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Attachment I

Sound Study

AN ALLETE COMPANY

Longspur updated the sound report included in the Wind Project Application at Appendixes B3. The updates do not change the data reported; sound (dba) remain unchanged. The changes are limited to correcting labeling of receptors.

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MINNESOTA POWER

Sound Study

Longspur Wind

PROJECT NO. 154125

REVISION 3

APRIL 30, 2026

Contents

Tables

List of Abbreviations

Abbreviation	Term/Phrase/Name
ACP	American Clean Power Association
ANSI	American National Standards Institute
CadnaA	Computer Aided Noise Abatement
dB	decibel
dBA	A-weighted decibels
DEM	Digital Elevation Model
Developer	Minnesota Power
Hz	hertz
IEC	International Electrotechnical Commission
ISO	International Organization for Standardization
L_{90}	90th-percentile exceedance sound level
L_{eq}	equivalent-continuous sound level
MW	megawatt
Project	Longspur Wind Project
PWL	sound power level
SO	Sound Optimized
SPL	sound pressure level
Study	sound study for the proposed Longspur Wind Project
USGS	U.S. Geological Survey
WTG	Wind Turbine Generator

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1.0 Introduction

1.1 Study Overview

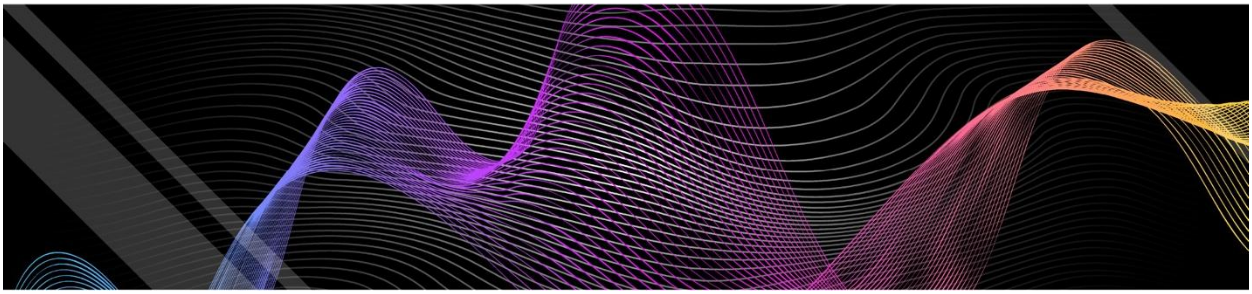
Burns & McDonnell was retained by Minnesota Power, a division of ALLETE, Inc. (“Minnesota Power”) to conduct a sound study (the “Study”) for the proposed Longspur Wind Project (the “Project”). The objectives of the Study were to identify applicable sound regulations and model Project-generated sound level impacts on neighboring occupied residences.

1.2 Project Overview

The proposed Project will be located in Morton County, North Dakota, approximately five (5) miles north of the city of Glen Ullin. The Project will include a quantity of up to 45 Vestas V163-4.5 wind turbine generators (“WTG”) at a 113-meter hub height with an aggregate nameplate capacity of approximately 202.5 megawatts (“MW”).

For purposes of this Study, a total of 57 turbine positions were evaluated (including 12 alternates), although only up to 45 turbines are expected to be installed. All 12 alternate turbines were modeled as the V163-4.5 turbine model. Some of the turbines were applied sound optimized (“SO”) modes to limit noise impacts to residences near the Project. This mitigation strategy shows the Project would be able to meet the limits with any configuration of 45 WTGs at the 57 potential WTG positions. It should be noted that the SO mitigation may not be necessary for the final layout based on which turbine locations are ultimately selected to be built. A final noise model will be completed for the final layout to confirm compliance and the need for SO modes, if any.

Longspur Wind Project			
LOCATION	GENERATION	WIND TURBINES UP TO	TURBINE MODEL(S)
Morton County, North Dakota	202.5 MW	45	V163-4.5



2.0 Acoustic Terminology

The term "sound level" is often used to describe two different sound characteristics: sound power and sound pressure. Every source that produces sound has a sound power level ("PWL"). The PWL is the acoustic energy emitted by a sound source and is an absolute number that is not affected by the surrounding environment. The acoustic energy produced by a source propagates through media as pressure fluctuations. These pressure fluctuations, also called sound pressure levels ("SPL"), are what human ears hear and microphones measure.

Sound is physically characterized by amplitude and frequency. The amplitude of sound is measured in decibels ("dB") as the logarithmic ratio of a sound pressure to a reference sound pressure (20 micropascals). The reference sound pressure corresponds to the typical threshold of human hearing. To the average listener, a 3-dB change in a continuous broadband sound is generally considered "just barely perceptible"; a 5-dB change is generally considered "clearly noticeable"; and a 10-dB change is generally considered a doubling (or halving, if the sound is decreasing) of the apparent loudness.

