NOXIOUS WEED MANAGEMENT AND CONTROL PLAN

PREPARED FOR:

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BOWMAN COUNTY, NORTH DAKOTA

MAY 2021

Prepared by:

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ACRONYM LIST

ADLS	Aircraft Detection Lighting System
Apex	Apex Clean Energy Holdings, LLC
Bowman Wind	Bowman Wind, LLC
EPC	engineering, procurement, and construction
kV	kilovolt
MW	megawatt
NDDA	North Dakota Department of Agriculture
NDSU	North Dakota State University
O&M	operations and maintenance
Plan	Noxious Weed Management and Control Plan
Project	Bowman Wind Project
Project Area	The 42,144-acre project area

1.0 INTRODUCTION

Bowman Wind, LLC (Bowman Wind), a wholly owned subsidiary of Apex Clean Energy Holdings, LLC (Apex) is developing the Bowman Wind Project (Project) in Bowman County, North Dakota. The Project will encompass an approximately 42,144-acre project area (Project Area) located approximately 3.5 miles west of the City of Bowman, North Dakota (Figure 1). The Project nameplate capacity will be up to 208.7 megawatts (MWs), with up to 200.1 MWs of electricity delivered to the grid. The Projects facilities are shown are Figure 1 and will include:

- up to 74 wind turbines and related equipment,
- new gravel access roads and improvements to existing roads (as needed),
- underground electrical collection and communication lines, with above-ground junction boxes,
- two permanent meteorological towers,
- Aircraft Detection Lighting System (ADLS) components,
- operation and maintenance (O&M) facility,
- battery storage facility,
- Project substation, and
- 230 kilovolt (kV) Gen-Tie transmission line.

The Project Area is comprised of portions of 96 sections of agricultural land and rangeland in central Bowman County, North Dakota, situated between the towns of Rhame and Bowman. Bowman Wind currently holds Wind Energy Lease and Easement agreements with approximately 70 landowner partners (Table 1.0-1).

Table 1.0-1
Project Area Location TC "Table 1.0-1 Project Area Location" \f C \l "1"

Township Name	Township	Range	Section(s)
Rhame	132N	104W	24
Marion	132N	103W	19, 29-36
Adelaide	131N	104W	14-15, 20-29, 31-34
Hart Unorganized Territory	131N	103W	1-5, 7-8, 10-11, 14-16, 18-23, 25-26, 28-32, 34-36
Bowman	131N	102W	6
Nebo	130N	104W	1-4, 7-18, 20-24, 27
Amor	130N	103W	1-12, 16-22, 28

1.1 Schedule and Construction Management

Bowman Wind anticipates construction activities to begin as early as Second Quarter 2022 and be completed by the end of 2022. Bowman Wind will select a third-party engineering, procurement, and construction (EPC) contractor to perform the majority of the engineering and construction. The EPC contractor will be responsible for completing all construction, including roads, wind turbine assembly, electrical, and communications work. Bowman Wind will own the entire Project and, as a result, will manage the construction of all equipment and associated facilities. Bowman Wind anticipates full commercial operation to occur by the end of 2022.

1.2 Plan Purpose

The purpose of this Noxious Weed Management and Control Plan (Plan) is to implement preventative measures to eliminate the spread of weeds during construction and to implement prescribed treatments to eliminate, to the maximum extent possible, the invasion of weeds from surrounding lands. Any kind of soil disturbance often stimulates weed seeds already present in the soil seed bank to germinate and establish. Monitoring during the construction of the Project will ensure that these goals are achieved.

2.0 REGULATORY SETTING

2.1 State Regulations

North Dakota Century Code Section 4.1-47-01 defines a noxious weed as a plant propagated by either seed or vegetative parts and determined to be injurious to public health, crops, livestock, land, or other property.

