Exhibit X

Noise

Nolin Hills Wind Power Project
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Prepared for

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Acronyms and Abbreviations

AGL	above ground level
Applicant	Nolin Hills Wind, LLC
BPA	Bonneville Power Administration
CadnaA	computer-aided noise abatement program
Corona 3	Corona and Field Effects Program Version 3
dB	decibel
dBA	A-weighted decibel
dBL	Linear or unweighted decibel
EPRI	Electric Power Research Institute
GE	General Electric
Hz	hertz
IEC	International Electrotechnical Commission
ISO	International Organization for Standardization
kV	kilovolt
L_{50}	median sound level
L_{eq}	equivalent sound level
L_{max}	maximum sound level
L_n	statistical sound level
L_P	received sound pressure level
L_w	source sound power level
MW	megawatt
NSR	noise sensitive receptor
OAR	Oregon Administrative Rule
ODEQ	Oregon Department of Environmental Quality
Project	Nolin Hills Wind Power Project
ROW	right-of-way
SG	Siemens Gamesa
UTM	Universal Transverse Mercator

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1.0 Introduction

Nolin Hills Wind, LLC (the Applicant) proposes to construct the Nolin Hills Wind Power Project (Project), a wind energy project with a nominal generating capacity of approximately 350 megawatts (MW) and up to 117 average MW of energy, in Umatilla County, Oregon. The Project comprises up to 116 wind turbine generators depending on the turbine model selected and the final layout determined during the micrositing process. If larger turbines are selected, fewer turbines will likely be installed. The Project will interconnect to the regional grid via either a transmission line leading from the northern Project substation northwest to Cottonwood Substation in Hermiston, or a new 230-kilovolt (kV) transmission line to the proposed Bonneville Power Administration (BPA) Stanfield Substation, north of the town of Nolin. Other Project components include electrical collection lines, substations, site access roads, one operations and maintenance building, meteorological data collection towers, and temporary construction yards. These facilities are all described in greater detail in Exhibit B.

The acoustic modeling analysis considered the following turbine layout configurations:

- 58 Siemens Gamesa (SG) 6.0-170 wind turbines, individually rated at 6.0 MW, with a hub height of 377 feet (115 meters) and a rotor diameter of 558 feet (170 meters); and
- 116 General Electric (GE) 3.03-140 wind turbines, individually rated at 3.03 MW, with a hub height of 266 feet (81 meters) and a rotor diameter of 459 feet (140 meters).

In addition, the 230-kV Project transmission line was included in the acoustic modeling analysis. The results of the acoustic analysis will be assessed relative to the applicable Oregon Administrative Rule (OAR), Division 35 Noise Control Regulations, instituted by the Oregon Department of Environmental Quality (ODEQ). The primary objective of this exhibit is to demonstrate that the Project can operate in compliance with the noise limits promulgated under the OAR. Prior to the discussion on the acoustic assessment of the Project, an introduction to the terms and language used within Exhibit X has been provided.

1.1 Acoustic Terminology

Sound is what we hear. Sound is defined as a rapid fluctuation or oscillation of air pressure above and below atmospheric pressure creating a sound wave and reaching our ears to exert tiny pressures on our eardrums. Sound energy is characterized by the properties of sound waves, which are frequency, wavelength, period, amplitude, and velocity. When sound becomes noise is a highly subjective determination, largely dependent on the following factors (not provided in any specific order of importance):

- Magnitude or intensity of noise with a frequency weighting to human hearing response;
- Duration of the intruding noise;

- Time of year (windows open or closed – outdoor exposure and location of outdoor activities);
- Time of day (higher sensitivities may occur at night);
- Existing ambient sound levels in the community when the noise is not present, including effects of wind generated noise (eolian) and masking by foliage in areas with established tree stands during elevated wind conditions;
- History of prior exposure to the same or similar noise sources;
- Existence of a pure tone, tonal, or impulsive character in the sound;
- Level of community outreach and notification of schedule of potential noisy periods (i.e., construction activities);
- Predetermined attitudes towards a proposed project or activity; and
- Facility benefits including private and public economic incentives.

The unit of sound pressure is the decibel (dB). The decibel scale is logarithmic to accommodate the vast dynamics of sound intensities to which the human ear is subjected. A logarithmic scale is formed by taking 20 times the base logarithm (base 10) of the ratio of two sound pressures[1]: the measured sound pressure divided by a reference sound pressure. The reference sound pressure is 20 micro-Pascals, the approximate threshold of human perception to sound at a frequency of 1,000 hertz (Hz; 0 dB). The loudness of a sound is determined by the source sound power level (L_W), the total acoustic power radiated by an object or structure measured in decibels referenced to 10^{-12} watts and is independent of environmental conditions. The received sound pressure level (L_P) includes the effects of propagation and attenuation that occur between source and receptor location.

Sound is typically composed of acoustic energy spanning across a wide range of frequencies, referred to as the frequency spectra; however, the human ear does not interpret the sound level from each frequency equally as loud. To compensate for the physical response of the human ear, the A-weighting filter is commonly used for describing environmental sound levels. The A-weighted sound level is the most widely accepted descriptor for community noise assessments. A-weighting filters the frequency spectrum of sound levels to correspond to the human ear frequency response (attenuating low and high frequency energy like the way people hear sound). Sound levels that are A-weighted to reflect human response are presented as dBA. Table X-1 shows how this scale related to some common noise sources and environment. Unweighted sound levels are referred to as linear, or dBL.

An inherent property of the logarithmic decibel scale is that the sound pressure levels of two separate sounds are not directly additive. For example, if a sound of 50 dB is added to another sound of 50 dB, the total is a 3-dBL increase (or 53 dB), not an arithmetic doubling to 100 dB. The

[1] Or alternatively, ten times the base-10 logarithm of the ratio of two powers.

human ear does not hear changes in the sound pressure level as equivalent changes in perceived loudness.

Scientific research demonstrates the following general relationships between sound level and human perception for two broadband sound levels with identical (or very similar) frequency characteristics are valid:

- **1 dBA** is the practically achievable limit of the accuracy of noise measurement systems and it corresponds to approximately 10 percent variation in relative sound pressure. A 1 dBA increase or decrease is a non-perceptible change in an environmental sound level.
- **3 dBA** increase or decrease is a doubling or halving of acoustic energy, respectively, and it corresponds to the threshold of perceptibility of change in a laboratory environment. In practice, the average person may or may not be able to distinguish a 3 dBA differential in environmental sound levels outdoors.
- **5 dBA** increase or decrease is described as a perceptible change in an environmental sound level and is a clearly discernable change in an outdoor environment.
- **10 dBA** increase is a tenfold increase in acoustic energy but is perceived as only a doubling in loudness (i.e., the average person will judge a 10 dBA change in sound level to be twice or half as loud, depending on if it is a 10 dBA increase or decrease).

Table X-1. Sound Pressure Levels (LP) and Relative Loudness

Noise Source or Activity	Sound Level (dBA)	Subjective Impression	Relative Loudness (Perception of Different Sound Levels)
Jet aircraft takeoff from carrier (50 ft. away)	140	Threshold of pain	64 times as loud
50-hp siren (100 ft.)	130		32 times as loud
Loud rock concert near stage Jet takeoff (200 ft.)	120	Uncomfortably loud	16 times as loud
Float plane takeoff (100 ft.)	110		8 times as loud
Jet takeoff (2,000 ft.)	100	Very loud	4 times as loud
Heavy truck or motorcycle (25 ft.)	90		2 times as loud
Garbage disposal Food blender (2 ft.) Pneumatic drill (50 ft.)	80	Loud	Reference loudness
Vacuum cleaner (10 ft.)	70	Moderate	1/2 as loud
Passenger car at 65 mph (25 ft.)	65		
Large store air-conditioning unit (20 ft.)	60		1/4 as loud
Light auto traffic (100 ft.)	50	Quiet	1/8 as loud
Quiet rural residential area with no activity	45		

Noise Source or Activity	Sound Level (dBA)	Subjective Impression	Relative Loudness (Perception of Different Sound Levels)
Bedroom or quiet living room Bird calls	40	Faint	1/16 as loud
Typical wilderness area	35		
Quiet library, soft whisper (15 ft.)	30	Very quiet	1/32 as loud
Wilderness with no wind or animal activity	25	Extremely quiet	
High-quality recording studio	20		1/64 as loud
Acoustic test chamber	10	Just audible	
	0	Threshold of hearing	
Adapted from: Beranek 1988 and EPA 1971.			

1.2 Acoustic Metrics

Noise can be measured, modeled and presented in various formats. The most common sound metrics used in community sound surveys are the equivalent sound level (L_{eq}), the maximum sound level (L_{max}), and percentile distributions of sound levels (L_n). The sound metrics that were employed in the Project acoustic assessment are the following:

The L_{eq} value is the energy averaged sound level and is defined as the steady, continuous sound level, over a specified time, which has the same acoustic energy as the actual varying sound levels over the same time. The L_{eq} has been shown to provide both an effective and uniform method for comparing time varying sound levels that typically occur and have been used routinely in assessing construction and transportation noise studies.

The L_n descriptor identifies the sound level that is exceeded "n" percent of the time over a measurement period The L_{10} is often referred to as the intrusive noise level and is the A-weighted sound level that is exceeded for 10 percent of the time during a specified measurement period. During a 100-minute period, the L_{10} would be the sound level that was exceeded by other sound levels for 10 minutes of the 100-minute measurement period. It is often referred to as the intrusive sound level. The L_{50} is referred to as the median sound level. During an average day, the measured sound levels are greater than the L_{50} half of the time, and less than the L_{50} half of the time. This sound metric is also cited in OAR 340-035-0035((1)(b)(B)(iii)(I), which states that a background L_{50} ambient noise level of 26 dBA can be applied when assessing noise related to wind energy facilities.

The L_{max} is the maximum instantaneous sound level as measured during a specified time period. It can also be used to quantify the maximum sound pressure level generated by a piece of equipment or an activity that normally varies with time or the maximum allowable noise sound pressure level as set as a regulatory criteria or manufacturers maximum source level emission level.

These sound metrics are broadband, i.e., they include sounds at all audible frequencies. In addition to broadband, sound level data typically include an analysis of the various frequency components of the sound spectrum to determine tonal characteristics. The unit of frequency is Hz, measuring the cycles per second of the sound pressure waves, and typically the frequency analysis includes 10 octave bands from 31 Hz (low frequency) to 16,000 Hz (high frequency).