Sound waves can occur at many different wavelengths, also known as the frequency. Frequency is measured in hertz ("Hz") and is the number of wave cycles per second that occur. The typical human ear can hear frequencies ranging from approximately 20 to 20,000 Hz. Normally, the human ear is most sensitive to sounds in the middle frequencies (1,000 to 8,000 Hz) and is less sensitive to sounds in the lower and higher frequencies. As such, the A-weighting scale was developed to simulate the frequency response of the human ear to sounds at typical environmental levels. The A-weighting scale emphasizes sounds in the middle frequencies and de-emphasizes sounds in the low and high frequencies. Any sound level to which the A-weighting scale has been applied is expressed in A-weighted decibels, or dBA. For reference, the A-weighted sound pressure level and subjective loudness associated with some common sound sources are listed in Table 2-1.

Sound in the environment is constantly fluctuating, as when a car drives by, a dog barks, or a plane passes overhead. Therefore, sound metrics have been developed to quantify fluctuating environmental sound levels. These metrics include the exceedance sound level. The exceedance sound level is the sound level exceeded during "x" percent of the sampling period and is also referred to as a statistical sound level. Common exceedance sound level values are the 10-, 50-,90-percentile exceedance sound levels, denoted by L_{10}, L_{50}, and L_{90}. The equivalent-continuous sound level ("L_{eq}") is the arithmetic average of the varying sound over a given time period and is the most common metric used to describe sound.

Table 2-1: Typical Sound Pressure Levels Associated with Common Sound Sources

Sound Pressure Level (dBA)	Subjective Evaluation	Environment
140	Deafening	Jet aircraft at 75 feet
130	Threshold of pain	Jet aircraft during takeoff at a distance of 300 feet
120	Threshold of feeling	Elevated train
110	Very loud	Jet flyover at 1,000 feet
100		Motorcycle at 25 feet
90	Moderately loud	Propeller plane flyover at 1,000 feet
80		Diesel truck (40 mph) at 50 feet
70	Loud	B-757 cabin during flight
60	Moderate	Air-conditioner condenser at 15 feet
50	Quiet	Private Office
40		Farm field with light breeze, birdcalls
30	Very quiet	Quiet residential neighborhood
20		Rustling leaves
10	Just audible	--
0	Threshold of hearing	--

Sources:
(1) Adapted from *Architectural Acoustics*, *M. David Egan, 1988*
(2) *Architectural Graphic Standards*, Ramsey and Sleeper, 1994

3.0 Applicable Regulations

Federal, State, and county regulations and guidelines were reviewed to determine the applicable overall sound level limits for the Project.

3.1 State of North Dakota

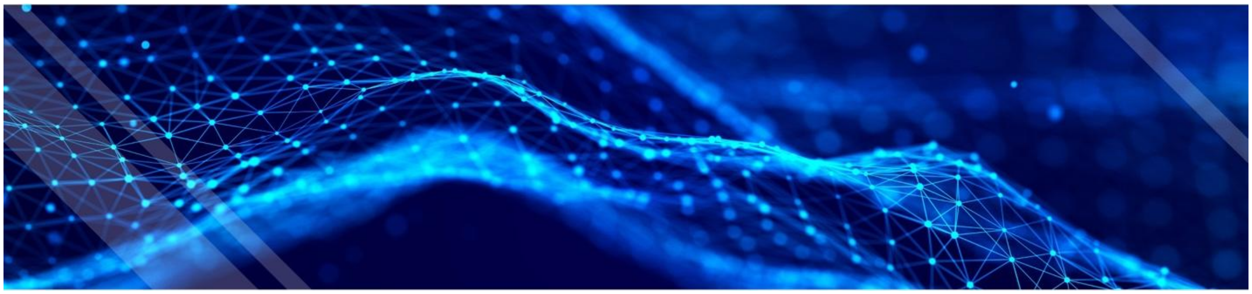
Chapter 69-06-08-01 in the North Dakota Public Service Commissions states, “A wind energy conversion facility site must not include a geographic area where, due to operation of the facility, the sound levels within one hundred feet of an inhabited residence or a community building will exceed forty-five dBA. The sound level avoidance area criteria may be waived in writing by the owner of the occupied residence or the community building”.

3.2 Morton County

Morton County Land Use Code Section 2-100(d)(6) states, “With the exception of temporary construction equipment, noises produced shall neither exceed 65 decibels between the hours of 7:00 am and 11:00 pm nor 60 decibels between the hours of 11:00 pm and 7:00 am, as measured at or beyond any of the property lines from which the noise is emanating.”.