North Dakota Century Code Section 4.1-47-02 requires every person to do all things necessary and proper to control the spread of noxious weeds and makes it illegal for any person to distribute, sell, or offer for sale within this state a noxious weed. At the state and county levels, the State Agricultural Commissioner and County Weed Control Officer are responsible for the enforcement of the weed laws. It is a class B misdemeanor to anyone who violates the following:

- A person may not willfully transport any material that contains noxious weed seeds or propagating parts, on a public road, in a manner that allows for the dissemination of noxious weeds.
- A person may not willfully drive or transport any equipment, on a public road, in a manner that allows for the dissemination of noxious weeds.
- A person may not willfully dispose of any material that contains noxious weed seeds or propagating parts in a manner that allows for the dissemination of noxious weeds.

2.2 State and County Noxious Weeds

North Dakota has 13 state noxious weeds that are enforced by all cities and counties in North Dakota (NDDA, 2021). Counties and cities do have the option to add additional weeds onto a list for enforcement only in their jurisdiction. Bowman County includes three additional noxious weeds, baby's breath (*Gypsophila paniculate*), black henbane (*Hyoscyamus niger*), and Scotch thistle (*Onopordum acanthium*). Table 2.2-1 includes a list of the state and county noxious weed species.

Table 2.2-1 State and County Noxious Weeds		
Common Name	**Scientific Name**	**Jurisdiction**
Absinth wormwood	*Artemisia absinthium*	State
Canada thistle	*Cirsium arvense*	State
Dalmatian toadflax	*Linaria genistifolia*	State
Diffuse knapweed	*Centaurea diffusa*	State
Houndstongue	*Cynoglossum officinale*	State
Leafy spurge	*Euphorbia esula*	State
Musk thistle	*Carduus nutans*	State
Palmer amaranth	*Amaranthus palmeri*	State
Purple loosestrife	*Lythrum salicaria, Lythrum virgatum*	State
Russian knapweed	*Rhaponticum repens*	State
Saltcedar	*Tamarix* spp.	State
Spotted knapweed	*Centaurea maculosa*	State
Yellow toadflax	*Linaria vulgaris*	State
Baby's breath	*Gypsophila paniculata*	Bowman
Black henbane	*Hyoscyamus niger*	Bowman
Scotch thistle	*Onopordum acanthium*	Bowman
Source: NDDA, 2021		

2.3 County Weed Board

The public is urged to work with local weed board officers, extension agents, and other experts to identify and report suspect plants. The main role of the county weed board is help the public with the control of noxious weeds within the county. The county weed board can offer assistance as it relates to identification, prevention, and treatment of noxious weeds. Table 2.3-1 includes contact information for the Bowman County Weed Board.

Table 2.3-1 Bowman County Weed Board		
Title	**Name**	**Contact Information**
Weed Officer	Joshua Hetland	(701) 928-0909 bowmanweed@nd.gov
Member	Randy Gaebe	(701) 523-2332 garbe@ndsupernet.com
Member	Jeff Oakland	(701) 279-5774 messybear61@gmail.com
Member	Zach Brown	(701) 440-8935 zacbrown1307@gmail.com
Source: NDDA, 2020		

3.0 NOXIOUS WEED MANAGEMENT

Noxious weeds are spread by a variety of means including vehicles, construction equipment, construction activities, farm equipment, livestock, and wildlife. Implementation of preventative measures to control the spread of noxious weeds is the most cost-effective management approach. The Project will implement noxious weed control management measures that are consistent with state and county regulations and work with local weed officers as necessary.

3.1 Identification and Occurrences

Absinth wormwood, Canada thistle, and leafy spurge have been observed at the Project, often in invaded grasslands, along roadsides, and on the edge of croplands. A recommended guide for identification and control of each of the state noxious weeds as well as other invasive or troublesome weed species with the most potential to spread is A Guide to North Dakota and Noxious and Troublesome Weeds (NDSU, 2020). Table 3.1-1 includes the reported acres of noxious weeds surveyed in 2012 for Bowman County, which is the most recent data available.