2.0 Regulatory Environment

This section describes the noise-related requirements that may be applicable to the Project at the federal, state, county, and local levels. The acoustic assessment described in Exhibit X is limited to potential noise exposure of off-site receptors and not potential on-site noise exposure as regulated by the United States Occupational Health and Safety Administration.

2.1 Federal Noise Regulations

There are no federal regulatory requirements in the United States that are directly applicable to the Project.

2.2 State Noise Regulations

OAR Chapter 340, Division 35 prescribes noise regulations applicable throughout the State of Oregon, with specific requirements in OAR 340-035-0035, "Noise Control Regulations for Industry and Commerce." This standard provides guidance for new noise sources on a previously used site:

> *OAR 340-035-0035(1)(b)(A) New Sources Located on Previously Used Sites. No person owning or controlling a new industrial or commercial noise source located on a previously used industrial or commercial site shall cause or permit the operation of that noise source if the statistical noise levels generated by that new source and measured at an appropriate measurement point, specified in subsection (3)(b) of this rule, exceed the levels specified in Table 8, except as otherwise provided in these rules. For noise levels generated by a wind energy facility including wind turbines of any size and any associated equipment or machinery, subparagraph (1)(b)(B)(iii) applies.*

Table X-2 gives statistical noise limits as summarized below. All limits are presented in terms of dBA. The L_{50} is the median sound level (50 percent of the measurement interval is above this level, 50 percent is below). The noise limits apply at "appropriate measurement points" on "noise sensitive property."[2] The appropriate measurement point is defined as whichever of the following is farther from the noise source:

- 25 feet toward the noise source from that point on the noise sensitive building nearest the noise source; or
- The point on the noise sensitive property line nearest the noise source.

[2] OAR 340-035-0035(3)(b)

"Noise sensitive property" is defined as "real property normally used for sleeping, or normally used as schools, churches, hospitals or public libraries. Property used in industrial or agricultural activities is not Noise Sensitive Property unless it meets the above criteria in more than an incidental manner."

Table X-2. Industrial and Commercial Noise Standards

Statistical Descriptor	Maximum Permissible Statistical Noise Levels (dBA)	
	Daytime (7:00 a.m. – 10 p.m.)	Nighttime (10 p.m. – 7 a.m.)
L_{50}	55	50
L_{10}	60	55
L_1	75	60
Source: OAR 340-035-0035, Table 8		

As stated above, OAR 340-035-0035(b)(B)(iii) specifically applies to sound generated by a wind energy facility. The increase in ambient statistical noise levels is based on an assumed background L_{50} ambient sound level of 26 dBA or the actual ambient background level. Compliance for wind energy facilities is determined based on:

> *OAR 340-035-0035(1)(b)(B)(iii) The noise levels from a wind energy facility may increase the ambient statistical noise levels L_{10} and L_{50} by more than 10 dBA (but not above the limits specified in Table 8), if the person who owns the noise sensitive property executes a legally effective easement or real covenant that benefits the property on which the wind energy facility is located. The easement or covenant must authorize the wind energy facility to increase the ambient statistical noise levels, L_{10} or L_{50} on the sensitive property by more than 10 dBA at the appropriate measurement point.*

For the purposes of assessing compliance in situations where the landowner has not waived the standard, noise levels at the appropriate measurement point are predicted assuming that all the proposed wind facility's turbines are operating between cut-in speed and the wind speed corresponding to the maximum sound power level established by International Electrotechnical Commission (IEC) 61400-11 (version 2002-12). These predictions must be compared to the highest of either the assumed ambient noise level of 26 dBA or to the actual ambient background L_{10} and L_{50} noise level, if measured. The facility complies with the noise ambient background standard if this comparison shows that the increase in noise is not more than 10 dBA over this entire range of wind speeds. Compliance assessment with the maximum permissible statistical sound levels given in Table X-2 is determined based on a similar methodology, assuming all the proposed wind facility's turbines are operating at the maximum sound power level.

2.2.1 Exemptions to State Noise Regulations

OAR 340-035-0035(5) specifically exempts construction activity from the state noise standards and regulations, as indicated below. This section also provides an exemption for maintenance of capital equipment, the operation of aircraft (such as helicopters used in Project construction), and sounds created by activities related to timber harvest.

OAR 340-035-0035(5) Exemptions:

Except as otherwise provided in subparagraph (1)(b)(B)(ii) of this rule, the rules in section (1) of this rule shall not apply to:

[section abridged for brevity]

(b) Warning devices not operating continuously for more than 5 minutes;

(g) Sounds that originate on construction sites.

(h) Sounds created in construction or maintenance of capital equipment;

(j) Sounds generated by the operation of aircraft and subject to pre-emptive federal regulation. This exception does not apply to aircraft engine testing, activity conducted at the airport that is not directly related to flight operations, and any other activity not pre-emptively regulated by the federal government or controlled under OAR 340-035-0045;

(k) Sounds created by the operation of road vehicle auxiliary equipment complying with the noise rules for such equipment as specified in OAR 340-035-0030(1)(e);

(m) Sounds created by activities related to the growing or harvesting of forest tree species on forest land as defined in subsection (1) of ORS 526.324.

2.2.2 Exceptions to State Noise Regulations

OAR 340-035-0035(6) allows for some exceptions to the state noise regulations. OAR 340-035-0035 (6)(d) applies to parties that have agreed to sign a waiver to allow for an exception of the noise regulations.

OAR 340-035-0035 (6) Exceptions:

Upon written request from the owner or controller of an industrial or commercial noise source, the Department may authorize exceptions to section (1) of this rule, pursuant to rule 340-035-0010, for:

(a) Unusual and/or infrequent events;

(b) Industrial or commercial facilities previously established in areas of new development of noise sensitive property;

(c) Those industrial or commercial noise sources whose statistical noise levels at the appropriate measurement point are exceeded by any noise source external to the industrial or commercial noise source in question;

(d) Noise sensitive property owned or controlled by the person who controls or owns the noise source;

(e) Noise sensitive property located on land zoned exclusively for industrial or commercial use.

2.3 County and Municipal Noise Regulations

The Project is located within Umatilla County in Oregon. Within the Umatilla County Development Code, which was revised on April 13, 2016, there is guidance provided for conditional uses and land use decisions pertaining to commercial wind power generation facilities (§152.616 (HHH)). Within that section, the following direction is given regarding noise:

> *The turbine/towers shall be of a size and design to help reduce noise or other detrimental effects. At a minimum, the Wind Power Generation Facility shall be designed and operated within the limits of noise standard(s) established by the State of Oregon. A credible noise study may be required to verify that noise impacts in all wind directions are in compliance with the State noise standard.*

Therefore, for the purposes of assessing Project compliance, the ODEQ noise regulations will be used.

3.0 Existing Conditions

A wide range of noise settings occur within the Project area. Variations in an acoustic environment are due in part to existing land uses, population density, and proximity to transportation corridors. The principal development area for the Project is within Umatilla County, Oregon, near the town of Nolin. Land surrounding the Project is primarily used for agricultural purposes, in particular dryland wheat and cattle grazing. The ambient acoustic environment would be typically that of a typical quiet rural area. There are no major throughways, urban communities, or existing industrial noise sources located close to the proposed Project site other than adjacent existing wind farms.

4.0 Predicted Noise Levels – OAR 345-021-0010(1)(x)(A)

OAR 345-021-0010(1)(x) Information about noise generated by construction and operation of the proposed facility, providing evidence to support a finding by the Council that the proposed facility complies with the Oregon Department of Environmental Quality's noise control standards in OAR 340-035-0035. The applicant must include:

OAR 345-021-0010(1)(x)(A) Predicted noise levels resulting from construction and operation of the proposed facility;

As permitted under the ODEQ, an assumed background level of 26 dBA was used as the baseline to represent the existing ambient acoustic environment.

4.1 Construction Noise Assessment

Potential noise impacts associated with Project construction were reviewed; however, according to OAR 340-035-0035(5)(g), sound originating from construction sites is exempt from state noise regulations.

Construction of the Project will require the use of heavy construction equipment that may be periodically audible at off-site noise sensitive receptors (NSRs). Construction of the Project may cause short-term increases in the ambient sound levels. Work is estimated to begin in 2021, and the start of commercial operation is targeted for late 2022. However, given that construction could conceivably be delayed by weather or other unforeseen circumstances such as market changes, the Applicant would like the flexibility to build the Project over a longer period of time, and requests a deadline for construction completion of 3 years later than the deadline for beginning construction, or 6 years from issuance of the site certificate. The list of construction equipment that may be used on the Project and estimates of construction sound levels are presented in Table X-3 at a reference distance of 50 feet and far field distance of 2,000 feet.

Table X-3. Estimated L_{max} Sound Pressure Levels from Construction Equipment

Equipment	L_{max} Sound Pressure Level at 50 feet (dBA)	Estimated Sound Pressure Level at 2,000 feet (dBA)
Crane	85	53
Forklift	80	48
Backhoe	80	48
Grader	85	53
Man basket	85	53
Dozer	83-88	51-56
Loader	83-88	51-56
Scissor Lift	85	53
Truck	85	52
Welder	73	41
Compressor	80	48
Concrete Pump	77	45
Note: Data compiled in part from the following sources: FHWA 2006; Bolt Beranek and Newman, Inc. 1977.		

The construction of the Project may cause short-term but unavoidable noise impacts. The sound levels resulting from construction activities vary significantly depending on several factors such as the type and age of equipment, the specific equipment manufacturer and model, the operations being performed, and the overall condition of the equipment and exhaust system mufflers.

All reasonable efforts will be made to minimize the impact of noise resulting from construction activities. As the design of the Project progresses and construction scheduling is finalized, the construction engineer normally notifies the community via public notice or alternative method of the expected Project construction commencement and duration to help minimize the effects of construction noise. In addition, the location of stationary equipment and the siting of construction laydown areas will be carefully selected to be as far removed from existing NSRs as is practical. Candidate construction noise mitigation measures include scheduling louder construction activities during daytime hours and equipping internal combustion engines with appropriately sized muffler systems to minimize noise excessive emissions.

4.2 Operational Noise Assessment

Sound generated during Project operation will include that associated with wind turbines, transmission lines, and substation operation.

4.2.1 Wind Turbines

Sound generated by an operating wind turbine comprises both aerodynamic and mechanical sound, with the dominant sound component from modern utility-scale wind turbines being largely aerodynamic. Aerodynamic sound refers to the sound produced from air flow and the interaction with the wind turbine tower structure and moving rotor blades. Mechanical sound is generated at the gearbox, generator, and cooling fan, and is radiated from the surfaces of the nacelle and machinery enclosure and by openings in the nacelle casing. Due to the improved design of wind turbine mechanical components and the use of improved noise damping materials within the nacelle, including elastomeric elements supporting the generator and gearbox, mechanical noise emissions have been minimized. Sound reduction elements designed as a part of the wind turbines include impact noise insulation of the gearbox and generator, sound reduced gearbox, sound reduced nacelle, and rotor blades designed to minimize noise generation.