3.3 Regulation Summary

The North Dakota Public Service Commissions are more restrictive than the county limits. Therefore, the Project will be compared to the State of North Dakota 45-dBA sound level limit at locations within one hundred feet of an inhabited residence. If sound levels are predicted to exceed the sound level limit, the sound level avoidance area criteria may be waived in writing by the owner of the occupied residence.



4.0 Modeling Parameters and Inputs

Industry-accepted sound modeling software, CadnaA (Version 2026, published by DataKustik, Ltd., Munich, Germany) was used to estimate expected sound levels from the Project. The model inputs and assumptions are described in this section.

4.1 Wind Turbine Sound Characteristics

The sound commonly associated with a wind turbine is described as a rhythmic "whoosh" caused by aerodynamic processes. This sound is created as air flow interacts with the surface of rotor blades. As air flows over the rotor blade, turbulent eddies form in the surface boundary layer and wake of the blade. These eddies are where most of the "whooshing" sound is formed. Additional sound is generated from vortex shedding produced by the tip of the rotor blade. Air flowing past the rotor tip creates alternating low-pressure vortices on the downstream side of the tip causing sound generation to occur. Older wind turbines, built with rotors which operate downwind of the tower (downwind turbines), often have higher aerodynamic impulse sound levels. This is caused by the interaction between the aerodynamic lift created on the rotor blades and the turbulent wake vortices produced by the tower. Modern wind turbine rotors are mostly built to operate upwind of the tower (upwind turbines). Upwind turbines are not impacted by wake vortices generated by the tower and, therefore, overall sound levels can be as much as 10 dBA less for similarly sized turbines. The rhythmic fluctuations of the overall sound level are less perceivable farther from the turbine. Additionally, multiple turbines operating at the same time will create the whooshing sound at different times. These non-synchronized sounds will blend together to create a more constant sound to an observer at most distances from the turbines. Another phenomenon that reduces perceivable noise from turbines is the wind itself. Higher wind speed produces noise that tends to mask (or drown out) the sounds created by wind turbines.

Advancement in wind turbine technology has reduced pure tonal emissions of modern wind turbines. Manufacturers have reduced distinct tonal sounds by reshaping turbine blades and adjusting the angle at which air contacts the blade. Pitching technology allows the angle of the blade to adjust when the maximum rotational speed is achieved, which allows the turbine to maintain a constant rotational velocity. Therefore, sound emission levels remain constant as the velocity remains the same.

Wind turbines can create noise in other ways as well. Wind turbines have a nacelle where the mechanical portions of the turbine are housed. The current generation of wind turbines use multiple techniques to reduce the noise from this portion of the turbine: vibration isolating mounts, special gears, and acoustic insulation. In general, all moving parts and the housing of the current generation wind turbines have been designed to minimize the noise they generate.

4.2 Model Inputs and Settings

The CadnaA program is a scaled, three-dimensional program that takes into account air absorption, terrain, ground absorption, and ground reflection for each piece of noise-emitting equipment and predicts downwind sound pressure levels. The model calculates sound propagation based on International Organization for Standardization ("ISO") 9613-2:2024, General Method of Calculation. ISO 9613, and therefore CadnaA, assesses the sound pressure levels based on the octave-band center-frequency range from 31.5 to 8,000 Hz. Predicted compliance with the regulations for all turbines operating implies predicted compliance for any combination of the turbines operating.

4.2.1 Project Layout

The Project layout includes up to 57 potential WTG locations. The predictive models for the Vestas V163-4.5 WTGs were completed using the proposed layout with all 57 WTGs modeled shown in Figure A-1 of Appendix A. The WTGs were modeled at a hub height of 113 meters with each serrated trailing edge blades included on each WTG. The turbine coordinates, turbine type, and hub height for each modeled WTG are listed in the tables provided in Appendix A.

4.2.2 Receptors

A quantity of 61 receptors were modeled surrounding the Project. The Developer-provided coordinates of each receptor are provided in Appendix B. Burns & McDonnell did not provide an independent verification of the location or occupied status of these receptors.

4.2.3 ANSI / ACP 111-1 (2022)

In an effort to standardize the calculation methodology for wind turbine sound levels, the American Clean Power Association ("ACP") developed a standard, recognized by the American National Standards Institute ("ANSI"), which outlines preferred modeling methods for predicting future sound levels from wind turbine generating projects. These methods, along with the wind turbine model-specific sound power levels (determined in accordance with International Electrotechnical Commission, IEC 61400-11), are to be used with ISO 9613 calculations and are expected to yield a conservative, worst-case condition with wind turbines operating at their highest rated sound power levels.

