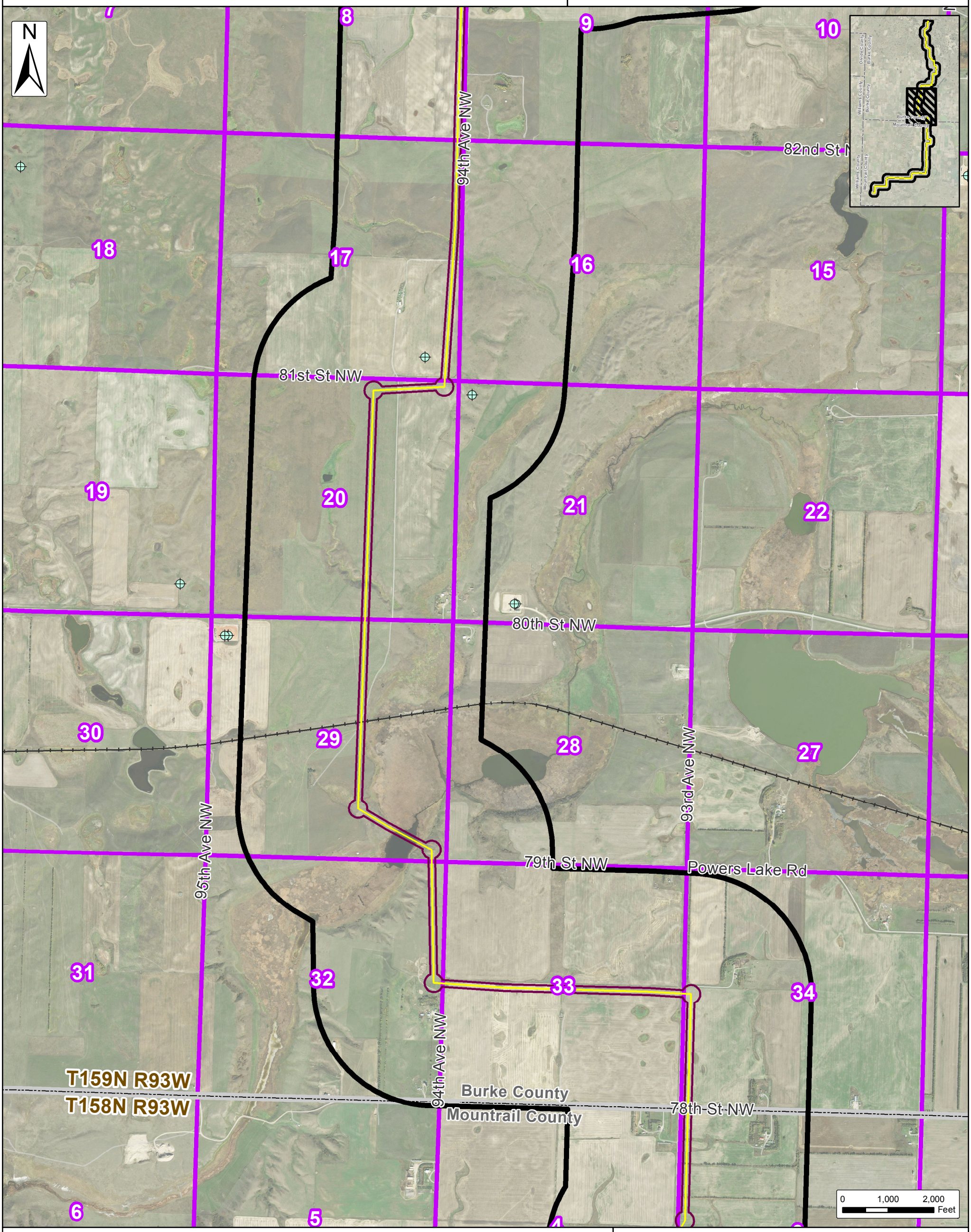
Figure 1c: Aerial Site Location Map

Burke County & Mountrail County, North Dakota

Client:
Burke Wind, LLC

Issue Date:
8/2/2018

Atwell, LLC Project:
16000947



Oil & Gas Wells (NDIC)
Existing Natural Gas Pipeline (Velocity Suite)
Proposed Transmission (Velocity Suite)
Existing Transmission (Velocity Suite)
Project Transmission Line
Project Transmission Line 150 ft. Project Corridor
Project Transmission Line 1 Mile Study Area
Existing Tande Substation
Sections (PLSS)
Townships (PLSS)
Counties

SOURCE: USDA NAIP 2017 IMAGERY

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Burke Wind Transmission Line

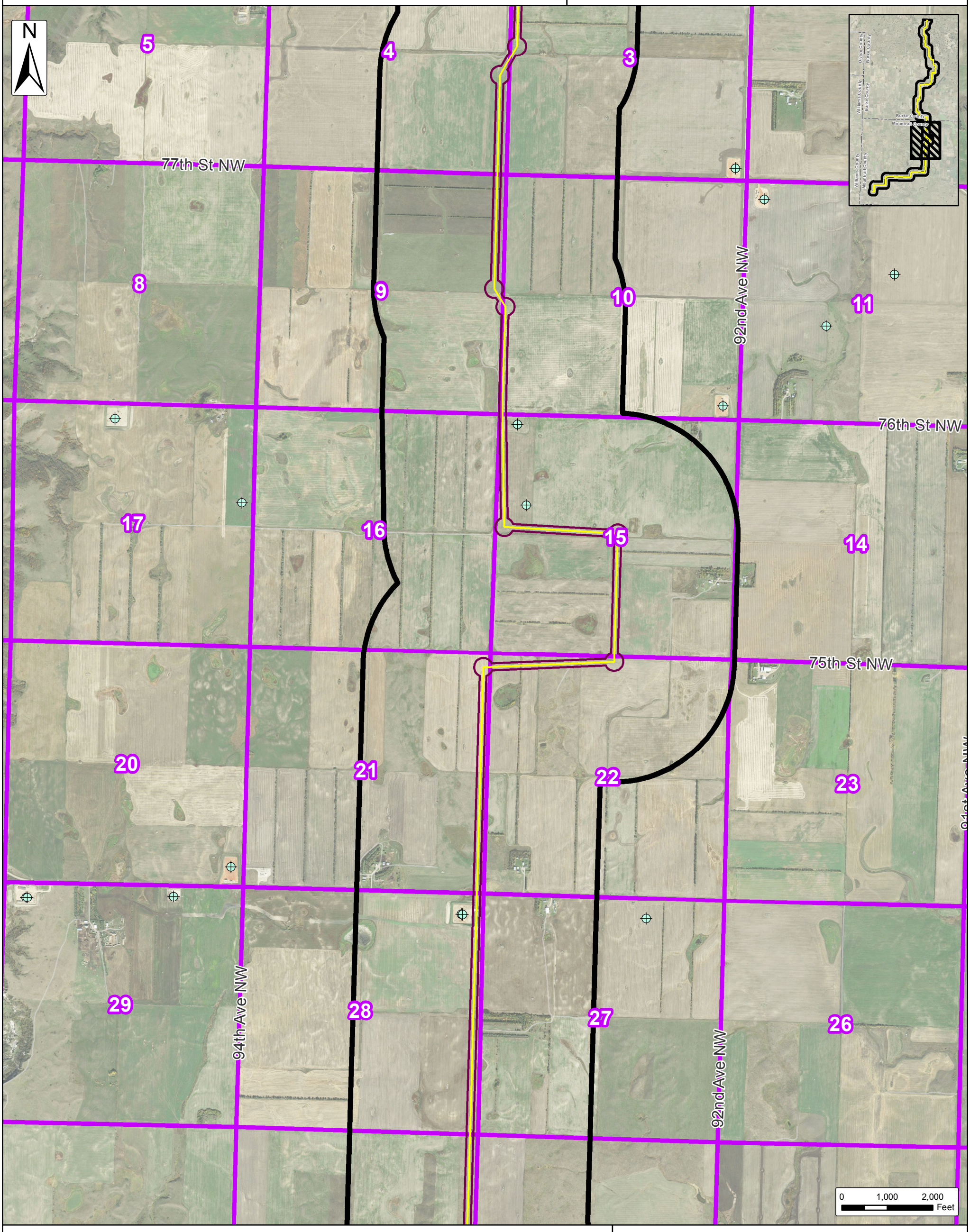
Figure 1d: Aerial Site Location Map

Burke County & Mountrail County, North Dakota

Client:
Burke Wind, LLC

Issue Date:
8/2/2018

Atwell, LLC Project:
16000947



Oil & Gas Wells (NDIC)

Existing Natural Gas Pipeline (Velocity Suite)

Proposed Transmission (Velocity Suite)

Existing Transmission (Velocity Suite)

Project Transmission Line

Project Transmission Line 150 ft. Project Corridor

Project Transmission Line 1 Mile Study Area

Existing Tande Substation

Sections (PLSS)

Townships (PLSS)

Counties

SOURCE: USDA NAIP 2017 IMAGERY

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Burke Wind Transmission Line

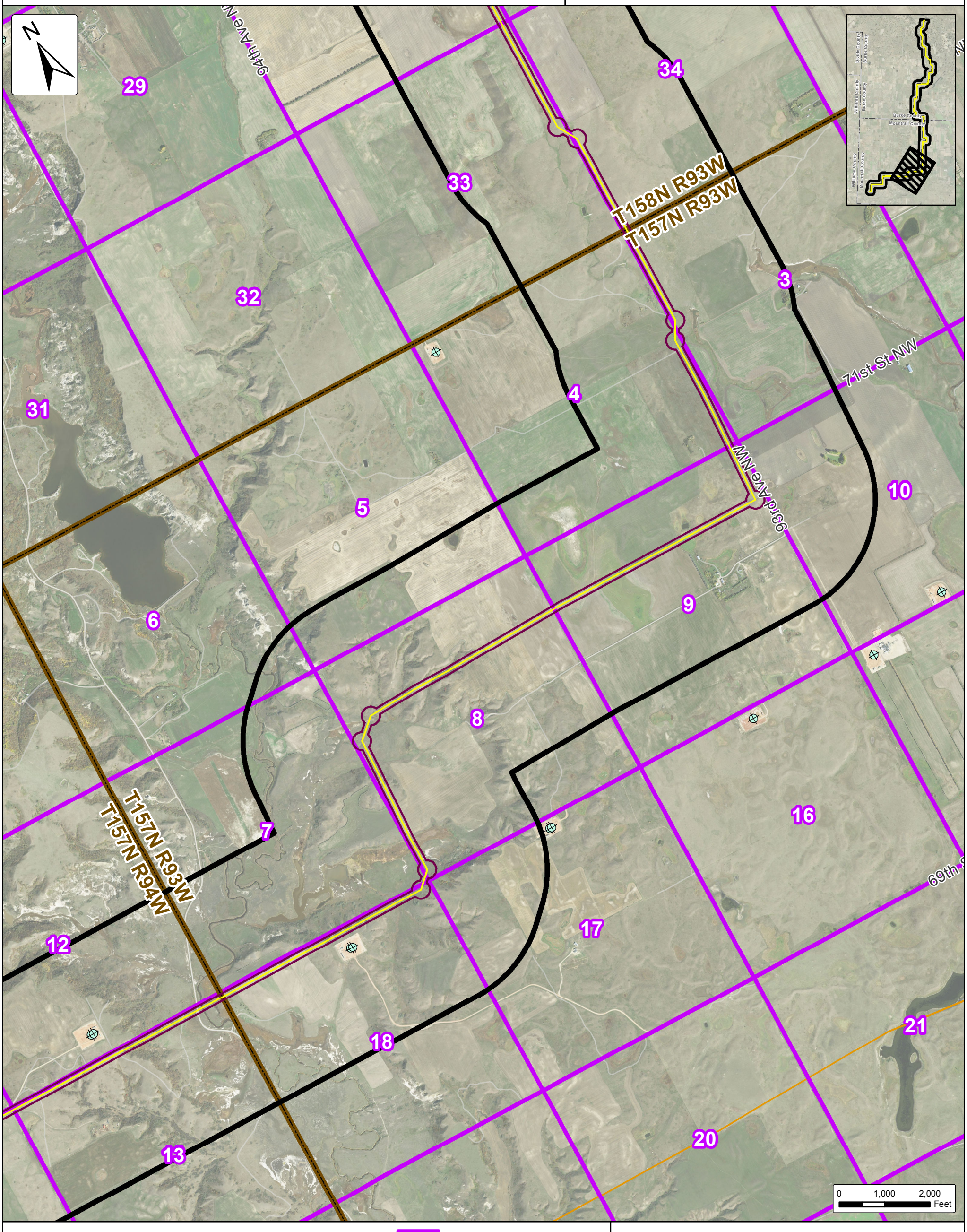
Figure 1e: Aerial Site Location Map

Burke County & Mountrail County, North Dakota

Client:
Burke Wind, LLC

Issue Date:
8/2/2018

Atwell, LLC Project:
16000947



Oil & Gas Wells (NDIC)

Existing Natural Gas Pipeline (Velocity Suite)

Proposed Transmission (Velocity Suite)

Existing Transmission (Velocity Suite)

Project Transmission Line

Project Transmission Line 150 ft. Project Corridor

Project Transmission Line 1 Mile Study Area

Existing Tande Substation

Sections (PLSS)

Townships (PLSS)

Counties

SOURCE: USDA NAIP 2017 IMAGERY

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Burke Wind Transmission Line

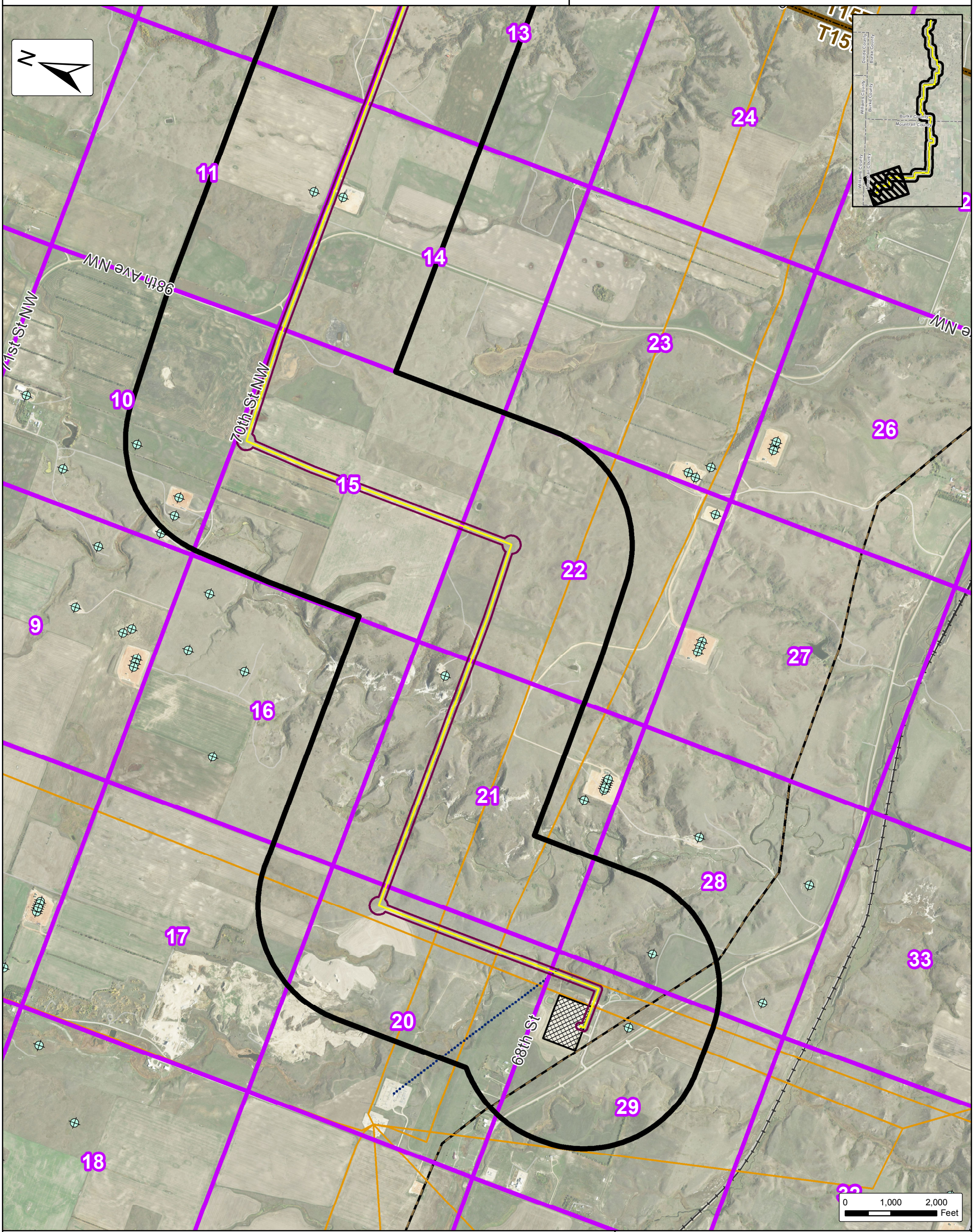
Figure 1f: Aerial Site Location Map

Burke County & Mountrail County, North Dakota

Client:
Burke Wind, LLC

Issue Date:
8/2/2018

Atwell, LLC Project:
16000947



Oil & Gas Wells (NDIC)
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Townships (PLSS)
Counties

SOURCE: USDA NAIP 2017 IMAGERY

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Burke Wind Transmission Line

Figure 2: Topographic Site Location Overview Map

Burke County & Mountrail County, North Dakota

Client:
Burke Wind, LLC

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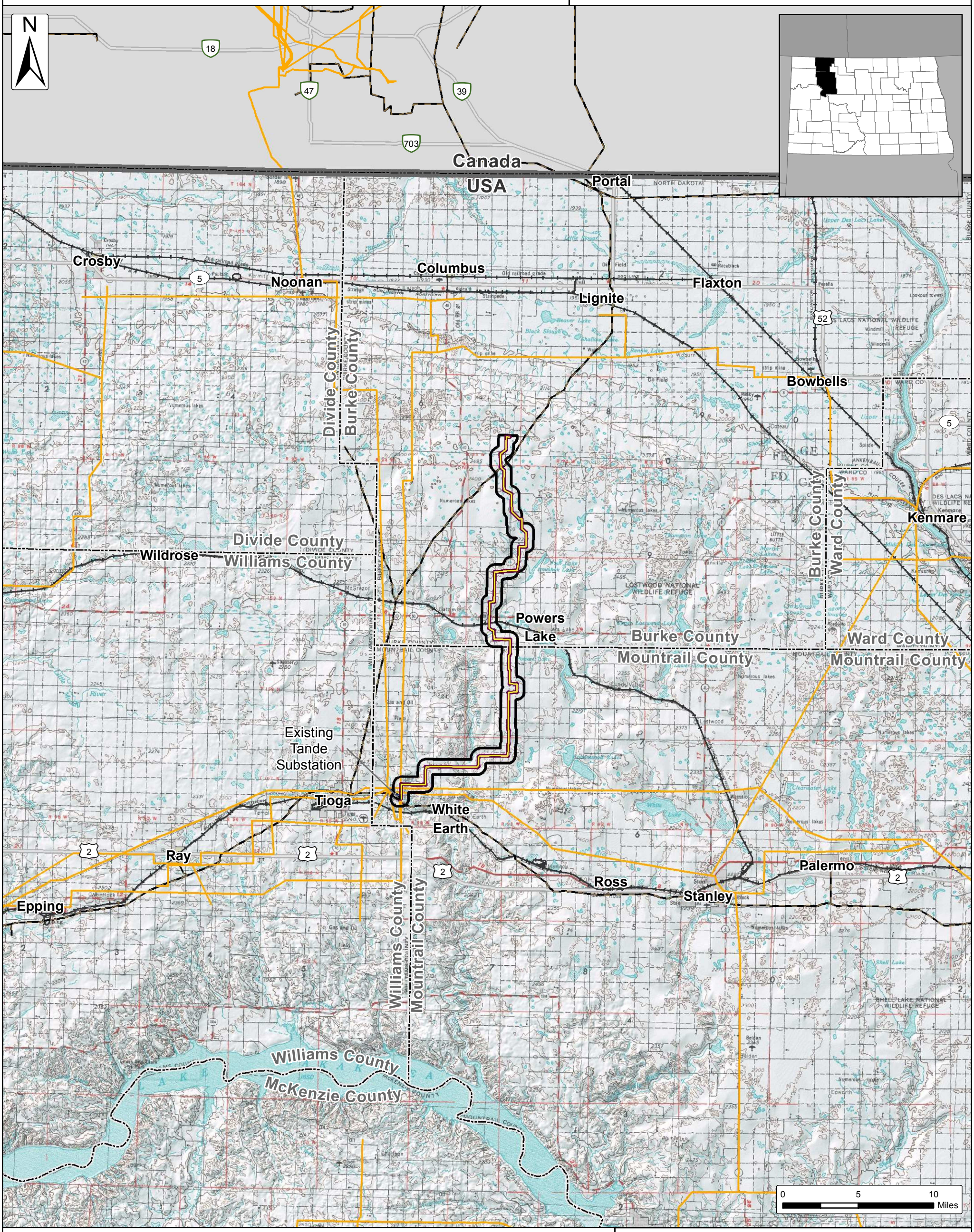
8/2/2018

Atwell, LLC Project:
16000947



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Project Transmission Line

Project Transmission Line 150 ft. Project Corridor

Project Transmission Line 1 Mile Study Area

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Counties

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SOURCE: USGS TOPO QUADS

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Burke Wind Transmission Line

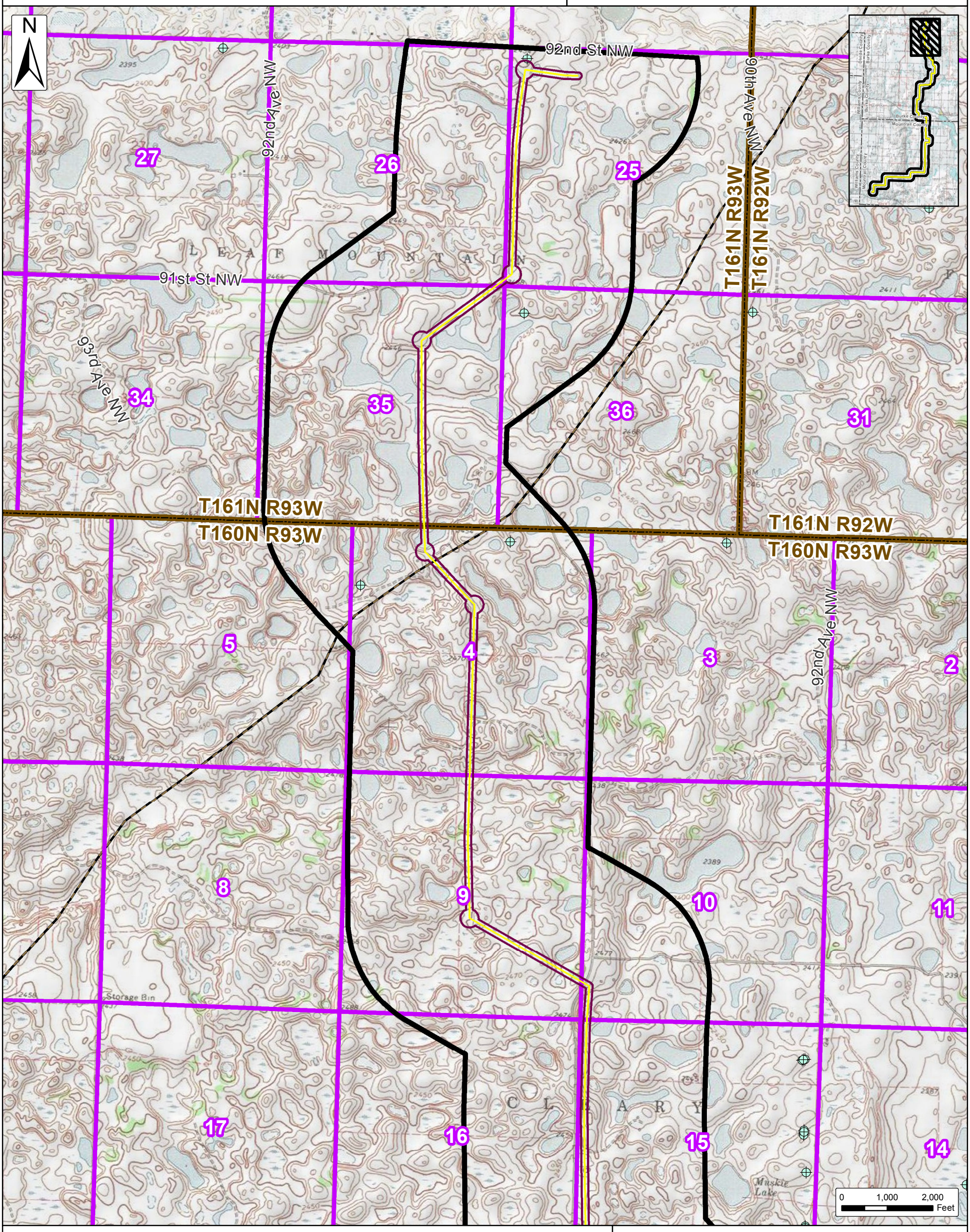
Figure 2a: Topographic Site Location Map

Burke County & Mountrail County, North Dakota

Client:
Burke Wind, LLC

Issue Date:
8/2/2018

Atwell, LLC Project:
16000947



Oil & Gas Wells (NDIC)
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Townships (PLSS)
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SOURCE: USGS TOPO QUADS

ATWELL

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Burke Wind Transmission Line

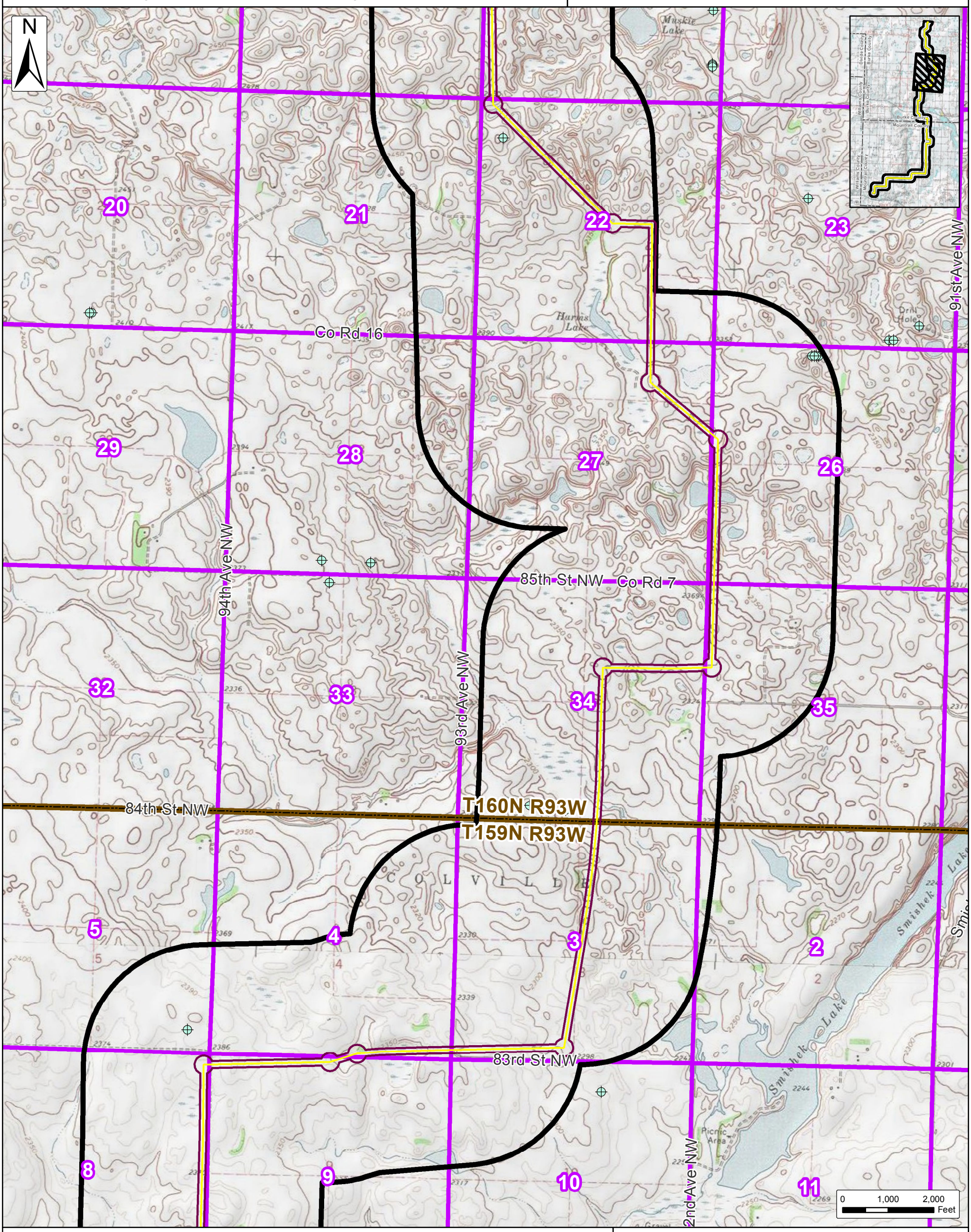
Figure 2b: Topographic Site Location Map

Burke County & Mountrail County, North Dakota

Client:
Burke Wind, LLC

Issue Date:
8/2/2018

Atwell, LLC Project:
16000947



Oil & Gas Wells (NDIC)
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SOURCE: USGS TOPO QUADS

ATWELL

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Burke Wind Transmission Line

Figure 2c: Topographic Site Location Map

Burke County & Mountrail County, North Dakota

Client:
Burke Wind, LLC

Issue Date:
8/2/2018

Atwell, LLC Project:
16000947

N

94th Ave NW
82nd St NW
81st St NW
80th St NW
79th St NW
95th Ave NW
93rd Ave NW
94th Ave NW
78th St NW
Powers Lake Rd
Burke County
Mountrail County
T159N R93W
T158N R93W
COLVILLE
Earth
White
Meadow
Paradise
Enget Lake
BURLINGTON NORTHERN
River

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 26 27 28 29 30 31 32 33 34 35 36

0 1,000 2,000 Feet

Oil & Gas Wells (NDIC)
Existing Natural Gas Pipeline (Velocity Suite)
Proposed Transmission (Velocity Suite)
Existing Transmission (Velocity Suite)
Project Transmission Line
Project Transmission Line 150 ft. Project Corridor
Project Transmission Line 1 Mile Study Area
Existing Tande Substation
Sections (PLSS)
Townships (PLSS)
Counties

SOURCE: USGS TOPO QUADS

ATWELL

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Burke Wind Transmission Line

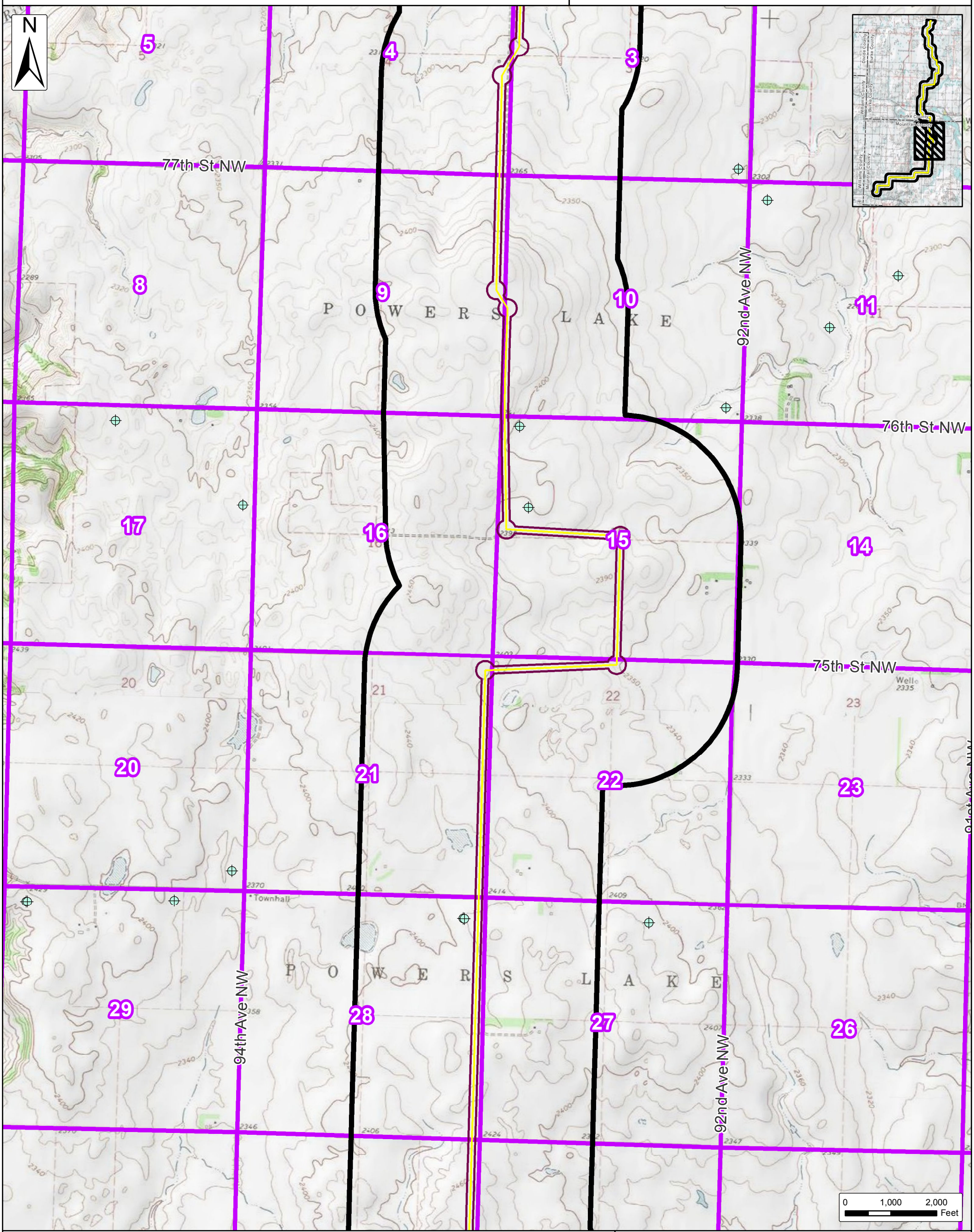
Figure 2d: Topographic Site Location Map

Burke County & Mountrail County, North Dakota

Client:
Burke Wind, LLC

Issue Date:
8/2/2018

Atwell, LLC Project:
16000947



Oil & Gas Wells (NDIC)
Existing Natural Gas Pipeline (Velocity Suite)
Proposed Transmission (Velocity Suite)
Existing Transmission (Velocity Suite)
Project Transmission Line
Project Transmission Line 150 ft. Project Corridor
Project Transmission Line 1 Mile Study Area
Existing Tande Substation
Sections (PLSS)
Townships (PLSS)
Counties

SOURCE: USGS TOPO QUADS

ATWELL

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Burke Wind Transmission Line

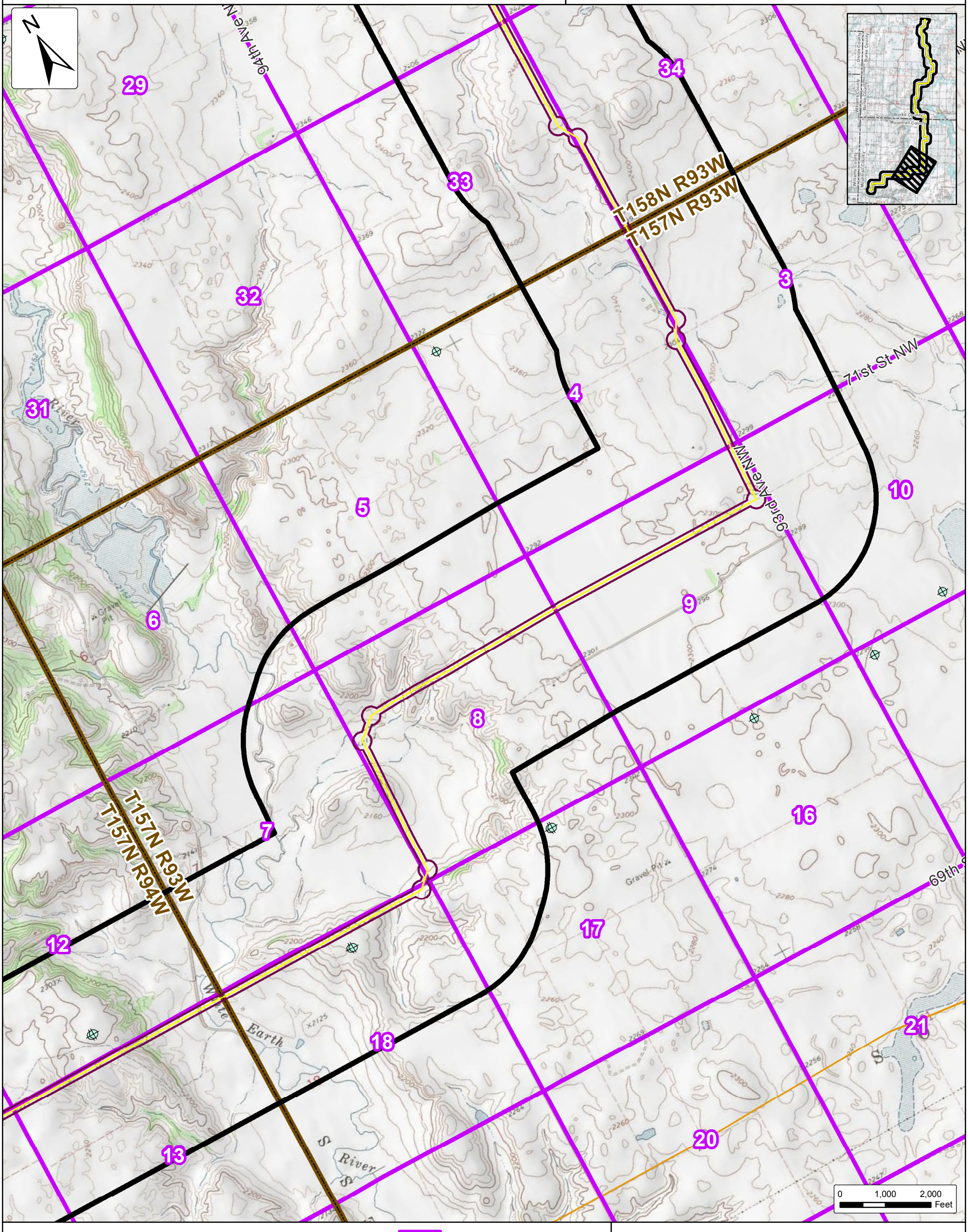
Figure 2e: Topographic Site Location Map

Burke County & Mountrail County, North Dakota

Client:
Burke Wind, LLC

Issue Date:
8/2/2018

Atwell, LLC Project:
16000947



- Oil & Gas Wells (NDIC)
- Existing Natural Gas Pipeline (Velocity Suite)
- Proposed Transmission (Velocity Suite)
- Existing Transmission (Velocity Suite)
- Project Transmission Line
- Project Transmission Line 150 ft. Project Corridor
- Project Transmission Line 1 Mile Study Area
- Existing Tande Substation
- Sections (PLSS)
- Townships (PLSS)
- Counties

SOURCE: USGS TOPO QUADS

ATWELL

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Burke Wind Transmission Line

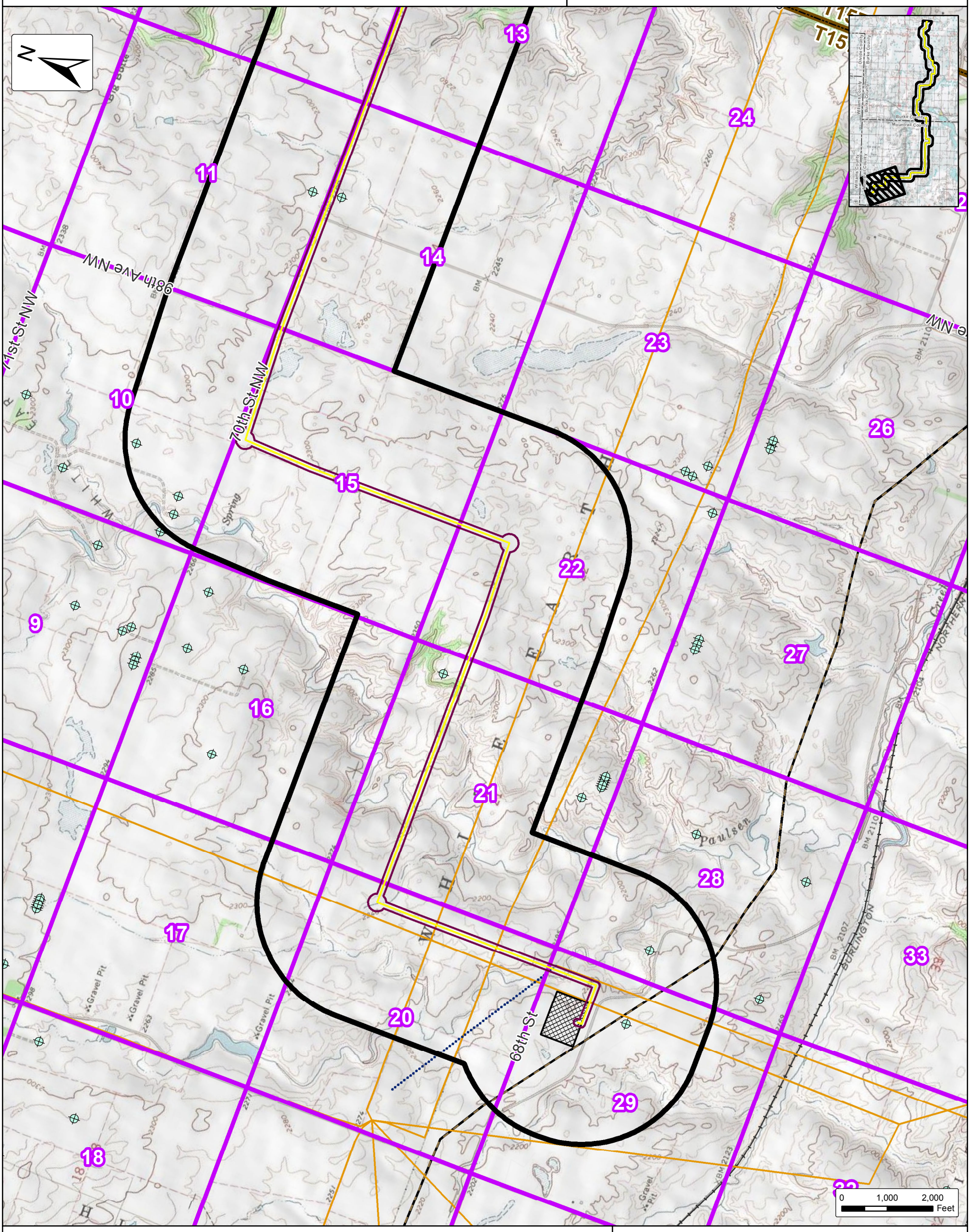
Figure 2f: Topographic Site Location Map

Burke County & Mountrail County, North Dakota

Client:
Burke Wind, LLC

Issue Date:
8/2/2018

Atwell, LLC Project:
16000947



Oil & Gas Wells (NDIC)

Existing Natural Gas Pipeline (Velocity Suite)

Proposed Transmission (Velocity Suite)

Existing Transmission (Velocity Suite)

Project Transmission Line

Project Transmission Line 150 ft. Project Corridor

Project Transmission Line 1 Mile Study Area

Existing Tande Substation

Sections (PLSS)

Townships (PLSS)

Counties

SOURCE: USGS TOPO QUADS

ATWELL

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Burke Wind Transmission Line

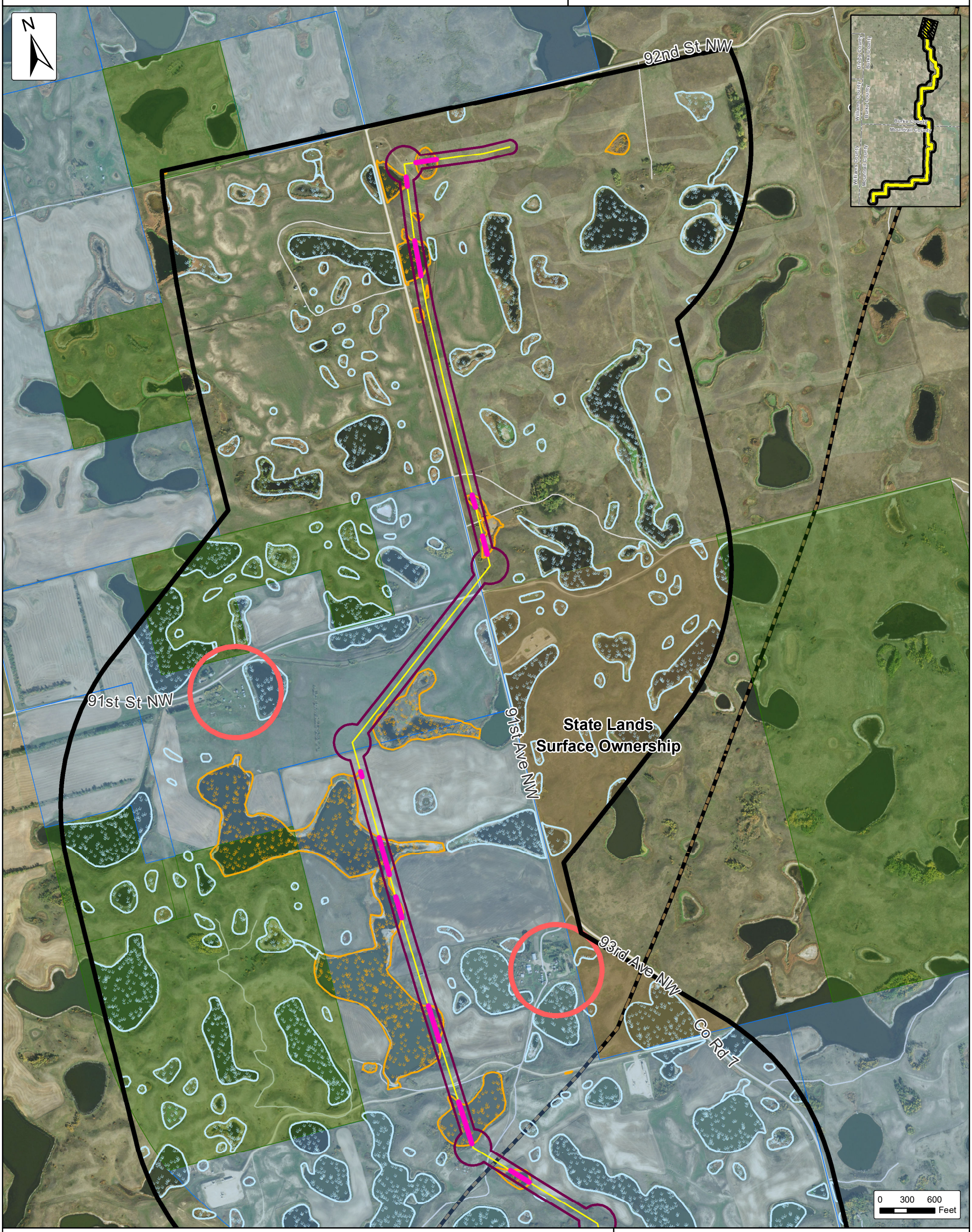
Figure 3a: Avoidance & Exclusion Areas Map

Burke County & Mountrail County, North Dakota

Client:
Burke Wind, LLC

Issue Date:
8/2/2018

Atwell, LLC Project:
16000947



Aerial Overhead Crossing- No Direct Impacts Proposed
Transmission Line
Transmission Line 150 ft. Project Corridor
Transmission Line 1 Mile Study Area
Existing Tande Substation
Counties

SOURCE: USDA NAIP 2017 IMAGERY

Avoidance Areas
Watercourses (Atwell Field Identified)
Watercourses (Atwell Desktop Review)
Watercourses (Atwell Field Identified)
Wetlands (Atwell Field Identified)
Wetlands (Atwell Desktop Review)

*Exclusion Area: Archaeological sites not shown due to confidentiality

Existing Natural Gas Pipeline (Velocity Suite)
Existing Transmission (Velocity Suite)
Receptor 500 ft. Avoidance Area
Landslide Deposits
Private Lands Open to Sportsmen (NDGF)

USFWS Easements
FHA Easement
Grassland Easement
Wetland Easement
Wetland/Grassland Easement

Protected Areas (USGS)
Waterfowl Production Area
Wildlife Management Area
State Lands Surface Ownership

ATWELL

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Burke Wind Transmission Line

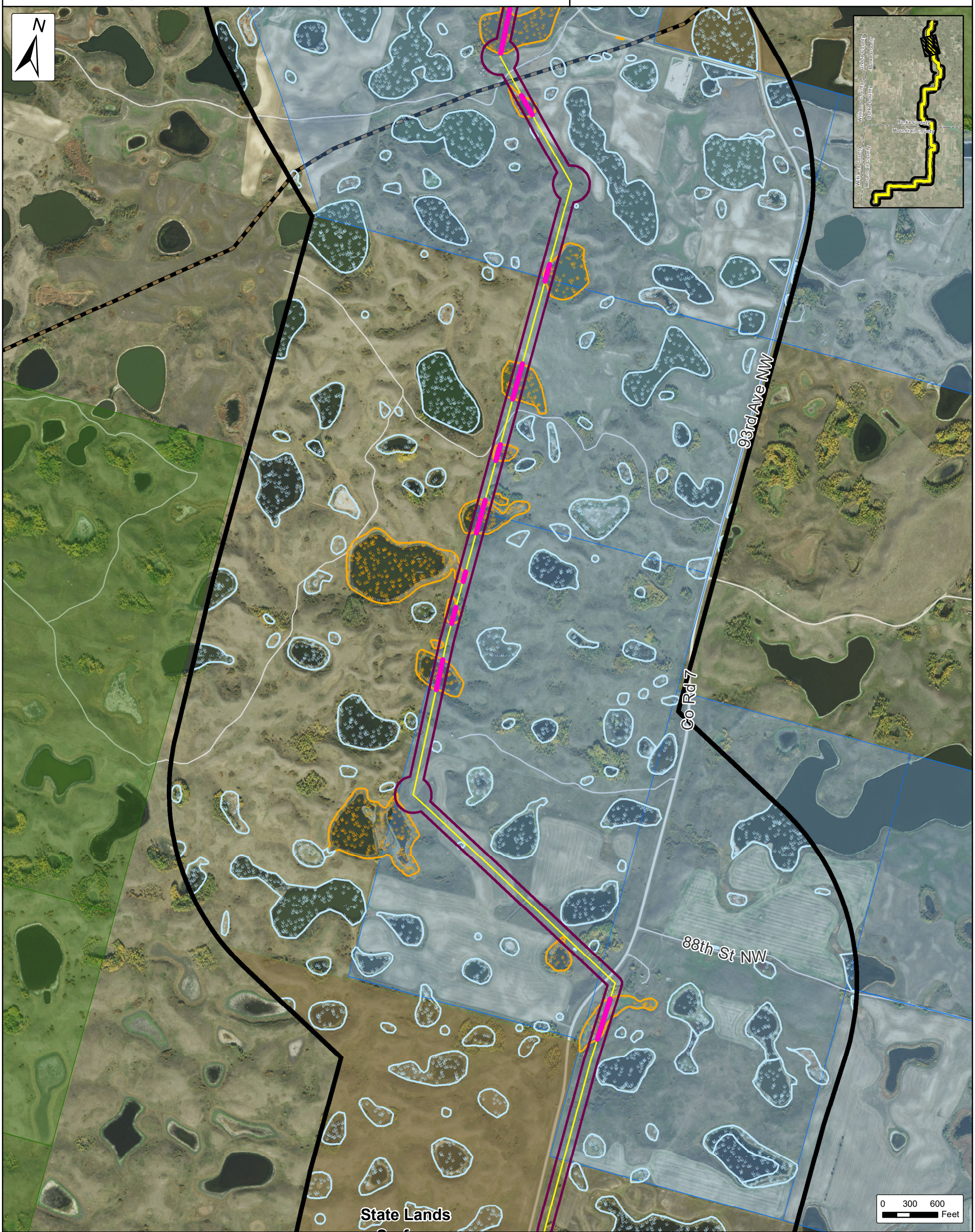
Figure 3b: Avoidance & Exclusion Areas Map

Burke County & Mountrail County, North Dakota

Client:
Burke Wind, LLC

Issue Date:
8/2/2018

Atwell, LLC Project:
16000947



Aerial Overhead Crossing- No Direct Impacts Proposed
Transmission Line
Transmission Line 150 ft. Project Corridor
Transmission Line 1 Mile Study Area
Existing Tande Substation
Counties

SOURCE: USDA NAIP 2017 IMAGERY

Avoidance Areas
Watercourses (Atwell Field Identified)
Watercourses (Atwell Desktop Review)
Watercourses (Atwell Field Identified)
Wetlands (Atwell Field Identified)
Wetlands (Atwell Desktop Review)

*Exclusion Area: Archaeological sites not shown due to confidentiality

Existing Natural Gas Pipeline (Velocity Suite)
Existing Transmission (Velocity Suite)
Receptor 500 ft. Avoidance Area
Landslide Deposits
Private Lands Open to Sportsmen (NDGF)

USFWS Easements
FHA Easement
Grassland Easement
Wetland Easement
Wetland/Grassland Easement

Protected Areas (USGS)
Waterfowl Production Area
Wildlife Management Area
State Lands Surface Ownership

ATWELL

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Burke Wind Transmission Line

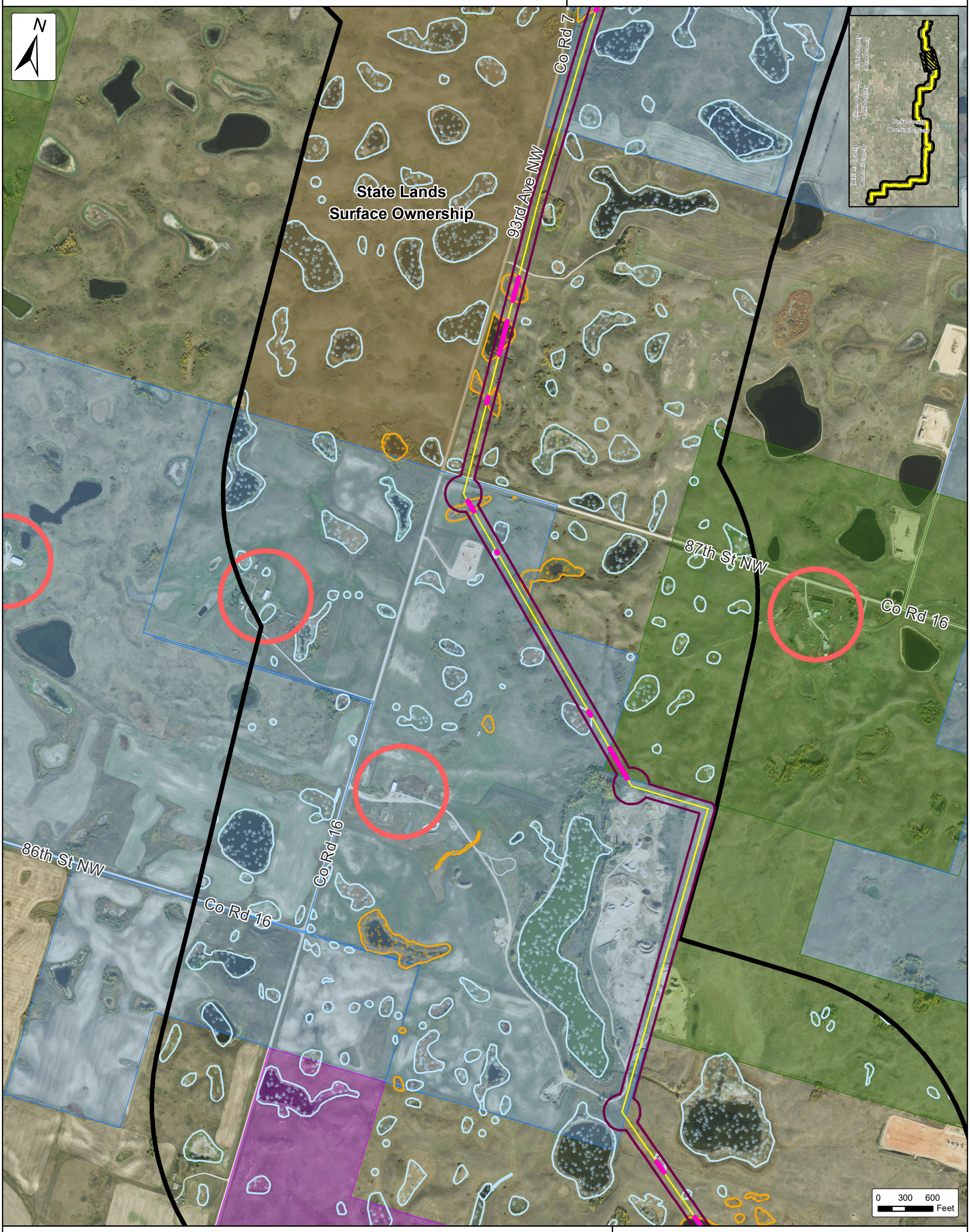
Figure 3c: Avoidance & Exclusion Areas Map

Burke County & Mountrail County, North Dakota

Client:
Burke Wind, LLC

Issue Date:
8/2/2018

Atwell, LLC Project:
16000947



Aerial Overhead Crossing- No Direct Impacts Proposed
Transmission Line
Transmission Line 150 ft. Project Corridor
Transmission Line 1 Mile Study Area
Existing Tande Substation
Counties

SOURCE: USDA NAIP 2017 IMAGERY

Avoidance Areas
Watercourses (Atwell Field Identified)
Watercourses (Atwell Desktop Review)
Watercourses (Atwell Field Identified)
Wetlands (Atwell Field Identified)
Wetlands (Atwell Desktop Review)

*Exclusion Area: Archaeological sites not shown due to confidentiality

Existing Natural Gas Pipeline (Velocity Suite)
Existing Transmission (Velocity Suite)
Receptor 500 ft. Avoidance Area
Landslide Deposits
Private Lands Open to Sportsmen (NDGF)

USFWS Easements
FHA Easement
Grassland Easement
Wetland Easement
Wetland/Grassland Easement

Protected Areas (USGS)
Waterfowl Production Area
Wildlife Management Area
State Lands Surface Ownership

ATWELL

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Burke Wind Transmission Line

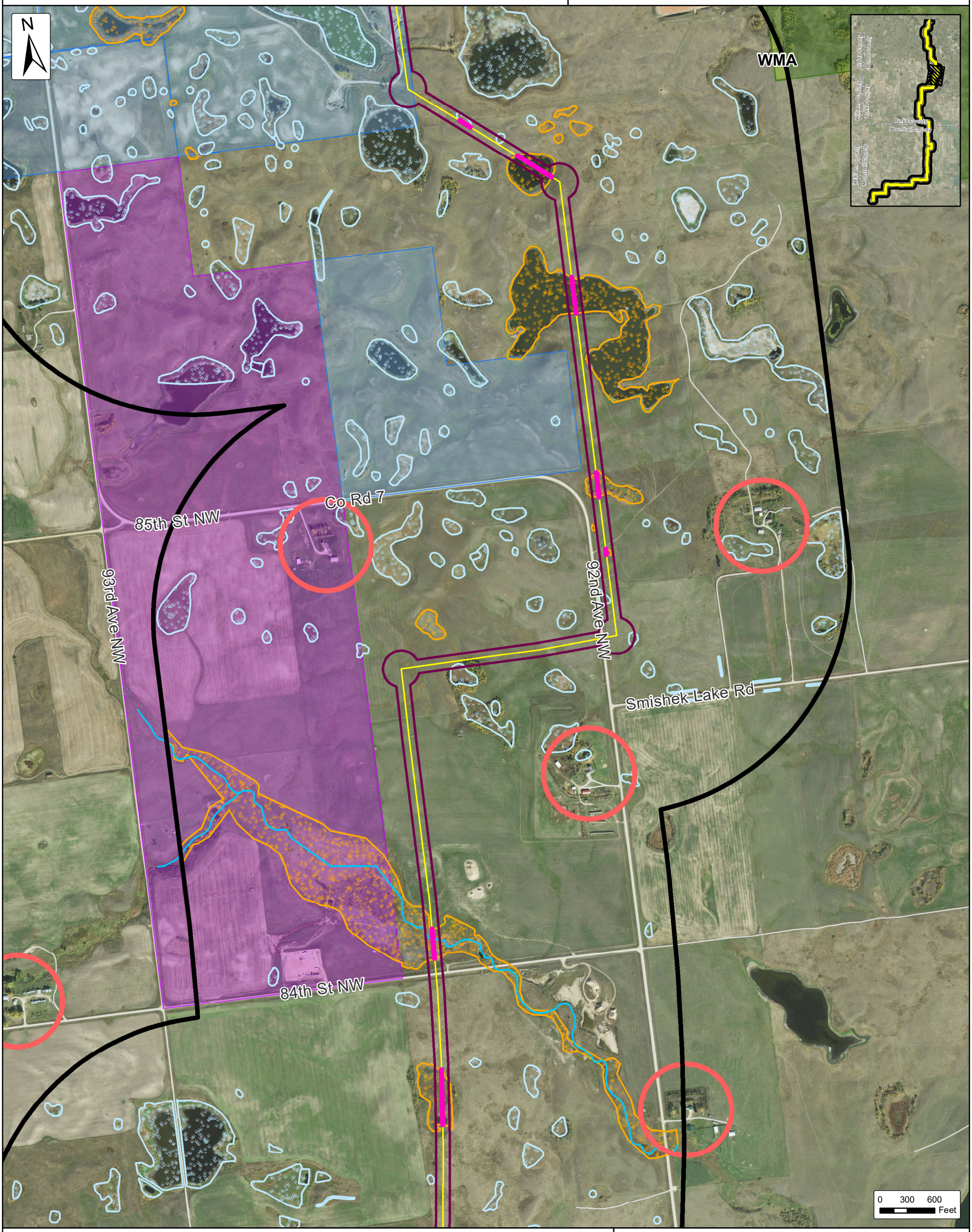
Figure 3d: Avoidance & Exclusion Areas Map

Burke County & Mountrail County, North Dakota

Client:
Burke Wind, LLC

Issue Date:
8/2/2018

Atwell, LLC Project:
16000947



Aerial Overhead Crossing- No Direct Impacts Proposed
Transmission Line
Transmission Line 150 ft. Project Corridor
Transmission Line 1 Mile Study Area
Existing Tande Substation
Counties

Avoidance Areas
Watercourses (Atwell Field Identified)
Watercourses (Atwell Desktop Review)
Watercourses (Atwell Field Identified)
Wetlands (Atwell Field Identified)
Wetlands (Atwell Desktop Review)

Existing Natural Gas Pipeline (Velocity Suite)
Existing Transmission (Velocity Suite)
Receptor 500 ft. Avoidance Area
Landslide Deposits
Private Lands Open to Sportsmen (NDGF)

USFWS Easements
FHA Easement
Grassland Easement
Wetland Easement
Wetland/Grassland Easement

Protected Areas (USGS)
Waterfowl Production Area
Wildlife Management Area
State Lands Surface Ownership

*Exclusion Area: Archaeological sites not shown due to confidentiality

SOURCE: USDA NAIP 2017 IMAGERY

ATWELL

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Burke Wind Transmission Line

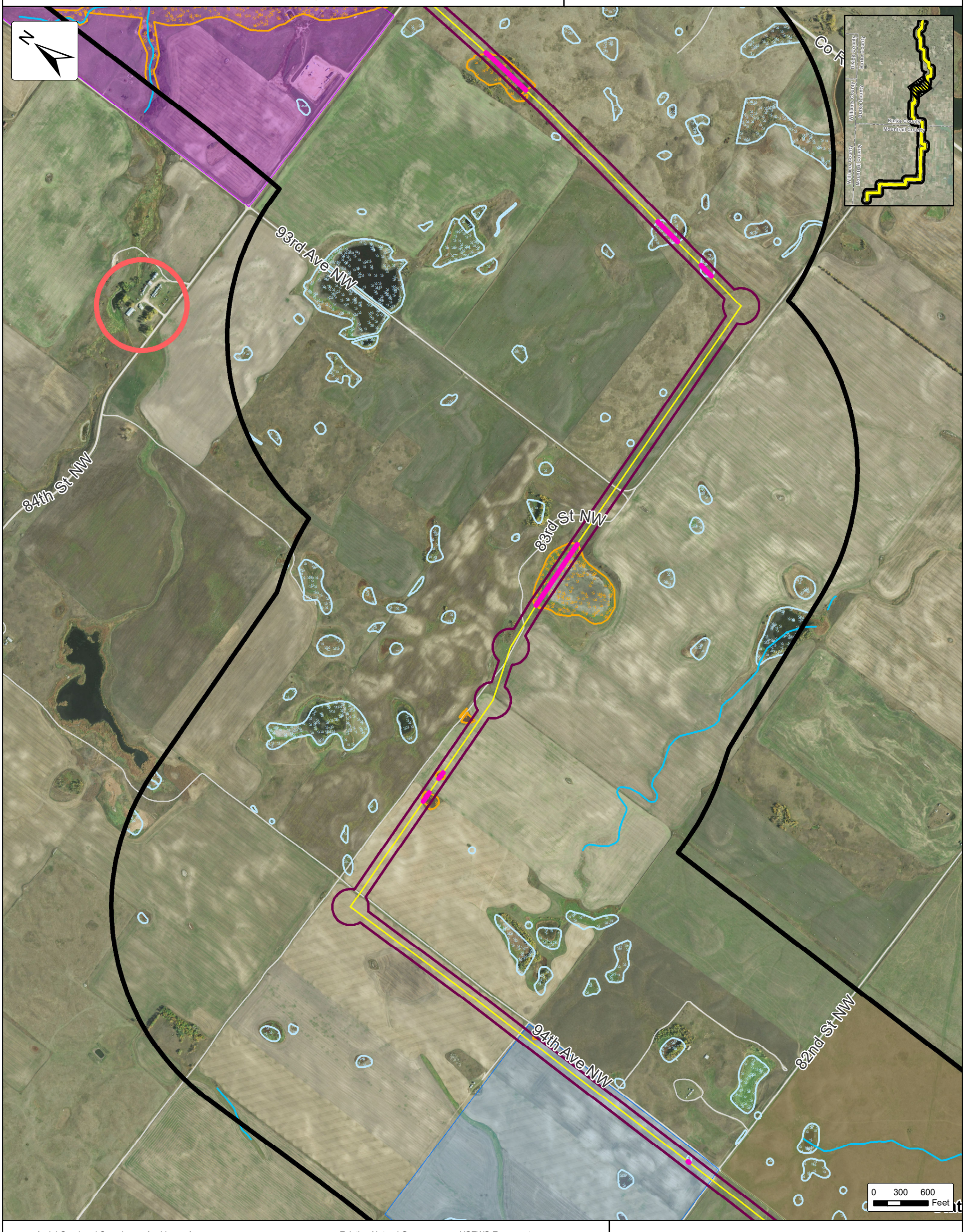
Figure 3e: Avoidance & Exclusion Areas Map

Burke County & Mountrail County, North Dakota

Client:
Burke Wind, LLC

Issue Date:
8/2/2018

Atwell, LLC Project:
16000947



Aerial Overhead Crossing-No Direct Impacts Proposed
Transmission Line
Transmission Line 150 ft. Project Corridor
Transmission Line 1 Mile Study Area
Existing Tande Substation
Counties

SOURCE: USDA NAIP 2017 IMAGERY

Avoidance Areas
Watercourses (Atwell Field Identified)
Watercourses (Atwell Desktop Review)
Watercourses (Atwell Field Identified)
Wetlands (Atwell Field Identified)
Wetlands (Atwell Desktop Review)

*Exclusion Area: Archaeological sites not shown due to confidentiality

Existing Natural Gas Pipeline (Velocity Suite)
Existing Transmission (Velocity Suite)
Receptor 500 ft. Avoidance Area
Landslide Deposits
Private Lands Open to Sportsmen (NDGF)

USFWS Easements
FHA Easement
Grassland Easement
Wetland Easement
Wetland/Grassland Easement

Protected Areas (USGS)
Waterfowl Production Area
Wildlife Management Area
State Lands Surface Ownership

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Burke Wind Transmission Line

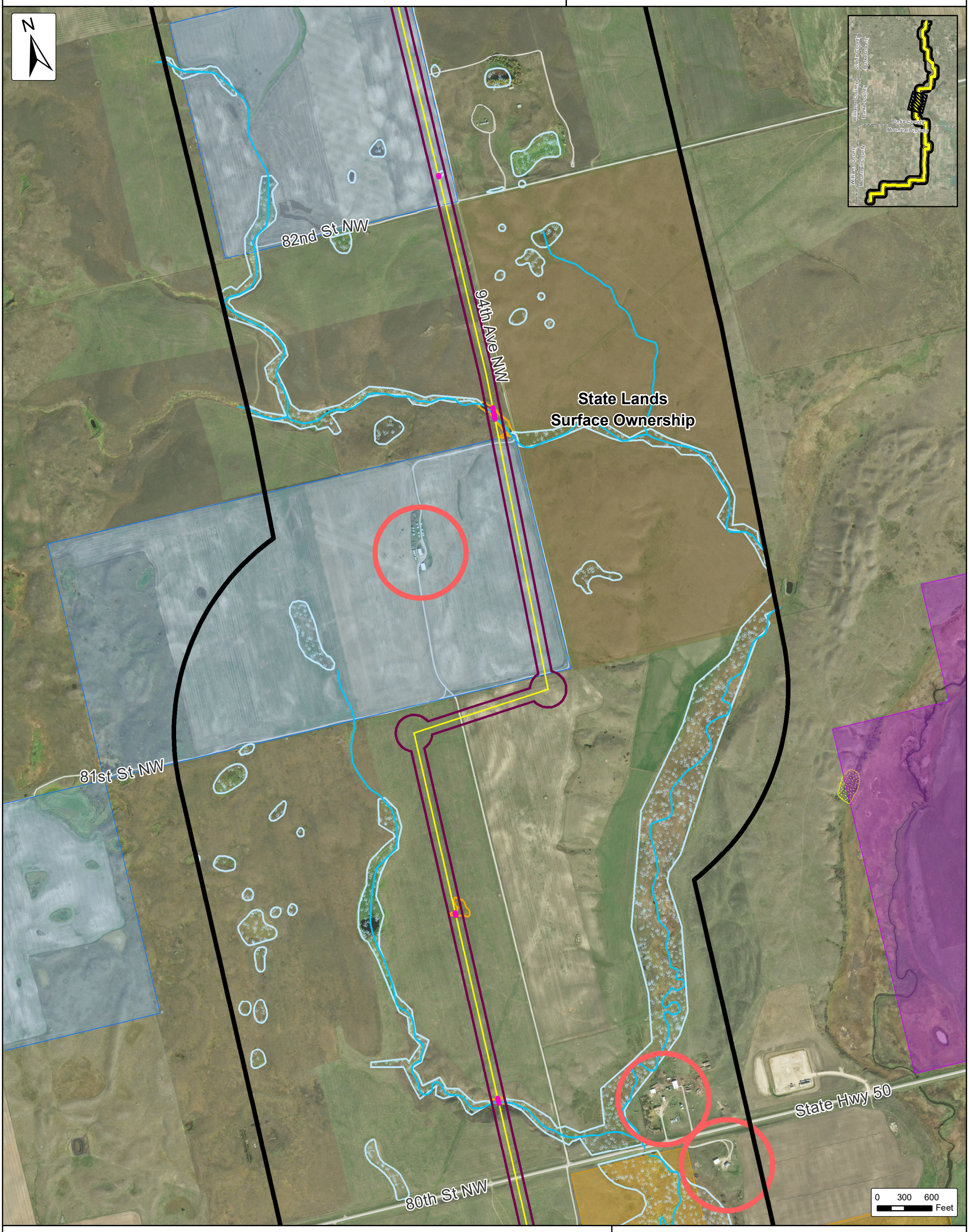
Figure 3f: Avoidance & Exclusion Areas Map

Burke County & Mountrail County, North Dakota

Client:
Burke Wind, LLC

Issue Date:
8/2/2018

Atwell, LLC Project:
16000947



Aerial Overhead Crossing- No Direct Impacts Proposed
Transmission Line
Transmission Line 150 ft. Project Corridor
Transmission Line 1 Mile Study Area
Existing Tande Substation
Counties

SOURCE: USDA NAIP 2017 IMAGERY

Avoidance Areas
Watercourses (Atwell Field Identified)
Watercourses (Atwell Desktop Review)
Watercourses (Atwell Field Identified)
Wetlands (Atwell Field Identified)
Wetlands (Atwell Desktop Review)

*Exclusion Area: Archaeological sites not shown due to confidentiality

Existing Natural Gas Pipeline (Velocity Suite)
Existing Transmission (Velocity Suite)
Receptor 500 ft. Avoidance Area
Landslide Deposits
Private Lands Open to Sportsmen (NDGF)

USFWS Easements
FHA Easement
Grassland Easement
Wetland Easement
Wetland/Grassland Easement

Protected Areas (USGS)
Waterfowl Production Area
Wildlife Management Area
State Lands Surface Ownership

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Burke Wind Transmission Line

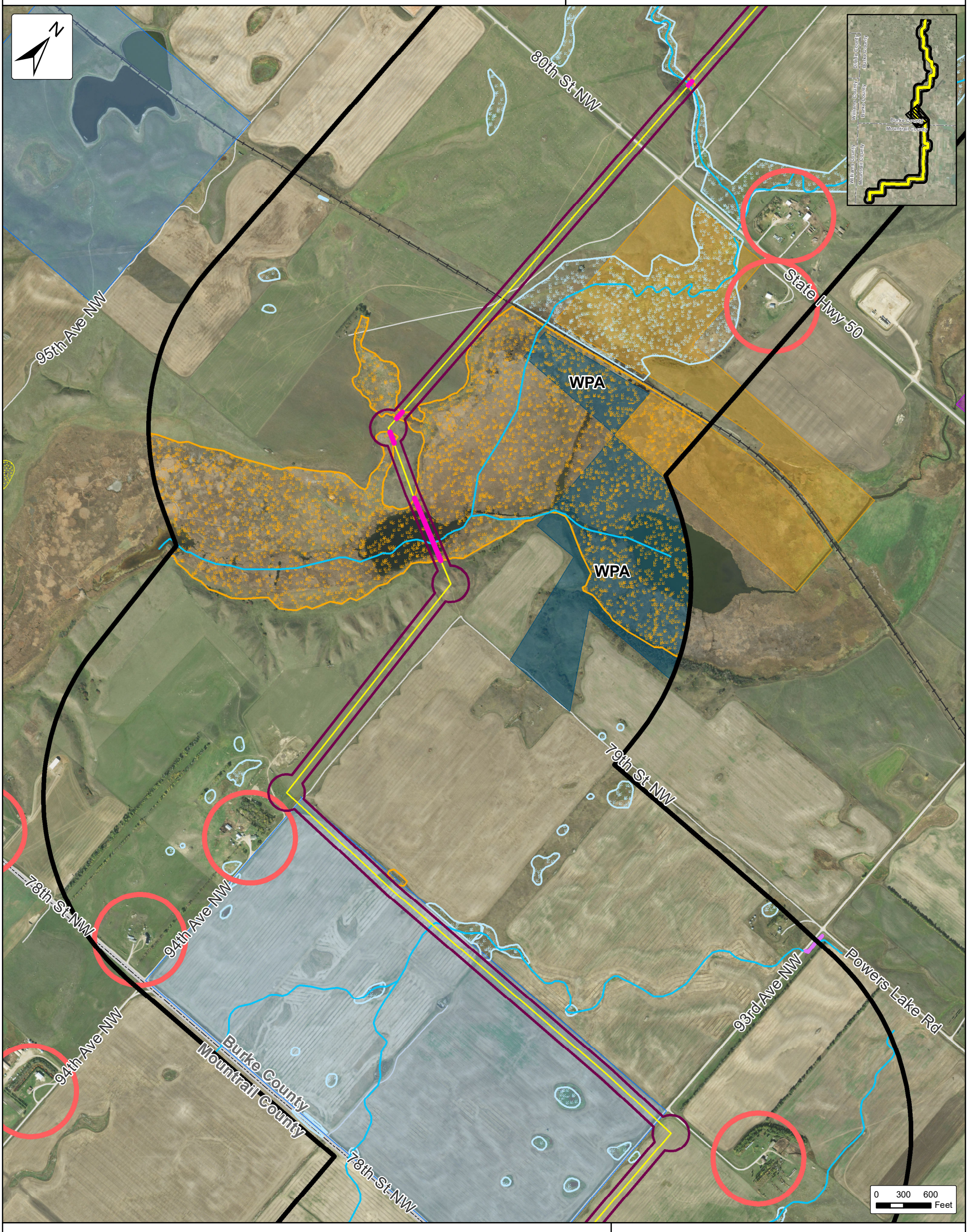
Figure 3g: Avoidance & Exclusion Areas Map

Burke County & Mountrail County, North Dakota

Client:
Burke Wind, LLC

Issue Date:
8/2/2018

Atwell, LLC Project:
16000947



- Aerial Overhead Crossing- No Direct Impacts Proposed
- Transmission Line
- Transmission Line 150 ft. Project Corridor
- Transmission Line 1 Mile Study Area
- Existing Tande Substation
- Counties

SOURCE: USDA NAIP 2017 IMAGERY

Avoidance Areas
- Watercourses (Atwell Field Identified)
- Watercourses (Atwell Desktop Review)
- Watercourses (Atwell Field Identified)
- Wetlands (Atwell Field Identified)
- Wetlands (Atwell Desktop Review)

*Exclusion Area: Archaeological sites not shown due to confidentiality

- Existing Natural Gas Pipeline (Velocity Suite)
- Existing Transmission (Velocity Suite)
- Receptor 500 ft. Avoidance Area
- Landslide Deposits
- Private Lands Open to Sportsmen (NDGF)

USFWS Easements
- FHA Easement
- Grassland Easement
- Wetland Easement
- Wetland/Grassland Easement

Protected Areas (USGS)
- Waterfowl Production Area
- Wildlife Management Area
- State Lands Surface Ownership

ATWELL

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Burke Wind Transmission Line

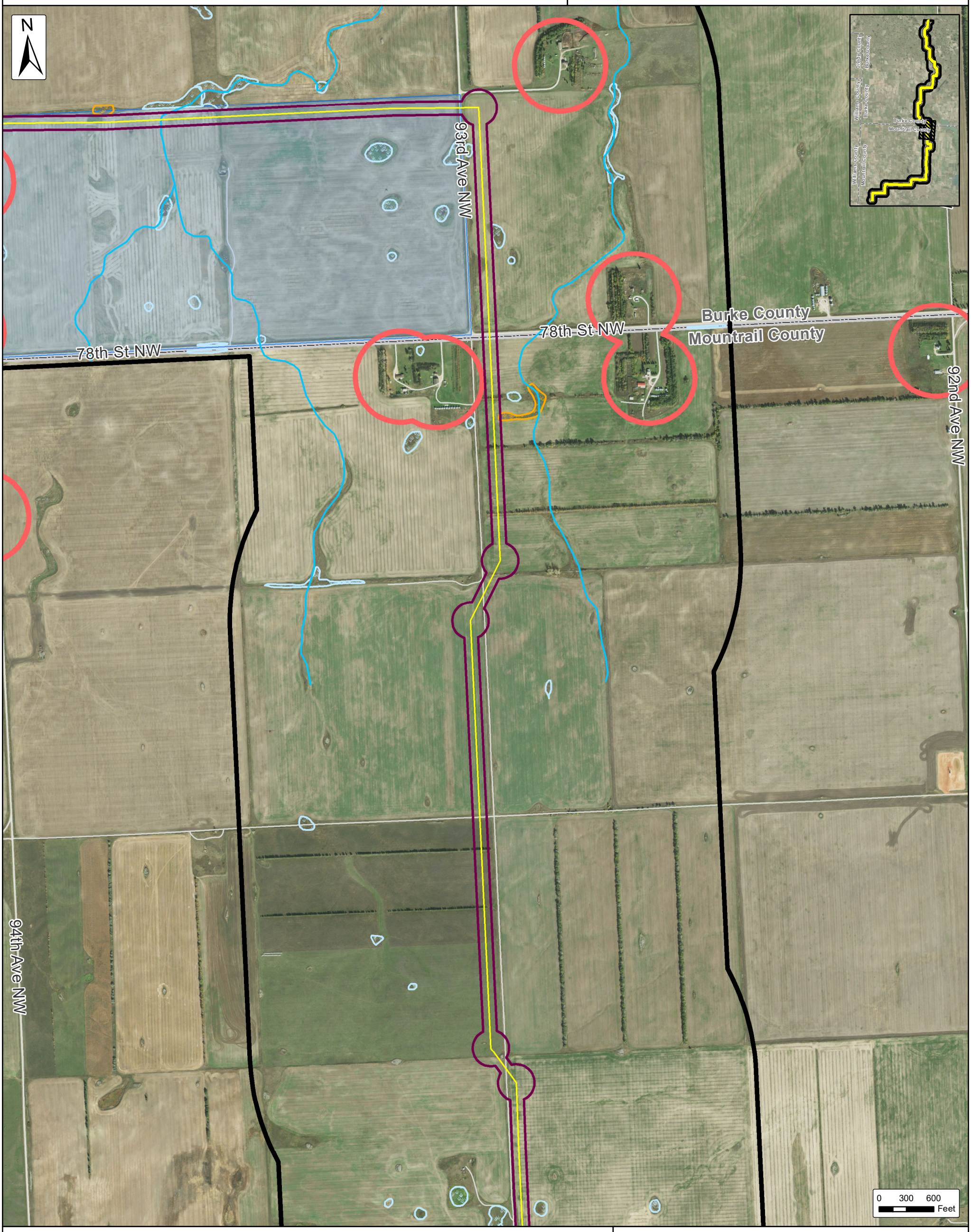
Figure 3h: Avoidance & Exclusion Areas Map

Burke County & Mountrail County, North Dakota

Client:
Burke Wind, LLC

Issue Date:
8/2/2018

Atwell, LLC Project:
16000947



Aerial Overhead Crossing- No Direct Impacts Proposed
Transmission Line
Transmission Line 150 ft. Project Corridor
Transmission Line 1 Mile Study Area
Existing Tande Substation
Counties

SOURCE: USDA NAIP 2017 IMAGERY

Avoidance Areas
Watercourses (Atwell Field Identified)
Watercourses (Atwell Desktop Review)
Watercourses (Atwell Field Identified)
Wetlands (Atwell Field Identified)
Wetlands (Atwell Desktop Review)

*Exclusion Area: Archaeological sites not shown due to confidentiality

Existing Natural Gas Pipeline (Velocity Suite)
Existing Transmission (Velocity Suite)
Receptor 500 ft. Avoidance Area
Landslide Deposits
Private Lands Open to Sportsmen (NDGF)

USFWS Easements
FHA Easement
Grassland Easement
Wetland Easement
Wetland/Grassland Easement

Protected Areas (USGS)
Waterfowl Production Area
Wildlife Management Area
State Lands Surface Ownership

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Burke Wind Transmission Line