Wind energy facilities, in comparison to other energy-related facilities, are unique in that the sound generated by each individual wind turbine will increase as the wind speed across the site increases. Wind turbine sound is negligible when the rotor is at rest, increases as the rotor tip speed increases, and is generally constant once rated power output and maximum rotational speed are achieved. Under this condition, the wind turbine maximum sound power level will be reached at approximately 15.7 to 20.1 miles per hour (7 to 9 meters per second) according to the wind turbine manufacturer specifications. It is important to recognize that, as wind speeds increase, the background ambient sound level will generally increase as well, resulting in acoustic masking effects; however, this trend is also affected by local contributing sound sources. As such, during periods of elevated wind speeds when higher wind turbine sound emissions occur, the sound produced from a wind turbine operating at maximum rotational speed may be largely or fully masked due to wind generated sound in foliage or vegetation. In practical terms, this means a nearby receptor would tend to hear leaves or vegetation rustling rather than wind turbine noise. This relationship is expected to further minimize the potential for any adverse noise effects of the

Project. Conversely, these acoustic masking effects may be limited during periods of unusually high wind shear or at receiver locations that are sheltered from the prevailing wind direction.

4.2.2 Transmission Lines

Transmission line sound sources will primarily consist of corona noise in addition to Aeolian noise, and noise associated with maintenance activities. Transmission line noise (also called corona noise) is caused by the partial electrical breakdown of the insulating properties of air around the electrical conductors and overhead power lines. Audible noise generated by corona on transmission lines is composed of two major components. The higher frequencies of the broadband component distinguish it from more common outdoor environmental noise. The random phase relationship of the pressure waves generated by each corona source along a transmission line results in a characteristic sound commonly described as crackling, frying, or hissing. The second component is a lower-frequency sound that is superimposed over the broadband noise. The corona discharges produce positive and negative ions that, under the influence of the alternating electric field around alternating current conductors, are alternately attracted to and repelled from the conductors. This motion establishes a sound-pressure wave having a frequency twice that of the voltage; i.e., 120 Hz for a 60-Hz system. Higher harmonics (e.g., 240 Hz) may also be present, but they are generally of lower significance (Electric Power Research Institute [EPRI] 2005). Corona activity increases with increasing altitude, and with increasing voltage in the line, but is generally not affected by system loading. The relative magnitude of hum and broadband noise may be different depending on weather conditions at the line. According to EPRI, when the line is wet (such as during rainy weather conditions), the broadband component typically dominates; however, under icing conditions, the lower frequency components may be more prevalent.

Corona noise levels during precipitation may vary over a wide range. During the initial stages, when the conductors are not thoroughly wet, there may be considerable fluctuation in the noise level as the precipitation intensity varies. When the conductors are thoroughly wet, the noise fluctuations will often be less significant, because even as the intensity of precipitation diminishes the conductors will still be saturated, which can result in corona discharge. The variation in noise levels during rain depends greatly on the condition of the conductor surface and on the voltage gradient at which the conductors are operating. At high operating gradients, the audible noise is less sensitive to rain rate than at low gradients. Consequently, the variation in noise levels is less for the higher gradients. In different weather conditions the relative magnitudes of random noise and hum may be different. Noise levels in fog and snow usually do not attain the same magnitude as compared to rain, and elevated noise levels during fog and snow are usually for a shorter duration in proportion to the event (EPRI 1982).

During fair weather conditions, corona occurs only at scratches or other imperfections in the conductor surface or where dust has settled on the line. These limited sources are such that the corona activity is minimal, and the audible noise generated is very low. Generally, the fair-weather audible noise of transmission lines cannot be distinguished from ambient noise at the edge of the right-of-way (ROW).

Corona noise is not generally an issue at substations. The presence of equipment such as circuit breakers, switches, and measuring devices reduces the electromagnetic field gradient on the buses to a great extent. In addition, the distance from most of the buses to the perimeter of the substation is considerable (on average, greater than 100 meters). Consequently, low levels of corona noise would likely not be readily detectable immediately outside the substation fence line (EPRI 1982).

In addition to corona noise, wind blowing across power lines and power poles can generate noise when airflow is non-laminar or turbulent. Aeolian, or wind, noise is produced when a steady flow of wind interacts with a solid object, such as a tower. The interaction produces oscillating forces on the object that in turn can radiate sound as a dipole source at a given frequency.

The occurrence of Aeolian noise is dependent on several factors and is difficult to predict. Wind noise from a stationary source requires perfect conditions: to produce any sound, the wind must blow for enough time in a specific direction at a specific speed; a slight deviation in either the direction or intensity would disrupt the conditions necessary to produce noise. Wind can create a variety of sounds, ranging from a low hum to a snapping sound to a high whistle. Aeolian noise is not considered a significant contributor to noise disturbance, and has not been considered further in the acoustic analysis.

4.2.3 Substations

The primary ongoing noise sources at substations are the transformers, which generate sound generally described as a low humming. There are three main sound sources associated with a transformer: core noise, load noise, and noise generated by the operation of the cooling equipment. The core vibrational noise is the principal noise source and does not vary significantly with electrical load.

Transformer noise varies with transformer dimensions, voltage rating, and design, and attenuates with distance. The noise produced by substation transformers is primarily caused by the load current in the transformer's conducting coils (or windings) and consequently the main frequency of this sound is twice the supply frequency (60 Hz). The characteristic humming sound consists of tonal components generated at harmonics of 120 Hz. Most of the acoustical energy resides in the fundamental tone (120 Hz) and the first three or four harmonics (240, 360, 480, and 600 Hz).

Circuit-breaker operations may also cause audible noise, particularly the operation of air-blast breakers, which is characterized as an impulsive sound event of very short duration, and expected to occur no more than a few times throughout the year. Because of its short duration and infrequent occurrence, circuit breaker noise was not considered in this analysis.

4.2.4 Acoustic Modeling Software and Calculation Methods

Two programs were used for the Project acoustic analysis, DataKustik GmbH's computer-aided noise abatement program (CadnaA) and the Corona and Field Effects Program Version 3 (Corona 3). Further details pertaining to these two programs are given in the following subsections.

4.2.4.1 CadnaA

The acoustic modeling analysis was conducted using the most recent version of CadnaA (v 2018 MR1). CadnaA is a comprehensive three-dimensional acoustic software model that conforms to the International Organization for Standardization (ISO) standard ISO 9613-2 "Attenuation of Sound during Propagation Outdoors." The engineering methods specified in this standard consist of full (1/1) octave band algorithms that incorporate geometric spreading due to wave divergence, reflection from surfaces, atmospheric absorption, screening by topography and obstacles, ground effects, source directivity, heights of both sources and receptors, seasonal foliage effects, and meteorological conditions. Topographical information was imported into the acoustic model using the official United States Geological Survey digital elevation dataset to accurately represent terrain in three dimensions. Terrain conditions, vegetation type, ground cover, and the density and height of foliage can also influence the absorption that takes place when sound waves travel over land. The ISO 9613-2 standard accounts for ground absorption rates by assigning a numerical coefficient of G=0 for acoustically hard, reflective surfaces and G=1 for absorptive surfaces and soft ground. If the ground is hard-packed dirt, typically found in industrial complexes, pavement, bare rock or for sound traveling over water, the absorption coefficient is defined as G=0 to account for reduced sound attenuation and higher reflectivity. In contrast, ground covered in vegetation, including suburban lawns, livestock and agricultural fields (both fallow with bare soil and planted with crops), will be acoustically absorptive and aid in sound attenuation (i.e., G=1.0). A mixed (semi-reflective) ground factor of G=0.5 was used in the Project acoustic modeling analysis. In addition to geometrical divergence, attenuation factors include topographical features, terrain coverage, and/or other natural or anthropogenic obstacles that can affect sound attenuation and result in acoustical screening. To be conservative, sound attenuation through foliage and diffraction around and over existing anthropogenic structures such as buildings was not included in this modeling analysis.

Sound attenuation by the atmosphere is not strongly dependent on temperature and humidity; however, the temperature of 10 degrees Celsius (50 degrees Fahrenheit) and 70 percent relative humidity parameters were selected for this analysis. Over short distances, the effects of atmospheric absorption are minimal. The ISO 9613-2 standard calculates attenuation for meteorological conditions favorable to propagation, i.e., downwind sound propagation or what might occur typically during a moderate atmospheric ground level inversion. Though a physical impracticality, the ISO 9613-2 standard simulates omnidirectional downwind propagation. For receivers located between discrete wind turbine locations or wind turbine groupings, the acoustic model may result in over-prediction. In addition, the acoustic modeling algorithms essentially assume laminar atmospheric conditions, in which neighboring layers of air do not mix. This conservative assumption does not take into consideration turbulent eddies and micrometeorological inhomogeneities that may form when winds change speed or direction, which can interfere with the sound wave propagation path and increase attenuation effects.

4.2.4.2 Corona and Field Effects Program

Transmission line corona sound levels were evaluated using Corona 3, a DOS-based computer model developed by the BPA (1991). The Corona 3 program uses the algorithms developed by BPA to predict a variety of outputs including electric and magnetic fields and audible noise. The inputs to the Corona 3 model are line voltage, load flow (current), and the physical dimensions of the line (number of phases, conductor diameter, spacing, height, and subconductor configuration) and site elevation.

The BPA method of calculating audible noise from transmission lines is based on long-term statistical data collected from operating and test transmission lines. This method calculates the L_{50} noise level during rainy conditions of 1 millimeter per hour. Long-term measurements show that L_{50} audible noise levels occur at this rain rate. Results during fair weather conditions are also evaluated. Additional details regarding the Corona 3 program are provided in Exhibit AA.

4.2.5 Acoustic Modeling Input Parameters

The operational acoustic assessment was performed for two separate wind turbine layouts corresponding with two wind turbine models (SG 6.0-170 [58 turbines] and GE 3.03-140 [116 turbines]) using sound specification information from each turbine manufacturer.