Table 3.1-1
Reported Acres of State Noxious Weeds in Bowman County

Common Name	Scientific Name	Reported Total Acres (Private and Public)
Absinth wormwood	*Artemisia absinthium*	135
Canada thistle	*Cirsium arvense*	16,240
Dalmatian toadflax	*Linaria genistifolia*	-
Diffuse knapweed	*Centaurea diffusa*	-
Leafy spurge	*Euphorbia esula*	945
Musk thistle	*Carduus nutans*	-
Purple loosestrife	*Lythrum salicaria, Lythrum virgatum*	-
Russian knapweed	*Rhaponticum repens*	-
Saltcedar	*Tamarix* spp.	-
Spotted knapweed	*Centaurea maculosa*	1,535
Yellow toadflax	*Linaria vulgaris*	-
Source: NDDA, 2012		

3.2 Preventive Measures

The following preventive measures will be used to prevent the spread of noxious weeds:

- All contractors will receive noxious weed identification, management, and control training as part of their onsite contractor orientation and receive a copy of A Guide to North Dakota Noxious and Troublesome Weeds (NDSU, 2020), as needed.
- All EPC contractor equipment will arrive at the work site clean and weed-free. Prior to being allowed access to the right-of-way, all equipment will be power or high-pressure air washed. In addition, all equipment leaving an area infested with noxious weeds will first be cleaned with an air compressor to limit the spread of noxious weed seeds and propagules.

- The EPC contractor will ensure that equipment is free of soil and debris capable of transporting noxious weed seeds, roots, or rhizomes.

- The right-of-way will be inspected for weeds prior to the clearing of vegetation. Infestations will be recorded on the construction alignment sheets for reference for post construction monitoring.

- The EPC contractor will employ best management practices during construction to monitor soil impacts and segregate topsoil. Final revegetation would occur within the approved seeding window.

- The EPC contractor will ensure that straw bales, used on the Project for sediment barrier installations, or mulch are certified weed-free.

- Equipment will not be sprayed with pre-emergent chemicals as a preventive measure as these chemicals target a wide range of vegetation. As a result, the use of such chemicals could affect the success of revegetation efforts.

- Field wash stations with water are not proposed as a preventive measure as they have not proven to be an effective means of noxious weed control. In order for a wash station to be effective, high-pressure steam cleaners and controlled drainage are essential. These criteria cannot be met in the field. As a result, field wash stations run the risk of creating conditions favorable to seed germination (e.g., presence of seeds or rhizomes, presence of disturbed soils, water from uncontrolled drainage).

3.3 Treatment Methods

Noxious weed controls will be used in accordance with existing regulations and landowner or agency agreements. Prior to clearing and grading operations, pre-treatment of noxious weed infestations may be conducted if it is determined that pre-treatment will aid in controlling the spread of weeds during construction. The noxious weed control measures to be implemented at these locations may include the application of herbicide or mechanical measures. The weed control measure chosen will be the best method available for the time, location, and species of weed.

- Herbicide application is an effective means of reducing the size of noxious weed populations.

- Mechanical methods such as mowing, or disking are reliant on the use of equipment to disk or excavate weed populations.

During construction, the EPC contractor will periodically monitor the Project right-of-way to allow for early detection of noxious weed species infestations. If such species are found in numbers that are significantly different from existing nearby off right of-way locations, appropriate control measures will be implemented in an attempt to eradicate the identified noxious weed infestations along the right-of-way and to reduce the spread or proliferation of weeds.

4.0 HERBICIDE TREATMENTS

Herbicide selection (if required) would be based on information gathered from local county weed board and/or the North Dakota Department of Agriculture.