The standard, ACP 111-1-2022, provides two options for modeling parameters which are to be implemented into the modeling software/calculations. Both options are expected to yield nearly identical results, per the standard. The Option 1 modeling parameters were selected for this study and are shown in Table 4-1 below.

Table 4-1: ANSI / ACP 111-1 (2022) Modeling Parameters

Model Parameter	Value
Ground Factor (G)	0
Receptor Height	1.5 meters
Turbine Source Height	Vendor Provided Hub-height
Model Adjustments	None
Temperature	50 °F
Humidity	70%

4.2.4 Terrain and Vegetation

Terrain and attenuation from ground absorption and scattering can have a significant impact on sound transmission. U.S. Geological Survey ("USGS") Digital Elevation Model ("DEM") contours were imported into the model to account for topographic variations around the Project. The terrain around the proposed Project is mostly rural with minor changes in elevation.

4.2.5 Sound Propagation and Directivity

CadnaA calculates downwind sound propagation using ISO 9613 standards, which use omni-directional downwind sound propagation and worst-case directivity factors. In other words, the model assumes that each turbine propagates its maximum sound level in all directions at all times. This will likely over-predict upwind sound levels.

4.2.6 Sound Emission Data

Acoustic modeling was conducted for the Project using the expected loudest sound power levels for the Vestas V163-4.5 with serrated trailing edge blades. The sound emissions data was developed using the International Electrotechnical Commission ("IEC") 61400-11 acoustic measurement standards. IEC 61400-11 is used to determine the max sound power level of the overall turbine assembly. Overall sound power levels were provided by the manufacturer at various wind speeds. The expected sound power levels for the Vestas V163-4.5 are displayed in Table 4-2.

Table 4-2: Maximum Sound Power Levels

WTG Model	Octave Band Frequency (Hz) Sound Pressure Level (dBA)									Total Sound Level (dBA)
	31.5	63	125	250	500	1000	2000	4000	8000	
V163-4.5	76	88	96	100	101	100	96	90	81	106.3
V163-4.5 SO1	75	87	95	99	99	98	95	89	80	105.0
V163-4.5 SO2	73	85	93	97	98	97	94	87	78	103.5

(a) Overall sound levels are based on vendor-provided turbine data for the turbine. These levels are A-weighted octave-band sound levels with the inclusion of serrated trailing edge blades.

A point source located at the specific hub height of each proposed turbine location was used to model sound emissions from each of the wind turbines, per direction of ANSI / ACP 111-1. The sound levels shown in the table above were applied, as appropriate, to each point source. The proposed Project layout figure is provided in Appendix A, including the identified neighboring residences. Each residence was modeled as a receiver at a height of 1.5 meters (5.0 feet) above ground level.

4.3 Acoustic Modeling Results

Project-generated sound pressure levels were calculated for the identified receivers in the CadnaA noise modeling program using the manufacturer-specified sound power levels at each octave-band frequency and the assumptions listed above. Noise modeling results have been demonstrated in previous studies to conservatively approximate real-life measured noise from a source when extraneous noises are not present.

Sound level inputs and results at the nearest identified residential receptors are provided in tabular form in Appendix B. Any receptor within 1 dBA of the limit (45 dBA), was further analyzed to determine if sound levels at any location within 100 feet of the residence exceeded 45 dBA. The sound level contours for the Project WTGs are shown in Appendix C.

There were several residences identified that were predicted to exceed the 45-dBA limit within 100 feet of an inhabited residence with the standard turbine sound levels. In order to bring the Project into compliance with the North Dakota limits for the 57-turbine layout, SO operating modes were implemented on specific turbines to reduce noise impacts to these residential receptors. The turbines with SO operating modes are listed in Appendix A.

This mitigation strategy ensures the Project would be able to meet the sound level limits. However, mitigation may not be necessary for the final layout based on which turbines are ultimately selected to be built. A final noise model will be completed to demonstrate compliance for the final layout.

5.0 Conclusions

Burns & McDonnell conducted a sound study for the Longspur Wind Project. The sound study included identification of applicable sound regulations and predictive modeling to estimate sound levels in the surrounding community. A comparison to the North Dakota noise levels limit of 45 dBA was performed for compliance at the neighboring residential structures and within 100 feet of the residential structures.

The Project was modeled for Vestas V163-4.5 turbines. The Vestas turbines were modeled at a hub height of 113 meters for the 57 WTGs that could be installed. Sound pressure levels were predicted for the Project area using manufacturer-specified overall sound power levels for the wind turbines and guidance from the ANSI ACP 111-1 wind turbine modeling standard to provide the loudest predicted sound pressure levels from the modeled turbines to the neighboring identified residences.