To assist project developers and acoustical engineers, wind turbine manufacturers report wind turbine sound power data at integer wind speeds referenced to the effective hub height, ranging from cut-in to full-rated power per International Electrotechnical Commission (IEC) standard (IEC 61400-11:2006 Wind Turbine Generator Systems – Part 11: Acoustic Noise Measurement Techniques). This accepted IEC standard was developed to ensure consistent and comparable sound emission data of utility-scale wind turbines between manufacturers. Table X-4 presents a summary of sound power data correlated to wind speeds 32.8 feet (10 meters) above ground level (AGL) using a roughness length coefficient of 0.2 feet (0.05 meter). The roughness length describes the vertical wind profile per IEC specification in a neutral atmosphere with the wind profile following a logarithmic curve.

Table X-4. Broadband Sound Power Levels (dBA) Correlated with Wind Speed

Turbine	Wind Turbine L_{max} Sound Power Level (L_W) at Reference Wind Speed (meters per second / miles per hour)									
	3/6.7	4/8.9	5/11.2	6/13.4	7/15.7	8/17.9	9/20.1	10/22.4	11/24.6	12/26.8
SG 6.0-170	92.0	92.0	94.5	98.4	101.8	104.7	105.5	105.5	105.5	105.5
GE 3.0-140	-	95.4	96.1	100.0	103.3	106.2	108.0	108.0	108.0	108.0

Wind turbines can be somewhat directional, radiating more sound in some directions than others. The IEC test measurement protocol requires that sound measurements are made for the maximum downwind directional location when reporting apparent sound power levels. Thus, it is assumed

that wind turbine directivity and sound generating efficiencies are inherently incorporated in the sound source data and used in acoustic model development. The specification for the wind turbines includes an expected warranty confidence interval, or k-factor, which was added to the nominal sound power level in the acoustic model. A confidence interval of k = 2 dBA was applied to account for the uncertainty in independent sound power level measurements conducted, the applied probability level and standard deviation for test measurement reproducibility, and product variability. A summary of sound power data by octave band center frequency for wind turbines operating at maximum rotation is presented in Table X-5 (1/1 octave band frequency data provided with stated intended use limited for informational purposes only).

Table X-5. Sound Power Level by Octave Band Center Frequency

Turbine	Octave Band Sound Power Level (dBA) by Frequency (Hz)								Broadband (dBA)
	63	125	250	500	1000	2000	4000	8000	
SG 6.0-170	87.0	93.8	96.0	97	100.2	99.9	95.4	83.6	105.5
GE 3.0-140	82.8	87.5	93.3	98.4	98.6	95.1	86.0	63.5	108.0

In addition to the Project wind turbines, the on-site collection substations were also incorporated into the acoustic modeling analysis. The transformers at the Project substations were modeled using the latest version of CadnaA implementing ISO 9613-2. Transformer sound source levels for the Nolin Hills substations were derived based on transformers used at a similarly specified wind energy facility, with transformers rated at 222 megavolt amperes. Table X-6 presents the transformer sound source data by octave band center frequency calculated based on the estimated transformer National Electrical Manufacturers Association rating using standardized engineering guidelines.

Table X-6. Transformer Sound Power Level

Equipment	Octave Band Sound Power Level (dB) by Frequency (Hz)									Broadband (dBA)
	31.5	63	125	250	500	1000	2000	4000	8000	
Transformer	102	108	110	105	105	99	94	89	82	105

Audible noise levels associated with the transmission line is dependent upon the configuration of the transmission line. Section 2.1.2.2 of Exhibit A provides the modeling assumptions used as inputs to Corona 3.

Figure X-1 displays the Corona 3 audible noise modeling results for the Project transmission line in both fair and foul weather conditions. The transmission line is modeled in the center of a 100-foot ROW. The ROW will be a minimum of 100 feet wide pending completion of detailed design. The plot shows that during foul weather conditions, when more corona is generated, received sound levels attenuate to approximately 40 to 41 dBA at the edge of the ROW.

5.0 Assessment of Compliance with Applicable Noise Regulations – OAR 345-021-0010(1)(x)(B)

OAR 345-021-0010(1)(x)(B) An analysis of the proposed facility's compliance with the applicable noise regulations in OAR 340-035-0035, including a discussion and justification of the methods and assumptions used in the analysis;

Construction activities are categorically exempted under OAR 340-35-0035(5)(g). Construction noise is short term and not expected to result in any significant long-term impacts at any NSRs.

Acoustic modeling was completed for wind turbine operation at maximum wind speeds. In addition, sound energy contribution from the Project Substation was included in the acoustic modeling analysis. When calculating received sound levels, it was assumed that the Project Substation and all wind turbines were operating concurrently and continuously at the maximum rated sound power level identified by manufacturers. Sound contour plots displaying modeled Project operational sound levels in color-coded isopleths are provided on Figures X-2 and X-3. Figure X-2 shows received sound levels resulting from the Project incorporating the SG 6.0-170 wind turbine, operating at maximum rotational wind speed. Figure X-3 shows received sound levels resulting from the Project incorporating the GE 3.03-140 wind turbine, operating at maximum rotational wind speed. The resultant noise contour plots are independent of the existing acoustic environment, i.e., are Project-generated sound levels only. Values presented in the contour isopleths and table are downwind of the wind turbines; lower sound levels would occur in other directions.

Table X-7 presents the results of the Project acoustic modeling analysis and includes the ID, Universal Transverse Mercator (UTM) coordinates, and the received sound levels at each NSR resulting from wind turbine operation, transmission line operation, and cumulative sound levels of wind turbines and the transmission line operating simultaneously. Received sound levels are rounded to the nearest whole decimal for consistency with the ODEQ noise regulations.

Modeling results indicate compliance with the ODEQ 50 dBA L_{50} limit at all NSRs for both the SG 6.0-170 and GE 3.03-140 turbine configurations with and without the Project transmission line; however, both the SG 6.0-170 and GE 3.03-140 turbine configurations result in exceedances of the OAR 340-035-0035(B)(iii)(III) 10 dBA ambient degradation standard.

Acoustic analysis of the SG 6.0-170 Project wind turbines at maximum rotation results in one potential exceedance of the OAR ambient degradation standard (NSR ID 1046). However, when incorporating the effects of the Project transmission line, there is one additional exceedance of the OAR ambient degradation standard identified at NSR ID 3. Figure X-4 displays this NSR relative to the Project transmission line and micrositing corridor.

Table X-7. Acoustic Modeling Results Summary, Wind Turbine Maximum Rotation Wind Speed and Transmission Line Operation

ID	Classification	UTM Coordinates (meters)		UTM Coordinates (feet)		Transmission Line Sound Level (dBA)	Received Sound Levels							
							SG 6.0-170				GE 3.03-140			
		Easting	Northing	Easting	Northing		Turbine Sound Level	Increase Relative to Ambient	Turbine and Transmission Line Sound Level	Incremental Increase	Turbine Sound Level	Increase Relative to Ambient	Turbine and Transmission Line Sound Level	Incremental Increase
1001	Residence	338571	5059597	1110512	16595477	<1	11	0	11	0	24	2	24	2
1002	Residence	324940	5060314	1065804	16597829	<1	11	0	11	0	24	2	24	2
1009	Residence	339924	5059572	1114950	16595397	<1	10	0	10	0	22	1	22	1
3	Residence	324904	5063550	1065685	16608445	37	<1	0	37	12	<1	0	37	12
1010	Residence	342161	5060954	1122287	16599930	<1	10	0	10	0	21	1	21	1
1012	Residence	320095	5064677	1049911	16612139	<1	10	0	10	0	19	1	19	1
1013	Residence	341444	5060273	1119936	16597695	<1	11	0	11	0	19	1	19	1
1014	Residence	318977	5064622	1046244	16611960	<1	12	0	12	0	25	2	25	2
1015	Residence	318545	5064710	1044828	16612248	<1	10	0	10	0	26	3	26	3
1020	Residence	343032	5060211	1125145	16597491	<1	12	0	12	0	21	1	21	1
10	Residence	318570	5064782	1044908	16612486	5	<1	0	5	0	<1	0	5	0
1022	Residence	342747	5059934	1124209	16596582	<1	23	2	23	2	29	5	29	5
1025	Residence	316657	5065006	1038634	16613219	<1	9	0	9	0	23	2	23	2
15	Residence	340128	5059527	1115619	16595250	12	<1	0	12	0	<1	0	12	0
1026	Residence	316893	5065604	1039407	16615182	<1	9	0	9	0	24	2	24	2
1027	Residence	339368	5060284	1113127	16597732	<1	8	0	8	0	24	2	24	2
1028	Residence	318096	5068999	1043356	16626317	<1	9	0	9	0	23	2	23	2
1029	Residence	343264	5059226	1125904	16594262	<1	5	0	5	0	23	2	23	2
1030	Residence	318149	5069108	1043529	16626673	<1	28	4	28	4	28	4	28	4
1031	Residence	345205	5049866	1132273	16563560	<1	2	0	2	0	22	2	22	2
1038	Residence	318240	5069137	1043826	16626769	<1	1	0	1	0	21	1	21	1
1042	Residence	341230	5052382	1119235	16571812	<1	7	0	7	0	24	2	24	2
1043	Residence	318154	5069566	1043546	16628175	<1	7	0	7	0	25	2	25	2
1046	Residence	336381	5060899	1103331	16599747	<1	39	14	39	14	40	14	40	14
1051	Residence	318166	5070311	1043586	16630619	<1	9	0	9	0	23	2	23	2
1052	Residence	336466	5060843	1103608	16599564	<1	8	0	8	0	24	2	24	2
1053	Residence	318169	5070288	1043594	16630545	<1	11	0	11	0	24	2	24	2
1054	Residence	336057	5061633	1102267	16602155	<1	12	0	12	0	25	2	25	2
1057	Residence	318129	5070276	1043463	16630504	<1	11	0	11	0	24	2	24	2
1061	Residence	336315	5061099	1103112	16600404	<1	10	0	10	0	19	1	19	1
1064	Residence	318146	5070361	1043518	16630783	<1	9	0	9	0	23	2	23	2
1066	Residence	335032	5061747	1098906	16602529	<1	10	0	10	0	25	3	25	3
47	Residence	318153	5070370	1043543	16630813	12	<1	0	12	0	<1	0	12	0
54	Residence	340729	5042810	1117593	16540417	13	<1	0	13	0	<1	0	13	0
59	Residence	318104	5070295	1043380	16630568	24	<1	0	24	2	<1	0	24	2

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ID	Classification	UTM Coordinates (meters)		UTM Coordinates (feet)		Transmission Line Sound Level (dBA)	Received Sound Levels							
							SG 6.0-170				GE 3.03-140			
		Easting	Northing	Easting	Northing		Turbine Sound Level	Increase Relative to Ambient	Turbine and Transmission Line Sound Level	Incremental Increase	Turbine Sound Level	Increase Relative to Ambient	Turbine and Transmission Line Sound Level	Incremental Increase
61	Residence	332934	5063799	1092024	16609260	26	<1	0	26	3	<1	0	26	3
71	Residence	318101	5070286	1043372	16630537	19	<1	0	19	1	<1	0	19	1
79	Residence	332948	5063565	1092069	16608492	16	<1	0	16	0	<1	0	16	0
89	Residence	318146	5070261	1043520	16630458	12	<1	0	12	0	<1	0	12	0
85	Residence	318031	5070296	1043141	16630572	18	<1	0	18	1	<1	0	18	1

1. A project participant is a party that has signed a lease or waiver allowing for an exception to the Oregon noise regulations.