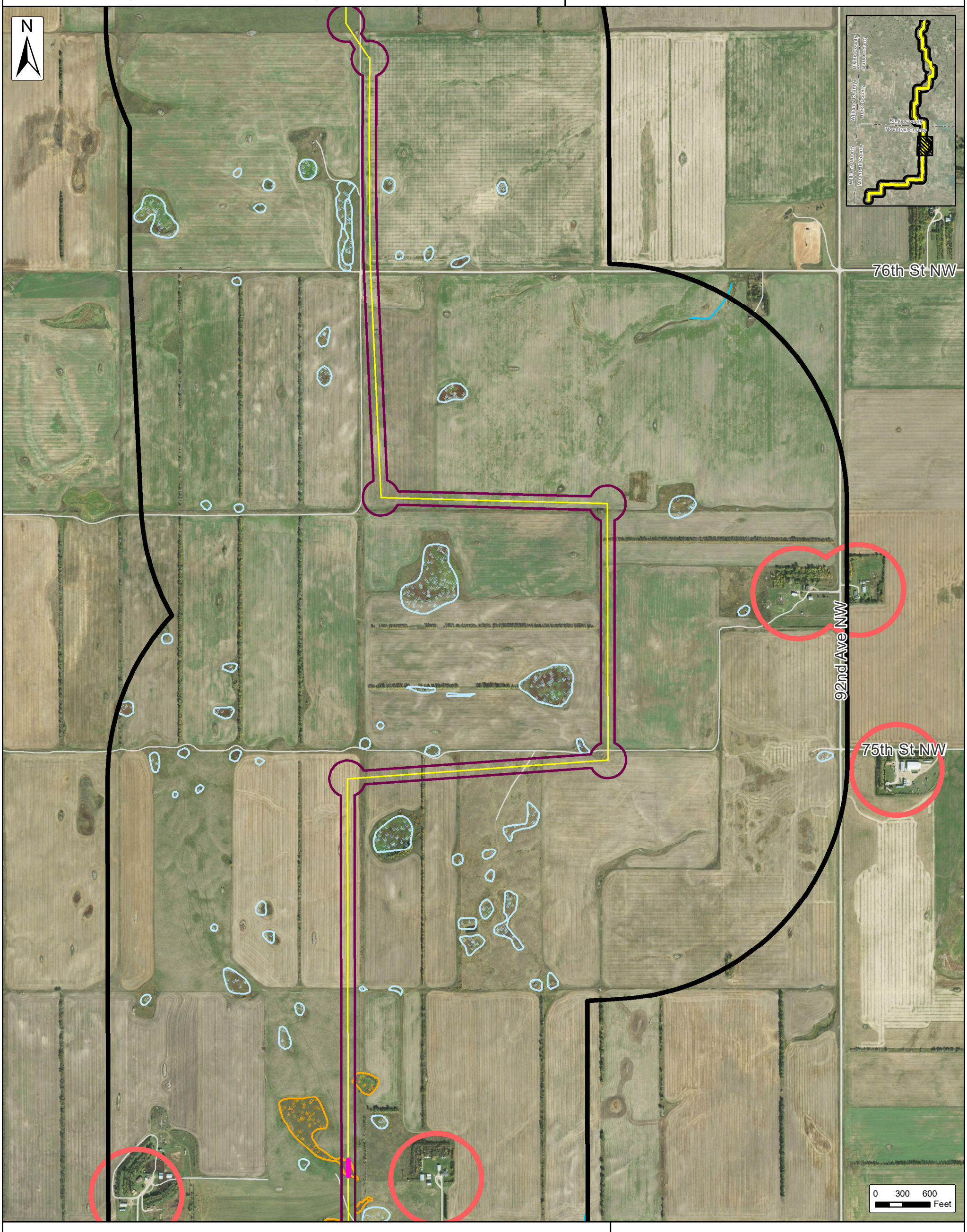
Figure 3i: Avoidance & Exclusion Areas Map

Burke County & Mountrail County, North Dakota

Client:
Burke Wind, LLC

Issue Date:
8/2/2018

Atwell, LLC Project:
16000947



Aerial Overhead Crossing- No Direct Impacts Proposed
Transmission Line
Transmission Line 150 ft. Project Corridor
Transmission Line 1 Mile Study Area
Existing Tande Substation
Counties

SOURCE: USDA NAIP 2017 IMAGERY

Avoidance Areas
Watercourses (Atwell Field Identified)
Watercourses (Atwell Desktop Review)
Watercourses (Atwell Field Identified)
Wetlands (Atwell Field Identified)
Wetlands (Atwell Desktop Review)

*Exclusion Area: Archaeological sites not shown due to confidentiality

Existing Natural Gas Pipeline (Velocity Suite)
Existing Transmission (Velocity Suite)
Receptor 500 ft. Avoidance Area
Landslide Deposits
Private Lands Open to Sportsmen (NDGF)

USFWS Easements
FHA Easement
Grassland Easement
Wetland Easement
Wetland/Grassland Easement

Protected Areas (USGS)
Waterfowl Production Area
Wildlife Management Area
State Lands Surface Ownership

ATWELL

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Burke Wind Transmission Line

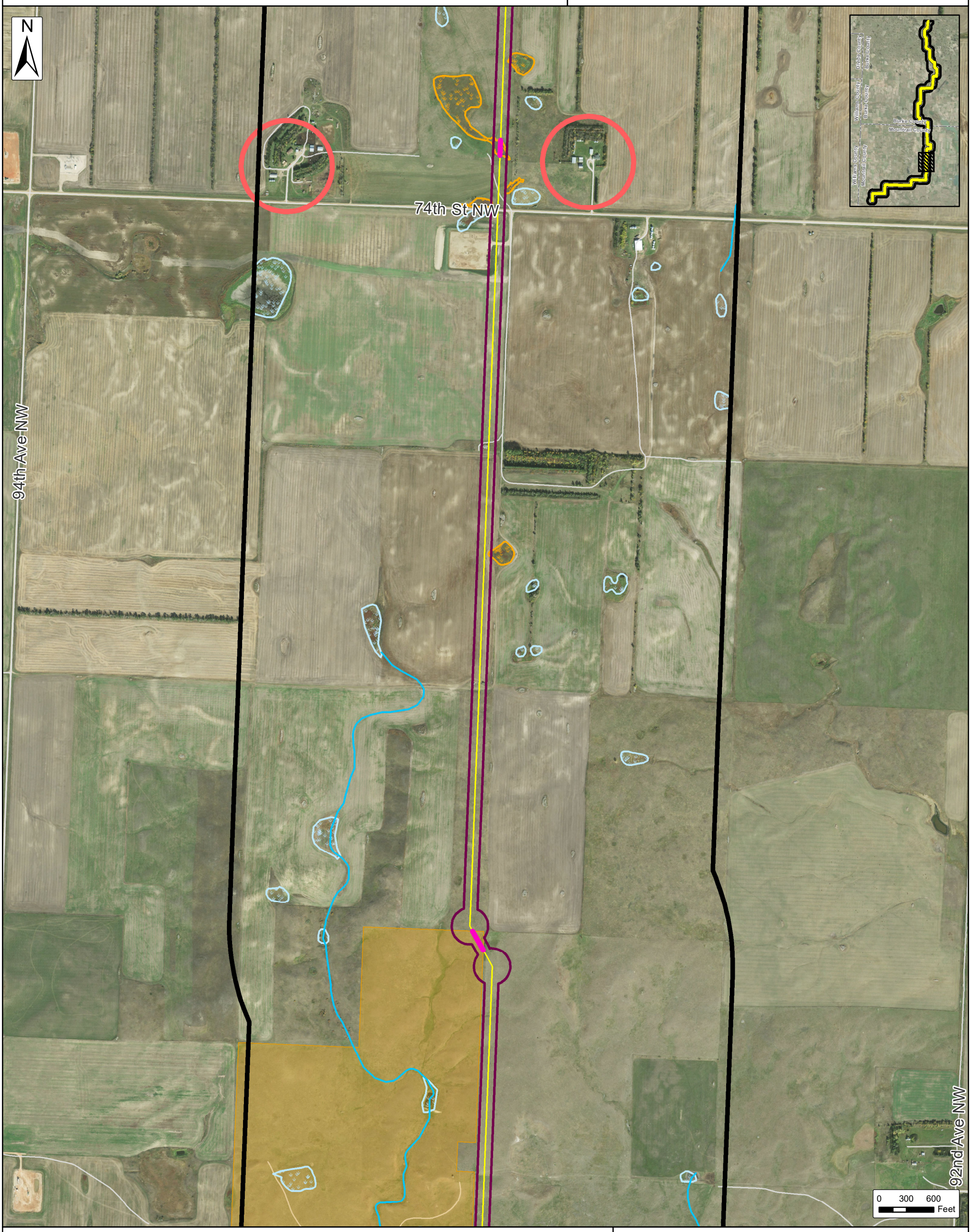
Figure 3j: Avoidance & Exclusion Areas Map

Burke County & Mountrail County, North Dakota

Client:
Burke Wind, LLC

Issue Date:
8/2/2018

Atwell, LLC Project:
16000947



Aerial Overhead Crossing- No Direct Impacts Proposed
Transmission Line
Transmission Line 150 ft. Project Corridor
Transmission Line 1 Mile Study Area
Existing Tande Substation
Counties

Avoidance Areas
Watercourses (Atwell Field Identified)
Watercourses (Atwell Desktop Review)
Watercourses (Atwell Field Identified)
Wetlands (Atwell Field Identified)
Wetlands (Atwell Desktop Review)

*Exclusion Area: Archaeological sites not shown due to confidentiality

Existing Natural Gas Pipeline (Velocity Suite)
Existing Transmission (Velocity Suite)
Receptor 500 ft. Avoidance Area
Landslide Deposits
Private Lands Open to Sportsmen (NDGF)

USFWS Easements
FHA Easement
Grassland Easement
Wetland Easement
Wetland/Grassland Easement

Protected Areas (USGS)
Waterfowl Production Area
Wildlife Management Area
State Lands Surface Ownership

SOURCE: USDA NAIP 2017 IMAGERY

ATWELL

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Burke Wind Transmission Line

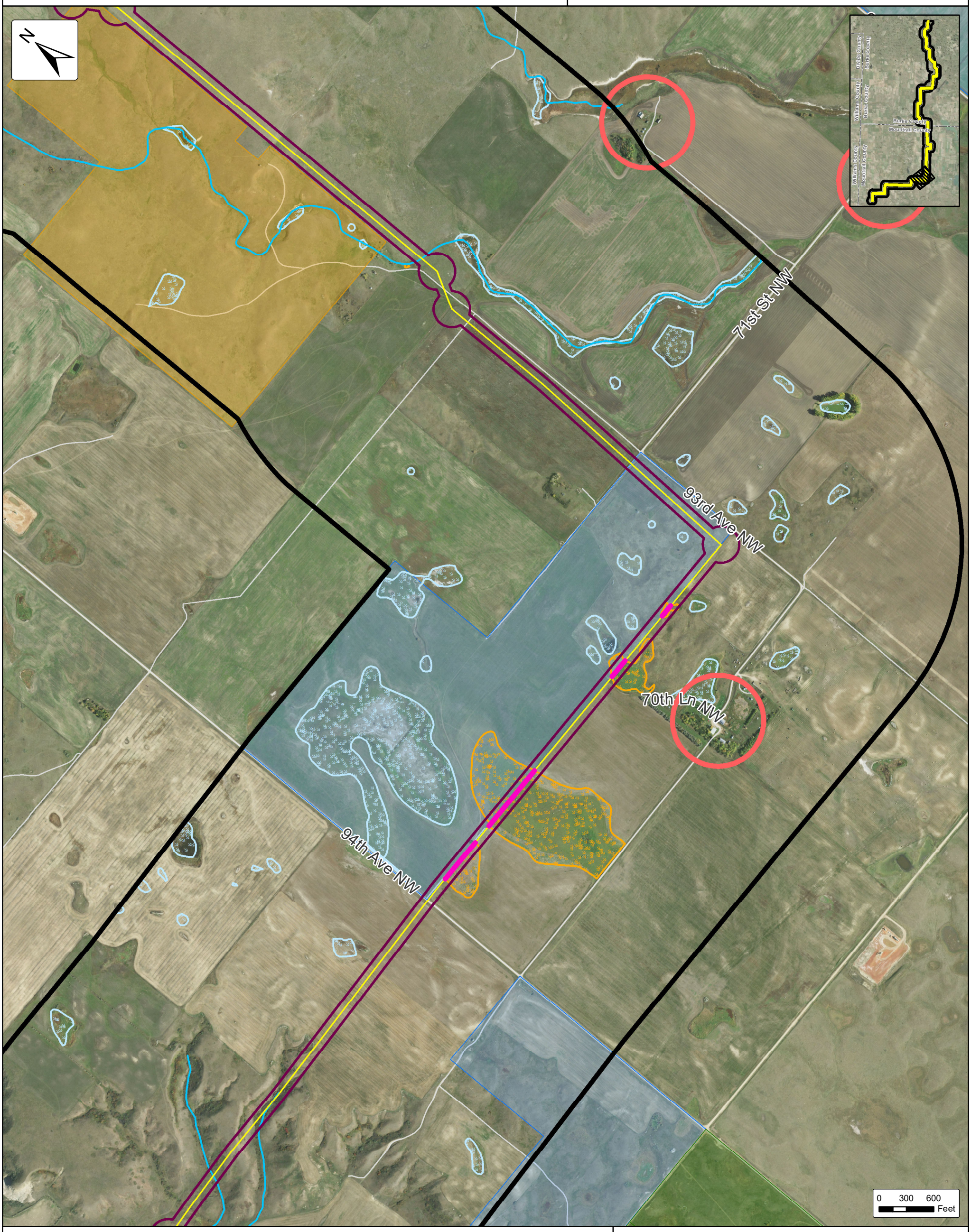
Figure 3k: Avoidance & Exclusion Areas Map

Burke County & Mountrail County, North Dakota

Client:
Burke Wind, LLC

Issue Date:
8/2/2018

Atwell, LLC Project:
16000947



Aerial Overhead Crossing- No Direct Impacts Proposed
Transmission Line
Transmission Line 150 ft. Project Corridor
Transmission Line 1 Mile Study Area
Existing Tande Substation
Counties

SOURCE: USDA NAIP 2017 IMAGERY

Avoidance Areas
Watercourses (Atwell Field Identified)
Watercourses (Atwell Desktop Review)
Watercourses (Atwell Field Identified)
Wetlands (Atwell Field Identified)
Wetlands (Atwell Desktop Review)

*Exclusion Area: Archaeological sites not shown due to confidentiality

Existing Natural Gas Pipeline (Velocity Suite)
Existing Transmission (Velocity Suite)
Receptor 500 ft. Avoidance Area
Landslide Deposits
Private Lands Open to Sportsmen (NDGF)

USFWS Easements
FHA Easement
Grassland Easement
Wetland Easement
Wetland/Grassland Easement

Protected Areas (USGS)
Waterfowl Production Area
Wildlife Management Area
State Lands Surface Ownership

ATWELL

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Burke Wind Transmission Line

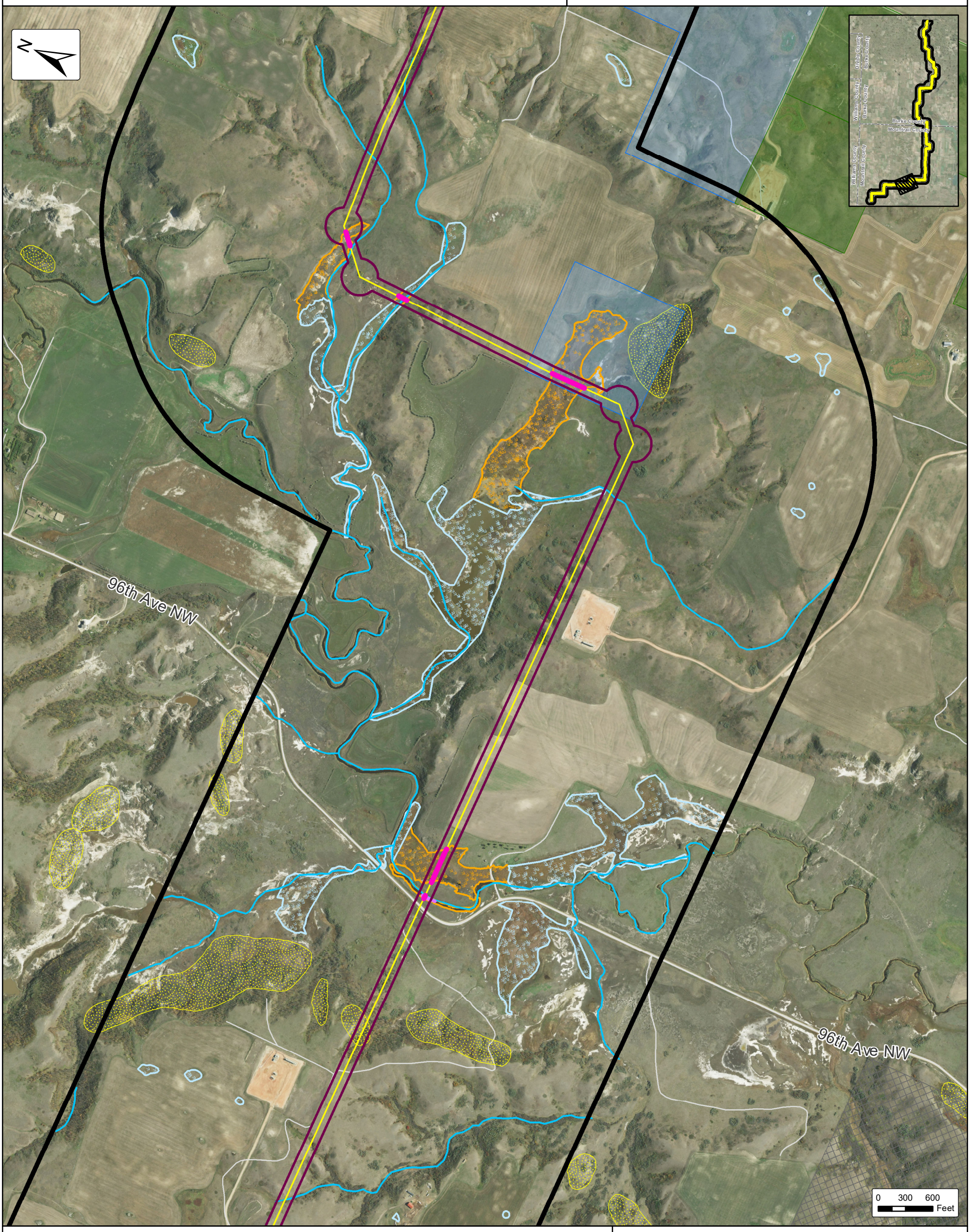
Figure 3l: Avoidance & Exclusion Areas Map

Burke County & Mountrail County, North Dakota

Client:
Burke Wind, LLC

Issue Date:
8/2/2018

Atwell, LLC Project:
16000947



Aerial Overhead Crossing- No Direct Impacts Proposed
Transmission Line
Transmission Line 150 ft. Project Corridor
Transmission Line 1 Mile Study Area
Existing Tande Substation
Counties

SOURCE: USDA NAIP 2017 IMAGERY

Avoidance Areas
Watercourses (Atwell Field Identified)
Watercourses (Atwell Desktop Review)
Watercourses (Atwell Field Identified)
Wetlands (Atwell Field Identified)
Wetlands (Atwell Desktop Review)

*Exclusion Area: Archaeological sites not shown due to confidentiality

Existing Natural Gas Pipeline (Velocity Suite)
Existing Transmission (Velocity Suite)
Receptor 500 ft. Avoidance Area
Landslide Deposits
Private Lands Open to Sportsmen (NDGF)

USFWS Easements
FHA Easement
Grassland Easement
Wetland Easement
Wetland/Grassland Easement

Protected Areas (USGS)
Waterfowl Production Area
Wildlife Management Area
State Lands Surface Ownership

ATWELL

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Burke Wind Transmission Line

Figure 3m: Avoidance & Exclusion Areas Map

Burke County & Mountrail County, North Dakota

Client:
Burke Wind, LLC

Issue Date:
8/2/2018

Atwell, LLC Project:
16000947



Aerial Overhead Crossing- No Direct Impacts Proposed
Transmission Line
Transmission Line 150 ft. Project Corridor
Transmission Line 1 Mile Study Area
Existing Tande Substation
Counties

SOURCE: USDA NAIP 2017 IMAGERY

Avoidance Areas
Watercourses (Atwell Field Identified)
Watercourses (Atwell Desktop Review)
Watercourses (Atwell Field Identified)
Wetlands (Atwell Field Identified)
Wetlands (Atwell Desktop Review)

*Exclusion Area: Archaeological sites not shown due to confidentiality

Existing Natural Gas Pipeline (Velocity Suite)
Existing Transmission (Velocity Suite)
Receptor 500 ft. Avoidance Area
Landslide Deposits
Private Lands Open to Sportsmen (NDGF)

USFWS Easements
FHA Easement
Grassland Easement
Wetland Easement
Wetland/Grassland Easement

Protected Areas (USGS)
Waterfowl Production Area
Wildlife Management Area
State Lands Surface Ownership

ATWELL

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Burke Wind Transmission Line

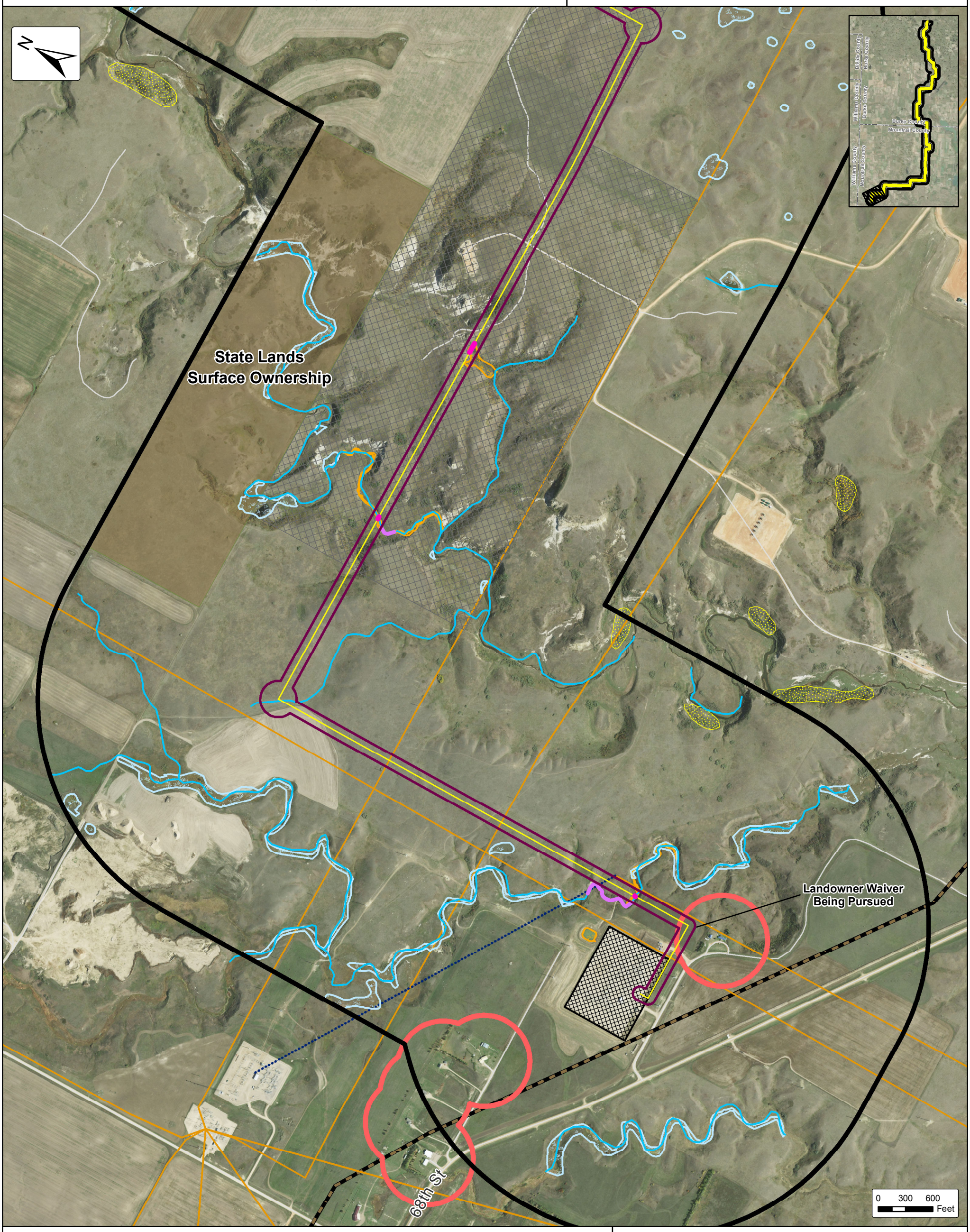
Figure 3n: Avoidance & Exclusion Areas Map

Burke County & Mountrail County, North Dakota

Client:
Burke Wind, LLC

Issue Date:
8/2/2018

Atwell, LLC Project:
16000947



Aerial Overhead Crossing- No Direct Impacts Proposed
Transmission Line
Transmission Line 150 ft. Project Corridor
Transmission Line 1 Mile Study Area
Existing Tande Substation
Counties

SOURCE: USDA NAIP 2017 IMAGERY

Avoidance Areas
Watercourses (Atwell Field Identified)
Watercourses (Atwell Desktop Review)
Watercourses (Atwell Field Identified)
Wetlands (Atwell Field Identified)
Wetlands (Atwell Desktop Review)

*Exclusion Area: Archaeological sites not shown due to confidentiality

Existing Natural Gas Pipeline (Velocity Suite)
Proposed Transmission (Velocity Suite)
Existing Transmission (Velocity Suite)
Receptor 500 ft. Avoidance Area
Landslide Deposits
Private Lands Open to Sportsmen (NDGF)

USFWS Easements
FHA Easement
Grassland Easement
Wetland Easement
Wetland/Grassland Easement

Protected Areas (USGS)
Waterfowl Production Area
Wildlife Management Area
State Lands Surface Ownership

ATWELL

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Burke Wind Transmission Line

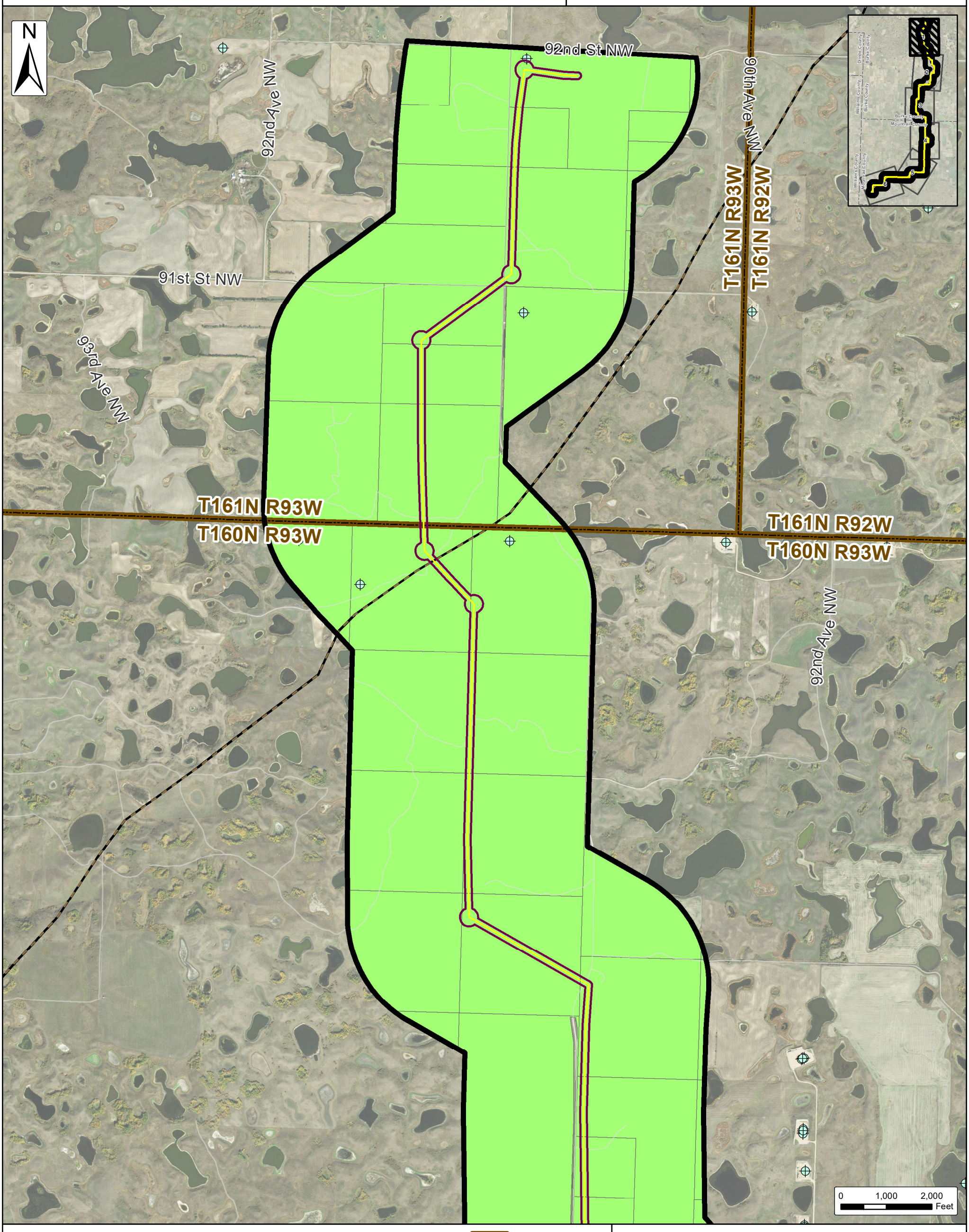
Figure 4a: Participating Landowners

Burke County & Mountrail County, North Dakota

Client:
Burke Wind, LLC

Issue Date:
8/2/2018

Atwell, LLC Project:
16000947



Landowner Participation
- Participating
- Non-Participating

- Oil & Gas Wells (NDIC)
- Natural Gas Pipeline (Velocity Suite)

Velocity Suite Transmission
- Proposed Transmission
- Existing Transmission

- Transmission Line
- Transmission Line 150 ft. Project Corridor
- Transmission Line 1 Mile Study Area
- Existing Tande Substation

- Townships (PLSS)
- Counties

ATWELL

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Burke Wind Transmission Line

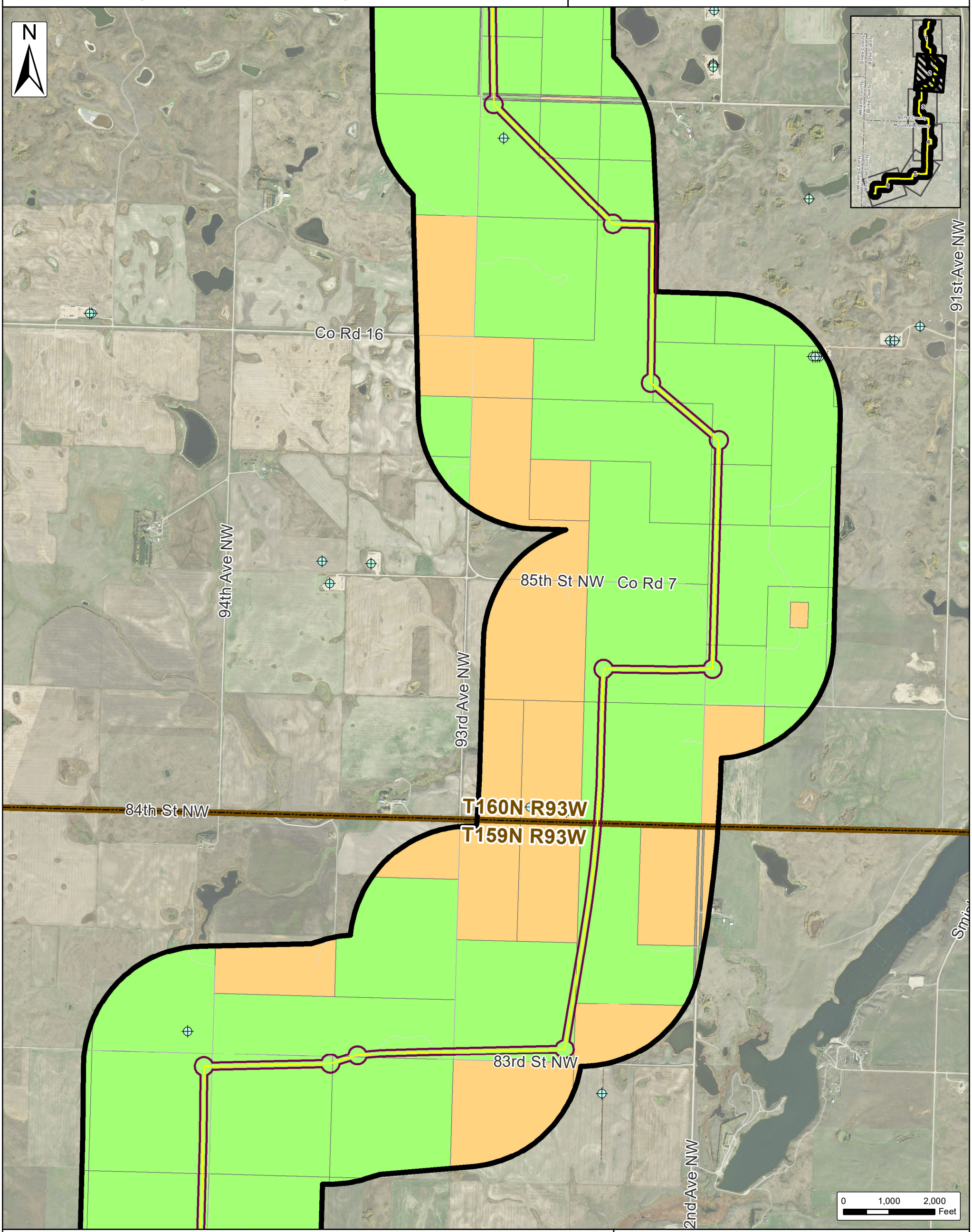
Figure 4b: Participating Landowners

Burke County & Mountrail County, North Dakota

Client:
Burke Wind, LLC

Issue Date:
8/2/2018

Atwell, LLC Project:
16000947



Landowner Participation
- Participating
- Non-Participating

- Oil & Gas Wells (NDIC)
- Natural Gas Pipeline (Velocity Suite)

Velocity Suite Transmission
- Proposed Transmission
- Existing Transmission

- Transmission Line
- Transmission Line 150 ft. Project Corridor
- Transmission Line 1 Mile Study Area
- Existing Tande Substation

- Townships (PLSS)
- Counties

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Burke Wind Transmission Line

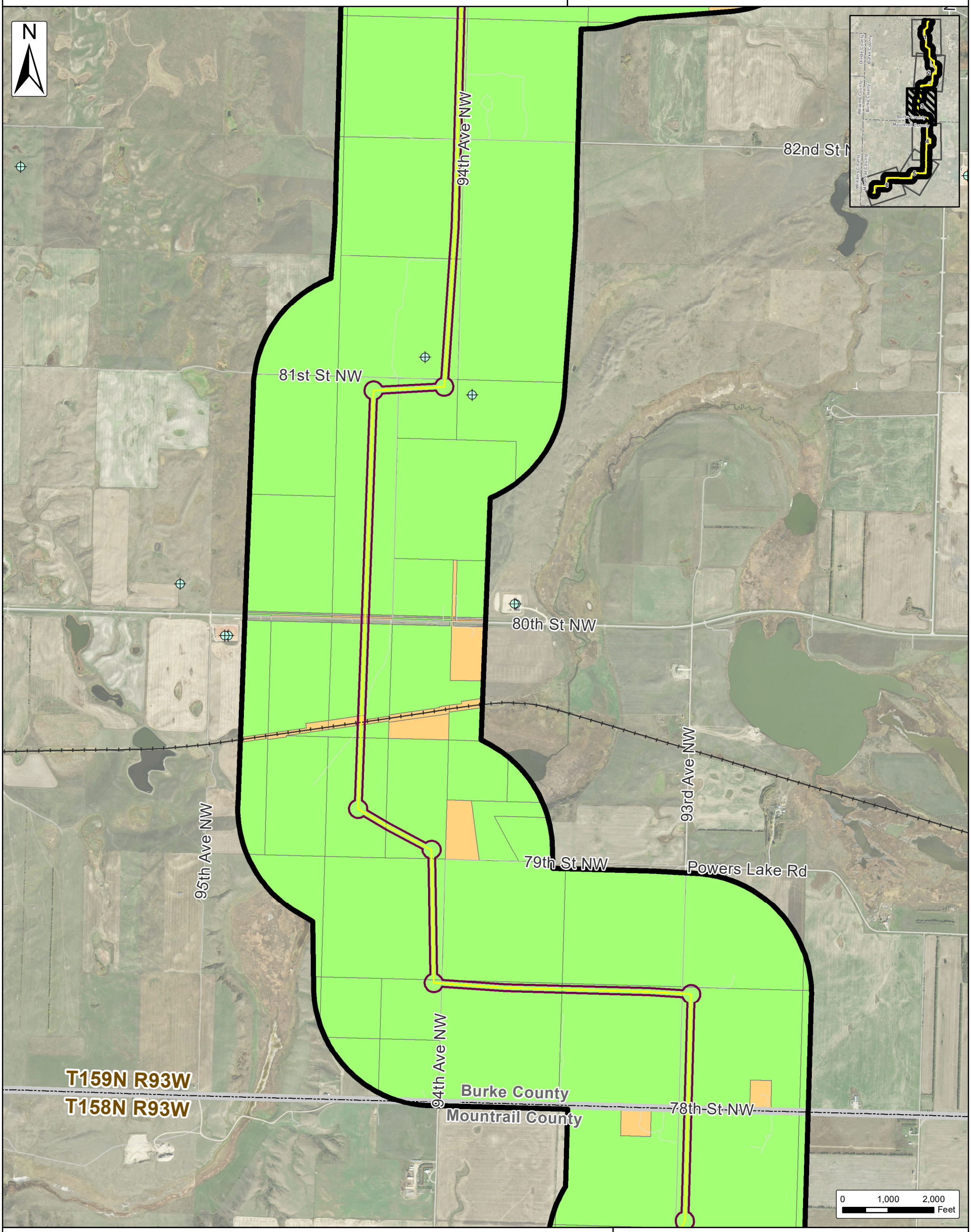
Figure 4c: Participating Landowners

Burke County & Mountrail County, North Dakota

Client:
Burke Wind, LLC

Issue Date:
8/2/2018

Atwell, LLC Project:
16000947



Landowner Participation
- Participating
- Non-Participating

- Oil & Gas Wells (NDIC)
- Natural Gas Pipeline (Velocity Suite)

Velocity Suite Transmission
- Proposed Transmission
- Existing Transmission

- Transmission Line
- Transmission Line 150 ft. Project Corridor
- Transmission Line 1 Mile Study Area
- Existing Tande Substation

- Townships (PLSS)
- Counties

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Burke Wind Transmission Line

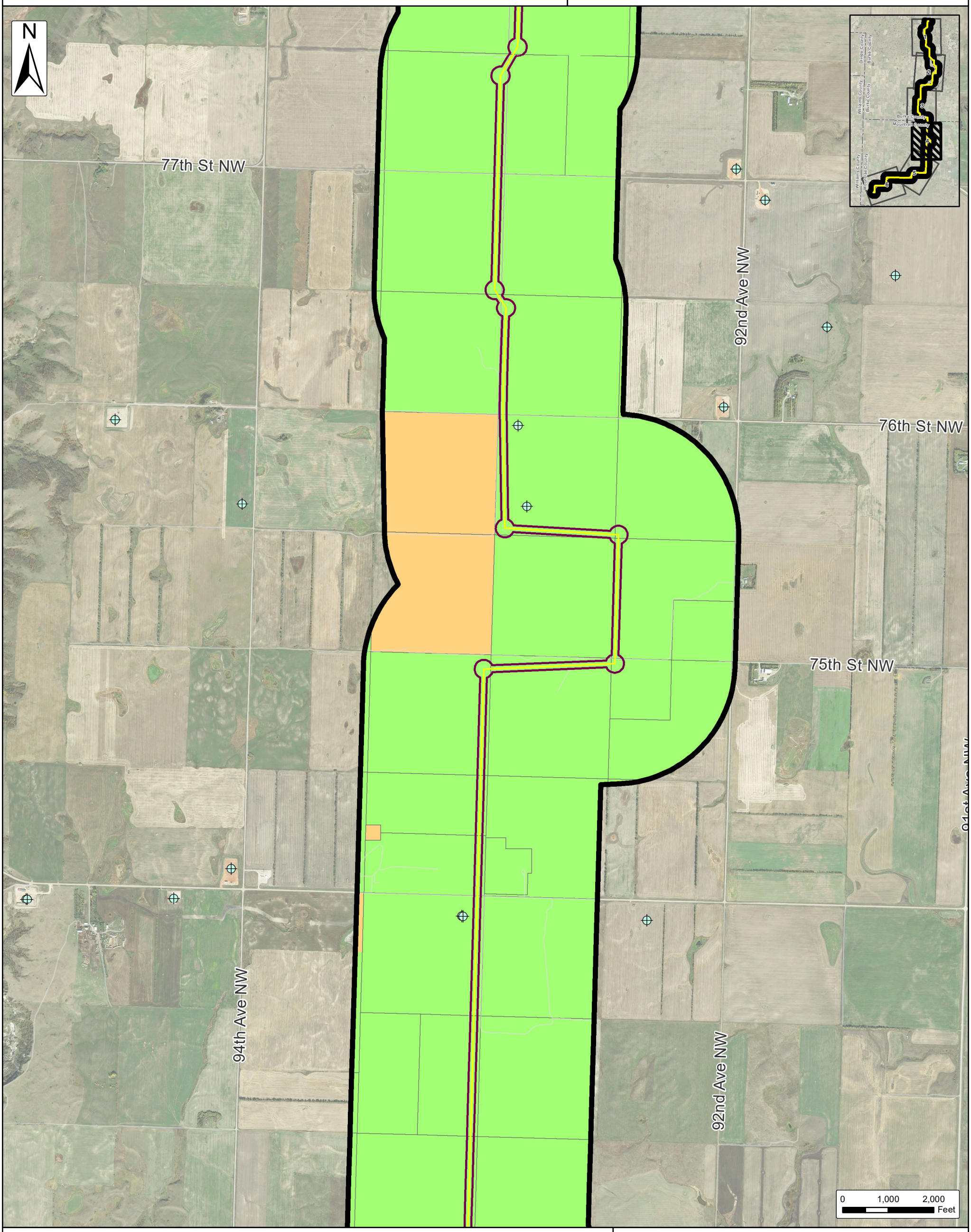
Figure 4d: Participating Landowners

Burke County & Mountrail County, North Dakota

Client:
Burke Wind, LLC

Issue Date:
8/2/2018

Atwell, LLC Project:
16000947



Landowner Participation
- Participating
- Non-Participating

Velocity Suite Transmission
- Proposed Transmission
- Existing Transmission

- Oil & Gas Wells (NDIC)
- Natural Gas Pipeline (Velocity Suite)
- Transmission Line
- Transmission Line 150 ft. Project Corridor
- Transmission Line 1 Mile Study Area
- Existing Tande Substation
- Townships (PLSS)
- Counties

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Burke Wind Transmission Line

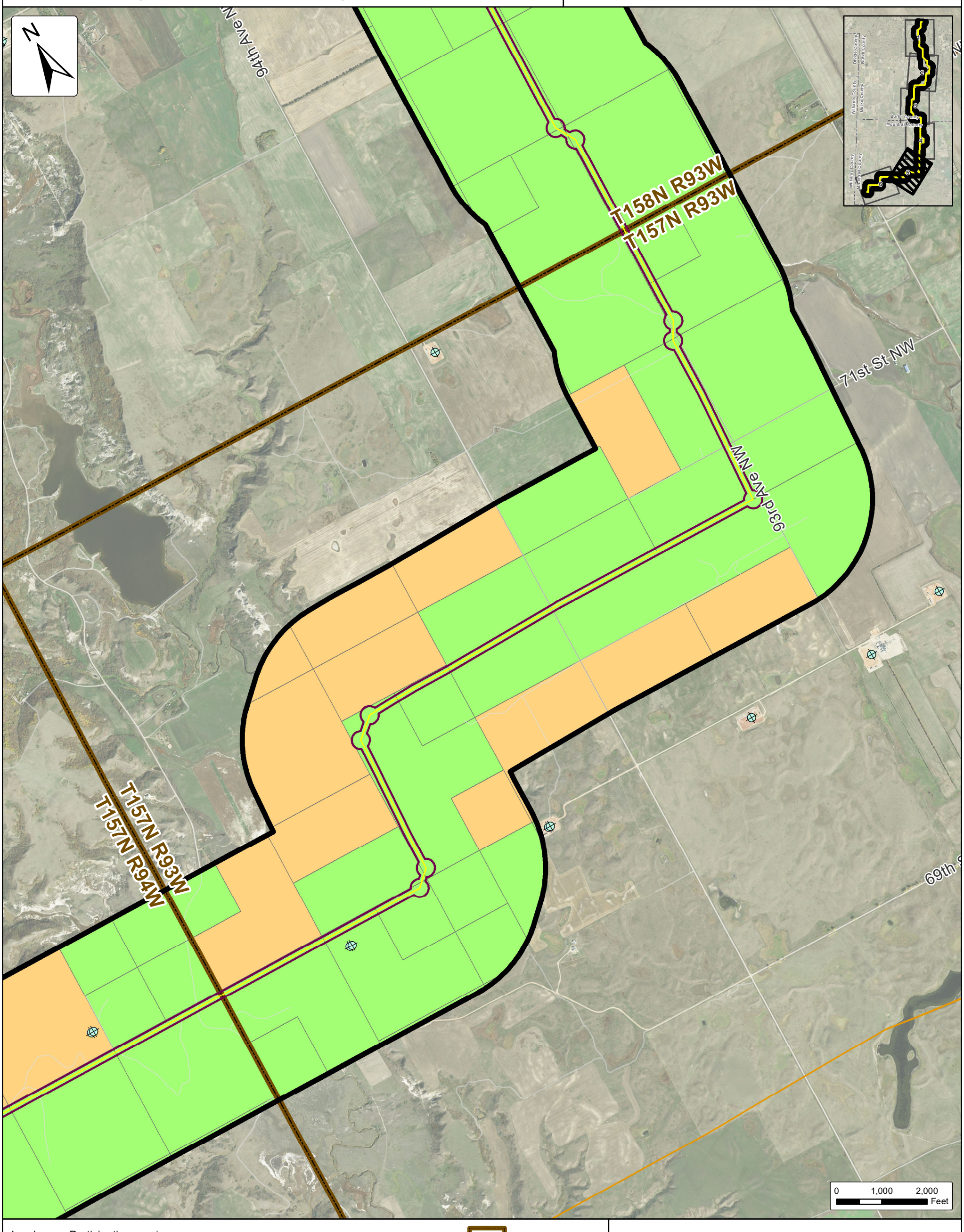
Figure 4e: Participating Landowners

Burke County & Mountrail County, North Dakota

Client:
Burke Wind, LLC

Issue Date:
8/2/2018

Atwell, LLC Project:
16000947



Landowner Participation
- Participating
- Non-Participating

- Oil & Gas Wells (NDIC)
- Natural Gas Pipeline (Velocity Suite)

Velocity Suite Transmission
- Proposed Transmission
- Existing Transmission

- Transmission Line
- Transmission Line 150 ft. Project Corridor
- Transmission Line 1 Mile Study Area
- Existing Tande Substation

- Townships (PLSS)
- Counties

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Burke Wind Transmission Line

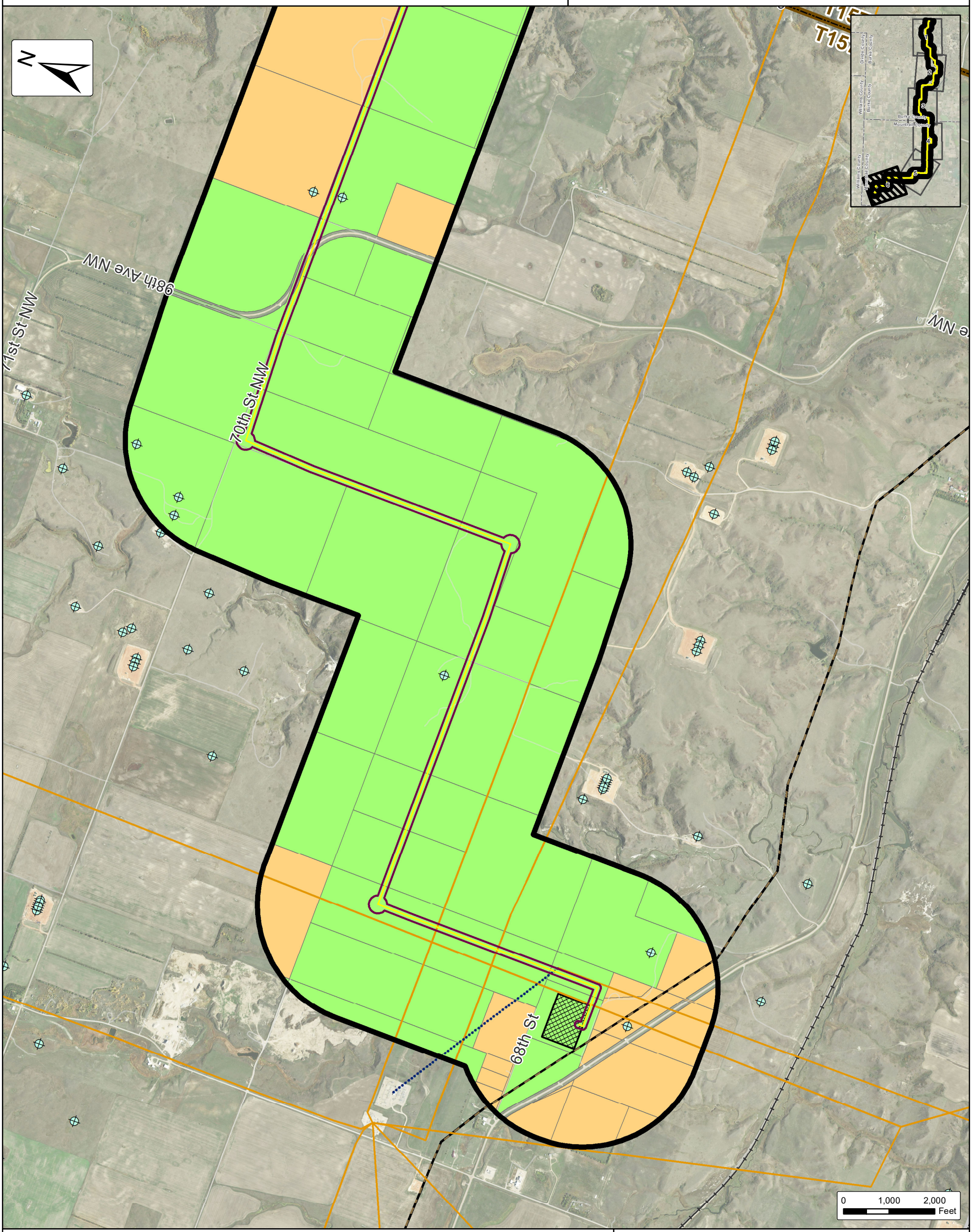
Figure 4f: Participating Landowners

Burke County & Mountrail County, North Dakota

Client:
Burke Wind, LLC

Issue Date:
8/2/2018

Atwell, LLC Project:
16000947



Landowner Participation
- Participating
- Non-Participating

Oil & Gas Wells (NDIC)

Natural Gas Pipeline (Velocity Suite)

Velocity Suite Transmission
- Proposed Transmission
- Existing Transmission

Transmission Line

Transmission Line 150 ft. Project Corridor

Transmission Line 1 Mile Study Area

Existing Tande Substation

Townships (PLSS)

Counties

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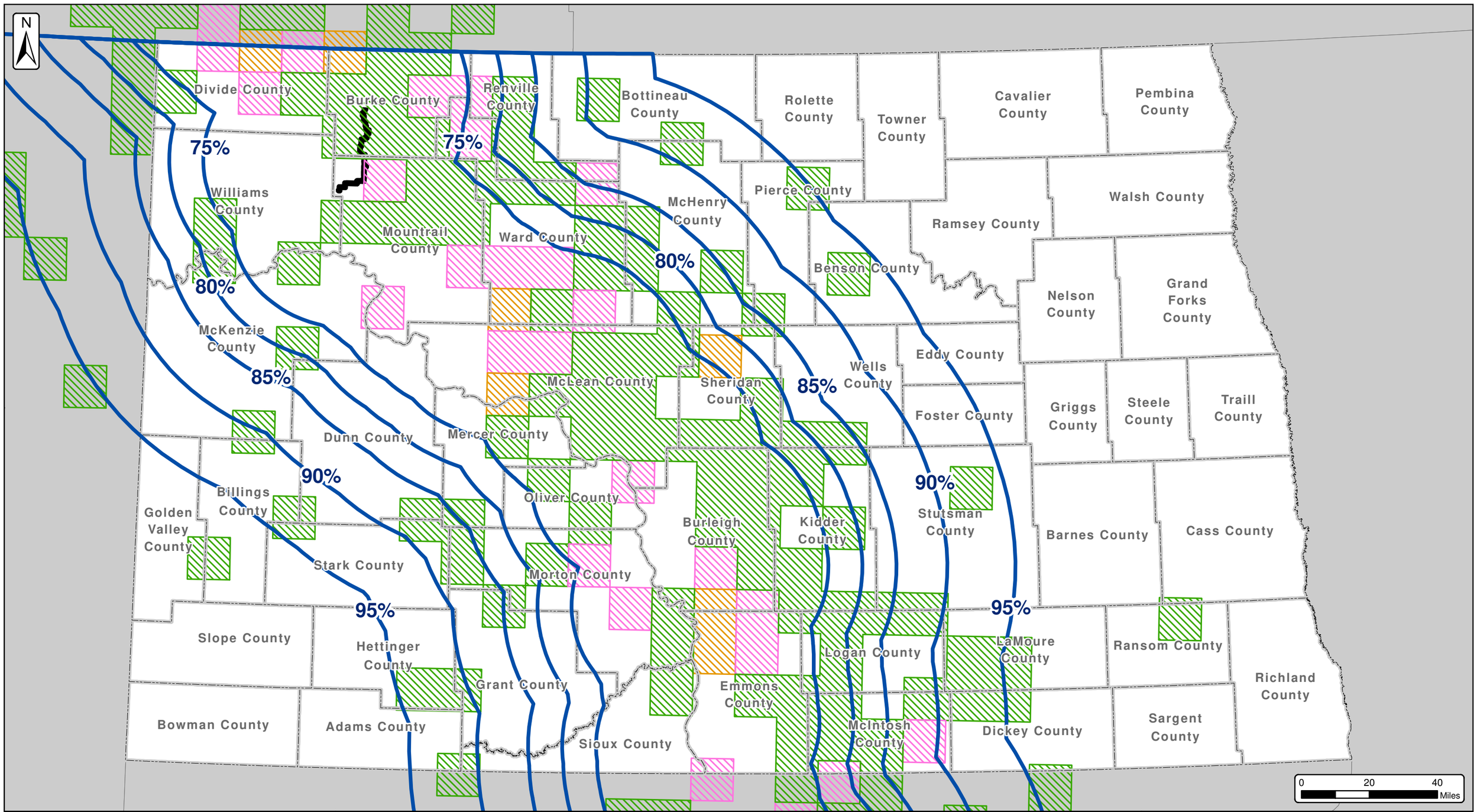

Burke Wind Transmission Line

Figure 5: Whooping Crane Corridor Map

North Dakota

Date: 8/2/2018

Client:

Burke Wind, LLC

Atwell, LLC Project: 16000947

Whooping Crane Stop Over Site Use Intensity (USGS)

- Extended Use Core Intensity
- Core Intensity
- Low Intensity

- Whooping Crane Migration Corridor - Percent of Sightings (USFWS)
- Transmission Line 1 Mile Study Area
- County Boundaries

SOURCE: USFWS & USGS

ATWELL

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Burke Wind Transmission Line

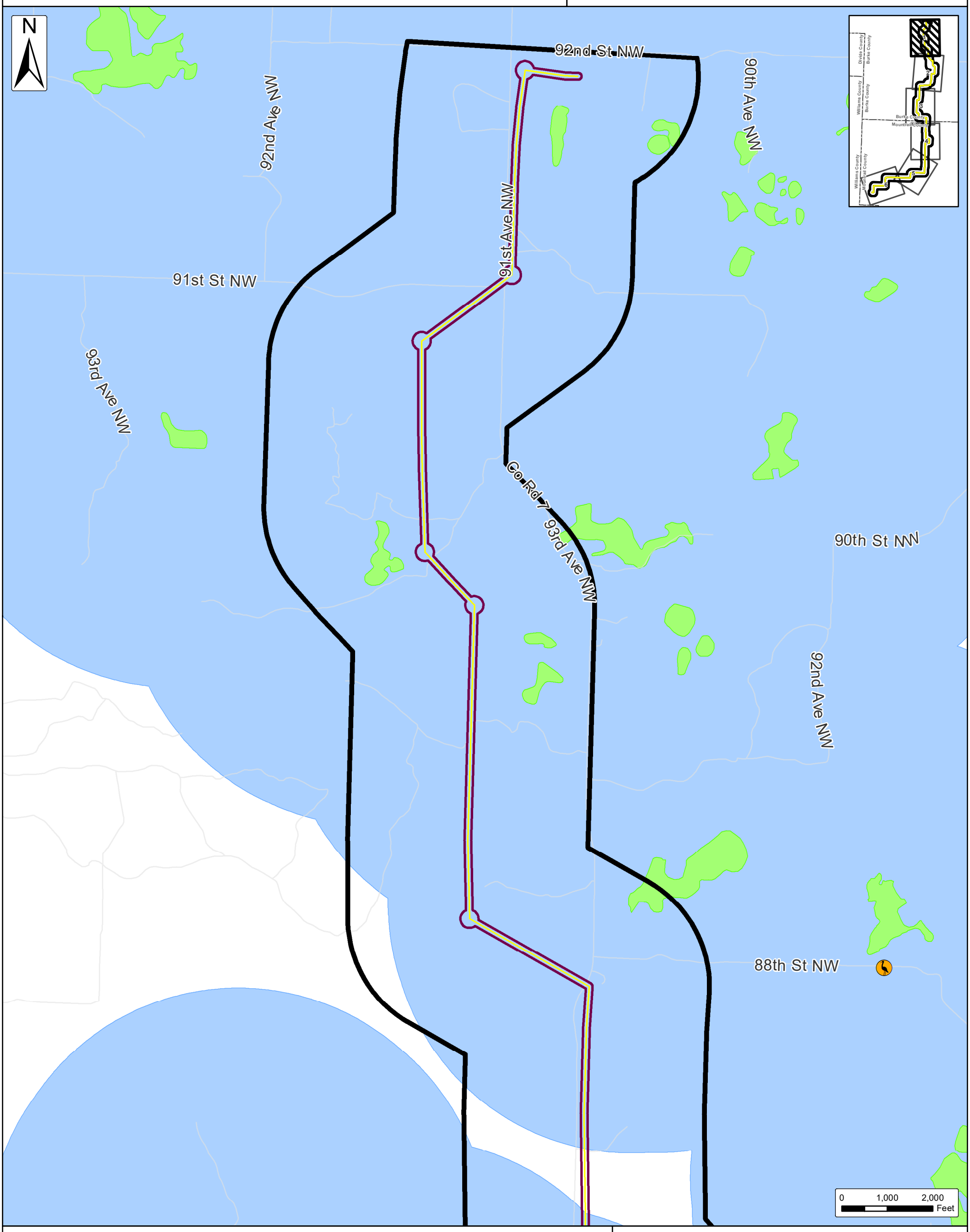
Figure 5a: Potential Whooping Crane Habitat Map

Burke County & Mountrail County, North Dakota

Client:
Burke Wind, LLC

Issue Date:
8/2/2018

Atwell, LLC Project:
16000947



Whooping Crane Sightings (Fall 2015, USFWS)

Whooping Crane Potential Suitable Habitat (TWI)

Whooping Crane Potential Suitable Habitat (TWI) 1 Mile Buffer

Transmission Line

Transmission Line 150 ft. Project Corridor

Transmission Line 1 Mile Study Area (05/14/2018)

Existing Tande Substation

Counties

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Burke Wind Transmission Line

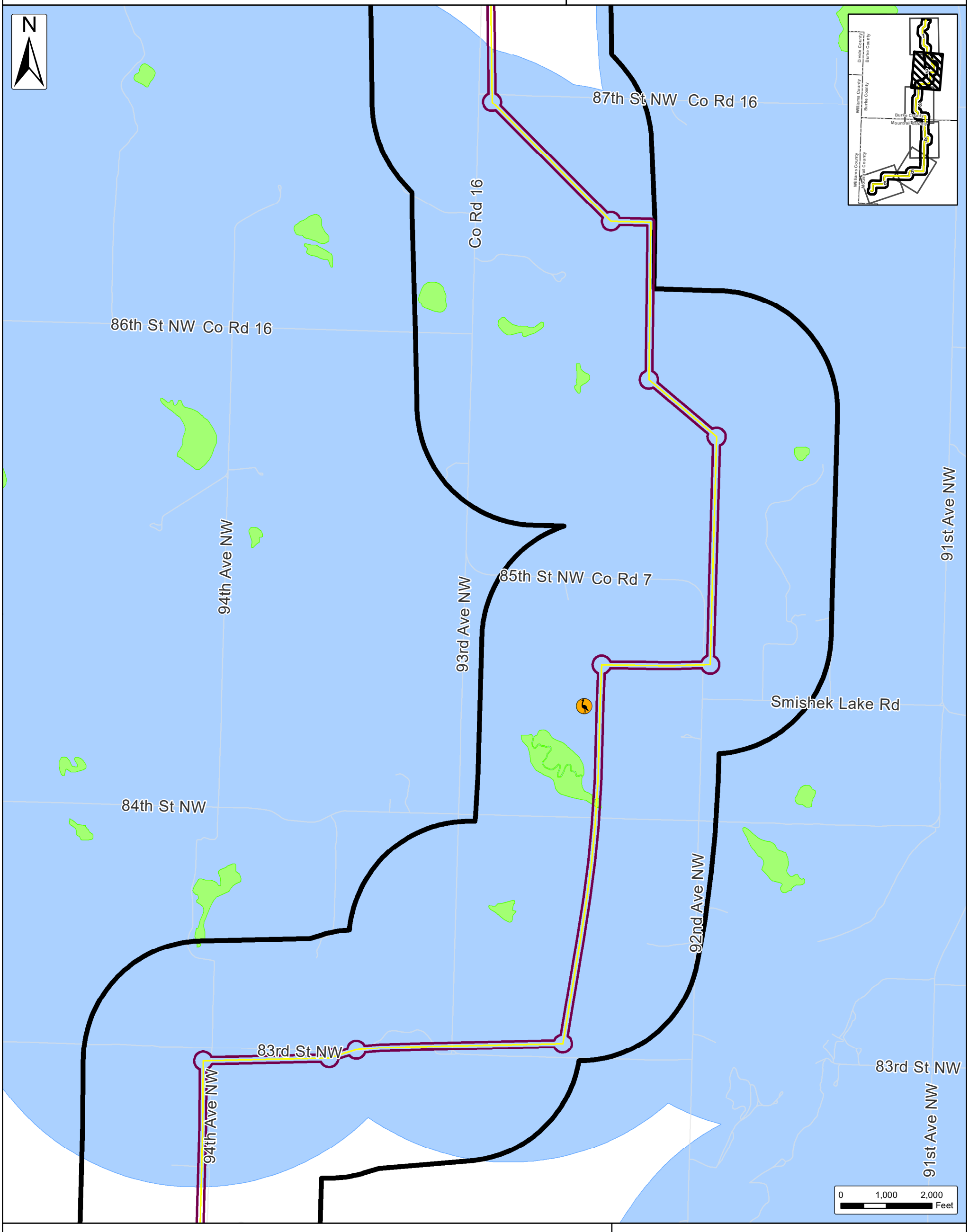
Figure 5b: Potential Whooping Crane Habitat Map

Burke County & Mountrail County, North Dakota

Client:
Burke Wind, LLC

Issue Date:
8/2/2018

Atwell, LLC Project:
16000947



- Whooping Crane Sightings (Fall 2015, USFWS)
- Whooping Crane Potential Suitable Habitat (TWI)
- Whooping Crane Potential Suitable Habitat (TWI) 1 Mile Buffer
- Transmission Line
- Transmission Line 150 ft. Project Corridor
- Transmission Line 1 Mile Study Area (05/14/2018)
- Existing Tande Substation
- Counties

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Burke Wind Transmission Line

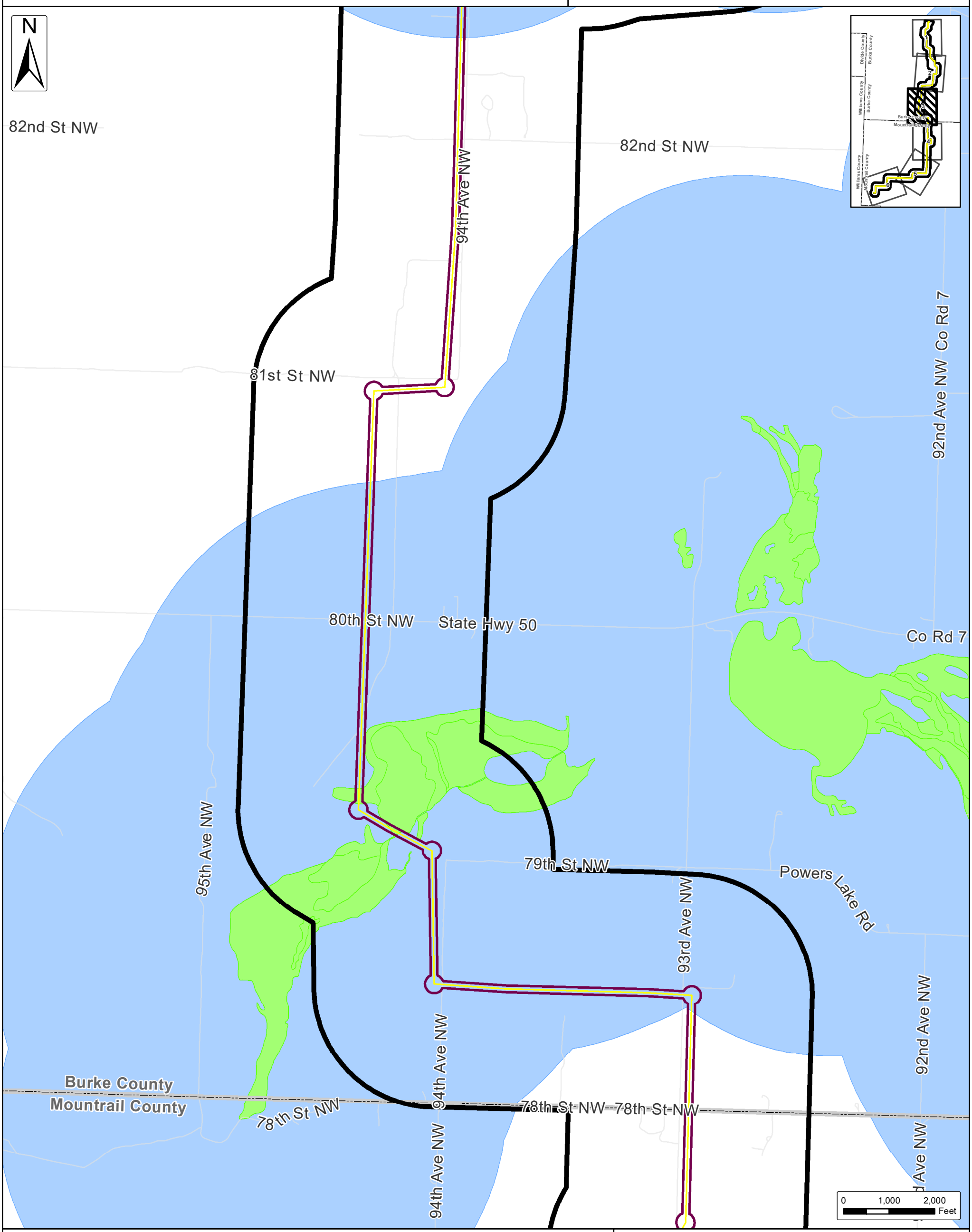
Figure 5c: Potential Whooping Crane Habitat Map

Burke County & Mountrail County, North Dakota

Client:
Burke Wind, LLC

Issue Date:
8/2/2018

Atwell, LLC Project:
16000947



- Whooping Crane Sightings (Fall 2015, USFWS)
- Whooping Crane Potential Suitable Habitat (TWI)
- Whooping Crane Potential Suitable Habitat (TWI) 1 Mile Buffer
- Transmission Line
- Transmission Line 150 ft. Project Corridor
- Transmission Line 1 Mile Study Area (05/14/2018)
- Existing Tande Substation
- Counties

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Burke Wind Transmission Line

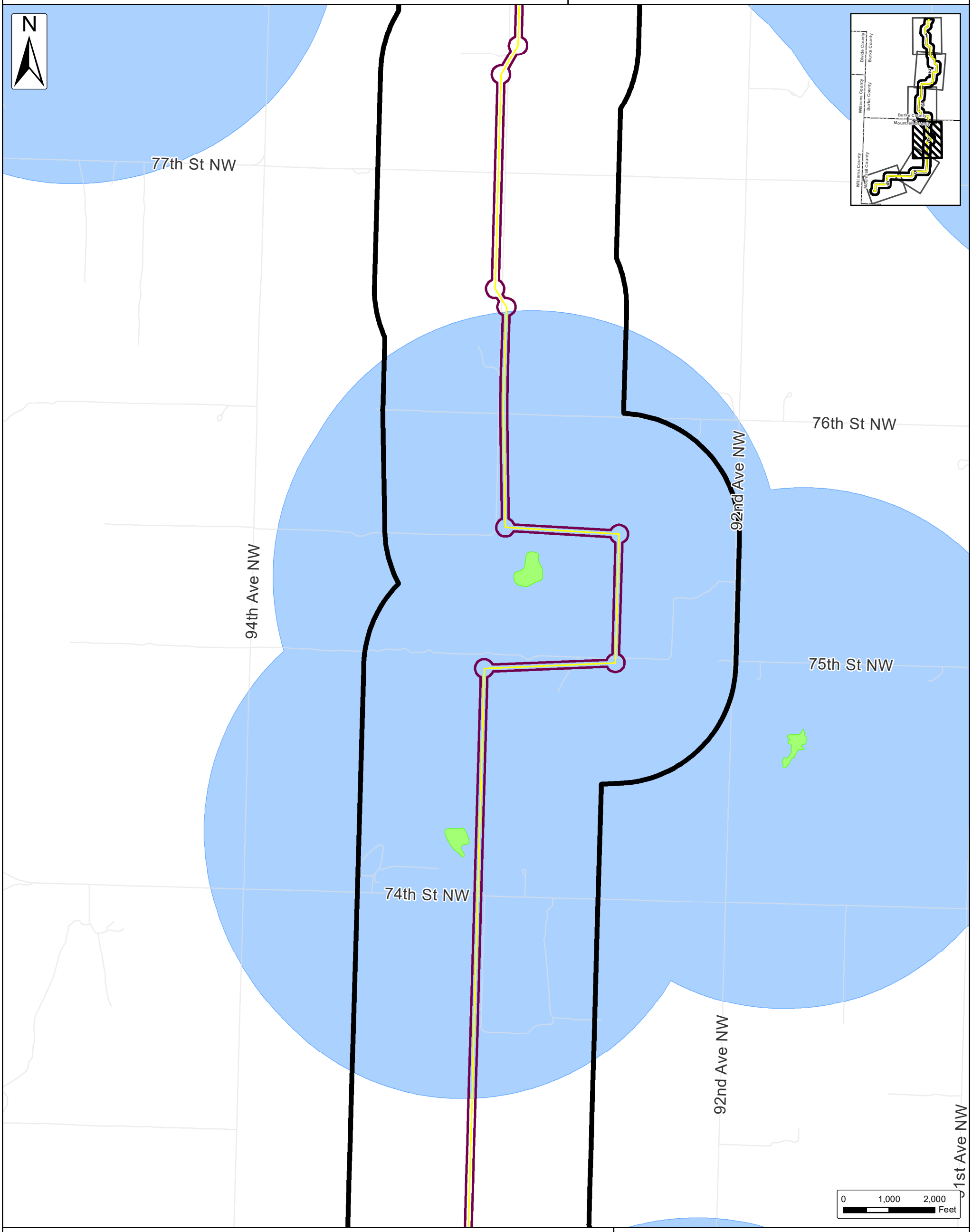
Figure 5d: Potential Whooping Crane Habitat Map

Burke County & Mountrail County, North Dakota

Client:
Burke Wind, LLC

Issue Date:
8/2/2018

Atwell, LLC Project:
16000947



Whooping Crane Sightings (Fall 2015, USFWS)

Whooping Crane Potential Suitable Habitat (TWI)

Whooping Crane Potential Suitable Habitat (TWI) 1 Mile Buffer

Transmission Line

Transmission Line 150 ft. Project Corridor

Transmission Line 1 Mile Study Area (05/14/2018)

Existing Tande Substation

Counties

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Burke Wind Transmission Line

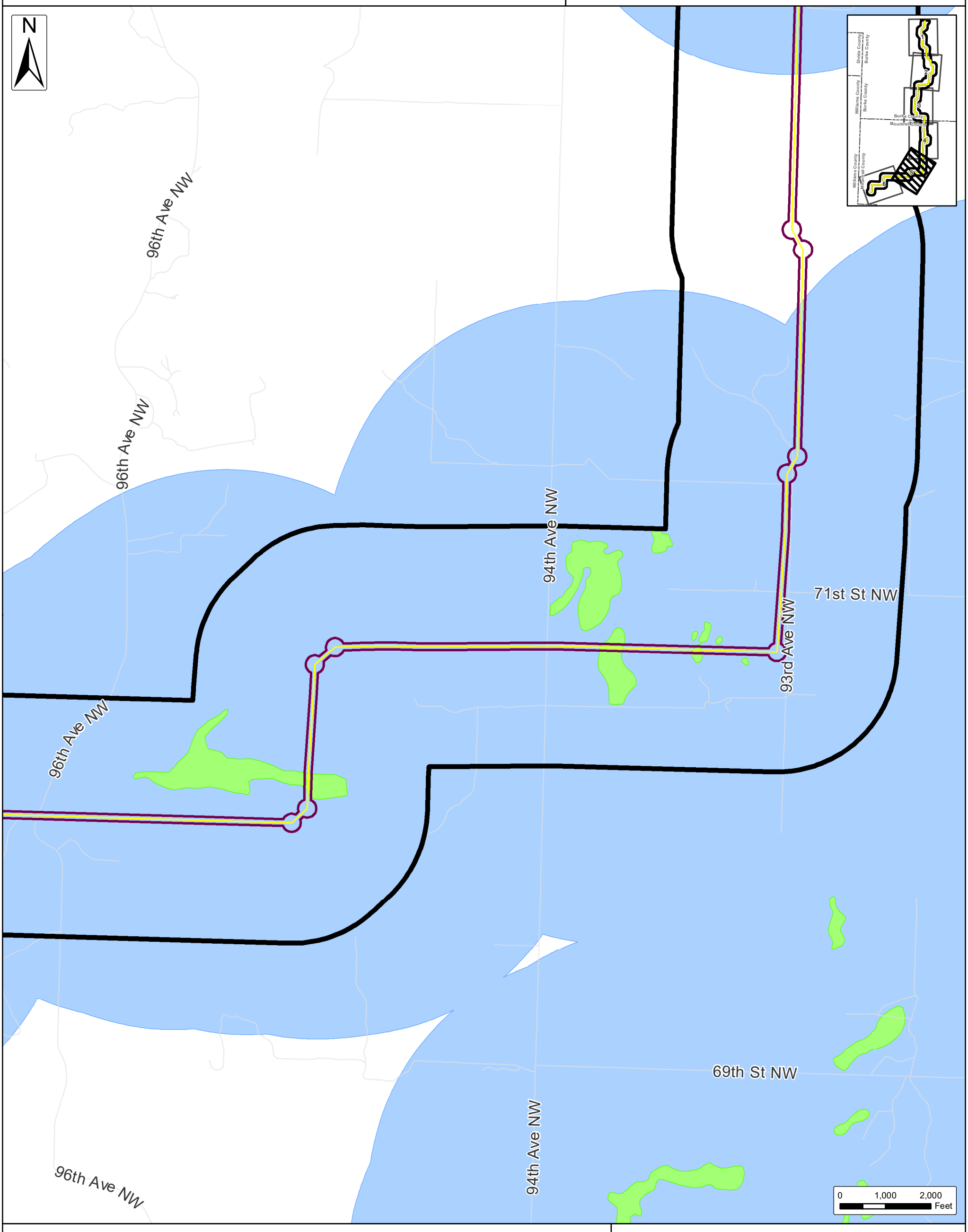
Figure 5e: Potential Whooping Crane Habitat Map

Burke County & Mountrail County, North Dakota

Client:
Burke Wind, LLC

Issue Date:
8/2/2018

Atwell, LLC Project:
16000947



- Whooping Crane Sightings (Fall 2015, USFWS)
- Whooping Crane Potential Suitable Habitat (TWI)
- Whooping Crane Potential Suitable Habitat (TWI) 1 Mile Buffer
- Transmission Line
- Transmission Line 150 ft. Project Corridor
- Transmission Line 1 Mile Study Area (05/14/2018)
- Existing Tande Substation
- Counties

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Burke Wind Transmission Line

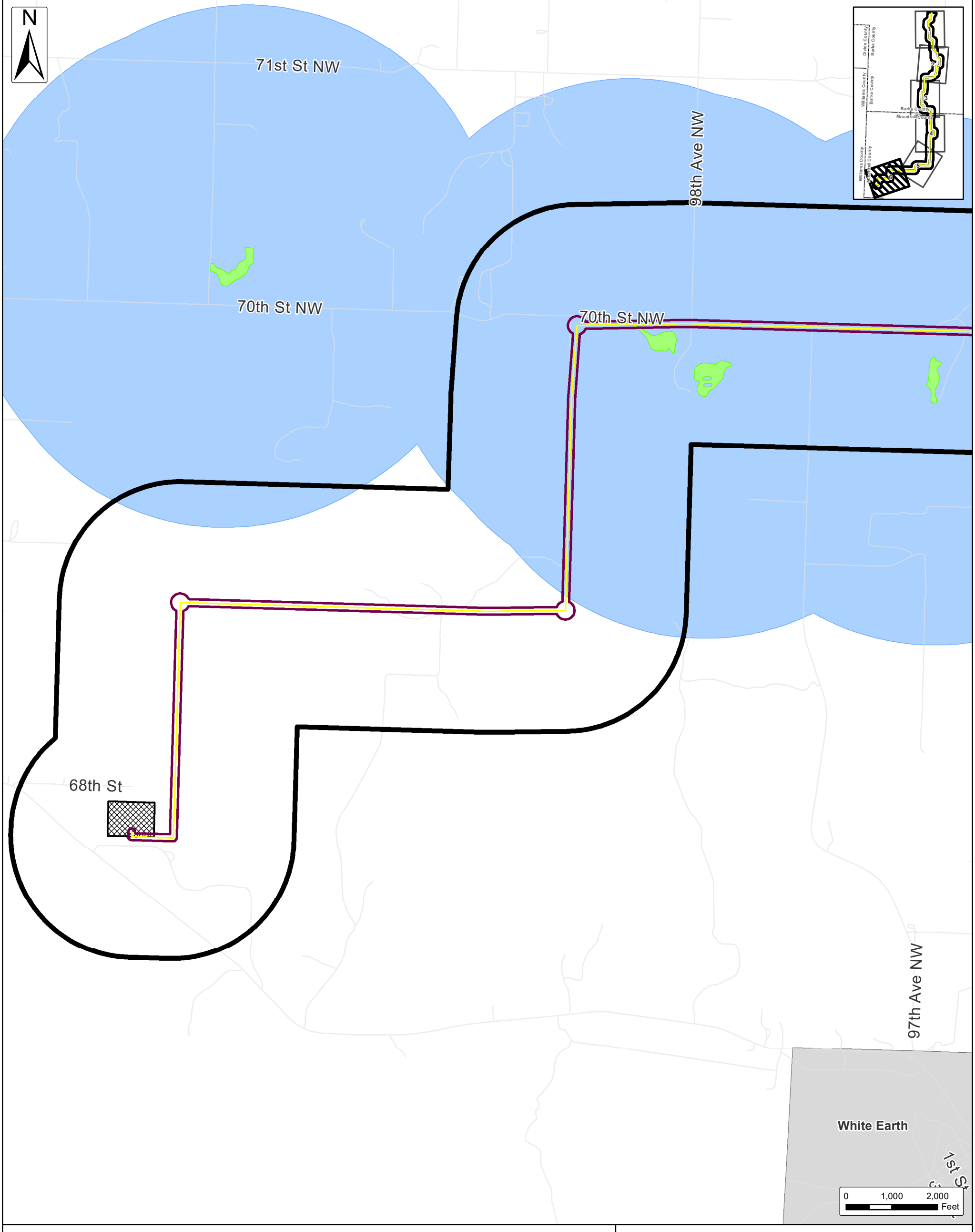
Figure 5f: Potential Whooping Crane Habitat Map

Burke County & Mountrail County, North Dakota

Client:
Burke Wind, LLC

Issue Date:
8/2/2018

Atwell, LLC Project:
16000947



Whooping Crane Sightings (Fall 2015, USFWS)

Whooping Crane Potential Suitable Habitat (TWI)

Whooping Crane Potential Suitable Habitat (TWI) 1 Mile Buffer

Transmission Line

Transmission Line 150 ft. Project Corridor

Transmission Line 1 Mile Study Area (05/14/2018)

Existing Tande Substation

Counties

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Burke Wind Transmission Line

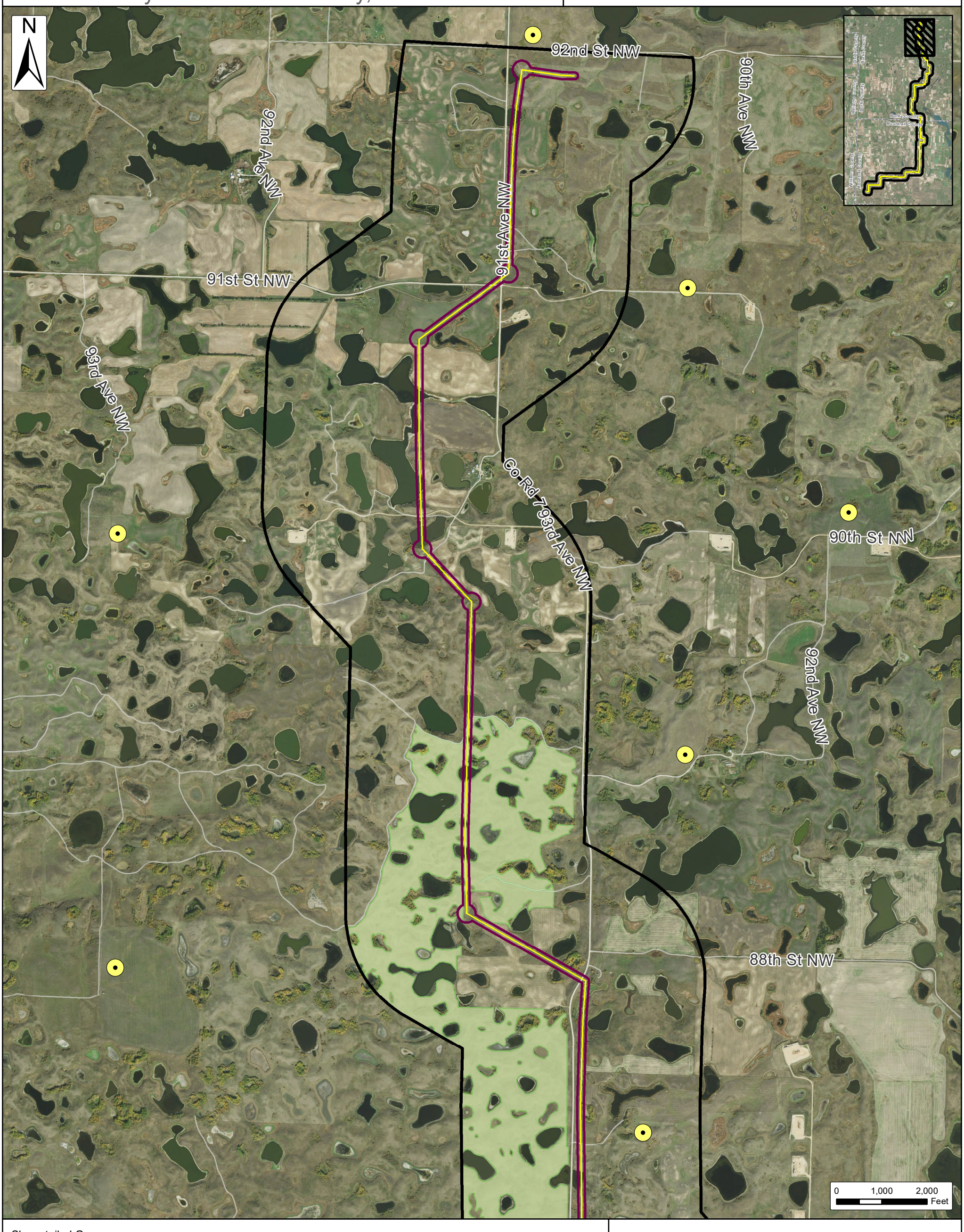
Figure 6a: Sharp-tailed Grouse Lek Habitat & Native Prairie Map