4.1 Application and Handling

Prior to herbicide application, the EPC contractor will obtain any required permits or approvals from the local weed district and landowner. The chemical application will be done by a licensed contractor in accordance with all applicable laws and regulations. Herbicide label instructions and manufacture guidelines will be strictly adhered to. For example, manufacturer's guidelines recommend that herbicides only be applied under appropriate weather conditions (i.e., periods of low wind speeds, when precipitation is not imminent, etc.), that application sprayers be mounted low to the ground, and that sprayer booms incorporate specialized nozzles designed to produce large droplet sizes with limited drift potential. Adherence to these specifications and manufacturer label directions would minimize the potential for drift or transport of herbicides to off right-of-way areas.

Vehicle-mounted sprayers (e.g., handgun, boom, and injector) will be used primarily in open areas that are readily accessible by vehicle. Hand application methods (e.g., backpack spraying) that target individual plants will be used to treat small scattered noxious weed populations in rough terrain. Calibration checks of equipment will be conducted at the beginning of spraying and periodically thereafter to ensure proper application rates are being achieved. Herbicides will be transported daily to the Project site with the provisions listed below.

- Herbicides will be premixed and delivered in returnable/refillable containers and transferred by closed system to application tanks to limit worker and environmental exposure and eliminate the need for disposal of herbicide containers in area landfills.
- Herbicides will be transported in a manner that will prevent tipping or spilling.
- Mixing of surfactants or other additives with water or other carriers and refilling of containers will typically be conducted at road crossings, and no mixing or filling will occur within 100 feet of open or flowing water, wetlands, or other sensitive resources; greater than 200 feet from private wells; and greater than 400 feet from public wells.
- Mixing and application procedures will be supervised by a licensed commercial applicator, and monitoring will be conducted to ensure that proper mixing, application, cleanup, personal protection, and safety procedures are followed.
- All herbicide equipment and containers will be inspected daily for leaks.

4.2 Spills and Cleanup

All reasonable precautions will be taken to avoid herbicide spills. In the event of a spill, clean-up will be immediate. The EPC contractors will be responsible for keeping spill kits in their vehicles and in herbicide storage areas to allow for quick and effective response to spills.

Response to herbicide spills will vary with the size and location of the spill. The order of priorities after discovering a spill are to protect the safety of personnel and the public, minimize damage to the environment, and conduct cleanup and remediation activities. The EPC contractor will obtain

and carry with them, copies of the appropriate product labels and Safety Data Sheets for the herbicides used. All herbicide spills will be reported in accordance with applicable laws and requirements.

5.0 MONITORING AND OPERATION

Following construction, on-site operations staff will manage, monitor, and treat noxious weeds as a part of normal operations and maintenance activities. Infestation areas identified prior to construction will be inspected for weed growth until final reclamation is achieved. In areas with noxious weed growth, the noxious weed control measure chosen will be the best method available for the time, location, and species of noxious weed. Mechanical treatments will be conducted prior to seed maturation if needed. In addition, subsequent reseeding will be conducted, if necessary, to re-establish a desirable vegetative cover that will stabilize the soils and slow the potential of reinvasion of noxious weeds. If appropriate, further consultation with the county weed board regarding the use of biological and other alternate noxious weed control methods will be conducted.