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Acoustic analysis of the GE 3.03-140 Project site layout results in the same exceedances of the OAR ambient degradation standard. When analyzing the contribution of the wind turbines alone, there is only one exceedance at NSR ID 1046. However, when incorporating the effects of the Project transmission line, there is one additional exceedance of the OAR ambient degradation standard identified at NSR ID 3.

The Applicant will resolve both potential exceedances of the OAR ambient degradation standard. The Applicant is currently exploring a noise waiver agreement with the landowner associated with NSR ID 1046. If a waiver cannot be obtained, further noise mitigation will be implemented to eliminate the exceedance condition at NSR ID 1046. The Applicant is also further micrositing the Project transmission line, which will eliminate the predicted exceedance at NSR ID 3. By micrositing the transmission line to be located at least 130 feet from NSR ID 3, this location will be in compliance with the applicable noise regulations.

5.1 Conclusions

The results of the acoustic analyses of both Project wind turbine layouts under review indicate that there is likely one predicted exceedance of the OAR 10 dBA ambient degradation standard . The site layouts for both the SG 6.0-170 and GE 3.03-140 turbines indicate an exceedance of the standard at NSR ID 1046. As mentioned above, the Applicant is currently exploring a noise waiver agreement with the landowner associated with receptor ID 1046. If a waiver cannot be obtained, further noise mitigation will be implemented to eliminate the exceedance condition at receptor ID 1046.

When accounting for the sound contribution of the Project transmission line, there was one additional exceedance of the OAR ambient degradation standard identified at NSR ID 3. The Applicant is further micrositing the Project transmission line, which will eliminate the predicted exceedance at NSR ID 3. By shifting the transmission line within the micrositing corridor to be located at least 130 feet from the residence, NSR ID 3 will successfully demonstrate compliance with the applicable noise regulations.

6.0 Measures to Reduce Noise Levels or Impacts to Address Public Complaints – OAR 345-021-0010(1)(x)(C)

> *OAR 345-021-0010(1)(x)(C) Any measures the applicant proposes to reduce noise levels or noise impacts or to address public complaints about noise from the facility;*

Construction noise is exempt from OAR regulations. Thus, no construction noise mitigation is planned beyond restricting noisy construction activities to daytime periods.

Because the Applicant can comply with the Table 8 limits and can comply with the ambient degradation standard using waivers or consents or using engineering controls, no further mitigation measures are required for Project operations.

7.0 Monitoring – OAR 345-021-0010(1)(x)(D)

OAR 345-021-0010(1)(x)(D) Any measures the applicant proposes to monitor noise generated by operation of the facility;

No significant noise impacts have been identified; therefore, an operational monitoring program is not being proposed at this time. At the written request of state and local authorities as may be made in response to reoccurring noise complaints, an operational noise survey will be completed to determine compliance with ODEQ regulations within 120 days of receipt by the Project. However, the Project is not expected to result in a noise nuisance condition, and the vast majority of people in nearby NSRs with sound levels shown to below the stringent regulatory limits are expected to regard Project operational sound as generally acceptable, as defined per the ODEQ noise standards contained in OAR-340-35-035.

8.0 Owners of Noise Sensitive Property – OAR 345-021-0010(1)(x)(E)

OAR 345-021-0010(1)(x)(E) A list of the names and addresses of all owners of noise sensitive property, as defined in OAR 340-035-0015, within one mile of the proposed site boundary.

Attachment X-1 has a list of the names and addresses of all owners of noise sensitive property within one mile from the Project Site Boundary, as defined in OAR 340-035-0015.

9.0 Conclusion

For the reasons set forth in this exhibit, the Council may find that the Project, taking into account mitigation, can be constructed and operated to be in compliance with Oar 340-035-0035.

10.0 References

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Figures

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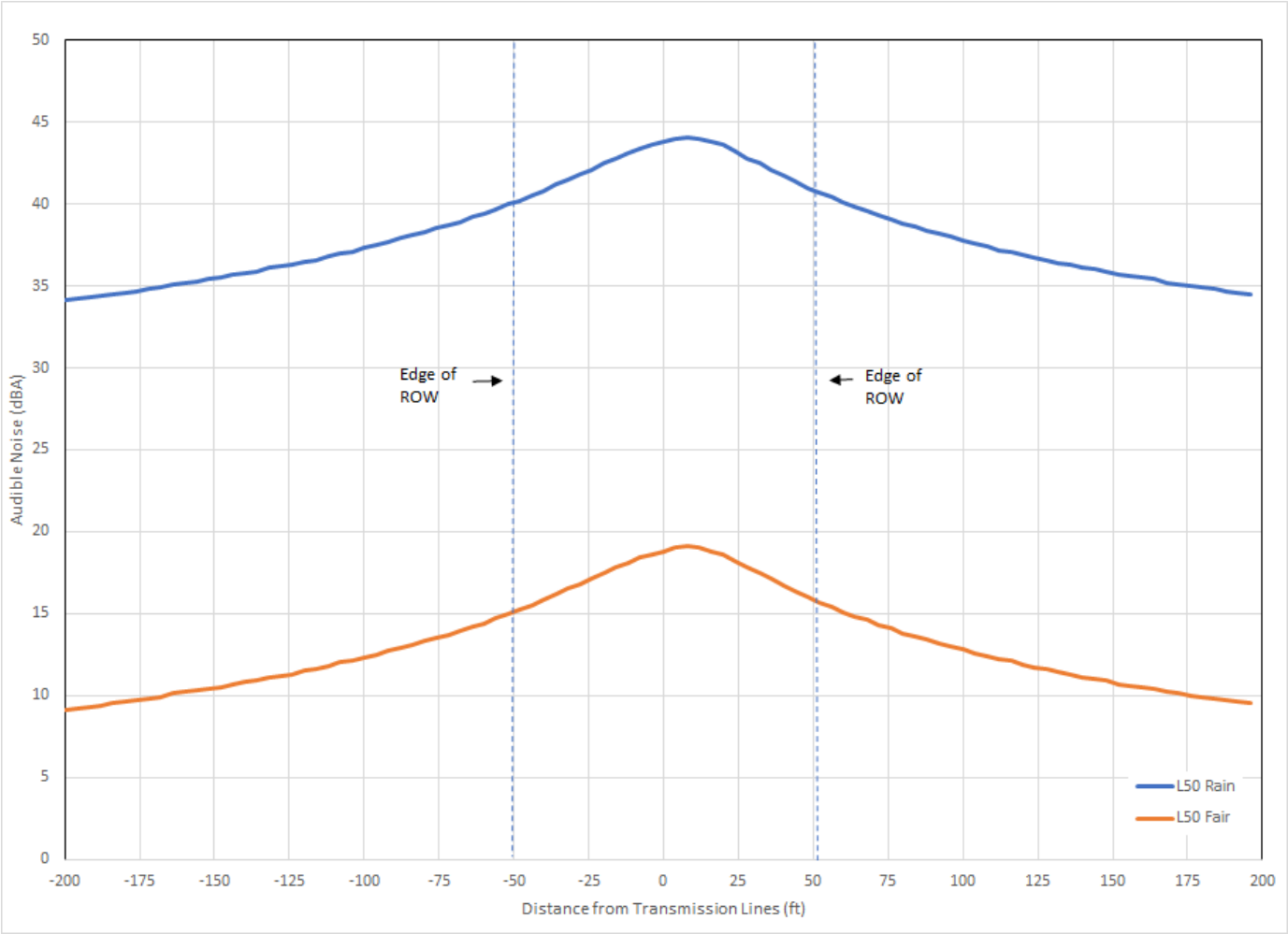