Burke County & Mountrail County, North Dakota

Client:
Burke Wind, LLC

Issue Date:
8/2/2018

Atwell, LLC Project:
16000947



Sharp-tailed Grouse
(Atwell Identified 2017/2018)

- Confirmed Lek
- Native Prairie Habitat
- Transmission Line
- Transmission Line 150 ft. Project Corridor
- Transmission Line 1 Mile Study Area
- Existing Tande Substation
- Counties

SOURCE: USDA NAIP 2017 IMAGERY

ATWELL

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Burke Wind Transmission Line

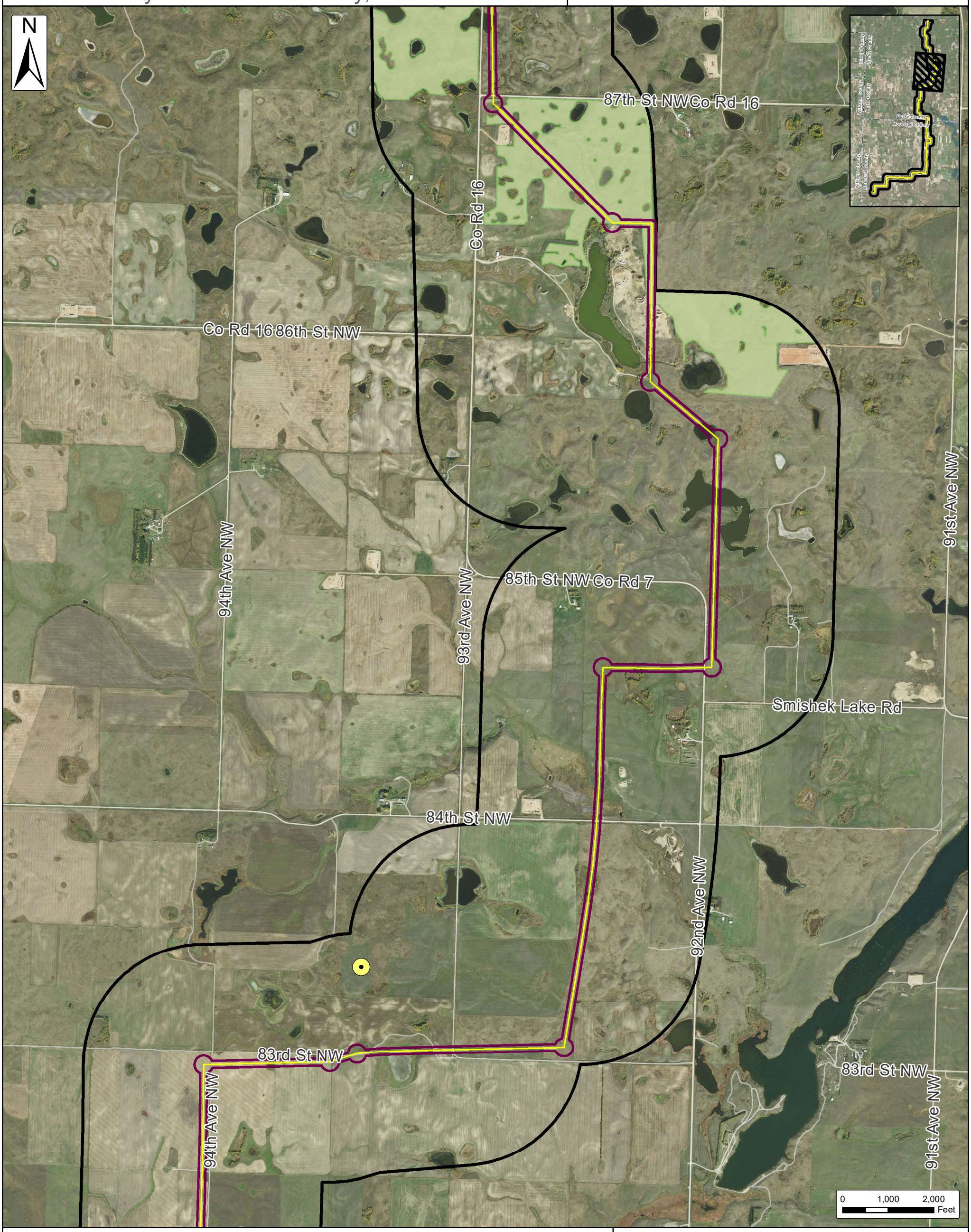
Figure 6b: Sharp-tailed Grouse Lek Habitat & Native Prairie Map

Burke County & Mountrail County, North Dakota

Client:
Burke Wind, LLC

Issue Date:
8/2/2018

Atwell, LLC Project:
16000947



Sharp-tailed Grouse
(Atwell Identified 2017/2018)

- Confirmed Lek
- Native Prairie Habitat
- Transmission Line
- Transmission Line 150 ft. Project Corridor
- Transmission Line 1 Mile Study Area
- Existing Tande Substation
- Counties

SOURCE: USDA NAIP 2017 IMAGERY

ATWELL

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Burke Wind Transmission Line

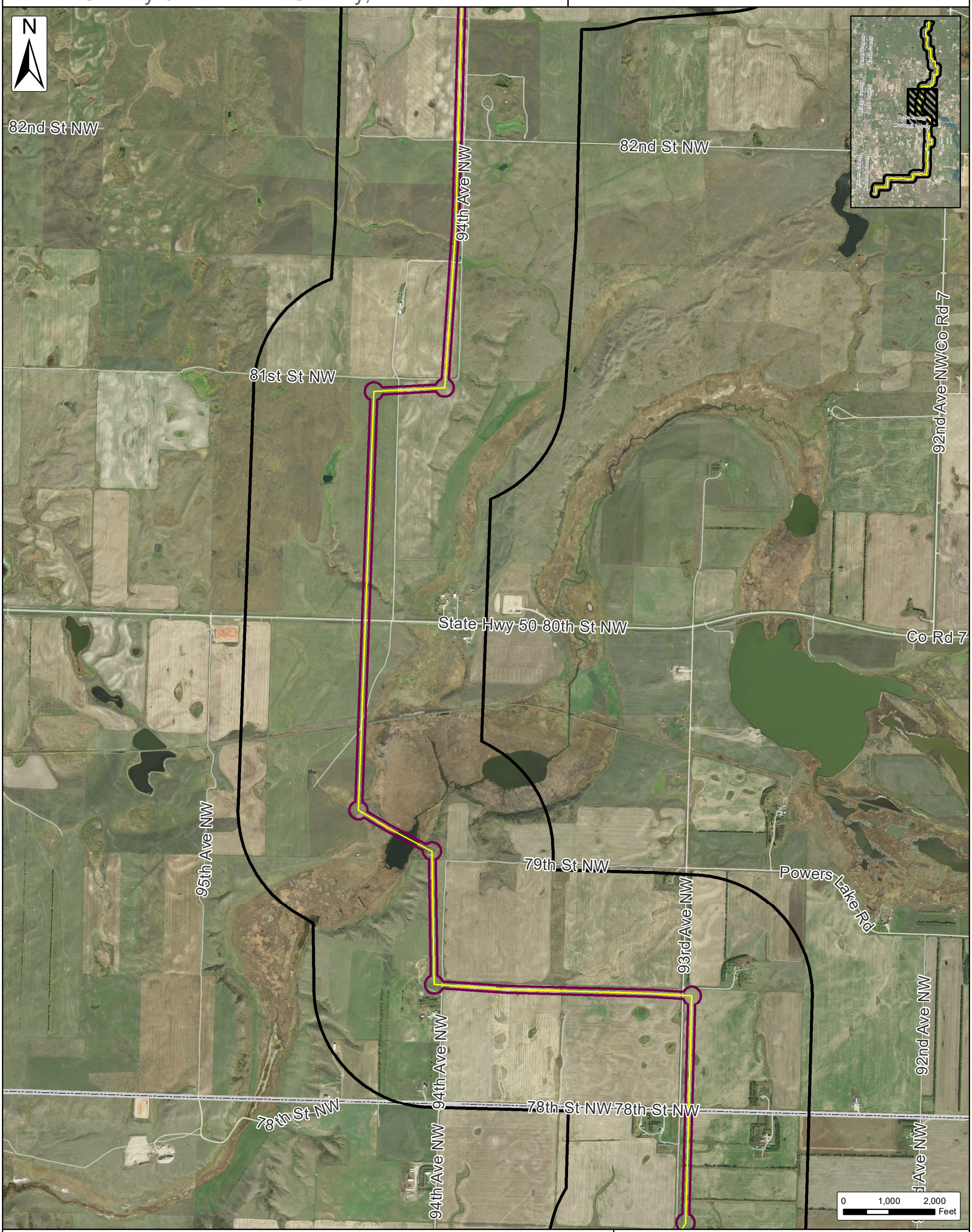
Figure 6c: Sharp-tailed Grouse Lek Habitat & Native Prairie Map

Burke County & Mountrail County, North Dakota

Client:
Burke Wind, LLC

Issue Date:
8/2/2018

Atwell, LLC Project:
16000947



Sharp-tailed Grouse
(Atwell Identified 2017/2018)

- Confirmed Lek
- Native Prairie Habitat
- Transmission Line
- Transmission Line 150 ft. Project Corridor
- Transmission Line 1 Mile Study Area
- Existing Tande Substation
- Counties

SOURCE: USDA NAIP 2017 IMAGERY

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Burke Wind Transmission Line

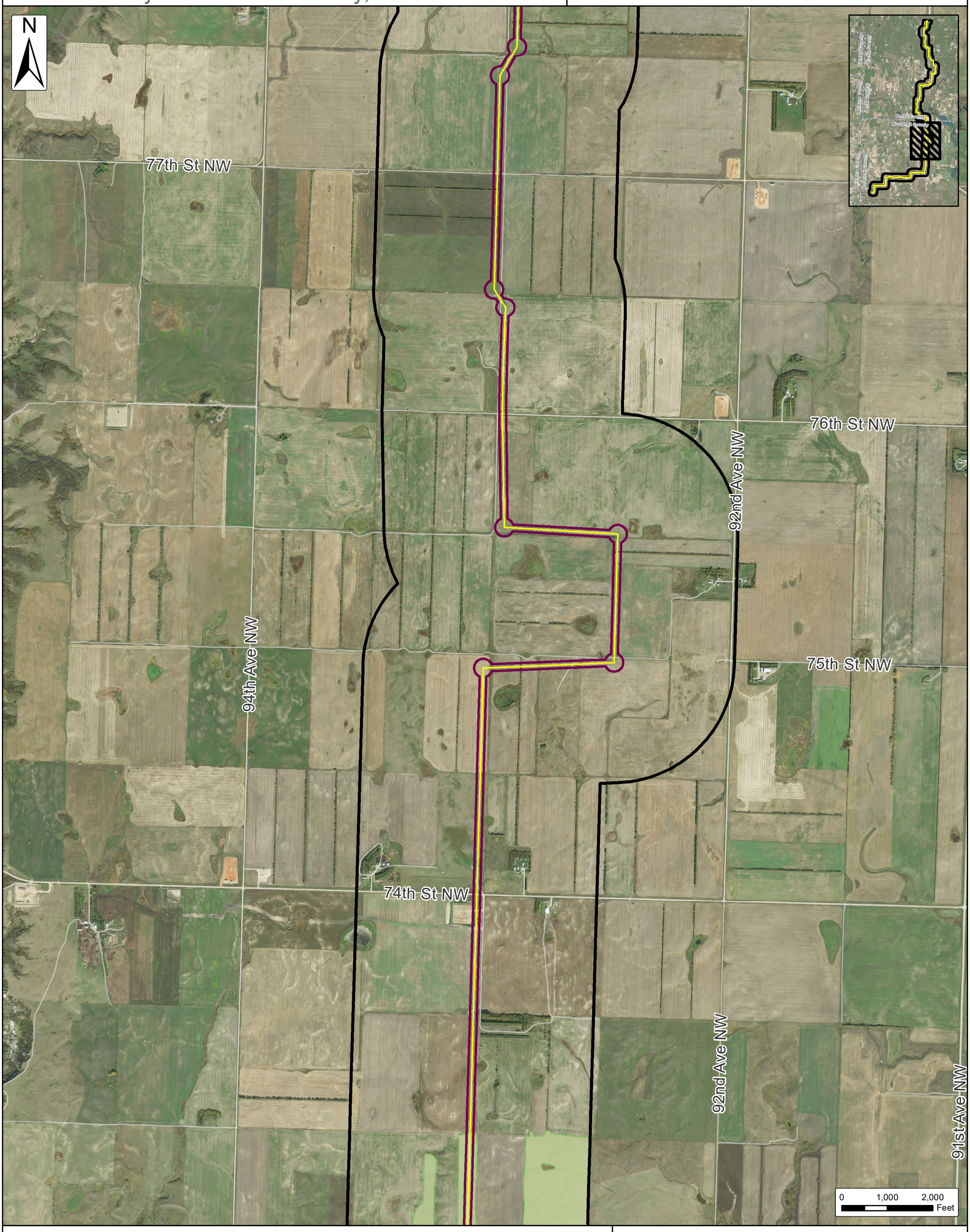
Figure 6d: Sharp-tailed Grouse Lek Habitat & Native Prairie Map

Burke County & Mountrail County, North Dakota

Client:
Burke Wind, LLC

Issue Date:
8/2/2018

Atwell, LLC Project:
16000947



Sharp-tailed Grouse
(Atwell Identified 2017/2018)
- Confirmed Lek
- Native Prairie Habitat

- Transmission Line
- Transmission Line 150 ft. Project Corridor
- Transmission Line 1 Mile Study Area
- Existing Tande Substation
- Counties

SOURCE: USDA NAIP 2017 IMAGERY

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Burke Wind Transmission Line

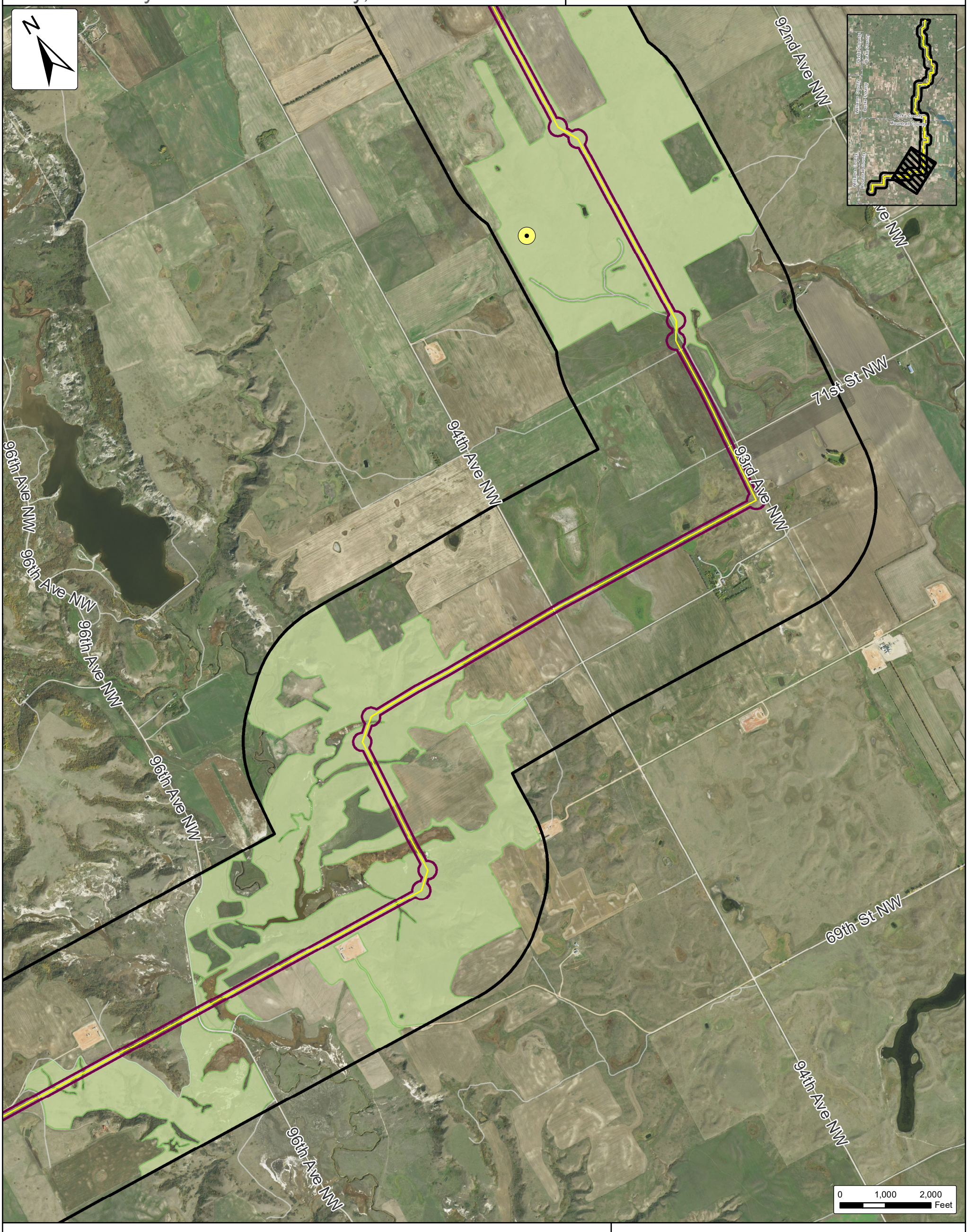
Figure 6e: Sharp-tailed Grouse Lek Habitat & Native Prairie Map

Burke County & Mountrail County, North Dakota

Client:
Burke Wind, LLC

Issue Date:
8/2/2018

Atwell, LLC Project:
16000947



Sharp-tailed Grouse
(Atwell Identified 2017/2018)

- Confirmed Lek
- Native Prairie Habitat
- Transmission Line
- Transmission Line 150 ft. Project Corridor
- Transmission Line 1 Mile Study Area
- Existing Tande Substation
- Counties

SOURCE: USDA NAIP 2017 IMAGERY

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Burke Wind Transmission Line

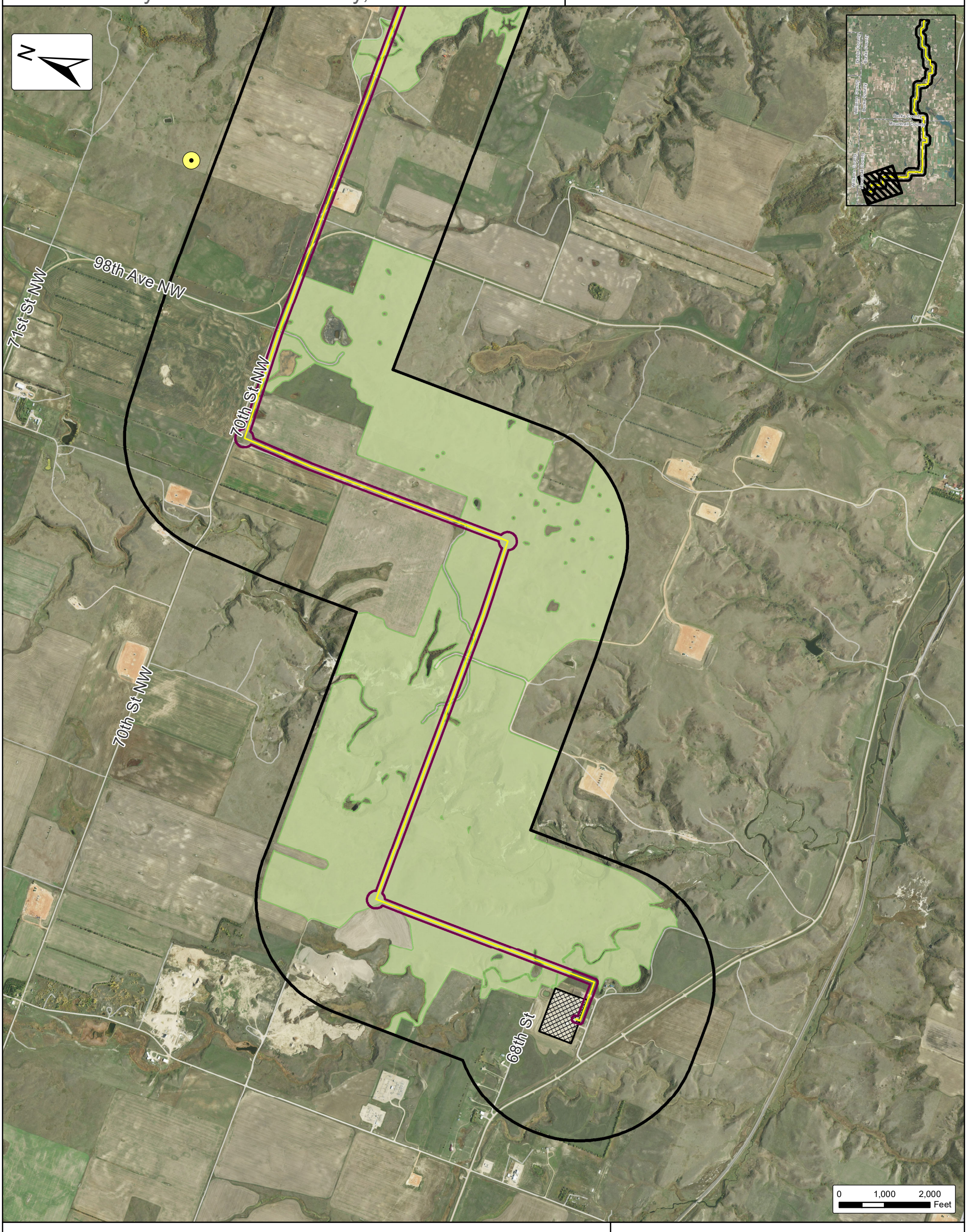
Figure 6f: Sharp-tailed Grouse Lek Habitat & Native Prairie Map

Burke County & Mountrail County, North Dakota

Client:
Burke Wind, LLC

Issue Date:
8/2/2018

Atwell, LLC Project:
16000947



Sharp-tailed Grouse
(Atwell Identified 2017/2018)

- Confirmed Lek
- Native Prairie Habitat
- Transmission Line
- Transmission Line 150 ft. Project Corridor
- Transmission Line 1 Mile Study Area
- Existing Tande Substation
- Counties

SOURCE: USDA NAIP 2017 IMAGERY

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Burke Wind Transmission Line

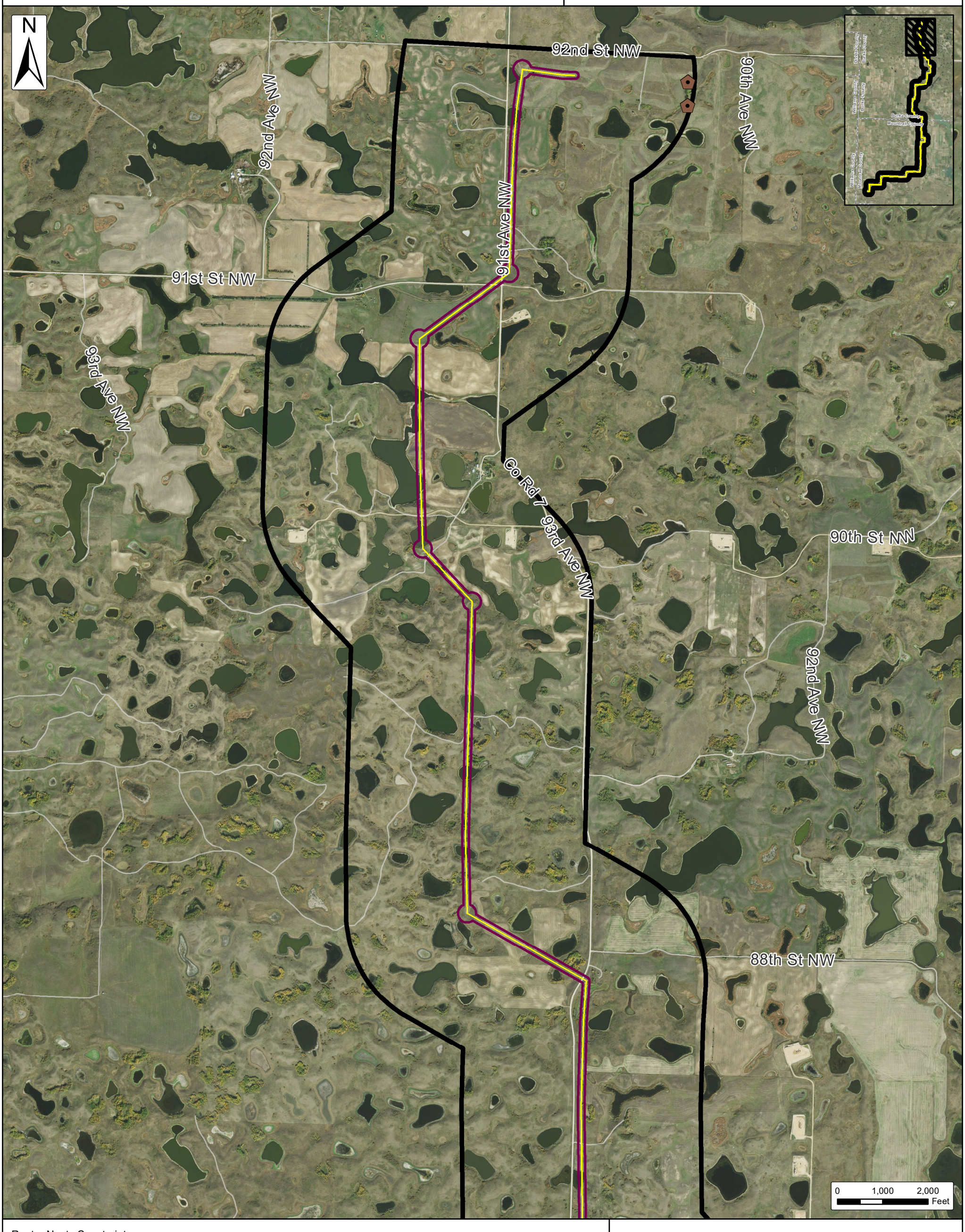
Figure 7a: Raptor Nest Map

Burke County & Mountrail County, North Dakota

Client:
Burke Wind, LLC

Issue Date:
8/2/2018

Atwell, LLC Project:
16000947



Raptor Nests Constraints
(Atwell Identified April & May 2018)

- Ferruginous Hawk (Active)
- Ferruginous Hawk (Probable)
- Great Horned Owl (Active)

- Transmission Line
- Transmission Line 150 ft. Project Corridor
- Transmission Line 1 Mile Study Area
- Existing Tande Substation
- Counties

SOURCE: USDA NAIP 2017 IMAGERY

ATWELL

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Burke Wind Transmission Line

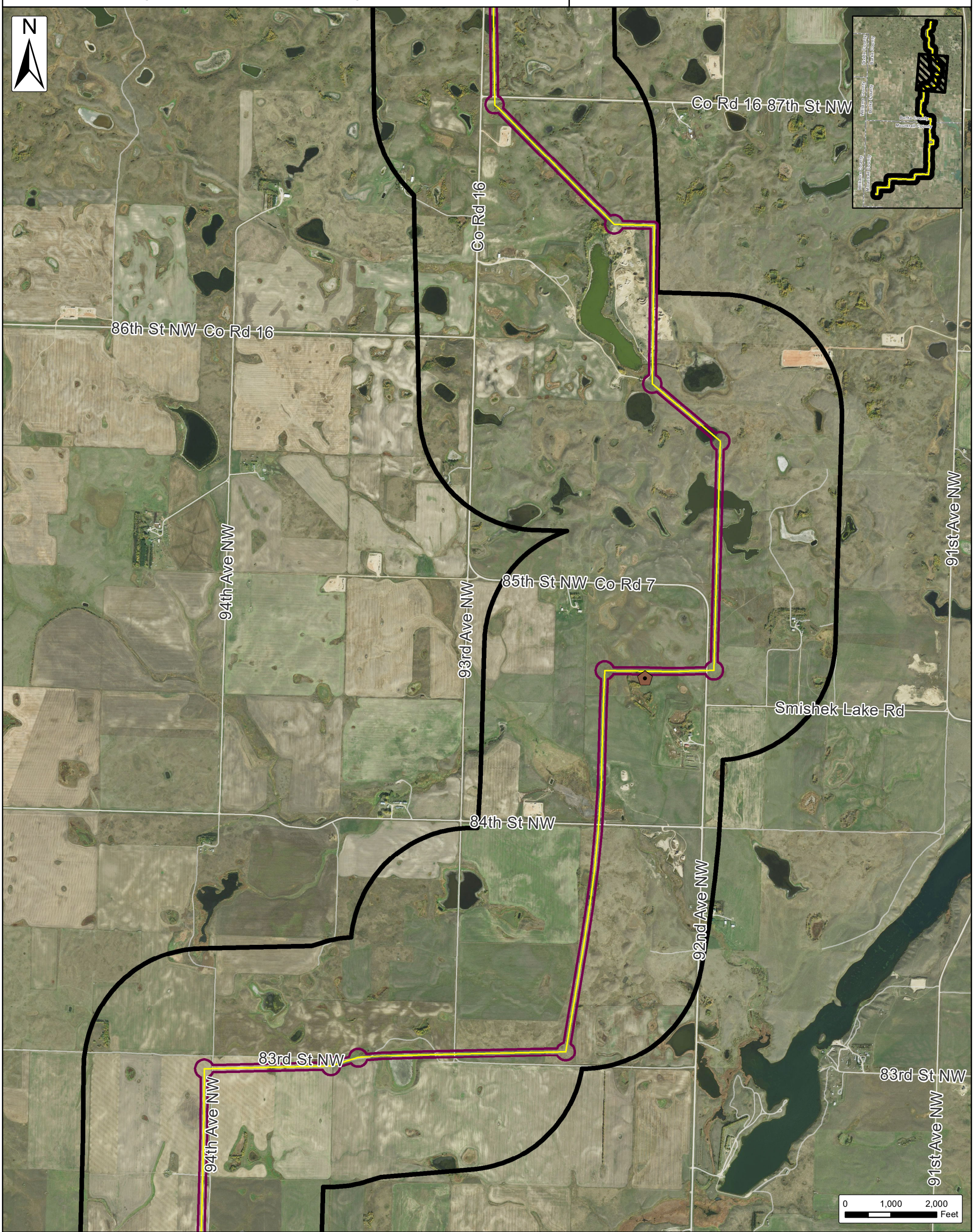
Figure 7b: Raptor Nest Map

Burke County & Mountrail County, North Dakota

Client:
Burke Wind, LLC

Issue Date:
8/2/2018

Atwell, LLC Project:
16000947



Raptor Nests Constraints
(Atwell Identified April & May 2018)

- Ferruginous Hawk (Active)
- Ferruginous Hawk (Probable)
- Great Horned Owl (Active)

- Transmission Line
- Transmission Line 150 ft. Project Corridor
- Transmission Line 1 Mile Study Area
- Existing Tande Substation
- Counties

SOURCE: USDA NAIP 2017 IMAGERY

ATWELL

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Burke Wind Transmission Line

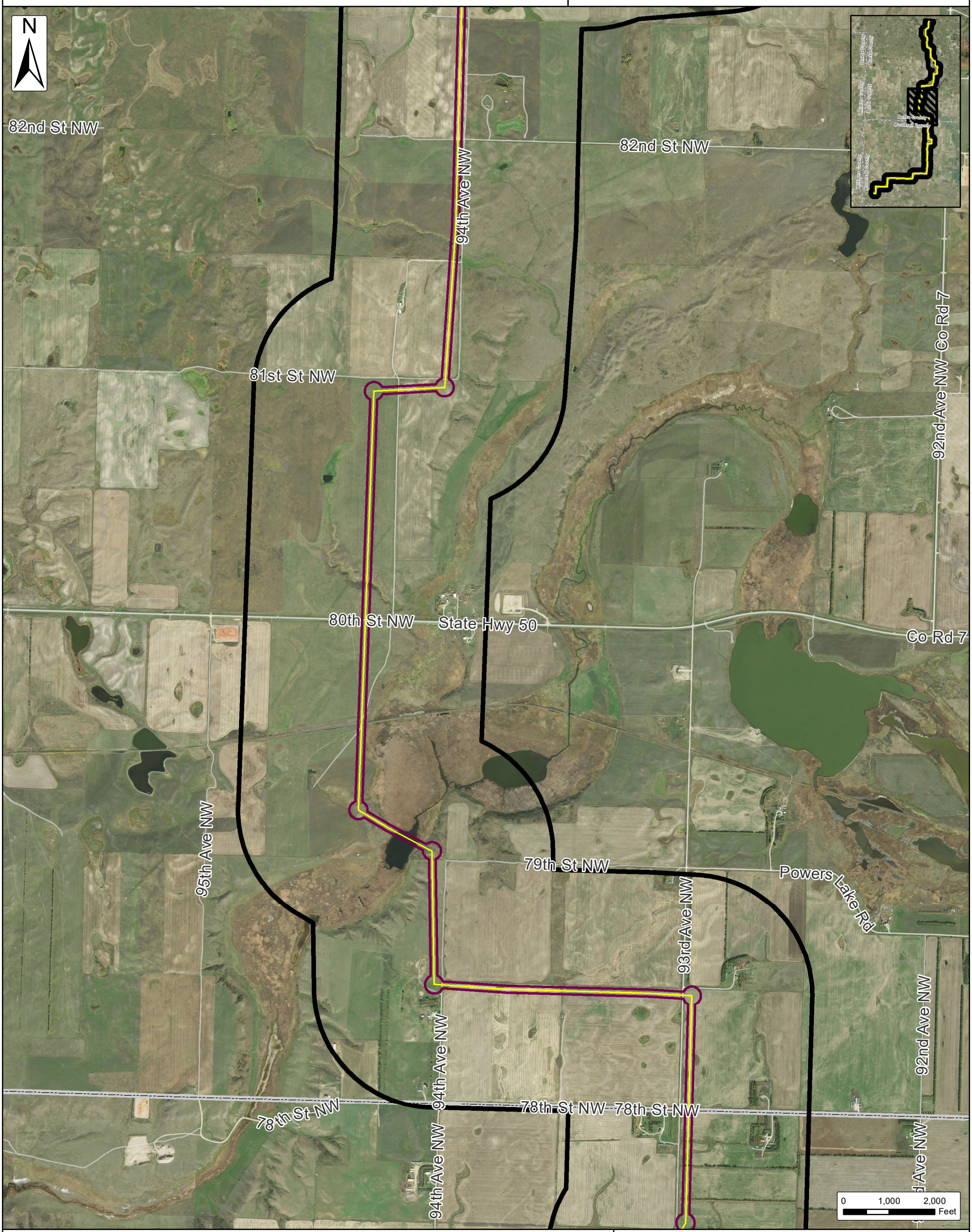
Figure 7c: Raptor Nest Map

Burke County & Mountrail County, North Dakota

Client:
Burke Wind, LLC

Issue Date:
8/2/2018

Atwell, LLC Project:
16000947



Raptor Nests Constraints
(Atwell Identified April & May 2018)

- Ferruginous Hawk (Active)
- Ferruginous Hawk (Probable)
- Great Horned Owl (Active)

- Transmission Line
- Transmission Line 150 ft. Project Corridor
- Transmission Line 1 Mile Study Area
- Existing Tande Substation
- Counties

SOURCE: USDA NAIP 2017 IMAGERY

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Burke Wind Transmission Line

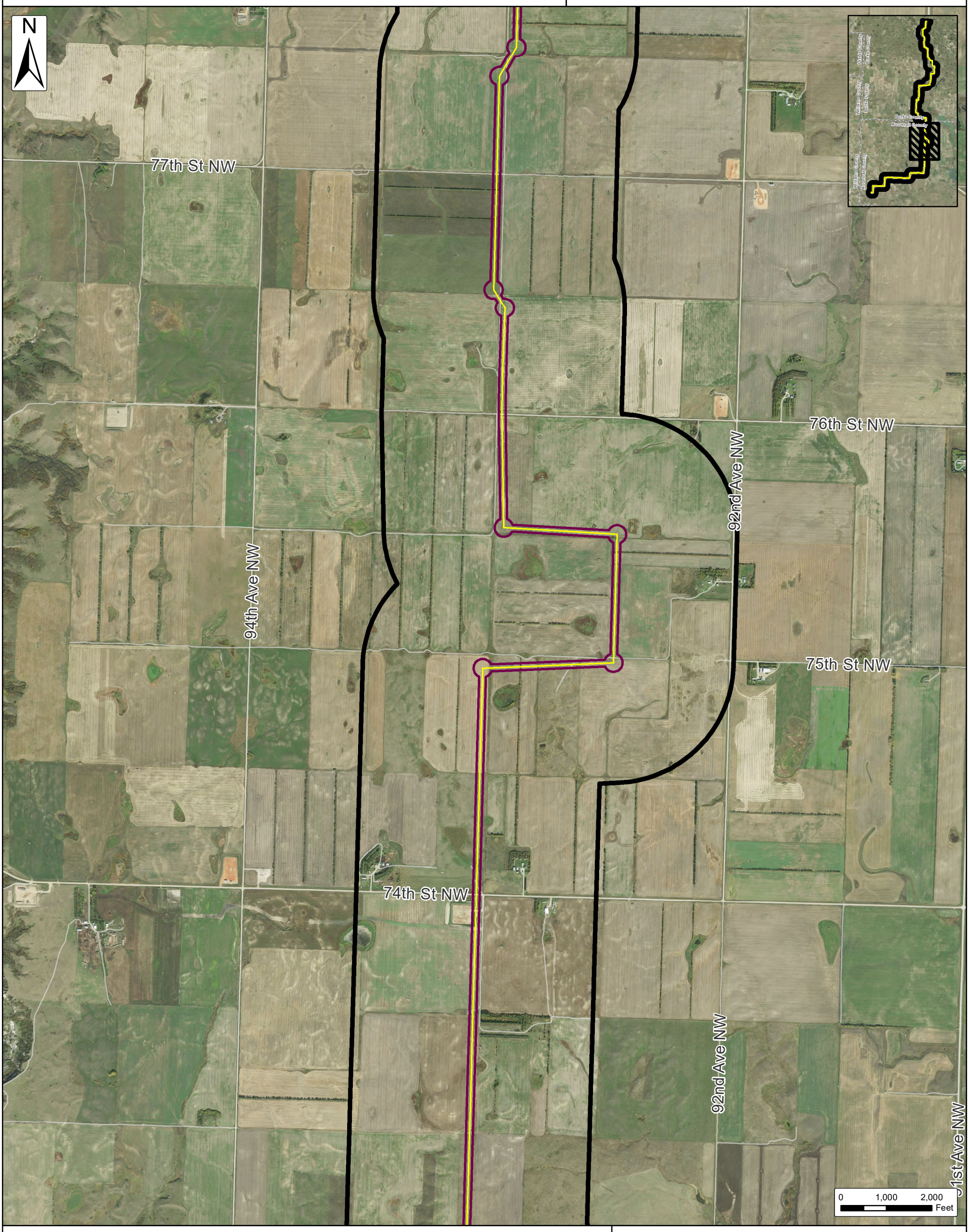
Figure 7d: Raptor Nest Map

Burke County & Mountrail County, North Dakota

Client:
Burke Wind, LLC

Issue Date:
8/2/2018

Atwell, LLC Project:
16000947



Raptor Nests Constraints
(Atwell Identified April & May 2018)

- Ferruginous Hawk (Active)
- Ferruginous Hawk (Probable)
- Great Horned Owl (Active)

- Transmission Line
- Transmission Line 150 ft. Project Corridor
- Transmission Line 1 Mile Study Area
- Existing Tande Substation
- Counties

SOURCE: USDA NAIP 2017 IMAGERY

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.

Burke Wind Transmission Line

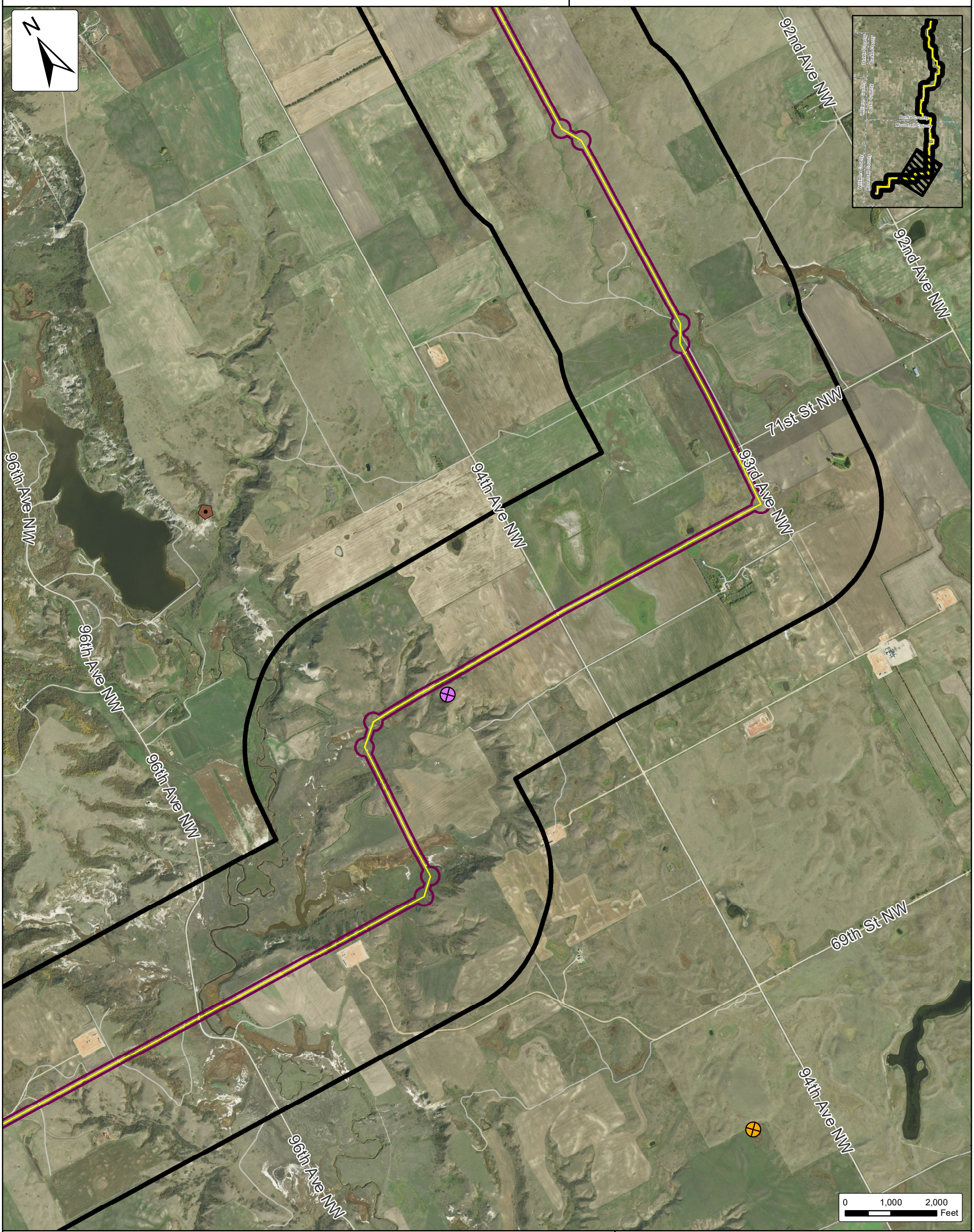
Figure 7e: Raptor Nest Map

Burke County & Mountrail County, North Dakota

Client:
Burke Wind, LLC

Issue Date:
8/2/2018

Atwell, LLC Project:
16000947



Raptor Nests Constraints
(Atwell Identified April & May 2018)

- Ferruginous Hawk (Active)
- Ferruginous Hawk (Probable)
- Great Horned Owl (Active)

- Transmission Line
- Transmission Line 150 ft. Project Corridor
- Transmission Line 1 Mile Study Area
- Existing Tande Substation
- Counties

SOURCE: USDA NAIP 2017 IMAGERY

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.

Burke Wind Transmission Line

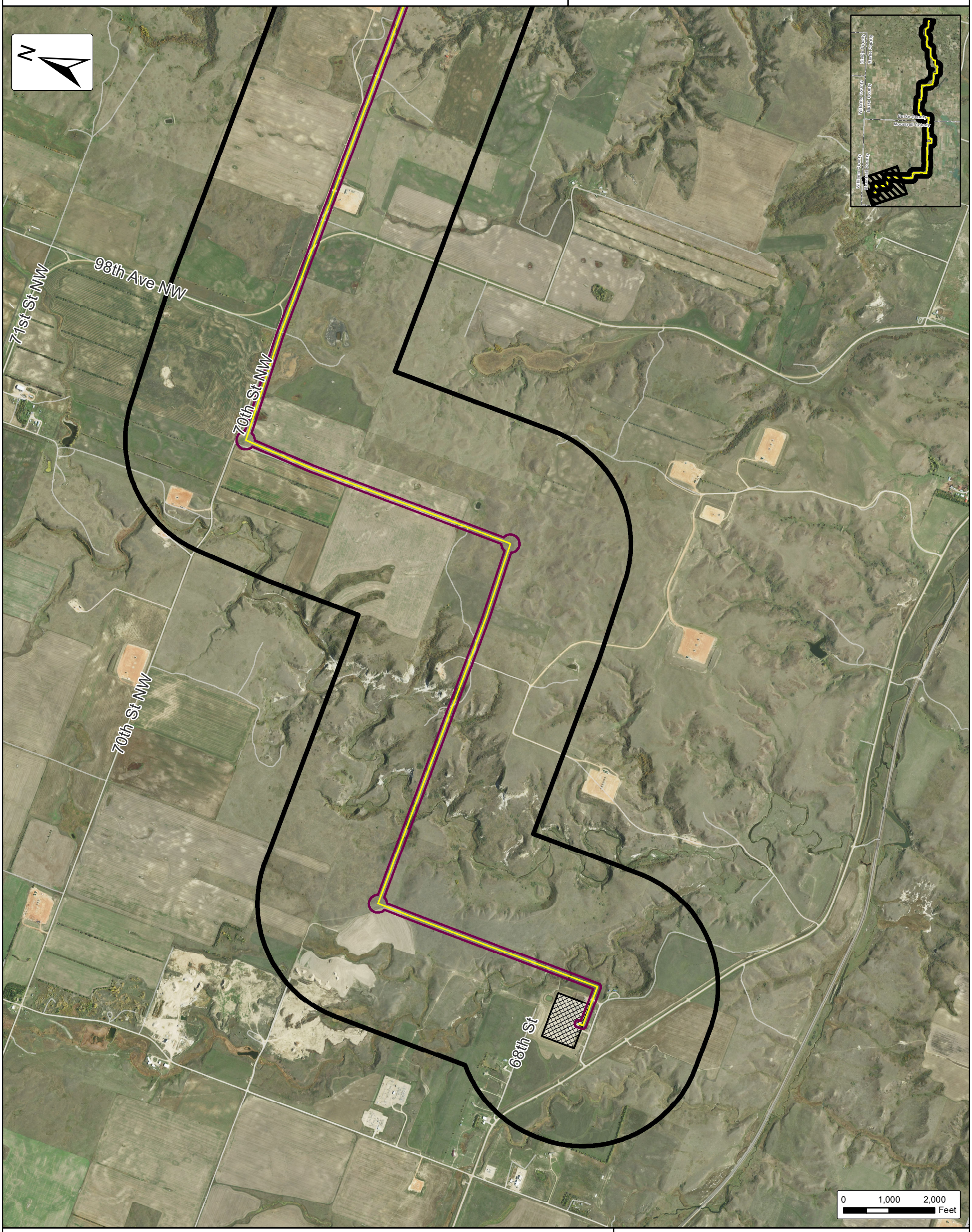
Figure 7f: Raptor Nest Map

Burke County & Mountrail County, North Dakota

Client:
Burke Wind, LLC

Issue Date:
8/2/2018

Atwell, LLC Project:
16000947



Raptor Nests Constraints
(Atwell Identified April & May 2018)

- Ferruginous Hawk (Active)
- Ferruginous Hawk (Probable)
- Great Horned Owl (Active)

- Transmission Line
- Transmission Line 150 ft. Project Corridor
- Transmission Line 1 Mile Study Area
- Existing Tande Substation
- Counties

SOURCE: USDA NAIP 2017 IMAGERY

ATWELL

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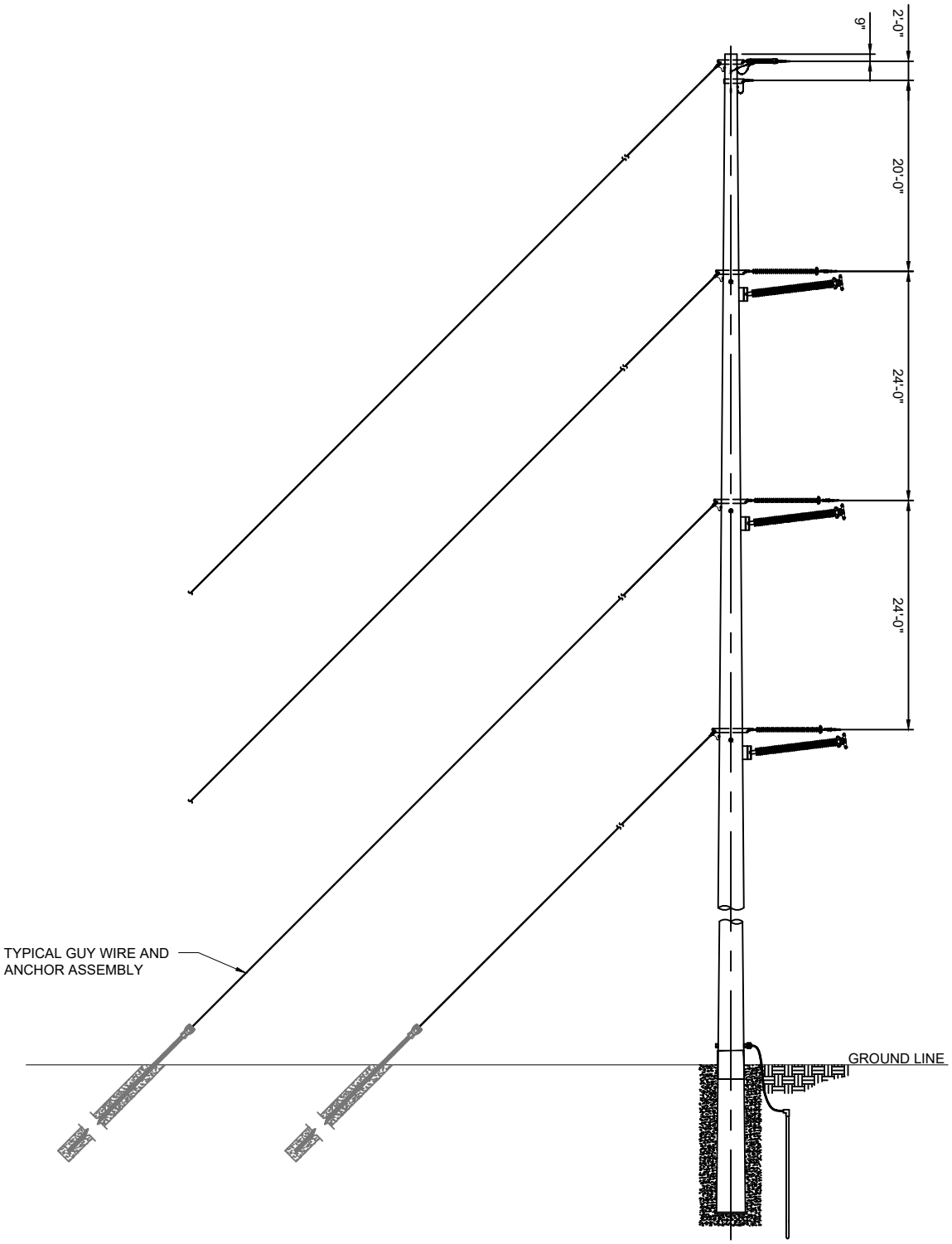

NOTES:
1. DIMENSIONS AND GENERAL CONFIGURATION SHOWN ARE BASED ON PRELIMINARY DESIGN INFORMATION AND ARE SUBJECT TO MINOR VARIATIONS IF REQUIRED DURING DETAILED DESIGN.

Figure 8: Typical Structure Layout Monopole Guyed Deadend

no.	date	by	ckd	description
B	6/1/18	MSP	JPC	ISSUED FOR ND PSC APPLICATION
A	11/14/17	MSP	JPC	ISSUED FOR REVIEW

BURNS McDONNELL
9400 WARD PARKWAY, KANSAS CITY, MO 64114
PROJECT 99793

date	detailed
11/14/2017	M. PEPICH
designed	checked
M. PEPICH	A. OVERSCHMIDT

BURKE COUNTY WIND, LLC
700 UNIVERSE BLVD.
JUNO BEACH, FL 33408

BURKE COUNTY 345kV T/L PROJECT
EXHIBIT DRAWING
TYPICAL STRUCTURE LAYOUT
MONOPOLE GUYED DEADEND

drawing	sheet	rev.
BC1-00948	1	B

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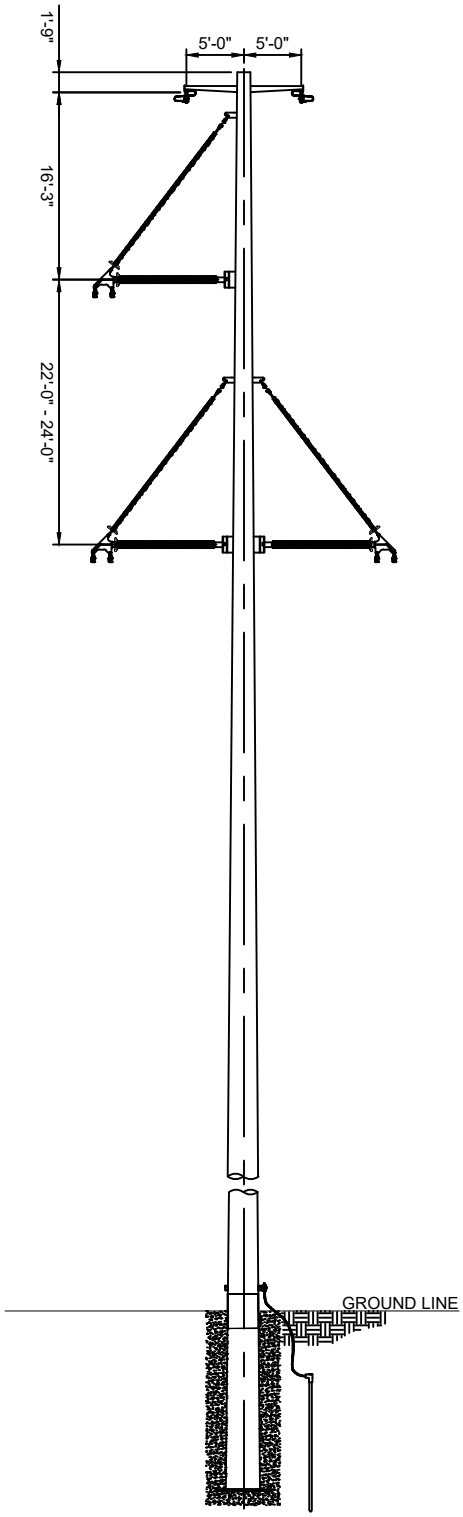

NOTES:
1. DIMENSIONS AND GENERAL CONFIGURATION SHOWN ARE BASED ON PRELIMINARY DESIGN INFORMATION AND ARE SUBJECT TO MINOR VARIATIONS IF REQUIRED DURING DETAILED DESIGN.

Figure 9: Typical Structure Layout Monopole Tangent

no.	date	by	ckd	description
B	6/1/18	MSP	JPC	ISSUED FOR ND PSC APPLICATION
A	11/14/17	MSP	JPC	ISSUED FOR REVIEW

BURNS McDONNELL
9400 WARD PARKWAY, KANSAS CITY, MO 64114

PROJECT 99783

date	detailed
11/14/2017	M. PEPICH
designed	checked
M. PEPICH	A. OVERSCHMIDT

BURKE COUNTY WIND, LLC
700 UNIVERSE BLVD.
JUNO BEACH, FL 33408

BURKE COUNTY 345kV T/L PROJECT
EXHIBIT DRAWING
TYPICAL STRUCTURE LAYOUT
MONOPOLE TANGENT

drawing	sheet	rev.
BC1-00946	1	B

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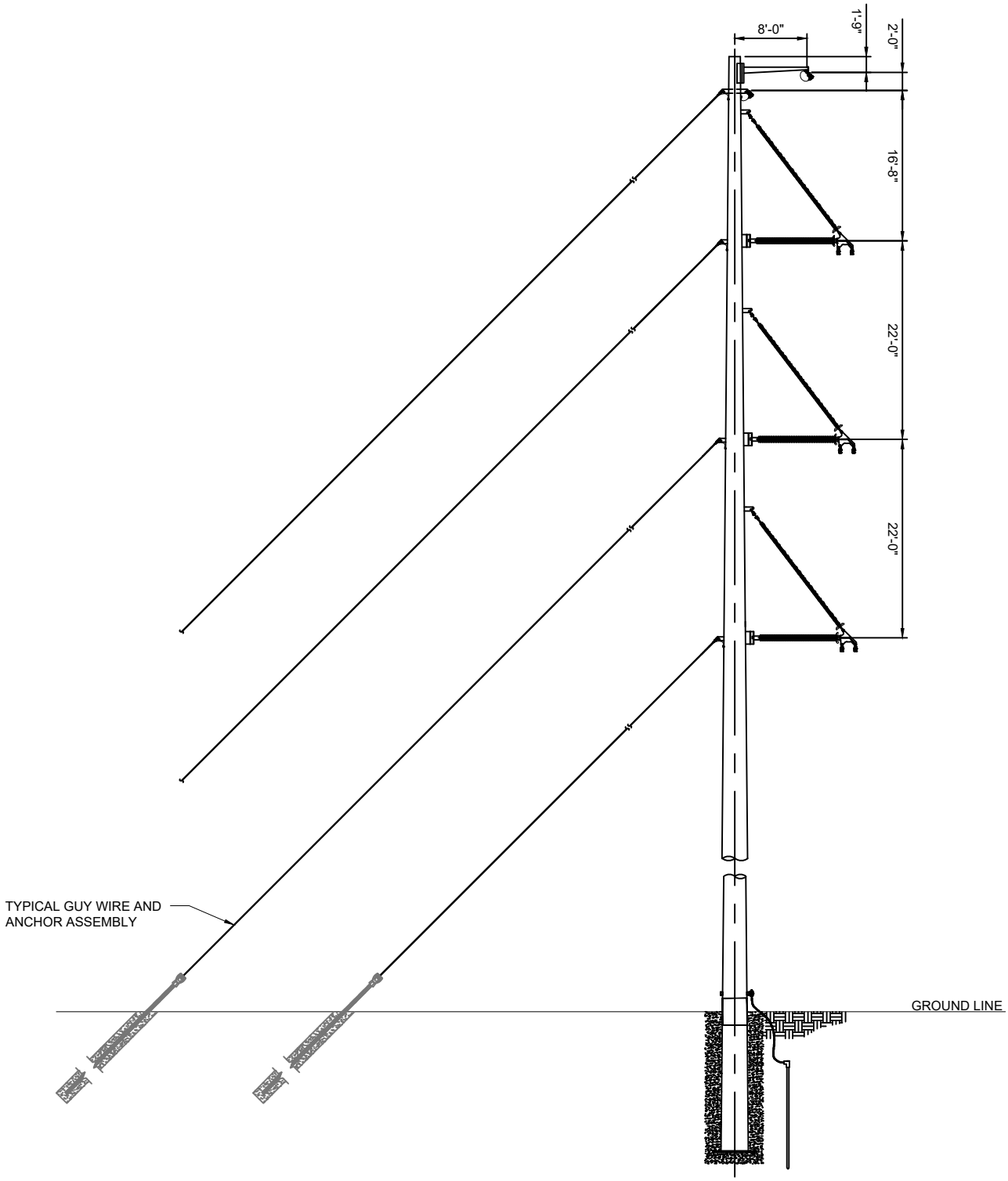

NOTES:
1. DIMENSIONS AND GENERAL CONFIGURATION SHOWN ARE BASED ON PRELIMINARY DESIGN INFORMATION AND ARE SUBJECT TO MINOR VARIATIONS IF REQUIRED DURING DETAILED DESIGN.

Figure 10: Typical Structure Layout Monopole Guyed Light Running Angle

no.	date	by	ckd	description
A	6/1/18	MSP	JPC	ISSUED FOR ND PSC APPLICATION

BURNS McDONNELL
9400 WARD PARKWAY, KANSAS CITY, MO 64114
PROJECT 99793

date	detailed
6/1/2018	M. PEPICH
designed	checked
M. PEPICH	A. OVERSCHMIDT

BURKE COUNTY WIND, LLC
700 UNIVERSE BLVD.
JUNO BEACH, FL 33408

BURKE COUNTY 345kV T/L PROJECT
EXHIBIT DRAWING
TYPICAL STRUCTURE LAYOUT
MONOPOLE GUYED LIGHT RUNNING ANGLE

drawing	sheet	rev.
BC1-00950	1	A

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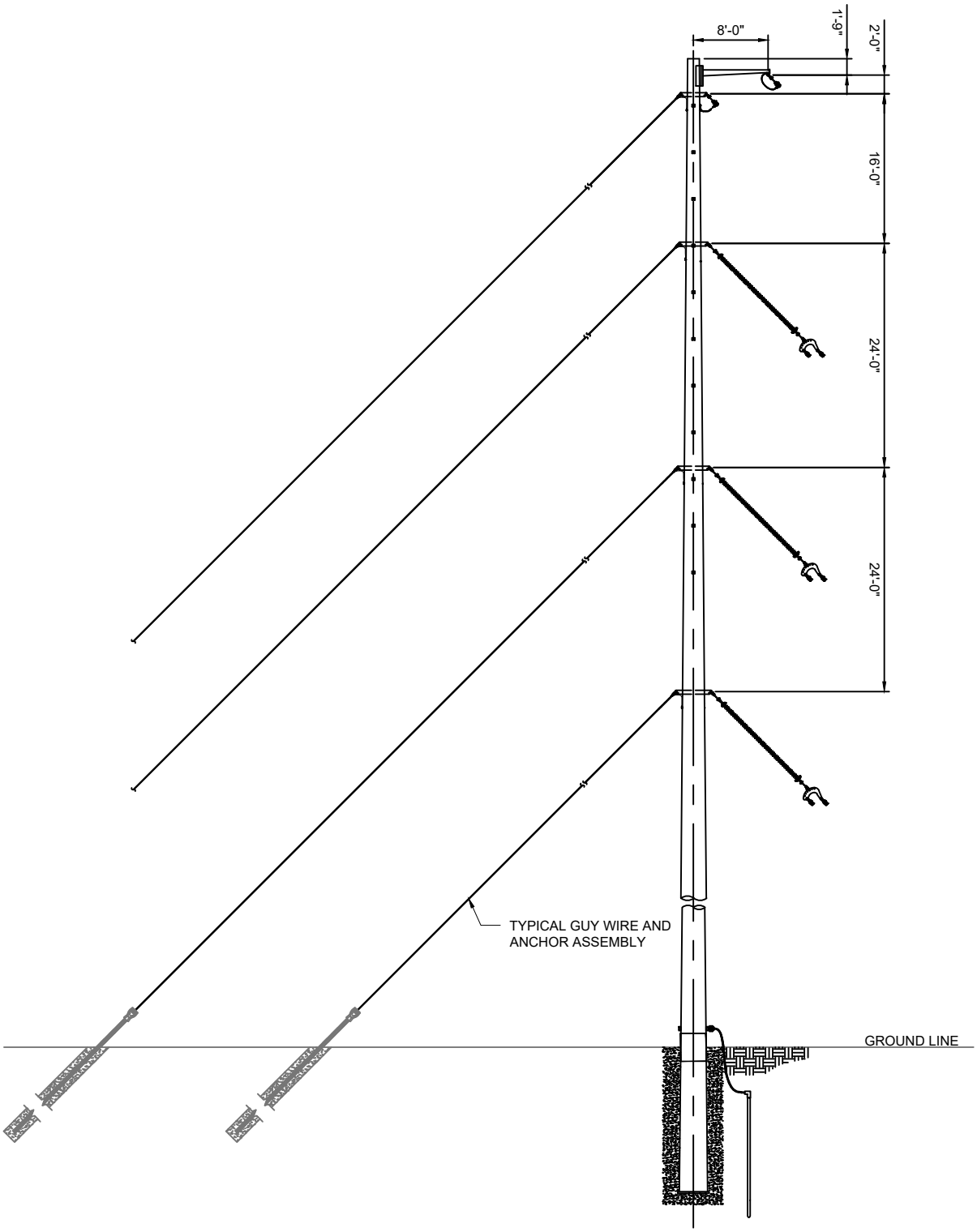

NOTES:
1. DIMENSIONS AND GENERAL CONFIGURATION SHOWN ARE BASED ON PRELIMINARY DESIGN INFORMATION AND ARE SUBJECT TO MINOR VARIATIONS IF REQUIRED DURING DETAILED DESIGN.

Figure 11: Typical Structure Layout Monopole Guyed Medium Running Angle

no.	date	by	ckd	description
B	6/1/18	MSP	JPC	ISSUED FOR ND PSC APPLICATION
A	11/14/17	MSP	JPC	ISSUED FOR REVIEW

BURNS McDONNELL
9400 WARD PARKWAY, KANSAS CITY, MO 64114

PROJECT 99793

date	detailed
11/14/2017	M. PEPICH
designed	checked
M. PEPICH	A. OVERSCHMIDT

BURKE COUNTY WIND, LLC
700 UNIVERSE BLVD.
JUNO BEACH, FL 33408

BURKE COUNTY 345kV T/L PROJECT
EXHIBIT DRAWING
TYPICAL STRUCTURE LAYOUT
MONOPOLE GUYED MEDIUM RUNNING ANGLE

drawing	sheet	rev.
BC1-00947	1	B

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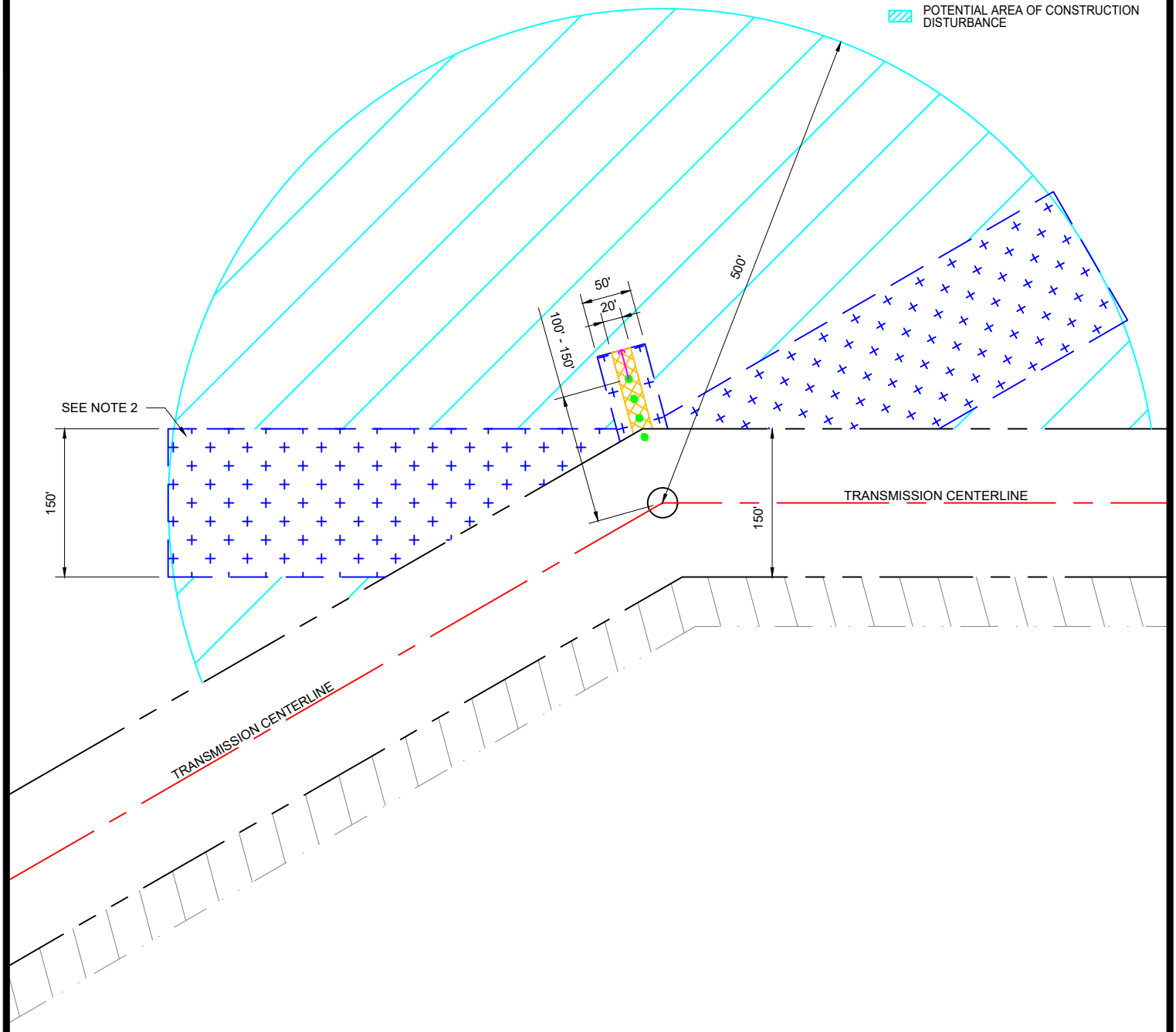

NOTES:
1. DIMENSIONS AND GENERAL CONFIGURATION SHOWN ARE BASED ON PRELIMINARY DESIGN INFORMATION AND ARE SUBJECT TO MINOR VARIATIONS IF REQUIRED DURING DETAILED DESIGN.
2. IF RUNNING ANGLE STRUCTURE IS LOCATED NEAR A ROAD SUCH THAT THE TEMPORARY CONSTRUCTION EASEMENT OVERLAPS THE ROAD ROW, THE TOTAL LENGTH OF THE EASEMENT MAY NEED TO INCREASE TO ALLOW WORK CREWS TO WORK ON THE OPPOSITE SIDE OF THE ROAD.

Figure 12: Guy Easement Exhibit Single Circuit Running Angle Structure

no.	date	by	ckd	description
A	6/1/18	MSP	ANO	ISSUED FOR ND PSC APPLICATION

BURNS McDONNELL
9400 WARD PARKWAY, KANSAS CITY, MO 64114

PROJECT 99793

date	detailed
6/1/2018	M. PEPICH
designed	checked
M. PEPICH	A. OVERSCHMIDT

BURKE COUNTY WIND, LLC
700 UNIVERSE BLVD.
JUNO BEACH, FL 33408

BURKE COUNTY 345kV T/L PROJECT
GUY EASEMENT EXHIBIT
SINGLE CIRCUIT RUNNING ANGLE STRUCTURE

drawing	sheet	rev.
BC1-00931	1	A

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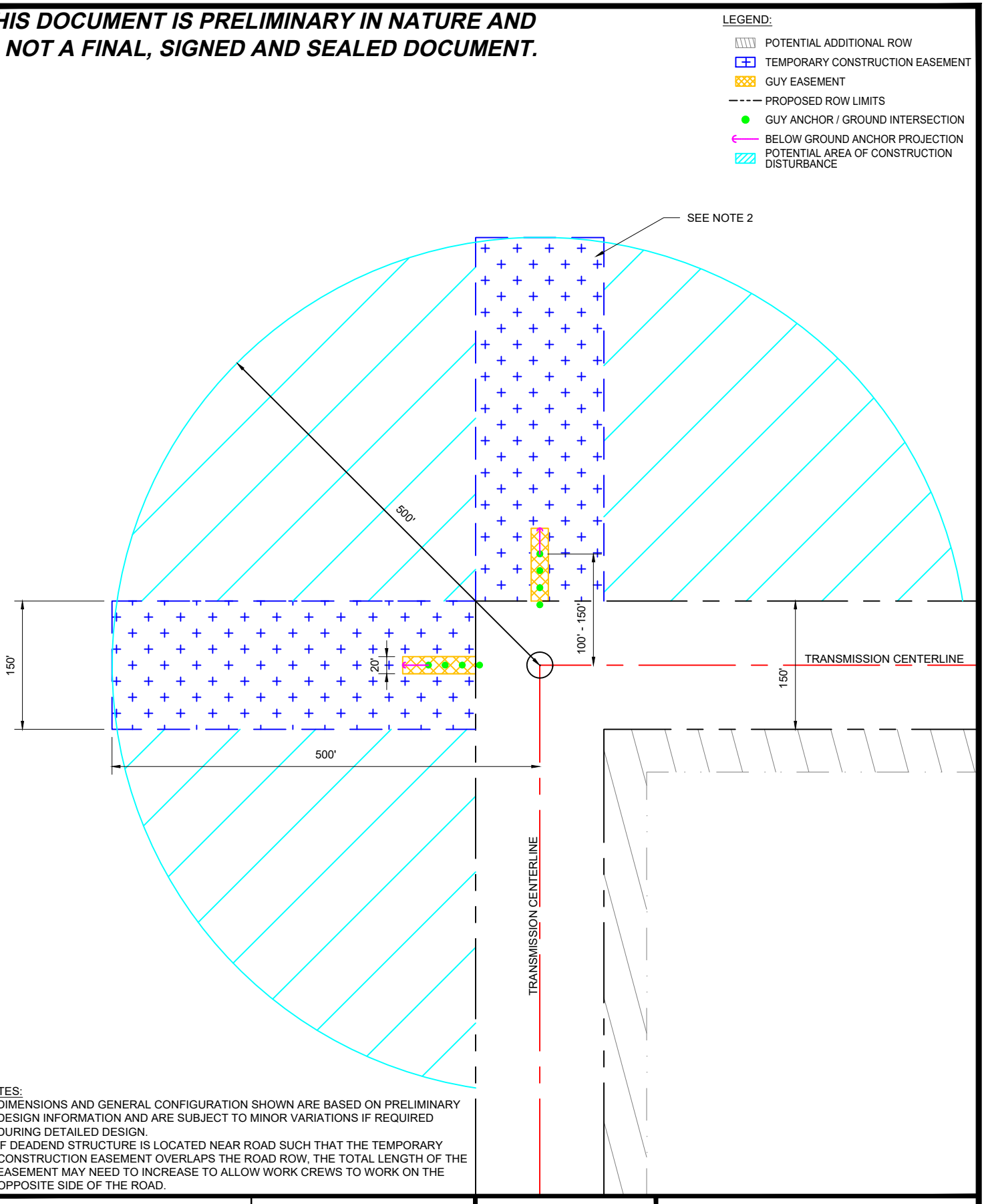

NOTES:
1. DIMENSIONS AND GENERAL CONFIGURATION SHOWN ARE BASED ON PRELIMINARY DESIGN INFORMATION AND ARE SUBJECT TO MINOR VARIATIONS IF REQUIRED DURING DETAILED DESIGN.
2. IF DEADEND STRUCTURE IS LOCATED NEAR ROAD SUCH THAT THE TEMPORARY CONSTRUCTION EASEMENT OVERLAPS THE ROAD ROW, THE TOTAL LENGTH OF THE EASEMENT MAY NEED TO INCREASE TO ALLOW WORK CREWS TO WORK ON THE OPPOSITE SIDE OF THE ROAD.

Figure 13: Guy Easement Exhibit Single Circuit Deadend Structure

no.	date	by	ckd	description
A	6/1/18	MSP	ANO	ISSUED FOR ND PSC APPLICATION

BURNS McDONNELL
9400 WARD PARKWAY, KANSAS CITY, MO 64114

PROJECT 99793

date	detailed
6/1/2018	M. PEPICH
designed	checked
M. PEPICH	A. OVERSCHMIDT

BURKE COUNTY WIND, LLC
700 UNIVERSE BLVD.
JUNO BEACH, FL 33408

BURKE COUNTY 345kV T/L PROJECT
GUY EASEMENT EXHIBIT
SINGLE CIRCUIT DEADEND STRUCTURE

drawing	sheet	rev.
BC1-00931	2	A

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Appendix A

Excerpts of NextEra's Energy, Inc.'s 2017 Corporate Responsibility Report

2017 | CORPORATE RESPONSIBILITY EXECUTIVE DIGEST

CORPORATE PROFILE





NEXTera® ENERGY

INVESTING IN AMERICA'S ENERGY INFRASTRUCTURE SUSTAINABLY AND RESPONSIBLY






Jim Robo

Our Vision

Be North America's Leader in the Generation and Delivery of Clean Energy

Our Values

We Are Committed to Excellence
We Do the Right Thing
We Treat People with Respect

NYSE Ticker Symbol: NEE

Recognitions

- Most Admired Companies (Fortune magazine) – No. 1 in electric & gas utilities industry – 10 times, incl. 2017
- A World's Most Ethical Company® (Ethisphere Institute) – 10 times, incl. 2017
- No. 1 Green Utility in U.S. and No. 4 in the world (EI Energy Intelligence)
- Florida Employer Support of the Guard and Reserves "Above and Beyond Award" – three times, incl. 2016
- A Fortune 200 company; included in S&P 100 Index

At a Glance (2016)

~14,700 employees	~$2.9 billion in net income
Operations in 30 U.S. states, four Canadian provinces	~$90 billion in total assets
~$16.2 billion in operating revenue	~45,900 megawatts (MW) in total generation capacity

Data in At A Glance is as of Dec. 31, 2016.

Cautionary statements and risk factors that may affect future results can be found on the inside back cover of this report.

To view our complete Corporate Responsibility Report, visit **NextEraEnergy.com/CRR**.

As our nation and our world continue to grow and change, we at NextEra Energy remain committed to doing so sustainably.

We're one of America's largest infrastructure developers, and by investing in infrastructure we're creating a more sustainable world. We've invested more than $75 billion across the U.S. since 2004, and we plan to invest billions more through 2020. This new infrastructure includes strengthening power lines, as well as new natural gas-fired generation in Florida. It includes a multistate natural gas pipeline in the Southeast and another in the Mid-Atlantic. And, it includes more than a thousand wind turbines and millions of solar panels across America.

Our investments in infrastructure create significant benefits for our stakeholders:

- **For our environment: NextEra Energy and our affiliates generate more energy from the wind and sun than any other company in the world. We now own and operate approximately 16 percent of the U.S. wind capacity and roughly 11 percent of the U.S. universal solar capacity, both more than anyone else.**
- **For our customers: At our regulated electric utility, Florida Power & Light Company, we continue to deliver high reliability, award-winning customer service, a clean emissions profile and low bills to our nearly 5 million customers.**
- **For our communities: Our investments across North America create jobs and economic opportunity, including in many rural communities, and our tax payments provide funding for schools, emergency services and other local needs. Our employees logged more than 85,000 volunteer hours in 2016.**
- **For our shareholders: We have delivered higher total shareholder return than 71 percent of the companies in the S&P 500 Index over the last 10 years. We have also outperformed our peer utility companies in total shareholder return over the last five years, seven years and 10 years.**

Investing in infrastructure is how NextEra Energy helps make our country and our world more sustainable and more successful. Our team works hard to advance that vision every day. We salute every person, company, school, supplier, government agency and charitable organization that has a similar passion for sustainability, and we appreciate the opportunity to work together to create a more sustainable world.

You can find more details on our sustainability performance throughout this report and on our company websites, including NextEraEnergy.com, FPL.com and NextEraEnergyResources.com.

Sincerely,



Jim Robo
Chairman and Chief Executive Officer

Floridians benefit from clean, emissions-free, U.S.-produced solar energy generated at FPL's Manatee Solar Energy Center in Parrish, Florida.

Respecting Our Environment

- NextEra Energy's emissions rates of carbon dioxide (CO_2), sulfur dioxide (SO_2) and nitrogen oxide (NOx) are substantially better than the U.S. electric sector averages.
- We continue to be the world's largest generator of renewable energy from the wind and the sun.
- Nearly 99 percent of the water we use is returned to its original source.
- We are committed to interacting with nature in a positive manner and have developed wildlife programs to protect a number of species and their habitats.

IN 2016 ALONE, NEARLY 64 MILLION TONS OF CO_2 WERE AVOIDED THANKS TO NEXTERA ENERGY'S EMISSIONS-FREE WIND, SOLAR AND NUCLEAR POWER GENERATION.



The environmental attributes of NextEra Energy's electric generation facilities, such as renewable energy credits, emissions reductions, offsets, allowances, and the avoided emission of greenhouse gas pollutants, have been or likely will be sold or transferred to third parties, who are solely entitled to the reporting rights to any federal, state, foreign or voluntary emissions trading program and to ownership of such environmental attributes.

To view our complete Corporate Responsibility Report, visit **NextEraEnergy.com/CRR**.

OUR EMISSIONS RATES ARE SUBSTANTIALLY BETTER THAN THE U.S. ELECTRIC SECTOR AVERAGES

53% LOWER CO_2

94% LOWER SO_2

74% LOWER NOx

Kurtis Hill, a member of the National Guard and a wind technician with NextEra Energy Resources, uses an iPad® to plan and execute work at the Peetz Table Wind Energy Center in Logan County, Colorado.

Outstanding Customer Value

- Our customers range from homes and businesses to utilities, retail electricity providers, power cooperatives, municipalities and, increasingly, individual companies committed to renewable and sustainable energy.
- In 2017, FPL was recognized as one of the most trusted U.S. electric utilities by Market Strategies International. We're committed to doing the right thing for our customers, and we challenge ourselves each and every day to enhance the service we provide our customers.
- The investments we make in our nation's electric infrastructure provide these customers with affordable, reliable and clean energy.
- At FPL, our typical residential customer bill is lower than it was 10 years ago.

care to share

Since 1994, the Care To Share® program raised more than

$22.5 million

helping 89,000 families

To view our complete Corporate Responsibility Report, visit **NextEraEnergy.com/CRR**.



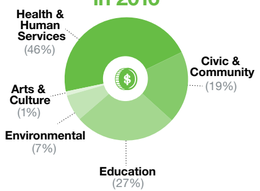
These FPL employees and thousands of their colleagues are working daily to provide affordable, reliable and clean energy to Floridians.

FPL customers can discover ways to save money by visiting **FPL.COM/ENERGYDASHBOARD**

Sustaining Our Communities

- As part of our signature Power to Care volunteer program, our employee volunteers contributed more than 85,000 hours in 2016 to our communities through company-sponsored projects and personal volunteer time.
- To spark student interest in science, technology, engineering and math (STEM), we sponsor more than 70 robotics teams or clubs at all grade levels, as well as science shows, solar education stations and other programs that use real-life applications to motivate our future workforce.
- Our employees and company contributed $15 million in 2016 to support initiatives that contribute to the well-being of our communities.

Charitable Giving in 2016



To view our complete Corporate Responsibility Report, visit **NextEraEnergy.com/CRR**.

NextEra Energy employee volunteers working with Whole Foods® Market packed hurricane kits to benefit patrons of Meals on Wheels.

In 2016, our employees

Raised more than $**3.7 million** for the community

Donated $**143,000** worth of **Dollars for Doers** grants

Volunteered **85,000** hours of service

Logged **22**% more service hours than in 2015

Expanded CEO Volunteer Circle membership to **270** employees

Investing in Our Team

- Our 2016 safety performance was 63 percent better than 10 years ago.
- Through our NextEra University and other venues, our employees spent approximately 1 million hours in 2016 growing their skills, completing 850,000 individual training sessions.
- The NextEra Health & Well-Being program provides information, motivation and on-site facilities to help employees take care of themselves and their families.
- We encourage and value a diverse and inclusive work environment, stressing these values in our recruiting, development, internal knowledge sharing and community involvement.