6.0 REFERENCES

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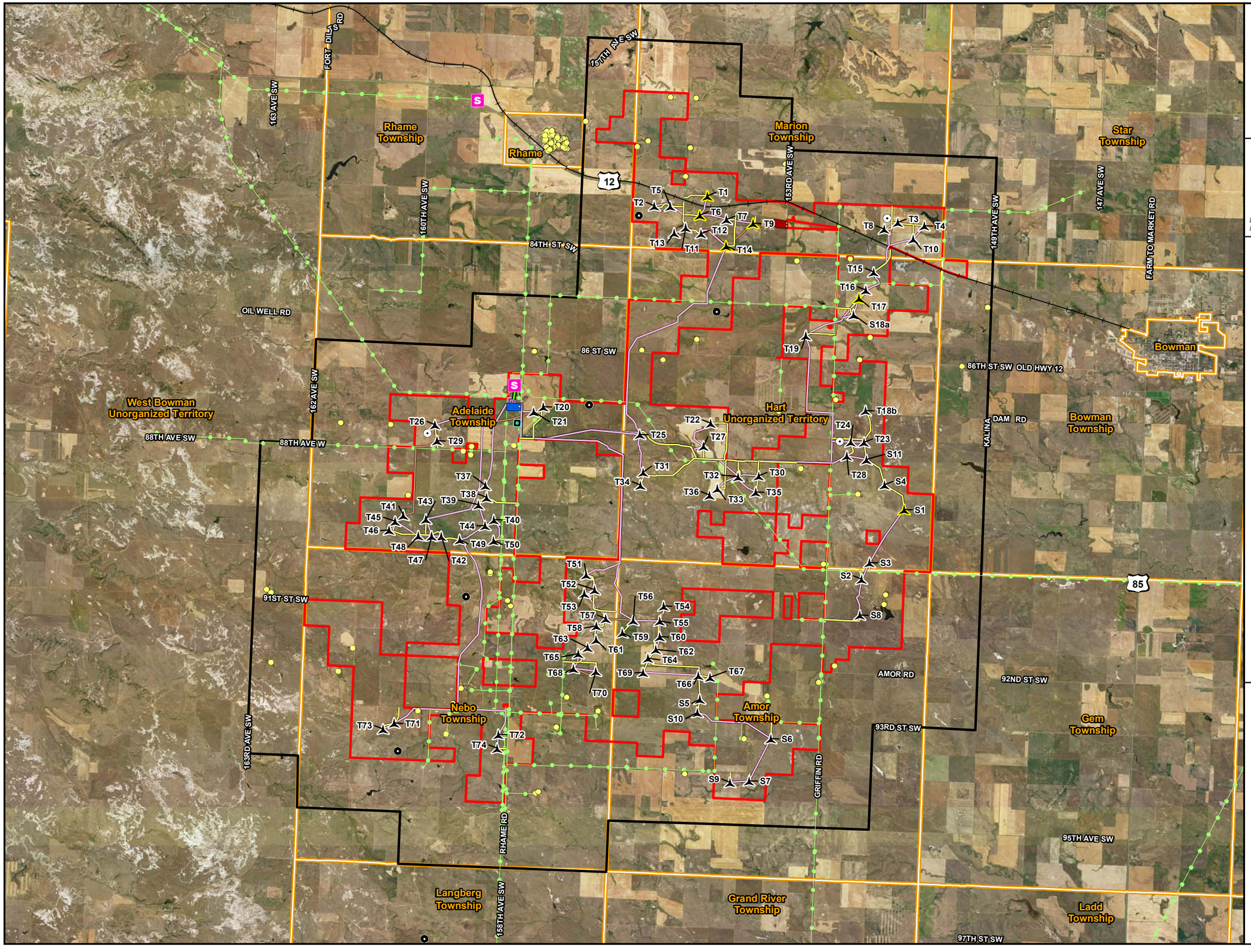
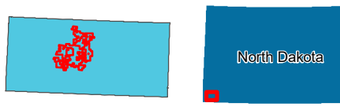
Figures





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Data Source: Apex, US Census, ND GIS Hub, ESRI
Imagery: ND GIS 2018

- Proposed Turbine
- Currently Limited to GE-127 2.82 MW Turbine
- Residence within 1-mile of Project
- Permanent Met Tower
- Temporary Met Tower
- Existing Substation
- Access Road
- Crane Path
- Underground Collection Line
- Proposed Transmission
- Existing Transmission
- Project Substation
- O&M Facility
- Laydown Yard
- Battery Storage
- Project Boundary
- Study
- City/Township

*Turbines Not to Scale

Figure 1
Facilities Layout

Bowman Wind Project

Bowman County, North Dakota

BOWMAN WIND

For Environmental Review Purposes Only

Source: Z:\Clients\A_D\Apex\Bowman\Permitting\Site_Permit\Mapping\Fig02_Bowman_Facilities_Layout.mxd
Date: (7/20/2021)