Nolin Hills Wind Power Project

Figure X-1

Transmission Line Audible Noise During Fair and Rainy Conditions

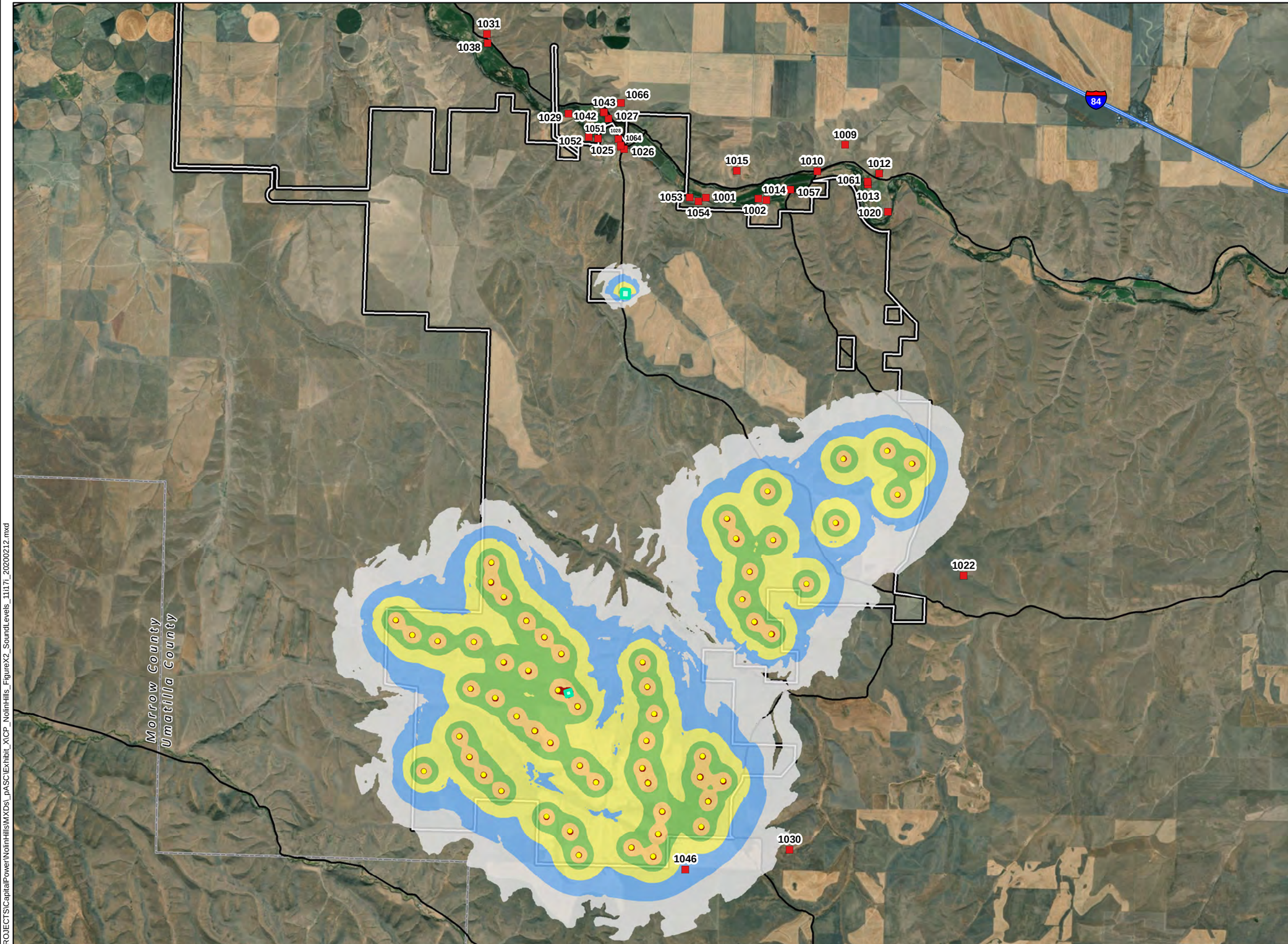
UMATILLA COUNTY, OREGON

TETRA TECH

Nolin Hills Wind Power Project

Figure X-2
Received Sound Levels, SG 6.0-170 Wind Turbine Operation at Maximum Rotational Wind Speed

UMATILLA COUNTY, OREGON



Proposed Site Boundary
Proposed Turbine
Proposed Substation
Noise Sensitive Receptors
Interstate Highway
Secondary Road
County Boundary

Sound Level Contour Ranges (dBA)
- 31 - 36 dBA
- 36 - 41 dBA
- 41 - 46 dBA
- 46 - 51 dbA
- 51 - 56 dBA
- > 56 dBA

TETRA TECH

Capital Power
RESPONSIBLE ENERGY FOR TOMORROW

Data Sources

Capital Power-Project Infrastructure; USDA-Aerial Imagery; ESRI-Roads

Reference Map

1:95,000 WGS 1984 UTM Zone 11N

0 0.5 1 2 3 4 Miles

NOT FOR CONSTRUCTION

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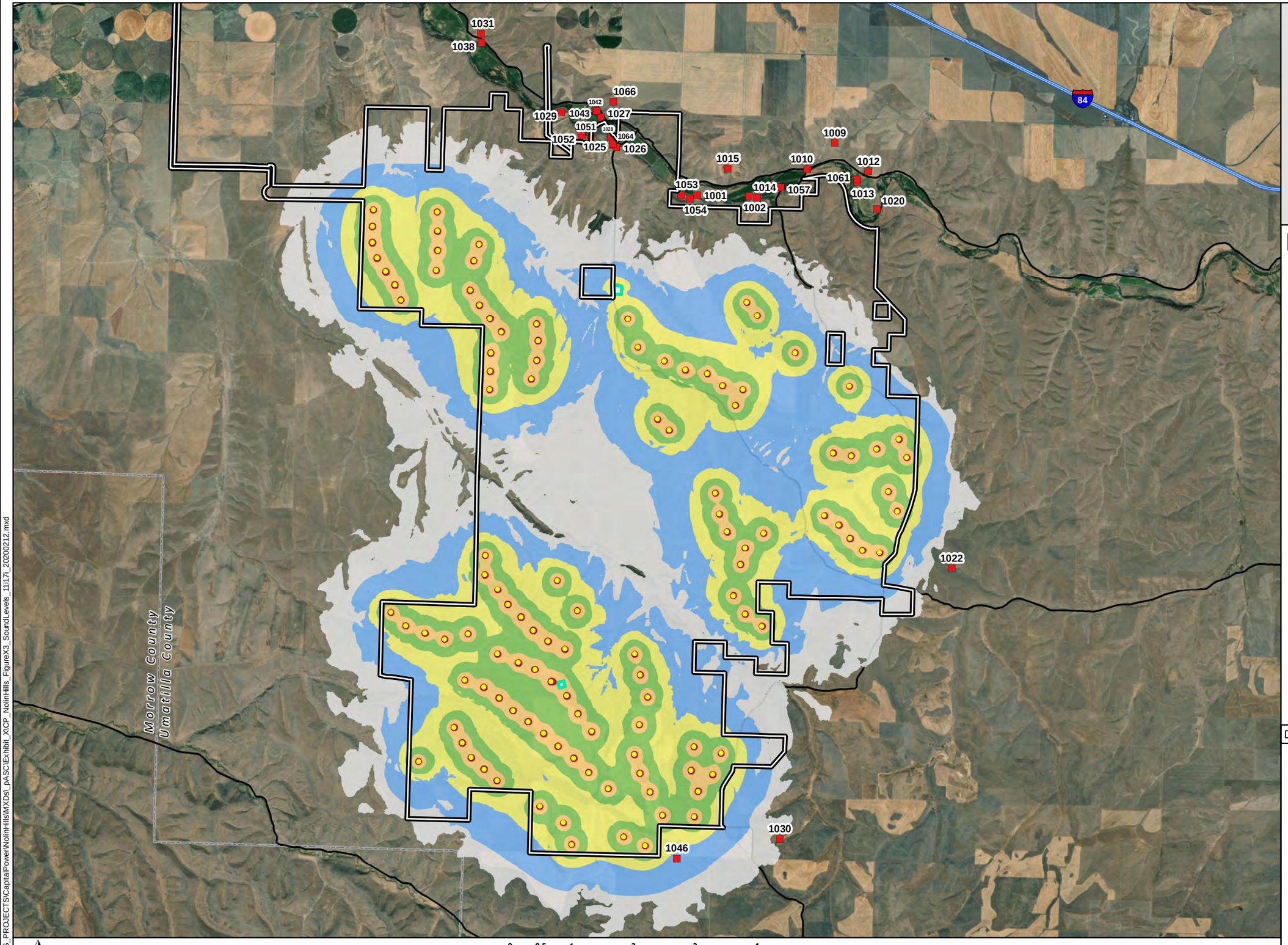
Nolin Hills Wind Power Project

Figure X-3
Received Sound Levels, GE 3.03-140 Wind Turbine Operation at Maximum Rotational Wind Speed

UMATILLA COUNTY, OREGON



- Proposed Site Boundary
- Proposed Turbine
- Proposed Substation
- Noise Sensitive Receptors
- Interstate Highway
- Secondary Road
- County Boundary

Sound Level Contour Ranges (dBA)

- 31 - 36 dBA
- 36 - 41 dBA
- 41 - 46 dBA
- 46 - 51 dbA
- 51 - 56 dBA
- > 56 dBA

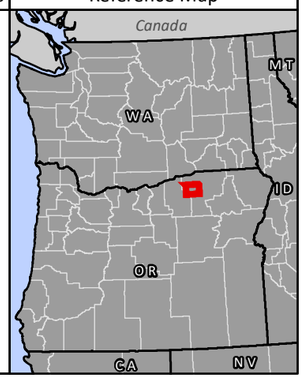
TETRA TECH

Capital Power
RESPONSIBLE ENERGY FOR TOMORROW

Data Sources

Capital Power-Project Infrastructure; USDA-Aerial Imagery; ESRI-Roads

Reference Map



1:95,000 WGS 1984 UTM Zone 11N

0 0.5 1 2 3 4 Miles

NOT FOR CONSTRUCTION

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Nolin Hills Wind Power Project

Figure X-4
Close-up of NSR ID 3

UMATILLA COUNTY, OREGON

- Proposed Site Boundary
- Proposed BPA Stanfield Transmission Line Route, 230-kV
- Proposed UEC Transmission Line Route, 230-kV
- Proposed Substation
- Noise Sensitive Receptors
- City/Town
- Interstate Highway
- Secondary Highway
- Secondary Road
- County Boundary

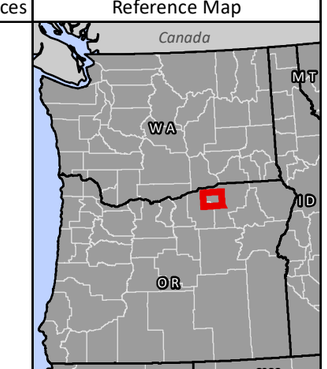
TETRA TECH

Capital Power
RESPONSIBLE ENERGY FOR TOMORROW

Data Sources

Capital Power-Project Infrastructure; USDA-Aerial Imagery; ESRI-Roads

Reference Map



1:135,000 WGS 1984 UTM Zone 11N

0 0.5 1 2 3 4 Miles

NOT FOR CONSTRUCTION

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Attachment X-1. List of Noise Sensitive Property Owners within One Mile of the Site Boundary

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List of Noise Sensitive Property Owners within One Mile of the Site Boundary