STRIVING TO BE WELL IN 2016

58	On-site fitness centers
17,000	On-site health center visits
4,000	On-site wellness screenings
5,000	Employees attended nearly 200 health and wellness presentations

To view our complete Corporate Responsibility Report, visit **NextEraEnergy.com/CRR**.



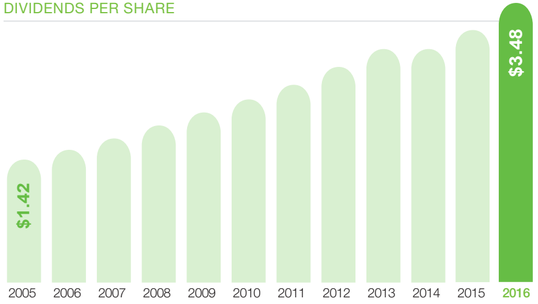
Training in this control room simulator underscores NextEra Energy's commitment to the safe and efficient operation of our nuclear power plant fleet.

850,000
TRAINING SESSIONS COMPLETED

Growing Shareholder Value

- NextEra Energy delivered a 10-year total shareholder return through Dec. 31, 2016, of approximately 206 percent, compared with 96 percent for the S&P 500 Utilities Index and 96 percent for the S&P 500 Index.
- We achieved a compound annual growth rate in dividends per share of approximately 8.5 percent since 2005 through Dec. 31, 2016.
- We continue to maintain strong credit ratings.

DIVIDENDS PER SHARE



To view our complete Corporate Responsibility Report, visit **NextEraEnergy.com/CRR**.



Value creation at NextEra Energy is everyone's business. Here, employees use leading-edge technology to help FPL produce its best-ever service reliability in 2016, ranking among the best in the nation among all investor-owned energy companies.

No. **170**
FORTUNE 500, 2017

TOTAL SHAREHOLDER RETURN
206%
over the last decade, outperforming our peers and the S&P 500
10 years ending 12/31/16

NEXTera ENERGY

NextEra Energy

Building America's Energy Infrastructure

At NextEra Energy, we're investing in infrastructure for this and future generations.

NextEra Energy is an industry leader

- We are among the top 10 companies in the world, across all industries, in: 1) innovation, 2) social responsbility and 3) use of corporate assets (Fortune magazine).
- We generate more electricity than any other electric utility in the U.S.
- We generate more wind and solar energy than any other company in the world.

NextEra Energy is one of America's largest investors in infrastructure

- We made U.S. capital investments of more than $75 billion from 2004 through 2016.
- We are among the largest capital investors in any industry.
- From 2017 through 2020, we plan new infrastructure investment of tens of billions more.

NextEra Energy's infrastructure delivers economic benefits across America

- We employ approximately 14,700 workers in the U.S.
- We paid $580 million in property taxes in 2016, providing communities with much-needed funding for schools, emergency services and other local needs.



Production Technician Troy Munroe is pictured at the Port Everglades Next Generation Clean Energy Center in Florida. This fuel-efficient facility generates clean, affordable and reliable electricity for thousands of residential and business customers.

WE INVESTED MORE THAN $75 BILLION IN U.S. ENERGY INFRASTRUCTURE FROM 2004 THROUGH 2016

NextEra Energy at a Glance (2016)

Operating Revenue	~$16.2 billion
Operations in	30 U.S. states, 4 Canadian provinces
Total Generating Capacity	~45,900 MW
Number of Employees	~14,700

Florida Power & Light Company

Smart, Affordable, Reliable, Clean

With residential bills significantly lower than the national and Florida averages, FPL's focus continues to be on finding smart investments to lower costs, improve reliability and provide clean energy solutions for the benefit of our customers.

Sheep are used at the DeSoto Solar Energy Center as an environmentally responsible method to prevent weeds and slow the growth of grass.

Most Reliable U.S. Electric Utility

As a result of its ongoing investments to enhance service reliability, FPL delivered its best-ever service reliability in 2016, ranking highest among all investor-owned energy companies in Florida and among the best in the nation for the second consecutive year.

Since 2006, FPL has invested nearly $3 billion to strengthen its electric system, resulting in fewer and shorter customer interruptions of service.

Over the next four years, the company plans to make further investments to improve reliability by continuing to strengthen and automate its transmission and distribution system.

Continuing to Modernize Our Fleet

At FPL, we continue to advance our strategy of making smart, long-term investments in clean energy infrastructure, while keeping electric bills low, reliability high, and delivering superior customer value.

Clean Natural Gas

Progress continues on the approximately 1,750-MW Okeechobee Clean Energy Center that is scheduled to begin operation in mid-2019.

We also plan to modernize one of FPL's oldest power plants in Dania Beach, Florida, with a new approximately 1,200-MW high efficiency natural gas plant that is expected to begin serving FPL customers by mid-2022.

Phasing Out Coal Plants

Over the last two years, FPL has bought out existing contracts with two independent coal-fired power plants with the goal of shutting down both plants, saving hundreds of millions of dollars for customers and significantly reducing emissions.

- The first of these, the Cedar Bay plant in Jacksonville, ceased operations in 2016.
- FPL also has significantly reduced operations at the Indiantown plant in Martin County and it is on track to be retired by 2019.

Also, in 2017, FPL reached a preliminary agreement with JEA to close the St. Johns River Power Park, an approximately 1,300-MW coal-fired power plant jointly owned by the two utilities. If finalized, retirement of St. Johns in 2018 is expected to produce $183 million in savings for FPL customers and eliminate 5.6 million tons of carbon dioxide emissions annually.

Advancing Universal Solar Cost-Effectively For All Customers

Our universal solar energy centers generate clean, zero-emissions power for all FPL customers by using the sun for fuel. Universal solar is the fastest and most cost-effective way to bring more solar to more Floridians.

In 2016, we built three, 74.5-MW universal solar energy centers, each capable of generating enough solar to power about 15,000 homes.

We're leading one of the largest solar expansions ever in the eastern United States. Construction is underway at eight 74.5-MW solar energy centers across FPL's service area. Once complete, the eight solar energy centers will produce 600 MW of combined solar capacity – enough to power approximately 120,000 homes. Those eight facilities alone will feature 2.5 million solar panels that could wrap around Florida's coastline more than two times.

BY EARLY 2018,
WE'RE BUILDING
8 NEW SOLAR ENERGY CENTERS
COMPRISED OF
2.5 MILLION SOLAR PANELS

THAT'S ENOUGH TO
WRAP AROUND FLORIDA'S COASTLINE
2X

One of the Largest U.S. Electric Utilities	
Customer Accounts	~5 million
People Served	~10 million
Employees	~8,900
Generating Capacity	~26,000 MW
Substations	~600
Power Lines	~74,800 miles

NextEra Energy Resources, LLC

We're Delivering Clean Energy Across Much of North America

The World Leader in Wind Energy

We produced more wind energy in 2016 than any other company in the world.

Over the last decade, our wind energy capacity has nearly tripled, and today we own and operate nearly 14,000 MW of wind energy.

In 2016 alone, our wind energy portfolio grew by approximately 1,465 MW, adding eight wind energy centers in six states.

For 2017-2018, we expect to bring online an additional 2,400 to 4,100 MW of clean, emissions-free wind energy.

The World Leader in Solar Energy

- NextEra Energy Resources produced more solar energy in 2016 than any other company in the world.
- We produce universal solar energy in Alabama, Arizona, Arkansas, California, Georgia, Minnesota, Nevada, New Jersey, New Mexico and Canada.
- In 2017-2018, we expect to bring online an additional 400 to 1,300 MW of clean, emissions-free solar energy.
- We also continue to tailor solutions for commercial, utility and public power customers to produce clean solar energy from rooftops, parking structures and vacant land. We develop, build, finance and operate these systems to help these customers control costs and meet their renewable energy goals. We have these kind of solar facilities in operation in 9 states across the U.S. and in 2017 have 18 of these solar facilities in development or construction in eight states.

Emissions-Free Nuclear Energy

NextEra Energy Resources operates emissions-free nuclear power plants in Iowa, New Hampshire and Wisconsin. This nuclear fleet as a whole produces enough electricity to power 3 million homes. Each nuclear power plant employs hundreds of highly trained workers. These plants pay millions of dollars in local and state taxes each year, and create billions of dollars in economic activity.

Investing in Natural Gas Infrastructure

We began investing in shale gas production in 2008, and today we have more than $2.7 billion deployed around the country.

We are also executing on our plans for significant investments in natural gas pipelines:

- In Texas, the more than 500 miles of NET Midstream pipelines (seven pipelines);
- In Alabama, Georgia and Florida, the approximately 515-mile Sabal Trail Transmission Pipeline;
- In West Virginia and Virginia, the 303-mile Mountain Valley Pipeline;
- In Florida, the 126-mile Florida Southeast Connection pipeline; and
- In North Dakota, the Flickertail and Wheatland pipelines.

Meeting the Need for Energy Storage

Today's power infrastructure must balance electricity supply and demand instantaneously, while accounting for the intermittency of renewable energy. Customers are looking for energy services and products that provide flexibility and value in areas like grid reliability and peaking power. Our battery energy storage technologies help customers meet these challenges.

- At the end of 2016, we had in operation approximately 90 MW of battery energy storage systems in Arizona, California, Florida, Illinois, Maine, New Jersey and Pennsylvania; and
- Other projects are in development in Arizona, California, New York, Texas, and Ontario, Canada.

Providing Affordable Retail Products and Services

Gexa Energy, our wholly owned subsidiary, is a leading provider of affordable retail energy products and services for residential and commercial customers and is one of the fastest growing retail energy providers in North America.

Today, Gexa serves more than 125,000 residential customers and 5,500 commercial customers in Texas. Outside of Texas, Gexa provides retail energy services under the brand NextEra Energy Services and currently serves more than 500,000 residential customers and 6,000 commercial customers in 14 states in the Midwest and Northeast U.S.

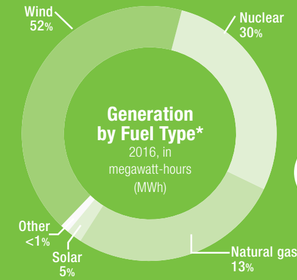
Gexa Energy®



NextEra Energy produced more solar energy in 2016 than any other company in the world. The Roswell-Chaves Solar Energy Center is one of several solar facilities that went into operation in 2016.

NextEra Energy Resources at a Glance (2016)

Operating Revenues	~$4.9 billion
Total Assets	~$41.7 billion
Employees	~5,300



WORLD'S NO. 1 GENERATOR OF WIND AND SOLAR ENERGY

* Includes megawatts associated with noncontrolling interests related to NextEra Energy Partners, LP.

Electricity's Superhighways

NextEra Energy Transmission

It's one thing to generate affordable, reliable and clean energy, but getting it safely and quickly to where it's needed most is equally important. That role falls to large poles and high voltage electric transmission lines that cross urban and rural areas alike. At NextEra Energy, these businesses are making it happen across much of North America.

Business	Location	Scope
FPL	35 counties across Florida	6,926 circuit miles (69kV - 500kV)
NextEra Energy Resources	Alabama, Alberta (Can.), Arizona, California, Colorado, Illinois, Iowa, Kansas, Maine, Massachusetts, Michigan, Minnesota, Missouri, Nebraska, Nevada, New Jersey, New Mexico, New York, North Dakota, Nova Scotia (Can.), Oklahoma, Ontario (Can.), Pennsylvania, Quebec (Can.), South Dakota, Texas, Washington, West Virginia, Wisconsin	1,244 circuit miles (69kV - 345kV)
NextEra Energy Transmission	California, New Hampshire, Ontario (Can.), Texas	624 circuit miles (345kV)

LONEstar — Owner and operator of approximately 330 miles of high-voltage transmission lines and associated equipment in Texas, bringing wind power to Central Texas, strengthening the electric grid and enhancing electric reliability from all sources.

NEW HAMPSHIRE TRANSMISSION — The majority owner of the Seabrook Substation, a 345-kV facility in New Hampshire connecting the Seabrook Nuclear Generating Station and three critical 345-kV transmission lines in New England to the power grid.

NEXTBRIDGE INFRASTRUCTURE — The designated developer of the Ontario East-West Tie line, which will be an approximately 250-mile, 230-kV transmission line between Thunder Bay and Wawa and will connect to the bulk transmission system in Northern Ontario to improve reliability.

NEXTera ENERGY TRANSMISSION WEST — The designated developer for two projects in California, the Suncrest Dynamic Reactive Power Support Project located in San Diego and the Estrella Substation Project located in Paso Robles.

Delivering Unique Solutions

FPL Energy Services, FPL Services, NextEra Energy Solutions, GEXA Energy Solutions

With a strong commitment to excellence and customer satisfaction, FPL Energy Services (FPLES) offers convenient, affordable energy products and services that add value and comfort to our customers' homes and businesses. Our residential portfolio of innovative products and services includes: SurgeShield®, Electronics Surge Protection, Home Electrical Solutions, ElectricShield®, A/C Filter Smart®, installation and service of backup generators, water heater and plumbing protection plans and more.

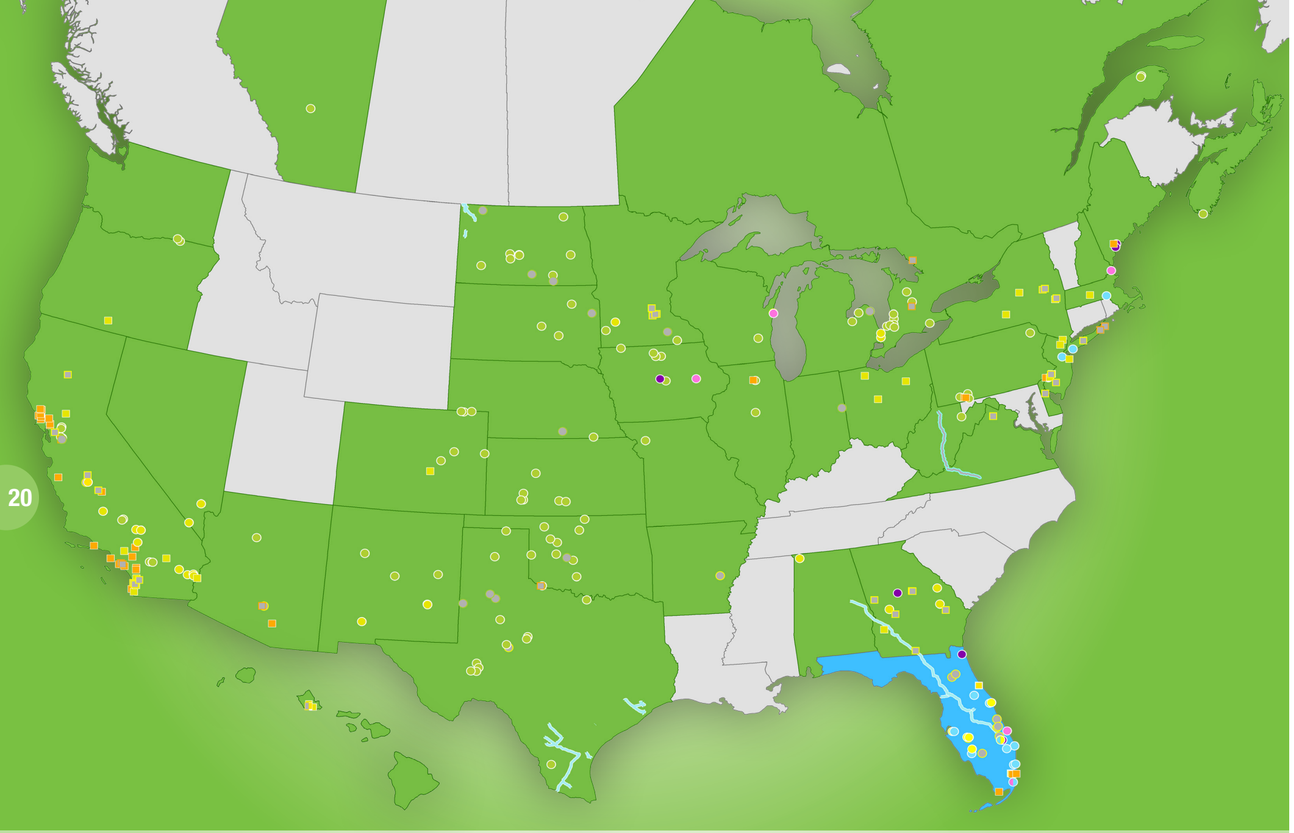
- **Natural gas supply services:** FPLES has been providing a reliable supply of natural gas at competitive rates, coupled with sophisticated industry analysis and custom consulting services in Florida for more than 15 years.
- **Commercial lighting solutions:** This program offers specialized lighting upgrades and retrofits for commercial and industrial customers. We install comprehensive energy efficient solutions that reduce costs, minimize risk and improve customers' bottom lines.
- **Energy savings performance contracting:** We develop, design and construct comprehensive, sustainable energy solutions for governments and businesses in Florida, Texas and other states through our family of Energy Service Companies (ESCOs) – FPLES, FPL Services, NextEra Energy Solutions and Gexa Energy Solutions. To date, our ESCO businesses have helped customers save more than $198 million, using 1.6 million MWh less electricity and 5.3 billion gallons less water. That's enough electricity to power more than 134,630 homes for one year and enough water to fill more than 8,874 Olympic-size swimming pools.

NEXTera ENERGY SOLUTIONS | FPL Services | FPL Energy Services

NextEra Energy Partners, LP

NextEra Energy Partners, LP (NYSE: NEP) is a growth-oriented limited partnership formed by NextEra Energy, Inc. to acquire, manage and own contracted clean energy projects with stable, long-term cash flows. Headquartered in Juno Beach, Florida, NextEra Energy Partners owns interests in wind and solar projects in North America, as well as natural gas infrastructure assets in Texas. The renewable energy projects are fully contracted, use industry-leading technology and are located in regions that are favorable for generating energy from the wind and sun. The seven natural gas pipelines in the portfolio are all strategically located, serving power producers and municipalities in South Texas, processing plants and producers in the Eagle Ford Shale and commercial and industrial customers in the Houston area. The NET Mexico Pipeline, the largest pipeline in the portfolio, provides a critical source of natural gas transportation for low-cost, U.S.-sourced shale gas to Mexico. For more information about NextEra Energy Partners, visit **NextEraEnergyPartners.com**.

NEXTera energy PARTNERS



Providing Clean Energy Across North America

LEGEND:
Wind Natural Gas Nuclear Solar (universal) Solar
Battery Energy Storage Other Development/Construction Pipeline
States and provinces served by: NextEra Energy Resources Florida Power & Light Company

Locations with more than one facility are illustrated with a single dot; locations are those in operation as of February 2017.

CAUTIONARY STATEMENTS AND RISK FACTORS THAT MAY AFFECT FUTURE RESULTS

This report contains "forward-looking statements" within the meaning of the safe harbor provisions of the Private Securities Litigation Reform Act of 1995. Forward-looking statements are not statements of historical facts, but instead represent the current expectations of NextEra Energy, Inc. (together with its subsidiaries, NextEra Energy) regarding future operating results and other future events, many of which, by their nature, are inherently uncertain and outside of NextEra Energy's control. In some cases, you can identify the forward-looking statements by words or phrases such as "will," "may result," "expect," "anticipate," "believe," "intend," "plan," "seek," "potential," "projection," "forecast," "predict," "goals," "target," "outlook," "should," "would" or similar words or expressions. You should not place undue reliance on these forward-looking statements, which are not a guarantee of future performance. The future results of NextEra Energy and its business and financial condition are subject to risks and uncertainties that could cause actual results to differ materially from those expressed or implied in the forward-looking statements, or may require it to limit or eliminate certain operations. These risks and uncertainties include, but are not limited to, the following: effects of extensive regulation of NextEra Energy's business operations; inability of NextEra Energy to recover in a timely manner any significant amount of costs, a return on certain assets or a reasonable return on invested capital through base rates, cost recovery clauses, other regulatory mechanisms or otherwise; impact of political, regulatory and economic factors on regulatory decisions important to NextEra Energy; disallowance of cost recovery based on a finding of imprudent use of derivative instruments; effect of any reductions or modifications to, or elimination of, governmental incentives or policies that support utility scale renewable energy projects or the imposition of additional tax laws, policies or assessments on renewable energy; impact of new or revised laws, regulations, interpretations or other regulatory initiatives on NextEra Energy; capital expenditures, increased operating costs and various liabilities attributable to environmental laws, regulations and other standards applicable to NextEra Energy; effects on NextEra Energy of federal or state laws or regulations mandating new or additional limits on the production of greenhouse gas emissions; exposure of NextEra Energy to significant and increasing compliance costs and substantial monetary penalties and other sanctions as a result of extensive federal regulation of its operations and businesses; effect on NextEra Energy of changes in tax laws, guidance or policies as well as in judgments and estimates used to determine tax-related asset and liability amounts; impact on NextEra Energy of adverse results of litigation; effect on NextEra Energy of failure to proceed with projects under development or inability to complete the construction of (or capital improvements to) electric generation, transmission and distribution facilities, gas infrastructure facilities or other facilities on schedule or within budget; impact on development and operating activities of NextEra Energy resulting from risks related to project siting, financing, construction, permitting, governmental approvals and the negotiation of project development agreements; risks involved in the operation and maintenance of electric generation, transmission and distribution facilities, gas infrastructure facilities and other facilities; effect on NextEra Energy of a lack of growth or slower growth in the number of customers or in customer usage; impact on NextEra Energy of severe weather and other weather conditions; threats of terrorism and catastrophic events that could result from terrorism, cyber attacks or other attempts to disrupt NextEra Energy's business or the businesses of third parties; inability to obtain adequate insurance coverage for protection of NextEra Energy against significant losses and risk that insurance coverage does not provide protection against all significant losses; a prolonged period of low gas and oil prices could impact NextEra Energy's gas infrastructure business and cause NextEra Energy to delay or cancel certain gas infrastructure projects and for certain existing projects to be impaired; risk of increased operating costs resulting from unfavorable supply costs necessary to provide full energy and capacity requirement services; inability or failure to manage properly or hedge effectively the commodity risk within its portfolio; effect of reductions in the liquidity of energy markets on NextEra Energy's ability to manage operational risks; effectiveness of NextEra Energy's risk management tools associated with its hedging and trading procedures to protect against significant losses, including the effect of unforeseen price variances from historical behavior; impact of unavailability or disruption of power transmission or commodity transportation facilities on sale and delivery of power or natural gas; exposure of NextEra Energy to credit and performance risk from customers, hedging counterparties and vendors; failure of counterparties to perform under derivative contracts or of requirement for NextEra Energy to post margin cash collateral under derivative contracts; failure or breach of NextEra Energy's information technology systems; risks to NextEra Energy's retail businesses from compromise of sensitive customer data; losses from volatility in the market values of derivative instruments and limited liquidity in OTC markets; impact of negative publicity; inability to maintain, negotiate or renegotiate acceptable franchise agreements; occurrence of work strikes or stoppages and increasing personnel costs; NextEra Energy's ability to successfully identify, complete and integrate acquisitions, including the effect of increased competition for acquisitions; NextEra Energy Partners, LP's (NEP's) acquisitions may not be completed and, even if completed, NextEra Energy may not realize the anticipated benefits of any acquisitions; environmental, health and financial risks associated with ownership and operation of nuclear generation facilities; liability of NextEra Energy for significant retrospective assessments and/or retrospective insurance premiums in the event of an incident at certain nuclear generation facilities; increased operating and capital expenditures and/or result in reduced revenues at nuclear generation facilities resulting from orders or new regulations of the Nuclear Regulatory Commission; inability to operate any owned nuclear generation units through the end of their respective operating licenses; effect of disruptions, uncertainty or volatility in the credit and capital markets on NextEra Energy's ability to fund its liquidity and capital needs and meet its growth objectives; inability to maintain current credit ratings; impairment of liquidity from inability of credit providers to fund their credit commitments or to maintain their current credit ratings; poor market performance and other economic factors that could affect NextEra Energy's defined benefit pension plan's funded status; poor market performance and other risks to the asset values of nuclear decommissioning funds; changes in market value and other risks to certain of NextEra Energy's investments; effect of inability of NextEra Energy subsidiaries to pay upstream dividends or repay funds to NextEra Energy or of NextEra Energy's performance under guarantees of subsidiary obligations on NextEra Energy's ability to meet its financial obligations and to pay dividends on its common stock; the fact that the amount and timing of dividends payable on NextEra Energy's common stock, as well as the dividend policy approved by NextEra Energy's board of directors from time to time, and changes to that policy, are within the sole discretion of NextEra Energy's board of directors and, if declared and paid, dividends may be in amounts that are less than might be expected by shareholders; NEP's inability to access sources of capital on commercially reasonable terms could have an effect on its ability to consummate future acquisitions and on the value of NextEra Energy's limited partner interest in NextEra Energy Operating Partners, LP; and effects of disruptions, uncertainty or volatility in the credit and capital markets on the market price of NextEra Energy's common stock. NextEra Energy discusses these and other risks and uncertainties in its annual report on Form 10-K for the year ended December 31, 2016 and other SEC filings, and this report should be read in conjunction with such SEC filings made through the date of this report. The forward-looking statements made in this report are made only as of the date of this report and NextEra Energy undertakes no obligation to update any forward-looking statements.

ON THE COVER (clockwise from top left): Babcock Solar Energy Center, Punta Gorda, Florida; High Lonesome Mesa Wind Energy Center, Torrance County, New Mexico; Power Delivery Diagnostic Center, Jupiter, Florida.



NextEra Energy, Inc.
700 Universe Boulevard, Juno Beach, FL 33408

For more information:

NextEraEnergy.com

FPL.com

NextEraEnergyResources.com

Printed: September 2017
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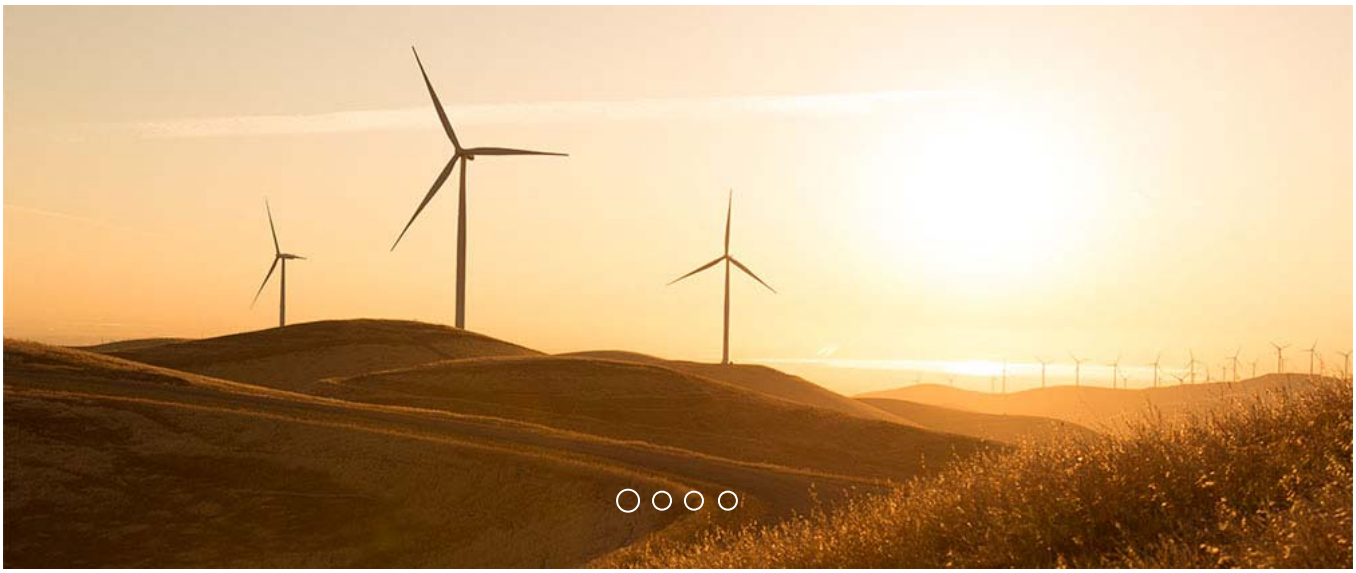
Our Environment

We respect our environment, and we're committed to being an industry leader in its protection and stewardship.



Lowering Emissions

In 2016, we achieved our lowest-ever emissions rates of SO2, NOx and CO2 – rates that were 94%, 74% and 53% lower, respectively, than the average U.S. utility sector.

Environmental Stewardship

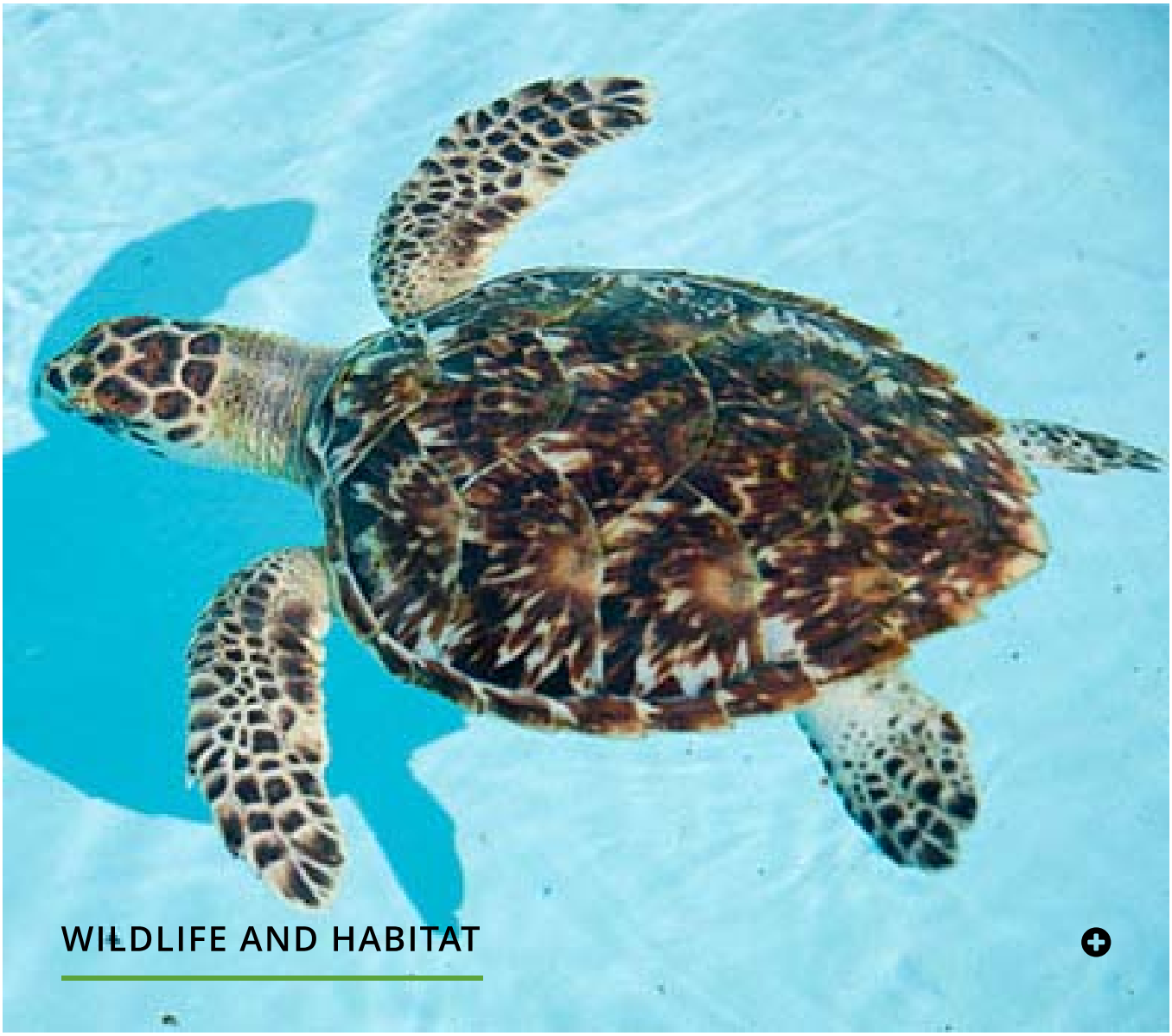
We're committed to being an industry leader in environmental protection and stewardship. Our Environmental Policy (/pdf/env-policy.pdf) establishes our core environmental expectations and provides actionable

guidance for all employees as we strive to foster a culture of environmental excellence and challenge ourselves to continuously improve. Everyone at NextEra Energy understands that protecting the environment is a collective responsibility. It's why our senior executives are actively involved in our environmental accountability, management and stewardship programs that are intended to:

- Design, construct, operate and maintain our facilities in an environmentally sound and responsible manner;
- Prevent pollution, minimize waste and conserve natural resources;
- Avoid, minimize and/or mitigate impacts to habitat and wildlife; and
- Engage local stakeholders and environmental agencies.


RENEWABLE ENERGY


AIR AND WATER


WILDLIFE AND HABITAT



Managing & Mitigating Risk

Environmental risk management and mitigation are key drivers for ensuring safe and sustainable operations.

READ MORE

(/SUSTAINABILITY/ENVIRONMENT/MANAGING-RISK.HTML)

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Appendix B

Public Agency Letter & Responses

Agency Correspondence Letter Template

and Agency List

April 20, 2018

TO: [Mr. or Ms.][First Name][Last Name]
[Title]
[Department]
[Agency]
[Address]
[City],[State][Zip]

FROM: Atwell, LLC

DATE: April 20, 2018

SUBJECT: Information Request for the Proposed Burke County Wind Energy Center and Transmission Line in Burke and Mountrail Counties, North Dakota

Dear [Mr. or Ms.] [Last Name],

Atwell, LLC has been contracted by Burke Wind, LLC to prepare an application for a Certificate of Site Compatibility for the proposed Burke County Wind Energy Center (WEC) and to prepare a separate application for a Certificate of Corridor Compatibility and Route Permit for the proposed transmission line, in accordance with North Dakota Century Code Section 49-22-07. As part of the applications, we are conducting an investigation of the WEC, which is located approximately nine miles southwest of the City of Bowbells in Burke County, North Dakota, and the proposed transmission line, which is approximately four miles east of Tioga, North Dakota. Please refer to the attached **Site Location Map** and **Transmission Line Site Location Map**.

This proposed WEC has a nameplate capacity of up to 300 megawatts (MW) and would consist of a maximum of 111 GE 2.5 wind turbine generators and 12 GE 1.715 wind turbine generators and associated access roads and collection lines. The WEC would interconnect to the electrical grid via an approximately 39-mile-long transmission line from the WEC substation to the point of interconnect. The WEC would include portions of the following townships:

BURKE COUNTY

- **Keller Township**
  T161N, R94W
- **Foothills Township:**
  T161N,R92W
- **Fay Township:**
  T162N, R93W
- **Harmonious Township:**
  T161N, R94W,
- **Leaf Mountain Township:**
  T161N, R93W
- **Kandiyohi Township**
  T159N, R90W
- **Clearly Township**
  T160N, R93W
- **Clayton Township:**
  T161N, R91W
- **Ward Township:**
  T161N, R90W
- **Lucy Township:**
  T160N, R92W
- **Diamond Township:**
  T160N, R91W
- **Roseland Township:**
  T157N, R93W
- **Thorson Township**
  T160N, R94W

The associated transmission line corridor includes the following townships and sections:

BURKE COUNTY

- **Leaf Mountain Township**
  T161N, R93W, Sections 25, 26, 35
- **Cleary Township:**
  T160N, R93W, Sections 4, 9, 10, 15, 22, 26, 27, 34, 35
- **Colville Township:**
  T159N, R93W Sections 3, 4, 8, 9, 17, 20, 29, 32, 33, 34

MOUNTRAIL COUNTY

- **Powers Lake Township:**
  T158N, R93W, Sections 3, 4, 9, 10, 15, 21, 22, 28, 33, 34
- **Sorkness Township:**
  T157N, R93W, Sections 3, 4, 8, 9, 13, 14, 15, 17, 18, 20, 21, 22, 29

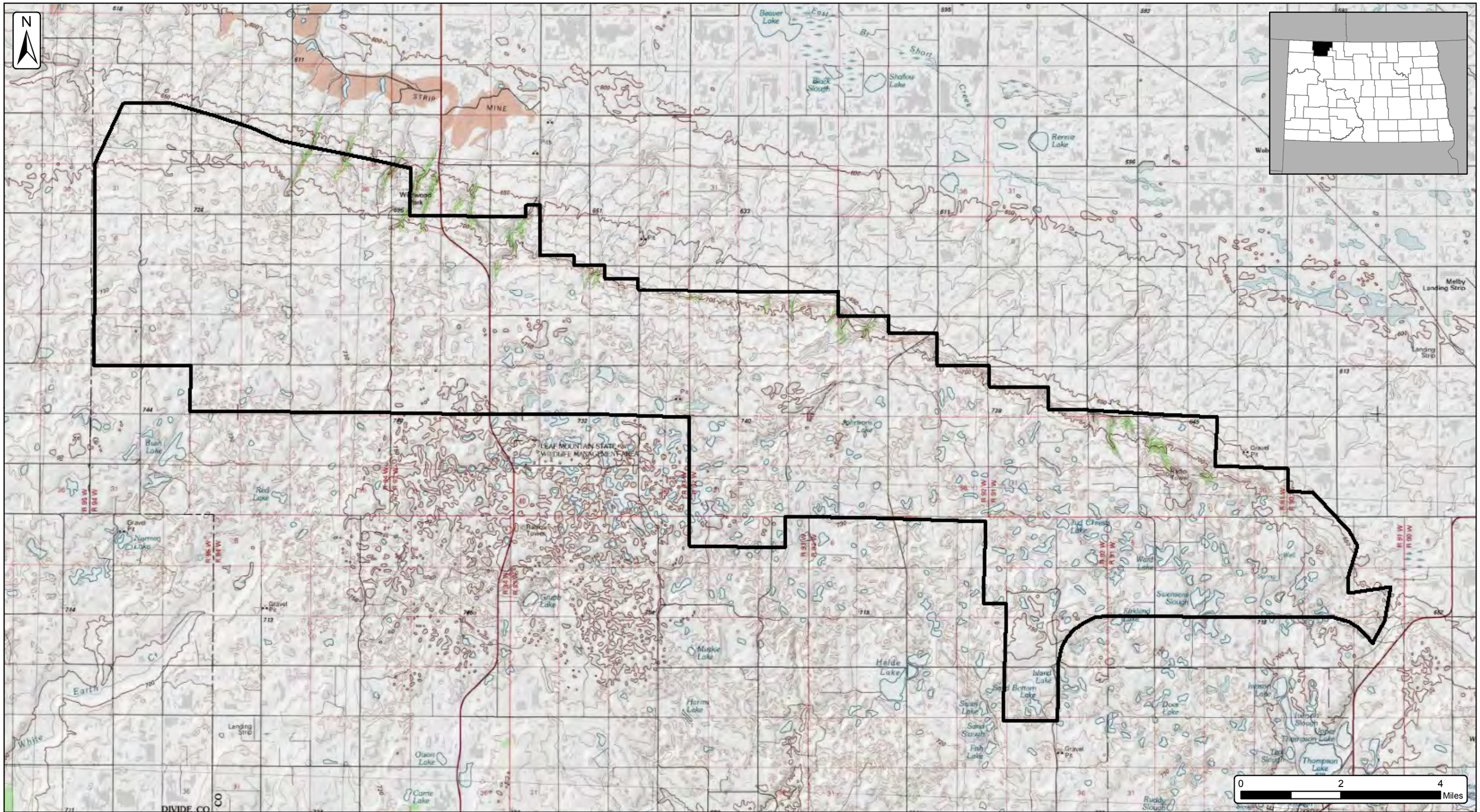
Per Section 69-06-01-05 of the North Dakota Public Service Commission's administrative rules, we are consulting your agency for assistance in identifying concerns or issues within the boundaries of the townships and sections listed above that would influence a decision regarding the use of the land, as well as applicable permits that may be required from your office.

We would appreciate a response by May 15, 2018. Please contact me at 866.850.4200 or email at ejahnke@atwell-group.com if you have any questions. Thank you for your assistance.

Sincerely,

Ethan Jahnke
Project Manager
Environmental Services

Enclosures: Site Location Map
Burke Wind Transmission Line Location Map



Burke County Wind Energy Center

Site Location Map

Burke County, North Dakota

Date: 4/11/2018

Client:

Burke Wind, LLC

Atwell, LLC Project:16000947

Wind Resource Area
01/25/2017 (±68,719 Ac.)

BUSINESS CONFIDENTIAL
NOT FOR DISTRIBUTION

SOURCE: USGS TOPO QUADRANGLES
COLUMBUS SW (1949), BUSH LAKE 1974), GRAND VIEW (1974), GRUBB LAKE (1974), HELDE LAKE (1974), THOMPSON LAKE (1974), COLUMBUS SE (1981), BEAVER LAKE (1948), RENNIE LAKE (1949), WOBURN (1948), COTEAU (1948), VANVILLE NE (1950)

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.

Burke County Wind Energy Center

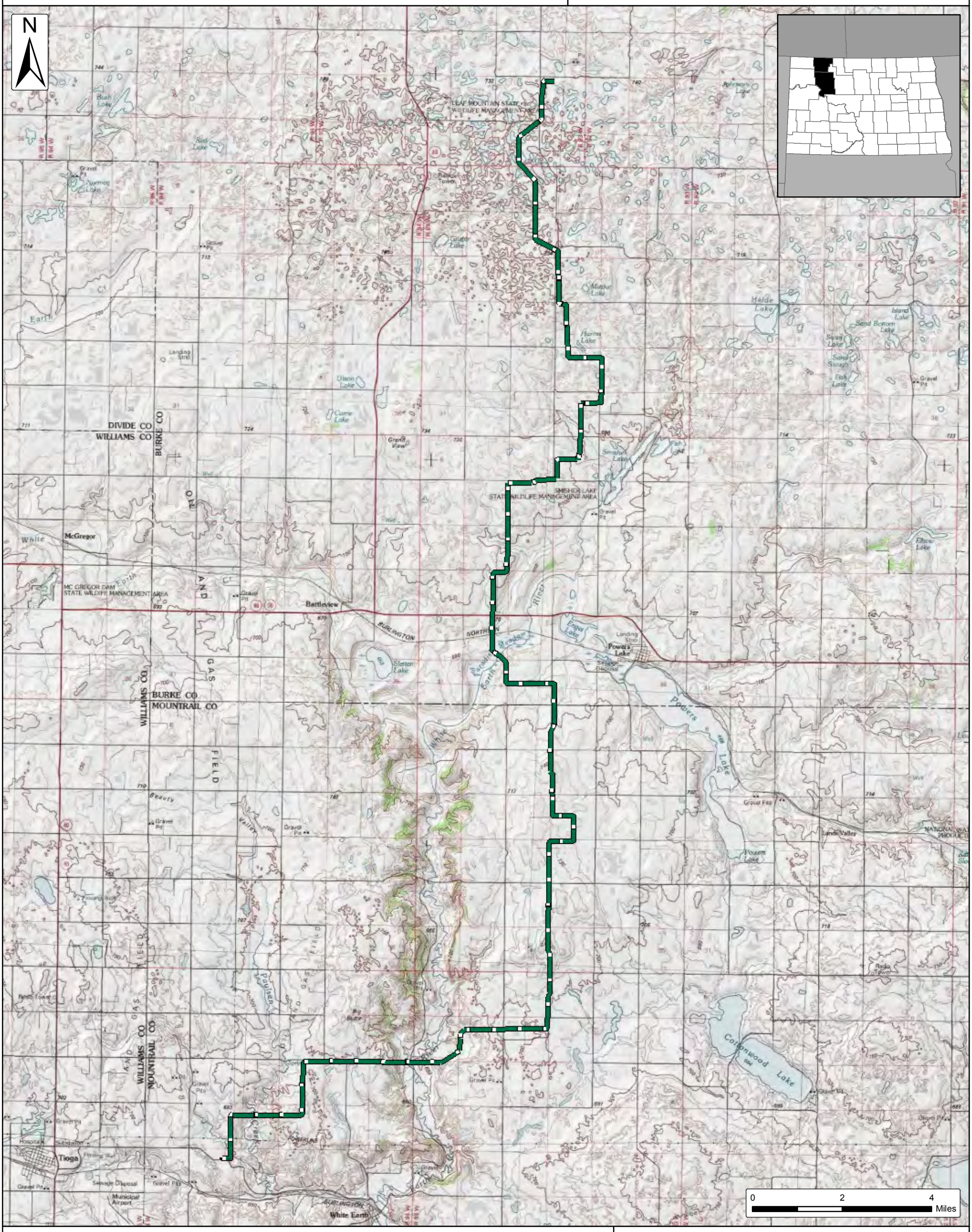
Transmission Line Site Location Map

Burke County and Mountrail County, North Dakota

Client:
Burke Wind, LLC

Issue Date:
4/11/2018

Atwell, LLC Project:
16000947



Transmission Line (04/02/2018)

CONTAINS PRIVILEDGED AND CONFIDENTIAL INFORMATION- NOT FOR PUBLIC DISCLOSURE

SOURCE: USGS TOPO QUADS
GRAND VIEW (1974), GRUBB LAKE (1974), HELDE LAKE (1974), BATTLEVIEW (1978), POWERS LAKE (1977), LUNDS VALLEY (1978), TIOGA (1979), WHITE EARTH (1969), ROSS NW (1969), COTTONWOOD LAKE (1981), COLUMBUS SE (1981), BEAVER LAKE (1948), RENNIE LAKE (1949)

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.

Mr. or Ms.	First Name	Last Name	Title	Agency	Department/District	Address	City	State	Zip
	Mylynn	Tufte	State Health Officer	North Dakota Department of Health		600 East Boulevard Avenue	Bismarck	ND	58505-0200
Ms.	Jodi A.	Smith	Commissioner	North Dakota Department of Trust Lands		1707 North 9th Street, PO Box 5523	Bismarck	ND	58506-5523
Mr.	Tom	Sorel	Director	North Dakota Department of Transportation		608 East Boulevard Avenue	Bismarck	ND	58505-0700
Mr.	Doug	Goehring	Agriculture Commissioner	North Dakota Department of Agriculture		600 East Boulevard Avenue, Department 602	Bismarck	ND	58505-0020
Mr.	Edward C.	Murphy	State Geologist	North Dakota Geological Survey		600 East Boulevard Avenue	Bismarck	ND	58505-0840
Ms.	Claudia J.	Berg	Director	State Historical Society of North Dakota		612 East Boulevard Avenue	Bismarck	ND	58505
Mr.	Garland	Erbele	State Engineer	North Dakota State Water Commission		900 East Boulevard, Dept. 770	Bismarck	ND	58505-0850
Mr.	Kyle C.	Wanner	Director	North Dakota Aeronautics Commission		2301 University Drive, Building 22, PO Box 5020	Bismarck	ND	58502-5020
Ms.	Melissa	Baker	Director	North Dakota Parks and Recreation Department		1600 E. Century Ave., Suite 3 PO Box 5594	Bismarck	ND	58506-5594
Ms.	Susan	Quinnell	Review and Compliance Coordinator	ND State Historic Preservation Office	State Historical Society of North Dakota	612 East Boulevard Avenue	Bismarck	ND	58505
Mr.	Thomas	Wheeler	District 1 Director	North Dakota Township Officers Association		6561-115 Ave. NW	Ray	ND	58849-9411
Mr.	Wayne	Stenehjem	Attorney General			600 East Boulevard Avenue, Department 125	Bismarck	ND	58505-0040
Mr.	Christopher	Jones	Executive Director	Department of Human Services		600 East Boulevard Avenue, Dept 325	Bismarck	ND	58505-0250
Ms.	Michelle	Kommer	Commissioner of Labor	North Dakota Department of Labor and Human Rights		600 East Boulevard Ave Dept 406	Bismarck	ND	58505-0340
Mr.	Mark	Wagner	Director	North Dakota Department of Career and Technical Education		600 East Boulevard Avenue, Dept. 270	Bismarck	ND	58505-0610

Mr.	Jay	Schuler	Commissioner	Department of Commerce		1600 E. Century Ave., Suite 2	Bismarck	ND	58503
Ms.	Karlene	Fine		North Dakota Industrial Commission		600 E Boulevard Ave. Dept. 405	Bismarck	ND	58505-0840
Mr.	Doug	Burgum	Govenor	Office of Governor, State of North Dakota		600 E Boulevard Ave	Bismarck	ND	58505
	Naike	Doglod	Equal Opportunity Officer	Job Service of North Dakota		PO Box 5507	Bismarck	ND	58506-5507
Mr.	Dennis	Renner	Chair	Soil Conservation Committee		2718 Gateway Ave., Suite 304	Bismarck	ND	58503
Mr.	James N.	Mattis	Secretary of Defense	United States Department of Defense		1400 Defense Pentagon	Washington	DC	20301-1400
Ms.	Shari	Lares	Environmental Protection Specialist	Federal Aviation Administration		2301 University Drive, Building 23B	Bismarck	ND	58504
Mr.	John	Weeda	Director	North Dakota Transmission Authority		600 E. BOULEVARD AVE. DEPT. 405	Bismarck	ND	58505-0840
Mr.	Justin	Kringstad		North Dakota Pipeline Authority		600 E. Boulevard Ave. Dept. 405	Bismarck	ND	58505-0840
Ms.	Debbie	Kuryn	Chairman	Burke County Commissioners		103 Main St.	Bowbells	ND	58721
Mr.	Allen	Ryberg		Burke County Commissioners		103 Main St.	Bowbells	ND	58721
Mr.	Jarret	Van Berkom		Burke County Commissioners		103 Main St.	Bowbells	ND	58721

Department of Defense

From: Lignowski, Michael J CTR (US)
To: Ethan Jahnke
Subject: Burke County Wind Energy Center and Transmission Line in Burke and Mountrail Counties, North Dakota
Date: Tuesday, May 01, 2018 1:44:26 PM

Mr. Jahnke

We were recently notified of correspondence sent to the Secretary of Defense regarding the Burke County Wind Energy Center and Transmission Line in Burke and Mountrail Counties, North Dakota. We at the Military Aviation and Installation Siting Clearinghouse (DoD Siting Clearinghouse) handle energy siting and compatibility for the Office of the Secretary of Defense and work in coordination with the Military Departments and other entities to ensure minimal impacts to military readiness and training. The Clearinghouse acts as a single point of contact for Federal agencies; State, Indian tribal, and local governments; developers; and landowners, and provides a central forum for internal staffing. Our systematic process is defined in Part 211 of Title 32 of the Code of Federal Regulations. For a better understanding of The Clearinghouse and what we do please visit our website at https://www.acq.osd.mil/dodsc/ and please ensure all future correspondence is provided to us.

Thank you,

Michael Lignowski
Military Aviation & Installation Assurance Siting Clearinghouse
Office# 571-372-6853
michael.j.lignowski.ctr@mail.mil

From: Sample, Steven J CIV OSD OUSD ATL (US)
To: Ethan Jahnke
Cc: Miller, Brin A CTR (US); Lignowski, Michael J CTR (US)
Subject: Burke Co Wind Energy Center Review (UNCLASSIFIED)
Date: Thursday, May 31, 2018 10:49:17 AM

CLASSIFICATION: UNCLASSIFIED

Mr. Jahnke, the Department of Defense has received your request for an informal review of your energy project in North Dakota. Our review process includes an assessment by all military stakeholders and will be complete in a few weeks. We will send the completed assessment to this email address

https://www.acq.osd.mil/dodsc/

In the future, you'll received a quicker response if you submit through the standard process on our website rather than send to the Secretary of Defense. Please contact me if you have any questions.

V/r,

Steve Sample
Miltitary Aviation and Installation Assurance Siting Clearinghouse
Office of the Assistant Secretary of Defense (Energy, Installations & Environment)
703-571-0076

Email: steven.j.sample4.civ@mail.mil

CLASSIFICATION: UNCLASSIFIED

OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE
3400 DEFENSE PENTAGON
WASHINGTON, DC 20301-3400

ENERGY,
INSTALLATIONS
AND ENVIRONMENT

July 11, 2018

Ethan Jahnke
Project Manager
Atwell, LLC
143 Union Boulevard, Suite 700
Lakewood, CO 80228

Dear Mr. Jahnke,

As requested, the Military Aviation and Installation Assurance Siting Clearinghouse coordinated within DoD an informal review of the Burke County Wind Energy Center and Transmission Line. The results of our review indicated that the dual wind and transmission project located in Burke and Mountrail Counties, ND, as proposed, may have an impact on military operations conducted in the area.

The proposed siting location of the dual wind and transmission project may impact US Air Force low-level flight training. Please contact Mr. Jamie Flanders at jamie.a.flanders.civ@mail.mil to discuss this proposal.

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

OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE
3400 DEFENSE PENTAGON
WASHINGTON, DC 20301-3400

ENERGY,
INSTALLATIONS
AND ENVIRONMENT

July 26, 2018

Ethan Jahnke
Project Manager
Atwell, LLC
143 Union Boulevard, Suite 700
Lakewood, CO 80228

Dear Mr. Jahnke,

As requested, the Military Aviation and Installation Assurance Siting Clearinghouse coordinated within DoD an informal review of the Burke County Wind Energy Center and Transmission Line Project located in Burke and Mountrail Counties, ND.

Our initial review indicated potential impacts to US Air Force operations. After subsequent discussions with you, we have conducted further analysis and determined that the Burke County Wind Energy Center and Transmission Line Project will have minimal impact on military operations.

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

North Dakota Department of Health

NORTH DAKOTA
DEPARTMENT *of* HEALTH

ENVIRONMENTAL HEALTH SECTION
Gold Seal Center, 918 E. Divide Ave.
Bismarck, ND 58501-1947
701.328.5200 (fax)
www.ndhealth.gov

May 7, 2018

Mr. Ethan Jahnke
Atwell
143 Union Blvd., Suite 700
Lakewood, CO 80228

Re: Burke County Wind Energy Center and Transmission Line
Burke and Mountrail Counties in North Dakota

Dear Mr. Jahnke:

This department has reviewed the information concerning the above-referenced project submitted under date of April 20, 2018, with respect to possible environmental impacts.

This department believes that environmental impacts from the proposed construction will be minor and can be controlled by proper construction methods. With respect to construction, we have the following comments:

1. Care is to be taken during construction activity near any water of the state to minimize adverse effects on a water body. This includes minimal disturbance of stream beds and banks to prevent excess siltation, and the replacement and revegetation of any disturbed area as soon as possible after work has been completed. Caution must also be taken to prevent spills of oil and grease that may reach the receiving water from equipment maintenance, and/or the handling of fuels on the site. Guidelines for minimizing degradation to waterways during construction are attached.

2. Projects disturbing one or more acres are required to have a permit to discharge storm water runoff until the site is stabilized by the reestablishment of vegetation or other permanent cover. Further information on the storm water permit may be obtained from the Department's website or by calling the Division of Water Quality (701-328-5210). Also, cities may impose additional requirements and/or specific best management practices for construction affecting their storm drainage system. Check with the local officials to be sure any local storm water management considerations are addressed.

3. The proposed construction project overlies the White Earth and Shell Creek-White Lake glacial drift aquifers, both of which are considered sensitive groundwater areas. The project also overlies the Lucy, Clayton, Foothills, and Foothills South glacial drift aquifers. Several domestic and stock water supply wells lie in close proximity to the proposed project location(s). 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.

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., Chief
Environmental Health Section

LDG:cc
Attach.

NORTH DAKOTA
DEPARTMENT of HEALTH

ENVIRONMENTAL HEALTH SECTION
Gold Seal Center, 918 E. Divide Ave.
Bismarck, ND 58501-1947
701.328.5200 (fax)
www.ndhealth.gov

Construction and Environmental Disturbance Requirements

These represent the minimum requirements of the North Dakota Department of Health. They ensure that minimal environmental degradation occurs as a result of construction or related work which has the potential to affect the waters of the State of North Dakota. All projects will be designed and implemented to restrict the losses or disturbances of soil, vegetative cover, and pollutants (chemical or biological) from a site.

Soils

Prevent the erosion of exposed soil surfaces and trapping sediments being transported. Examples include, but are not restricted to, sediment dams or berms, diversion dikes, hay bales as erosion checks, riprap, mesh or burlap blankets to hold soil during construction, and immediately establishing vegetative cover on disturbed areas after construction is completed. Fragile and sensitive areas such as wetlands, riparian zones, delicate flora, or land resources will be protected against compaction, vegetation loss, and unnecessary damage.

Surface Waters

All construction which directly or indirectly impacts aquatic systems will be managed to minimize impacts. All attempts will be made to prevent the contamination of water at construction sites from fuel spillage, lubricants, and chemicals, by following safe storage and handling procedures. Stream bank and stream bed disturbances will be controlled to minimize and/or prevent silt movement, nutrient upsurges, plant dislocation, and any physical, chemical, or biological disruption. The use of pesticides or herbicides in or near these systems is forbidden without approval from this Department.

Fill Material

Any fill material placed below the high water mark must be free of top soils, decomposable materials, and persistent synthetic organic compounds (in toxic concentrations). This includes, but is not limited to, asphalt, tires, treated lumber, and construction debris. The Department may require testing of fill materials. All temporary fills must be removed. Debris and solid wastes will be removed from the site and the impacted areas restored as nearly as possible to the original condition.

North Dakota Department of Transportation

North Dakota Department of Transportation

Thomas K. Sorel
Director

Doug Burgum
Governor

May 14, 2018

Ethan Jahnke
Project Manager
Environmental Services
143 Union Boulevard, Suite 700
Lakewood, CO 80228

PROPOSED BURKE COUNTY WIND ENERGY CENTER AND TRANSMISSION LINE, BURKE AND MOUNTRAIL COUNTIES, NORTH DAKOTA

We have reviewed your April 20, 2018, letter.

This project should have no adverse effect on the North Dakota Department of Transportation (NDDOT) highways.

However, if because of this project any work needs to be done on highway right of way, appropriate permits and risk management documents will need to be obtained from the Department of Transportation District Engineer, Joel Wilt at 701-774-2700.

Robert Fode

ROBERT A. FODE, P.E., DIRECTOR - OFFICE OF PROJECT DEVELOPMENT

57\raf\js
c: Joel Wilt, Williston District Engineer

North Dakota Department of Trust Lands

1707 North 9th Street
PO Box 5523
Bismarck, ND 58506-5523
Phone: (701) 328 – 2800
Fax: (701) 328 – 3650

https://land.nd.gov

DEPARTMENT OF
NDTRUST LANDS
INVESTING FOR EDUCATION

Jodi A. Smith, Commissioner

May 4, 2018

ETHAN JAHNKE
ENVIRONMENTAL SERVICES PROJECT MANAGER
ATWELL
143 UNION BOULEVARD SUTIE 700
LAKEWOOD CO 80228

Re: Information Request for the Proposed Burke County Wind Energy Center and Transmission Line in Burke and Mountrail Counties, North Dakota

Dear Mr. Jahnke:

We are in receipt of your April 20, 2018 letter, regarding a request for information for the proposed Burke Wind Energy Center and proposed transmission line in Burke and Mountrail Counties, North Dakota. There are common schools trust fund surface interests that are managed by the North Dakota Department of Trust Lands, on behalf of the Board of University and School Lands which are included in the Wind Project Area, as shown on the **Site Location Map and Transmission Line Site Location Map**. These surface interests are as follows:

County	*Township*	*Range*	*Section*	*Subdivisions*
Burke	161	91	36	ALL
Burke	161	92	16	ALL
Burke	161	92	36	ALL
Burke	161	93	16	NW4, SW4
Burke	161	94	16	NW4, SW4
Burke	162	94	36	ALL

No common schools trust fund surface interests appear to be included in the Transmission Line Area.

An application for a Wind Farm Easement Agreement was received from Deanna Julsen of NextEra Energy, for the Burke Wind Project in March of 2017. The application remains in pending status until more details are received for this project. Separate applications will need to be submitted for buried electric collection lines for common school trust fund surface interests having no wind tower improvements and for Transmission lines crossing common schools trust fund surface interests.

The surface tracts within the project area will need to be evaluated for inclusion in the wind farm project. Prior to the Board considering a Wind Energy Easement Agreement, an onsite inspection of the trust property is required. The inspection would include review of wind tower locations, associated access road, collection lines, construction crane access paths and transmissions line corridors, as well as the following items which 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, or 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.

Any proposed wind tower locations would be subject to review and approval by the Board of University and School Lands. The Board of University and School Lands will not move forward with the completion of Wind Energy Easement Agreements until site inspection and review has 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

Michael Humann
Surface Division Manager

cc: Clay Cameron
NextEra Energy
700 Universe Blvd
Juno Beach FL, 33408

Tom VonBische
NextEra Energy
7217 41St ST CT N
Oakdale MN, 55128

Deanna Julsen
NextEra Energy
700 Universe Blvd
Juno Beach FL, 33408

North Dakota Game and Fish Department (NDGFD)

From:	Johnson, Sandra K.
To:	Wells, Kimberly
Cc:	Bourke Thomas
Subject:	RE: New data sharing agreement
Date:	Wednesday, January 11, 2017 9:19:19 AM
Attachments:	WC use in ND (map).pdf

Hi Kimberly,

There are no known Bald or Golden Eagle nest sites in Burke County in our database. The closest known Bald Eagle nest is about 5 miles east of the northeast corner of Burke County. I do have a few more recent Ferruginous Hawk nest observations, if you are interested in those. Do you mind sending the shapefile first and then I will query those nests and draft a data sharing agreement?

As far as other data, I'd suggest Bourke Thomas download the Whooping Crane intensity use layer that is publicly available at https://www.sciencebase.gov/catalog/item/56253ce5e4b0fb9a11dd3d2b Portions of eastern and northern Burke County and Divide County are frequently used as stopover sites by Whooping Cranes.

In our discussions Kimberly, I can't recall if we've mentioned the ND State Wildlife Action Plan Focus Areas. These areas are based on extant native vegetation and key biological information that indicate where a maximum number of Species of Conservation Priority may occur. This layer could be used in conjunction with the native prairie and woodland layers we shared with you. Search for "action plan focus areas" here https://apps.nd.gov/hubdataportal/srv/en/main.home
Also see https://gf.nd.gov/wildlife/swap

Thanks,
Sandy

Sandy Johnson
Conservation Biologist
North Dakota Game and Fish Department
100 N. Bismarck Expwy.
Bismarck, ND 58501-5095
Phone: 701-328-6382
sajohnson@nd.gov
http://gf.nd.gov/

-----Original Message-----
From: Wells, Kimberly [mailto:Kimberly.Wells@nexteraenergy.com]
Sent: Friday, January 6, 2017 4:30 PM
To: Johnson, Sandra K. <sajohnson@nd.gov>
Cc: Bourke Thomas <bthomas@atwell-group.com>
Subject: New data sharing agreement

***** CAUTION: This email originated from an outside source. Do not click links or open attachments unless you know they are safe. *****

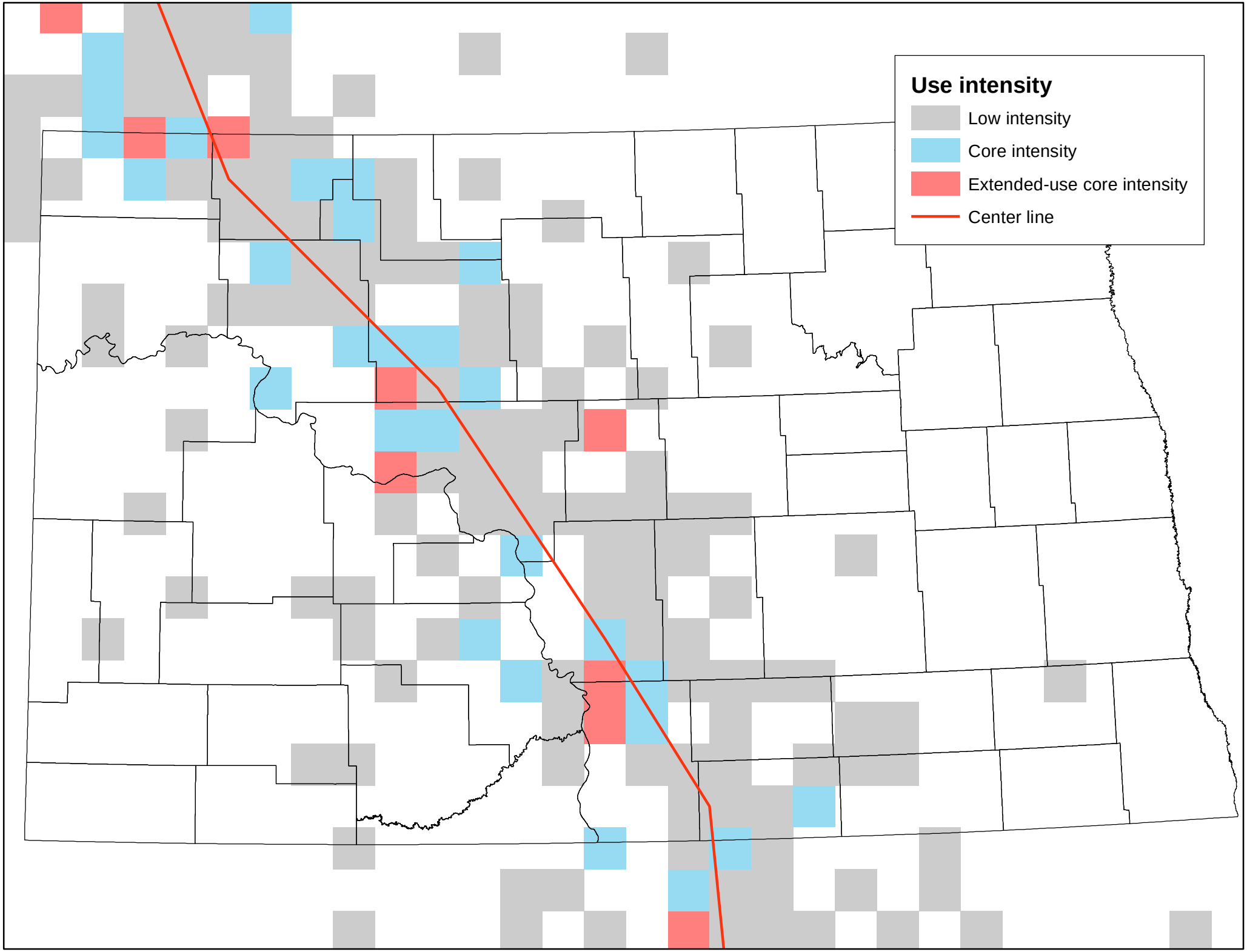
Hi Sandi,

Could you please send Bourke Thomas of Atwell (copied here) and I a new data sharing agreement for our proposed wind project in Burke County? This is one of the early stage projects in our pipeline for 2019 that we discussed with the agencies last year at a high level. We can send back our current target area shapefiles to support the query.

We are interested in any eagle or other special-status species info along with your native habitat layers.

Thanks!

Kim Wells
Manager, Mid Continent Region
Environmental Services
NextEra Energy Resources
832.538.7935 (cell)


Use intensity
Low intensity
Core intensity
Extended-use core intensity
Center line

From: Johnson, Sandra K. [mailto:sajohnson@nd.gov]
Sent: Friday, February 24, 2017 11:36 AM
To: Wells, Kimberly
Cc: Bourke Thomas
Subject: RE: Burke ND Wind: shape files for data sharing request

Kimberly and Bourke,

Attached is the data sharing agreement. There are signature lines for both of you.

In addition to the considerable amount of native prairie within the prospecting area, there are substantial wetland resources that support several level I species of conservation priority such as Horned Grebe. Therefore, in addition to the known Ferruginous and Swainson's Hawk nests sites within 10 miles, I am also including waterbird data from a recent waterbird survey. Recognize they did not survey every wetland in this area.

The U.S. Fish and Wildlife Service has developed spatially explicit models that prioritize habitats which are the most important to upland nesting waterfowl. This is sometimes referred to as the "waterfowl thunderstorm map" or "duck priority map." The categories range from 0-10 pairs of ducks per square mile to > 100 pairs of ducks per square mile. Almost your entire prospecting area is in the >100 ducks per square mile. I have asked the USFWS if we may share the duck priority map with you in planning for this project and other wind projects in North Dakota.

There are several Piping Plover critical habitat lakes near but not within the project area. This data is publicly available on www.data.gov

The NDGF does not have any Sharp-tailed Grouse census blocks within this area. However, I'm sure Aaron Robinson would attest that grouse and leks are abundant.

Were you able to download the ND State Wildlife Plan Focus Areas? The entire prospecting area lies within the Missouri Coteau Breaks focus area. The species of conservation priority associated with this important landscape are found on page 46 of the SWAP and wetland associated species are on page 63.

In summary, the prospecting area contains some of the most important habitat in North Dakota for a host of the state's species of conservation priority. Placing turbines in this resource rich area has a high potential of negatively impacting these resources. We hope that we are early enough in the process that you have considerable flexibility in the siting of the turbines and/or changing the prospecting area.

Thanks,
Sandy

Sandy Johnson
Conservation Biologist
North Dakota Game and Fish Department
100 N. Bismarck Expwy.
Bismarck, ND 58501-5095
Phone: 701-328-6382
sajohnson@nd.gov

http://gf.nd.gov/

-----Original Message-----
From: Wells, Kimberly [mailto:Kimberly.Wells@nexteraenergy.com]
Sent: Thursday, February 23, 2017 2:06 PM
To: Johnson, Sandra K. <sajohnson@nd.gov>
Cc: Bourke Thomas <bthomas@atwell-group.com>
Subject: RE: Burke ND Wind: shape files for data sharing request

***** CAUTION: This email originated from an outside source. Do not click links or open attachments unless you know they are safe. *****

Hi Sandi,

Have you had a chance to get this started for us?

Kim

Kimberly Wells, Ph.D.
Manager, Environmental Services
Mid Continent Region
NEXTera Energy Resources, LLC
601 Travis Street, Suite 1900
Houston, TX 77002
713.951.5372 (office)
832.538.7935 (mobile)
Kimberly.Wells@NEE.com

-----Original Message-----
From: Wells, Kimberly
Sent: Thursday, February 16, 2017 6:07 PM
To: 'Johnson, Sandra K.'
Cc: Bourke Thomas; Wells, Kimberly
Subject: Burke ND Wind: shape files for data sharing request

Hi Sandi,

Here are the geospatial files (both GE and shape file format) of our prospecting area for Burke Wind that you requested. We added the t-line to the south so that is the long narrow thread coming south out of the larger prospecting area for the wind farm. Could you please send Bourke and I a new data sharing agreement?

Thanks!

Kim

From:	Johnson, Sandra K.
To:	Bourke Thomas
Cc:	Wells, Kimberly
Subject:	RE: Burke ND Wind: shape files for data sharing request
Date:	Tuesday, February 28, 2017 11:57:45 AM
Attachments:	ndgf_birds.shp ndgf_birds.shx ndgf_birds.dbf ndgf_birds.prj ndgf_birds.sbn ndgf_birds.sbx WaterfowlPair2013.zip

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Attached is a shapefile containing point locations for the hawk nest and waterbird sites. The waterfowl pair map is the zipped file. Use the "description" field to display number of duck pairs per square mile. Please let me know if you have any questions on either dataset.

I'll let you know if anything else comes to mind that may help you in this planning process.

Thanks,
Sandy

Sandy Johnson
Conservation Biologist
North Dakota Game and Fish Department
100 N. Bismarck Expwy.
Bismarck, ND 58501-5095
Phone: 701-328-6382
sajohnson@nd.gov
http://gf.nd.gov/

-----Original Message-----
From: Bourke Thomas [mailto:bthomas@atwell-group.com]
Sent: Monday, February 27, 2017 2:37 PM
To: Johnson, Sandra K. <sajohnson@nd.gov>
Cc: Wells, Kimberly <Kimberly.Wells@nexteraenergy.com>
Subject: RE: Burke ND Wind: shape files for data sharing request

***** CAUTION: This email originated from an outside source. Do not click links or open attachments unless you know they are safe. *****

Good afternoon Sandy,

Please find the attached data share agreement executed by both NEER and Atwell.

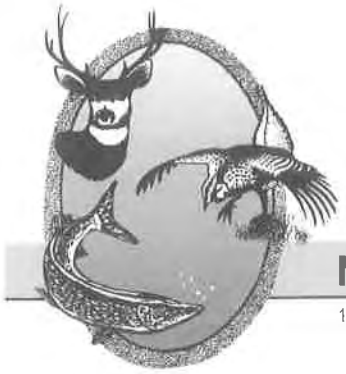
Have a great day,

Bourke Thomas
Team Leader
Environmental Services

ATWELL, LLC
Two Towne Square, Suite 700, Southfield, MI 48076
Tel: 248.447.2059 Mob: 586.601.6497 Fax: 248.447.2001 www.atwell-group.com

-----Original Message-----
From: Johnson, Sandra K. [mailto:sajohnson@nd.gov]
Sent: Friday, February 24, 2017 11:36 AM

GOVERNOR, Doug Burgum
DIRECTOR, Terry Steinwand
DEPUTY, Scott A. Peterson



"VARIETY IN HUNTING AND FISHING"

NORTH DAKOTA GAME AND FISH DEPARTMENT

100 NORTH BISMARCK EXPRESSWAY BISMARCK, NORTH DAKOTA 58501-5095 PHONE 701-328-6300 FAX 701-328-6352

November 16, 2017

Bourke Thomas
Atwell
10100 Reunion Place, Suite 700
San Antonio, TX 78216

Re: Comprehensive Pre-construction Avian Services Study Plan for Burke County Wind Resource Area

Dear Mr. Thomas

The North Dakota Game and Fish Department (Department) has reviewed the comprehensive avian resources and use study in the Burke Wind Energy Center (WEC). While we compliment Atwell and NextEra to conduct surveys for species of concern to implement voluntary avoidance/minimization, we are unsure as to the current status of the study. In other words, have surveys already been conducted in spring 2017? If so, we hope the following can be considered for studies in 2018.

First of all, recognize the Department believes strongly that pre-construction studies should focus on surveying and mapping the habitat in the project area, particularly native prairie (uncultivated grassland), native woodlands, and wetlands. To adequately document the avian resources of a given area, multiple (at least 3 years) of surveys should be implemented. Given the short timeline for conducting avian surveys, it is unlikely the full suite of avian resources will be detected. Additional emphasis should be placed on delineating habitat and characterizing the wildlife resources based on species ranges or spatial models.

Regarding the sensitive grassland breeding bird surveys, we recommend all grassland/pasture habitat be included in the point count surveys, not just areas deemed "suitable." Also note that the land cover class grassland should be categorized as either 1) native prairie/uncultivated grassland (i.e. land that has never been converted from its natural prairie state to other land covers, such as cropland, regardless of invasion of non-native vegetation); or 2) planted grassland (i.e. land that had been converted to other land covers such as cropland but currently seeded to tame or other introduced grasses). Recognize that land use, such as grazing (i.e. pasture) or haying, should not be construed as "unsuitable" grassland. They are merely uses of grasslands and deemed beneficial, when properly applied. Given the short timeline for the study, land use and climatic conditions can result in dramatically different land cover structure and perceived land quality from year to year. Some grassland species of conservation priority

thrive on grazed uncultivated grassland, such as Chestnut-collared Longspur and Sprague's Pipit, while others prefer more lightly grazed or rested grassland, such as Grasshopper Sparrow.

The list of sensitive grassland species, specifically the NDGF Grassland-associated Species of Conservation Priority, is not complete. Short-eared Owl, Northern Harrier and Western Meadowlark should be added to the list. Grassland birds can be rather challenging to identify, particularly the emberizine sparrows, as they are often heard and not seen. Are the technicians conducting the surveys proficient with northern grassland bird identification by sight and sound?

We question the validity and use of the breeding waterfowl density survey. Once again, given the short study timeframe, an accurate assessment of breeding waterfowl density is likely to be biased to the year of survey. For example, if surveys were conducted in the summer of 2017, results will be biased low due to the extreme drought conditions experienced in North Dakota this past year. Wetlands are dynamic and experience frequent drought/deluge cycles. Therefore, we suggest you consider forgoing the waterfowl survey and refer to the U.S. Fish and Wildlife Service Habitat and Population Evaluation Team's Waterfowl Breeding Pair Survey (aka "Thunderstorm Map"). This spatial analysis combines 30+ years of waterfowl population and habitat information. Nearly the entire WEC project area is accessible to >100 ducks pairs/square mile, the highest category possible. Contact the Department's Conservation Biologist, Sandra Johnson (sajohnson@nd.gov), if you do not have access to this spatial layer.

There is a lack of mention of surveys for both Sandhill and Whooping Cranes. This area contains high priority habitat for these species and both frequently use the area. Furthermore, there is no mention of surveys for wetland associated birds other than herons and cormorants. The WEC project area has extremely high wetland density, as high as 100-150 wetlands per square mile or more. Wetland sensitive Species of Conservation Priority such as Horned Grebe, American White Pelican, American Bittern, American Avocet, Willet, Wilson's Phalarope and Marbled Godwit (though mentioned in grassland surveys), Franklin's Gull or Black Tern, are likely quite common to abundant given the wetland density. Consider studying proposed turbine placement and whether the tower and blades will create shadow flicker on wetlands and how to avoid/minimize this impact.

We look forward to seeing the results of the study, including habitat mapping, and a strategy for how the results will be used to inform decision making regarding where wind turbines and associated roads will be placed to minimize impacts to habitat and species.

Thank you for consideration of these recommendations.

Sincerely,

Greg Link
Chief, Conservation and Communications Division

cc: Kevin Shelley, Supervisor, North Dakota Field Office, U.S. Fish and Wildlife Service
Kimberly Wells, NextEra Energy Resources, LLC

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

22 May 2018

Bourke Thomas
Director, Environmental Services
Atwell, LLC
143 Union Boulevard, Suite 700
Lakewood, CO 80228

Dear Mr. Thomas:

RE: Information Request for the Proposed Burke County Wind Energy Center and Transmission Line in Burke and Mountrail Counties, ND

The North Dakota Game and Fish Department has been in discussion with proponents of the Burke Wind Energy Center since 2016. The Department has openly expressed great concern about the potential impacts to wildlife on a number of occasions, most recently in a joint meeting on 29 January 2018, as well as in a letter dated 16 November 2017, and a meeting with NextEra on 27 September 2016. The area proposed for development is extremely important to an uncommonly high number of wildlife species due to its high degree of relatively undisturbed native habitats, including nearly 12,000 acres of native prairie and over 6,000 wetlands, and central location amid other valuable habitat areas (the project is only one mile from Lostwood National Wildlife Refuge). Because of this, the Department has openly expressed its concerns of development on such a uniquely vital landscape for wildlife and our concerns have not changed. There are few places that compare to its wildlife value in the state or even within the Prairie Pothole Region. To say the least, the proposed project area is some of the "best of the best" prairie-wetland habitat in North America.

Native prairie is the most endangered habitat type in North Dakota and, as a grassland state, the majority of our native wildlife 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. A large portion of the wind resource area and transmission line area is composed of native, unbroken prairie (55%) which may support 30 or more of the 115 Species of Conservation Priority identified in the North Dakota State Wildlife Action Plan (Dyke et. al 2015). Species of Conservation Priority, such as the Chestnut-collared Longspur, which has declined 86%, or the Loggerhead Shrike which has declined 74% since 1974 (Rosenberg et. al 2016), will be further negatively impacted by the loss and fragmentation of native prairie in the

project area.

The proposed project area is located within the Missouri Coteau, a landscape that not only has a considerable amount of native prairie, but an extremely high concentration of wetlands, some of the highest in North America. Prairie Pothole wetlands are the most productive wildlife habitat in North Dakota and they make up a large portion of the project area. These wetlands support 54 Species of Conservation Priority, as well as a considerable number of waterfowl, shorebirds and cranes throughout the year.

Though the Department believes the best way to protect our Species of Conservation Priority is by taking a habitat focused approach, we would be remiss to not also reiterate the following species-specific concerns.

1. The Whooping Crane's migration corridor enters North Dakota in the northwest corner of the state, angling through Burke County and directly through the proposed project area. The migration corridor then proceeds south to just north of the Van Hook Arm on Lake Sakakawea and follows just east of the Missouri River and its reservoirs until it exits the southern portion of the state. This federally listed endangered species uses a wide variety of shallow wetlands for roosting and foraging. Whooping cranes have been documented staging within both the wind project boundary and the transmission line boundary on multiple occasions. Nearly the entire Burke County Wind Energy Center project area falls within the highest ranked landscape-level habitat used by migrant Whooping Cranes (Niemuth et al. 2018). The risk of Whooping Cranes striking a turbine or a transmission line will be elevated in this area. While no fatalities have been documented of Whooping Cranes from collision with wind turbines in the United States, collisions with transmission lines are the leading known cause of death in the wild for whooping cranes. 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.

2. The project area is extremely important to waterfowl production. 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). The research documented 20% avoidance of wetlands by five species of ducks. We ran the model using the Burke County Wind Energy Center project area and the project area supports some of the highest numbers and densities of breeding pairs of ducks in the entire Prairie Pothole Region. The project would result in a reduction of nearly 3,300 breeding duck pairs. Breeding ducks are territorial; as such, they won't reliably find a breeding territory that is as suitable as that found in the proposed project area, and other surrounding areas will likely not be able to support additional breeding pairs. The model also produces an approximation of the number of wetlands requiring restoration that offset the displacement of these breeding pairs, and that number is around 770 basins (2-acre seasonal wetlands). The model is built to assess wetland within ½ mile of turbine locations, therefore the actual numbers will change based on final turbine siting. However, these numbers reiterate the importance of this area to breeding waterfowl and the resource deficiency that will result from the project. Contact the HAPET office to request the DST.

3. While there are no known Bald Eagle nests in the immediate area, both Bald and Golden Eagles were observed within the project boundary. Though their numbers are low in the winter months, both species are likely to be common in the project area during the rest of year, specifically spring and fall.

4. A large number of Sharp-tailed Grouse were observed in the project area. Twenty-eight leks were confirmed, averaging 11.6 grouse per lek. That is approximately 325 male birds. This does not include males that went undetected, or females. In fall, based on these estimates, the area could produce upwards of 3,500 huntable birds. And as prairie grouse generally avoid areas with human disturbance and tall structures (Leddy et al. 1999, Hagen et al. 2004, Manville 2004, Pruett et all. 2009) this project could impact the local population.

5. Despite an extremely short survey period (one summer, as compared to the minimum of 3 years that should be implemented), a number of species of conservation concern were observed in the project area, including: Sprague's Pipit, Grasshopper Sparrow, Nelson's Sparrow, Marbled Godwit, Northern Harrier, Upland Sandpiper, Bobolink, and Western Meadowlark. All of these species are sensitive to habitat loss and fragmentation and this project has the potential to further negatively impact these, already declining, species. Of particular concern is the Sprague's Pipit. Pipits were historically found throughout much of North Dakota but the species range has contracted in the state. The Burke County Wind Energy Center, particularly the transmission line, overlaps with one of the few places in the state where a high concentration of pipits still persist (Lipsey et al. 2015). Male pipits conduct a flight display about 50-100 meters above the ground that last from several minutes to several hours. This project could impact the core area for pipits, including the risk of increased mortality to this skylarking (a breeding display) species.

The Department is also uncertain of the protocols for creating and maintaining a transmission line. If a road needs to be created for its construction, a sizeable loss to native prairie and an increase in habitat fragmentation would result. If that road is to be maintained, it is likely that disturbance will have long lasting impacts to species of conservation concern, specifically those sensitive to habitat fragmentation.

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 by restricting further construction of infrastructure, energy development, recreational activities, grazing, vegetation control, and land-use changes or conversion on both public and private land.

To address the losses associated with this project, we suggest that a voluntary offset package be developed for both the direct and indirect permanent impacts of roads, turbine pads, and associated infrastructure constructed within native habitats (i.e. unbroken native prairie $\geq$ 160

acres and wetlands). The developer has a draft copy of North Dakota Native Wildlife Resources: Guidelines for Reducing Impacts from Wind Energy Development, and can use this guide, as well as consulting directly with us, on creating an appropriate offset package.