The modeling results show the Project sound levels would meet North Dakota's requirement of 45 dBA within one hundred feet of an inhabited residence or community building for the Vestas V163-4.5 through the use of low-noise operating modes on two (2) WTGs. However, this mitigation may not be necessary for the final layout based on which turbines are ultimately selected to be built. A final noise model will be completed to demonstrate compliance for the final layout.

Appendix A – Project Layout

WIND TURBINE COORDINATES (V163)

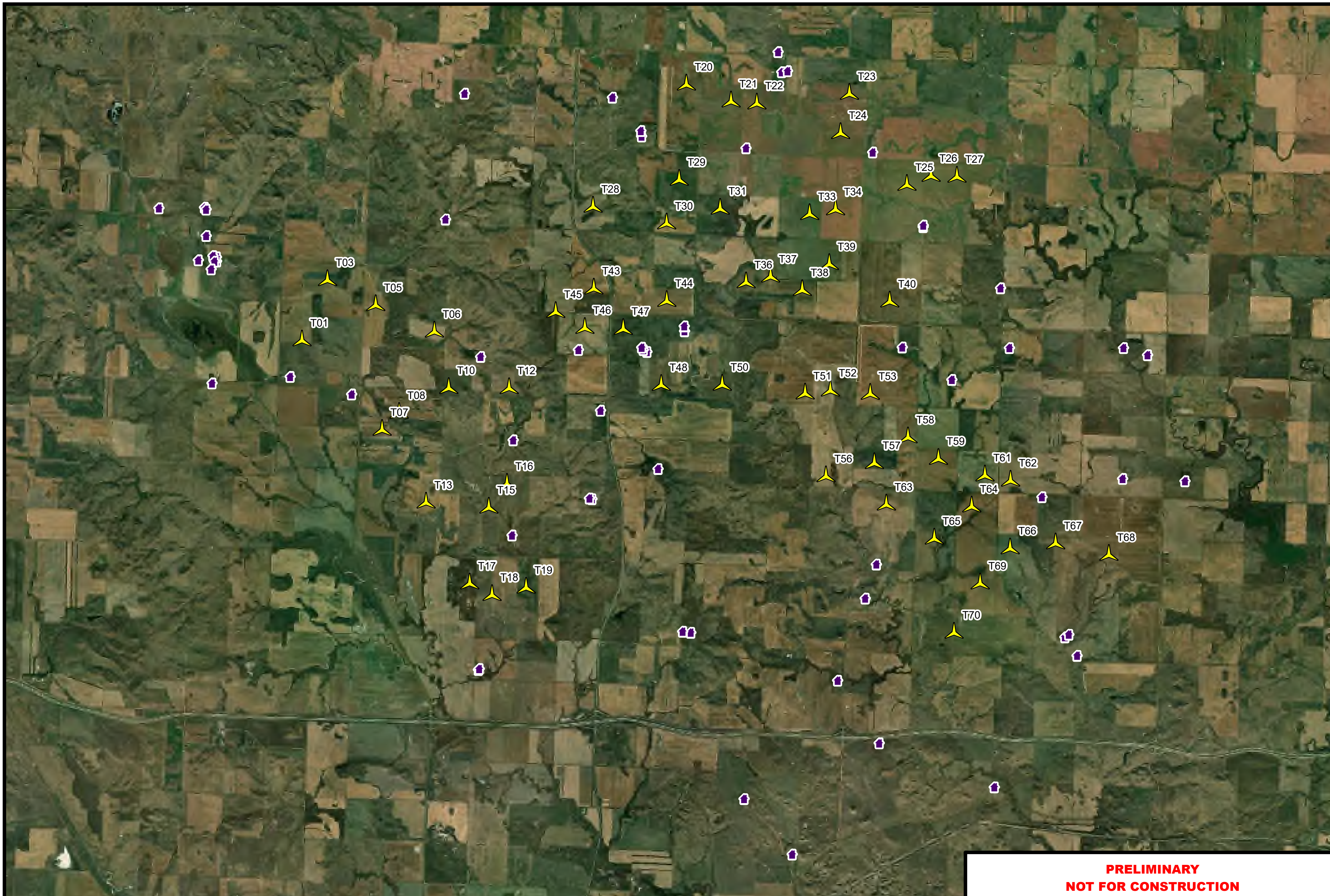
Turbine Name	Easting [m]	Northing [m]	Turbine Model	Hub Height [m]	Sound Power Level [dBA]
T01	282,280	5,201,201	V163-4.5MW	113	106.3
T03	282,778	5,202,380	V163-4.5MW	113	106.3
T05	283,721	5,201,891	V163-4.5MW	113	106.3
T06	284,869	5,201,373	V163-4.5MW	113	106.3
T07	283,847	5,199,451	V163-4.5MW	113	106.3
T08	284,179	5,199,783	V163-4.5MW	113	106.3
T10	285,150	5,200,270	V163-4.5MW	113	106.3
T12	286,330	5,200,266	V163-4.5MW	113	106.3
T13	284,706	5,198,029	V163-4.5MW	113	106.3
T15	285,933	5,197,930	V163-4.5MW	113	106.3
T16	286,289	5,198,396	V163-4.5MW	113	106.3
T17	285,559	5,196,447	V163-4.5MW	113	106.3
T18	285,996	5,196,220	V163-4.5MW	113	106.3
T19	286,662	5,196,365	V163-4.5MW	113	106.3
T20	289,796	5,206,205	V163-4.5MW	113	106.3
T21	290,669	5,205,874	V163-4.5MW	113	106.3
T22	291,173	5,205,835	V163-4.5MW	113	106.3
T23	292,983	5,206,023	V163-4.5MW	113	106.3
T24	292,810	5,205,256	V163-4.5MW	113	106.3
T25	294,107	5,204,243	V163-4.5MW	113	106.3
T26	294,579	5,204,418	V163-4.5MW	113	106.3