Receptor ID	Owner Name	Address	City	State	Zip Code	UTM_X	UTM_Y
Residences evaluated							
3	WESTLAND ENTERPRISES LLC	822 S HIGHWAY 395 #PMB 423	HERMISTON	OR	N/A	320094.7914	5064676.594
10	PRIOR CHESTER J	32327 OREGON TRAIL RD	ECHO	OR	97826	318122	5069108.471
15	J R SIMPLOT COMPANY	PO BOX 27	BOISE	ID	83707	318165.6847	5070311.942
47	CURTIS BERT W	29416 NOBLE RD	HERMISTON	OR	97838	316235.2992	5072069.151
54	MOORE BRIAN A & ARLENE M	77151 COL JORDAN RD	HERMISTON	OR	N/A	315816.7996	5072002.369
59	VAZZA VINCENT C &LOHMAN JANICE	77225 COL JORDAN RD	HERMISTON	OR	97838	315600.4574	5072127.688
61	PALUSO JACK W	PO BOX 52	HERMISTON	OR	97838	315464.3402	5072034.545
71	CHAIREZ SAUL V	PO BOX 221	HERMISTON	OR	97838	315590.7041	5072392.441
79	WAGNER-BELLINGHAM PAULA & BELLINGHAM J	77333 COL JORDAN RD	HERMISTON	OR	N/A	315609.9002	5072456.87
85	NOBLE HARRY E ET AL	77379 COLONEL JORDAN RD	HERMISTON	OR	N/A	315592.8062	5072572.457
89	NOBLE HARRY E & HELEN M	29206 NOBLE RD	HERMISTON	OR	97838	315636.981	5072754.967
Parcel List (Not Evaluated)							
2N28000000100	SNOW RICHARD ESTATE 1/2 & (TRS) 1/2	PO BOX 178	ECHO	OR	97826		
2N28000000200	EAGLE RANCH	32327 OREGON TRAIL RD	ECHO	OR	97826		
2N28000000300	EAGLE RANCH	32327 OREGON TRAIL RD	ECHO	OR	97826		
2N28000000500	EAGLE RANCH	32327 OREGON TRAIL RD	ECHO	OR	97826		
2N28000000600	EAGLE RANCH	32327 OREGON TRAIL RD	ECHO	OR	97826		
2N28000002500	EAGLE RANCH	32327 OREGON TRAIL RD	ECHO	OR	97826		
2N29000000600	SNOW RICHARD ESTATE 1/2 & (TRS) 1/2	PO BOX 178	ECHO	OR	97826		
2N29000000700	SNOW RICHARD ESTATE 1/2 & (TRS) 1/2	PO BOX 178	ECHO	OR	97826		
3N27000000100	PALUSO JACK W	PO BOX 52	HERMISTON	OR	97838		
3N27000000300	WESTLAND IRRIG DIST	PO BOX 944	HERMISTON	OR	97838		
3N27000000301	EAGLE RIVER RANCH LLC	PO BOX 1255	HERMISTON	OR	97838		
3N27000000500	ZIEMER MAURICE M & LUCY C	76676 COL JORDAN RD	HERMISTON	OR	97838		
3N27000000600	WESTLAND IRRIG DIST	PO BOX 944	HERMISTON	OR	97838		
3N27000000800	PARKS CRAIG F & CYNTHIA L	75557 SNOW RD	ECHO	OR	97826		
3N27000004700	A&C MADISON LLC	29299 MADISON RD	ECHO	OR	97826		
3N27000004703	A&C MADISON LLC	29299 MADISON RD	ECHO	OR	97826		
3N27000004704	MADISON RANCHES INC	29299 MADISON RD	ECHO	OR	97826		
3N27000004800	USA	PO BOX 2965	PORTLAND	OR	97208		
3N27000005200	MADISON RANCHES INC	29299 MADISON RD	ECHO	OR	97826		
3N27000005300	SAYLOR LOWELL	1000 S HIGHWAY 395 #PMB 217	HERMISTON	OR	97838		
3N27000005400	MADISON RANCHES INC & M MADISON LLC ETAL	29299 MADISON RD	ECHO	OR	97826		
3N27000005900	MADISON RANCHES LAND 3 LLC ETAL	29299 MADISON RD	ECHO	OR	97826		
3N28000001100	PRIOR ARTHUR ET AL	32327 OREGON TRAIL RD	ECHO	OR	97826		
3N28000001200	PRIOR ARTHUR ET AL	32327 OREGON TRAIL RD	ECHO	OR	97826		
3N28000001300	PRIOR ARTHUR ET AL	32327 OREGON TRAIL RD	ECHO	OR	97826		
3N28000001400	PRIOR ARTHUR ET AL	32327 OREGON TRAIL RD	ECHO	OR	97826		
3N28000001500	BAR-U-INC	PO BOX 27	BOISE	ID	83707		
3N28000001600	BAR-U-INC	PO BOX 27	BOISE	ID	83707		
3N28000001700U1	LINC R MANN AND PATRICIA L MANN TRS ETAL	11905 SW LANEWOOD ST	PORTLAND	OR	N/A		
3N28000001700U2	BUHLER DEBORAH J (TRS)26.694% ETAL 73.30	95867 CAPE FERRELO RD	Brookings	OR	N/A		
3N28000001702	BAR-U-INC	PO BOX 27	BOISE	ID	83707		

List of Noise Sensitive Property Owners within One Mile of the Site Boundary

Receptor ID	Owner Name	Address	City	State	Zip Code	UTM_X	UTM_Y
3N28000001702A1	BEEF CITY INC	11905 SW LANEWOOD ST	PORTLAND	OR	97225		
3N28000001800	WESTLAND IRRIG DIST	PO BOX 944	HERMISTON	OR	97838		
3N28000002300	J R SIMPLOT COMPANY	PO BOX 27	BOISE	ID	83707		
3N28000002302	J R SIMPLOT COMPANY	PO BOX 27	BOISE	ID	83707		
3N28000002303	J R SIMPLOT COMPANY	PO BOX 27	BOISE	ID	83707		
3N28000002306	J R SIMPLOT COMPANY	PO BOX 27	BOISE	ID	83707		
3N28000002307	J R SIMPLOT COMPANY	PO BOX 27	BOISE	ID	83707		
3N28000002400	ELH LLC	76855 HIGHWAY 207	ECHO	OR	97826		
3N28000002401	ELH LLC	76855 HIGHWAY 207	ECHO	OR	97826		
3N28000002500	MOORE BRIAN A & ARLENE M	77151 COL JORDAN RD	HERMISTON	OR	97838		
3N28000002501	MADISON RANCHES INC	29299 MADISON RD	ECHO	OR	97826		
3N28000002600	MADISON RANCHES INC	29299 MADISON RD	ECHO	OR	97826		
3N28000002601	J R SIMPLOT COMPANY	PO BOX 27	BOISE	ID	83707		
3N28000002700	MADISON RANCHES INC	29299 MADISON RD	ECHO	OR	97826		
3N28000002800	MUELLER FRANK N	PO BOX 27	HERMISTON	OR	97838		
3N28000002801	PRIOR CHESTER J	32327 OREGON TRAIL RD	ECHO	OR	97826		
3N28000002805	N & C LAND LLC	71062 PERKINS RD	ECHO	OR	97826		
3N28000002890	HINKLE DITCH CO	N/A	N/A	N/A	N/A		
3N28000002900	PRIOR ARTHUR RAY	32327 OREGON TRAIL RD	ECHO	OR	97826		
3N28000002902	TAYLOR MICHAEL L & PATRICIA S (TRS)	31466 ANDREWS RD	ECHO	OR	97826		
3N28000002903	PRIOR CHESTER J	32327 OREGON TRAIL RD	ECHO	OR	97826		
3N28000003000	PRIOR ARTHUR RAY	32327 OREGON TRAIL RD	ECHO	OR	97826		
3N28000003100	PRIOR ARTHUR R (1/2) & PRIOR C (TRS)	32327 OREGON TRAIL RD	ECHO	OR	97826		
3N28000003101	PRIOR ARTHUR ET AL	32327 OREGON TRAIL RD	ECHO	OR	97826		
3N28000004100	TAYLOR MICHAEL L & PATRICIA S (TRS)	31466 ANDREWS RD	ECHO	OR	97826		
3N28000004101	TAYLOR MICHAEL L & PATRICIA S (TRS)	31466 ANDREWS RD	ECHO	OR	97826		
3N28000004170	TAYLOR MICHAEL L & PATRICIA S (TRS)	31466 ANDREWS RD	ECHO	OR	97826		
3N28000004180	TAYLOR MICHAEL L & PATRICIA S (TRS)	31466 ANDREWS RD	ECHO	OR	97826		
3N28000004190	TAYLOR MICHAEL L & PATRICIA S (TRS)	31466 ANDREWS RD	ECHO	OR	97826		
3N28000004700	PRIOR ARTHUR ET AL	32327 OREGON TRAIL RD	ECHO	OR	97826		
3N28000005600	BROWN SAYLOR RANCH LLC	57 RAMONA RD	DANVILLE	CA	N/A		
3N28000005900	PRIOR MICHAEL WILLIAM	32327 OREGON TRAIL RD	ECHO	OR	97826		
3N28000005902	MADISON SCOTT & MARY	75512 HIGHWAY 207	ECHO	OR	97826		
3N28000005903	MADISON SCOTT & MARY	75512 HIGHWAY 207	ECHO	OR	97826		
3N28000005905	HAWKINS COMPANY INC	78771 EGGERS RD	PENDLETON	OR	97801		
3N28000006000	MADISON SCOTT & MARY	75512 HIGHWAY 207	ECHO	OR	97826		
3N28000006100	MADISON RANCHES INC	29299 MADISON RD	ECHO	OR	97826		
3N28000006101	J R SIMPLOT COMPANY	PO BOX 27	BOISE	ID	83707		
3N28000006200	MADISON SCOTT & MARY	75512 HIGHWAY 207	ECHO	OR	97826		
3N28000006300	MADISON RANCHES INC	29299 MADISON RD	ECHO	OR	97826		
3N28000006400	JOHNSON DUANE M & JANET	1550 MCCONNELL LN	HERMISTON	OR	97838		
3N28000006500	MADISON SCOTT J	75512 HIGHWAY 207	ECHO	OR	97826		
3N28000006501	HAWKINS CO INC	78771 EGGERS RD	PENDLETON	OR	97801		
3N28000006600	MADISON SCOTT J	75512 HIGHWAY 207	ECHO	OR	97826		