Sincerely,

Greg Link
Chief, Conservation and Communications Division

Cc: Kevin Shelley, US Fish and Wildlife Service
ND Public Service Commission

North Dakota Geological Survey (NDGS)

North Dakota Geological Survey

Edward C. Murphy - State Geologist

Department of Mineral Resources

Lynn D. Helms - Director

North Dakota Industrial Commission

www.state.nd.us/ndgs

April 30, 2018

Ethan Jahnke
Project Manager-Environmental Services
Atwel Group
143 Union Boulevard, Suite 700
Lakewood, CO 80228

Re: Burke Co. Wind Energy Center and Transmission Line – Information Request for Certificate of Site Compatibility and Route Permit

The North Dakota Geological Survey appreciates the notification and opportunity to review and provide comment on the proposed wind energy development project. The information request letter was received by our office on April 24, 2018 was reviewed on April 30, 2018. We dropped in the approximate route of the proposed project area and transmission line corridor on our landslide base maps and compared the proposed route to the locations of landslides that have been identified by detailed mapping work previously completed by our office.

From this comparison, it appears that the proposed transmission line corridor, along the reach that traverses the White Earth River valley north of White Earth and northeast of Tioga, travels near previously mapped landslide areas in northwestern Mountrail County. There should be careful examination of route selection and construction practices in these potentially unstable areas. Areas like these should be avoided whenever possible.

Downloadable Areas of Landslides maps and detailed LiDAR elevation mapping and data products for the 1:24,000 and 1:100,000 scale quadrangles that encompass the proposed wind energy center area and associated transmission line corridor can be found on our website at:

https://www.dmr.nd.gov/ndgs/landslides/

You may also contact our offices directly, with any additional questions or comments, at (701) 328-8000.

Sincerely,

North Dakota Geological Survey:

Fred Anderson

Fred Anderson
Geologist

FJA\

600 E Boulevard Ave – Dept 405, Bismarck, North Dakota 58505-0840 Phone (701)328-8000 Fax (701)328-8010

North Dakota Industrial Commission

From: Holweger, Todd L.
To: Ethan Jahnke
Cc: Haugen, Tyler B.
Subject: ND Wind project info
Date: Thursday, May 03, 2018 7:21:47 AM
Attachments: 3438_001.pdf

Ethan,
We are currently reviewing your request, however we need additional information. Please supply a shape file of each map that was provided with your initial request. You may email it to me directly.
Thank you,

Todd L. Holweger
Permit Manager
NDIC-DMR-OGD
(701) 328-8024

ATWELL

ONE COMPANY
INFINITE SOLUTIONS

Received

MAY 9 2018

ND Oil & Gas Division

TO: **Ms. Karlene Fine**
North Dakota Industrial Commission
600 E Boulevard Ave. Dept. 405
Bismarck, ND 58505-0840

FROM: Atwell, LLC

DATE: April 20, 2018

SUBJECT: Information Request for the Proposed Burke County Wind Energy Center and Transmission Line in Burke and Mountrail Counties, North Dakota

Dear Ms. Fine,

Atwell, LLC has been contracted by Burke Wind, LLC to prepare an application for a Certificate of Site Compatibility for the proposed Burke County Wind Energy Center (WEC) and to prepare a separate application for a Certificate of Corridor Compatibility and Route Permit for the proposed transmission line, in accordance with North Dakota Century Code Section 49-22-07. As part of the applications, we are conducting an investigation of the WEC, which is located approximately nine miles southwest of the City of Bowbells in Burke County, North Dakota, and the proposed transmission line, which is approximately four miles east of Tioga, North Dakota. Please refer to the attached **Site Location Map** and **Transmission Line Site Location Map**.

This proposed WEC has a nameplate capacity of up to 300 megawatts (MW) and would consist of a maximum of 111 GE 2.5 wind turbine generators and 12 GE 1.715 wind turbine generators and associated access roads and collection lines. The WEC would interconnect to the electrical grid via an approximately 39-mile-long transmission line from the WEC substation to the point of interconnect. The WEC would include portions of the following townships:

BURKE COUNTY

- **Keller Township**
  T161N, R94W
- **Foothills Township:**
  T161N,R92W
- **Fay Township:**
  T162N, R93W
- **Harmonious Township:**
  T161N, R94W,
- **Leaf Mountain Township:**
  T161N, R93W
- **Kandiyohi Township**
  T159N, R90W
- **Clearly Township**
  T160N, R93W
- **Clayton Township:**
  T161N, R91W
- **Ward Township:**
  T161N, R90W
- **Lucy Township:**
  T160N, R92W
- **Diamond Township:**
  T160N, R91W
- **Roseland Township:**
  T157N, R93W
- **Thorson Township**
  T160N, R94W

The associated transmission line corridor includes the following townships and sections:

BURKE COUNTY

- **Leaf Mountain Township**
  T161N, R93W, Sections 25, 26, 35
- **Cleary Township:**
  T160N, R93W, Sections 4, 9, 10, 15, 22, 26, 27, 34, 35
- **Colville Township:**
  T159N, R93W Sections 3, 4, 8, 9, 17, 20, 29, 32, 33, 34

MOUNTRAIL COUNTY

- **Powers Lake Township:**
  T158N, R93W, Sections 3, 4, 9, 10, 15, 21, 22, 28, 33, 34
- **Sorkness Township:**
  T157N, R93W, Sections 3, 4, 8, 9, 13, 14, 15, 17, 18, 20, 21, 22, 29

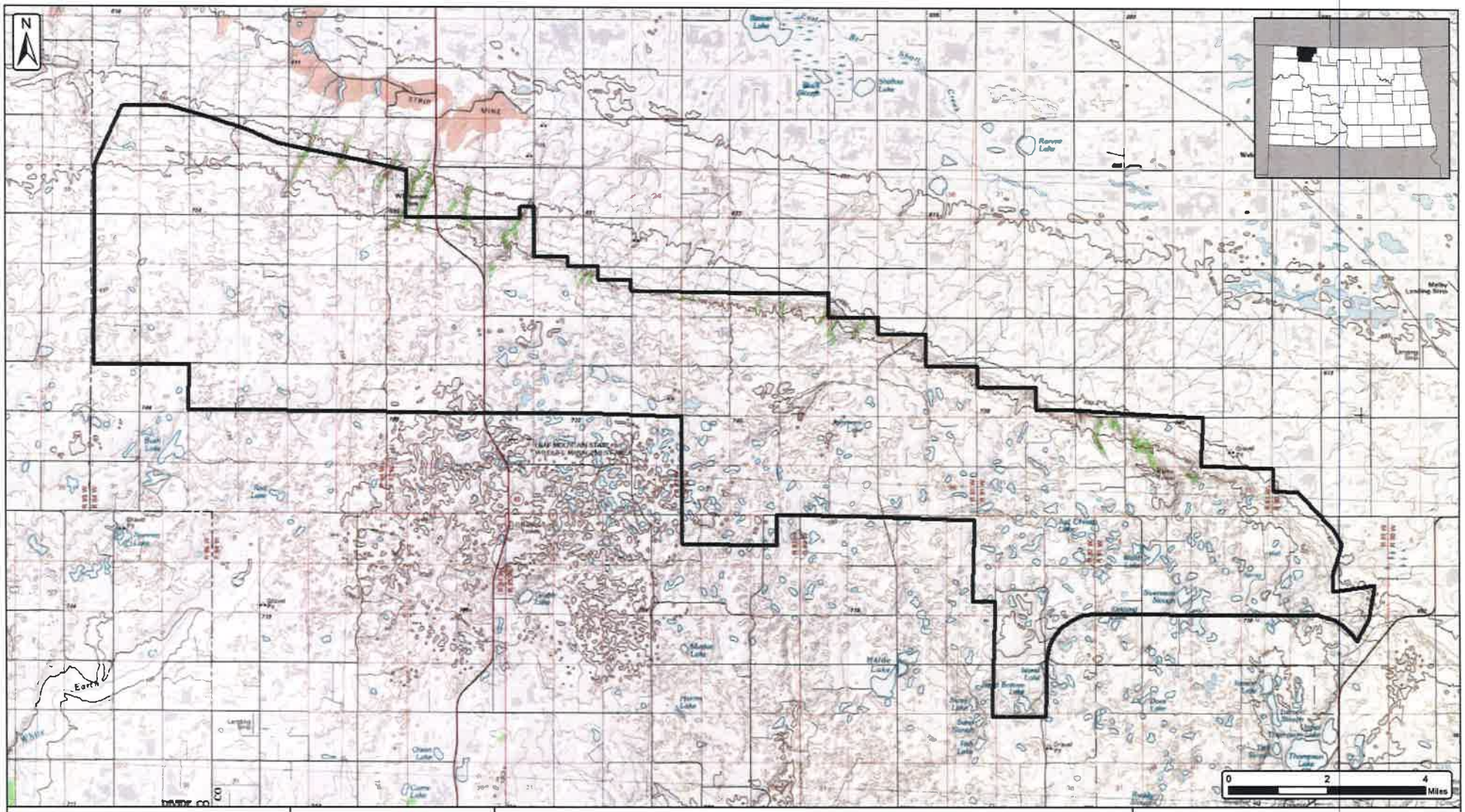
Per Section 69-06-01-05 of the North Dakota Public Service Commission's administrative rules, we are consulting your agency for assistance in identifying concerns or issues within the boundaries of the townships and sections listed above that would influence a decision regarding the use of the land, as well as applicable permits that may be required from your office.

We would appreciate a response by May 15, 2018. Please contact me at 866.850.4200 or email at ejahnke@atwell-group.com if you have any questions. Thank you for your assistance.

Sincerely,

Ethan Jahnke
Project Manager
Environmental Services

Enclosures: Site Location Map
Burke Wind Transmission Line Location Map



Burke County Wind Energy Center

Site Location Map

Burke County, North Dakota

Date: 4/11/2018

Client:

Burke Wind, LLC

Atwell, LLC Project:16000947

Wind Resource Area
01/25/2017 (±68,719 Ac.)

BUSINESS CONFIDENTIAL
NOT FOR DISTRIBUTION

SOURCE: USGS TOPO QUADRANGLES:
COLUMBUS SW (1943), BUSH LAKE (1974), GRAND VIEW (1974),
GRUBB LAKE (1974), HELDE LAKE (1974), THOMPSON LAKE (1974),
COLUMBUS SE (1941), BEAVER LAKE (1948), RENNIE LAKE (1949),
WOBURN (1948), COTEAU (1948), VANVILLE NE (1950).

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.

Burke County Wind Energy Center

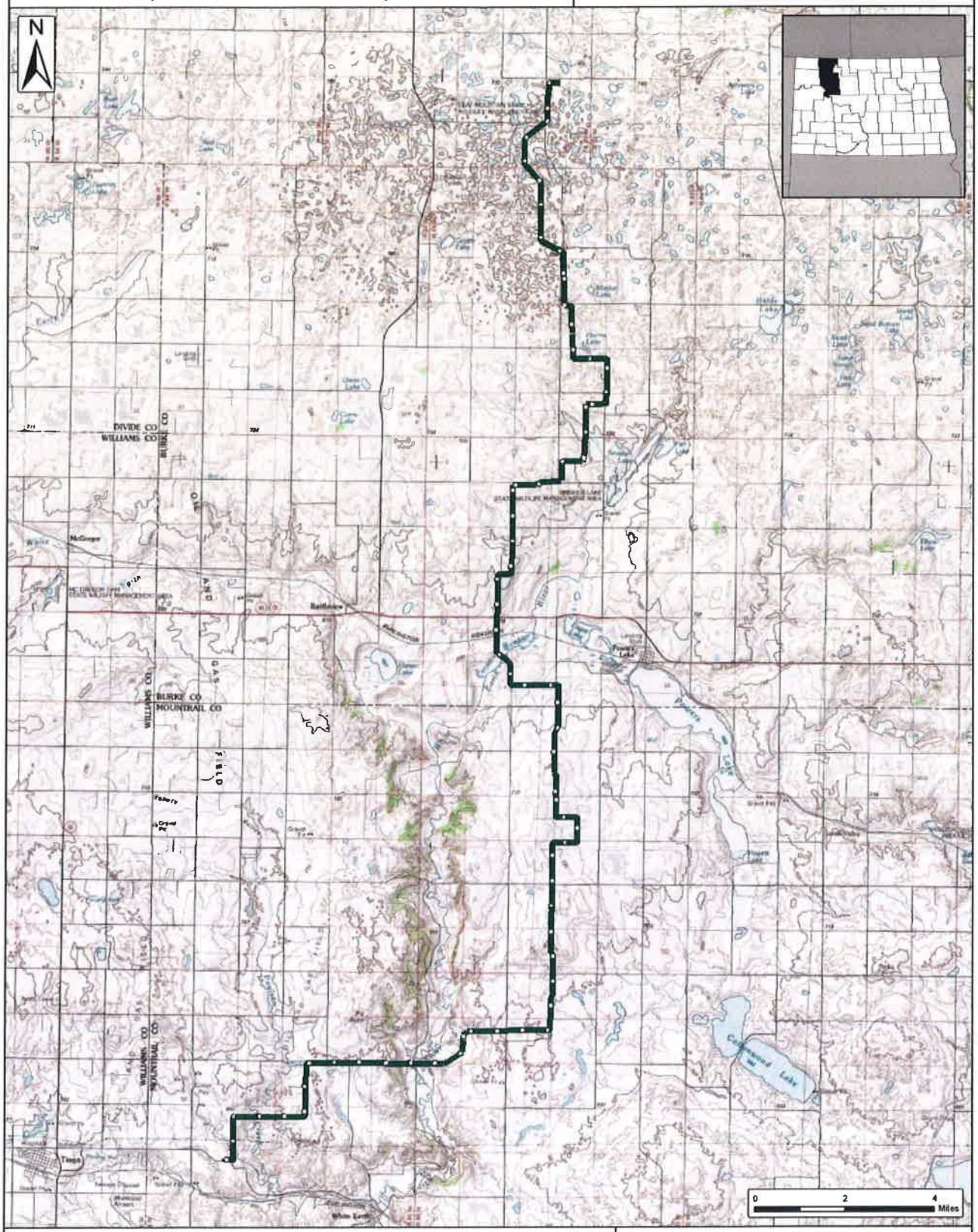
Transmission Line Site Location Map

Burke County and Mountrail County, North Dakota

Client: Burke Wind, LLC

Issue Date: 4/11/2018

Atwell, LLC Project: 16000947



Transmission Line (04/02/2018)

CONTAINS PRIVILEDGED AND CONFIDENTIAL INFORMATION- NOT FOR PUBLIC DISCLOSURE

SOURCE USGS TOPO QUADS
GRAND MEW (1974), GRUEB LAKE (1974), HELDE LAKE (1974), BATTLEVIEW (1974), POWERS LAKE (1973), LUNDS VALLEY (1974), TIOGA (1973), WHITE EARTH (1963), ROSS NW (1950), COTTONWOOD LAKE (1951), COLUMBUS SE (1951), BEAVER LAKE (1948), RENNIE LAKE (1947)

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.

North Dakota State Water Commission

North Dakota State Water Commission

900 EAST BOULEVARD AVENUE, DEPT 770 • BISMARCK, NORTH DAKOTA 58505-0850
(701) 328-2750 • TTY 1-800-366-6888 or 711 • FAX (701) 328-3696 • http://swc.nd.gov

May 9, 2018

Ethan Jahnke
Atwell
143 Union Boulevard, STE 700
Lakewood, CO 80228

Dear Mr. Jahnke:

This is in response to your request for a review of the environmental impacts associated with the Burke County Wind Energy Center and Transmission Line project located in Burke and Mountrail Counties, ND.

The proposed project has been reviewed by State Water Commission staff, and the following comments are provided:

- 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 (NDCC) § 61-04-02. Please consult with the Water Appropriations Division of the Office of the State Engineer (OSE) if you have any questions regarding this comment at 701-328-2754 or waterpermits@nd.gov.

The State Water Commission (SWC) 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. SWC 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 Appropriations Division. The SWC hopes to keep all observation wells, but otherwise will ensure the well is properly abandoned.

- Through the National Flood Insurance Program, a floodplain development permit is required for all development that takes place within a Special Flood Hazard Area, as identified by FEMA. Please work with the local floodplain administrator(s) for additional information and permit requirements from their jurisdictions. This list may not include all jurisdictions impacted: Three Affiliated Tribes, Cliff Whitman, 701-627-4805, cwhitman@mhanation.com. White Earth, Kelly Woessner, 701-862-3459, cityauditor@restel.com.

Thank you for the opportunity to provide review comments. If you have any questions, please call me at 701-328-4967.

Sincerely,

Jared Huibregtse
Water Resource Planner IV

JH:dm/1570

DOUG BURGUM, GOVERNOR
CHAIRMAN

GARLAND ERBELE, P.E.
CHIEF ENGINEER-SECRETARY

Western Area Water Supply Authority

Communication Log

To:	Todd Pokrzywinski	**DATE:**	7/13/2018
	Western Area Water Supply Authority	**PROJECT:**	Burke County Wind
	Phone: 701-774-6605		
		JOB #:	1600947
		VIA:	Phone

REMARKS:

The Western Area Water Supply Authority receives water from the Missouri River at the Williston Water Treatment Plant location and also from water wells at the Ray Water Treatment Plant. The wells at the Ray Water Treatment Plant are within the plant compound.

FROM: Benjamin Banks

State Historical Society of North Dakota (SHSND)

STATE HISTORICAL SOCIETY OF NORTH DAKOTA

Doug Burgum
Governor of North Dakota

North Dakota State Historical Board

Terrance Rockstad
Bismarck - President

Gereld Gerntholz
Valley City - Vice President

H. Patrick Weir
Medora - Secretary

Calvin Grinnell
New Town

Albert I. Berger
Grand Forks

Steve C. Martens
Fargo

Daniel Stenberg
Watford City

Sara Otte Coleman
Director
Tourism Division

Kelly Schmidt
State Treasurer

Alvin A. Jaeger
Secretary of State

Melissa Baker
Director
Parks and Recreation Department

Thomas Sorel
Interim Director
Department of Transportation

Claudia J. Berg
Director

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April 23, 2018

Mr. Ethan Jahnke
Project Manager
Atwell
143 Union Boulevard, Suite 700
Lakewood, CO 80228

ND SHPO REF: 18-0733 ND Public Service Commission – Proposed 300 MW Burke County Wind Energy Center & Transmission Line in Burke and Mountrail Counties, North Dakota

Dear Mr. Jahnke,

Thank you for your preliminary information on ND SHPO REF: 18-0733 ND Public Service Commission – Proposed 300 MW Burke County Wind Energy Center & Transmission Line in Burke and Mountrail Counties, North Dakota. We recommend survey for cultural resources as follows:

- A current Class I (file search) to determine any additional recorded cultural resources in the project area.

- A Class III (pedestrian) survey by a permitted architectural historian for standing buildings and structures (including cemeteries) over 50 years old in the visual Area of Potential Effect (APE). This is within a 2 mile radius of individual turbine locations. The purpose is to evaluate any architectural or structural features that may be eligible for nomination to the National Register of Historic Places. At least three out of the seven aspects of integrity used to evaluate historic properties could be impacted by the proposed project: the setting, feeling, and association of historic sites.

- A Class III archaeological survey of all areas of direct impact including crane paths, met towers, access roads, turbine locations and staging areas, unless the footprint has been recently surveyed for cultural resources.

Thank you for the opportunity to review preliminary information on this project. We look forward to further review. If you have questions please contact or Susan Quinnell at squinnell@nd.gov or (701) 328-3576.

Sincerely,

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

U.S Army Corps of Engineers (USACE)

From: McQueary, Patricia L CIV USARMY CENWO (US)
To: Bourke Thomas
Cc: kimberly.wells@nee.com; richard.estabrook@nee.com
Subject: Follow-up
Date: Friday, December 16, 2016 11:11:28 AM
Attachments: Minimum_Standards_for_Delineations.pdf

Hi All!

I just wanted to follow up on a couple of things we talked about. First is the 401 Water quality certification for the project - you will still need a 401 WQC with a non-reporting NWP 12.

Here is the website: https://www.ndhealth.gov/WQ/

Our contact person is:
Pete Wax
pwax@nd.gov

918 East Divide Avenue, 4th Floor
Bismarck, ND 58501-1947

I have also attached our minimum standards for delineations - but as per our conversation - I would expect photo interpretation of a large majority of these with field verification on a sampling.

Thanks for stopping by - I appreciate the early coordination!

Happy Holidays!

Patricia L. McQueary
U.S. Army Corps of Engineers
North Dakota State Program Manager
1513 South 12th Street
Bismarck, North Dakota 58504
Office: (701) 255-0015
Cell: (701) 204-3443
Patricia.l.mcqueary@usace.army.mil

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
NORTH DAKOTA REGULATORY OFFICE
3319 UNIVERSITY DRIVE
BISMARCK ND 58504-7565

May 15, 2018

NWO-2016-02466-BIS

Atwell
Attn: Mr. Bourke Thomas
143 Union Boulevard, Suite 700
Lakewood, Colorado 80228

Dear Mr. Thomas:

This is in response to your solicitation letter dated February 20, 2018, requesting Department of the Army (DA), United States Army Corps of Engineers (Corps) comments on the proposed Burke County Wind Energy Center and Transmission Line project. The Wind Energy Center location includes portions of the following townships in Burke County: Keller Township T161N, R94W, Clayton Township T161N, R91W, Foothills Township T161N, R92W, Ward Township T161N, R90W, Fay Township T162N, R93W, Lucy Township T160N, R92W, Harmonious Township T161N, R94W, Diamond Township T160N, R91W, Leaf Mountain Township T161N, R93W, Roseland Township T157N, R93W, Kandiyohi Township T159N, R90W, Thorson Township T160N, R94W, and Clearly Township T160N, R93W. The associated transmission line corridor includes the following townships and sections in Burke County: Leaf-Mountain Township T161N, R93W, Cleary Township T160N, R93W, and Colville Township T159N, R93W; In Mountrail County: Powers Lake Township T158N, R93W, and Sorkness Township T157N, R93W, North Dakota.

Corps Regulatory Offices administers Section 404 of the Clean Water Act. Section 404 of the Clean Water Act regulates 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.

Enclosed for your information is the fact sheet for Nationwide Permit 12, Utility Line Activities. Utility lines are already authorized by Nationwide Permit 12 provided the utility line can be placed without any change to pre-construction contours and all other proposed construction activities and facilities are in compliance with the Nationwide's permit conditions and 401 Water Quality Certification. On Tribal Lands, Water Quality Certification is denied for all Nationwide Permits. Applicants must work with EPA to

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obtain individual water quality certification. Please note the pre-construction notification requirements on page 2 of the fact sheet. If a project involves any one of the seven notification requirements, the project proponent must submit a DA application. Furthermore, a project must also be in compliance with the "Regional Conditions for Nationwide Permits within the State of North Dakota", found on pages 18 thru 21 of the fact sheet.

In the event your project(s) requires approval from the U.S. Army Corps of Engineers and cannot be authorized by Nationwide Permit(s), a Standard or Individual Permit will be required. A project that requires a Standard or Individual Permit is intensely reviewed and will require the issuance of a public notice. A Standard or Individual Permit generally requires a minimum of 120 days for processing but based on the project impacts and comments received through the public notice may extend well beyond 120 days.

This correspondence letter does not approve the proposed construction work or does not verify the proposed project complies with the Nationwide Permit(s).

If any of these projects require a Section 404 permit, please complete and submit the enclosed Department of the Army permit application (ENG Form 4345) to the U.S. Army Corps of Engineers, North Dakota Regulatory Office, 3319 University Drive, Bismarck, North Dakota 58504 or to the email address below. If you are unsure if a permit is required, you may submit an application; include a project location map, description of work, and construction methodology.

The North Dakota Regulatory office can accept (and prefers) electronic submissions to the following email: CENWO-OD-RND@usace.army.mil.

If we can be of further assistance or should you have any questions regarding our program, please do not hesitate to contact this office by letter of phone at (701) 255-0015.

Sincerely,

for Patricia L. McQueary
Regulatory Program Manager
North Dakota

Enclosure
ENG Form 4345, Fact Sheet NWP 12
Permit Completion Instructions

Instructions for Preparing a
Department of the Army Permit Application

Blocks 1 through 4. To be completed by Corps of Engineers.

Block 5. Applicant's Name. Enter the name and the E-mail address of the responsible party or parties. If the responsible party is an agency, company, corporation, or other organization, indicate the name of the organization and responsible officer and title. If more than one party is associated with the application, please attach a sheet with the necessary information marked Block 5.

Block 6. Address of Applicant. Please provide the full address of the party or parties responsible for the application. If more space is needed, attach an extra sheet of paper marked Block 6.

Block 7. Applicant Telephone Number(s). Please provide the number where you can usually be reached during normal business hours.

Blocks 8 through 11. To be completed, if you choose to have an agent.

Block 8. Authorized Agent's Name and Title. Indicate name of individual or agency, designated by you, to represent you in this process. An agent can be an attorney, builder, contractor, engineer, or any other person or organization. Note: An agent is not required.

Blocks 9 and 10. Agent's Address and Telephone Number. Please provide the complete mailing address of the agent, along with the telephone number where he / she can be reached during normal business hours.

Block 11. Statement of Authorization. To be completed by applicant, if an agent is to be employed.

Block 12. Proposed Project Name or Title. Please provide name identifying the proposed project, e.g., Landmark Plaza, Burned Hills Subdivision, or Edsall Commercial Center.

Block 13. Name of Waterbody. Please provide the name of any stream, lake, marsh, or other waterway to be directly impacted by the activity. If it is a minor (no name) stream, identify the waterbody the minor stream enters.

Block 14. Proposed Project Street Address. If the proposed project is located at a site having a street address (not a box number), please enter it here.

Block 15. Location of Proposed Project. Enter the latitude and longitude of where the proposed project is located. If more space is required, please attach a sheet with the necessary information marked Block 15.

Block 16. Other Location Descriptions. If available, provide the Tax Parcel Identification number of the site, Section, Township, and Range of the site (if known), and / or local Municipality that the site is located in.

Block 17. Directions to the Site. Provide directions to the site from a known location or landmark. Include highway and street numbers as well as names. Also provide distances from known locations and any other information that would assist in locating the site. You may also provide description of the proposed project location, such as lot numbers, tract numbers, or you may choose to locate the proposed project site from a known point (such as the right descending bank of Smith Creek, one mile downstream from the Highway 14 bridge). If a large river or stream, include the river mile of the proposed project site if known

Block 18. Nature of Activity. Describe the overall activity or project. Give appropriate dimensions of structures such as wing walls, dikes (identify the materials to be used in construction, as well as the methods by which the work is to be done), or excavations (length, width, and height). Indicate whether discharge of dredged or fill material is involved. Also, identify any structure to be constructed on a fill, piles, or float-supported platforms.

The written descriptions and illustrations are an important part of the application. Please describe, in detail, what you wish to do. If more space is needed, attach an extra sheet of paper marked Block 18.

Block 19. Proposed Project Purpose. Describe the purpose and need for the proposed project. What will it be used for and why? Also include a brief description of any related activities to be developed as the result of the proposed project. Give the approximate dates you plan to both begin and complete all work.

Block 20. Reasons for Discharge. If the activity involves the discharge of dredged and/or fill material into a wetland or other waterbody, including the temporary placement of material, explain the specific purpose of the placement of the material (such as erosion control).

Block 21. Types of Material Being Discharged and the Amount of Each Type in Cubic Yards. Describe the material to be discharged and amount of each material to be discharged within Corps jurisdiction. Please be sure this description will agree with your illustrations. Discharge material includes: rock, sand, clay, concrete, etc.

Block 22. Surface Areas of Wetlands or Other Waters Filled. Describe the area to be filled at each location. Specifically identify the surface areas, or part thereof, to be filled. Also include the means by which the discharge is to be done (backhoe, dragline, etc.). If dredged material is to be discharged on an upland site, identify the site and the steps to be taken (if necessary) to prevent runoff from the dredged material back into a waterbody. If more space is needed, attach an extra sheet of paper marked Block 22.

Block 23. Description of Avoidance, Minimization, and Compensation. Provide a brief explanation describing how impacts to waters of the United States are being avoided and minimized on the project site. Also provide a brief description of how impacts to waters of the United States will be compensated for, or a brief statement explaining why compensatory mitigation should not be required for those impacts.

Block 24. Is Any Portion of the Work Already Complete? Provide any background on any part of the proposed project already completed. Describe the area already developed, structures completed, any dredged or fill material already discharged, the type of material, volume in cubic yards, acres filled, if a wetland or other waterbody (in acres or square feet). If the work was done under an existing Corps permit, identity the authorization, if possible.

Block 25. Names and Addresses of Adjoining Property Owners, Lessees, etc., Whose Property Adjoins the Project Site. List complete names and full mailing addresses of the adjacent property owners (public and private) lessees, etc., whose property adjoins the waterbody or aquatic site where the work is being proposed so that they may be notified of the proposed activity (usually by public notice). If more space is needed, attach an extra sheet of paper marked Block 24.

Information regarding adjacent landowners is usually available through the office of the tax assessor in the county or counties where the project is to be developed.

Block 26. Information about Approvals or Denials by Other Agencies. You may need the approval of other federal, state, or local agencies for your project. Identify any applications you have submitted and the status, if any (approved or denied) of each application. You need not have obtained all other permits before applying for a Corps permit.

Block 27. Signature of Applicant or Agent. The application must be signed by the owner or other authorized party (agent). This signature shall be an affirmation that the party applying for the permit possesses the requisite property rights to undertake the activity applied for (including compliance with special conditions, mitigation, etc.).

DRAWINGS AND ILLUSTRATIONS

General Information.

Three types of illustrations are needed to properly depict the work to be undertaken. These illustrations or drawings are identified as a Vicinity Map, a Plan View or a Typical Cross-Section Map. Identify each illustration with a figure or attachment number.

Please submit one original, or good quality copy, of all drawings on 8½ x11 inch plain white paper (electronic media may be substituted). Use the fewest number of sheets necessary for your drawings or illustrations.

Each illustration should identify the project, the applicant, and the type of illustration (vicinity map, plan view, or cross-section). **While illustrations need not be professional (many small, private project illustrations are prepared by hand), they should be clear, accurate, and contain all necessary information.**

U.S. Army Corps of Engineers (USACE)

APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT

33 CFR 325. The proponent agency is CECW-CO-R.

Form Approved - OMB No. 0710-0003 Expires: 01-08-2018

The public reporting burden for this collection of information, OMB Control Number 0710-0003, is estimated to average 11 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or burden reduction suggestions to the Department of Defense, Washington Headquarters Services, at whs.mc-alex.esd.mbx.dd-dod-information-collections@mail.mil. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

PRIVACY ACT STATEMENT

Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Programs of the Corps of Engineers; Final Rule 33 CFR 320-332. Principal Purpose: Information provided on this form will be used in evaluating the application for a permit. Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public and may be made available as part of a public notice as required by Federal law. Submission of requested information is voluntary, however, if information is not provided the permit application cannot be evaluated nor can a permit be issued. One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and/or instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned. System of Record Notice (SORN). The information received is entered into our permit tracking database and a SORN has been completed (SORN #A1145b) and may be accessed at the following website: http://dpcld.defense.gov/Privacy/SORNsIndex/DOD-wide-SORN-Article-View/Article/570115/a1145b-ce.aspx

(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETE

(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME	8. AUTHORIZED AGENT'S NAME AND TITLE (agent is not required)
First - Middle - Last -	First - Middle - Last -
Company -	Company -
E-mail Address -	E-mail Address -
6. APPLICANT'S ADDRESS:	9. AGENT'S ADDRESS:
Address-	Address-
City - State - Zip - Country -	City - State - Zip - Country -
7. APPLICANT'S PHONE NOs. w/AREA CODE	10. AGENTS PHONE NOs. w/AREA CODE
a. Residence b. Business c. Fax	a. Residence b. Business c. Fax

STATEMENT OF AUTHORIZATION

11. I hereby authorize, _____ to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

_____ _____
SIGNATURE OF APPLICANT DATE

NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE (see instructions)

13. NAME OF WATERBODY, IF KNOWN (if applicable)	14. PROJECT STREET ADDRESS (if applicable)
	Address
15. LOCATION OF PROJECT	City - State- Zip-
Latitude: °N Longitude: °W	

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions)

State Tax Parcel ID Municipality

Section - Township - Range -

17. DIRECTIONS TO THE SITE

18. Nature of Activity (Description of project, include all features)

19. Project Purpose (Describe the reason or purpose of the project, see instructions)

USE BLOCKS 20-23 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED

20. Reason(s) for Discharge

21. Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards:

Type Amount in Cubic Yards	Type Amount in Cubic Yards	Type Amount in Cubic Yards

22. Surface Area in Acres of Wetlands or Other Waters Filled (see instructions)

Acres

or

Linear Feet

23. Description of Avoidance, Minimization, and Compensation (see instructions)

24. Is Any Portion of the Work Already Complete? ☐ Yes ☐ No IF YES, DESCRIBE THE COMPLETED WORK

25. Addresses of Adjoining Property Owners, Lessees, Etc., Whose Property Adjoins the Waterbody (if more than can be entered here, please attach a supplemental list).

a. Address-

City - State - Zip -

b. Address-

City - State - Zip -

c. Address-

City - State - Zip -

d. Address-

City - State - Zip -

e. Address-

City - State - Zip -

26. List of Other Certificates or Approvals/Denials received from other Federal, State, or Local Agencies for Work Described in This Application.

AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED

* Would include but is not restricted to zoning, building, and flood plain permits

27. Application is hereby made for permit or permits to authorize the work described in this application. I certify that this information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

SIGNATURE OF APPLICANT DATE SIGNATURE OF AGENT DATE

The Application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than $10,000 or imprisoned not more than five years or both.

FACT SHEET
NATIONWIDE PERMIT 12
(2017)

UTILITY LINE ACTIVITIES

Activities required for the construction, maintenance, repair, and removal of utility lines and associated facilities in waters of the United States, provided the activity does not result in the loss of greater than 1/2-acre of waters of the United States for each single and complete project.
Utility lines: This NWP authorizes discharges of dredged or fill material into waters of the United States and structures or work in navigable waters for crossings of those waters associated with the construction, maintenance, or repair of utility lines, including outfall and intake structures. There must be no change in pre-construction contours of waters of the United States. A ''utility line'' is defined as any pipe or pipeline for the transportation of any gaseous, liquid, liquescent, or slurry substance, for any purpose, and any cable, line, or wire for the transmission for any purpose of electrical energy, telephone, and telegraph messages, and internet, radio, and television communication. The term ''utility line'' does not include activities that drain a water of the United States, such as drainage tile or french drains, but it does apply to pipes conveying drainage from another area. Material resulting from trench excavation may be temporarily sidecast into waters of the United States for no more than three months, provided the material is not placed in such a manner that it is dispersed by currents or other forces. The district engineer may extend the period of temporary side casting for no more than a total of 180 days, where appropriate. In wetlands, the top 6 to 12 inches of the trench should normally be backfilled with topsoil from the trench. The trench cannot be constructed or backfilled in such a manner as to drain waters of the United States (e.g., backfilling with extensive gravel layers, creating a french drain effect). Any exposed slopes and stream banks must be stabilized immediately upon completion of the utility line crossing of each waterbody.
Utility line substations: This NWP authorizes the construction, maintenance, or expansion of substation facilities associated with a power line or utility line in non-tidal waters of the United States, provided the activity, in combination with all other activities included in one single and complete project, does not result in the loss of greater than 1/2-acre of waters of the United States. This NWP does not authorize discharges into non-tidal wetlands adjacent to tidal waters of the United States to construct, maintain, or expand substation facilities. Foundations for overhead utility line towers, poles, and anchors: This NWP authorizes the construction or maintenance of foundations for overhead utility line towers, poles, and anchors in all waters of the United States, provided the foundations are the minimum size necessary and separate footings for each tower leg (rather than a larger single pad) are used where feasible.
Access roads: This NWP authorizes the construction of access roads for the construction and maintenance of utility lines, including overhead power lines and utility line substations, in non-tidal waters of the United States, provided the activity, in combination with all other activities included in one single and complete project, does not cause the loss of greater than 1/2-acre of non-tidal waters of the United States. This NWP does not authorize discharges into non- tidal wetlands adjacent to tidal waters for access roads. Access roads must be the minimum width necessary (see Note 2, below). Access roads must be constructed so that the length of the road minimizes any adverse effects on waters of the United States and must be as near as possible to pre-construction contours and elevations (e.g., at grade corduroy roads or

geotextile/gravel roads). Access roads constructed above pre-construction contours and elevations in waters of the United States must be properly bridged or culverted to maintain surface flows. This NWP may authorize utility lines in or affecting navigable waters of the United States even if there is no associated discharge of dredged or fill material (See 33 CFR part 322). Overhead utility lines constructed over section 10 waters and utility lines that are routed in or under section 10 waters without a discharge of dredged or fill material require a section 10 permit. This NWP authorizes, to the extent that Department of the Army authorization is required, temporary structures, fills, and work necessary for the remediation of inadvertent returns of drilling fluids to waters of the United States through sub-soil fissures or fractures that might occur during horizontal directional drilling activities conducted for the purpose of installing or replacing utility lines. These remediation activities must be done as soon as practicable, to restore the affected waterbody. District engineers may add special conditions to this NWP to require a remediation plan for addressing inadvertent returns of drilling fluids to waters of the United States during horizontal directional drilling activities conducted for the purpose of installing or replacing utility lines. This NWP also authorizes temporary structures, fills, and work, including the use of temporary mats, necessary to conduct the utility line activity. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. After construction, temporary fills must be removed in their entirety and the affected areas returned to pre- construction elevations. The areas affected by temporary fills must be revegetated, as appropriate.
Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if any of the following criteria are met: (1) The activity involves mechanized land clearing in a forested wetland for the utility line right-of-way; (2) a section 10 permit is required; (3) the utility line in waters of the United States, excluding overhead lines, exceeds 500 feet; (4) the utility line is placed within a jurisdictional area (i.e., water of the United States), and it runs parallel to or along a stream bed that is within that jurisdictional area; (5) discharges that result in the loss of greater than 1/10- acre of waters of the United States; (6) permanent access roads are constructed above grade in waters of the United States for a distance of more than 500 feet; or (7) permanent access roads are constructed in waters of the United States with impervious materials. (See general condition 32.) (Sections 10 and 404)

Note 1: Where the utility line is constructed or installed in navigable waters of the United States (i.e., section 10 waters) within the coastal United States, the Great Lakes, and United States territories, a copy of the NWP verification will be sent by the Corps to the National Oceanic and Atmospheric Administration (NOAA), National Ocean Service (NOS), for charting the utility line to protect navigation.

Note 2: For utility line activities crossing a single waterbody more than one time at separate and distant locations, or multiple waterbodies at separate and distant locations, each crossing is considered a single and complete project for purposes of NWP authorization. Utility line activities must comply with 33 CFR 330.6(d).

Note 3: Utility lines consisting of aerial electric power transmission lines crossing navigable waters of the United States (which are defined at 33 CFR part 329) must comply with the applicable minimum clearances specified in 33 CFR 322.5(i).

Note 4: Access roads used for both construction and maintenance may be authorized, provided they meet the terms and conditions of this NWP. Access roads used solely for construction of the utility line must be removed upon completion of the work, in accordance with the requirements for temporary fills.

Note 5: Pipes or pipelines used to transport gaseous, liquid, liquescent, or slurry substances over navigable waters of the United States are considered to be bridges, not utility lines, and may require a permit from the U.S. Coast Guard pursuant to section 9 of the Rivers and Harbors Act of 1899. However, any discharges of dredged or fill material into waters of the United States associated with such pipelines will require a section 404 permit (see NWP 15).

Note 6: This NWP authorizes utility line maintenance and repair activities that do not qualify for the Clean Water Act section 404(f) exemption for maintenance of currently serviceable fills or fill structures.

Note 7: For overhead utility lines authorized by this NWP, a copy of the PCN and NWP verification will be provided to the Department of Defense Siting Clearinghouse, which will evaluate potential effects on military activities.

Note 8: For NWP 12 activities that require pre-construction notification, the PCN must include any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity, including other separate and distant crossings that require Department of the Army authorization but do not require pre-construction notification (see paragraph (b) of general condition 32). The district engineer will evaluate the PCN in accordance with Section D, ''District Engineer's Decision.'' The district engineer may require mitigation to ensure that the authorized activity results in no more than minimal individual and cumulative adverse environmental effects (see general condition 23).

Nationwide Permit General Conditions

Note: To qualify for NWP authorization, the prospective permittee must comply with the following general conditions, as applicable, in addition to any regional or case-specific conditions imposed by the division engineer or district engineer. Prospective permittees should contact the appropriate Corps district office to determine if regional conditions have been imposed on an NWP. Prospective permittees should also contact the appropriate Corps district office to determine the status of Clean Water Act Section 401 water quality certification and/ or Coastal Zone Management Act consistency for an NWP. Every person who may wish to obtain permit authorization under one or more NWPs, or who is currently relying on an existing or prior permit authorization under one or more NWPs, has been and is on notice that all of the provisions of 33 CFR 330.1 through 330.6 apply to every NWP authorization. Note especially 33 CFR 330.5 relating to the modification, suspension, or revocation of any NWP authorization.

1. Navigation.

(a) No activity may cause more than a minimal adverse effect on navigation.
(b) Any safety lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, must be installed and maintained at the permittee's expense on authorized facilities in navigable waters of the United States.
(c) The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

2. Aquatic Life Movements.

No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. All permanent and temporary crossings of waterbodies shall be suitably culverted, bridged, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species. If a bottomless culvert cannot be used, then the crossing should be designed and constructed to minimize adverse effects to aquatic life movements.

3. Spawning Areas.

Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., through excavation, fill, or downstream smothering by substantial turbidity) of an important spawning area are not authorized.

4. Migratory Bird Breeding Areas.

Activities in waters of the United States that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.

5. Shellfish Beds.

No activity may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWPs 4 and 48, or is a shellfish seeding or habitat restoration activity authorized by NWP 27.

6. Suitable Material.

No activity may use unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.). Material used for construction or discharged must be free from toxic pollutants in toxic amounts (see section 307 of the Clean Water Act).

7. Water Supply Intakes.

No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent bank stabilization.

8. Adverse Effects from Impoundments.

If the activity creates an impoundment of water, adverse effects to the aquatic system due to accelerating the passage of water, and/or restricting its flow must be minimized to the maximum extent practicable.

9. Management of Water Flows.

To the maximum extent practicable, the pre-construction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization, storm water management activities, and temporary and permanent road crossings, except as provided below. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the pre-construction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).

10. Fills Within 100-Year Floodplains.

The activity must comply with applicable FEMA-approved state or local floodplain management requirements.

11. Equipment.

Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance.

12. Soil Erosion and Sediment Controls.

Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow, or during low tides.

13. Removal of Temporary Fills.

Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The affected areas must be revegetated, as appropriate.

14. Proper Maintenance.

Any authorized structure or fill shall be properly maintained, including maintenance to ensure public safety and compliance with applicable NWP general conditions, as well as any activity-specific conditions added by the district engineer to an NWP authorization.

15. Single and Complete Project.

The activity must be a single and complete project. The same NWP cannot be used more than once for the same single and complete project.

16. Wild and Scenic Rivers.

(a) No NWP activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a ''study river'' for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status.
(b) If a proposed NWP activity will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a ''study river'' for possible inclusion in the system while the river is in an official study status, the permittee must submit a pre-construction notification (see general condition 32). The district engineer will coordinate the PCN with the Federal agency with direct management responsibility for that river. The permittee shall not begin the NWP activity until notified by the district engineer that the Federal agency with direct management responsibility for that river has determined in writing that the proposed NWP activity will not adversely affect the Wild and Scenic River designation or study status.
(c) Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency responsible for the designated Wild and Scenic River or study river (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service). Information on these rivers is also available at: http://www.rivers.gov/.

17. Tribal Rights.

No NWP activity may cause more than minimal adverse effects on tribal rights (including treaty rights), protected tribal resources, or tribal lands.

18. Endangered Species.

(a) No activity is authorized under any NWP which is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will

directly or indirectly destroy or adversely modify the critical habitat of such species. No activity is authorized under any NWP which ''may affect'' a listed species or critical habitat, unless ESA section 7 consultation addressing the effects of the proposed activity has been completed. Direct effects are the immediate effects on listed species and critical habitat caused by the NWP activity. Indirect effects are those effects on listed species and critical habitat that are caused by the NWP activity and are later in time, but still are reasonably certain to occur.

(b) Federal agencies should follow their own procedures for complying with the requirements of the ESA. If pre- construction notification is required for the proposed activity, the Federal permittee must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will verify that the appropriate documentation has been submitted. If the appropriate documentation has not been submitted, additional ESA section 7 consultation may be necessary for the activity and the respective federal agency would be responsible for fulfilling its obligation under section 7 of the ESA.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if any listed species or designated critical habitat might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that might affect Federally-listed endangered or threatened species or designated critical habitat, the pre-construction notification must include the name(s) of the endangered or threatened species that might be affected by the proposed activity or that utilize the designated critical habitat that might be affected by the proposed activity. The district engineer will determine whether the proposed activity ''may affect'' or will have ''no effect'' to listed species and designated critical habitat and will notify the non-Federal applicant of the Corps' determination within 45 days of receipt of a complete pre-construction notification. In cases where the non- Federal applicant has identified listed species or critical habitat that might be affected or is in the vicinity of the activity, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification that the proposed activity will have ''no effect'' on listed species or critical habitat, or until ESA section 7 consultation has been completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(d) As a result of formal or informal consultation with the FWS or NMFS the district engineer may add species- specific permit conditions to the NWPs.

(e) Authorization of an activity by an NWP does not authorize the ''take'' of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with ''incidental take'' provisions, etc.) from the FWS or the NMFS, the Endangered Species Act prohibits any person subject to the jurisdiction of the United States to take a listed species, where ''take'' means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The word ''harm'' in the definition of ''take'' means an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.

(f) If the non-federal permittee has a valid ESA section 10(a)(1)(B) incidental take permit with an approved Habitat Conservation Plan for a project or a group of projects that includes the proposed NWP activity, the non-federal applicant should provide a copy of that ESA section 10(a)(1)(B) permit with the PCN required by paragraph (c) of this general condition. The district

engineer will coordinate with the agency that issued the ESA section 10(a)(1)(B) permit to determine whether the proposed NWP activity and the associated incidental take were considered in the internal ESA section 7 consultation conducted for the ESA section 10(a)(1)(B) permit. If that coordination results in concurrence from the agency that the proposed NWP activity and the associated incidental take were considered in the internal ESA section 7 consultation for the ESA section 10(a)(1)(B) permit, the district engineer does not need to conduct a separate ESA section 7 consultation for the proposed NWP activity. The district engineer will notify the non-federal applicant within 45 days of receipt of a complete pre-construction notification whether the ESA section 10(a)(1)(B) permit covers the proposed NWP activity or whether additional ESA section 7 consultation is required.
(g) Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the FWS and NMFS or their world wide Web pages at http://www.fws.gov/ or http:// www.fws.gov/ipac and http:// www.nmfs.noaa.gov/pr/species/esa/ respectively.

19. Migratory Birds and Bald and Golden Eagles.

The permittee is responsible for ensuring their action complies with the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. The permittee is responsible for contacting appropriate local office of the U.S. Fish and Wildlife Service to determine applicable measures to reduce impacts to migratory birds or eagles, including whether ''incidental take'' permits are necessary and available under the Migratory Bird Treaty Act or Bald and Golden Eagle Protection Act for a particular activity.

20. Historic Properties.

(a) In cases where the district engineer determines that the activity may have the potential to cause effects to properties listed, or eligible for listing, in the National Register of Historic Places, the activity is not authorized, until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.
(b) Federal permittees should follow their own procedures for complying with the requirements of section 106 of the National Historic Preservation Act. If pre-construction notification is required for the proposed NWP activity, the Federal permittee must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will verify that the appropriate documentation has been submitted. If the appropriate documentation is not submitted, then additional consultation under section 106 may be necessary. The respective federal agency is responsible for fulfilling its obligation to comply with section 106.
(c) Non-federal permittees must submit a pre-construction notification to the district engineer if the NWP activity might have the potential to cause effects to any historic properties listed on, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties. For such activities, the pre-construction notification must state which historic properties might have the potential to be affected by the proposed NWP activity or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties. Assistance regarding information on the location of, or potential for, the presence of historic properties can be sought

from the State Historic Preservation Officer, Tribal Historic Preservation Officer, or designated tribal representative, as appropriate, and the National Register of Historic Places (see 33 CFR 330.4(g)). When reviewing pre-construction notifications, district engineers will comply with the current procedures for addressing the requirements of section 106 of the National Historic Preservation Act. The district engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts, which may include background research, consultation, oral history interviews, sample field investigation, and field survey. Based on the information submitted in the PCN and these identification efforts, the district engineer shall determine whether the proposed NWP activity has the potential to cause effects on the historic properties. Section 106 consultation is not required when the district engineer determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR 800.3(a)). Section 106 consultation is required when the district engineer determines that the activity has the potential to cause effects on historic properties. The district engineer will conduct consultation with consulting parties identified under 36 CFR 800.2(c) when he or she makes any of the following effect determinations for the purposes of section 106 of the NHPA: no historic properties affected, no adverse effect, or adverse effect. Where the non-Federal applicant has identified historic properties on which the activity might have the potential to cause effects and so notified the Corps, the non-Federal applicant shall not begin the activity until notified by the district engineer either that the activity has no potential to cause effects to historic properties or that NHPA section 106 consultation has been completed.
(d) For non-federal permittees, the district engineer will notify the prospective permittee within 45 days of receipt of a complete pre-construction notification whether NHPA section 106 consultation is required. If NHPA section 106 consultation is required, the district engineer will notify the non- Federal applicant that he or she cannot begin the activity until section 106 consultation is completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.
(e) Prospective permittees should be aware that section 110k of the NHPA (54 U.S.C. 306113) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the Corps is required to notify the ACHP and provide documentation specifying the circumstances, the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/ THPO, appropriate Indian tribes if the undertaking occurs on or affects historic properties on tribal lands or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.

21. <u>Discovery of Previously Unknown Remains and Artifacts.</u>

If you discover any previously unknown historic, cultural or archeological remains and artifacts while accomplishing the activity authorized by this permit, you must immediately notify the district engineer of what you have found, and to the maximum extent practicable, avoid

construction activities that may affect the remains and artifacts until the required coordination has been completed. The district engineer will initiate the Federal, Tribal, and state coordination required to determine if the items or remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

22. Designated Critical Resource Waters.

Critical resource waters include, NOAA-managed marine sanctuaries and marine monuments, and National Estuarine Research Reserves. The district engineer may designate, after notice and opportunity for public comment, additional waters officially designated by a state as having particular environmental or ecological significance, such as outstanding national resource waters or state natural heritage sites. The district engineer may also designate additional critical resource waters after notice and opportunity for public comment.
(a) Discharges of dredged or fill material into waters of the United States are not authorized by NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, 44, 49, 50, 51, and 52 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters.
(b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, 38, and 54, notification is required in accordance with general condition 32, for any activity proposed in the designated critical resource waters including wetlands adjacent to those waters. The district engineer may authorize activities under these NWPs only after it is determined that the impacts to the critical resource waters will be no more than minimal.

23. Mitigation.

The district engineer will consider the following factors when determining appropriate and practicable mitigation necessary to ensure that the individual and cumulative adverse environmental effects are no more than minimal:
(a) The activity must be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the United States to the maximum extent practicable at the project site (i.e., on site).
(b) Mitigation in all its forms (avoiding, minimizing, rectifying, reducing, or compensating for resource losses) will be required to the extent necessary to ensure that the individual and cumulative adverse environmental effects are no more than minimal.
(c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland losses that exceed 1/10-acre and require pre- construction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse environmental effects of the proposed activity are no more than minimal, and provides an activity-specific waiver of this requirement. For wetland losses of 1/10-acre or less that require pre- construction notification, the district engineer may determine on a case-by- case basis that compensatory mitigation is required to ensure that the activity results in only minimal adverse environmental effects.
(d) For losses of streams or other open waters that require pre-construction notification, the district engineer may require compensatory mitigation to ensure that the activity results in no more than minimal adverse environmental effects. Compensatory mitigation for losses of streams should be provided, if practicable, through stream rehabilitation, enhancement, or preservation, since streams are difficult- to-replace resources (see 33 CFR 332.3(e)(3)).

(e) Compensatory mitigation plans for NWP activities in or near streams or other open waters will normally include a requirement for the restoration or enhancement, maintenance, and legal protection (e.g., conservation easements) of riparian areas next to open waters. In some cases, the restoration or maintenance/protection of riparian areas may be the only compensatory mitigation required. Restored riparian areas should consist of native species. The width of the required riparian area will address documented water quality or aquatic habitat loss concerns. Normally, the riparian area will be 25 to 50 feet wide on each side of the stream, but the district engineer may require slightly wider riparian areas to address documented water quality or habitat loss concerns. If it is not possible to restore or maintain/protect a riparian area on both sides of a stream, or if the waterbody is a lake or coastal waters, then restoring or maintaining/protecting a riparian area along a single bank or shoreline may be sufficient. Where both wetlands and open waters exist on the project site, the district engineer will determine the appropriate compensatory mitigation (e.g., riparian areas and/or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where riparian areas are determined to be the most appropriate form of minimization or compensatory mitigation, the district engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland losses.
(f) Compensatory mitigation projects provided to offset losses of aquatic resources must comply with the applicable provisions of 33 CFR part 332.

(1) The prospective permittee is responsible for proposing an appropriate compensatory mitigation option if compensatory mitigation is necessary to ensure that the activity results in no more than minimal adverse environmental effects. For the NWPs, the preferred mechanism for providing compensatory mitigation is mitigation bank credits or in-lieu fee program credits (see 33 CFR 332.3(b)(2) and (3)). However, if an appropriate number and type of mitigation bank or in-lieu credits are not available at the time the PCN is submitted to the district engineer, the district engineer may approve the use of permittee-responsible mitigation.

(2) The amount of compensatory mitigation required by the district engineer must be sufficient to ensure that the authorized activity results in no more than minimal individual and cumulative adverse environmental effects (see 33 CFR 330.1(e)(3)). (See also 33 CFR 332.3(f)).

(3) Since the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, aquatic resource restoration should be the first compensatory mitigation option considered for permittee-responsible mitigation.

(4) If permittee-responsible mitigation is the proposed option, the prospective permittee is responsible for submitting a mitigation plan. A conceptual or detailed mitigation plan may be used by the district engineer to make the decision on the NWP verification request, but a final mitigation plan that addresses the applicable requirements of 33 CFR 332.4(c)(2) through (14) must be approved by the district engineer before the permittee begins work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation (see 33 CFR 332.3(k)(3)).

(5) If mitigation bank or in-lieu fee program credits are the proposed option, the mitigation plan only needs to address the baseline conditions at the impact site and the number of credits to be provided.

(6) Compensatory mitigation requirements (e.g., resource type and amount to be provided as compensatory mitigation, site protection, ecological performance standards, monitoring requirements) may be addressed through conditions added to the NWP authorization, instead of components of a compensatory mitigation plan (see 33 CFR 332.4(c)(1)(ii)).

(g) Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the NWPs. For example, if an NWP has an acreage limit of 1/2-acre, it cannot be used to authorize any NWP activity resulting in the loss of greater than 1/2- acre of waters of the United States, even if compensatory mitigation is provided that replaces or restores some of the lost waters. However, compensatory mitigation can and should be used, as necessary, to ensure that an NWP activity already meeting the established acreage limits also satisfies the no more than minimal impact requirement for the NWPs.
(h) Permittees may propose the use of mitigation banks, in-lieu fee programs, or permittee-responsible mitigation. When developing a compensatory mitigation proposal, the permittee must consider appropriate and practicable options consistent with the framework at 33 CFR 332.3(b). For activities resulting in the loss of marine or estuarine resources, permittee-responsible mitigation may be environmentally preferable if there are no mitigation banks or in-lieu fee programs in the area that have marine or estuarine credits available for sale or transfer to the permittee. For permittee- responsible mitigation, the special conditions of the NWP verification must clearly indicate the party or parties responsible for the implementation and performance of the compensatory mitigation project, and, if required, its long-term management.
(i) Where certain functions and services of waters of the United States are permanently adversely affected by a regulated activity, such as discharges of dredged or fill material into waters of the United States that will convert a forested or scrub-shrub wetland to a herbaceous wetland in a permanently maintained utility line right-of-way, mitigation may be required to reduce the adverse environmental effects of the activity to the no more than minimal level.

24. Safety of Impoundment Structures.

To ensure that all impoundment structures are safely designed, the district engineer may require non-Federal applicants to demonstrate that the structures comply with established state dam safety criteria or have been designed by qualified persons. The district engineer may also require documentation that the design has been independently reviewed by similarly qualified persons, and appropriate modifications made to ensure safety.

25. Water Quality.

Where States and authorized Tribes, or EPA where applicable, have not previously certified compliance of an NWP with CWA section 401, individual 401 Water Quality Certification must be obtained or waived (see 33 CFR 330.4(c)). The district engineer or State or Tribe may require additional water quality management measures to ensure that the authorized activity does not result in more than minimal degradation of water quality. *Specifically for North Dakota, the North Dakota Department of Health has denied water quality certification for all projects proposed to affect Class 1 and 1A, II and Class III rivers and streams or classified lakes listed in Appendices I and II of the standards, individual certification must be obtained. For project proposed to affect any other waters, the North Dakota Department of Health has issued water quality certification provided the attached Construction and Environmental Disturbance Requirements are followed. The Standards may be found at* http://www.legis.nd.gov/information/acdata/pdf/33-16-02.1.pdf?20160311115632
On Tribal Lands, Water Quality Certification is denied for all Nationwide Permits. Applicants must work with EPA to obtain individual water quality certification. Contact: USEPA, Region 8,

401 Certification Program – 8WP-AAP, 1595 Wynkoop Street, Denver, Colorado 80202-1129. (303-312-6909)

26. Coastal Zone Management.

In coastal states where an NWP has not previously received a state coastal zone management consistency concurrence, an individual state coastal zone management consistency concurrence must be obtained, or a presumption of concurrence must occur (see 33 CFR 330.4(d)). The district engineer or a State may require additional measures to ensure that the authorized activity is consistent with state coastal zone management requirements.

27. Regional and Case-By-Case Conditions.

The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state, Indian Tribe, or U.S. EPA in its section 401 Water Quality Certification, or by the state in its Coastal Zone Management Act consistency determination.

28. Use of Multiple Nationwide Permits.

The use of more than one NWP for a single and complete project is prohibited, except when the acreage loss of waters of the United States authorized by the NWPs does not exceed the acreage limit of the NWP with the highest specified acreage limit. For example, if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the United States for the total project cannot exceed 1/3-acre.

29. Transfer of Nationwide Permit Verifications.

If the permittee sells the property associated with a nationwide permit verification, the permittee may transfer the nationwide permit verification to the new owner by submitting a letter to the appropriate Corps district office to validate the transfer. A copy of the nationwide permit verification must be attached to the letter, and the letter must contain the following statement and signature:

> When the structures or work authorized by this nationwide permit are still in existence at the time the property is transferred, the terms and conditions of this nationwide permit, including any special conditions, will continue to be binding on the new owner(s) of the property. To validate the transfer of this nationwide permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.
>
> _____ (Transferee) _____ (Date)

30. Compliance Certification.

Each permittee who receives an NWP verification letter from the Corps must provide a signed certification documenting completion of the authorized activity and implementation of any required compensatory mitigation. The success of any required permittee-responsible mitigation, including the achievement of ecological performance standards, will be addressed separately by the district engineer. The Corps will provide the permittee the certification document with the NWP verification letter. The certification document will include:
(a) A statement that the authorized activity was done in accordance with the NWP authorization, including any general, regional, or activity-specific conditions;
(b) A statement that the implementation of any required compensatory mitigation was completed in accordance with the permit conditions. If credits from a mitigation bank or in-lieu fee program are used to satisfy the compensatory mitigation requirements, the certification must include the documentation required by 33 CFR 332.3(l)(3) to confirm that the permittee secured the appropriate number and resource type of credits; and
(c) The signature of the permittee certifying the completion of the activity and mitigation. The completed certification document must be submitted to the district engineer within 30 days of completion of the authorized activity or the implementation of any required compensatory mitigation, whichever occurs later.

31. Activities Affecting Structures or Works Built by the United States.

If an NWP activity also requires permission from the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers (USACE) federally authorized Civil Works project (a ''USACE project''), the prospective permittee must submit a pre- construction notification. See paragraph (b)(10) of general condition 32. An activity that requires section 408 permission is not authorized by NWP until the appropriate Corps office issues the section 408 permission to alter, occupy, or use the USACE project, and the district engineer issues a written NWP verification.

32. Pre-Construction Notification.

(a) Timing. Where required by the terms of the NWP, the prospective permittee must notify the district engineer by submitting a pre-construction notification (PCN) as early as possible. The district engineer must determine if the PCN is complete within 30 calendar days of the date of receipt and, if the PCN is determined to be incomplete, notify the prospective permittee within that 30 day period to request the additional information necessary to make the PCN complete. The request must specify the information needed to make the PCN complete. As a general rule, district engineers will request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the district engineer will notify the prospective permittee that the PCN is still incomplete and the PCN review process will not commence until all of the requested information has been received by the district engineer. The prospective permittee shall not begin the activity until either:

(1) He or she is notified in writing by the district engineer that the activity may proceed under the NWP with any special conditions imposed by the district or division engineer; or

(2) 45 calendar days have passed from the district engineer's receipt of the complete PCN and the prospective permittee has not received written notice from the district or division

engineer. However, if the permittee was required to notify the Corps pursuant to general condition 18 that listed species or critical habitat might be affected or are in the vicinity of the activity, or to notify the Corps pursuant to general condition 20 that the activity might have the potential to cause effects to historic properties, the permittee cannot begin the activity until receiving written notification from the Corps that there is ''no effect'' on listed species or ''no potential to cause effects'' on historic properties, or that any consultation required under Section 7 of the Endangered Species Act (see 33 CFR 330.4(f)) and/or section 106 of the National Historic Preservation Act (see 33 CFR 330.4(g)) has been completed. Also, work cannot begin under NWPs 21, 49, or 50 until the permittee has received written approval from the Corps. If the proposed activity requires a written waiver to exceed specified limits of an NWP, the permittee may not begin the activity until the district engineer issues the waiver. If the district or division engineer notifies the permittee in writing that an individual permit is required within 45 calendar days of receipt of a complete PCN, the permittee cannot begin the activity until an individual permit has been obtained. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

(b) Contents of Pre-Construction Notification: The PCN must be in writing and include the following information:

(1) Name, address and telephone numbers of the prospective permittee;

(2) Location of the proposed activity;

(3) Identify the specific NWP or NWP(s) the prospective permittee wants to use to authorize the proposed activity;

(4) A description of the proposed activity; the activity's purpose; direct and indirect adverse environmental effects the activity would cause, including the anticipated amount of loss of wetlands, other special aquatic sites, and other waters expected to result from the NWP activity, in acres, linear feet, or other appropriate unit of measure; a description of any proposed mitigation measures intended to reduce the adverse environmental effects caused by the proposed activity; and any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity, including other separate and distant crossings for linear projects that require Department of the Army authorization but do not require pre-construction notification. The description of the proposed activity and any proposed mitigation measures should be sufficiently detailed to allow the district engineer to determine that the adverse environmental effects of the activity will be no more than minimal and to determine the need for compensatory mitigation or other mitigation measures. For single and complete linear projects, the PCN must include the quantity of anticipated losses of wetlands, other special aquatic sites, and other waters for each single and complete crossing of those wetlands, other special aquatic sites, and other waters. Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the activity and when provided results in a quicker decision. Sketches should contain sufficient detail to provide an illustrative description of the proposed activity (e.g., a conceptual plan), but do not need to be detailed engineering plans);

(5) The PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral streams, on the project site. Wetland delineations must be prepared in accordance with the current method required by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters on the project site, but there may be a delay if the Corps does the delineation,

especially if the project site is large or contains many wetlands, other special aquatic sites, and other waters. Furthermore, the 45 day period will not start until the delineation has been submitted to or completed by the Corps, as appropriate;

(6) If the proposed activity will result in the loss of greater than 1/10-acre of wetlands and a PCN is required, the prospective permittee must submit a statement describing how the mitigation requirement will be satisfied, or explaining why the adverse environmental effects are no more than minimal and why compensatory mitigation should not be required. As an alternative, the prospective permittee may submit a conceptual or detailed mitigation plan.

(7) For non-Federal permittees, if any listed species or designated critical habitat might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat, the PCN must include the name(s) of those endangered or threatened species that might be affected by the proposed activity or utilize the designated critical habitat that might be affected by the proposed activity. For NWP activities that require pre-construction notification, Federal permittees must provide documentation demonstrating compliance with the Endangered Species Act.

(8) For non-Federal permittees, if the NWP activity might have the potential to cause effects to a historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places, the PCN must state which historic property might have the potential to be affected by the proposed activity or include a vicinity map indicating the location of the historic property. For NWP activities that require pre-construction notification, Federal permittees must provide documentation demonstrating compliance with section 106 of the National Historic Preservation Act;

(9) For an activity that will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a ''study river'' for possible inclusion in the system while the river is in an official study status, the PCN must identify the Wild and Scenic River or the ''study river'' (see general condition 16); and

(10) For an activity that requires permission from the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers federally authorized civil works project, the pre-construction notification must include a statement confirming that the project proponent has submitted a written request for section 408 permission from the Corps office having jurisdiction over that USACE project.

(c) Form of Pre-Construction Notification: The standard individual permit application form (Form ENG 4345) may be used, but the completed application form must clearly indicate that it is an NWP PCN and must include all of the applicable information required in paragraphs (b)(1) through (10) of this general condition. A letter containing the required information may also be used. Applicants may provide electronic files of PCNs and supporting materials if the district engineer has established tools and procedures for electronic submittals.

(d) Agency Coordination:

(1) The district engineer will consider any comments from Federal and state agencies concerning the proposed activity's compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the activity's adverse environmental effects so that they are no more than minimal.

(2) Agency coordination is required for: (i) All NWP activities that require pre-construction notification and result in the loss of greater than 1/2-acre of waters of the United States; (ii) NWP 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52 activities that require pre-construction notification and will result in the loss of greater than 300 linear feet of stream bed; (iii) NWP 13

activities in excess of 500 linear feet, fills greater than one cubic yard per running foot, or involve discharges of dredged or fill material into special aquatic sites; and (iv) NWP 54 activities in excess of 500 linear feet, or that extend into the waterbody more than 30 feet from the mean low water line in tidal waters or the ordinary high water mark in the Great Lakes.

(3) When agency coordination is required, the district engineer will immediately provide (e.g., via email, facsimile transmission, overnight mail, or other expeditious manner) a copy of the complete PCN to the appropriate Federal or state offices (FWS, state natural resource or water quality agency, EPA, and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will have 10 calendar days from the date the material is transmitted to notify the district engineer via telephone, facsimile transmission, or email that they intend to provide substantive, site-specific comments. The comments must explain why the agency believes the adverse environmental effects will be more than minimal. If so contacted by an agency, the district engineer will wait an additional 15 calendar days before making a decision on the pre-construction notification. The district fully consider agency comments received within the specified time frame concerning the proposed activity's compliance with the terms and conditions of the NWPs, including the need for mitigation to ensure the net adverse environmental effects of the proposed activity are no more than minimal. The district engineer will provide no response to the resource agency, except as provided below. The district engineer will indicate in the administrative record associated with each pre-construction notification that the resource agencies' concerns were considered. For NWP 37, the emergency watershed protection and rehabilitation activity may proceed immediately in cases where there is an unacceptable hazard to life or a significant loss of property or economic hardship will occur. The district engineer will consider any comments received to decide whether the NWP 37 authorization should be modified, suspended, or revoked in accordance with the procedures at 33 CFR 330.5.

(4) In cases of where the prospective permittee is not a Federal agency, the district engineer will provide a response to NMFS within 30 calendar days of receipt of any Essential Fish Habitat conservation recommendations, as required by section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act.

5) Applicants are encouraged to provide the Corps with either electronic files or multiple copies of pre- construction notifications to expedite agency coordination.

Further Information

1. District Engineers have authority to determine if an activity complies with the terms and conditions of an NWP.
2. NWPs do not obviate the need to obtain other federal, state, or local permits, approvals, or authorizations required by law.
3. NWPs do not grant any property rights or exclusive privileges.
4. NWPs do not authorize any injury to the property or rights of others.
5. NWPs do not authorize interference with any existing or proposed Federal project (see general condition 31).

2017 NATIONWIDE PERMITS
REGIONAL CONDITIONS
OMAHA DISTRICT
STATE OF NORTH DAKOTA

The following Nationwide Permit Regional Conditions will be used in the State of North Dakota. Regional conditions are placed on Nationwide Permits to ensure projects result in no more than minimal adverse impacts to the aquatic environment and to address local resource concerns.

1. **Wetlands Classified as Peatlands – Revoked for use**

All Nationwide Permits, with the exception of 3, 5, 20, 32, 38 and 45, are revoked for use in peatlands. Peatlands are permanently or seasonally saturated and inundated wetlands where conditions inhibit organic matter decomposition and allow for the accumulation of peat. Under cool, anaerobic, and acidic conditions, the rate of organic matter accumulation exceeds organic decay.

2. **Wetlands Classified as Peatlands – Preconstruction Notification Requirement**

For Nationwide Permits 3, 5, 20, 32, 38 and 45 permittees must notify the Corps in accordance with General Condition 32 (Pre-Construction Notification) prior to initiating any regulated activity impacting peatlands.

3. **Waters Adjacent to Natural Springs – Preconstruction Notification Requirement**

For all Nationwide Permits permittees must notify the Corps in accordance with General Condition No. 32 (Pre-Construction Notification) for regulated activities located within 100 feet of the water source in natural spring areas. For purposes of this condition, a spring source is defined as any location where there is flow emanating from a distinct point at any time during the growing season. Springs do not include seeps and other groundwater discharge areas where there is no distinct point source.

4. **Missouri River, including Lake Sakakawea and Lake Oahe – Pre-construction Notification Requirement**

For all Nationwide Permits permittees must notify the Corps in accordance with General Condition No. 32 (Pre-Construction Notification) prior to initiating any regulated activity occurring in or under the Missouri River, including Lake Sakakawea and Lake Oahe. In addition, any activity occurring in an off channel area (marinas, bays, etc.) of any of these waterbodies, a preconstruction notification is required.

5. **Spawning Areas**

Spawning restrictions and important fish habitat areas, if applicable, can be accessed on the North Dakota Game & Fish Department's website at:

http://gf.nd.gov/gnf/conservation/docs/spawning-restriction-exclusions.pdf

No regulated activity within the Red River of the North shall occur between 15 April and 1 July. Spawning season restrictions do not apply to projects involving dredging or other discharges of less than 25 cubic yards of material in any jurisdictional water.

6. **Counter-Sinking Culverts and Associated Riprap – All Nationwide Permits**

In streams with intermittent or perennial flow and a stable stream bed, culvert stream crossings shall be installed with the culvert invert set below the natural streambed according to the table below. This regional condition does not apply in instances where the lowering of the culvert invert would allow a headcut to migrate upstream of the project into an unaffected stream reach or result in lowering the elevation of the stream reach.

Riprap inlet and outlet protection shall be placed to match the height of the culvert invert.

Culvert Type	Drainage Area	Minimum Distance Culvert Invert Shall Be Lowered Below Stream Flow Line
All culvert types	≤ 100 acres	Not required
Pipe diameter <8.0 ft	100 to 640 acres	0.5 ft
Pipe diameter <8.0 ft	>640 acres	1.0 ft
Pipe diameter ≥ 8.0 ft	All drainage sizes	1.0 ft
Box culvert	All drainage sizes	1.0 ft

REGIONAL CONDITIONS APPLICABLE TO SPECIFIC NATIONWIDE PERMITS

Nationwide Permit 7 – Outfall Structures and Associated Intake Structures and Nationwide Permit 12 – Utility Line Activities.

Intake Structures – Intake screens with a maximum mesh opening of ¼-inch must be provided, inspected annually, and maintained. Wire, Johnson-like, screens must have a maximum distance between wires of 1/8-inch. Water velocity at the intake screen shall not exceed ½-foot per second.

Pumping plant sound levels will not exceed 75 dB at 50 feet.

Intakes located in Lake Sakakawea, above river mile 1519, and on the Yellowstone River, are subject to the following conditions:

- The intakes shall be floating.
- At the beginning of the pumping season, the intake shall be placed over water with a minimum depth of 20 feet.
- If the 20-foot depth is not attainable, then the intake shall be located over the deepest water available.

- If the water depth falls below six feet, the intake shall be moved to deeper water or the maximum intake velocity shall be limited to ¼ foot per second.

Intakes located in Lake Sakakawea, below river mile 1519, and the Missouri River below Garrison Dam are subject to the following conditions:

- The intakes shall be submerged.
- At the beginning of the pumping season, the intake will be placed at least 20 vertical feet below the existing water level.
- The intake shall be elevated 2 to 4 feet off the bottom of the river or reservoir bed.
- If the 20-foot depth is not attainable, then the intake velocity shall be limited to ¼-foot per second with intake placed at the maximum practicable attainable depth.

Intakes and associated utility lines that are proposed to cross sandbars in areas designated as piping plover critical habitat are prohibited.

Utility Lines

- Any temporary open trench associated with utility lines are to be closed within 30 days of excavation. This time limit may be extended by notifying the North Dakota Regulatory Office and receiving a written response that the extension is acceptable.

Nationwide Permit 11 – Temporary Recreational Structures – Boat Docks

To ensure that the work or structure shall not cause unreasonable obstruction to the free navigation of the navigable waters, the following conditions are required:

- No boat dock shall be located on a sandbar or barren sand feature. The farthest point riverward of a dock shall not exceed a total length of 30 feet from the ordinary high watermark. Information Note: Issuance of this permit does not supersede authorization required by the North Dakota State Engineer's Office.
- Any boat dock shall be anchored to the top of the high bank.
- Any boat dock located within an excavated bay or marina that is off the main river channel may be anchored to the bay or marina bottom with spuds.

Section 10 Waters located in the State of North Dakota are:

Bois de Sioux River
James River
Missouri River
Red River of the North
Upper Des Lacs Lake
Yellowstone River

Nationwide Permit 13 – Bank Stabilization

Permittees must notify the Corps in accordance with General Condition No. 32 (Pre-Construction Notification) prior to initiating any regulated activity. The notification must also include photo evidence of erosion in the area. Prohibited materials found at

http://www.nwo.usace.army.mil/Media/FactSheets/FactSheetArticleView/tabid/2034/Article/487696/prohibited-restricted-materials.aspx cannot be used in waters of the United States.

Nationwide Permit 23 – Approved Categorical Exclusions

Permittees must notify the Corps in accordance with General Condition No. 32 (Pre-Construction Notification) prior to initiating any regulated activity. In addition to information required by General Condition 32 (Pre-Construction Notification), permittees must identify the approved categorical exclusion that applies and provide documentation that the project fits the categorical exclusion.

GENERAL CONDITIONS (REGIONAL ADDITIONS)

General Condition 32 Notification– Pre-construction Notification

Prospective permittees should be aware that a field aquatic resources delineation may be required for applications where notification is required in accordance with General Condition 32 (Pre-Construction Notification) and/or mitigation may be required. Specific guidelines outlining the aquatic resources delineation process in the State of North Dakota and the Corps 1987 Wetland Delineation Manual and applicable Regional supplements to the Manual can be accessed on the North Dakota Regulatory Office's website at:
http://www.nwo.usace.army.mil/Missions/RegulatoryProgram/NorthDakota.aspx

NORTH DAKOTA
DEPARTMENT of HEALTH

ENVIRONMENTAL HEALTH SECTION
Gold Seal Center, 918 E. Divide Ave.
Bismarck, ND 58501-1947
701.328.5200 (fax)
www.ndhealth.gov

Construction and Environmental Disturbance Requirements

These represent the minimum requirements of the North Dakota Department of Health. They ensure that minimal environmental degradation occurs as a result of construction or related work which has the potential to affect the waters of the State of North Dakota. All projects will be designed and implemented to restrict the losses or disturbances of soil, vegetative cover, and pollutants (chemical or biological) from a site.

Soils

Prevent the erosion of exposed soil surfaces and trapping sediments being transported. Examples include, but are not restricted to, sediment dams or berms, diversion dikes, hay bales as erosion checks, riprap, mesh or burlap blankets to hold soil during construction, and immediately establishing vegetative cover on disturbed areas after construction is completed. Fragile and sensitive areas such as wetlands, riparian zones, delicate flora, or land resources will be protected against compaction, vegetation loss, and unnecessary damage.

Surface Waters

All construction which directly or indirectly impacts aquatic systems will be managed to minimize impacts. All attempts will be made to prevent the contamination of water at construction sites from fuel spillage, lubricants, and chemicals, by following safe storage and handling procedures. Stream bank and stream bed disturbances will be controlled to minimize and/or prevent silt movement, nutrient upsurges, plant dislocation, and any physical, chemical, or biological disruption. The use of pesticides or herbicides in or near these systems is forbidden without approval from this Department.

Fill Material

Any fill material placed below the high water mark must be free of top soils, decomposable materials, and persistent synthetic organic compounds (in toxic concentrations). This includes, but is not limited to, asphalt, tires, treated lumber, and construction debris. The Department may require testing of fill materials. All temporary fills must be removed. Debris and solid wastes will be removed from the site and the impacted areas restored as nearly as possible to the original condition.

U.S. Fish and Wildlife Service (USFWS)

From: Kevin Shelley
To: Wells, Kimberly
Cc: Bourke Thomas; Tara Corbett; Sue Kvas
Subject: RE: NextEra Energy: Burke County Wind questions
Date: Tuesday, January 31, 2017 11:36:54 AM
Attachments: image001.jpg

Good morning Kim; I have reviewed the questions – most I believe I can address but for a full vetting I believe my colleagues in the Refuge Division will be needed. I'm not sure how and at what pace you would like to proceed, but I'd suggest we get on a brief call between ourselves (I can discuss today if urgent) and from that call I will reach out to the Refuge Manager that covers Burke County with the coordination and setting up for the NextEra's next engagement with the FWS. I'm open to also letting NextEra work the coordination for both of our Divisions with a single engagement to respond to the questions. If you choose the latter, Burke county is in the Crosby WMD (701.965.6488). Talk soon…K

Kevin Shelley, Supervisor
U.S. Fish and Wildlife Service
Ecological Services
3425 Miriam Ave.
Bismarck, ND 58501
Office: 701.250.4402 *Mobile*: 701.989.4233

From: Wells, Kimberly [mailto:Kimberly.Wells@nexteraenergy.com]
Sent: Monday, January 30, 2017 8:33 PM
To: Kevin Shelley
Cc: Bourke Thomas; Tara Corbett; sue_kvas@fws.gov
Subject: RE: NextEra Energy: Burke County Wind questions

Hi Kevin,

Have you had a chance to review our questions below? I am guessing your week last week was hectic with the new administration change, so I will call you tomorrow to follow up as well. If these are questions we should be directing to someone else in your office, let me know that too.

Thanks!

Kim

From: Wells, Kimberly
Sent: Tuesday, January 24, 2017 9:53 PM
To: Kevin Shelley
Cc: Bourke Thomas; Tara Corbett; sue_kvas@fws.gov
Subject: NextEra Energy: Burke County Wind questions

Hi Kevin,

We are advancing early due diligence on our Burke County Wind Farm (COD 2018/2019) or one of the wind farms we have discussed with you before at a high level and had a list of questions below about handling USFWS easements. I know in past discussions you referenced the PEIS documentation, so these are areas where Atwell assisted us in reviewing that documentation and we could use clarification for our project.

We have also been working with Sue to make sure we know where USFWS easements are for avoidance as much as possible and will have an updated project boundary and gen-tie study corridor to send her very soon. We did receive some preliminary files recently that we have used to avoid all USFWS grassland easements and then wetland basins of USFWS wetland easements.

Are these questions we should schedule a call to discuss or how do you recommend we address with you?

Kim

Kimberly Wells, Ph.D.
Manager, Environmental Services
Mid Continent Region
NEXTera Energy Resources, LLC
601 Travis Street, Suite 1900
Houston, TX 77002
713.951.5372 (office)
832.538.7935 (mobile)
Kimberly.Wells@NEE.com

From: Bourke Thomas [mailto:bthomas@atwell-group.com]
Sent: Friday, January 13, 2017 1:36 PM
To: Wells, Kimberly
Cc: Tara Corbett; Bobbi Westerby; Brian Ortman
Subject: Burke County ND USFWS Questions

CAUTION - EXTERNAL EMAIL

Good afternoon Kim,

Here is a comprehensive list of questions that I think would be worth going over with the USFWS.

The Programmatic Environmental Impact Statement (PEIS) for wind energy projects in the Upper Great

Plains Region was intended to address projects that interconnect to Western's transmission facilities *or* ***that would require consideration of an easement exchange to accommodate placement of project facilities on easements managed by the service.***

Clarifications on this program are needed.

1. Is this PEIS the standard process for all wind energy developers that cross USFWS easements or is intended only for projects that interconnect with Western Area Power Administration or have other existing federal nexus?

2. Can a project that does not otherwise have a federal nexus, move forward with development on USFWS easement parcels without going through this PEIS process as completed previous on project without the interconnect with Western or another federal nexus?
    a. If so, what is required for this alternative?

3. Can the process of easement exchange be pursued and executed without triggering NEPA?
    a. If so, how?

4. Do the local USFWS districts have discretion to modify the PEIS process and request that developers of wind projects follow a modified process due to specific site characteristics?

5. Is the streamlined NEPA analysis only required on USFWS easement parcels or is the entire project subject to the process?

6. Are parcels under USFWS easements considered federal lands, thus development on them triggers a federal nexus?

7. How long does the PEIS process take?

8. What defines "crossing" of USFWS easements that would trigger NEPA or easement exchange? (i.e. boring, aerial transmission crossing).

9. Are there certain easement types or portions of easements that the USFWS strongly discourage development and easement exchange for?

10. Can certain activities (related to wind development) take place within the easement parcel without review or requirement of an easement exchange?

11. Are temporary impacts treated differently than permanent impacts relative to the evaluation process?

12. If a developer crossed land adjacent to (but not physically on) USFWS easements, is a NEPA or modified NEPA process to evaluate impacts necessary? The PEIS makes a reference to this (Pp 48; ES-10 and 114; 2-14) but the interpretation is unclear.

Have a great weekend,

Bourke Thomas
Team Leader
Environmental Services

ATWELL

Two Towne Square, Suite 700, Southfield, MI 48076
Tel: 248.447.2059 Mob: 586.601.6497 Fax: 248.447.2001
www.atwell-group.com

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From: Kvas, Sue
To: Wells, Kimberly; Scott Williams
Cc: Bourke Thomas
Subject: Re: FW: NextEra Burke County wind prospecting: update USFWS easement file query?
Date: Thursday, February 23, 2017 4:20:07 PM
Attachments: image001.jpg
fws_easements.zip

Kim,

Here are the shapefiles for the area you requested. If you have any questions about USFWS easements, please contact Scott Williams.

Thanks,

Sue

Susan Kvas

Supervisory Fish and Wildlife Biologist

U.S. Fish & Wildlife Service

Habitat and Population Evaluation Team

3425 Miriam Ave.

Bismarck, ND 58503

Office : 701-355-8541

On Thu, Feb 23, 2017 at 2:20 PM, Wells, Kimberly <Kimberly.Wells@nexteraenergy.com> wrote:

> Hi Sue,
>
> Here are the files I sent again in both Google Earth and GIS shapefile formats.
>
> Let me know if you need anything else.
>
> Kim
>
> ---
>
> **From:** Wells, Kimberly

Sent: Thursday, February 16, 2017 6:16 PM
To: 'Williams, Scott'; sue_kvas@fws.gov
Cc: Bourke Thomas; Kevin Shelley; Wells, Kimberly
Subject: NextEra Burke County wind prospecting: update USFWS easement file query?

Hi Scott/Sue,

Could we get your help in extracting an updated set of USFWS easement data for our Burke County wind project? I have attached the geospatial files of the most current area that includes the prospecting area for our wind farm plus a t-line study corridor we are evaluating. When we last queried your files in September of last year, we had a slightly smaller prospecting area for the wind farm and had not yet identified the gen-tie study corridor currently included.

Note, I have copied Kevin in here as well as we are having some initial contact with each of you in the interest of time and then plan to come back together. After we assemble some key baseline and process information. We are also touching bases with Sandy Johnson at NDGFD.