T27	295,086	5,204,403	V163-4.5MW	113	106.3
T28	287,971	5,203,815	V163-4.5MW	113	106.3
T29	289,655	5,204,342	V163-4.5MW	113	106.3
T30	289,409	5,203,489	V163-4.5MW	113	106.3
T31	290,456	5,203,777	V163-4.5MW	113	106.3
T33	292,205	5,203,672	V163-4.5MW	113	106.3
T34	292,711	5,203,764	V163-4.5MW	113	106.3
T36	290,963	5,202,336	V163-4.5MW	113	106.3
T37	291,442	5,202,449	V163-4.5MW	113	106.3
T38	292,061	5,202,185	V163-4.5MW	113	106.3
T39	292,590	5,202,695	V163-4.5MW	113	106.3
T40	293,772	5,201,961	V163-4.5MW	113	106.3
T43	287,986	5,202,215	V163-4.5MW	113	106.3
T44	289,412	5,201,972	V163-4.5MW	113	106.3
T45	287,241	5,201,756	V163-4.5MW	113	106.3
T46	287,811	5,201,445	V163-4.5MW SO2	113	103.5
T47	288,561	5,201,425	V163-4.5MW SO2	113	103.5
T48	289,304	5,200,329	V163-4.5MW	113	106.3
T50	290,497	5,200,333	V163-4.5MW	113	106.3
T51	292,117	5,200,162	V163-4.5MW	113	106.3
T52	292,610	5,200,219	V163-4.5MW	113	106.3
T53	293,390	5,200,156	V163-4.5MW	113	106.3
T56	292,525	5,198,543	V163-4.5MW	113	106.3
T57	293,471	5,198,801	V163-4.5MW	113	106.3
T58	294,128	5,199,304	V163-4.5MW	113	106.3
T59	294,724	5,198,883	V163-4.5MW	113	106.3
T61	295,633	5,198,559	V163-4.5MW	113	106.3
T62	296,133	5,198,457	V163-4.5MW	113	106.3
T63	293,705	5,197,990	V163-4.5MW	113	106.3
T64	295,374	5,197,952	V163-4.5MW	113	106.3
T65	294,643	5,197,324	V163-4.5MW	113	106.3
T66	296,125	5,197,133	V163-4.5MW	113	106.3
T67	297,014	5,197,230	V163-4.5MW	113	106.3
T68	298,056	5,197,006	V163-4.5MW	113	106.3
T69	295,539	5,196,447	V163-4.5MW	113	106.3
T70	295,029	5,195,483	V163-4.5MW	113	106.3