Thanks in advance for your help.

Kim

Kimberly Wells, Ph.D.

Manager, Environmental Services

Mid Continent Region

NEXTera Energy Resources, LLC

601 Travis Street, Suite 1900

Houston, TX 77002

713.951.5372 (office)

832.538.7935 (mobile)

From:	Kvas, Sue
To:	Bourke Thomas; Scott Williams
Cc:	Wells, Kimberly (Kimberly.Wells@nexteraenergy.com)
Subject:	Re: Burke County Wind Energy Center USFWS Easement Request
Date:	Wednesday, April 26, 2017 12:26:03 PM
Attachments:	fws_easements.zip

Hey Thomas,

Here is a zip file with USFWS easements. If you have any questions, please contact Scott Williams with the Crosby-Lostwood WMD at 701-965-6488.

Thanks,

Sue

Susan Kvas

Supervisory Fish and Wildlife Biologist

U.S. Fish & Wildlife Service

Habitat and Population Evaluation Team

3425 Miriam Ave.

Bismarck, ND 58503

Office : 701-355-8541

On Mon, Apr 24, 2017 at 9:29 PM, Bourke Thomas <bthomas@atwell-group.com> wrote:

> Good evening Sue,
>
> Thanks again for providing the previous USFWS easement data. Could you provide the easement shapefiles for the area attached in the shapefiles? In an attempt to avoid easements to the greatest extent possible we would like the easements for the attached area.
>
> Thanks again and feel free to call with any questions.
>
> **Bourke Thomas**
>
> **Team Leader**
>
> **Environmental Services**

ATWELL, LLC

Two Towne Square, Suite 700, Southfield, MI 48076

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From: Kevin Shelley
To: Wells, Kimberly
Cc: Bourke Thomas; Ethan Jahnke
Subject: RE: [EXTERNAL] Burke: native prairie analysis update - inclusion of ephemeral wetlands
Date: Wednesday, May 09, 2018 9:52:51 AM

Hello Kim; I'm pleased you undertook another look at the native prairie calcs. Chuck certainly has much more experience than I (and he may have a different data layer he relies on) but I'm not that surprised that the acreage of ephemeral (seasonal and temporary) wetlands is negligible. I agree with you that we need to verify that we are all working from a mutually agreed upon understanding of baseline conditions, so with Chuck and Neal I will look into the wetland definitions and calculation methodology they envisioned, before we embark on the impact assessment…and will keep this close-hold and under the deliberation label. K

Kevin Shelley, Supervisor
U.S. Fish and Wildlife Service
Ecological Services
3425 Miriam Ave.
Bismarck, ND 58501
Office: 701.250.4402 *Mobile*: 701.989.4233

From: Wells, Kimberly [mailto:Kimberly.Wells@nexteraenergy.com]
Sent: Wednesday, May 09, 2018 10:28 AM
To: Kevin Shelley
Cc: Bourke Thomas; Ethan Jahnke; Wells, Kimberly
Subject: [EXTERNAL] Burke: native prairie analysis update - inclusion of ephemeral wetlands

Hi Kevin,

During our in person meeting on 4/23 in your office with Chuck and Neal, Chuck noted he was surprised there wasn't more native prairie and indicated he thought that estimate may go up if the ephemeral wetlands were included instead of excluded from the Atwell analysis. I had Atwell recalculate native prairie including the ephemeral wetlands and the results show a **negligible increase** of 5 acres for the wind farm (from 11,824 acres to 11,829) and **a negligible decrease** of 6 acres for the transmission line (from 4,12 acres to 4,116). In our view, this re-analysis provides a second line of evidence that we believe demonstrates the existing Atwell native prairie analysis we presented is solid and not sensitive to the inclusion or exclusion of ephemeral wetlands.

As the USFWS starts thinking about impact assessment, I think it is critical we are all on the same

page about baseline conditions, particularly when it comes to the definition and extent of native prairie. I would be interested in your reactions when you have time for review. I didn't copy Chuck or Neal as not sure how ES is coordinating with refuge scientists, but feel free to share if you find appropriate.

These materials are confidential and not for public distribution, so please keep limited to only those necessary and advise of their sensitivity if shared with others internally.

Kim

Kimberly Wells, Ph.D.
Manager, Environmental Services
Mid Continent Region
NEXTera Energy Resources, LLC
601 Travis Street, Suite 1900
Houston, TX 77002
713.951.5372 (office)
832.538.7935 (mobile)
Kimberly.Wells@NEE.com



From:	Shelley, Kevin
To:	Bourke Thomas
Subject:	Fwd: Dakota Skipper Information
Date:	Monday, May 22, 2017 12:13:24 PM
Attachments:	Burke_County_Wind.pdf Pearse et al. 2015 Whooping crane stopover site use intensity in Great Plains USGS.pdf

---

Kevin Shelley, Supervisor
U.S. Fish and Wildlife Service
3425 Miriam Ave.
Bismarck, ND 58501
Office: 701.355.8512 *Mobile*: 701.989.4233

---------- Forwarded message ----------
From: **Shelley, Kevin** <kevin_shelley@fws.gov>
Date: Tue, May 9, 2017 at 2:06 PM
Subject: Re: Dakota Skipper Information
To: Bourke Thomas <bthomas@atwell-group.com>
Cc: "Wells, Kimberly" <Kimberly.Wells@nexteraenergy.com>

Kim and Bourke;

I asked Allen, one of my Team members who is handy with GIS, to develop a draft T&E species occurrence map for the most obvious species of interest in the proximity of Burke County project using the project shape file you provided. The species data sources include:

- the WC observational database (blue points) maintained by the USFWS, through 2007. We will be updating the point data in the near future to get the most recent information. These are largely verified sightings, but I don't believe all are verified (I will be able to better address the data quality issue following a conversation with the data stewards).

- the WC use area (green polygon) as presented in Pearse et al. (2015; paper attached). We did not differentiate the relative use as recorded from the whooping cranes that were fitted with transmitters for the study.

- the Dakota skipper sites (green plus signs; 2 formerly occupied sites noted within 15mi...currently with an unknown status). We have no records of any (occupancy) survey attempts within the project boundaries.

- the designated critical habitat for the piping plover (red polygons).

I anticipate you may have questions or ideas that may improve the map to be more useful for your planning purposes so feel free to give me a call. K

Kevin Shelley, Supervisor
U.S. Fish and Wildlife Service
3425 Miriam Ave.
Bismarck, ND 58501
Office: 701.355.8512 *Mobile*: 701.989.4233

On Tue, May 2, 2017 at 2:47 PM, Bourke Thomas <bthomas@atwell-group.com> wrote:

> Good afternoon Kevin,
>
> Thank you, and sorry for the delayed response. I have been in training all week.
>
> Please find the attached SHP for the Burke County boundary.
>
> Feel free to call with any questions,
>
> Bourke
>
> 1-586-601-6497 Mobile
>
> **From:** Shelley, Kevin [mailto:kevin_shelley@fws.gov]
> **Sent:** Monday, May 01, 2017 10:01 AM
> **To:** Bourke Thomas
> **Cc:** Wells, Kimberly
> **Subject:** Re: Dakota Skipper Information
>
> Bourke: If you send me a shapefile, I'll have one of my folks make a map with the DASK sites.
>
> Here's the list of surveyors who said they were willing to share their contact information handy
>
> - Dennis Skadsen: cell 605-880-2406; diskadsen@venturecomm.net
> - Jim Reiser: 402-676-0599; jimreiser@cox.net
> - Neil Dankert: 308-440-7096; neildankert@q.com
> - Gerald Selby: jselby@mchsi.com
> - Scott Krych (HDR): Scott.Krych@hdrinc.com
> - SWCA - Jake Powell and Ken Kingsley: (701) 258-6622

> I'm aware of two additional permits that were issued for the butterflies, but those permittees didn't want their info shared.

Kevin Shelley, Supervisor

U.S. Fish and Wildlife Service

3425 Miriam Ave.

Bismarck, ND 58501

Office: 701.355.8512 *Mobile*: 701.989.4233

On Fri, Apr 28, 2017 at 8:01 AM, Bourke Thomas <bthomas@atwell-group.com> wrote:

Good morning Kevin,

Thanks again for meeting with us on Tuesday, it was very helpful.

As a follow up, are you able to share any historical and/or current Dakota Skipper habitat or use data in and around the project study boundary?

Would you also be able to share the names of approved Skipper survey biologists?

Thanks and have a great Friday,

Bourke Thomas

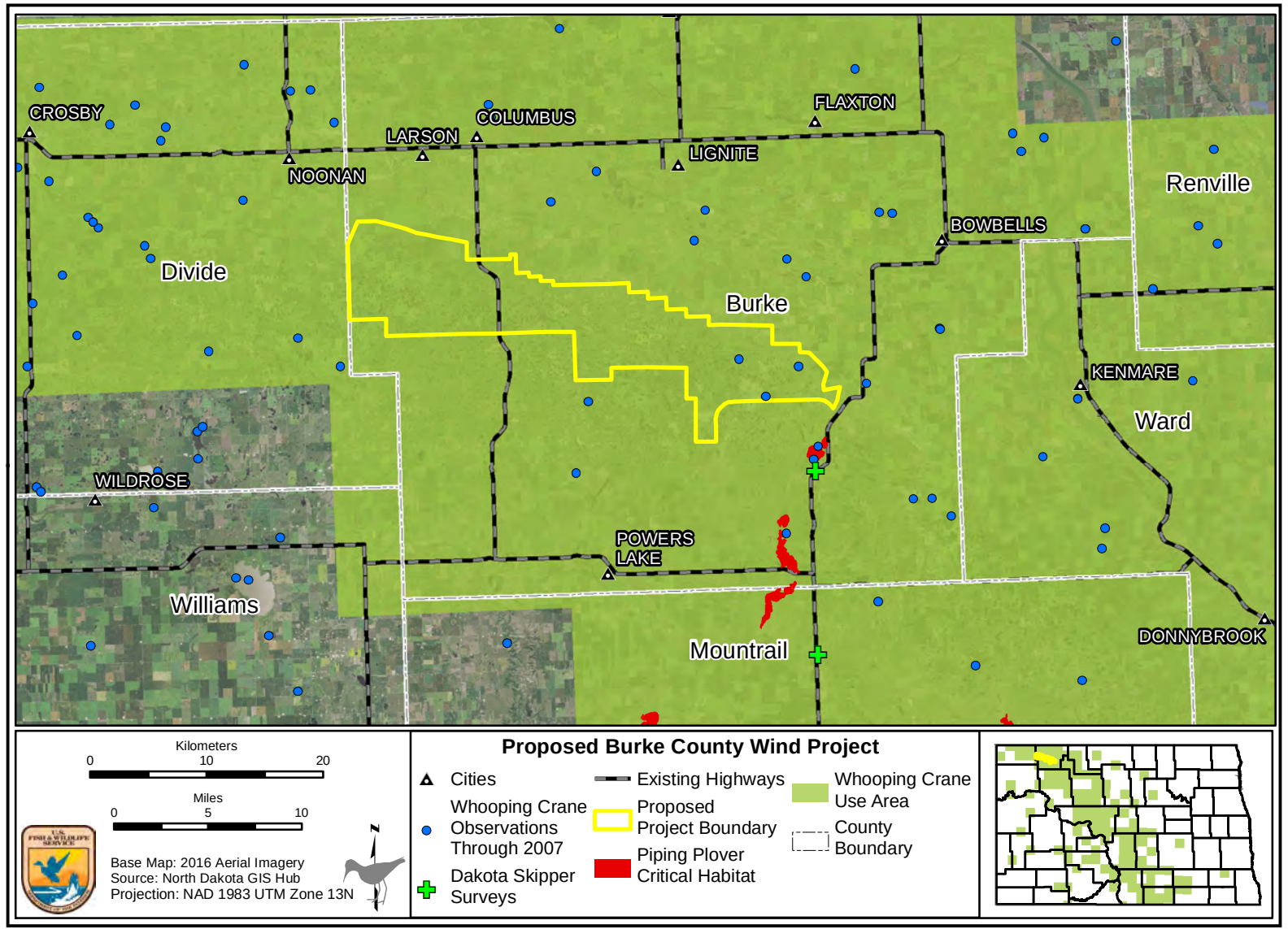
Team Leader

Environmental Services

ATWELL, LLC

Two Towne Square, Suite 700, Southfield, MI 48076

Tel: 248.447.2059 Mob: 586.601.6497 Fax: 248.447.2001


CROSBY
COLUMBUS
LARSON
NOONAN
FLAXTON
LIGNITE
Renville
BOWBELLS
Divide
Burke
KENMARE
Ward
WILDROSE
POWERS LAKE
Williams
Mountrail
DONNYBROOK
Kilometers
0
10
20
Miles
0
5
10
Base Map: 2016 Aerial Imagery
Source: North Dakota GIS Hub
Projection: NAD 1983 UTM Zone 13N
N
Proposed Burke County Wind Project
Cities
Whooping Crane Observations Through 2007
Dakota Skipper Surveys
Existing Highways
Proposed Project Boundary
Piping Plover Critical Habitat
Whooping Crane Use Area
County Boundary

From: Reinisch, Jerry [mailto:jerry_reinisch@fws.gov]
Sent: Wednesday, March 21, 2018 2:09 PM
To: Bourke Thomas
Cc: Kevin Shelley; Jerry Reinisch
Subject: Dakota skipper

Bourke

Attached is a map of the Dakota observations in relation to the project area.
The Whooping crane manuscript that was requested will be available after April 18, 2018.

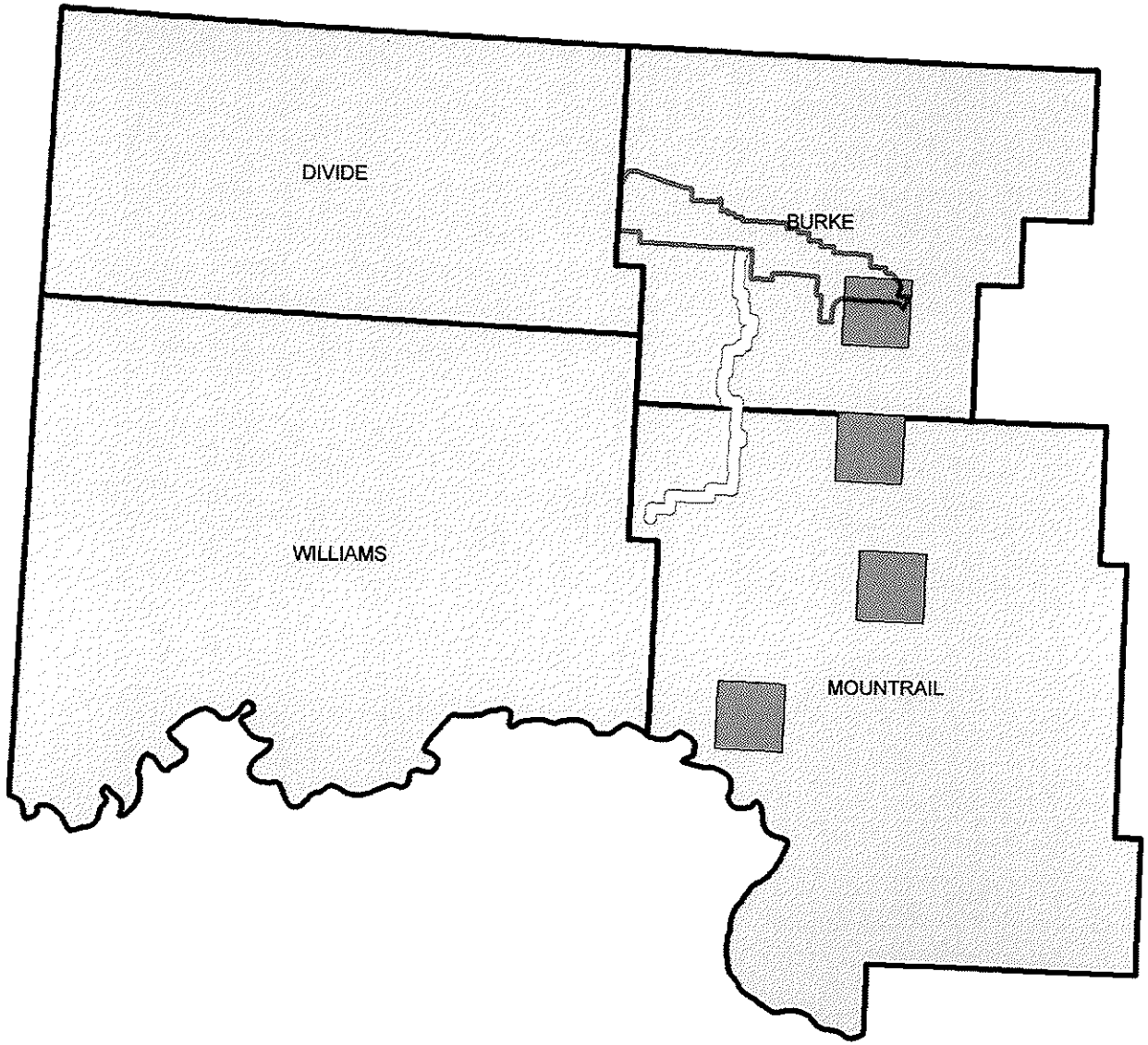
If you have additional questions please feel free to contact me.

Thanks

Jerry D. Reinisch
Fish & Wildlife Biologist
Ecological Services
US Fish & Wildlife Service
3425 Miriam Drive
Bismarck, North Dakota 58501

(M) 701-250-4481 Ext 8267
(D) 701-333-0267
(C)701-425-2133

North Dakota Townships with Dakota Skipper Observations thru 2016



Legend

SymbolID

- 0
- Transmission Line
- DASK_Presence_Burke_CO_Wind Township
- North Dakota Counties

DISCLAIMER:
The USFWS makes no claim as to tho accuracy or completeness of the displayed information. Species occurrence information is provided for illustrative purposes only. Federal action agencies and project proponents should contact the USFWS North Dakota Field Office for more detailed species information and technical assistance in evaluating potential project impacts to fish and wildlife resources.

Map produced 02/08/2018 by USFWS Ecological Servicos, Bismarck, ND.

0 3.757.5 15 22.5 30
Miles

From: Loesch, Chuck [mailto:chuck_loesch@fws.gov]
Sent: Friday, April 27, 2018 8:03 AM
To: Niemuth, Neal
Cc: Wells, Kimberly; Kevin Shelley; Ethan Jahnke; Bourke Thomas
Subject: Re: [EXTERNAL] Burke meeting follow up

Kim,

Attached is a manuscript that will be coming out in the next month or so. Please do not distribute. We identified "native sod" as predominantly rangeland from NRI. This coincides closely with rangeland in NLCD data. It is important to recognize that use of grassland as rangeland for cattle does not eliminate the value of the grassland for grassland birds and upland nesting waterfowl.

Chuck

Chuck Loesch
USFWS - HAPET
3425 Miriam Avenue
Bismarck, ND 58501
o: 701-355-8537
c: 701-527-0996
chuck_loesch@fws.gov

From: Niemuth, Neal [mailto:neal_niemuth@fws.gov]
Sent: Friday, April 27, 2018 7:49 AM
To: Wells, Kimberly
Cc: Kevin Shelley; Loesch, Chuck; Ethan Jahnke; Bourke Thomas
Subject: Re: [EXTERNAL] Burke meeting follow up

Hi Kim,

Attached is a copy of the Condor article that you requested. As always, please feel free to e-mail or call if you have questions.

I'm up against a couple of deadlines at the moment, but will try to get some models to you next week.

Neal

"They tried to bury us. They didn't know we were seeds." Dinos Christianopoulos

---

Neal D. Niemuth

Integrated Conservation Scientist

Habitat and Population Evaluation Team (HAPET)

U.S. Fish and Wildlife Service

3425 Miriam Avenue

Bismarck, ND 58501

701-355-8542 (tel)

701-355-8533 (fax)

On Tue, Apr 24, 2018 at 10:00 PM, Wells, Kimberly <Kimberly.Wells@nexteraenergy.com> wrote:
Kevin/Ethan/Chuck,

Thanks for your time yesterday discussing our Burke project. As a follow up, I am providing shapefiles of our proposed wind farm and 1-mile study corridor along our tline route.

Chuck - could you provide the refined surface for the breeding duck data you mentioned and the Roger Clawson crop insurance/CRP PDF galley you referenced?

Neal - could we also get the surface model for your grassland bird models in the area and the Condor 2017 underlying PDF you referenced?

If possible to get our project area plus whatever surrounding buffer you think is appropriate for landscape context, that would help us.

Kim

Kimberly Wells, Ph.D.
Manager, Environmental Services
Mid Continent Region
NEXTera Energy Resources, LLC
601 Travis Street, Suite 1900
Houston, TX 77002
713.951.5372 (office)
832.538.7935 (mobile)
Kimberly.Wells@NEE.com

From: Loesch, Chuck [mailto:chuck_loesch@fws.gov]
Sent: Friday, April 27, 2018 7:44 AM
To: Wells, Kimberly
Cc: Kevin Shelley; Niemuth, Neal; Ethan Jahnke; Bourke Thomas; Ronald Pritchert
Subject: Re: [EXTERNAL] Burke meeting follow up

Kim,

Attached is a zipped geodatabase that contains 2 layers of waterfowl related information and a document defining the contents of the data layers.

Please let me know if you have any questions.

Chuck

Chuck Loesch
USFWS - HAPET
3425 Miriam Avenue
Bismarck, ND 58501
o: 701-355-8537
c: 701-527-0996
chuck_loesch@fws.gov

"A duck call in the hands of the unskilled is one of conservation's greatest assets" – Nash Buckingham

On Wed, Apr 25, 2018 at 8:07 AM, Wells, Kimberly <Kimberly.Wells@nexteraenergy.com> wrote:
Thanks Chuck. We appreciate the help.

From: Loesch, Chuck [mailto:chuck_loesch@fws.gov]
Sent: Wednesday, April 25, 2018 6:54 AM
To: Wells, Kimberly
Cc: Kevin Shelley; Niemuth, Neal; Ethan Jahnke; Bourke Thomas
Subject: Re: [EXTERNAL] Burke meeting follow up

CAUTION - EXTERNAL EMAIL

Kimberly,

I should be able to get the information to you by Friday at the latest.

Chuck

Chuck Loesch
USFWS - HAPET

3425 Miriam Avenue
Bismarck, ND 58501
o: 701-355-8537
c: 701-527-0996
chuck_loesch@fws.gov

"A duck call in the hands of the unskilled is one of conservation's greatest assets" – Nash Buckingham

On Tue, Apr 24, 2018 at 10:00 PM, Wells, Kimberly <Kimberly.Wells@nexteraenergy.com> wrote:
Kevin/Ethan/Chuck,

Thanks for your time yesterday discussing our Burke project. As a follow up, I am providing shapefiles of our proposed wind farm and 1-mile study corridor along our tline route.

Chuck - could you provide the refined surface for the breeding duck data you mentioned and the Roger Clawson crop insurance/CRP PDF galley you referenced?

Neal - could we also get the surface model for your grassland bird models in the area and the Condor 2017 underlying PDF you referenced?

If possible to get our project area plus whatever surrounding buffer you think is appropriate for landscape context, that would help us.

Kim

Kimberly Wells, Ph.D.
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NEXTera Energy Resources, LLC
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Houston, TX 77002
713.951.5372 (office)
832.538.7935 (mobile)
Kimberly.Wells@NEE.com

From:	Williams, Scott
To:	Bourke Thomas
Cc:	Ethan Jahnke; Wells, Kimberly (Kimberly.Wells@nexteraenergy.com)
Subject:	Re: [EXTERNAL] Mountrail Burke County USFWS Easements
Date:	Tuesday, June 12, 2018 11:56:24 AM

Hi Bourke,

Responses below per your email,

Can you confirm that the following locations in Mountrail and Burke counties do not include USFWS wetland or grassland easements?

1. Wetland Easement in the south half of the north half of sections 09 in 157N 93W?
   No Easements
2. Grassland Easement in section 03 of 157N 93W?
   No Easements
3. Grassland Easement in section 34 of 158N 93W?
   No Easements
4. Wetland Easement in section 34 159N 93W?
   No Easements- Fee Title Waterfowl Production Area approx NE1/4, NE1/4
5. Wetland Easement in the southwest ¼ section of section 26 of 160N 93W?
   No Easements
6. Wetland/Grassland Easement in the east ½ of section 35 of 161N 93W?
   Wetland Easement

Let me know if you have any questions,

Take care,

S

Scott A. Williams
Federal Wildlife Officer

Crosby Wetland Management District
United States Fish and Wildlife Service
10100 HWY 42 NW
Crosby, ND 58730

701.965.6488 Office
701.339.1450 Cell
701.965.6487 Fax

On Mon, Jun 11, 2018 at 5:06 PM, Bourke Thomas <bthomas@atwell-group.com> wrote:

Good afternoon Scott, thanks again for call this today.

Can you confirm that the following locations in Mountrail and Burke counties do not include USFWS wetland or grassland easements?

1. Wetland Easement in the south half of the north half of sections 09 in 157N 93W?

2. Grassland Easement in section 03 of 157N 93W?

3. Grassland Easement in section 34 of 158N 93W?

4. Wetland Easement in section 34 159N 93W?

5. Wetland Easement in the southwest ¼ section of section 26 of 160N 93W?

6. Wetland/Grassland Easement in the east ½ of section 35 of 161N 93W?

Also as we discussed, later this week I will likely be sending you over a second email requesting input on the protection status of certain wetland basins within existing wetland easements.

Thanks again for all of your support on this.

Bourke Thomas

Director

Environmental Services

ATWELL, LLC

Two Towne Square, Suite 700, Southfield, MI 48076

Tel: 248.447.2059 Cell: 586.601.6497 Fax: 248.447.2001

www.atwell-group.com

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Appendix C

Transmission Line Grouse Lek and Raptor Nest Survey Results

Bat Habitat Assessment for Transmission Lines

Desktop Whooping Crane Habitat Assessment

Technical Avian Data Summary

TO: Burke Wind, LLC

FROM: Atwell, LLC

DATE: May 29, 2018 (Revision: June 22, 2018)

RE: Burke County Transmission Line Grouse Lek & Raptor Nest Survey Results

Burke Wind, LLC (Burke Wind), a wholly-owned, indirect subsidiary of NextEra Energy Resources, LLC, is developing the Burke County Wind Energy Center (*WEC*) in Burke County, North Dakota. A grouse lek and raptor survey was completed within the wind resource *Project Area* (*Figure 1 & 2*) located within Burke and Mountrail Counties. Burke Wind conducted this study as part of a holistic natural resources review approach to assess potential adverse effects from development of this WEC on species of concern and their habitats. These Tier 3 grouse lek and raptor nest surveys followed pre-survey Tier 2 analysis (as defined within the U.S. Fish & Wildlife Service's [USFWS] Land-based Wind Energy Guidelines; USFWS 2012) that found the earlier version of a larger *transmission line assessment area,* used for transmission line route planning, held potential lekking and nesting habitat for Sharp-tailed Grouse (*Tympanuchus phaisanellus*), eagles, and other raptor species.

Results from the grouse lek and raptor nest surveys will be combined with results from other natural resource studies and will aid in responsibly siting wind turbines, access roads, underground electric collection lines, an electric substation, overhead high-voltage transmission line, and other proposed infrastructure. To date, this thorough approach has enabled Burke Wind to adapt quickly during project design planning and has further minimized potential impacts to sensitive natural resources. Survey data and subsequent analysis that appears within this document only pertain to the approximately 37.4-mile-long Gen-Tie Electric Transmission Line (i.e., *Transmission Line*) in Burke and Mountrail Counties that is being planned as a part of development of the WEC.

On January 24, 2018, raptor nest survey and grouse lek survey methodologies were submitted to the USFWS (Mr. Kevin Shelly) and North Dakota Game and Fish Department (NDGFD; Mr. Steve Dyke) to set forth separate study methodologies for the *Transmission Line,* as opposed to what had already been completed for other segments of the *WEC*. Atwell, LLC (Atwell) requested review of this separate avian services study plan and invited both agencies to pose questions or request additional clarification. Atwell did not receive study plan review communication from the USFWS or NDGFD. As such, Atwell deemed defined survey protocols as sufficient and continued with the identical approach for future survey endeavors associated with the *Transmission Line*.

Ground-based & Aerial Grouse Lek Survey Methodologies

Aerial Transect Lek Surveys

The *Transmission Line* and a 1.5 mile lek-assessment buffer (collectively referred to hereafter as *Transmission Grouse Survey Study Area*; Figure 1) were assessed for Sharp-tailed Grouse lekking grounds during two separate site visit mobilizations from April 4 to May 5, 2018. The assessment buffer is based, in part, on the 2015 North Dakota *State Wildlife Action Plan* (Dyke et al. 2015) description of Sharp-tailed Grouse hens often nesting within 0.5 miles of the lek. Grouse leks located out to at least 1.0 mile could theoretically include active nests within 0.5 miles of the planned route; tripling the accepted setback buffer (i.e., 0.5 miles) yields the 1.5 mile *Transmission Grouse Survey Study Area* (approximately 103.1 square-miles), primarily to accommodate future fluctuations in route planning. Approximately 206 miles of transects were flown across the *Transmission Grouse Survey Study Area* (*Figure 1*).

Atwell utilized a transect band width of no more than 0.5 miles, since a narrower visual threshold (i.e., 0.25 miles on either side of the helicopter) is ideal for detecting this cryptic species. State wildlife agencies have indicated that surveying for Sharp-tailed Grouse leks via helicopter can be difficult (e.g., BLM 2011), and perceived visual detection challenges was Atwell's primary reason for narrowing transect spacing. This transect width has proven effective during prior surveys that Atwell has conducted for Sharp-tailed Grouse, and lekking birds have been readily detectible across a wide range of ground cover backgrounds. Even hunkered grouse are detectable from the air, and a large proportion of encountered grouse flush when encountered (Atwell, pers. comm.). Flushing birds are readily detected across a variety of ground cover backgrounds, particularly birds that are returning to a lek once flushed.

Aerial lek surveys were conducted within the *Transmission Grouse Survey Study Area* during two mobilizations to the *Transmission Line;* surveys were finalized in early May because severe cold weather during the early-April mobilization grounded the helicopter during preferred grouse lek survey window in the early morning (i.e., a narrow window of time around local sunrise) across several days. Aerial transect surveys were conducted by Atwell avian specialists and were flown by *Double M Helicopters* at low speeds (i.e., 30 – 40 knots). Survey transects were flown in 0.5-mile intervals across the *Transmission Grouse Survey Study Area*. A 0.25-mile (400-meter) visibility threshold existed on either side of the aircraft. Transect routes were oriented on a north-south axis, and flown at heights of 50 to 100 feet (15 – 30 meters). Transects did not intersect federal wildlife management areas/refuges so there was no need to adjust the study flight plan for this particular survey. Transects began at 20 minutes before sunrise and ended approximately two hours after sunrise. Two Atwell biologists surveyed simultaneously, one from each side of the aircraft.

The large majority of lek locations were plotted to a precision of 50 meters or less, and all leks were within 100-150 meters of plotted coordinates. More precise mapping of grouse lekking grounds from a moving helicopter in open grassland was occasionally difficult, as landmarks in aerial images that were

used to assist mapping precision during the survey (such as hilltops, potholes, trees, rock outcrops, or roads) were in some cases lacking in grassland-dominated lek habitats.

Confirmed leks were defined as three or more birds together with at least one male displaying, based on Sharp-tailed Grouse species biology, prior experience with lekking grouse species, and information synthesized within Johnsgard (2016). When flushing birds were encountered via aerial transects, birds were observed for return-flight behavior to pin point the exact location of the lek centroid. *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. Standing flocks of birds that were not actively lekking at time of observation, possibly because of extreme cold weather, were also noted as *possible* leks. Flushing flocks that did not return to a lek centroid, but where sufficient ground cover disturbance pointed towards a possible lek centroid, were classified as *possible* leks.

Ground-based Roadside Lek Surveys

Ground-based roadside lek surveys were attempted from April 3 to April 5, 2018. Roadside lek surveys were conducted from the majority of available and safely accessible public roadways that traverse the *Transmission Grouse Survey Study Area* and which intersected grassland habitat (grassland habitat determined with available land cover data and desktop review of sources including GIS coverage of NDGFD Micro Native Grassland Conservation Areas; BLM 2011). Surveys were conducted within a limited window commencing 30 minutes before local sunrise and terminating between 60 and 120 minutes after sunrise, based on the suitability of survey weather variables (e.g., wind speed, temperature,. precipitation, etc.). Biologists surveyed for lekking grouse along safe roadside pull-offs at no greater than 0.4-mile increments (Hamilton et al. 2011). Each ground-based survey point was surveyed for a minimum of five (5) minutes.

Eagle & Raptor Nest Survey Methodology

Simultaneously, the *Transmission Line* was assessed for raptor nests, particularly for Bald Eagle (*Haliaeetus leucocephalus*), Golden Eagle (*Aquila chrysaetos*), and Ferruginous Hawk (*Buteo regalis*) nests (e.g., Dyke et al. 2015). This Tier 3 (USFWS 2013) survey followed pre-survey Tier 2 analysis, which concluded that the *Transmission Raptor Nest Study Area* could potentially contain Bald Eagle and Golden Eagle nesting habitat (Johnson 2009, Dyke et al. 2015). Aerial raptor nest surveys were conducted from April 3 to April 5, 2018. These eagle nest buffer survey transects were flown only after peak grouse lekking timing in the early morning hours.

Aerial transect surveys were conducted by Atwell avian specialists and were flown by *Double M Helicopters* at low speeds (30 – 40 knots). Survey transects were conducted in 1-mile intervals across the *Transmission Line* and a surrounding 3-mile eagle assessment buffer (together referred to as the *Transmission Raptor Nest Study Area*). While some guidelines recommend up to a 1-mile setback buffer for sensitive raptor species nests, such as Bald and Golden Eagles and Ferruginous Hawk (USFWS 2008),

other published studies suggest using a 2-mile setback buffer for Golden Eagles (e.g., Suter and Joness 1981). The 3-mile assessment buffer-width is partially based on the more conservative 2-mile recommendation and serves to accommodate possible line route fluctuations.

Since 2017 aerial raptor nest surveys partly overlapped with the *Transmission Line*, 1-mile transects did not extend across a 3-mile buffer of the entire *Transmission Line* (Figure 2). Approximately 115 miles of transects were flown across the *Transmission Raptor Nest Study Area* (approx. 117.9 square-miles). A 0.5-mile (800-meter) visibility threshold existed on either side of the helicopter. Additionally, the entire *Transmission Line* was flown per specified route data available during the time of the survey. Known raptor nests that were delineated during the 2017 aerial nest survey that occurred within 1-mile of the *Transmission Line* were spot checked on April 5, 2018 to confirm persistence from the previous spring and to check for subsequent activity level.

Visibility constraints were minimal during surveys, and deciduous leaf-out conditions never exceeded initial bud-break phase. The *Transmission Raptor Nest Study Area* consists of tilled agricultural lands and associated shelter belts, grassland, numerous glacial potholes, and isolated aspen (*Populus* sp.) stands. High-wall terrain associated with the White Earth River valley was scrutinized from varying angles considering the chance that this area coincides with Golden Eagle habitat (Dyke et al. 2015).

RESULTS

Sharp-tailed Grouse Lek Survey Results Summary

A total of 10 leks are known from within 1.5 miles of the *Transmission Line* (*Figure 1, 2; Appendix II*). Eight (8) confirmed leks were discovered within the proposed *Transmission Grouse Survey Study Area* during the Spring 2018 surveys (*Figure 2; Appendix I*). One of these leks was previously known from surveys conducted during Spring 2017 for the wind resource portion of the WEC. The 1.5-mile *Transmission Line* buffer captured two (2) additional leks that were documented during Spring 2017. These leks averaged 14.5 individuals/lek (*S.D.* = 10.9, *n* = 10).

Confirmed leks were not located during ground-based roadside survey efforts.

In addition to confirmed leks found during aerial surveys, biologists located three (3) possible lek locations during ground-based surveys within the *Transmission Grouse Survey Study Area*. Additionally, individuals (sightings of one or two Sharp-tailed Grouse that were not linked directly to a lek) or flushing flocks, that appeared to be foraging or associated with shelter vegetation, were recorded on 10 instances throughout the *Transmission Grouse Survey Study Area* and are plotted in *Figure 1*.

Eagle Nest Survey Results Summary

Atwell did not detect Bald Eagle or Golden Eagle nests within the *Transmission Raptor Nest Study Area* during April 2018 aerial surveys. Atwell biologists did detect individual eagles of both species that were using habitats within the *Transmission Raptor Nest Study Area* (*Figure 2*). Most eagle observations during aerial transect flights were concentrated within the White Earth River valley. During the early April survey, the vast majority of water features were frozen, and it is possible that the bitter cold temperatures caused eagles to take shelter within this valley, as opposed to being an indication of local nesting.

Other Nesting Raptor Species Results Summary

No active raptor nests occur within the 150 ft. construction corridor of the *Transmission Line*. Similarly, intact yet inactive raptor nest structures were located within the 150 ft. construction corridor of the *Transmission Line* (*Table 1*).

Atwell located four (4) active nests of two species: Great Horned Owl (*Bubo virginianus*) and Ferruginous Hawk within the *Transmission Raptor Nest Study Area* (*Figure 2; Appendix II*). Each of these active nests was observed with either: an incubating adult, an adult defending the nest, or a nest containing eggs or nestlings. None of these active nests were delineated within one-mile of the *Transmission Line* (*Figure 2*).

One probable Ferruginous Hawk nest occurs within the *Transmission Raptor nest Study Area* within Mountrail County, but this nest does not intersect the 150 ft. construction corridor of the *Transmission Line* (*Table* 1, *Figure 2; Appendix II*). This nest appeared to have been built directly on top of a second nest that likely was an original nest but had since become dilapidated. At the time of aerial surveys, this nest cup was empty but an adult was present in attendance of the nest and acting territorial.

Atwell noted fourteen (14) raptor nests within the *Transmission Raptor Nest Study Area* that were associated with an unknown raptor species (*Figure 2*); *Table 1* describes the relationship of those nests that intersect the general *Transmission Line 1-Mile Study Area* to the 150 ft. construction corridor. These nests were described as large enough to be raptor nests (though likely too small to be eagle nests), and of recent construction (2016 or 2017, as evaluated on the condition of nesting material and nest cup structure), yet unattended by hawks or owls. In addition to Ferruginous Hawks and Great Horned Owls, Red-tailed Hawks (*Buteo jamaicensis*), Swainson's Hawks (*Buteo swainsoni*), and Cooper's Hawks (*Accipiter cooperii*) are all potential breeders within the proposed *Transmission Raptor Nest Study Area* and may use these structures later in the season (USFWS 2008).

Where the *Transmission Line* continues north of the *Transmission Raptor Nest Study Area* (*Figure 2*), an additional 21 nest structures that occurred within 1-mile of the *Transmission Line* were spot checked for activity or were discovered as new structures. Sixteen (16) of these nest structures persisted since

previous delineation efforts. Four (4) previously known Great Horned Owl nests were spot-checked and relocated during aerial transect flights; all four nests were confirmed to be active with incubating owls (*Figure 2*). Importantly, an active Ferruginous Hawk nest known from Spring 2017 data, which occurred at a point along the *Transmission Line*, was found to have been no longer present. Known Red-tailed Hawk nests along this portion of the *Transmission Line* were relocated during spot-checked aerial transect flights, but in most instances, this species proved to not be actively nesting at the time of the surveys and these nest structures were deemed *inactive*.

Red-tailed Hawks likely utilize some of the above nest structures, but their nesting activity was low during the time of the survey, possibly owing to the unseasonable severe cold during the time of the early-April survey. Swainson's Hawks were not noted in the area at the time of the survey; this species nesting phenology does not correspond well to when eagles are actively nesting in North Dakota.

Table 1. Raptor Nests within 1-mile Transmission Line Study Area (Burke WEC, North Dakota)

Observation ID	Mapping Category	Latitude	Longitude	150 ft Corridor	1-mile Corridor	Distance (m)
Ferruginous Hawk Nests						
FEHA18_03	Ferruginous Hawk (active)	48.37842	-102.82	No	No	2874
FEHA18_01	Ferruginous Hawk (active)	48.40861	-102.719	No	No	2689
FEHA18_2.5	Ferruginous Hawk (probable)	48.53758	-102.746	No	No	3015
FEHA18_02	*Ferruginous Hawk (probable)*	*48.4403*	*-102.724*	*No*	*Yes*	*96*
FEHA17_01	Ferruginous Hawk (historic)	48.64213	-102.674	No	Yes	270
Great Horned Owl Nests						
GHOW18_03	Great Horned Owl (active)	48.4398	-102.869	No	No	3516
GHOW18_02	Great Horned Owl (active)	48.45686	-102.736	No	No	1788
GHOW18_04	*Great Horned Owl (active)*	*48.7477*	*-102.683*	*No*	*Yes*	*762*
GHOW17_53	*Great Horned Owl (active)*	*48.7463*	*-102.683*	*No*	*Yes*	*784*
GHOW18_01	Great Horned Owl (active)	48.42277	-102.681	No	No	2214
GHOW17_52	*Great Horned Owl (active)*	*48.6422*	*-102.674*	*No*	*Yes*	*273*
Inactive Nests						
RTHA17_82	*Red-tailed Hawk (inactive)*	*48.7268*	*-102.715*	*No*	*Yes*	*410*
RTHA17_188	*Red-tailed Hawk (inactive)*	*48.7121*	*-102.697*	*No*	*Yes*	*305*
RTHA17_79	*Red-tailed Hawk (inactive)*	*48.7046*	*-102.693*	*No*	*Yes*	*584*
RTHA17_183	*Red-tailed Hawk (inactive)*	*48.6303*	*-102.68*	*No*	*Yes*	*100*
RTHA17_184	*Red-tailed Hawk (inactive)*	*48.6682*	*-102.68*	*No*	*Yes*	*419*
UK18_11	*Unknown Raptor*	*48.4305*	*-102.763*	*No*	*Yes*	*26*
UK18_01	*Unknown Raptor*	*48.6903*	*-102.692*	*No*	*Yes*	*114*
UK18_16	*Unknown Raptor*	*48.6909*	*-102.691*	*No*	*Yes*	*83*
UK17_902	*Unknown Raptor (inactive)*	*48.7088*	*-102.698*	*No*	*Yes*	*267*
UK17_901	*Unknown Raptor (inactive)*	*48.6911*	*-102.692*	*No*	*Yes*	*166*
UK17_15	Unknown Raptor (historic)	48.61919	-102.699	No	No	--

Burke Wind Transmission Line

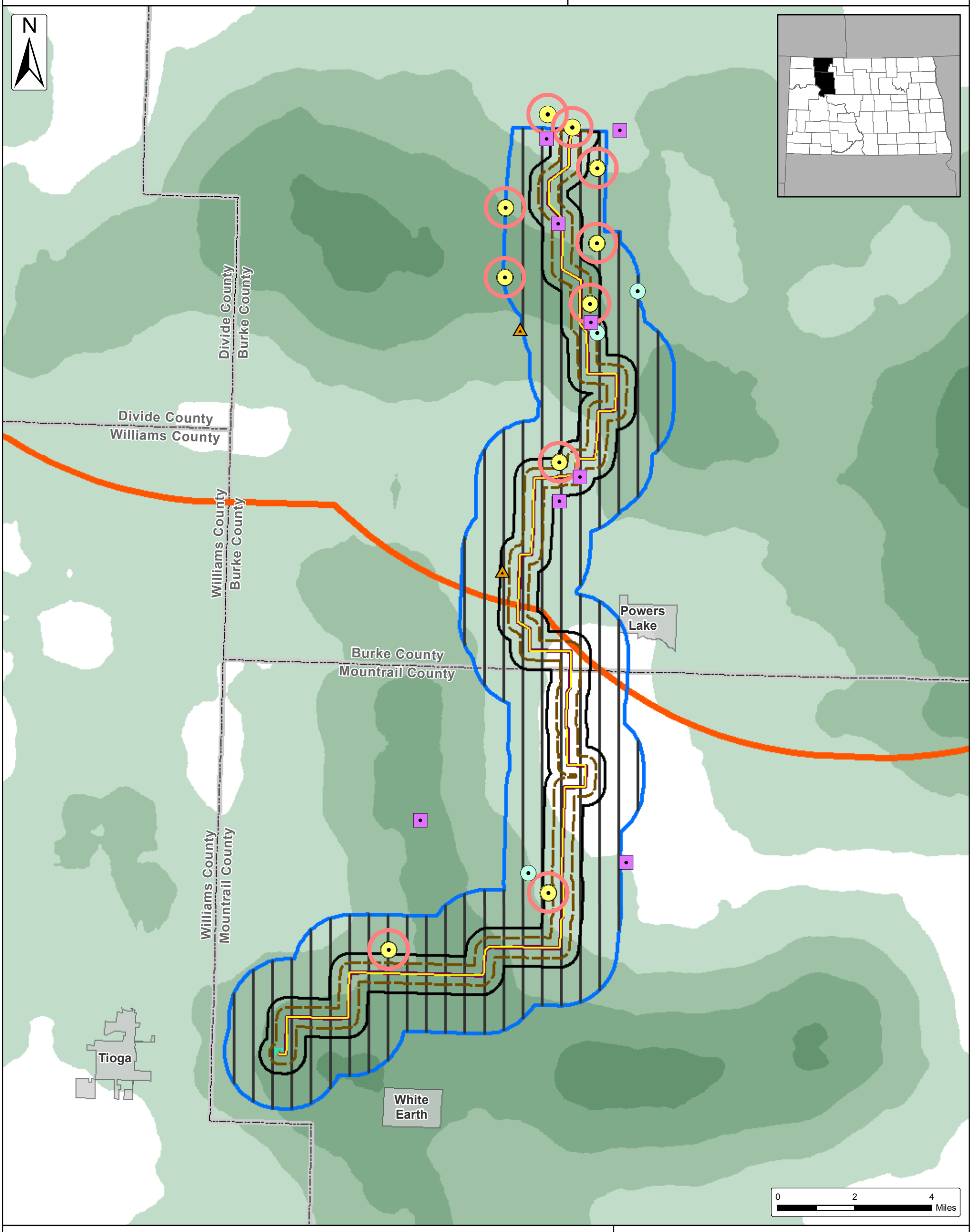
Figure 1. Sharp-tailed Grouse Lek Habitat Map

Burke County & Mountrail County, North Dakota

Client:
Burke Wind, LLC

Issue Date:
6/18/2018

Atwell, LLC Project:
16000947



Sharp-tailed Grouse (Atwell Identified 2017/2018)
- Lone Individual
- Flushing Flock
- Confirmed Lek
- Possible Lek

- Grouse Lek 0.5 Mile Transects (±206 Miles)
- Lek 0.5 Mile Constraint Buffer
- Transmission Grouse Survey Study Area
- Transmission Line 0.25 Mile Buffer (05/14/2018)
- Eagle Nest Study Area

Native Grasslands-Macro
- 0%-20%
- 20%-40%
- 40%-60%
- 60%-80%
- 80%-100%

- Transmission Line
- Transmission Line 150 ft. Project Corridor
- Transmission Line 1 Mile Study Area
- Existing Tande Substation
- Counties

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.

Burke Wind Transmission Line

Figure 2. Raptor Nest Map

Burke County & Mountrail County, North Dakota

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Burke Wind, LLC

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6/18/2018

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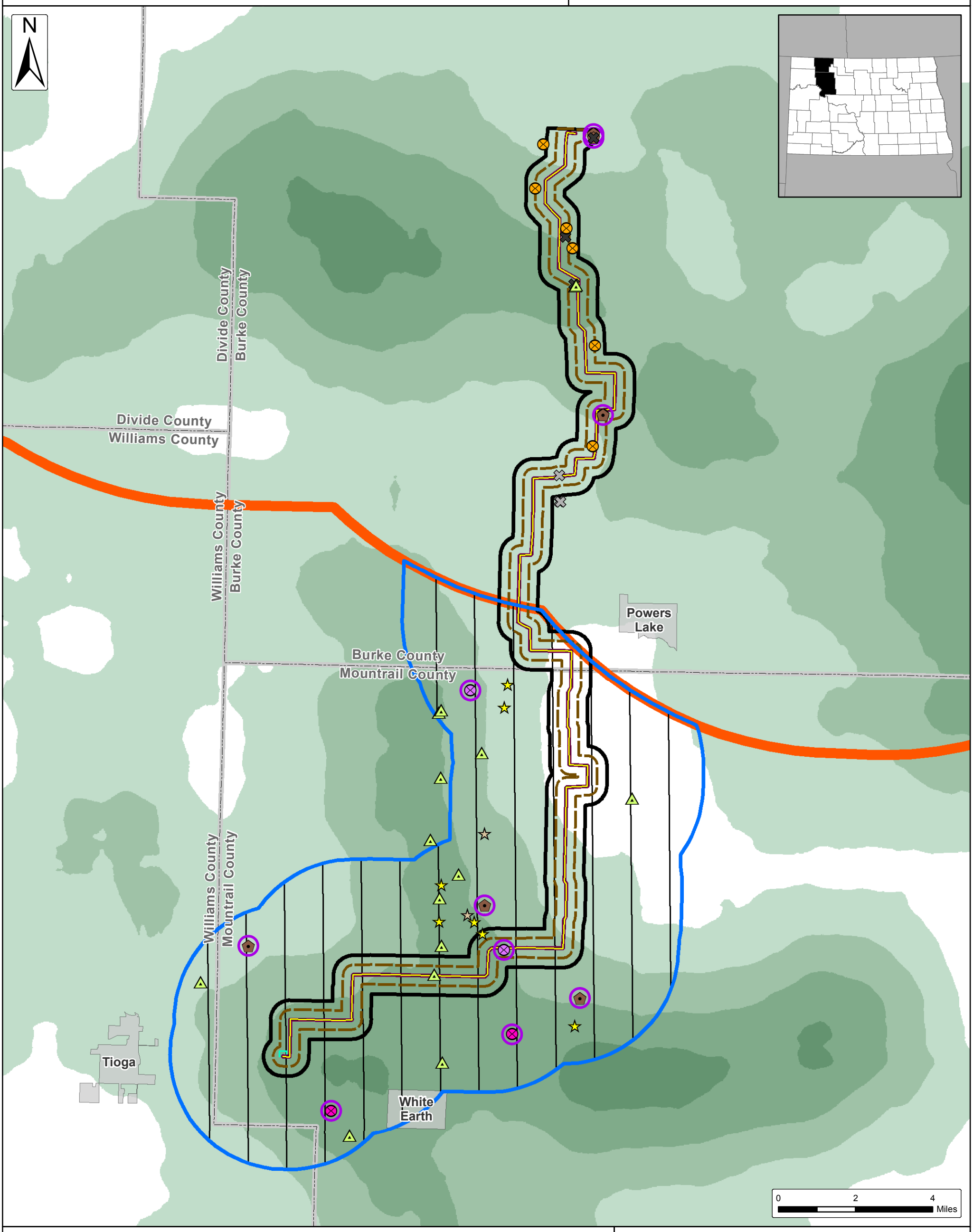
16000947



Raptor Nests (Atwell Identified April & May 2018)
- Bald Eagle (Individual)
- Golden Eagle (Individual)
- Ferruginous Hawk (Active)
- Ferruginous Hawk (Historic)
- Ferruginous Hawk (Probable)
- Great Horned Owl (Active)
- Red-tailed Hawk (Inactive)
- Unknown Raptor
- Unknown Raptor (Historic)
- Unknown Raptor (Inactive)

- Raptor Nest 1 Mile Transects (±115 Miles)
- Raptor Nests 0.25 Mile Constraint Buffer
- Transmission Raptor Nest Study Area
- Transmission Line 0.25 Mile Buffer (05/14/2018)
- Eagle Nest Study Area

Native Grasslands-Macro
- 0%-20%
- 20%-40%
- 40%-60%
- 60%-80%
- 80%-100%

- Transmission Line
- Transmission Line 150 ft. Project Corridor
- Transmission Line 1 Mile Study Area
- Existing Tande Substation
- Counties

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APPENDIX I

Detailed Map Book - Sharp-tailed Grouse Lek Locations

Burke Wind Transmission Line

Sharp-tailed Grouse Lek Habitat Map Burke County & Mountrail County, North Dakota

Client:
Burke Wind, LLC

Issue Date:
6/15/2018

Atwell, LLC Project:
16000947



Sharp-tailed Grouse (Atwell Identified 2017/2018)
- Confirmed Lek

Grouse Lek 0.5 Mile Transects (±206 Miles)
Lek 0.5 Mile Constraint Buffer
Transmission Grouse Survey Study Area
Transmission Line 0.25 Mile Buffer (05/14/2018)
Eagle Nest Study Area

Transmission Line
Transmission Line 150 ft. Project Corridor
Transmission Line 1 Mile Study Area
Existing Tande Substation
Counties

SOURCE: USDA NAIP 2017 IMAGERY

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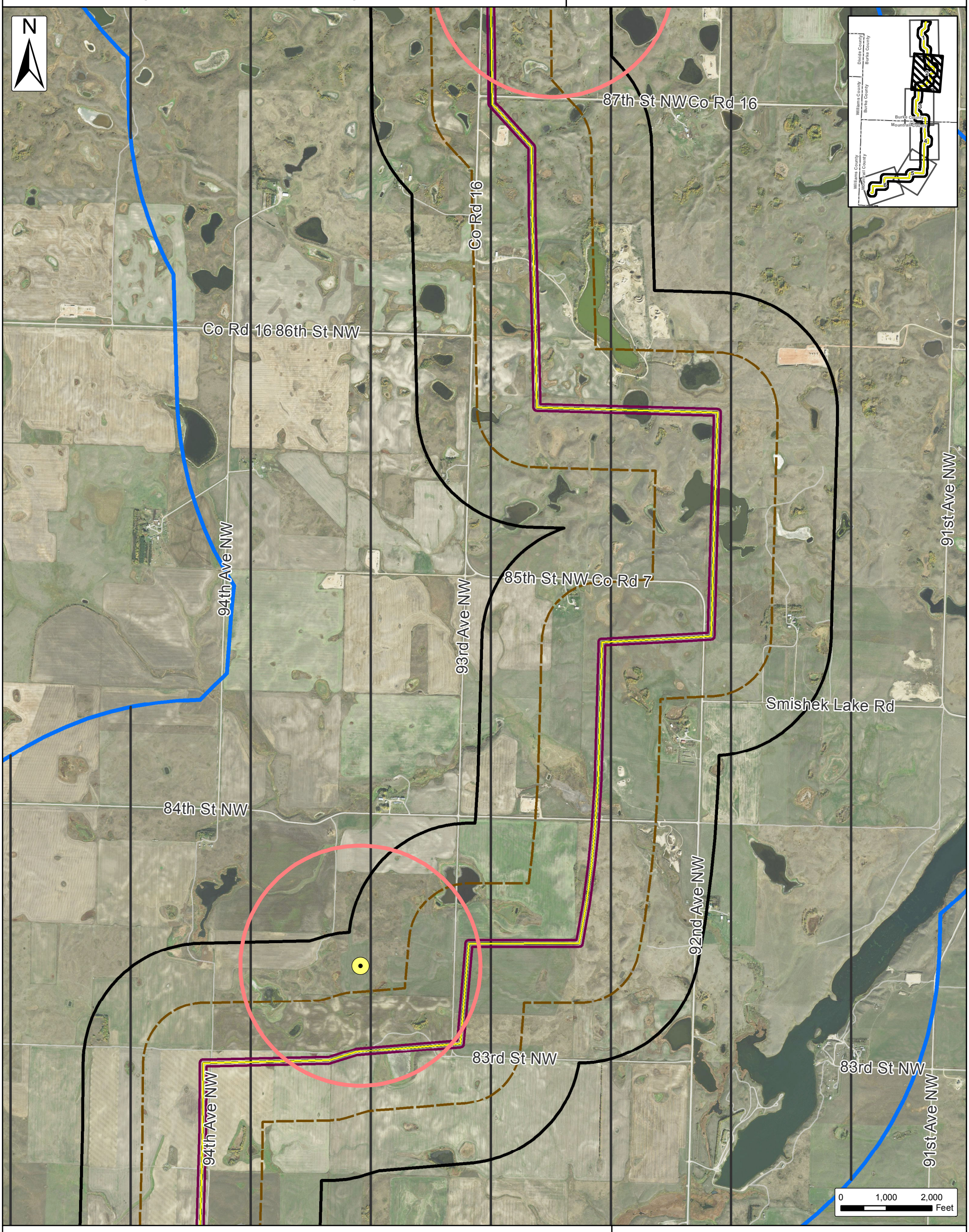

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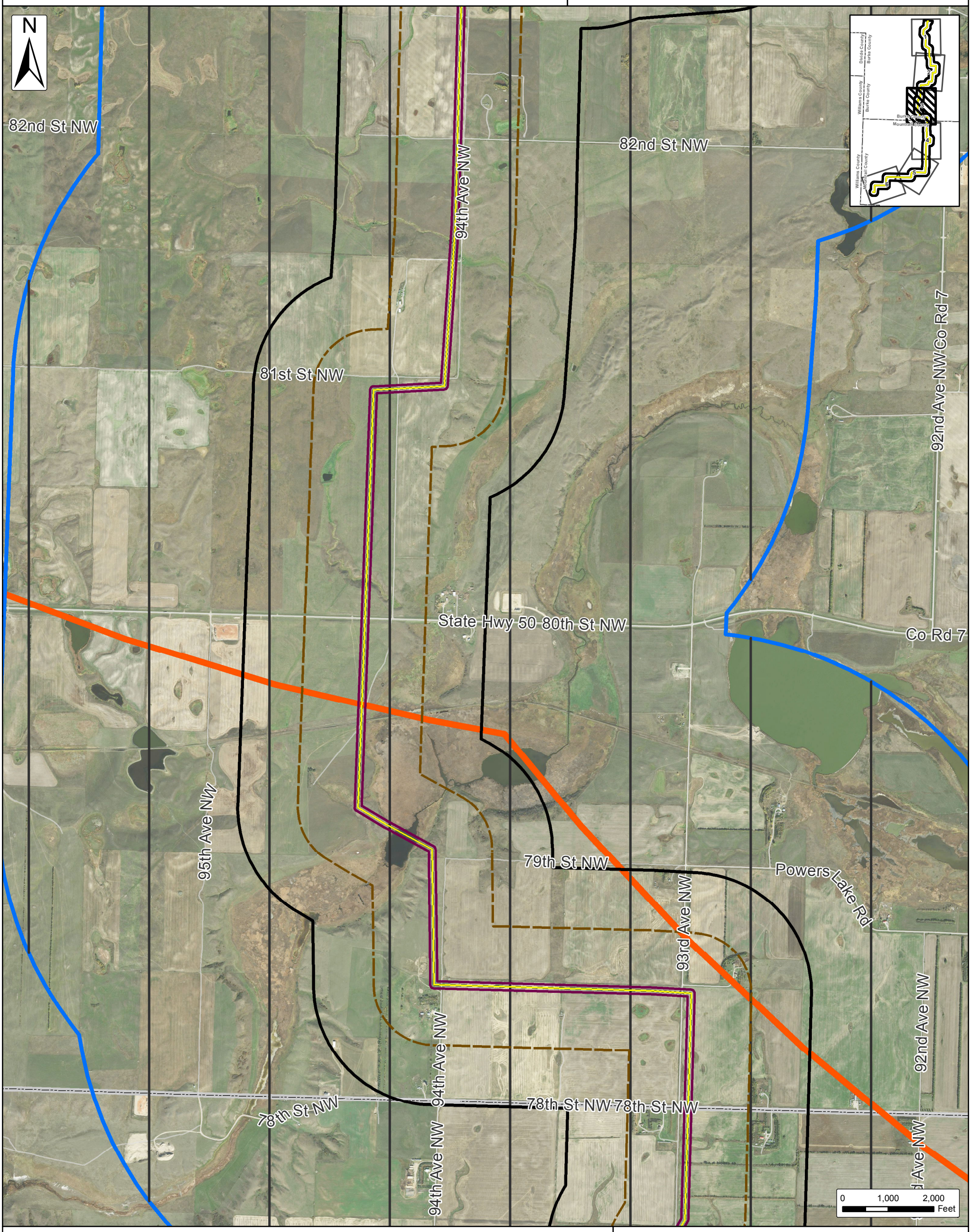

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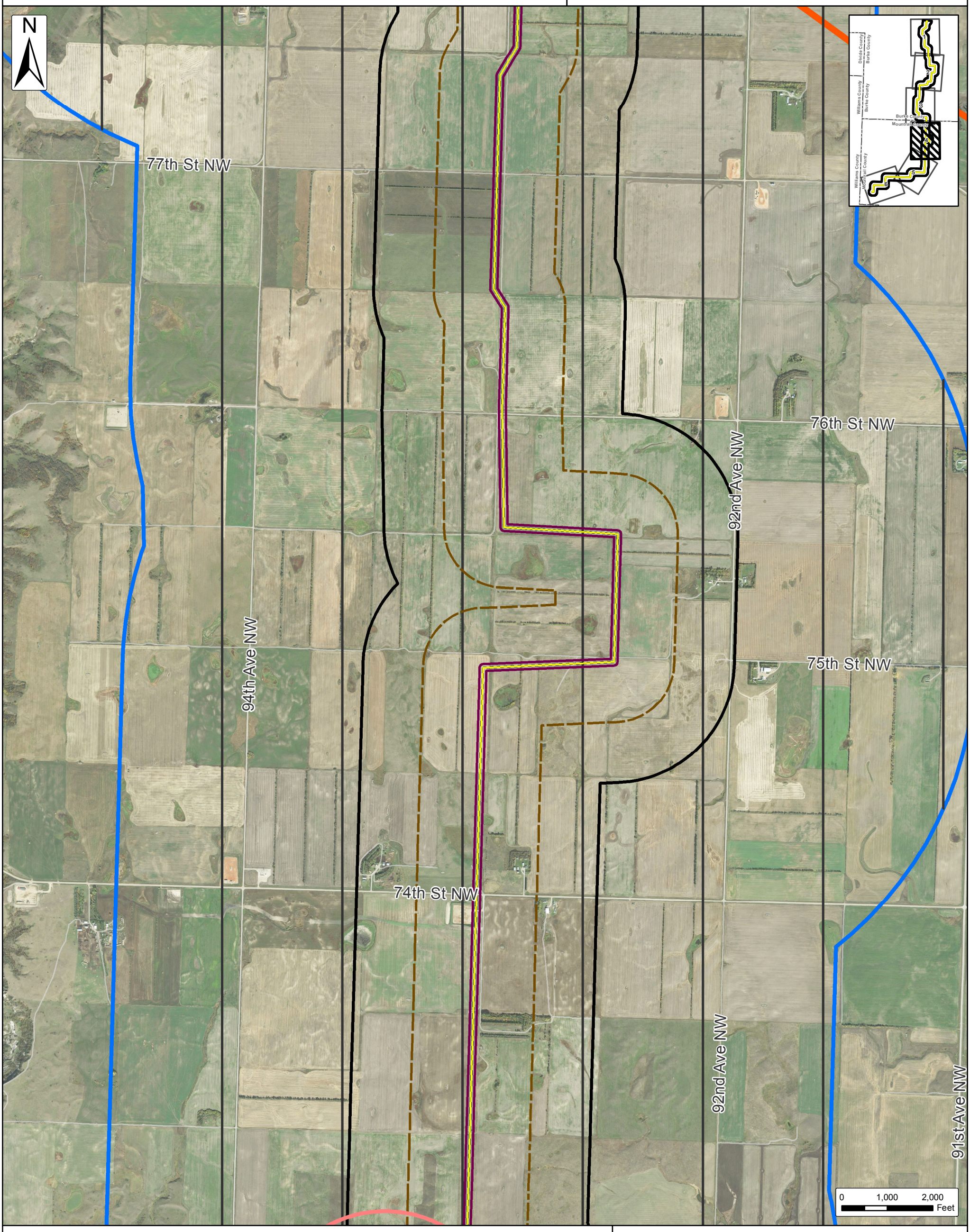

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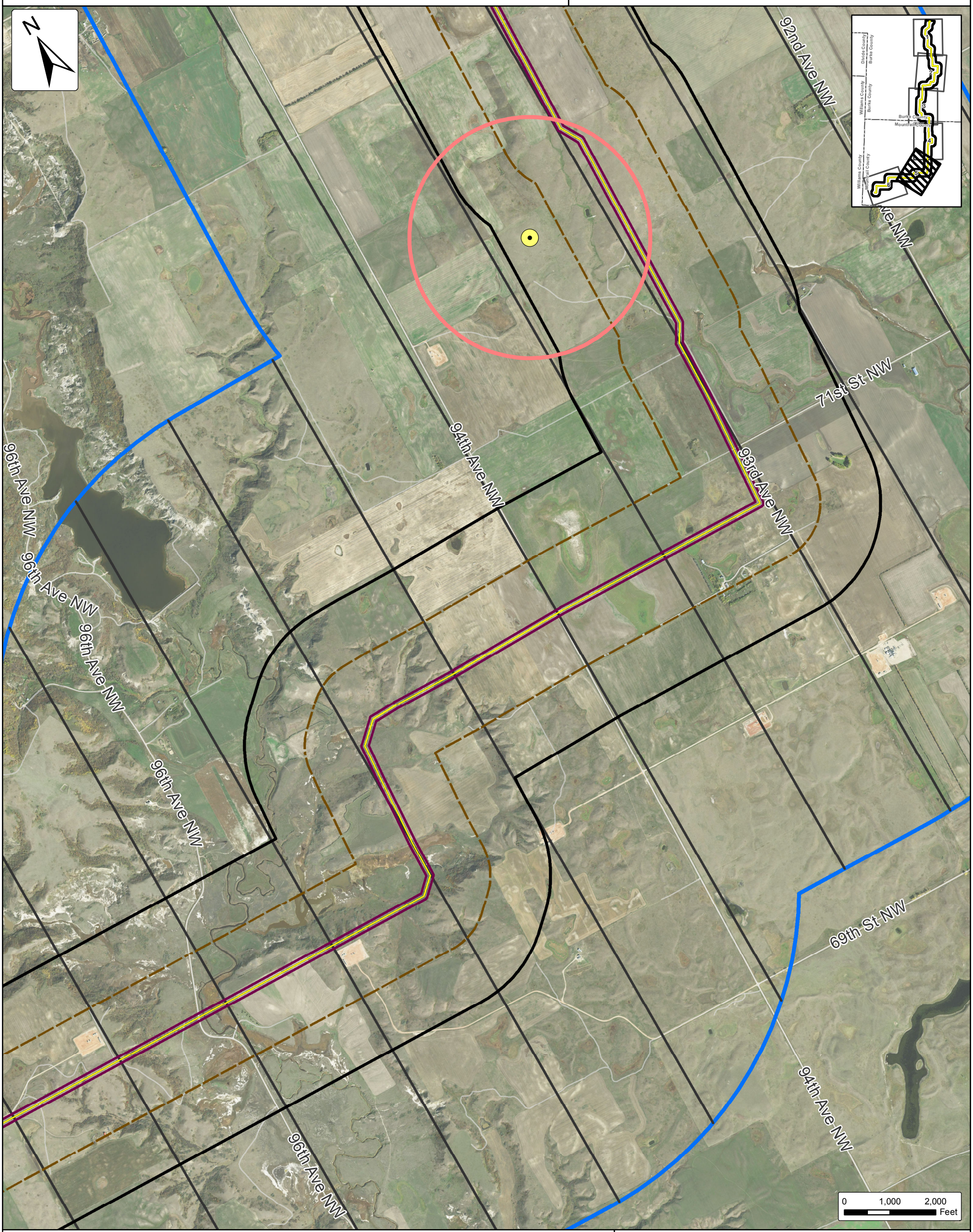

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- Transmission Line 0.25 Mile Buffer (05/14/2018)
- Eagle Nest Study Area
- Transmission Line
- Transmission Line 150 ft. Project Corridor
- Transmission Line 1 Mile Study Area
- Existing Tande Substation
- Counties

SOURCE: USDA NAIP 2017 IMAGERY

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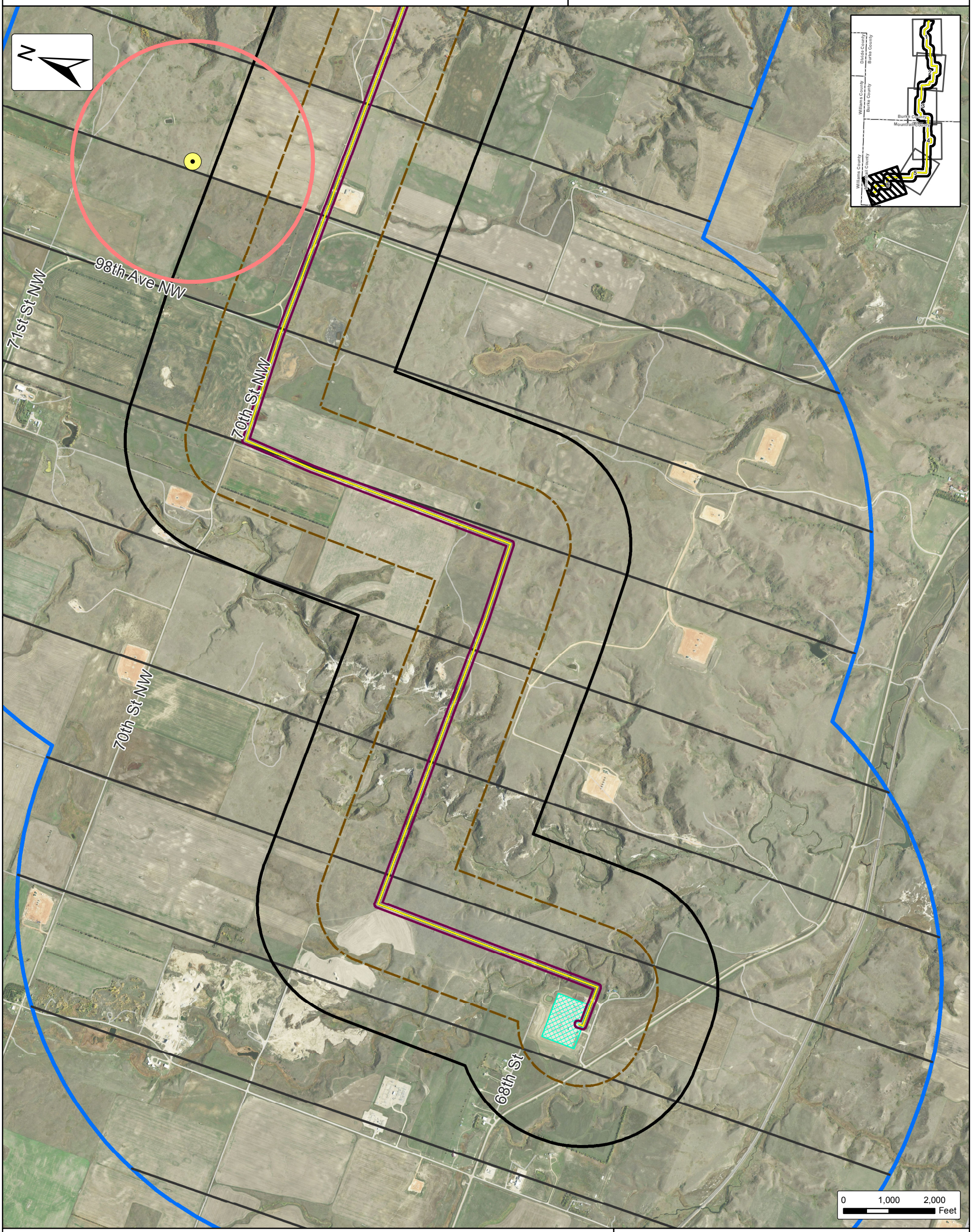

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Transmission Line 0.25 Mile Buffer (05/14/2018)
Eagle Nest Study Area

Transmission Line
Transmission Line 150 ft. Project Corridor
Transmission Line 1 Mile Study Area
Existing Tande Substation
Counties

SOURCE: USDA NAIP 2017 IMAGERY

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APPENDIX II

Detailed Map Book - Raptor Nest Locations

Burke Wind Transmission Line

Raptor Nest Map

Burke County & Mountrail County, North Dakota

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Issue Date:
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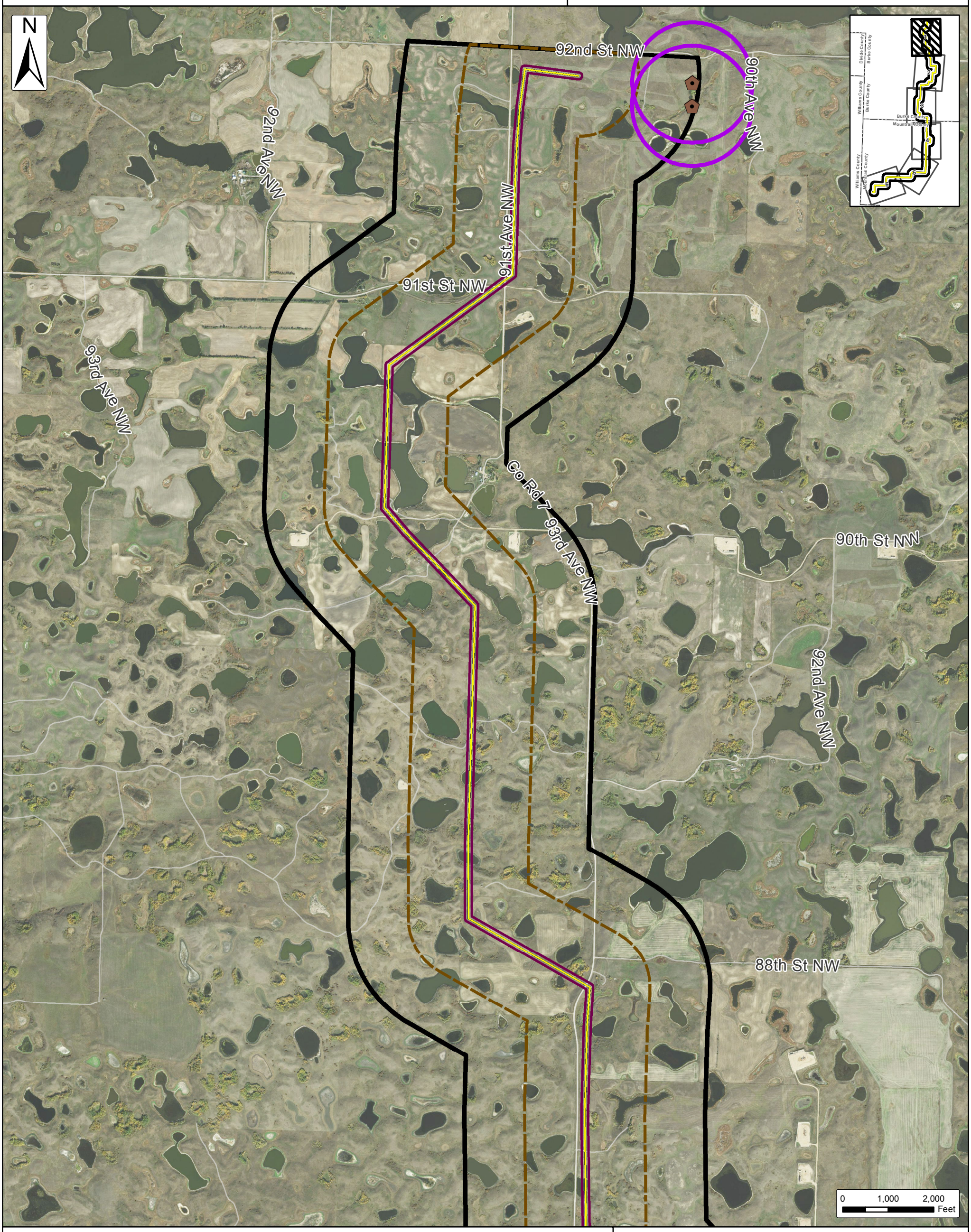
Atwell, LLC Project:
16000947



Raptor Nests Constraints
(Atwell Identified April & May 2018)

- Ferruginous Hawk (Active)
- Ferruginous Hawk (Probable)
- Great Horned Owl (Active)

- Raptor Nest 1 Mile Transects (±115 Miles)
- Raptor Nests 0.25 Mile Constraint Buffer
- Transmission Raptor Nest Study Area
- Transmission Line 0.25 Mile Buffer (05/14/2018)
- Eagle Nest Study Area

- Transmission Line
- Transmission Line 150 ft. Project Corridor
- Transmission Line 1 Mile Study Area
- Existing Tande Substation
- Counties

SOURCE: USDA NAIP 2017 IMAGERY

ATWELL

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Burke Wind Transmission Line

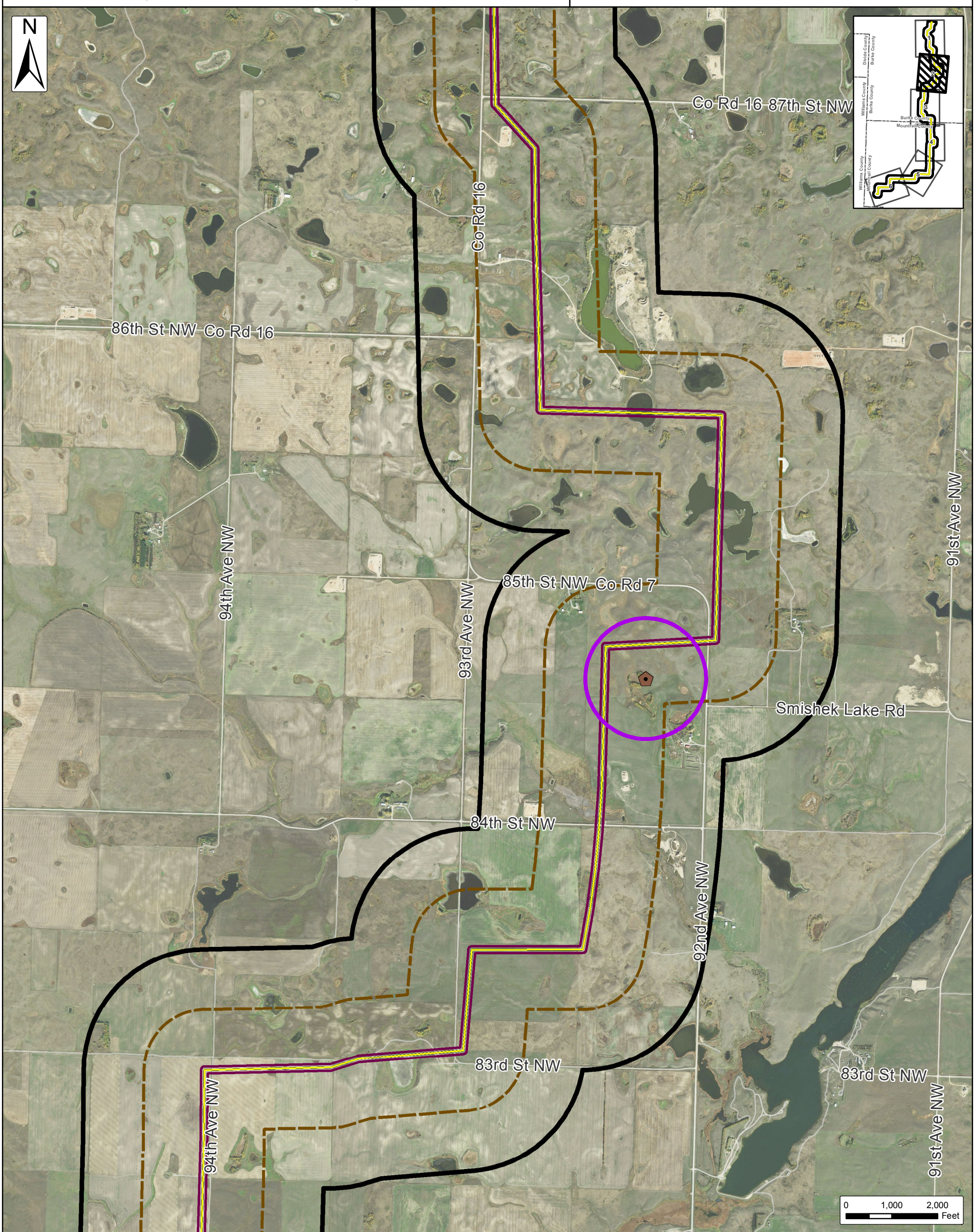
Raptor Nest Map

Burke County & Mountrail County, North Dakota

Client:
Burke Wind, LLC

Issue Date:
6/15/2018

Atwell, LLC Project:
16000947



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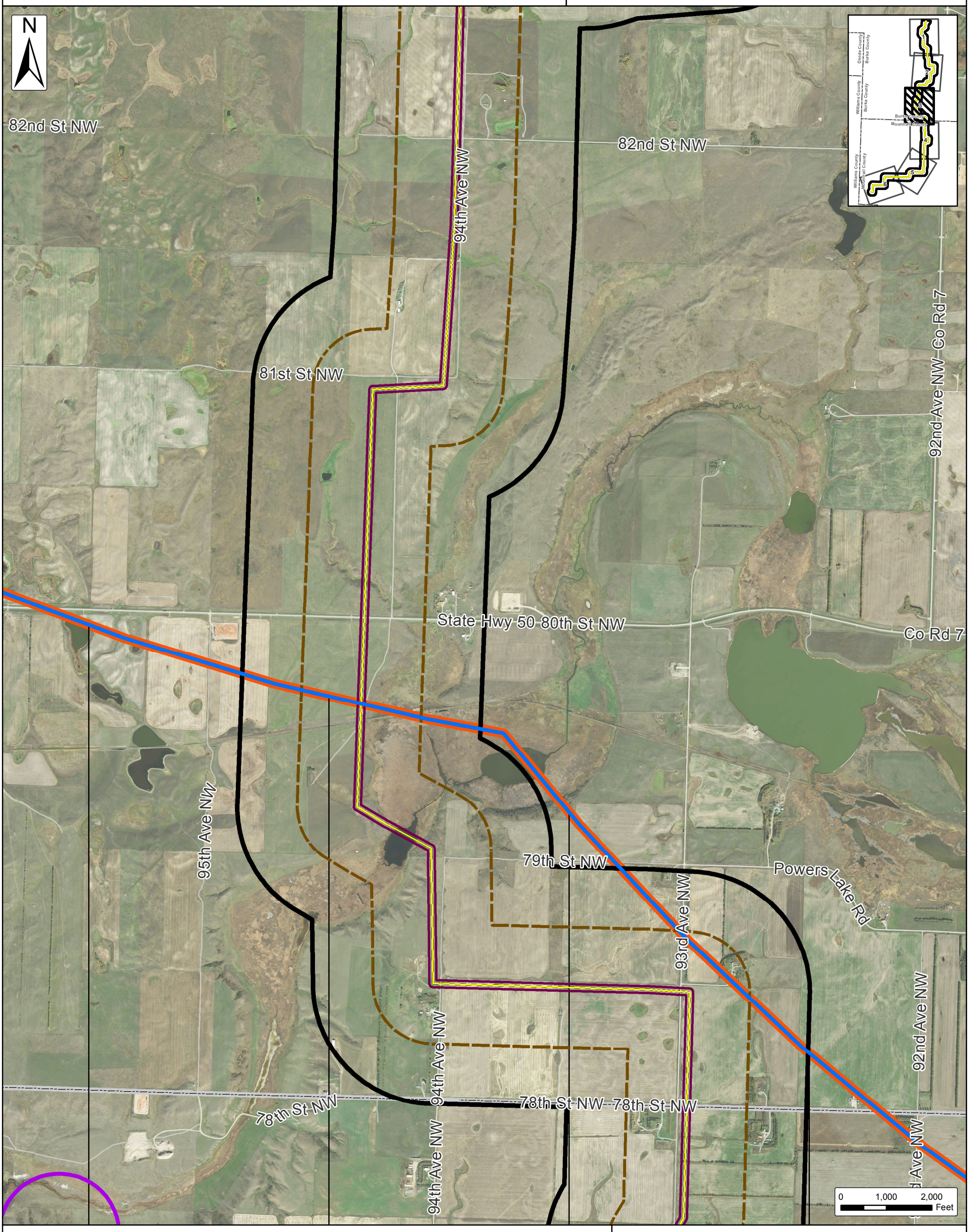

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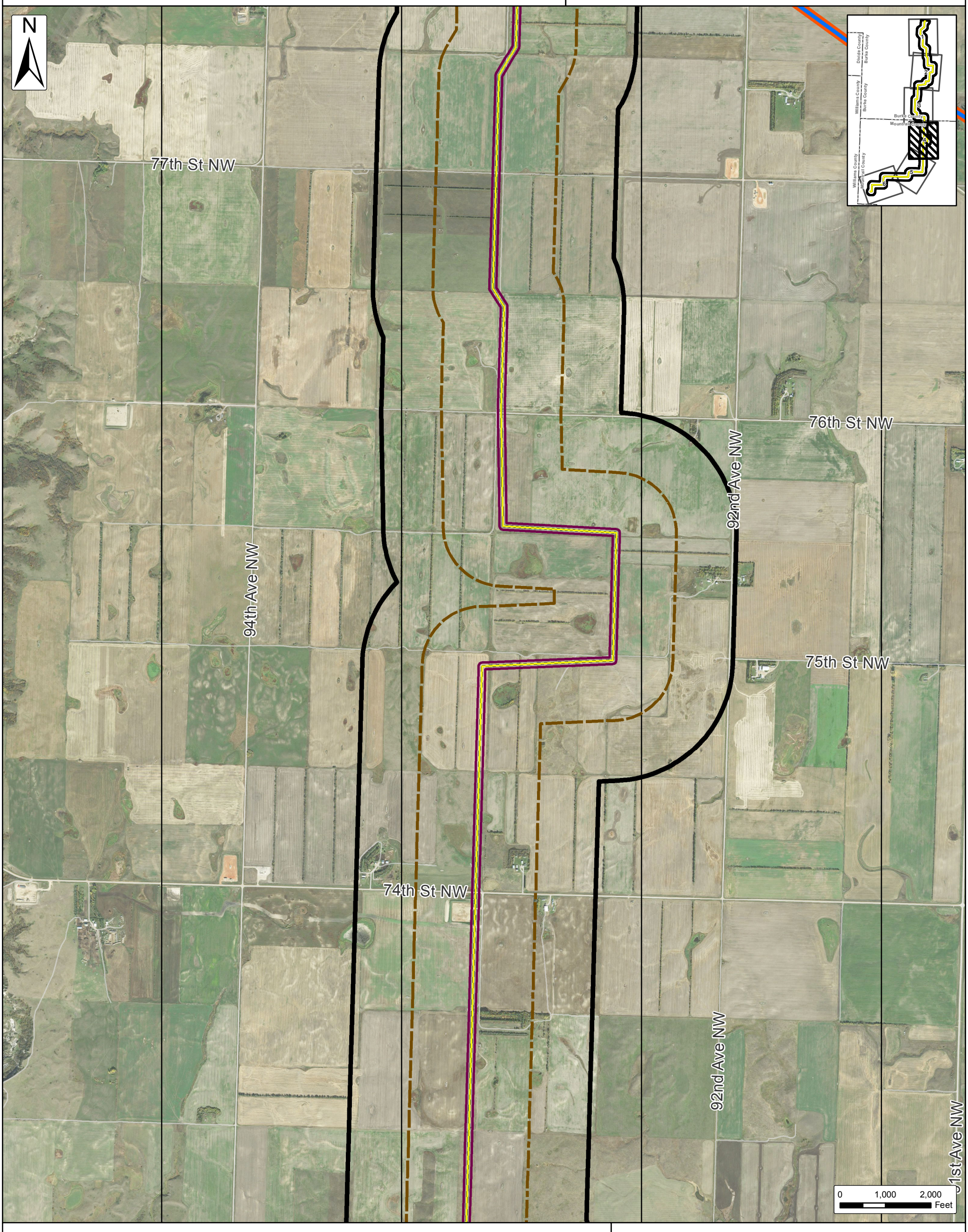

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Burke County & Mountrail County, North Dakota

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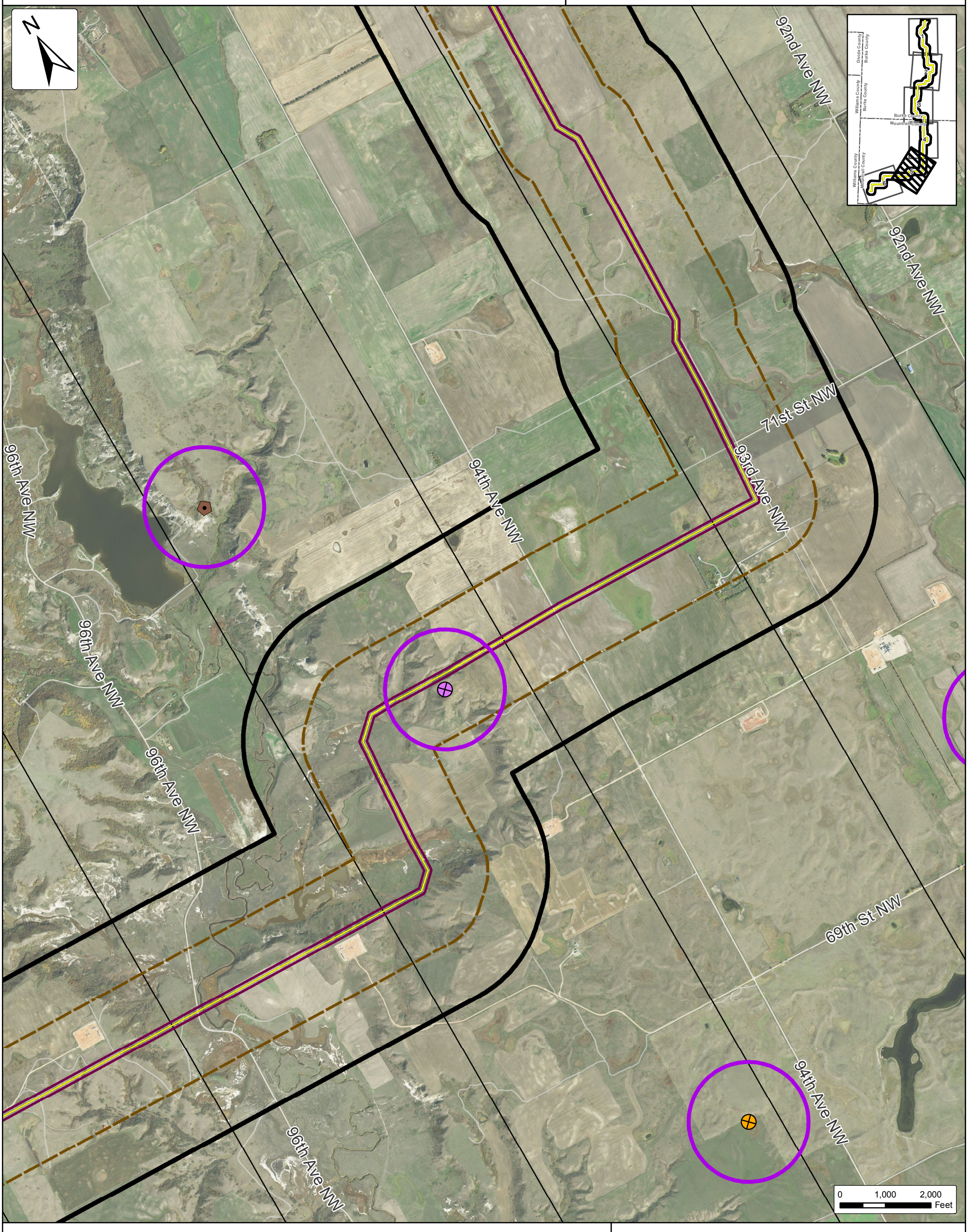

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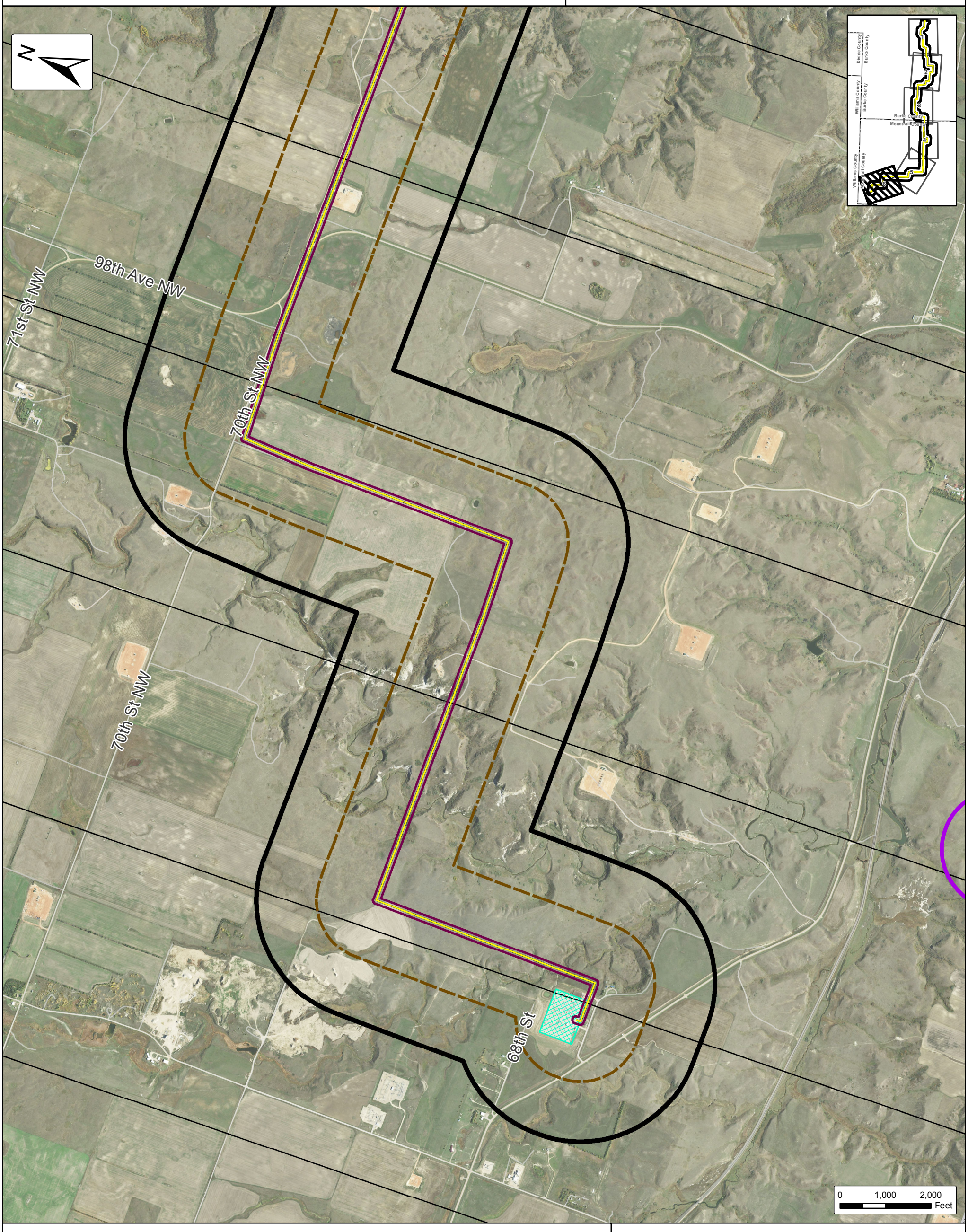

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BAT HABITAT ASSESSMENT

for

Burke County Wind Transmission Line Assessment Area
Burke & Mountrail Counties, North Dakota

Prepared for:

Burke Wind, LLC
700 Universe Boulevard
Juno Beach, Florida 33408

Prepared by: Atwell, LLC (#16000947)

May 4, 2018

(Revision: July 9, 2018)

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APPENDIX II

Summary of Bat Species with Distribution in North Dakota

EXECUTIVE SUMMARY

Burke Wind, LLC (Burke) contracted Atwell, LLC (Atwell) to conduct a habitat assessment to identify habitats conducive to bat resources within the proposed approximately 23,312-acre Transmission Line Assessment Area (TAA) in Burke and Mountrail counties, North Dakota. This TAA is associated with the Burke County Wind Energy Center (WEC). The purpose of this report is to evaluate the potential existence of habitat for state or federally listed threatened and endangered bat species, as well as species of concern, within the TAA based on a desktop and literature review.

Data acquisition was conducted through publicly available information from a variety of sources including federal and state agencies, local government offices, GIS, and literature reviews. The information obtained during this habitat assessment will be utilized during initial desktop analysis in an effort to design project infrastructure to avoid and/or minimize impacts to potential bat habitat.

Within the TAA, grasslands, wetlands, and agricultural lands dominate the landscape. The northern part of the TAA exists as an extensive prairie wetland pothole system. Intermittent streams and forested riparian corridors are present throughout the central and southern portions of the TAA. Because of the relatively small proportion of forested landscape, the TAA has limited potential to support tree roosting bats. The White Earth River region in the southern portion of the TAA stands out as the single region within the TAA that may contain adequate habitat and resources to support roosting and migrating bat species.

Overall use of the TAA by the northern long-eared bat is unlikely because of the relatively limited amounts of forested habitat and riparian corridors. These habitats are concentrated within the southern sections of the TAA within Mountrail County. Considering the TAA distance from the officially designated white-nose syndrome (WNS) zone, Atwell does not anticipate that development of the overhead electric transmission line project within the TAA would be subject to prohibitions on incidental take for the northern long-eared bat as defined by a finalized 4(d) rule.

Three (3) additional bats species with various levels of conservation priority (big brown bat (*Eptesicus fuscus*), little brown bat (*Myotis lucifugus*), and western small-footed bat (*Myotis ciliolabrum)*) have been identified as having at least a possible chance of occurring within certain habitats located within the TAA. The North Dakota *State Wildlife Action Plan* (SWAP) could assist in informing design to avoid or minimize possible impacts to species of conservation priority.

1.0 INTRODUCTION

Burke Wind, LLC (Burke) contracted Atwell, LLC (Atwell) to conduct a habitat assessment for bat species within the proposed 23,312-acre Transmission Line Assessment Area (TAA) for the Burke County Wind Energy Center (WEC) within Burke and Mountrail Counties, North Dakota. Please refer to the *Site Location Map* in **Appendix I**.

Burke Wind, LLC conducted this study as part of a holistic natural resources review approach to assess potential adverse effects from development of this wind energy project on species of concern and their habitats. Results from this study will be combined with results from other natural resource studies and will aid in responsibly siting wind turbines, access roads, underground electric collection lines, an electric substation, overhead high-voltage transmission line, and other proposed infrastructure. To date, this thorough approach has enabled Burke Wind, LLC to adapt quickly during project design planning and has further minimized potential impacts to sensitive natural resources.

The purpose of this report is to evaluate the potential existence of and/or habitat availability for summer roosting bat species within the TAA, particularly for state species of conservation priority and federally listed species. Potential impacts of project development on those potential habitats need to be assessed. This document presents information regarding habitat descriptions and review of general bat natural history for those species that may utilize habitats within the TAA.

2.0 PROJECT DESCRIPTION

The approximately 23,312-acre TAA is located in northwest North Dakota in Burke and Mountrail Counties, and overlaps with the Burke County wind resource *Project Area* at the southeastern end. The TAA, approximately 15 miles southwest of Bowbells, North Dakota, runs south from the *Project Area* into Mountrail County before heading west and ending northwest of White Earth, ND and east of Tioga, ND. Refer to the *Site Location Map* in **Appendix I**. The TAA and surrounding vicinity is sparsely populated and supports a mix of grasslands and cultivated cropland/hayfields/pasturelands partially within an extensive prairie pothole wetland system. Agricultural use (cultivated crops and hay/pasture) is the primary land use within the TAA. Much of the landscape is relatively flat or with gently rolling hills; however, terrain may vary more with a greater topographical shift around the north-south oriented White Earth River in the southern portion of the TAA.

3.0 BACKGROUND RESEARCH

Data acquisition was conducted through publicly available information from a variety of sources including federal and state agencies, local government offices, GIS, and literature reviews. Sources reviewed include, but are not limited to the following:

- National Hydrography Dataset (NHD) (USGS 2017)
- United States Geological Survey (USGS) USFWS Threatened and Endangered Species (TES) Data (USFWS 2017a)
- National Wetlands Inventory (NWI) Data (USFWS 2017b)
- National Land Cover Database (NLCD) (Homer et al. 2015)
- North Dakota Game and Fish Department (NDGFD)
- North Dakota Statewide datasets available through the North Dakota Geographic Data Library's GIS Open Data Portal

The information obtained during this habitat assessment and the desktop analysis review will be utilized during initial desktop analysis in an effort to design project infrastructure to avoid and/or minimize impacts to potential bat habitat. A detailed discussion of the geologic and ecoregion characteristics and current land cover within the TAA from the USGS Land Cover Database is provided below.

*3.1 **Ecoregion Characteristics***

The TAA is located within the Level IV Northern Missouri Coteau (42d) and Glaciated Dark Brown Prairie (42i) ecoregions of the Level III Northwestern Glaciated Plains-42, as well as within the Level IV River Breaks (43c) ecoregion of the Level III Northwestern Great Plains-43 (Bryce et al. 1996). According to the EPA Ecoregion mapping data, these ecoregions are characterized by the following:

3.1.1 Northwestern Glaciated Plains

The Northwestern Glaciated Plains ecoregion-42 marks the westernmost extent of continental glaciation. The young morainal landscape has significant microtopography with high wetland concentrations throughout this region. The Northern Missouri Coteau (42d) lies in a transition zone between a more boreal climate to the north and a more arid climate to the west. Willows (*Salix* sp.), trembling aspen (*Populus tremuloides*), and southern outliers of aspen parkland may occur at wetland margins. Rough fescue (*Festuca* sp.), also a northern species, appears in grassland associations throughout this region. Wetlands in this region typically dry out earlier in the summer than on the Missouri Coteau (42d) ecoregion located to the south and east. Mixed dryland agriculture is the major land use for this region (Bryce et al. 1996). The Glaciated Dark Brown Prairie (42i) also marks a transition to drier conditions, with a well-defined drainage system and fewer wetlands compared to more recently glaciated areas to the east (Bryce et al. 1996).

3.1.2 Northwestern Great Plains

The Northwestern Great Plains ecoregion- 43 contains the Missouri Plateau portion of the Great Plains. The semiarid rolling topography is dotted with buttes and badlands. Though areas of steeper or broken topography may maintain some native grassland, the majority of grasses throughout this ecoregion have been replaced with spring wheat and alfalfa. Irregular precipitation and inadequate irrigation restricts the amount of agriculture that can occur in this ecoregion. The

River Breaks (43c) ecoregion contains broken terraces and uplands that drop down to the Missouri River and its tributaries. Habitat features such as dissected topography, forested ravines, and minimal agriculture greatly support wildlife. Some major tributaries of the Missouri River continue to sustain Cottonwood-Ash gallery forests, though impoundments along the Missouri River have significantly reduced the amount of riparian along the main channel (Bryce et al. 1996).

3.2 Land Cover Analysis

The TAA is located within a rural area with small farmsteads scattered throughout. The dominant land cover types identified throughout the TAA, according to the 2011 National Land Cover Database, are summarized in **Table 1**, below. Also, refer to the *Land Cover Map* in **Appendix I**.

Table 1. Approximate Land Cover Acreage within the TAA

Classification Type	*TAA (ac)*	*TAA %Total*
Open Water	292	1.25%
Developed, Open Space	611	2.62%
Developed, Low Intensity	76	0.32%
Barren Land	7	0.03%
Deciduous Forest	363	1.56%
Evergreen Forest	8	0.04%
Mixed Forest	28	0.12%
Shrub/Scrub	362	1.55%
Herbaceous	10,051	43.11%
Hay/Pasture	753	3.23%
Cultivated Crops	10,214	43.81%
Woody Wetlands	43	0.18%
Emergent Herbaceous Wetlands	503	2.16%
Totals:	**23,312**	**100.00%**

3.3 Grassland Habitat

Grassland habitat, which NLCD and **Table 1** refers to as “herbaceous”, is the dominant land cover within the TAA, totaling approximately 43 percent.

3.4 Agriculture

Agricultural land cover accounts for approximately 47 percent of the overall TAA (Homer et al. 2015). Agricultural lands are further broken down into cultivated crops and hay/pasture land cover types.

3.4.1 Cultivated Croplands

Cultivated croplands comprise the dominant land use within the agricultural land cover accounting for approximately 44 percent of the overall TAA. This agricultural landscape contains croplands traversed by tile drainage, and a generally grid-like network of roadways with a north-south and east-west orientation (Homer et al. 2015).

3.4.2 Hay/Pasture

Land used for hay cultivation and pasture use within the TAA, totals approximately 3 percent. Areas included in this land cover type are grasses, legumes, or mixed grass-legume for livestock and grazing and land utilized for the production of seed or hay crops, on a perennial cycle (Homer et al. 2015).

3.5 Wetland Habitat and Open Water

An aerial desktop review of current and historic aerial photographs, US Geological Survey (USGS) Topographic maps, National Wetland Inventory (NWI) maps, National Hydrography Datasets (NHD), US Department of Agriculture – National Cooperative Soil Survey (USDA-NCSS) maps, Hydrologic Unit Code (HUC) 12 Sub Watershed Boundary Dataset maps, and Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM) floodplain maps was conducted to obtain broad-scale information regarding potential wetlands within the TAA. This review indicated that numerous scattered wetlands are mapped throughout the TAA. The northern half of the TAA contains a high concentration of wetlands, which are generally associated with a formerly glaciated landscape. Fewer wetlands appear to occur within the southern portion of the TAA in Mountrail County (USFWS 2017b). Refer to the *Aquatic Resources Map* in **Appendix I**.

3.6 Developed, Open Space and Disturbed Areas

Developed, Open Space, and Disturbed Areas (low, medium, high, open space, non-specific) account for approximately 687 acres (3%) of the TAA. Open space and low density development include landscapes with some constructed materials but mostly vegetation (e.g., large-plot single family housing, lawns, parks, vegetation planted in developed settings for recreation, erosion control or aesthetic purposes) and limited amounts of impervious surfaces (Homer et al. 2015). This land cover type within the TAA coincides particularly with farmsteads. Low and medium density development coincides with areas of impervious surfaces that account for approximately 50-100 percent of the total cover and minimal vegetation cover (i.e., row houses, commercial and/or industrial areas; Homer et al. 2015).

3.7 Deciduous Forest

Overall deciduous forest cover within the TAA is scarce and accounts for approximately 363 acres (1.5%). Forested habitat and riparian corridors are limited, fragmented, and occur primarily along intermittent drainages associated with the White Earth River in the southern portion of the TAA and, to a lesser extent, along a ridge located at the northeast boundary of the TAA. The NDGFD

woodland/shrubland macro habitat model also corroborates this assessment of the spatial distribution of potentially suitable woodland bat habitat throughout the TAA. Isolated tracts of woodlands associated with prairie pothole wetlands are also scattered throughout the northern portion of the TAA. Dominant forest systems appear to include aspen-oak forests and dry-mesic oak forests.

3.8 Federal and Public Lands

Burke County Waterfowl Production Areas (WPA), which are owned by the USFWS and managed to establish and protect waterfowl breeding and nesting habitat, were identified within the TAA. Additionally, there are several other federal public lands located in the vicinity of the TAA including Lostwood National Wildlife Refuge (Lostwood NWR) and several other WPAs (USFWS 2015c). The Lostwood NWR is adjacent to the eastern boundary of the TAA. Lostwood NWR is one of the largest tracts of northern mixed grass prairie that is publically owned in the United States. It is managed by the USFWS as a refuge and breeding ground for migratory birds and other wildlife (USFWS 2016a). The WPAs vary in size, are scattered within the vicinity of the TAA, and could potentially provide habitat for bat species. The Lostwood NWR and WPAs found in the vicinity of the *TAA* are depicted in the *Public Lands Map* provided in **Appendix I**.

North Dakota Department of Trust Lands School Trust Lands parcels are scattered within the TAA and the surrounding vicinity (North Dakota Department of Trust Lands 2017). The trust lands are often leased for agricultural purposes and are often open to walk-in hunting. State Wildlife Management Areas (WMAs) area also located within and in the vicinity of the TAA. WMAs are open to the public for hunting, fishing, and trapping and other compatible public uses. Private Land Open to Sportsmen (PLOTS) lands are located within and in the vicinity of the TAA (NDGFD 2016a). PLOTS are usually on private land and are open for public walk-in access for the purpose of hunting. The aforementioned managed public areas could potentially provide habitat for bat species in the vicinity of the TAA.

The USFWS land acquisition program grants wetland, grassland, and habitat easements for the purpose of protecting wetlands, grasslands, and habitat that provides nesting cover and surface habitat for waterfowl and other grassland-nesting bird species (USFWS 2008). Landowners agree to maintain the areas under easement as wildlife management areas by not draining, filling, leveling, or burning the wetland areas. Additionally, there are a variety of other protected lands and easement properties scattered throughout a majority of the TAA. These protected lands coincide with modeled woodland/shrubland habitat along the northern boundary of the TAA, but the woodland habitat corridor along the White Earth River does not appear to fall under a majority of public land or easement designations. Please refer to the *Public Lands Map* in **Appendix I**.

4.0 BAT HABITAT ASSESSMENT

4.1 Bat Species of North Dakota

According to NDGFD (NDGFD 2016b), eleven (11) species of bats are known to occur in North Dakota, of which three (3) are possibly year-round residents (Gillam et al. 2012, Nelson et al. 2015):

- Big Brown Bat (*Eptesicus fuscus*)*
- Northern Long-eared Bat (*Myotis septentrionalis*)
- Little Brown Bat (*Myotis lucifugus*)
- Long-legged Bat (*Myotis volans*)*
- Long-eared Bat (*Myotis evotis*)*
- Fringed Bat (*Myotis thysanodes*)
- Townsend's Big-eared Bat (*Corynorhinus townsendii)*
- Western Small-footed Bat (*Myotis ciliolabrum*)
- Eastern Red Bat (*Lasiurus borealis*)
- Hoary Bat (*Lasiurus cinereus*)
- Silver-haired Bat (*Lasionycteris noctivagans*)

*Possibly year-round residents in North Dakota

For a comprehensive list of North Dakota bat species and their occurrence within Burke and Mountrail counties, please refer to the *Occurrence Summary of North Dakota Bat Species and Their Distribution Assessment within the Transmission Line Assessment Area* table in **Appendix II**.

The northern long-eared bat is the only federally listed bat species (Threatened) known to occur within North Dakota. According to the North Dakota State Wildlife Action Plan (SWAP), Townsend's big-eared bat, big brown bat, little brown bat, and northern long-eared bat are categorized as Level I Species of Conservation Priority. Level I is defined as the highest level of conservation priority in the state where there is clear obligation to use State Wildlife Grant (SWG) funding to implement conservation actions that directly benefit these species (Dyke et al. 2015). The western small-footed bat, long-eared bat, and long-legged bat are listed as Level III Species of Conservation Priority, and listed as such since North Dakota lies at the edge of each species' known continental range.

4.2 North Dakota Bat Habitat & Availability Assessment

Preferred bat roosting and foraging habitat in North Dakota consists of woodlands (primarily coniferous) with a nearby water source, riparian woodland corridors, and rock crevice habitat (Gillam et al. 2012). Snags and trees with loose bark to roost under are commonly used; large cottonwood trees (>1 m diameter at breast height) tend to be a preferred tree of choice for several roosting species (Gillam et al. 2012). Some species will also utilize buildings and bridges for roosting. Preferred hibernaculum habitat includes caves, abandoned mines, rock crevices, and trees.

Within the TAA, forested habitat and riparian corridors are limited, fragmented, and occur primarily near intermittent drainages associated with the White Earth River (and including Paulsen Creek) in the southern portion of the TAA. According to the 2011 National Land Use-Land Cover Database, forests and wooded wetlands encompass less than 2.0% of the total land use/land cover mapped within the TAA (Homer et al. 2015). Nevertheless, these woodland habitat cover types may provide suitable roosting and foraging habitat for bats breeding within or migrating through the TAA.

Prairie potholes (i.e., emergent wetlands, freshwater ponds) scattered throughout the northern portion of the TAA are fringed with a variety of vegetative cover types including wooded habitat (cottonwoods and dead snags were observed within the TAA). These prairie potholes, particularly those near drainages/riparian corridors, have potential to afford bats a water source, foraging habitat, and occasional roosting habitat.

*4.3 **Previous State-wide Bat Studies***

Multiple mist netting and acoustic surveys were conducted by North Dakota and Dickinson State Universities at a total of 68 survey sites across five (5) ecological regions within North Dakota (i.e., Red River Valley- approximately 245 miles east, Pembina Gorge- approximately 206 miles east, Turtle Mountains-approximately 100 miles east/northeast, Missouri River Valley-approximately 16 miles south, and the Badlands- approximately 50 miles south/southwest of the TAA) (Nelson et al. 2015). Species presence at each location based on those surveys is summarized in Table 2.

Table 2. Presence of ND Bat Species Detected at Five Ecological Regions (Nelson et al. 2015)

Species	Badlands	Missouri River Valley	Turtle Mountains	Pembina Gorge	Red River Valley
Big Brown Bat	X	X	X	X	X
Northern Long-eared Bat	X	X			
Little Brown Bat	X	X	X		
Long-legged Bat	X	X			
Long-eared Bat	X	X			
Fringed Bat	X				
Townsend's Big-eared Bat	X	X			X
Western Small-footed Bat	X	X			
Eastern Red Bat	X	X	X		X
Hoary Bat	X	X	X	X	X
Silver-haired Bat	X	X	X	X	X

Based on these studies, 11 bat species were confirmed in the state; approximately 85% of the 333 captured bats were in the Badlands (n=143) and Missouri River Valley (n=140). The Missouri River Valley, which is the closest region to the TAA, had confirmed captures of four (4) species (i.e., big

brown, silver-haired, little brown, and northern long-eared bats) during mist-netting efforts (Nelson et al. 2015).

State-wide acoustic bat surveys conducted by North Dakota and Dickinson State Universities confirmed the presence of 10 bat species in the five (5) regions of North Dakota. Approximately 97% of the echolocation calls consisted of little brown bat, big brown, silver-haired bat, eastern red, western small-footed bat, and hoary bat. Northern long-eared bat calls were not detected in this study.

Therefore, based on this study, several regions in the state provide forested habitat needed to support foliage and tree roosting bats within the overall agricultural landscape of North Dakota, and more specifically the Missouri River Valley may provide habitat for conservation concern and listed species including little brown, big brown, and northern long-eared bats (Nelson et al. 2015).

There is little information available that focuses on species presence, distributions, and habitat use of bats in the Great Plains of North America, particularly wintering bats and hibernacula use. A study of the presence of overwintering bat species and hibernacula use in the Badlands region of North Dakota positively identified overwintering by big brown bat, silver-haired bat, little brown bat, long-eared bat, Townsend's big-eared bat, and western small-footed bat (Barnhart and Gillam 2017). However, to date no hibernacula for the northern long-eared bat have been documented in the state of North Dakota (USFWS, pers. comm. 2017).

4.4 Federally Listed Threatened and Endangered Species

Federally listed species are protected under federal law by the Endangered Species Act (ESA) of 1973 (16 U.S.C §1531-1544). The USFWS IPaC System provides information regarding federally threatened, endangered, proposed, and candidate species on a county-by-county basis. IPaC results indicate that the TAA is within the range (i.e., contains documented records and/or has the potential to harbor critical habitat) of one (1) listed bat species: northern long-eared bat (federally threatened). According to the IPaC results and other North Dakota bat studies conducted to date, the northern long-eared bat is the only federally listed bat species that may occur in the TAA. Based on previous land cover data analysis, specific habitat resources with a possibility of attracting this federally threatened species may exist in the White Earth River region in the southern portion of the TAA.

4.4.1 Northern Long-eared Bat (Federally Threatened)

The northern long-eared bat (NLEB) is a federally threatened species and considered a rare species in North Dakota (NDGFD 2016c). During late spring and summer, this species roosts and forages in forested habitats (Owen et al. 2003). The NLEB roosts under loose or peeling bark or in cavities and crevices of dead and living trees (USFWS 2015a). Their preferred tree species in North Dakota are

silver maple (*Acer saccharinum*), green ash (*Fraxinus pennsylvanica*), and eastern cottonwood (*Populus deltoides*) (Gillam and Barnhart 2012).

NLEB habitat use varies depending on season. Typically, NLEB utilizes caves, crevices, and abandoned mines for hibernacula but utilizes trees as roosts during the maternal pup rearing phase. To date, no hibernacula or maternity roost trees have been identified in North Dakota (USFWS *pers. comm*. 2016).

The USFWS recognizes the NLEB as occurring in every North Dakota county (USFWS 2017c). Furthermore, NDGFD range data for the NLEB indicate that the TAA is located within the "possible range" of the species (NDGFD 2016c). Acoustic monitoring studies were conducted in 2010 at three (3) National Wildlife Refuges within approximately 85 miles east of the TAA. These studies indicated that concentrations of NLEB were highest in riparian corridors compared to agricultural lands (Coberly et al. 2011). In addition, recent bat studies in the region have documented the NLEB in forested habitat in the Turtle Mountains (approximately 100 miles east/northeast of TAA) and in the riparian corridors of the Little Missouri and Missouri Rivers (approximately 16 miles south of TAA) (Dyke et al. 2015).

Forested habitat and riparian corridors are limited, fragmented, and occur primarily in the southern portion of the TAA near drainages associated with the White Earth River. Patchily distributed riparian habitat (e.g., N48.45442°, W102.75927°) may harbor this species, but it is unlikely that they would venture far from preferred summer roosts during foraging forays (Carter and Feldhamer 2005). Furthermore, the White Earth River may serve as a migratory corridor, linking habitat in the TAA with the primary range of the NLEB (i.e., Missouri River Valley; Gillam and Barnhart 2012).

The NLEB is listed as federally threatened by the USFWS, primarily because of the threat posed by the white-nose syndrome (WNS), a fungal disease that has affected several bat populations (USFWS 2016b). The decision to list the bat as threatened with a 4(d) rule provides sufficient protection to address conservation needs of this bat species (USFWS 2016b). The major provisions of the 4(d) rule prohibit the purposeful "take" (defined under the federal ESA as harming, harassing, or killing) of this species throughout the species' range. In counties/districts that have confirmed WNS records and in U.S. counties within 150 miles of confirmed WNS records, incidental take is prohibited under the following circumstances:

1) If it occurs within a hibernacula.
2) If it results from tree removal activities and
    a. The activity occurs within 0.25-miles of a known, occupied hibernacula; or
    b. The activity cuts or destroys a known, occupied maternity roost tree or other trees within a 150-foot radius from the maternity roost tree during the pup season from June 1 through July 31(USFWS 2016b).

Overall use of the TAA by NLEB is unlikely because of the fragmented and relatively limited amounts of forested habitat and riparian corridors located primarily with the southern portion of the TAA. The TAA is approximately 245 miles west of the edge of the northern long-eared bat WNS zone, per the USFWS WNS Zone Final 4(d) Rule (05/01/2017) (USFWS 2017d). In areas not yet affected by WNS, there are no prohibitions on incidental take resulting from otherwise lawful construction activities. Although habitat may exist within the TAA, the TAA is outside of areas affected by WNS. Therefore, it is not anticipated that the TAA would be subject to prohibitions on NLEB incidental take under the final 4(d) rule.

4.5 North Dakota State Wildlife Action Plan- State Species of Conservation Priority

The SWAP is the principal document for safe guarding rare and declining species of fish and wildlife within the state. The SWAP utilizes eight (8) essential elements that focus on species of greatest conservation need:

1) information on the distribution and abundance of wildlife species, particularly low and declining populations;
2) descriptions of locations and relative condition of habitat and community types;
3) problems affecting species and priority research or survey efforts needed;
4) conservation actions needed to conserve the identified species;
5) plans for monitoring species and the effectiveness of conservation actions;
6) plans for periodic review of the SWAP;
7) plans for coordinating with federal, state, local agencies and Tribal government on the development and implementation of the plan;
8) and involves broad public participation.

The plan places an emphasis on the protection of diverse native habitats in order to maximize the preservation of native wildlife diversity. The SWAP covers 115 species, 47 birds, two (2) amphibians, nine (9) reptiles, 21 mammals, 22 fish, ten (10) freshwater mussels, and four (4) insects (Dyke et al. 2015). **Table 3** presents a list of federally TES and state species of conservation priority bat species, with their potential to occur in the area of the Project based on data from the USFWS and SWAP.

The SWAP is a NDGFD guidance tool that could assist in informing design to avoid or minimize possible impacts to state species of conservation priority on public lands. Should project development potentially impact state species of conservation priority on public lands, the SWAP could assist in providing steps to reduce or minimize these impacts.

4.6 State Listed Threatened and Endangered Species

North Dakota does not have a state threatened or endangered species list. Only those species listed by the ESA of 1973 are considered threatened or endangered (NDGFD 2015). However, North Dakota identifies state species of conservation priority through the state's SWAP, which are not

afforded regulatory protection, but are closely monitored in the state. The SWAP identifies the little brown, big brown bat, and Townsend's big-eared bat, as level I species of conservation priority. Each species is discussed in more detail in the following sections.

4.6.1 Little Brown Bat (State Species of Conservation Priority Level 1)

The little brown bat was added to the Species of Conservation Priority list during the revision of the Wildlife Action Plan in 2015 (NDGFD 2016d). Although currently secure in North Dakota, WNS threatens this species in much of its eastern range (NDGFD 2016d). The little brown bat used to be abundant throughout forested areas for much of eastern U.S. and as far north as Alaska. This bat's range extends from Alaska to Labrador and Newfoundland (Canada), south to southern California, northern Arizona, and northern New Mexico (BCI 2017a). This species is especially associated with man-made structures such as buildings, attics, barns, etc., and often form nursery colonies containing hundreds, sometimes thousands of individuals in buildings and attics (BCI 2017a). Currently, North Dakota State University is trying to identify potential roosting and hibernacula habitat in western North Dakota and developing a Bat Management/White-nose Syndrome Response plan (NDGFD 2016d). State-wide acoustic monitoring studies were completed in 2009-2012 and documented little brown bat calls in the Missouri River Valley (approximately 16 miles south of TAA), Badlands (approximately 50 miles south/southwest of TAA), and Turtle Mountains (approximately 100 miles east/northeast of TAA)(Nelson et al. 2015).

Forested habitat and riparian corridors are limited, fragmented, and occur primarily in the southern portion of the TAA near drainages of the White Earth River. These patches of habitat (e.g., N48.45442°, W102.75927°) may harbor this species. Additionally, there may be potential for this species to occur within the TAA at isolated locations since they will occasionally utilize manmade structures, such as abandoned barns (e.g., N48.71979°, W102.64795°) for roosting, especially if habitat configuration is suitable to this species' ecological requirements.

4.6.2 Big Brown Bat (State Species of Conservation Priority Level 1)

The big brown bat was added to the Species of Conservation Priority list during the revision of the Wildlife Action Plan in 2015 (NDGFD 2016e). The big brown bat is one of the most widespread mammals in North America; found in a variety of habitats ranging from timberline meadows to lowland deserts, though it is most abundant in deciduous forest areas (Agosta 2002, BCI 2017b). Big brown bats' preferred roosting areas are beneath loose bark and in small cavities of pine (*Pinus spp.),* oak (*Quercus spp*.), beech (*Fagus spp*.), and bald cypress (*Taxodium distichum*) trees. Big brown bat roosts can also be found in buildings, barns, and bridges (BCI 2017b).

NDGFD recognizes that the big brown bat's primary range encompasses every county in North Dakota (NDGFD 2016e). Based on previous study findings (i.e., (Nelson et al. 2015), it is likely that big brown bats occur within the TAA. However, overall use of the TAA by big brown bats is not expected to be widespread due to the fragmented habitat and lack of concentrated forested areas,

with the possible exception of the more forested White Earth River region in the southern portion of the TAA.

4.6.3 Townsend's Big-eared Bat (State Species of Conservation Priority Level 1)

The Townsends's big-eared bat was added to the Species of Conservation Priority list during the revision of the Wildlife Action Plan in 2015 (NDGFD 2016d). Two disjunct groups of this species occur within North Dakota, including within the Badlands of the Little Missouri River and, more recently, in the Turtle Mountains region (NDGFD 2016f).

This species is considered a habitat generalist, but most commonly is associated with forest and riparian areas during summer months. In the spring and summer, females form maternity colonies in mines, caves, or buildings, while males generally roost alone. Winter hibernacula include caves and mines throughout its range; however, hibernacula have not been documented to date in North Dakota (BCI 2014a, NDGFD 2016b).

Because of this species localized distribution in North Dakota and its specialized habitat requirements (***not likely*** present within the TAA), the Townsend's big-eared bat is unlikely to occur within the TAA.

4.7 Other Myotis species (State Species of Conservation Priority Level III)

The western small-footed bat, long-eared bat, and long-legged bat are listed as Level III Species of Conservation Priority (having a moderate level of conservation priority, but believed to be non-breeding in North Dakota and being peripheral to their overall continental range).

4.7.1 Western Small-footed bat

The western small-footed bat is considered a year-round/resident of North Dakota and has been documented in riparian corridors of the state's Little Missouri and Missouri Rivers. This species typically roosts alone or in small groups in rock crevices, cracks, and/or under tree bark (primarily coniferous trees). This species utilizes deep crevices found in rock cliffs, buttes, and/or caves for hibernacula (BCI 2014b, NDGFD 2016g).

4.7.2 Long-eared Bat

The long-eared bat is a possible year-round resident of North Dakota. This bat species utilizes caves and crevices for hibernacula and prefers broken rock outcrop and cliffs for roosting sites. The ponderosa pines (*Pinus ponderosa*) of the Badlands region are identified a as a prime area for this species within the state. However, this species is also known to utilize deciduous stands and sagebrush flats as roosting sites (NDGFD 2016h).

4.7.3 Long-legged Bat

The long-legged bat is a possible year-round resident of North Dakota, however, appears to be relatively rare throughout the state (Nelson et al. 2015). In North Dakota, this bat species typically roosts alone or in small groups in rock crevices and under tree bark. This bat is often associated with conifer stands, particularly in the ponderosa pine area of the Badlands region. In addition, this species has been documented along the Missouri River in central North Dakota (NDGFD 2016i).

4.7.4 Evaluation of Potential Occurrence of SCP Level III Species

Within the TAA, preferred habitat that may harbor species such as the western small-footed bat, long-eared bat, and long-legged bat is minimal and primarily confined to the White Earth River region in the southern portion of the TAA. Rock cliffs or rocky face substrates were identified in this area; however, deciduous forest dominated the woodland habitat throughout the TAA and very little mixed and coniferous forest types are present within the TAA (see **Table 1**). Furthermore, the known distribution for these species in North Dakota (i.e., the Badlands and Missouri River Valley regions) occurs more than 16 miles from the TAA and these species are not considered long distance migrants (NatureServe 2016).

Therefore, because of the localized distribution of these species in North Dakota and their specialized and preferred habitat requirements (minimal presence within the TAA), the western small-footed bat, long-eared bat, and long-legged bat are unlikely to occur within the TAA. Refer to **Table 3** (on page 16 of this report)**,** *Federally Listed and SWAP Listed Bat Species with the Potential to Occur within or in the Vicinity of the TAA,* for a list of state listed bat species and their potential to occur within the TAA.

4.8 Evaluation of Potential Occurrence of Non-Listed Species

Based on state-wide mist-netting studies in North Dakota, the areas with the greatest bat diversity include: the Badlands region, Missouri River Valley, Turtle Mountains, Pembino Gorge, and Red River Valley. These areas appear to provide suitable forested habitat for foliage and tree roosting bats in North Dakota's overall agricultural landscape (Nelson et al. 2015), however, the closest region (i.e., Missouri River Valley) is located approximately 16 miles southwest of the TAA.

The fringed bat is rare in North Dakota, with the first documented occurrence recorded in 2012 (Nelson et al. 2015). Roost habitats for this species include caves, mines, cliff faces, rock crevices, outcrops, abandoned buildings, bridges, snags, and other sheltered sites (Cryan et al. 2001). The TAA contains isolated, old building structures and some rock outcrops; however, based on the distribution of this species and its scarcity in North Dakota, the fringed bat is unlikely to occur within the TAA.

Three (3) additional species; the hoary bat, eastern red bat, and silver-haired bat, are known to occur throughout the entire state of North Dakota, and are likely to occur in a variety of habitats. Habitat for all three (3) migratory tree bat species consists of forested areas, including areas altered by humans (e.g., city parks, residential areas, hedgerows, etc.). Landscapes containing open habitats (e.g., grassland, cropland, old fields, etc.) with scattered woodland, drainages, and man-made structures (e.g., abandoned barns, buildings, etc.) which are present throughout the TAA, have the potential to be used by these species.

In North Dakota, silver-haired bats occur throughout the state during migration. Of additional note was the presence of the species in the Badlands region of North Dakota during pre-hibernation and winter hibernation periods (Barnhart and Gillam 2017). The other two (2) migratory bat species, the eastern red bat and hoary bat, both migrate much farther south for the winter, hibernating primarily in Mexico, southeastern states (eastern red bat) and California (hoary bat) (Cryan 2003). As such, it is Atwell's opinion that hoary bat, eastern red bat, and silver-haired bat are likely to occur within the TAA in summer and/or during migration. Refer to the *Summary of Bat Species Known to Occur in North Dakota* in **Appendix II**.

Table 3. Federally & SWAP Listed Bat Species & Occurrence Probability Assessment within or in the Vicinity of the TAA

Common Name	Scientific Name	State Conservation Priority Species Level	Federal Status	TAA Occurrence Potential	Resident/ Transient Status	Habitat Association
Northern Long-eared Bat	*Myotis septentrionalis*	Level I	FT	Unlikely	Migrant; Summer	Hibernates in caves and mines, swarming in surrounding wooded areas. Roosts and forages in forested and riparian habitats.
Big Brown Bat	*Eptesicus fuscus*	Level I	--	Likely	Year-round Resident	This species is a habitat generalist and will often utilize buildings, bridges, and dead trees as roosting habitat.
Little Brown Bat	*Myotis lucifugus*	Level I	--	Likely	Migrant; Summer	Little brown bats are generally associated with buildings which they use as roosts. Hibernacula are generally caves, mines and rock crevices.
Townsend's Big-eared Bat	*Corynorhinus townsendii*	Level I	--	Unlikely	Migrant; Summer	Habitat generalist; commonly associated with forest and riparian areas during summer months. Winter hibernacula include caves and mines throughout its range, but none documented in North Dakota to date.
Western Small-footed Bat	*Myotis ciliolabrum*	Level III	--	Possible	Year-round Resident	Documented in the riparian corridors of the Little Missouri and Missouri Rivers. Possibly could occur in the riparian woodlands associated with the White Earth River. Roosts alone or in small groups in rock crevices and under tree bark, particularly coniferous forests. Crevices found in rock outcrops, cliffs, buttes, and/or caves are needed for hibernation.
Long-eared Bat	*Myotis evotis*	Level III	--	Unlikely	Possible year-round resident	Found in western North Dakota. Normally found in rugged terrain and coniferous forest. Hibernates in caves and abandoned mines. May migrate short distances to find suitable hibernacula in winter.
Long-legged Bat	*Myotis volans*	Level III	--	Unlikely	Possible year-round resident	Found in the Badlands region of western North Dakota and along the Missouri River. Typically roosts alone or in small groups in rock crevices and/or under tree bark, particularly coniferous trees.

FT = Federally Threatened, SCP Level I = State Conservation Priority Species Level I, SCP Level III = State Conservation Priority Species Level III

5.0 CONCLUSIONS

Bat species richness is expected to be relatively low within the TAA. According to the National Land Cover Database, approximately 87% of the landscape within the TAA is grassland and agriculture (Homer et al. 2015). Overall, minimal impact to bat habitat is expected to occur as a result of this transmission project within the TAA.

Though small, isolated woodlots and old, dilapidated structures may exist within the northern portion of the TAA, possible bat habitat impacts could be more likely to occur in the southern portion of the TAA where transmission lines would need to cross the north-south oriented White Earth River. This region likely contains the best bat habitat within the TAA, since there are numerous ravines and sheltered hills with large mature trees that could potentially support summer bat roosts and maternity colonies. The close proximity of these forests to waterbodies, as well as the presence of a few rocky outcroppings and cliffs, may also provide additional foraging and roosting opportunities in this area. The rocky, cliff-face substrate in the Mountrail County portion of the TAA could support hibernacula for some species.

Habitat characteristics within the TAA, literature review, and state-wide acoustic and mist-netting surveys indicate that it is unlikely that the northern long-eared bat will occur within the TAA during migration and summer. In addition, the bat community within the TAA is likely to include the big brown bat, little brown bat, eastern red bat, hoary bat, and silver-haired bat. The big brown bat has the potential to be a year-long resident of the TAA, most likely overwintering in the Badlands region (Barnhart and Gillam 2017). The migratory tree bats (hoary bat, eastern red bat, and silver-haired bat) may also occur in the TAA during summer and are likely to occur during migration.

It is unclear how commonly *Myotis* groups, including the northern long-eared bat, migrate through this region of North Dakota. However, it is reasonable to assume that there is an unlikely possibility of the species movement through the area during migration. Although suitable habitat for *Myotis* species may exist within the TAA, the TAA is outside of areas affected by WNS. Therefore, the Project should not be subject to prohibitions on incidental take for the northern long-eared bat under the final 4(d) rule nor will the Project impact or pose significant risk to the northern long-eared bat or habitat.

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APPENDIX I

Resource Mapping for the Burke Transmission Line Assessment Area

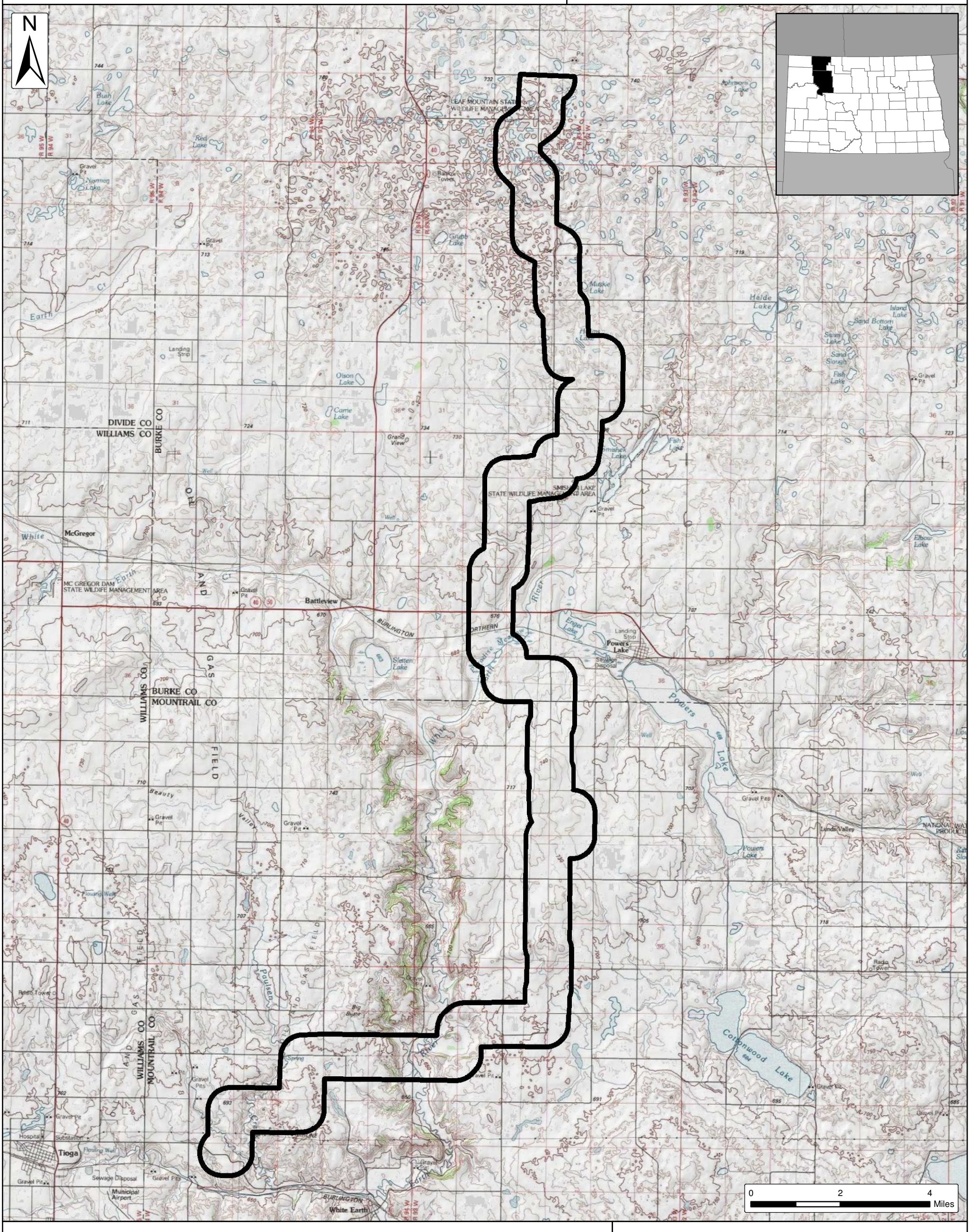
Topographic Overview Map/Site Location Map
USGS Land Cover Map
Aquatic Resources Map
Public Lands Map

Burke County
Transmission Line 1 Mile Corridor
Site Location Map
Burke County and Mountrail County, North Dakota

Client:
Burke Wind, LLC

Issue Date:
7/6/2018

Atwell, LLC Project:
16000947



Transmission Line 1 Mile Corridor (05/14/2018)

SOURCE: USGS TOPO QUADS
GRAND VIEW (1974), GRUBB LAKE (1974), HELDE LAKE (1974), BATTLEVIEW (1978), POWERS LAKE (1977), LUNDS VALLEY (1978), TIOGA (1979), WHITE EARTH (1969), ROSS NW (1969), COTTONWOOD LAKE (1981), COLUMBUS SE (1981), BEAVER LAKE (1948), RENNIE LAKE (1949)

ATWELL

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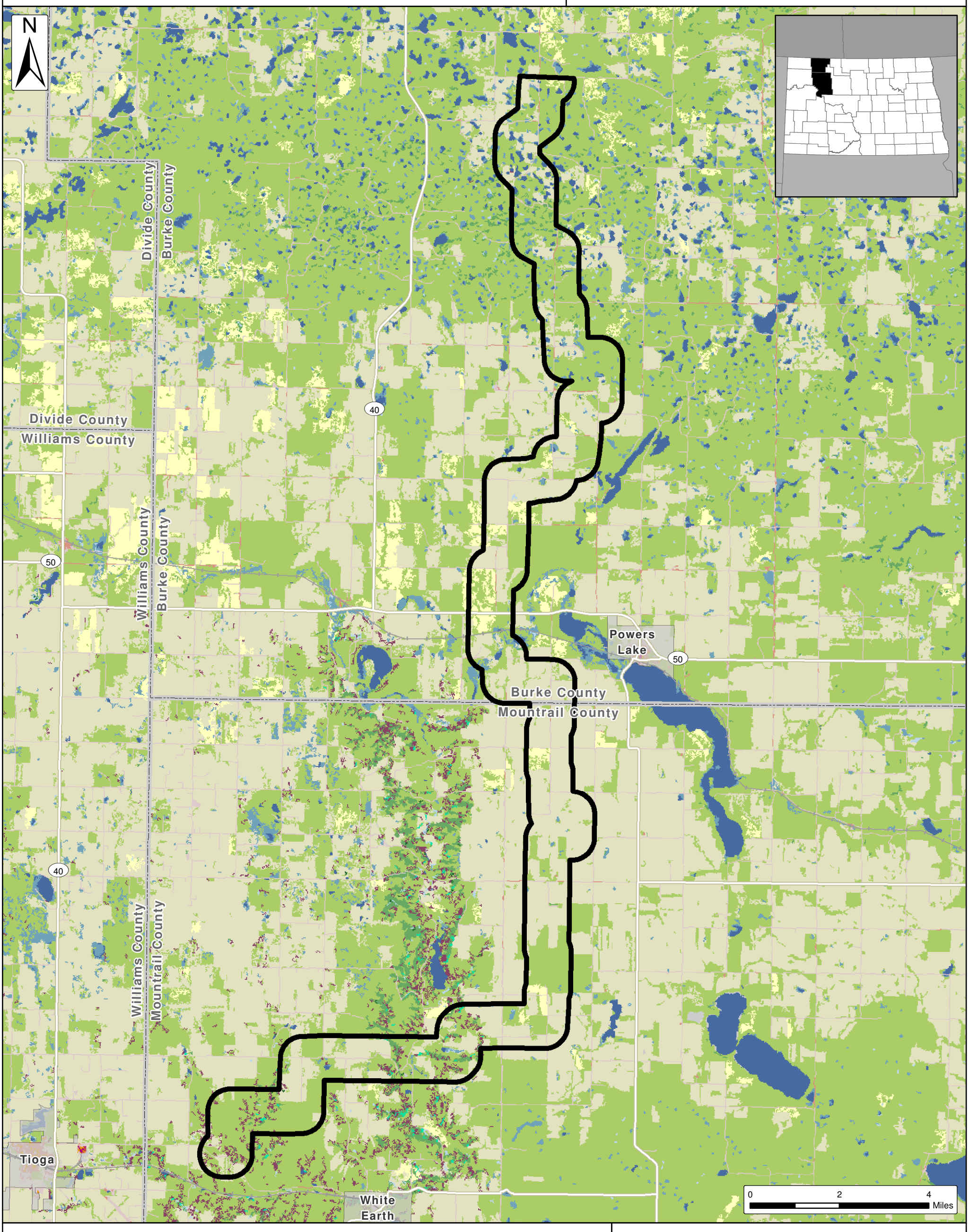
Burke Wind
Transmission Line 1 Mile Corridor
Land Cover Map
Burke County and Mountrail County, North Dakota

Client:
Burke Wind, LLC

Issue Date:
7/6/2018

Atwell, LLC Project:
16000947



Land Cover Types (NLCD 2011)
Percent of T-Line 1 Mile Corridor

- Barren Land (0.03%)
- Cultivated Crops (44.03%)
- Deciduous Forest (1.58%)
- Developed, High Intensity (0.00%)
- Developed, Low Intensity (0.33%)
- Developed, Medium Intensity (0.00%)
- Developed, Open Space (2.58%)
- Emergent Herbaceous Wetlands (2.24%)
- Evergreen Forest (0.04%)
- Hay/Pasture (3.18%)
- Herbaceous (44.71%)
- Mixed Forest (0.12%)
- Open Water (1.40%)
- Shrub/Scrub (1.59%)
- Woody Wetlands (0.18%)
- Transmission Line 1 Mile Corridor (05/14/2018)
- Cities
- Counties

SOURCE: USGS NATIONAL LAND COVER DATASET (2011)

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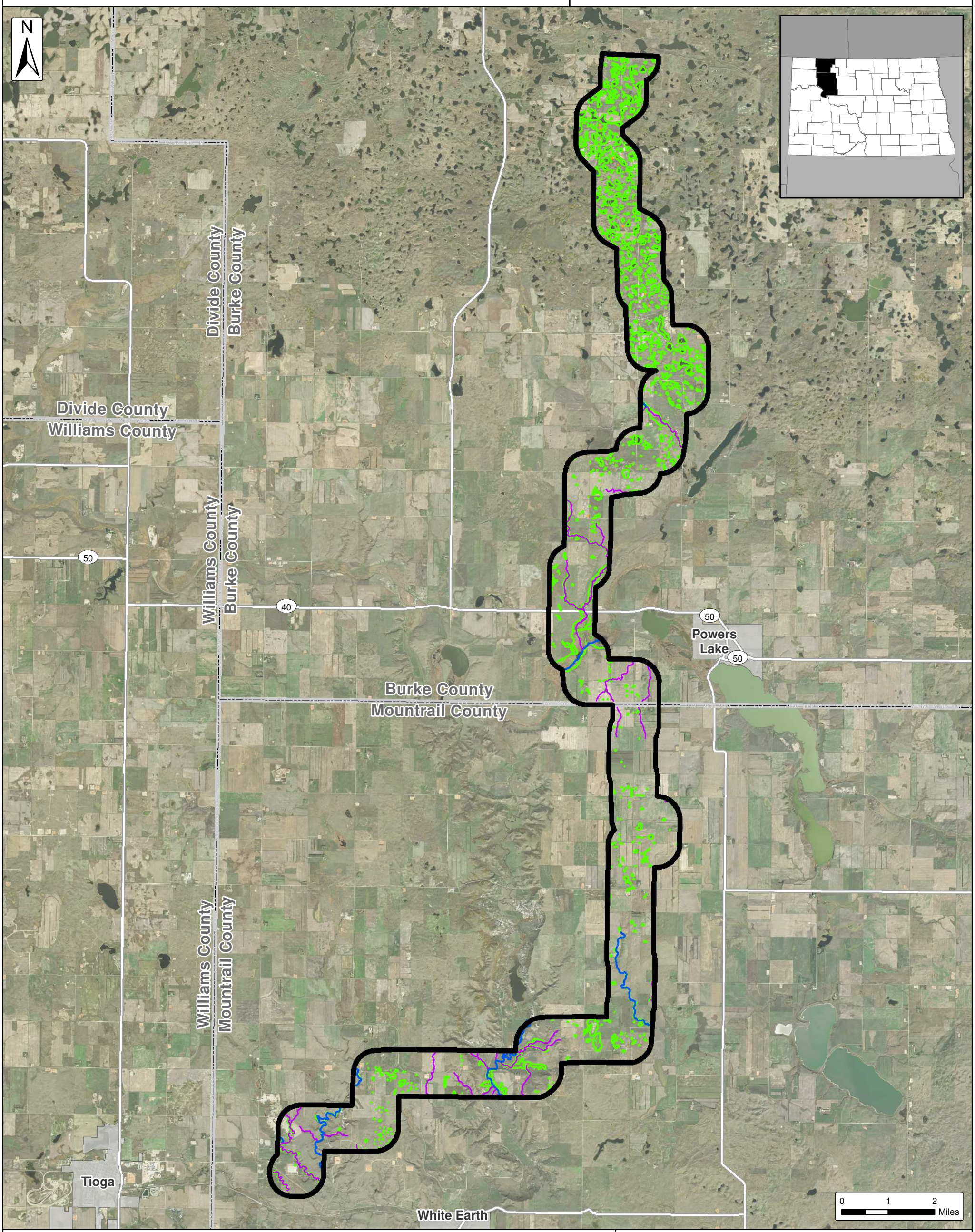
Burke Wind
Transmission Line 1 Mile Corridor
Aquatic Resources Map
Burke County and Mountrail County, North Dakota

Client:
Burke Wind, LLC

Issue Date:
7/6/2018

Atwell, LLC Project:
16000947



Watercourses (Desktop NHD and Atwell Identified)
- Intermittent
- Perennial

Wetlands Classification
- Jurisdicational
- USFWS Protected

- Transmission Line 1 Mile Corridor (05/14/2018)
- Cities
- Counties

SOURCE: USDA NAIP 2017 IMAGERY

ATWELL

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Burke Wind Transmission Line 1 Mile Corridor

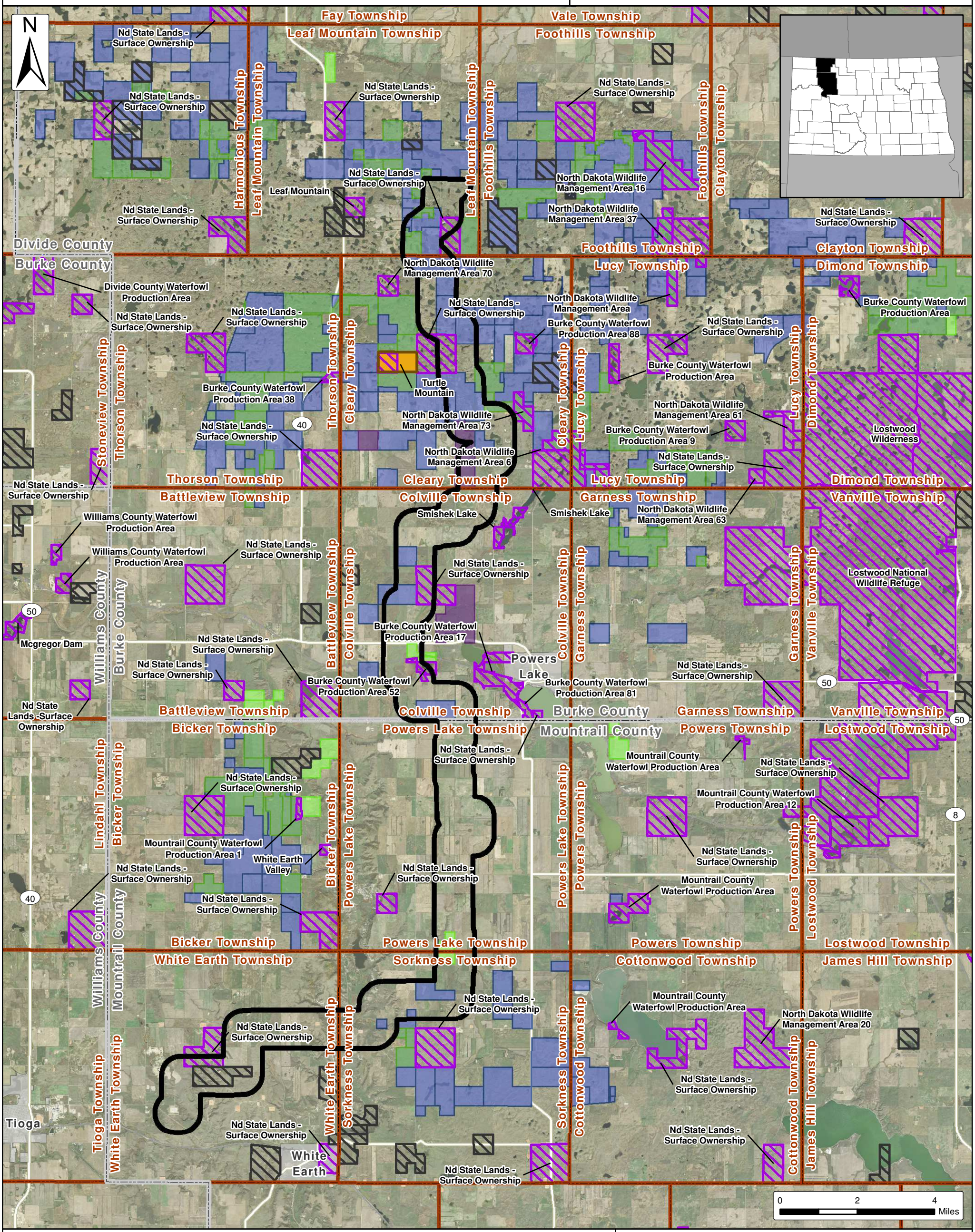
Public Lands Map

Burke County and Mountrail County, North Dakota

Client:
Burke Wind, LLC

Issue Date:
7/6/2018

Atwell, LLC Project:
16000947



Tribal Trust Lands (USDA)
PLOTS (Private Lands Open to Sportsmen, ND Game & Fish Dep.)
Protected Lands (USGS)
USFWS Easements*
Grassland Easement
Wetland Easement
Wetland/Grassland Easement
Farm Service Agency Easement

Transmission Line 1 Mile Corridor (05/14/2018)
Cities
Townships
Counties

*The USFWS makes no claim as to the accuracy or completeness of the displayed information. Shaded areas depicting the location of USFWS WPA fee lands and limited interest easements are for illustrative purposes only and do not represent legal boundaries. For more detailed information, please contact one of the USFWS Realty Offices located in Bismarck and Minot,North Dakota, Sand Lake and Huron, South Dakota, or Great Falls, Montana.

The USFWS easement layer is current through October 2015. Please contact the appropriate Wetland Management District for any newly acquired easements.

SOURCE: USDA NAIP 2017 IMAGERY

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APPENDIX II

Occurrence Summary of North Dakota Bat Species and Their Distribution Assessment within the Transmission Line Assessment Area

Appendix II -- Occurrence Summary of North Dakota Bat Species and Their Distribution Assessment within the Transmission Line Assessment Area

Common Name (Scientific Name) *	Habitat	Behavior	Foraging Habitat & Foraging Distance	Summer Colony Size	Summer Roosts	Migrant	North Dakota Distribution **	Listed Status	Does BCI range include northwestern North Dakota? ***	Occurrence within TLA
Big Brown Bat (*Eptesicus fuscus*)	Wooded, semi-open habitats, urban; caves, mines and buildings for hibernation	Sedentary (moves 80 km between summer and winter roosts); nocturnal	1-3 km (0.5-2 mi); generalist in habitat and diet	20-100 (in attics, barns; occasionally tree cavities)	Buildings, hollow trees, rock crevices	No	Statewide	SCP Level 1	Yes (Statewide)	Likely
Northern Long-eared Bat* (*Myotis septentrionalis*)	Riparian corridors, interior deciduous and coniferous woodland, caves or mines (winter)	Seasonal movement, nocturnal	2km (1.25 mi); ponds, forest clearings and edges; opportunistic	2 to 30	Hollow trees, exfoliating bark, occasionally old buildings	Yes (not long distance)	Statewide; primary range along Missouri River and tributaries, Turtle Mountains	FT, SCP Level 1	No (Eastern 2/3 of State)	Unlikely; potential habitat likely confined to far southern region of TLA
Little Brown Bat (*Myotis lucifugus*)	Woodland, wetland, riparian, grassland, old field, urban, shrubland/chaparral	Nocturnal	9.5 km (6 mi) woodlands near water, edge habitat; generalist	50-2500 (average 400)	Buildings, hollow trees, caves	Yes (no hibernacula known from North Dakota)	Statewide	SCP Level 1	Yes (Statewide)	Likely
Long-legged Bat (*Myotis volan* s)	Coniferous forests edges, wooded, coniferous, riarian and desert habitats; caves and mines (winter)	Nocturnal	5 km (3.1 mi); ponds, streams, water tanks, and forest clearings.	Solitary or small groups	Standing snag/hollow tree, rock crevices	No (possibly migrates short distances in winter)	Found in the badlands of western North Dakota and along the Missouri River and possibly into southern Mountrail	SCP Level 3	Yes (Western 1/4)	Unlikely

Appendix II -- Occurrence Summary of North Dakota Bat Species and Their Distribution Assessment within the Transmission Line Assessment Area

Common Name (Scientific Name) *	Habitat	Behavior	Foraging Habitat & Foraging Distance	Summer Colony Size	Summer Roosts	Migrant	North Dakota Distribution **	Listed Status	Does BCI range include northwestern North Dakota? ***	Occurrence within TLA
Long-eared bat (*Myotis evotis*)	Coniferous forests, rugged terrein; caves, mines (winter hibernacula)	Nocturnal	N/A; waterbodies, wetlands, and ponds	Maternity Colonies (<30 adults); Roosting females singly or in small groups (2-3)	Standing snag/hollow tree, rock crevices, buildings	No (possibly migrates short distances in winter)	Found in extreme western North Dakota	SCP Level 3	Yes (Far Western)	Unlikely
Fringed Bat (*Myotis thysanodes*)	Riparian, cliff, desert, bar rock/talus, suburban/orchard, woodland (conifer & mixed)	Nocturnal	N/A; waterbodies, wetlands, and ponds	Colony size ranges up to several hundred	Standing snag/hollow tree, rock crevices, buildings	No (possibly migrates short distances in winter)	This species not physically captured/confirmed in North Dakota until 2012 (Nelson, Barnhart, and Gillam 2015)	--	No	Unlikely
Townsend's Big-eared Bat (*Corynorhinus townsendii*)	Riparian, deserts, old field, grassland, savanna, shrubland, woodland; caves and mines	Sedentary, solitary or small groups, nocturnal	Varies 3.6-10.5 km (2.25-6 mi); near foliage of trees and shrubs, moth specialist	Solitary -small groups but up to 100 (west) 1,000 (east)	Caves and mines; sometimes buildings or cave-like bridges	No	Primary state range: from southwest corner of the State (western Bowman County through Dunn County), and in north-central Bottineau and Rolette Counties (Turtle Mountains)	SCP Level 1	Yes (Southwest corner)	Unlikely
Western Small-footed Myotis (*Myotis ciliolabrum*)	Desert, badlands, semiarid habitats, grasslands, mountainous wooded areas, riparian	Nocturnal	N/A; over waterbodies	Solitary or small groups (2-6)	Rock crevices in bluffs and badlands, abandoned houses, barns	Yes	Documented in the riparian corridors of the Little Missouri and Missouri rivers.	SCP Level 3	Yes (Southwest)	Possible

Appendix II -- Occurrence Summary of North Dakota Bat Species and Their Distribution Assessment within the Transmission Line Assessment Area

Common Name (Scientific Name) *	Habitat	Behavior	Foraging Habitat & Foraging Distance	Summer Colony Size	Summer Roosts	Migrant	North Dakota Distribution **	Listed Status	Does BCI range include northwestern North Dakota? ***	Occurrence within TLA
Eastern Red Bat (*Lasiurus borealis*)	Woodland, riparian, suburban	Solitary; nocturnal; active and feeds throughout the year (when temperatures above 9C)	Variable distances; forages near canopy, edge habitat, and along streams; generalist	Solitary	Tree foliage	Yes	Statewide during summer and migration where suitable habitat is present		Yes (statewide)	Likely
Hoary Bat (*Lasiurus cinereus*)	Woodland (deciduous and conifer), riparian, arid deserts in the southwest	Solitary; nocturnal	2 km (1 mi); mainly moths; clearings, along streams or lake edges, around lights; at high elevation	Solitary	Tree foliage	Yes	Statewide during summer and migration where suitable habitat is present		Yes (statewide)	Likely
Silver-haired Bat (*Lasionycteris noctivagans*)	Woodland (deciduous and conifer) adjacent to lakes or riparian habitats	Solitary or small groups, nocturnal	Variable long distances; forest edges, open fields, above canopy	3-6	Tree foliage, cavities, exfoliating bark, sometimes buildings	Yes	Statewide, more commonly in southwestern counties		Yes (statewide)	Likely

Sources: North Dakota Game & Fish Department (NDGFD), Nelson et al 2012, Gillam et al 2015, NatureServe 2017

* State and/or Federal listed

Status Legend: FT = Federally Threatened, SCP = State Conservation Priority Species (Levels 1, 2, & 3)

** Nelson et al. 2012, and Gillam et al 2015; NDGFD 2017 North Dakota Bats website; Accessed here: https://gf.nd.gov/wildlife/id/bats

*** Bat Conservation International: http://www.batcon.org/resources/media-education/species-profiles

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DESKTOP WHOOPING CRANE HABITAT ASSESSMENT
BURKE WIND, LLC
BURKE AND MOUNTRAIL COUNTY, NORTH DAKOTA



(*Grus americana*)

Prepared by:

WATERSHED INSTITUTE, INC.

1200 SW Executive Drive

Topeka, Kansas 66615

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APPENDIX A

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2 Site Layout Map
3 Ecoregion Map
4 Landcover Map
6 Wetland Habitats Map
7 Assessed Wetland Habitats Map
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APPENDIX B

Desktop Assessment Scores

July 2018

1.0 INTRODUCTION

Burke Wind, LLC (Burke Wind) tasked the Watershed Institute, Inc. (TWI) to complete a desktop habitat suitability assessment (desktop assessment) for the endangered whooping crane (*Grus americana*). The desktop assessment is for proposed windfarm and transmission line development (Project) in Burke and Mountrail Counties, North Dakota (Appendix A, Figure 1). Burke Wind conducted this study as part of a holistic natural resources review approach to assess potential adverse effects from development of this Project on species of concern and their habitats. Results from this study will be combined with results from other natural resource studies and will aid in responsibly siting wind turbines, access roads, underground electric collection lines, an electric substation, overhead high-voltage transmission line, and other proposed infrastructure.

For the desktop assessment, TWI examined 2016 aerial photographs and reviewed wetland habitats, elevation data, North Dakota infrastructure data (i.e. highways, roads, powerlines) and landuse data. Burke Wind provided TWI delineated wetland habitats, elevation data, and land use data in electronic format for use with ArcGIS Desktop software (ESRI 1999-2017). TWI also solicited known location records of whooping cranes and the whooping crane migratory corridor from U.S. Fish and Wildlife Service (USFWS). This report provides Project background information, outlines TWI's habitat assessment methodology (TWI 2013), and presents desktop assessment findings. Report figures are provided in Appendix A and the desktop assessment scoring summary in Appendix B.

2.0 SITE DESCRIPTION

The Project is in Burke and Mountrail Counties, North Dakota, and includes a proposed 72.7-square mile windfarm development area and a 195.0-square mile transmission line development area (Appendix A, Figure 1). The Project is found in the USFWS-defined 75-percent whooping crane migratory sighting corridor (Appendix A, Figure 2). The 75-percentile whooping crane migratory sighting corridor refers to the area encompassing 75-percent of confirmed sightings.

The Project encompasses portions of the Northern Dark Brown Prairie, Northern Missouri Coteau, Missouri Coteau Slope, and River Breaks ecoregions (Appendix A, Figure 3). The Northern Dark

Brown Prairie is part of the northern glaciated plains that is generally flat with some undulating topography (Bryce et al. 1996). This ecoregion contains high concentrations of temporary and seasonal wetlands. The Northern Missouri Coteau is part of the northwestern glaciated plains with a hummocky, rolling terrain (Bryce et al. 1996). There are numerous prairie pothole wetlands in this ecoregion. The Missouri Coteau Slope ecoregion is also in the northwestern glaciated plains and is a gently rolling plain sloping to the Missouri River (Bryce et al. 1996). The River Breaks is unglaciated and part of the northwestern great plains (Bryce et al. 1996). This ecoregion is highly dissected and borders major rivers and associated alluvial plains (Bryce et al. 1996). Overall, the Missouri Coteau Slope and River Breaks have fewer wetlands than the Northern Dark Brown Prairie and Northern Missouri Coteau.

Using landcover data from the 2011 GAP Analysis Program (GAP), cultivated land is the most common Project landuse covering 41.2-percent. Other significant Project landuses are shrublands at 22.6-percent, mixed-grass prairies at 20.6-percent, and wetlands/open water at 4.4-percent. A landuse map is shown in Appendix A, Figure 4.

3.0 HABITAT ASSESSMENT METHODOLOGY

Habitat assessment methods followed protocols recommended by the USFWS Aransas National Wildlife Refuge Complex (Tom Stehn *pers. comm.*), Manhattan, Kansas USFWS Ecological Services Office (Dan Mulhern *pers. comm.*), Region 6 Guidelines for Minimizing Effects from Power Line Projects within the Whooping Crane Mitigation Corridor (USFWS 2010), and habitat evaluation scientific literature. TWI's goal is to provide a reproducible methodology that provides clients with the appropriate information to make decisions that provide ecological value and protection. First, TWI developed an unsuitability screening process to eliminate wetlands that did not meet criteria based on wetland size, visual obstruction, and disturbance obstructions. After the unsuitability screening, TWI assessed remaining wetlands to determine habitat suitability based on water regime, distance to food, wetland size, wetland type (natural or created), and wetland density.

3.1 Unsuitability Habitat Screening

TWI assessed wetland habitats for potentially suitable habitat. TWI's approach was to screen the wetland habitats based on unsuitable habitat conditions (Tom Stehn *pers. comm.*).

First, TWI screened wetland habitats that were near human disturbances (i.e. highways, roads, railroads, and residential/commercial properties etc.). TWI generated buffers using distances in TWI's (2013) habitat assessment guideline around digital highway data (North Dakota Department of Transportation [NDDOT] 2017a), digital county road data (NDDOT 2017b), digital railroad data (Applied Data Consultants 2017), incorporated areas (NDDOT 2017c), digital transmission line data, and residential and commercial properties. TWI then clipped the buffered information to the Project extent and spatially analyzed the wetland habitats and human disturbance buffers. TWI selected wetland habitats located completely within the human disturbance buffers and removed the wetland habitats from the desktop assessment.

Next, TWI selected and eliminated wetland habitats equal to or less than 0.25 acres. These wetland features are deemed too small to designate as potentially suitable habitat (Tom Stehn *pers. comm.*).

For remaining wetland features, TWI visually inspected each wetland feature using the 2016 aerial photographs for tall, visual obstructions. If tall, visual obstructions were within 100 meters of a wetland habitat, TWI did not consider the wetland habitat as potentially suitable habitat.

Finally, TWI visually inspected all remaining wetland habitats using elevation data. TWI calculated a percent slope raster map and created a 1-meter topographic surface to inspect wetland habitat side-slopes. Visibility obstructions can be any feature, including topography, greater than 1.4 meters, the height at crane eye level (Armbruster 1990). TWI eliminated wetland habitats from the habitat quality assessment if side slopes, within 100-meters, were greater than 1.5-percent, a visibility obstruction for a whooping crane's open line of sight.

3.2 Habitat Suitability Assessment

TWI assessed remaining wetland habitats to rate habitat quality by assigning values to habitat criteria deemed important to migrating whooping cranes.

The first criterion was water regime. Since water is the primary attractant to whooping cranes, TWI scored wetlands with more permanent water higher as they would be a more consistent and likely stopover habitats from year to year (Table 1).

Table 1: Water Regime Habitat Score

Water Regime*	Score
Permanent (H)	5
Intermittently Exposed (G)	4
Semi-Permanent (F)	3
Seasonally Flooded (C)	2
Intermittent/Temporarily Flooded (J/A)	1

* Nontidal Water Regime from Cowardin et al. 1979

Distance to food was the second criterion. The literature states preferred roosting habitat is near food. The longest distance TWI found that a whooping crane would likely fly to food is 1.5 kilometers (Armbruster 1990). Table 2 shows the habitat scores based on distance from roosting sites and food.

Table 2: Distance to Food Habitat Score

Distance to Food	Score
Within or Adjacent to Cropfield	5
< 0.5 km	4
0.6-1.0 km	3
1.1-1.5 km	2
> 1.5 km	1

Wetland size was the third criterion. Whooping crane sighting records show them using a variety of wetland sizes from visual observations and radio collar data. The literature suggests that cranes will use small wetlands, but larger wetlands are preferable. Table 3 shows the habitat scores based on wetland size.

Table 3: Wetland Size Habitat Score

Wetland Size	Score
> 7 acres	5
5-6.9 acres	4
3-4.9 acres	3
1-2.9 acres	2

< 1 acre	1

TWI then scored the wetlands based on whether they are natural or created. Natural wetlands received a higher score as they are assumed to have shallower water. Whooping cranes prefer wetlands that are shallow. Studies have stated that cranes prefer water depths less than 30 centimeters (Armbruster 1990, Faanes et al. 1992). Table 4 shows the scoring.

Table 4: Natural Wetland Habitat Score

Wetland Type	Score
Natural	2
Created	0

The last criterion TWI evaluated was wetland density. Literature suggests whooping cranes prefer areas that have a wetland mosaic. TWI considered a wetland mosaic to be 5 or more wetlands within a one-quarter section and no visual obstructions between the wetlands habitats. Table 5 shows the scoring.

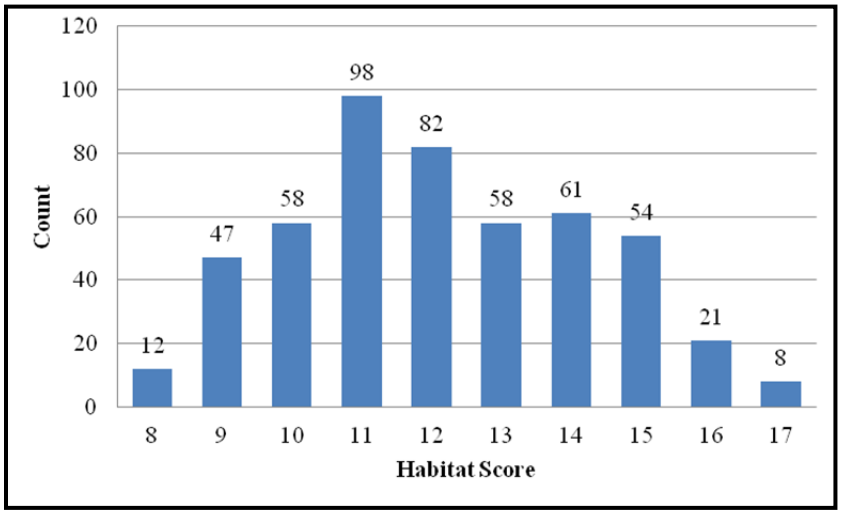
Table 5: Wetland Density Habitat Score

Wetland Mosaic	Score
Yes	3
No	0

After TWI scored the criteria, TWI added the scores to develop an overall habitat quality score. To determine a habitat quality score that constitutes potentially suitable habitat, TWI determined the habitat quality of national wetland inventory (NWI) wetlands at Quivira National Wildlife Refuge (NWR). Quivira NWR is a traditional migratory stopover location and is considered critical habitat for migrating whooping cranes. TWI analyzed the habitat quality as described in TWI's (2013) methodology for Quivira NWR wetlands. After completing the unsuitability habitat screening process, TWI evaluated 499 Quivira NWR NWI wetland habitats. Wetland habitat scores ranged from 8 to 17 with an average score of 12.1 (Figure 5). Using the Quivira NWR average habitat score as a benchmark, TWI considers a habitat score of 12 or higher as

potential suitable habitat when assessing whooping crane wetland habitats within the USFWS migratory sighting corridor.