Notes:

[1] Coordinates presented in UTM NAD 83 Zone 14N (meters)

[2] Coordinates provided in "Longspur_MNPower_L013_202p5MW_45xV163-4p5_113mHH_20250807_WithAlt.shp"

[3] "SO2" identifies sound optimized mode applied to limit noise below 45 dBA limit

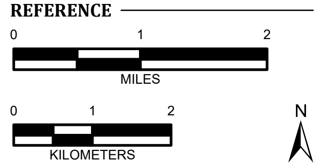


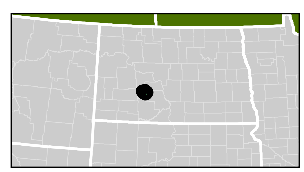
LEGEND

Residential Receiver

WTG

REFERENCE





PRELIMINARY
NOT FOR CONSTRUCTION

Figure A-1
Longspur Wind Project - Project Layout

LOCATION:	North Dakota
CLIENT:	Longspur Wind
PROJ. NO.:	154125
CREATED:	12/15/2025

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Path: G:\Projects\Air-Noise Dept\Project Files\MN Power\Longspur Wind\GIS\Longspur Wind GIS.aprx • Coordinate System: • Units:

Appendix B – Modeled Impacts

NOISE MODEL RESULTS (V163)

Receptor Name	Easting [m]	Northing [m]	Residence Status	Project Sound Level [dBA]
REC-001	299,548	5,198,403	Non-Participating	33
REC-002	298,328	5,198,450	Non-Participating	37
REC-003	298,817	5,200,869	Non-Participating	32
REC-004	298,346	5,201,009	Non-Participating	33
REC-005	283,255	5,200,102	Non-Participating	42
REC-006	280,525	5,200,317	Non-Participating	33
REC-007	282,053	5,200,445	Non-Participating	40
REC-008	280,615	5,202,703	Non-Participating	33
REC-009	280,257	5,202,726	Non-Participating	31
REC-010	280,612	5,202,784	Non-Participating	32
REC-011	280,543	5,202,808	Non-Participating	32
REC-012	280,411	5,203,201	Non-Participating	31
REC-013	285,089	5,203,522	Non-Participating	36
REC-014	279,487	5,203,743	Non-Participating	27
REC-015	280,378	5,203,755	Non-Participating	30
REC-016	293,514	5,196,773	Participating	40
REC-017	286,391	5,197,343	Participating	44
REC-018	287,953	5,198,053	Non-Participating	38
REC-019	287,904	5,198,066	Non-Participating	38
REC-020	296,751	5,198,091	Participating	44
REC-021	289,246	5,198,642	Participating	38
REC-022	286,413	5,199,204	Participating	42
REC-023	288,121	5,199,785	Non-Participating	40
REC-024	294,990	5,200,386	Non-Participating	40
REC-025	285,777	5,200,835	Participating	43
REC-026	287,689	5,200,972	Participating	44
REC-027	289,028	5,200,932	Non-Participating	44
REC-028	288,957	5,200,970	Participating	44
REC-029	288,926	5,201,017	Participating	44
REC-030	294,020	5,201,020	Participating	42
REC-031	296,115	5,201,008	Non-Participating	37
REC-032	289,764	5,201,336	Participating	44
REC-033	289,758	5,201,432	Non-Participating	44
REC-034	295,942	5,202,178	Non-Participating	36
REC-035	294,429	5,203,374	Non-Participating	42
REC-036	294,431	5,203,404	Non-Participating	43
REC-037	290,927	5,192,186	Non-Participating	27
REC-038	293,570	5,193,278	Non-Participating	31
REC-039	285,734	5,194,712	Non-Participating	36
REC-040	285,749	5,194,731	Non-Participating	36
REC-041	292,757	5,194,503	Non-Participating	33
REC-042	297,438	5,194,987	Non-Participating	35
REC-043	289,886	5,195,439	Non-Participating	33
REC-044	289,728	5,195,460	Non-Participating	33
REC-045	297,201	5,195,350	Non-Participating	37
REC-046	297,277	5,195,400	Non-Participating	37
REC-047	293,296	5,196,108	Participating	38
REC-048	285,462	5,205,985	Non-Participating	32
REC-049	293,442	5,204,835	Non-Participating	44
REC-050	288,924	5,205,147	Participating	41
REC-051	288,909	5,205,254	Participating	40
REC-052	288,354	5,205,907	Participating	38
REC-053	291,663	5,206,405	Participating	42
REC-054	291,777	5,206,426	Participating	42
REC-055	291,592	5,206,798	Non-Participating	40
REC-056	290,965	5,204,916	Participating	43
REC-057	280,409	5,203,718	Non-Participating	30
REC-058	280,572	5,202,698	Non-Participating	32
REC-059	280,509	5,202,548	Non-Participating	32
REC-060	291,869	5,191,101	Non-Participating	24
REC-061	295,820	5,192,415	Non-Participating	29