Figure 5: *Distribution of Habitat Scores from Quivira NWR*



4.0 HABITAT ASSESSMENT FINDINGS

TWI identified a total of 10,673 wetland habitats in or intersecting the Project (Appendix A, Figure 6). The dominant wetland habitat type was palustrine emergent (PEM) wetlands. Other wetlands habitat types TWI found were lacustrine (L), palustrine aquatic bed (PAB), and riverine (R).

Using the unsuitability habitat screening process, TWI eliminated 9,768 wetland habitats. Of the 9,768 wetland habitats, 4,923 wetland habitats were completely within disturbance area buffers, 1,551 wetland habitats were less than 0.25 acres, and 3,294 wetland habitats were within 100-meters of visibility obstructions or adjacent to steep side-slopes. TWI evaluated the remaining 905 wetland habitats for habitat suitability (Appendix A, Figure 7). Appendix B lists the wetland habitat and their habitat suitability score. TWI scored 277 wetland habitats a 12 or higher, considered potentially suitable habitat (Appendix A, Figure 8). For the riverine channels, TWI did not consider as potential suitable habitat as they did not meet the 100-meter width defined by Faanes et al. (1992).

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APPENDIX A

FIGURES

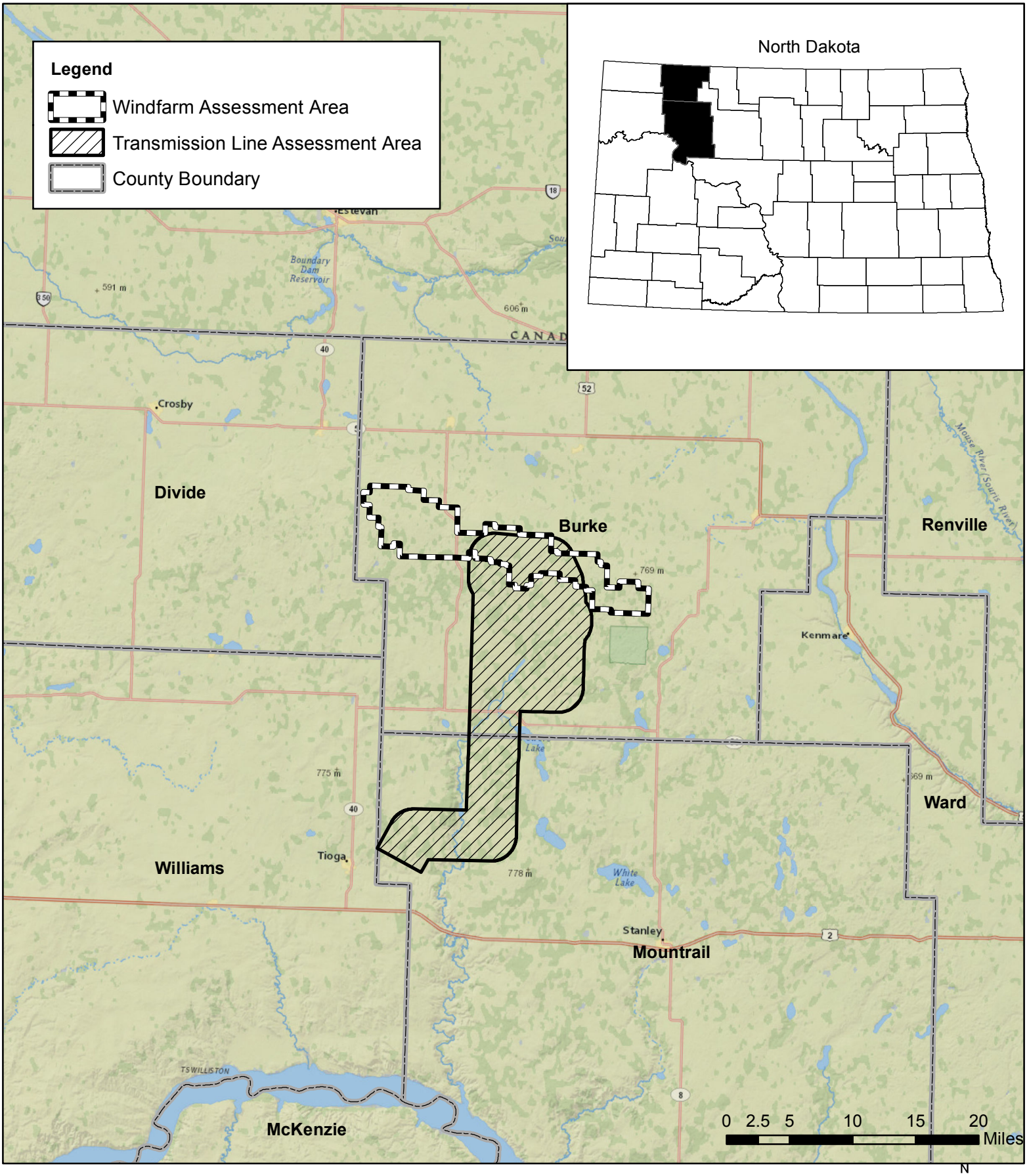

Figure 1
Location Map

Desktop Whooping Crane Habitat Assessment
Burke Wind, LLC Windfarm

Date: July 2018

Source: http://services.arcgisonline.com/arcgis/services, https://gishubdata.nd.gov/

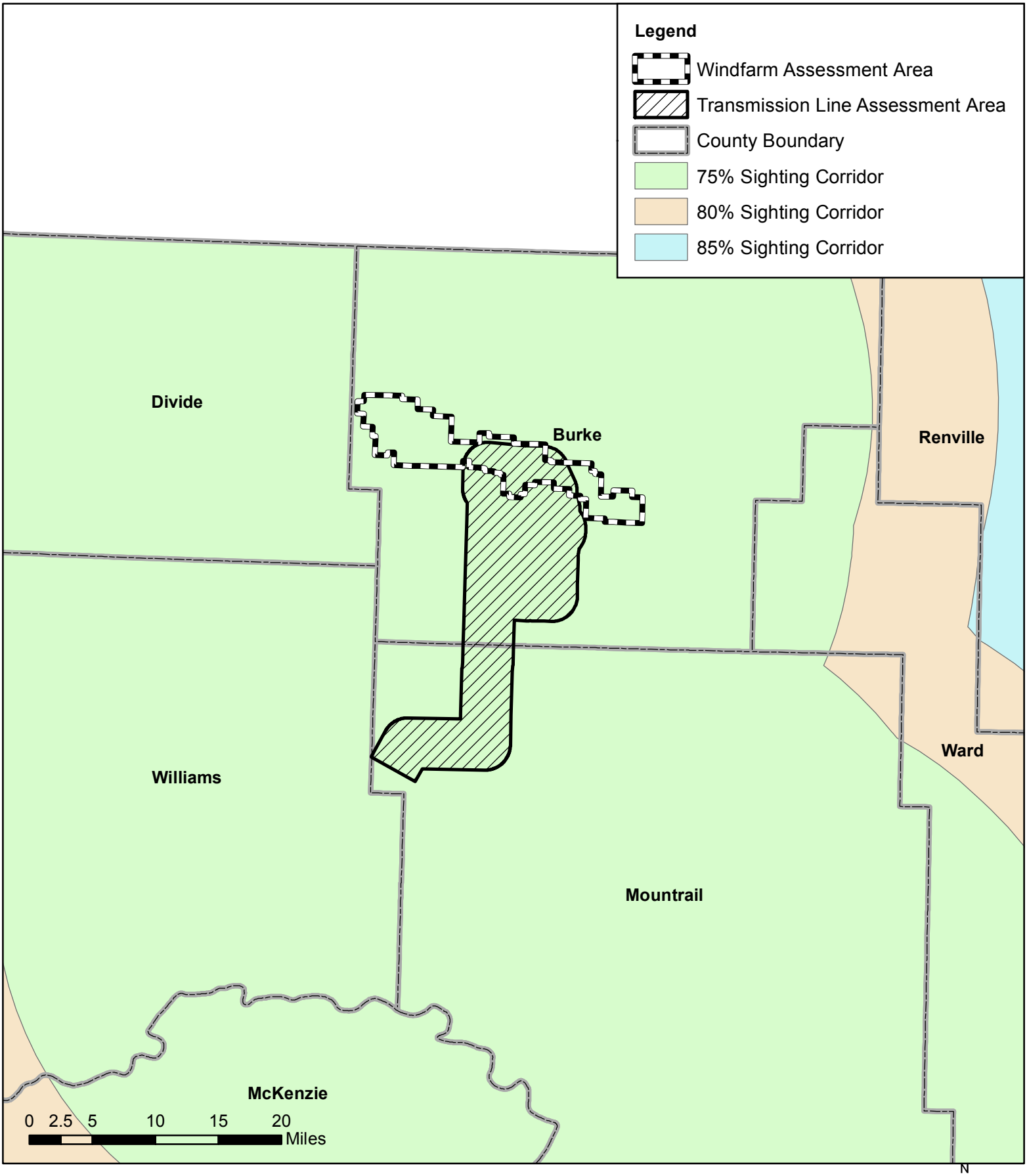

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Figure 2
U.S. Migratory Sighting Corridor Map
Desktop Whooping Crane Habitat Assessment
North Dakota

Date: July 2018

Source: https://gishubdata.nd.gov/, U.S. Fish and Wildlife Service

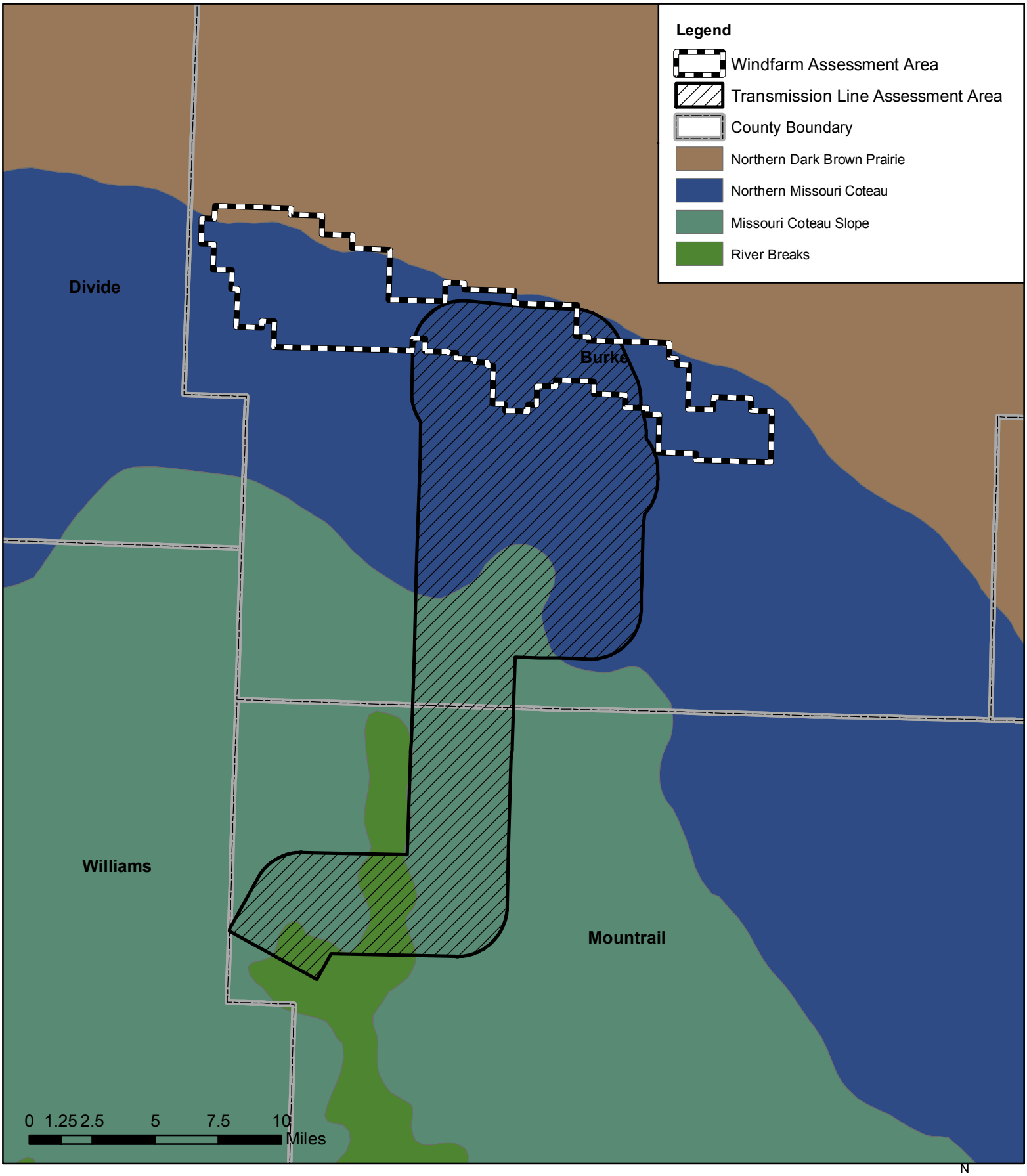

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Figure 3
Ecoregions Map
Desktop Whooping Crane Habitat Assessment
North Dakota

Date: July 2018

Source: https://gishubdata.nd.gov/, ftp://ftp.epa.gov/wed/ecoregions/nd/nd_eco_l4.zip

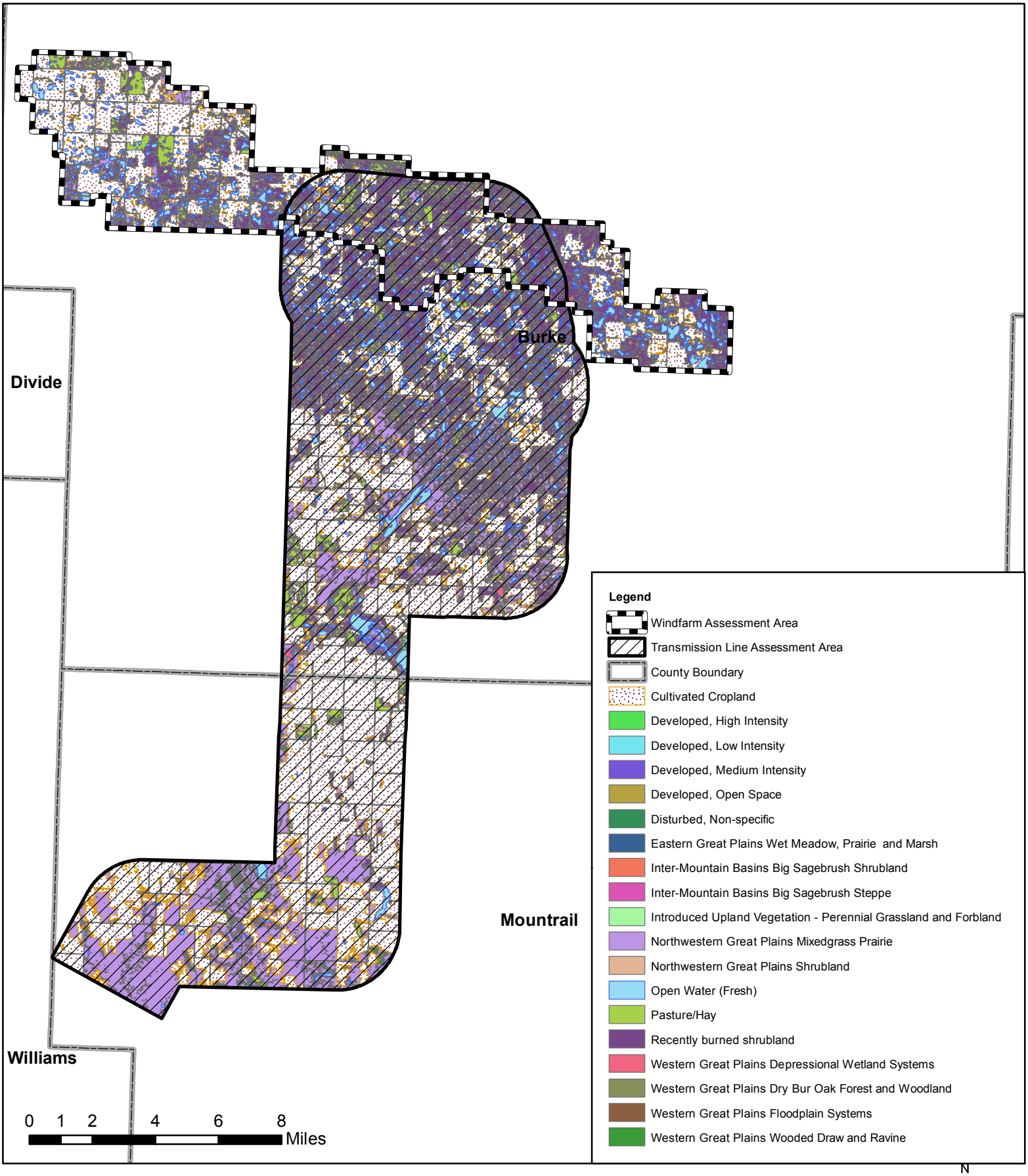

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Figure 4
Landuse Map
Desktop Whooping Crane Habitat Assessment
North Dakota

N
W E
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Date: July 2018

Source: https://gishubdata.nd.gov/

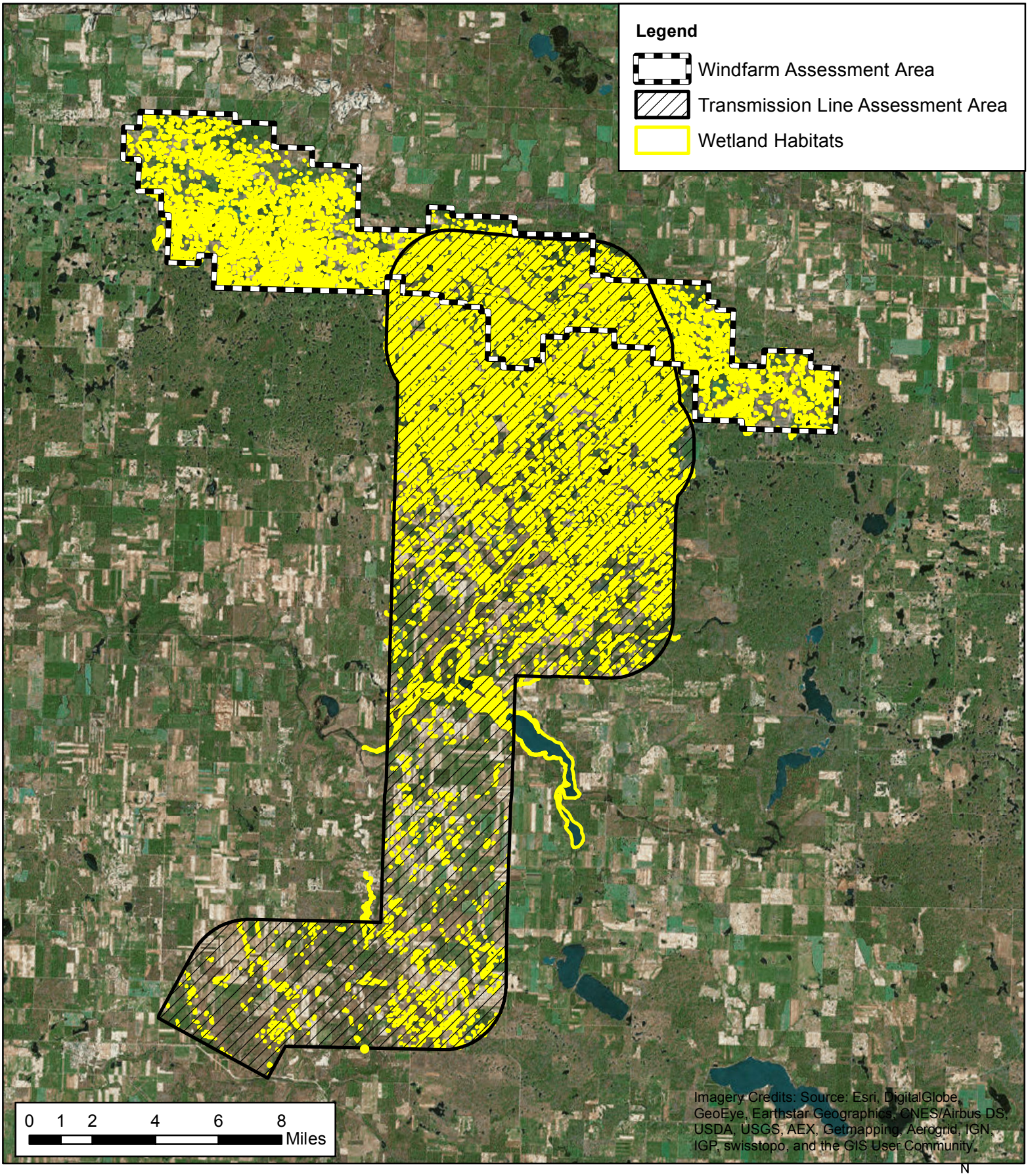

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Figure 6
Identified Wetland Habitats Map

Desktop Whooping Crane Habitat Assessment
North Dakota

Date: July 2018

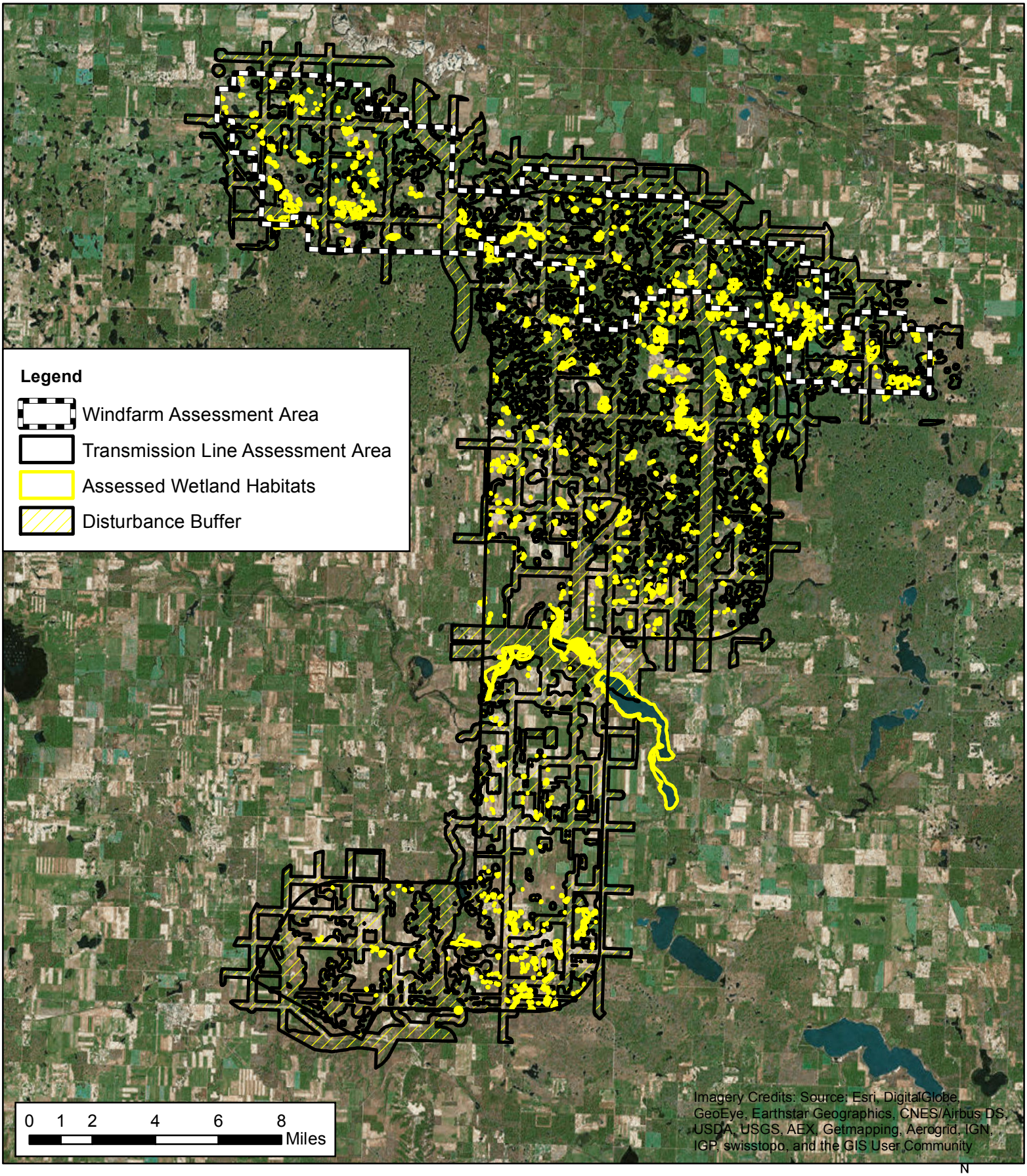

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Figure 7
Assessed Wetland Habitats Map

Desktop Whooping Crane Habitat Assessment
Burke Wind, LLC Transmission Line

Date: July 2018

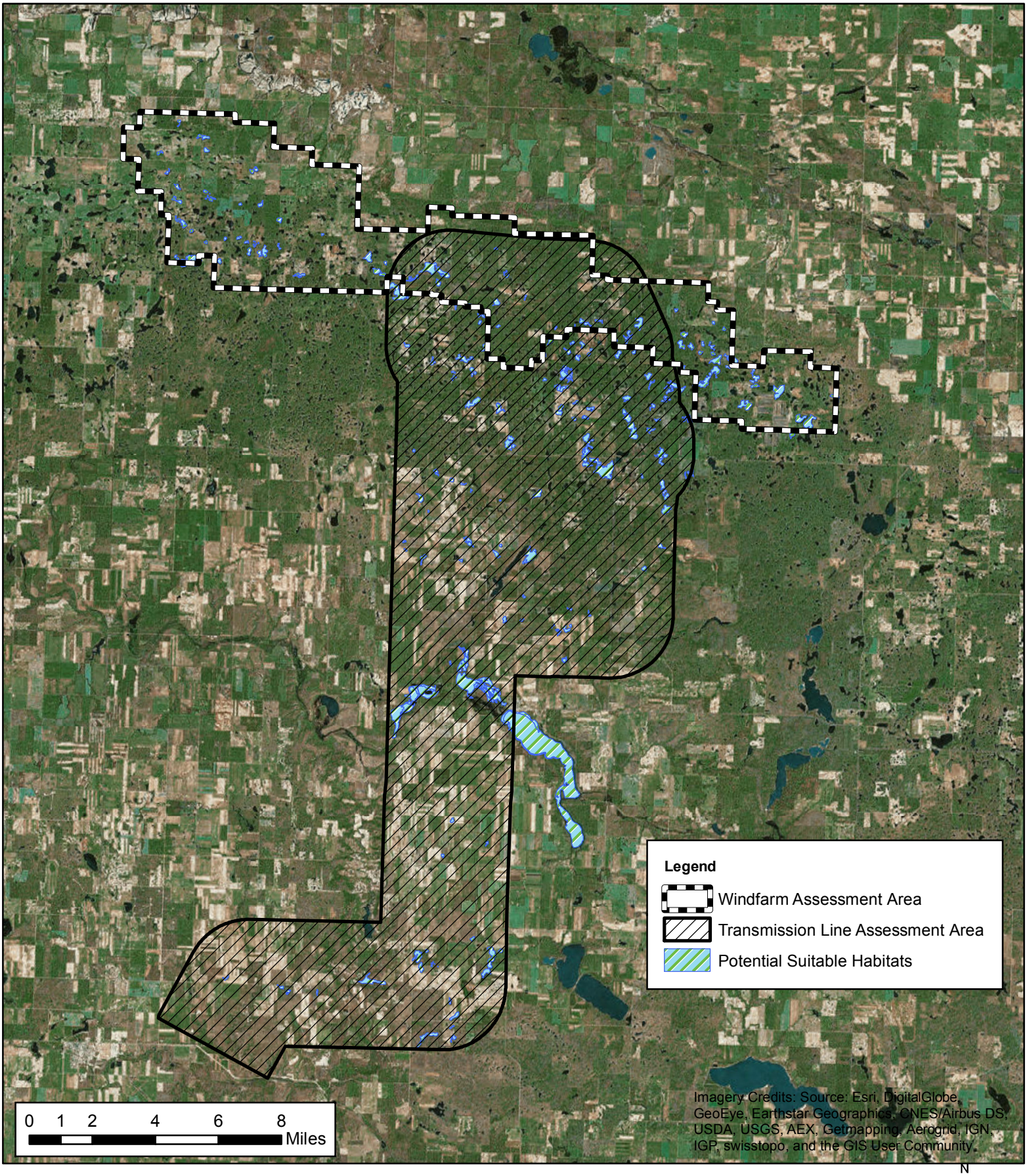

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Figure 8
Potential Suitable Habitats Map

Desktop Whooping Crane Habitat Assessment
North Dakota

Date: July 2018

APPENDIX B

HABITAT SUITABILITY ASSESSMENT SCORES

Habitat Suitablility Assessment Scores

OBJECTID	ATTRIBUTE	ACRES	REGIME	FOOD	SIZE	TYPE	DENSITY	TOTAL
1	L1UBGh	1401.15	4	4	5	0	0	13
2	L2UBGh	106.36	4	5	5	0	0	14
3	PEM1A	6.84	1	4	4	2	0	11
4	PEM1A	0.67	1	5	1	2	0	9
5	PEM1A	4.37	1	5	3	2	0	11
6	PEM1A	1.62	1	4	2	2	0	9
7	PEM1C	1.28	2	4	2	2	0	10
8	PEM1C	0.77	2	5	1	2	0	10
9	PEM1C	1.87	2	5	2	2	0	11
10	PEM1C	1.02	2	4	2	2	0	10
11	PEM1C	0.31	2	5	1	2	0	10
12	PEM1C	0.66	2	5	1	2	0	10
13	PEM1C	0.52	2	5	1	2	0	10
14	PEM1C	0.97	2	4	1	2	0	9
15	PEM1Cd	0.29	2	5	1	0	0	8
16	PEM1Ch	0.30	2	4	1	0	0	7
17	PEM1C	2.20	2	5	2	2	0	11
23	PEM1Cd	17.42	2	5	5	0	0	12
26	PEMA	0.34	1	5	1	2	0	9
27	PEMC	0.66	2	5	1	2	0	10
28	PEMC	5.86	2	5	4	2	0	13
29	PEMC	3.25	2	4	3	2	0	11
30	PEMC	1.12	2	4	2	2	0	10
31	PEMC	3.76	2	5	3	2	0	12
32	PEMC	0.72	2	5	1	2	0	10
35	PEMC	0.28	2	4	1	2	0	9
36	PEMC	1.51	2	5	2	2	0	11
37	PEMC	2.19	2	5	2	2	3	14
38	L2ABG	81.28	4	5	5	2	0	16
39	PEMC	2.97	2	4	2	2	0	10
40	PEMA	0.56	1	5	1	2	0	9
41	PEMC	0.30	2	4	1	2	0	9
42	PEMC	10.71	2	4	5	2	0	13
43	PEMC	0.27	2	4	1	2	3	12
44	PEMC	1.04	2	5	2	2	0	11
45	PEMC	0.37	2	5	1	2	0	10
46	PEMC	0.86	2	5	1	2	0	10
47	PEMC	1.32	2	5	2	2	0	11
48	PEMC	5.54	2	4	4	2	0	12
49	PEMCd	1.12	2	5	2	0	0	9
50	PEMC	2.13	2	5	2	2	0	11
51	PEMA	0.42	1	5	1	2	0	9
52	PEMC	0.90	2	5	1	2	0	10

Habitat Suitablility Assessment Scores

OBJECTID	ATTRIBUTE	ACRES	REGIME	FOOD	SIZE	TYPE	DENSITY	TOTAL
53	L2ABG	106.30	4	5	5	2	0	16
54	PEMAd	1.35	1	5	2	0	0	8
55	PEMC	1.08	2	4	2	2	0	10
56	PEMC	3.68	2	5	3	2	0	12
57	PEMCd	2.11	2	5	2	0	0	9
59	PEMC	4.68	2	5	3	2	0	12
60	PEMC	0.33	2	4	1	2	0	9
61	PEMC	0.39	2	5	1	2	0	10
62	PEMC	0.45	2	5	1	2	0	10
63	PEMCd	3.44	2	5	3	0	0	10
64	PEMC	2.36	2	4	2	2	0	10
66	PEMC	0.36	2	4	1	2	0	9
67	PEMC	9.65	2	4	5	2	0	13
68	PEMC	0.34	2	4	1	2	0	9
69	PEMC	15.48	2	5	5	2	0	14
70	PEMC	4.68	2	4	3	2	3	14
71	PEMC	0.35	2	5	1	2	0	10
72	PEMC	8.64	2	5	5	2	0	14
73	PEMC	0.80	2	4	1	2	3	12
74	PEMC	0.89	2	5	1	2	3	13
75	PEMA	0.27	1	3	1	2	0	7
76	PEMF	4.87	3	4	3	2	0	12
77	PEMC	2.18	2	4	2	2	0	10
78	PEMC	9.90	2	5	5	2	0	14
79	PEMF	2.66	3	4	2	2	3	14
80	PEMC	2.65	2	4	2	2	0	10
81	PEMC	0.38	2	4	1	2	0	9
82	PEMC	0.77	2	4	1	2	0	9
83	PEMFd	2.01	3	5	2	0	0	10
84	PEMC	0.48	2	4	1	2	3	12
85	PEMCd	5.72	2	5	4	0	0	11
86	PEMCd	0.70	2	5	1	0	3	11
87	PEMC	1.97	2	4	2	2	0	10
88	PEMC	0.32	2	4	1	2	0	9
90	PEMF	3.35	3	5	3	2	0	13
91	PEMC	0.47	2	5	1	2	0	10
92	PEMC	7.61	2	5	5	2	0	14
93	PEMF	2.72	3	5	2	2	0	12
95	PEMC	0.94	2	5	1	2	0	10
96	PEMC	0.36	2	5	1	2	0	10
97	L2ABG	52.09	4	5	5	2	0	16
100	PEMC	0.53	2	4	1	2	3	12
101	PEMC	0.29	2	4	1	2	3	12

Habitat Suitablility Assessment Scores

OBJECTID	ATTRIBUTE	ACRES	REGIME	FOOD	SIZE	TYPE	DENSITY	TOTAL
102	PEMA	1.40	1	5	2	2	0	10
105	PEMC	20.85	2	4	5	2	0	13
107	PEMC	0.43	2	4	1	2	3	12
109	PABF	21.09	3	5	5	2	3	18
110	PABF	16.57	3	5	5	2	3	18
111	PEMC	6.65	2	4	4	2	3	15
112	PEMC	1.31	2	5	2	2	0	11
113	PEMCd	12.39	2	4	5	0	0	11
114	PABF	23.42	3	5	5	2	0	15
115	PEMC	3.74	2	4	3	2	0	11
117	PEMC	0.41	2	4	1	2	0	9
118	PEMC	1.75	2	4	2	2	3	13
119	PEMC	2.04	2	4	2	2	0	10
120	PEMC	5.21	2	4	4	2	3	15
121	PEMC	0.40	2	4	1	2	0	9
123	PABF	45.51	3	4	5	2	0	14
124	PEMC	0.83	2	4	1	2	0	9
126	PEMC	0.44	2	4	1	2	0	9
128	PEMC	0.72	2	4	1	2	0	9
129	PEMC	7.48	2	3	5	2	0	12
131	PEMC	0.63	2	5	1	2	0	10
132	PEMC	0.33	2	4	1	2	0	9
134	PEMC	1.60	2	4	2	2	3	13
136	PEMC	1.35	2	4	2	2	0	10
137	PEMC	2.97	2	5	2	2	0	11
138	L2ABG	48.08	4	4	5	2	0	15
140	PEMC	1.00	2	4	2	2	3	13
143	PEMC	6.80	2	5	4	2	0	13
144	PEMC	2.90	2	4	2	2	0	10
145	L2ABG	30.65	4	4	5	2	0	15
147	PEMC	1.29	2	5	2	2	0	11
148	PEMC	2.54	2	3	2	2	0	9
149	PEMC	3.04	2	3	3	2	0	10
152	PEMC	5.14	2	5	4	2	0	13
154	PEMA	6.51	1	4	4	2	0	11
156	PEMCd	29.90	2	5	5	0	0	12
157	PEMC	0.65	2	4	1	2	3	12
158	PABF	21.77	3	5	5	2	0	15
161	PEMC	0.66	2	5	1	2	0	10
162	PABF	12.88	3	5	5	2	3	18
165	PEMC	0.89	2	4	1	2	0	9
167	PEMC	1.49	2	4	2	2	3	13
169	PABF	11.07	3	5	5	2	0	15

OBJECTID	ATTRIBUTE	ACRES	REGIME	FOOD	SIZE	TYPE	DENSITY	TOTAL
171	PEMA	0.28	1	5	1	2	0	9
175	L2ABG	57.18	4	5	5	2	0	16
178	PEMC	0.40	2	4	1	2	3	12
183	PEMC	10.87	2	5	5	2	0	14
184	PEMC	0.37	2	5	1	2	0	10
185	PEMC	1.00	2	4	1	2	3	12
190	PEMC	0.75	2	4	1	2	0	9
192	PEMCd	0.98	2	5	1	0	0	8
197	PEMC	0.69	2	5	1	2	0	10
198	PEMC	0.91	2	4	1	2	0	9
200	PEMC	1.12	2	4	2	2	0	10
201	PEMC	1.48	2	5	2	2	0	11
202	PEMC	1.75	2	5	2	2	0	11
203	PEMC	4.75	2	5	3	2	0	12
204	PEMC	0.87	2	4	1	2	0	9
205	PEMC	0.83	2	4	1	2	0	9
206	PEMC	9.52	2	5	5	2	0	14
207	PEMCd	0.32	2	5	1	0	3	11
208	PEMC	1.30	2	4	2	2	0	10
209	PEMAd	46.05	1	5	5	0	0	11
210	PEMF	1.44	3	4	2	2	3	14
211	PEMC	2.32	2	4	2	2	0	10
212	PEMCd	0.85	2	5	1	0	0	8
213	PEMC	3.27	2	5	3	2	0	12
214	PEMC	3.35	2	4	3	2	0	11
215	PEMC	1.51	2	5	2	2	0	11
217	PEMC	7.72	2	5	5	2	0	14
218	PEMC	3.85	2	4	3	2	0	11
219	PEMAd	2.30	1	5	2	0	0	8
220	PEMC	23.21	2	4	5	2	0	13
221	PEMAd	0.65	1	5	1	0	0	7
222	PEMC	1.88	2	5	2	2	0	11
224	PEMC	0.63	2	4	1	2	0	9
225	PEMC	13.49	2	4	5	2	0	13
226	PEMC	0.58	2	5	1	2	3	13
227	PEMC	1.24	2	4	2	2	0	10
228	PEMA	0.46	1	5	1	2	0	9
229	PEMA	0.28	1	5	1	2	0	9
230	PEMCd	0.89	2	5	1	0	3	11
231	PEMA	8.77	1	5	5	2	0	13
232	PEMA	0.26	1	5	1	2	0	9
233	PEMF	4.40	3	4	3	2	0	12
234	PEMC	2.67	2	5	2	2	0	11

OBJECTID	ATTRIBUTE	ACRES	REGIME	FOOD	SIZE	TYPE	DENSITY	TOTAL
235	PEMCd	3.81	2	5	3	0	0	10
236	PEMC	7.72	2	5	5	2	3	17
237	PEMA	0.44	1	5	1	2	0	9
238	PEMC	10.08	2	5	5	2	0	14
239	PABF	7.35	3	5	5	2	0	15
240	PEMC	0.84	2	4	1	2	0	9
242	PEMC	2.06	2	5	2	2	0	11
243	PEMC	0.60	2	4	1	2	0	9
244	PEMC	7.18	2	4	5	2	3	16
245	PEMC	0.31	2	3	1	2	0	8
246	PEMC	2.42	2	5	2	2	0	11
247	PEMC	0.32	2	5	1	2	0	10
248	PEMC	0.40	2	5	1	2	0	10
249	PEMC	0.51	2	5	1	2	0	10
250	PEMC	0.85	2	4	1	2	0	9
251	PABF	10.90	3	5	5	2	0	15
252	PEMC	0.40	2	4	1	2	0	9
253	PEMC	0.39	2	4	1	2	3	12
254	PEMC	1.97	2	4	2	2	0	10
255	PEMA	0.69	1	5	1	2	0	9
256	PEMAd	0.68	1	5	1	0	0	7
258	PEMCd	0.50	2	4	1	0	0	7
259	PEMC	4.25	2	5	3	2	0	12
260	PEMFd	4.78	3	5	3	0	0	11
261	PEMF	1.26	3	4	2	2	0	11
262	PEMC	1.42	2	5	2	2	0	11
263	PEMC	4.23	2	4	3	2	0	11
264	PEMC	1.99	2	5	2	2	0	11
265	PEMC	80.36	2	5	5	2	3	17
266	PEMC	0.35	2	4	1	2	0	9
267	PEMC	0.34	2	4	1	2	0	9
268	PEMC	16.33	2	4	5	2	0	13
269	PABF	11.26	3	5	5	2	0	15
270	PEMCd	8.26	2	5	5	0	0	12
271	PEMC	0.32	2	4	1	2	0	9
272	PEMAd	0.72	1	5	1	0	0	7
273	PEMC	0.40	2	5	1	2	0	10
274	PEMCd	7.34	2	5	5	0	0	12
275	PEMC	0.65	2	5	1	2	0	10
276	PEMC	6.73	2	5	4	2	0	13
278	PEMC	0.29	2	4	1	2	0	9
280	PEMCd	0.55	2	5	1	0	0	8
281	PEMA	0.38	1	5	1	2	0	9

OBJECTID	ATTRIBUTE	ACRES	REGIME	FOOD	SIZE	TYPE	DENSITY	TOTAL
282	PEMC	9.83	2	5	5	2	0	14
283	PEMAd	0.65	1	5	1	0	0	7
284	PEMAd	0.82	1	5	1	0	0	7
286	PEMC	0.75	2	4	1	2	0	9
287	PEMC	1.76	2	5	2	2	0	11
288	PEMC	0.56	2	5	1	2	0	10
289	PEMC	1.10	2	4	2	2	0	10
290	PEMC	0.38	2	4	1	2	0	9
291	PEMC	4.44	2	5	3	2	0	12
292	PEMA	0.26	1	5	1	2	0	9
293	PEMC	0.58	2	4	1	2	0	9
294	PEMC	0.56	2	5	1	2	0	10
295	PEMC	1.16	2	4	2	2	3	13
296	PEMF	5.78	3	4	4	2	0	13
297	PEMF	10.60	3	4	5	2	0	14
298	PEMCd	0.77	2	5	1	0	0	8
299	PEMC	0.45	2	4	1	2	0	9
300	PABF	10.02	3	4	5	2	0	14
301	PEMA	2.99	1	4	2	2	0	9
302	PEMC	0.36	2	4	1	2	0	9
303	PEMC	0.27	2	4	1	2	0	9
304	PEMC	0.83	2	4	1	2	0	9
305	PEMF	0.79	3	4	1	2	0	10
306	PEMC	1.27	2	5	2	2	0	11
307	PEMC	5.22	2	4	4	2	0	12
308	PEMC	1.43	2	5	2	2	0	11
309	PEMC	0.34	2	5	1	2	0	10
310	L2ABG	28.43	4	4	5	2	0	15
312	PEMAd	0.28	1	5	1	0	0	7
313	PEMC	14.45	2	5	5	2	0	14
314	PEMC	0.57	2	4	1	2	3	12
316	PEMC	1.14	2	4	2	2	3	13
317	PEMC	2.38	2	4	2	2	0	10
318	PEMC	0.32	2	4	1	2	0	9
319	PEMC	6.16	2	5	4	2	0	13
321	PEMC	0.32	2	4	1	2	3	12
322	PEMC	0.31	2	4	1	2	0	9
323	PEMA	0.47	1	4	1	2	0	8
324	PEMC	0.72	2	5	1	2	0	10
325	PEMC	0.53	2	4	1	2	0	9
326	PEMC	0.89	2	4	1	2	0	9
327	PEMC	0.69	2	4	1	2	0	9
328	PEMC	0.53	2	5	1	2	0	10

OBJECTID	ATTRIBUTE	ACRES	REGIME	FOOD	SIZE	TYPE	DENSITY	TOTAL
329	PEMC	1.22	2	4	2	2	0	10
330	PEMAd	0.26	1	5	1	0	0	7
331	PEMC	0.50	2	5	1	2	0	10
332	PEMC	3.61	2	5	3	2	0	12
333	PEMC	11.36	2	5	5	2	0	14
334	PEMC	1.11	2	4	2	2	0	10
335	PEMC	0.43	2	5	1	2	0	10
336	PEMF	4.44	3	5	3	2	0	13
337	PEMC	6.00	2	5	4	2	3	16
338	PEMC	0.38	2	5	1	2	0	10
339	PEMC	0.50	2	5	1	2	0	10
340	PEMC	3.88	2	4	3	2	0	11
341	PEMC	1.08	2	4	2	2	0	10
342	PEMC	1.02	2	5	2	2	0	11
344	PABF	19.43	3	5	5	2	0	15
345	PABF	12.77	3	4	5	2	0	14
346	PEMC	0.27	2	5	1	2	0	10
347	PEMC	0.27	2	5	1	2	0	10
348	PABF	9.73	3	5	5	2	0	15
350	PEMC	1.02	2	5	2	2	0	11
351	PEMC	0.87	2	5	1	2	0	10
352	PEMC	1.17	2	5	2	2	0	11
353	PEMC	1.27	2	5	2	2	0	11
354	PEMC	0.69	2	5	1	2	0	10
355	PEMC	0.80	2	5	1	2	0	10
356	PEMA	0.27	1	5	1	2	0	9
357	PEMF	12.17	3	5	5	2	0	15
359	PEMC	1.10	2	5	2	2	0	11
360	PEMC	5.54	2	5	4	2	0	13
362	PEMC	0.42	2	4	1	2	0	9
363	PEMAd	0.35	1	5	1	0	0	7
364	PABF	18.81	3	5	5	2	0	15
365	PEMC	0.50	2	4	1	2	0	9
366	PEMC	3.77	2	5	3	2	0	12
367	PEMF	3.01	3	5	3	2	0	13
368	PEMC	3.25	2	4	3	2	0	11
369	PEMC	25.75	2	5	5	2	0	14
371	PEMC	0.31	2	5	1	2	3	13
372	PEMC	0.28	2	4	1	2	0	9
373	PEMC	1.75	2	4	2	2	3	13
374	PEMAd	0.89	1	5	1	0	0	7
375	PEMC	3.39	2	5	3	2	0	12
376	PEMC	0.47	2	5	1	2	0	10

OBJECTID	ATTRIBUTE	ACRES	REGIME	FOOD	SIZE	TYPE	DENSITY	TOTAL
377	PEMC	3.16	2	5	3	2	0	12
378	PEMCd	4.05	2	4	3	0	0	9
379	PEMA	0.38	1	5	1	2	0	9
380	PEMC	0.27	2	4	1	2	0	9
381	PEMA	1.03	1	4	2	2	0	9
382	PEMCd	0.35	2	5	1	0	0	8
383	PEMAd	0.54	1	5	1	0	0	7
384	PEMC	0.35	2	4	1	2	0	9
386	PEMC	0.67	2	5	1	2	0	10
387	PABFx	0.28	3	4	1	0	0	8
390	PEMC	5.44	2	5	4	2	0	13
391	PEMC	0.35	2	4	1	2	0	9
392	PEMC	3.79	2	5	3	2	0	12
396	PEMC	8.02	2	5	5	2	0	14
402	PEMC	3.31	2	3	3	2	0	10
404	PEMC	1.91	2	4	2	2	0	10
405	PEMC	0.33	2	4	1	2	0	9
406	PEMC	13.35	2	4	5	2	0	13
407	PEMC	1.53	2	3	2	2	0	9
408	PEMC	0.73	2	4	1	2	0	9
409	PEMC	3.13	2	4	3	2	0	11
410	PEMC	10.92	2	5	5	2	0	14
411	PEMF	5.07	3	5	4	2	0	14
412	PEMF	3.15	3	5	3	2	0	13
413	PEMC	1.24	2	4	2	2	0	10
414	PEMC	3.75	2	4	3	2	0	11
415	PEMC	1.42	2	5	2	2	0	11
416	PEMC	3.27	2	4	3	2	0	11
417	PEMC	0.78	2	4	1	2	0	9
418	PEMC	6.44	2	5	4	2	0	13
419	PEMC	1.86	2	5	2	2	0	11
420	PEMC	0.36	2	4	1	2	0	9
421	PEMC	0.55	2	5	1	2	0	10
422	PEMC	0.32	2	5	1	2	0	10
423	PEMC	10.66	2	5	5	2	0	14
424	PEMC	2.66	2	4	2	2	0	10
425	PEMC	0.75	2	5	1	2	0	10
426	PEMC	0.37	2	4	1	2	0	9
427	PEMC	9.61	2	4	5	2	0	13
428	PEMF	13.06	3	4	5	2	0	14
429	PEMC	5.77	2	5	4	2	0	13
430	PEMA	4.05	1	5	3	2	0	11
431	PEMC	0.43	2	5	1	2	0	10

OBJECTID	ATTRIBUTE	ACRES	REGIME	FOOD	SIZE	TYPE	DENSITY	TOTAL
432	PEMC	5.90	2	5	4	2	0	13
433	PEMC	0.42	2	5	1	2	0	10
434	PEMC	1.36	2	4	2	2	0	10
435	PEMC	2.15	2	5	2	2	0	11
436	PABF	15.93	3	5	5	2	0	15
437	PEMC	2.82	2	5	2	2	0	11
438	PEMC	4.78	2	4	3	2	0	11
439	PEMC	4.80	2	5	3	2	0	12
440	PEMC	1.17	2	5	2	2	0	11
441	PEMC	1.94	2	5	2	2	0	11
442	PEMC	2.65	2	5	2	2	0	11
443	PEMC	1.02	2	3	2	2	0	9
444	L2ABG	36.55	4	4	5	2	0	15
445	L2ABG	21.83	4	4	5	2	0	15
446	PEMC	0.70	2	4	1	2	0	9
447	PEMC	0.99	2	4	1	2	0	9
448	PEMC	1.07	2	4	2	2	0	10
449	PABF	15.93	3	4	5	2	0	14
450	PEMC	4.94	2	5	3	2	0	12
451	PEMC	1.62	2	4	2	2	0	10
452	PEMC	8.09	2	5	5	2	0	14
453	PEMC	4.55	2	4	3	2	0	11
454	PEMC	7.54	2	5	5	2	0	14
455	L2ABG	34.09	4	5	5	2	0	16
457	PEMC	0.27	2	5	1	2	0	10
458	PEMC	0.50	2	4	1	2	0	9
459	PEMC	0.29	2	4	1	2	0	9
460	PABF	2.87	3	5	2	2	0	12
462	PEMC	1.39	2	5	2	2	0	11
464	PEMC	2.47	2	5	2	2	0	11
466	PEMC	1.05	2	5	2	2	0	11
468	PEMC	0.70	2	4	1	2	0	9
469	PEMC	0.34	2	5	1	2	0	10
470	PEMAd	0.35	1	5	1	0	0	7
471	PEMAd	2.93	1	5	2	0	0	8
473	PEMC	0.38	2	5	1	2	0	10
474	L2ABG	36.96	4	4	5	2	0	15
475	L2ABG	80.10	4	5	5	2	0	16
476	L2ABG	168.16	4	4	5	2	3	18
477	L2ABG	65.05	4	4	5	2	0	15
478	L2ABG	23.58	4	4	5	2	0	15
479	L2ABG	20.08	4	5	5	2	0	16
480	L2ABG	23.83	4	5	5	2	3	19

OBJECTID	ATTRIBUTE	ACRES	REGIME	FOOD	SIZE	TYPE	DENSITY	TOTAL
481	L2ABG	48.96	4	5	5	2	0	16
482	L2ABG	24.98	4	5	5	2	0	16
483	L2ABG	42.29	4	5	5	2	0	16
484	L2ABG	29.18	4	5	5	2	3	19
485	PABF	3.76	3	4	3	2	3	15
486	PABF	0.27	3	4	1	2	0	10
487	PABF	1.98	3	4	2	2	3	14
488	PABF	19.21	3	4	5	2	3	17
489	PABF	0.60	3	4	1	2	0	10
490	PABF	11.84	3	5	5	2	3	18
491	PABF	3.65	3	4	3	2	0	12
492	PABF	10.59	3	5	5	2	0	15
493	PABF	6.77	3	4	4	2	0	13
494	PABF	5.71	3	5	4	2	0	14
495	PABF	22.72	3	5	5	2	0	15
496	PABF	2.11	3	4	2	2	0	11
497	PABFh	1.47	3	4	2	0	3	12
498	PABFx	0.65	3	3	1	0	0	7
499	PABFx	0.36	3	3	1	0	0	7
500	PABFx	0.49	3	5	1	0	0	9
501	PEM1C	1.06	2	5	2	2	0	11
502	PEM1C	1.03	2	4	2	2	0	10
503	PEM1C	2.82	2	4	2	2	0	10
504	PEM1/ABF	6.78	1	4	4	2	0	11
505	PEM1/ABF	2.73	1	3	2	2	0	8
506	PEM1/ABF	1.83	1	4	2	2	0	9
507	PEM1/ABFd	49.60	1	5	5	0	0	11
508	PEM1A	0.35	1	4	1	2	0	8
509	PEM1A	0.32	1	4	1	2	0	8
510	PEM1A	0.48	1	5	1	2	0	9
511	PEM1A	0.30	1	5	1	2	0	9
512	PEM1A	0.28	1	5	1	2	0	9
513	PEM1A	1.07	1	4	2	2	0	9
514	PEM1A	0.37	1	5	1	2	0	9
515	PEM1A	0.41	1	5	1	2	0	9
516	PEM1A	2.16	1	5	2	2	0	10
517	PEM1A	0.78	1	4	1	2	0	8
518	PEM1A	1.00	1	5	1	2	0	9
519	PEM1A	0.30	1	4	1	2	0	8
520	PEM1A	0.83	1	5	1	2	0	9
521	PEM1A	0.42	1	5	1	2	0	9
522	PEM1A	1.06	1	5	2	2	0	10
523	PEM1A	0.41	1	5	1	2	0	9

OBJECTID	ATTRIBUTE	ACRES	REGIME	FOOD	SIZE	TYPE	DENSITY	TOTAL
524	PEM1A	0.27	1	4	1	2	0	8
525	PEM1C	4.56	2	4	3	2	3	14
526	PEM1A	0.47	1	5	1	2	0	9
527	PEM1A	0.48	1	5	1	2	0	9
528	PEM1A	1.06	1	5	2	2	0	10
529	PEM1A	7.32	1	5	5	2	3	16
530	PEM1A	56.25	1	5	5	2	3	16
531	PEM1A	0.27	1	5	1	2	0	9
532	PEM1A	121.32	1	5	5	2	3	16
533	PEM1C	6.58	2	5	4	2	0	13
534	PEM1A	0.56	1	5	1	2	0	9
535	PEM1A	0.98	1	4	1	2	0	8
536	PEM1A	0.41	1	5	1	2	0	9
537	PEM1A	0.26	1	5	1	2	0	9
538	PEM1A	0.38	1	5	1	2	0	9
539	PEM1A	1.37	1	4	2	2	3	12
540	PEM1A	0.30	1	4	1	2	0	8
541	PEM1A	0.28	1	5	1	2	0	9
542	PEM1A	0.48	1	4	1	2	0	8
543	PEM1A	0.34	1	4	1	2	0	8
544	PEM1A	0.39	1	4	1	2	0	8
545	PEM1A	1.14	1	4	2	2	0	9
546	PEM1A	0.37	1	4	1	2	0	8
547	PEM1A	1.72	1	5	2	2	0	10
548	PEM1A	0.29	1	4	1	2	0	8
549	PEM1A	0.27	1	4	1	2	0	8
550	PEM1A	1.14	1	4	2	2	0	9
551	PEM1A	0.46	1	5	1	2	0	9
552	PEM1C	0.61	2	4	1	2	0	9
553	PEM1A	0.39	1	5	1	2	0	9
554	PEM1A	15.33	1	5	5	2	0	13
555	PEM1A	11.61	1	5	5	2	0	13
556	PEM1A	0.30	1	5	1	2	0	9
557	PEM1A	1.35	1	5	2	2	0	10
558	PEM1A	0.33	1	5	1	2	0	9
559	PEM1A	0.85	1	5	1	2	0	9
560	PEM1Ad	22.07	1	5	5	0	3	14
561	PEM1C	3.44	2	4	3	2	0	11
562	PEM1C	1.10	2	5	2	2	0	11
563	PEM1C	1.61	2	4	2	2	0	10
564	PEM1C	2.85	2	4	2	2	0	10
565	PEM1C	10.37	2	5	5	2	0	14
566	PEM1C	0.78	2	4	1	2	0	9

OBJECTID	ATTRIBUTE	ACRES	REGIME	FOOD	SIZE	TYPE	DENSITY	TOTAL
567	PEM1C	0.80	2	4	1	2	0	9
568	PEM1C	1.09	2	4	2	2	0	10
569	PEM1C	0.28	2	4	1	2	0	9
570	PEM1C	1.94	2	5	2	2	0	11
571	PEM1C	0.92	2	3	1	2	0	8
572	PEM1C	0.30	2	3	1	2	0	8
573	PEM1C	2.59	2	4	2	2	0	10
574	PEM1C	0.39	2	4	1	2	0	9
575	PEM1C	0.35	2	3	1	2	0	8
576	PEM1C	0.29	2	5	1	2	0	10
577	PEM1C	0.57	2	4	1	2	0	9
578	PEM1C	0.49	2	3	1	2	0	8
579	PEM1C	3.58	2	5	3	2	0	12
580	PEM1C	0.31	2	3	1	2	0	8
581	PEM1C	0.49	2	5	1	2	0	10
582	PEM1C	1.34	2	4	2	2	0	10
583	PEM1C	0.29	2	3	1	2	0	8
584	PEM1C	0.92	2	4	1	2	0	9
585	PEM1C	1.34	2	3	2	2	0	9
586	PEM1C	6.06	2	3	4	2	0	11
587	PEM1C	1.73	2	3	2	2	0	9
588	PEM1C	1.29	2	4	2	2	0	10
589	PEM1C	0.60	2	4	1	2	0	9
590	PEM1C	2.28	2	4	2	2	0	10
591	PEM1C	1.81	2	4	2	2	0	10
592	PEM1C	0.45	2	3	1	2	0	8
593	PEM1C	0.36	2	4	1	2	0	9
594	PEM1C	0.60	2	5	1	2	0	10
595	PEM1C	0.28	2	4	1	2	0	9
596	PEM1C	0.64	2	4	1	2	0	9
597	PEM1C	0.60	2	4	1	2	0	9
598	PEM1C	0.42	2	3	1	2	0	8
599	PEM1C	0.84	2	3	1	2	0	8
600	PEM1C	0.89	2	5	1	2	0	10
601	PEM1C	2.04	2	4	2	2	0	10
602	PEM1C	0.28	2	4	1	2	0	9
603	PEM1C	1.27	2	3	2	2	0	9
604	PEM1C	2.47	2	5	2	2	0	11
605	PEM1C	1.12	2	4	2	2	0	10
606	PEM1C	0.65	2	4	1	2	0	9
607	PEM1C	0.43	2	3	1	2	0	8
608	PEM1C	0.32	2	4	1	2	0	9
609	PEM1C	0.43	2	4	1	2	0	9

OBJECTID	ATTRIBUTE	ACRES	REGIME	FOOD	SIZE	TYPE	DENSITY	TOTAL
610	PEM1C	0.71	2	5	1	2	0	10
611	PEM1C	1.14	2	4	2	2	0	10
612	PEM1C	5.70	2	5	4	2	0	13
613	PEM1C	4.99	2	4	3	2	0	11
614	PEM1C	1.43	2	4	2	2	0	10
615	PEM1C	0.28	2	4	1	2	0	9
616	PEM1C	0.51	2	4	1	2	0	9
617	PEM1C	0.50	2	4	1	2	0	9
618	PEM1C	2.91	2	4	2	2	0	10
619	PEM1C	2.70	2	4	2	2	0	10
620	PEM1C	0.69	2	5	1	2	0	10
621	PEM1C	0.62	2	5	1	2	0	10
622	PEM1C	0.42	2	5	1	2	0	10
623	PEM1C	3.82	2	5	3	2	0	12
624	PEM1C	1.72	2	5	2	2	0	11
625	PEM1C	0.68	2	5	1	2	0	10
626	PEM1C	0.30	2	5	1	2	0	10
627	PEM1C	1.29	2	5	2	2	0	11
628	PEM1C	0.59	2	4	1	2	0	9
629	PEM1C	6.16	2	5	4	2	0	13
630	PEM1C	1.51	2	5	2	2	3	14
631	PEM1C	0.40	2	4	1	2	3	12
632	PEM1C	0.52	2	5	1	2	0	10
633	PEM1C	0.32	2	4	1	2	0	9
634	PEM1C	0.42	2	5	1	2	3	13
635	PEM1C	0.44	2	5	1	2	0	10
636	PEM1C	0.41	2	5	1	2	0	10
637	PEM1C	0.38	2	5	1	2	0	10
638	PEM1C	0.44	2	5	1	2	0	10
639	PEM1C	6.82	2	5	4	2	0	13
640	PEM1C	39.20	2	5	5	2	0	14
641	PEM1C	3.29	2	4	3	2	0	11
642	PEM1C	3.71	2	5	3	2	0	12
643	PEM1C	1.28	2	5	2	2	0	11
644	PEM1C	1.79	2	5	2	2	0	11
645	PEM1C	7.26	2	4	5	2	0	13
646	PEM1C	0.36	2	5	1	2	0	10
647	PEM1C	2.38	2	4	2	2	0	10
648	PEM1C	1.87	2	5	2	2	0	11
649	PEM1C	2.50	2	4	2	2	0	10
650	PEM1C	1.50	2	4	2	2	0	10
651	PEM1C	0.71	2	4	1	2	0	9
652	PEM1C	0.50	2	5	1	2	0	10

OBJECTID	ATTRIBUTE	ACRES	REGIME	FOOD	SIZE	TYPE	DENSITY	TOTAL
653	PEM1C	0.26	2	4	1	2	0	9
654	PEM1C	0.45	2	4	1	2	0	9
655	PEM1C	1.73	2	5	2	2	0	11
656	PEM1C	0.41	2	5	1	2	0	10
657	PEM1C	2.36	2	4	2	2	0	10
658	PEM1C	0.57	2	5	1	2	0	10
659	PEM1C	0.32	2	4	1	2	0	9
660	PEM1C	0.49	2	4	1	2	0	9
661	PEM1C	0.54	2	5	1	2	0	10
662	PEM1C	1.64	2	5	2	2	0	11
663	PEM1C	0.62	2	5	1	2	0	10
664	PEM1C	4.57	2	5	3	2	0	12
665	PEM1C	0.72	2	4	1	2	0	9
666	PEM1C	0.57	2	5	1	2	0	10
667	PEM1C	0.37	2	5	1	2	0	10
668	PEM1C	0.34	2	5	1	2	0	10
669	PEM1C	0.43	2	5	1	2	0	10
670	PEM1C	0.86	2	5	1	2	0	10
671	PEM1C	3.88	2	5	3	2	0	12
672	PEM1C	0.91	2	5	1	2	0	10
673	PEM1C	0.33	2	5	1	2	0	10
674	PEM1C	1.12	2	4	2	2	0	10
675	PEM1C	0.26	2	5	1	2	0	10
676	PEM1C	0.88	2	5	1	2	0	10
677	PEM1C	0.65	2	5	1	2	0	10
678	PEM1C	1.42	2	5	2	2	0	11
679	PEM1C	6.97	2	5	4	2	0	13
680	PEM1C	2.50	2	5	2	2	0	11
681	PEM1C	1.08	2	5	2	2	0	11
682	PEM1C	0.68	2	5	1	2	0	10
683	PEM1C	0.27	2	5	1	2	0	10
684	PEM1C	0.66	2	5	1	2	0	10
685	PEM1C	0.49	2	5	1	2	0	10
686	PEM1C	1.92	2	5	2	2	0	11
687	PEM1C	0.35	2	5	1	2	0	10
688	PEM1C	0.38	2	5	1	2	0	10
689	PEM1C	1.38	2	5	2	2	0	11
690	PEM1C	25.14	2	5	5	2	0	14
691	PEM1C	2.69	2	4	2	2	3	13
692	PEM1C	4.16	2	4	3	2	3	14
693	PEM1C	0.28	2	5	1	2	0	10
694	PEM1C	0.43	2	5	1	2	0	10
695	PEM1C	1.31	2	5	2	2	0	11

OBJECTID	ATTRIBUTE	ACRES	REGIME	FOOD	SIZE	TYPE	DENSITY	TOTAL
696	PEM1C	1.38	2	5	2	2	0	11
697	PEM1C	0.73	2	5	1	2	0	10
698	PEM1C	0.30	2	5	1	2	0	10
699	PEM1C	1.03	2	5	2	2	0	11
700	PEM1C	6.29	2	5	4	2	3	16
701	PEM1C	7.25	2	5	5	2	0	14
702	PEM1C	4.18	2	5	3	2	0	12
703	PEM1C	0.59	2	5	1	2	0	10
704	PEM1C	0.34	2	5	1	2	0	10
705	PEM1C	0.65	2	5	1	2	0	10
706	PEM1C	0.35	2	5	1	2	0	10
707	PEM1C	1.32	2	5	2	2	0	11
708	PEM1C	1.18	2	4	2	2	3	13
709	PEM1C	0.61	2	5	1	2	0	10
710	PEM1C	2.32	2	5	2	2	0	11
711	PEM1C	2.70	2	5	2	2	3	14
712	PEM1C	2.16	2	5	2	2	0	11
713	PEM1A	1.60	1	5	2	2	0	10
714	PEM1C	1.99	2	5	2	2	0	11
715	PEM1C	0.44	2	4	1	2	0	9
716	PEM1C	1.98	2	4	2	2	0	10
717	PEM1C	1.04	2	4	2	2	0	10
718	PEM1C	0.76	2	4	1	2	0	9
719	PEM1C	0.33	2	5	1	2	0	10
720	PEM1C	0.26	2	4	1	2	0	9
721	PEM1C	0.53	2	4	1	2	0	9
722	PEM1C	4.32	2	4	3	2	0	11
723	PEM1C	6.47	2	5	4	2	3	16
724	PEM1C	1.70	2	5	2	2	3	14
725	PEM1C	0.66	2	4	1	2	0	9
726	PEM1C	0.75	2	4	1	2	0	9
727	PEM1C	0.49	2	4	1	2	3	12
728	PEM1C	13.38	2	5	5	2	0	14
729	PEM1C	0.81	2	4	1	2	0	9
730	PEM1C	3.08	2	5	3	2	0	12
731	PEM1C	0.37	2	4	1	2	0	9
732	PEM1C	1.29	2	4	2	2	3	13
733	PEM1C	0.95	2	5	1	2	0	10
734	PEM1C	0.97	2	4	1	2	0	9
735	PEM1C	0.36	2	5	1	2	0	10
736	PEM1C	0.28	2	4	1	2	0	9
737	PEM1C	0.29	2	4	1	2	0	9
738	PEM1C	2.05	2	5	2	2	0	11

OBJECTID	ATTRIBUTE	ACRES	REGIME	FOOD	SIZE	TYPE	DENSITY	TOTAL
739	PEM1C	4.63	2	5	3	2	0	12
740	PEM1C	4.11	2	5	3	2	0	12
741	PEM1C	0.31	2	5	1	2	0	10
742	PEM1C	0.81	2	5	1	2	0	10
743	PEM1C	0.52	2	5	1	2	0	10
744	PEM1C	0.77	2	4	1	2	0	9
745	PEM1C	1.69	2	4	2	2	0	10
746	PEM1C	0.89	2	4	1	2	0	9
747	PEM1C	0.61	2	4	1	2	0	9
748	PEM1C	2.08	2	5	2	2	0	11
749	PEM1C	0.82	2	4	1	2	0	9
750	PEM1C	1.64	2	4	2	2	0	10
751	PEM1C	3.72	2	5	3	2	0	12
752	PEM1A	1.55	1	5	2	2	0	10
753	PEM1C	0.37	2	5	1	2	0	10
754	PEM1C	0.71	2	5	1	2	0	10
755	PEM1C	1.54	2	5	2	2	0	11
756	PEM1C	2.61	2	5	2	2	0	11
757	PEM1C	0.43	2	4	1	2	0	9
758	PEM1C	0.61	2	5	1	2	0	10
759	PEM1C	0.36	2	5	1	2	0	10
760	PEM1C	0.33	2	5	1	2	0	10
761	PEM1C	1.56	2	4	2	2	0	10
762	PEM1C	0.29	2	4	1	2	0	9
763	PEM1C	0.33	2	5	1	2	0	10
764	PEM1C	1.71	2	4	2	2	0	10
765	PEM1C	0.96	2	4	1	2	0	9
766	PEM1C	1.56	2	5	2	2	0	11
767	PEM1C	2.23	2	5	2	2	0	11
768	PEM1C	0.36	2	4	1	2	0	9
769	PEM1C	0.57	2	4	1	2	0	9
770	PEM1C	0.71	2	4	1	2	0	9
771	PEM1C	2.71	2	5	2	2	0	11
772	PEM1C	0.53	2	5	1	2	0	10
773	PEM1C	0.36	2	4	1	2	0	9
774	PEM1C	0.55	2	5	1	2	0	10
775	PEM1C	2.09	2	5	2	2	0	11
776	PEM1C	0.48	2	4	1	2	0	9
777	PEM1C	3.49	2	5	3	2	0	12
778	PEM1C	0.61	2	5	1	2	0	10
779	PEM1C	0.71	2	5	1	2	0	10
780	PEM1C	0.38	2	5	1	2	0	10
781	PEM1C	0.58	2	5	1	2	0	10

OBJECTID	ATTRIBUTE	ACRES	REGIME	FOOD	SIZE	TYPE	DENSITY	TOTAL
782	PEM1C	0.97	2	5	1	2	0	10
783	PEM1C	0.31	2	5	1	2	0	10
784	PEM1C	0.78	2	5	1	2	0	10
785	PEM1C	1.05	2	5	2	2	0	11
786	PEM1C	3.47	2	5	3	2	0	12
787	PEM1C	2.72	2	5	2	2	0	11
788	PEM1C	0.91	2	4	1	2	0	9
789	PEM1C	2.28	2	4	2	2	0	10
790	PEM1C	0.46	2	4	1	2	0	9
791	PEM1C	3.22	2	5	3	2	0	12
792	PEM1C	3.08	2	4	3	2	0	11
793	PEM1C	1.97	2	4	2	2	0	10
794	PEM1C	0.60	2	5	1	2	0	10
795	PEM1C	0.64	2	5	1	2	0	10
796	PEM1C	2.39	2	4	2	2	0	10
797	PEM1C	3.02	2	4	3	2	0	11
798	PEM1C	1.74	2	5	2	2	0	11
799	PEM1C	2.57	2	4	2	2	0	10
800	PEM1C	0.37	2	5	1	2	0	10
801	PEM1C	0.45	2	5	1	2	0	10
802	PEM1C	0.37	2	5	1	2	0	10
803	PEM1C	1.58	2	4	2	2	0	10
804	PEM1C	1.15	2	4	2	2	0	10
805	PEM1C	0.33	2	4	1	2	0	9
806	PEM1C	0.38	2	4	1	2	0	9
807	PEM1C	1.60	2	4	2	2	0	10
808	PEM1C	4.62	2	3	3	2	0	10
809	PEM1C	0.27	2	4	1	2	0	9
810	PEM1C	2.69	2	5	2	2	0	11
811	PEM1C	0.77	2	3	1	2	0	8
812	PEM1C	3.74	2	5	3	2	0	12
813	PEM1C	1.11	2	5	2	2	0	11
814	PEM1C	1.12	2	4	2	2	0	10
815	PEM1C	0.91	2	4	1	2	0	9
816	PEM1C	0.77	2	5	1	2	0	10
817	PEM1C	0.49	2	5	1	2	0	10
818	PEM1C	0.26	2	5	1	2	0	10
819	PEM1C	0.87	2	5	1	2	0	10
820	PEM1C	0.97	2	5	1	2	0	10
821	PEM1C	0.53	2	5	1	2	0	10
822	PEM1C	0.81	2	5	1	2	0	10
823	PEM1C	0.37	2	5	1	2	0	10
824	PEM1C	0.39	2	5	1	2	0	10

OBJECTID	ATTRIBUTE	ACRES	REGIME	FOOD	SIZE	TYPE	DENSITY	TOTAL
825	PEM1C	0.41	2	5	1	2	0	10
826	PEM1C	2.03	2	5	2	2	0	11
827	PEM1C	0.99	2	5	1	2	0	10
828	PEM1C	2.20	2	5	2	2	0	11
829	PEM1C	1.72	2	4	2	2	0	10
830	PEM1C	3.15	2	5	3	2	0	12
831	PEM1C	2.01	2	5	2	2	0	11
832	PEM1C	1.03	2	4	2	2	0	10
833	PEM1C	0.76	2	4	1	2	0	9
834	PEM1C	3.74	2	4	3	2	0	11
835	PEM1C	4.10	2	4	3	2	0	11
836	PEM1C	0.41	2	4	1	2	0	9
837	PEM1C	0.38	2	4	1	2	0	9
838	PEM1C	5.93	2	5	4	2	3	16
839	PEM1C	3.34	2	5	3	2	0	12
840	PEM1C	1.18	2	4	2	2	0	10
841	PEM1C	1.62	2	5	2	2	0	11
842	PEM1C	0.35	2	4	1	2	0	9
843	PEM1C	0.43	2	5	1	2	0	10
844	PEM1C	4.19	2	5	3	2	0	12
845	PEM1C	0.32	2	5	1	2	0	10
846	PEM1C	0.62	2	4	1	2	0	9
847	PEM1C	1.67	2	5	2	2	0	11
848	PEM1C	10.73	2	4	5	2	0	13
849	PEM1C	2.92	2	5	2	2	0	11
850	PEM1C	1.18	2	4	2	2	0	10
851	PEM1C	6.90	2	5	4	2	0	13
852	PEM1C	0.77	2	5	1	2	0	10
853	PEM1C	0.39	2	5	1	2	3	13
854	PEM1C	11.36	2	5	5	2	3	17
855	PEM1C	3.26	2	5	3	2	3	15
856	PEM1C	7.46	2	5	5	2	3	17
857	PEM1C	5.00	2	5	4	2	3	16
858	PEM1C	1.65	2	5	2	2	0	11
859	PEM1C	2.08	2	5	2	2	3	14
860	PEM1C	5.35	2	5	4	2	3	16
861	PEM1Cd	0.61	2	4	1	0	0	7
862	PEM1Cd	0.82	2	4	1	0	0	7
863	PEM1Cd	16.47	2	5	5	0	0	12
864	PEM1Cd	18.54	2	5	5	0	0	12
865	PEM1Cd	0.50	2	4	1	0	0	7
866	PEM1Cd	0.55	2	4	1	0	0	7
867	PEM1Cd	1.36	2	5	2	0	0	9

OBJECTID	ATTRIBUTE	ACRES	REGIME	FOOD	SIZE	TYPE	DENSITY	TOTAL
868	PEM1Cd	11.33	2	4	5	0	0	11
869	PEM1Cd	3.99	2	4	3	0	0	9
870	PEM1F	7.75	3	4	5	2	0	14
871	PEM1F	0.37	3	4	1	2	3	13
872	PEM1F	1.60	3	4	2	2	3	14
873	PEM1F	37.80	3	5	5	2	3	18
874	PEM1F	182.04	3	5	5	2	3	18
875	PEM1F	44.47	3	4	5	2	3	17
876	PEM1F	37.12	3	4	5	2	3	17
877	PEM1F	41.86	3	5	5	2	3	18
878	PEM1F	15.27	3	5	5	2	3	18
879	PEM1F	0.51	3	5	1	2	0	11
880	PEM1F	0.45	3	5	1	2	0	11
881	PEM1F	13.42	3	5	5	2	0	15
882	PEM1F	14.81	3	5	5	2	0	15
883	PEM1F	2.48	3	5	2	2	0	12
884	PEM1F	2.53	3	4	2	2	0	11
885	PEM1F	1.88	3	5	2	2	0	12
886	PEM1F	1.76	3	5	2	2	0	12
887	PEM1F	2.40	3	5	2	2	0	12
888	PEM1F	1.38	3	4	2	2	0	11
889	PEM1F	4.51	3	5	3	2	0	13
890	PEM1F	7.23	3	5	5	2	0	15
891	PEM1F	6.45	3	5	4	2	3	17
892	PEM1F	28.17	3	5	5	2	3	18
893	PEM1F	0.99	3	4	1	2	0	10
894	PEM1F	1.70	3	5	2	2	3	15
895	PEM1F	2.45	3	5	2	2	3	15
896	PEM1F	2.34	3	5	2	2	3	15
897	PEM1F	2.68	3	4	2	2	0	11
898	PEM1F	26.95	3	5	5	2	3	18
899	PEM1F	5.36	3	4	4	2	0	13
900	PEM1F	25.35	3	5	5	2	3	18
901	PEM1F	0.74	3	4	1	2	0	10
902	L2ABG	33.00	4	4	5	2	0	15
903	L2ABG	16.43	4	4	5	2	0	15
904	PABF	9.45	3	5	5	2	0	15
905	PABF	10.78	3	4	5	2	0	14
906	PABF	36.69	3	5	5	2	0	15
907	PABF	13.06	3	5	5	2	0	15
908	PABF	56.95	3	5	5	2	0	15
909	PABF	32.98	3	4	5	2	0	14
910	PABFd	19.79	3	4	5	0	0	12

OBJECTID	ATTRIBUTE	ACRES	REGIME	FOOD	SIZE	TYPE	DENSITY	TOTAL
911	PEM1A	0.76	1	5	1	2	0	9
912	PEM1A	0.29	1	4	1	2	0	8
913	PEM1A	0.47	1	5	1	2	0	9
914	PEM1A	0.74	1	5	1	2	0	9
915	PEM1Ad	0.49	1	5	1	0	0	7
916	PEM1C	0.65	2	5	1	2	0	10
917	PEM1C	0.28	2	5	1	2	0	10
918	PEM1C	0.82	2	5	1	2	0	10
919	PEM1C	0.74	2	5	1	2	0	10
920	PEM1C	0.63	2	5	1	2	0	10
921	PEM1C	1.60	2	5	2	2	0	11
922	PEM1C	0.69	2	5	1	2	0	10
923	PEM1C	4.81	2	4	3	2	0	11
924	PEM1C	0.65	2	4	1	2	0	9
925	PEM1C	2.03	2	5	2	2	0	11
926	PEM1C	1.80	2	4	2	2	0	10
927	PEM1C	0.65	2	5	1	2	0	10
928	PEM1C	0.55	2	3	1	2	0	8
929	PEM1C	2.34	2	3	2	2	0	9
930	PEM1C	1.01	2	3	2	2	0	9
931	PEM1C	0.37	2	5	1	2	0	10
932	PEM1C	1.04	2	5	2	2	0	11
933	PEM1C	1.36	2	5	2	2	0	11
934	PEM1C	0.85	2	5	1	2	0	10
935	PEM1C	0.55	2	4	1	2	0	9
936	PEM1C	9.92	2	5	5	2	0	14
937	PEM1C	1.34	2	4	2	2	0	10
938	PEM1C	2.10	2	5	2	2	0	11
939	PEM1C	0.97	2	5	1	2	0	10
940	PEM1C	5.63	2	5	4	2	0	13
941	PEM1C	3.43	2	4	3	2	0	11
942	PEM1C	0.58	2	4	1	2	0	9
943	PEM1C	0.39	2	4	1	2	0	9
944	PEM1C	9.94	2	4	5	2	0	13
945	PEM1C	2.05	2	4	2	2	0	10
946	PEM1C	2.29	2	5	2	2	3	14
947	PEM1C	18.36	2	4	5	2	0	13
948	PEM1C	8.74	2	5	5	2	0	14
949	PEM1C	4.20	2	4	3	2	0	11
950	PEM1Cd	4.64	2	5	3	0	0	10
951	PEM1F	3.82	3	5	3	2	0	13
952	L2ABG	120.44	4	5	5	2	3	19
953	PEM1C	16.08	2	4	5	2	0	13

OBJECTID	ATTRIBUTE	ACRES	REGIME	FOOD	SIZE	TYPE	DENSITY	TOTAL
954	PEM1C	2.11	2	5	2	2	3	14
955	PEM1C	0.37	2	4	1	2	0	9
956	PEM1C	0.33	2	3	1	2	3	11
957	PEM1C	0.37	2	5	1	2	0	10
958	PEM1C	1.81	2	4	2	2	0	10
959	PEM1C	0.74	2	5	1	2	0	10
960	PEM1C	3.54	2	5	3	2	3	15
961	PEM1C	3.57	2	4	3	2	0	11
962	PEM1C	1.03	2	4	2	2	3	13
963	PEM1C	0.53	2	5	1	2	0	10
964	PABF	11.12	3	5	5	2	0	15
965	PEM1C	1.24	2	5	2	2	0	11
966	PEM1C	0.72	2	5	1	2	0	10
967	PABF	7.86	3	5	5	2	0	15
968	PEM1C	6.91	2	5	4	2	0	13
969	PEM1C	3.04	2	5	3	2	0	12
970	PEM1C	5.57	2	5	4	2	0	13
971	PEM1F	3.55	3	4	3	2	0	12
972	PABF	32.71	3	5	5	2	0	15
973	PEM1Cd	1.37	2	4	2	0	0	8
974	PEM1F	3.38	3	5	3	2	0	13
975	PEM1F	4.38	3	4	3	2	0	12
976	PEM1F	4.35	3	5	3	2	0	13
977	PEM1A	0.29	1	5	1	2	0	9
978	PEM1C	0.32	2	4	1	2	0	9
979	PEM1C	0.33	2	4	1	2	0	9
980	PEM1C	3.20	2	5	3	2	0	12
981	PEM1C	1.81	2	4	2	2	0	10
982	PEM1C	4.46	2	5	3	2	0	12
983	PABF	8.83	3	5	5	2	0	15
984	PEM1C	1.58	2	4	2	2	0	10
985	PEM1C	7.92	2	4	5	2	0	13
986	PEM1C	5.98	2	5	4	2	3	16
987	PEM1C	5.15	2	5	4	2	0	13
988	PABF	8.52	3	5	5	2	0	15
989	PEM1C	1.66	2	5	2	2	0	11
990	PEM1C	0.49	2	4	1	2	0	9
991	PEM1C	2.25	2	4	2	2	0	10
992	PEM1C	0.30	2	4	1	2	0	9
993	PEM1C	0.45	2	4	1	2	0	9
994	PEM1C	5.98	2	4	4	2	0	12
995	PEM1C	1.11	2	4	2	2	0	10
996	PEM1C	2.20	2	5	2	2	0	11

Habitat Suitablility Assessment Scores

OBJECTID	ATTRIBUTE	ACRES	REGIME	FOOD	SIZE	TYPE	DENSITY	TOTAL
997	PEM1A	3.33	1	5	3	2	0	11
998	PABF	58.26	3	5	5	2	0	15