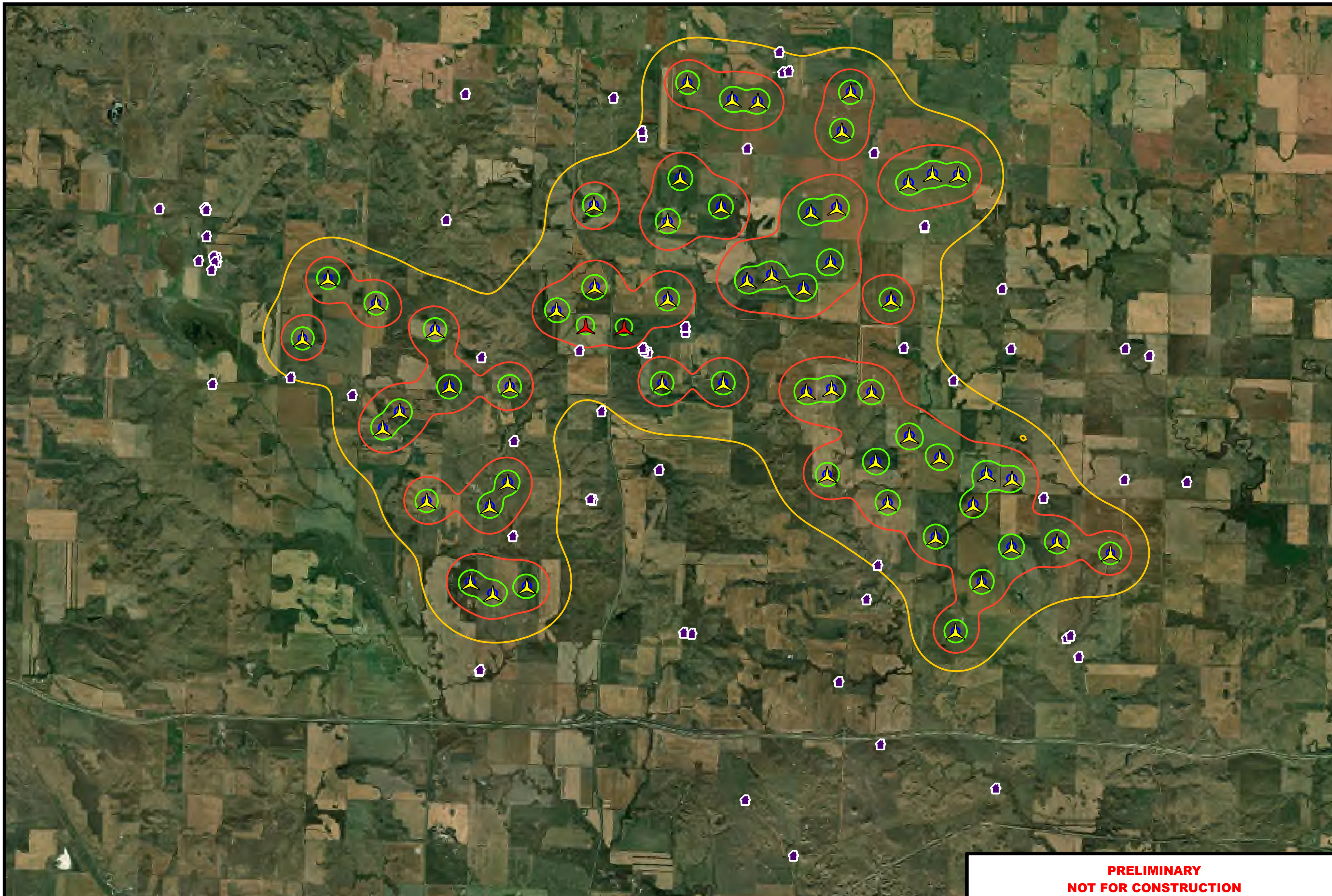
Notes:

[1] Coordinates presented in UTM NAD 83 Zone 14N (meters)

[2] Receptor coordinates provided by Client via "*Longspur_Wind_Receptor_Survey_Results - MB confirmed.xlsx*" on October 20, 2025

[3] Participating status provided by Client via *"Residence Status_ARL.shp"* on April 28, 2026.

Appendix C – Sound Level Contours

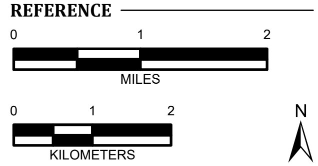


PRELIMINARY
NOT FOR CONSTRUCTION

LEGEND

- Residential Receiver
- V163 4.5 STE
- V163 4.5 STE SO2
- 40 dBA
- 45 dBA
- 50 dBA
- 55 dBA

REFERENCE



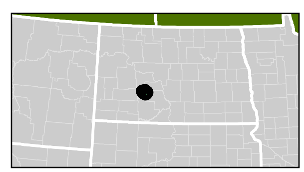


Figure C-1
Longspur Wind Project - Sound Level Contours

LOCATION:	North Dakota
CLIENT:	Longspur Wind
PROJ. NO.:	154125
CREATED:	12/15/2025

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