List of Noise Sensitive Property Owners within One Mile of the Site Boundary

Receptor ID	Owner Name	Address	City	State	Zip Code	UTM_X	UTM_Y
3N28000006700	PRIOR MICHAEL WILLIAM	32327 OREGON TRAIL RD	ECHO	OR	97826		
3N28000006701	HAWKINS CO INC	78771 EGGERS RD	PENDLETON	OR	97801		
3N28000006800	EAGLE RIVER RANCH LLC	PO BOX 1255	HERMISTON	OR	97838		
3N28000006801	JACK CORREA RANCH LLC	76122 ROSENBERG RD	ECHO	OR	97826		
3N28000006801A1	L & L FARMS	822 S HIGHWAY 395 #PMB 423	HERMISTON	OR	97838		
3N28000006900	EAGLE RIVER RANCH LLC	PO BOX 1255	HERMISTON	OR	97838		
3N28000007000	USA	PO BOX 2965	PORTLAND	OR	97208		
3N28000007000A1	L & L FARMS	822 S HIGHWAY 395 #PMB 423	HERMISTON	OR	97838		
3N28000007100	WESTLAND ENTERPRISES LLC	822 S HIGHWAY 395 #PMB 423	HERMISTON	OR	97838		
3N28000007300	WESTLAND ENTERPRISES LLC	822 S HIGHWAY 395 #PMB 423	HERMISTON	OR	97838		
3N28000007400	EAGLE RANCH	32327 OREGON TRAIL RD	ECHO	OR	97826		
3N28000007402	EAGLE RANCH	32327 OREGON TRAIL RD	ECHO	OR	97826		
3N28000007403	WESTLAND ENTERPRISES LLC	822 S HIGHWAY 395 #PMB 423	HERMISTON	OR	97838		
3N28000007404	WESTLAND ENTERPRISES LLC	822 S HIGHWAY 395 #PMB 423	HERMISTON	OR	97838		
3N28000007500	WESTLAND ENTERPRISES LLC	822 S HIGHWAY 395 #PMB 423	HERMISTON	OR	97838		
3N28000008100	PRIOR MICHAEL WILLIAM	32327 OREGON TRAIL RD	ECHO	OR	97826		
3N28000008103	WESTLAND ENTERPRISES LLC	822 S HIGHWAY 395 #PMB 423	HERMISTON	OR	97838		
3N28000008105	WESTLAND ENTERPRISES LLC	822 S HIGHWAY 395 #PMB 423	HERMISTON	OR	97838		
3N28000008200	MADISON SCOTT J	75512 HIGHWAY 207	ECHO	OR	97826		
3N28000008300	MADISON RANCHES INC	29299 MADISON RD	ECHO	OR	97826		
3N28000008500	MADISON KENT	29299 MADISON RD	ECHO	OR	97826		
3N28000008600	MADISON RANCHES INC	29299 MADISON RD	ECHO	OR	97826		
3N28000009000	FARMLAND RESERVE INC	PO BOX 511196	SALT LAKE CITY	UT	N/A		
3N28000009200	J R SIMPLOT COMPANY	PO BOX 27	BOISE	ID	83707		
3N28000009300	EAGLE RANCH	32327 OREGON TRAIL RD	ECHO	OR	97826		
3N28050000100	HORN BRADFORD M & CYNTHIA	76965 HIGHWAY 207	ECHO	OR	97826		
3N28050000200	WESTLAND IRRIG DIST	PO BOX 944	HERMISTON	OR	97838		
3N28050000300	ELH LLC	76855 HIGHWAY 207	ECHO	OR	97826		
3N28050000400	ELH LLC	76855 HIGHWAY 207	ECHO	OR	97826		
3N28050000500	BENNETT DONALD L & PHYLLIS R (TRS)	76711 HIGHWAY 207	ECHO	OR	97826		
3N28050000600	BENNETT DOUGLAS DEE ET AL	76707 HIGHWAY 207	ECHO	OR	97826		
3N28050000700	LINC R MANN AND PATRICIA L MANN TRS ETAL	31466 ANDREWS RD	ECHO	OR	97826		
3N28050000800	BAR-U-INC	PO BOX 27	BOISE	ID	83707		
3N28050000900	ELH LLC	76855 HIGHWAY 207	ECHO	OR	97826		
3N28050001000	J R SIMPLOT COMPANY	PO BOX 27	BOISE	ID	83707		
3N28050001100	ELH LLC	76855 HIGHWAY 207	ECHO	OR	97826		
3N28140000100	TAYLOR MICHAEL L & PATRICIA S (TRS)	31466 ANDREWS RD	ECHO	OR	97826		
3N28140000100A1	JACK CORREA RANCH LLC	76122 ROSENBERG RD	ECHO	OR	97826		
3N28170000100	PRIOR MICHAEL WILLIAM	32327 OREGON TRAIL RD	ECHO	OR	97826		
3N28170000200	PRIOR MICHAEL WILLIAM	32327 OREGON TRAIL RD	ECHO	OR	97826		
3N28170000300	PRIOR MICHAEL WILLIAM	32327 OREGON TRAIL RD	ECHO	OR	97826		
3N28170000500	PRIOR MICHAEL WILLIAM	32327 OREGON TRAIL RD	ECHO	OR	97826		
3N28170000600	PRIOR MICHAEL WILLIAM	32327 OREGON TRAIL RD	ECHO	OR	97826		
3N28170000700	PRIOR MICHAEL WILLIAM	32327 OREGON TRAIL RD	ECHO	OR	97826		

List of Noise Sensitive Property Owners within One Mile of the Site Boundary

Receptor ID	Owner Name	Address	City	State	Zip Code	UTM_X	UTM_Y
3N28170000800	BROWN SAYLOR RANCH LLC	57 RAMONA RD	DANVILLE	CA	N/A		
3N28170000900	MADISON SCOTT & MARY	75512 HIGHWAY 207	ECHO	OR	97826		
3N28170001000	MADISON SCOTT & MARY	75512 HIGHWAY 207	ECHO	OR	97826		
3N28170001100	MADISON SCOTT & MARY	75512 HIGHWAY 207	ECHO	OR	97826		
3N28170001200	PRIOR MICHAEL WILLIAM	32327 OREGON TRAIL RD	ECHO	OR	97826		
3N28170001300	PRIOR MICHAEL WILLIAM	32327 OREGON TRAIL RD	ECHO	OR	97826		
3N28240000100	JACK CORREA RANCH LLC	76122 ROSENBERG RD	ECHO	OR	97826		
3N28240000200	JACK CORREA RANCH LLC	76122 ROSENBERG RD	ECHO	OR	97826		
3N28240000300	JACK CORREA RANCH LLC	76122 ROSENBERG RD	ECHO	OR	97826		
3N28240000400	MOFFIT JOHN C & KRISTI	PO BOX 54	ECHO	OR	97826		
3N28240000500	MCCARTY DAVID	14178 BEN DIER LN	BAKER CITY	OR	97814		
3N28310000100	HAWKINS COMPANY INC	78771 EGGERS RD	PENDLETON	OR	97801		
3N28310000300	HALE FARMS LLC	PO BOX 511196	SALT LAKE CITY	UT	N/A		
3N29B00004700	SPIKE CASEY S TRS & EMILY R TRS	32603 OREGON TRAIL RD	ECHO	OR	97826		
3N29B00004800	SPIKE RANCH INC	PO BOX 8	ECHO	OR	97826		
3N29B00005100	EAGLE RANCH	32327 OREGON TRAIL RD	ECHO	OR	97826		
3N29B00005200	EAGLE RANCH	32327 OREGON TRAIL RD	ECHO	OR	97826		
3N29C00001400	SPIKE RANCH INC	PO BOX 8	ECHO	OR	97826		
3N29C00001500	SPIKE RANCH INC	PO BOX 8	ECHO	OR	97826		
3N29C00001600	EAGLE RANCH	32327 OREGON TRAIL RD	ECHO	OR	97826		
3N29C00001700	EAGLE RANCH	32327 OREGON TRAIL RD	ECHO	OR	97826		
3N29C00001800	AMSTAD ALOIS A & DEE ANN G	16300 SW 192ND AVE	SHERWOOD	OR	N/A		
3N29C00001900	AMSTAD ALOIS A & DEE ANN G (TRS)	16300 SW 192ND AVE	SHERWOOD	OR	N/A		
3N29C00002000	SNOW RICHARD ESTATE 1/2 & (TRS) 1/2	PO BOX 178	ECHO	OR	97826		
3N29C00002100	SNOW H RICHARD (TRS)	PO BOX 178	ECHO	OR	97826		
3N29C00002500	SNOW RICHARD ESTATE 1/2 & (TRS) 1/2	PO BOX 178	ECHO	OR	97826		
3N29C00002600	SNOW RICHARD ESTATE 1/2 & (TRS) 1/2	PO BOX 178	ECHO	OR	97826		
3N29C00002700	SNOW RICHARD ESTATE 1/2 & (TRS) 1/2	PO BOX 178	ECHO	OR	97826		
4N27000000200	USA	UMATILLA ARMY DEPOT	UMATILLA	OR	97882		
4N27000000204	GIRTH DOG LLC	33896 E WALLS RD	HERMISTON	OR	97838		
4N27000000205	GIRTH DOG LLC	33896 E WALLS RD	HERMISTON	OR	97838		
4N27000001200	PEDRO LAND COMPANY LLC	78710 WESTLAND RD	HERMISTON	OR	97838		
4N27000002200	GIRTH DOG LLC	33896 E WALLS RD	HERMISTON	OR	97838		
4N27250000100	USA	UMATILLA ARMY DEPOT	UMATILLA	OR	97882		
4N27250000200	WESTERN IRRIGATION CO THE	N/A	N/A	N/A	N/A		
4N27250000300	KW OREGON	3336 E 32ND ST #STE 217	TULSA	OK	N/A		
4N27250000400	FARMLAND RESERVE INC	PO BOX 511196	SALT LAKE CITY	UT	N/A		
4N27250000500	PETRO STOPPING CENTERS LP	24601 CENTER RIDGE RD #STE 200	WESTLAKE	OH	N/A		
4N27250000700	MEDELEZ TRUCKING LLC	30522 OLDFIELD ST	HERMISTON	OR	97838		
4N27250000800	MEDELEZ TRUCKING LLC	30522 OLDFIELD ST	HERMISTON	OR	97838		
4N27250000900	ROCK-IT LLC	74854 WASHINGTON AVE	IRRIGON	OR	N/A		
4N27250001000	DARGATZ LIVING TRUST ET AL	810 NE QUEENS LN	HILLSBORO	OR	N/A		
4N2725A000100	UMATILLA ELECTRIC CO-OP ASSN	PO BOX 1148	HERMISTON	OR	97838		
4N2725A000200	FLYING J INC	PO BOX 54470	LEXINGTON	KY	40555		

List of Noise Sensitive Property Owners within One Mile of the Site Boundary

Receptor ID	Owner Name	Address	City	State	Zip Code	UTM_X	UTM_Y
4N2725A000201	CRUM RANCHES LLC	PO BOX 67	IONE	OR	N/A		
4N2725A000202	FLYING J INC	PO BOX 54470	LEXINGTON	KY	40555		
4N2725A000400	FARMLAND RESERVE INC	PO BOX 511196	SALT LAKE CITY	UT	N/A		
4N2725A000500	FARMLAND RESERVE INC	PO BOX 511196	SALT LAKE CITY	UT	N/A		
4N2725A000501	FARMLAND RESERVE INC	PO BOX 511196	SALT LAKE CITY	UT	N/A		
4N2725A000502	WESTLAND ENTERPRISES LLC	822 S HIGHWAY 395 #PMB 423	HERMISTON	OR	97838		
4N2725A000505	FARMLAND RESERVE INC	PO BOX 511196	SALT LAKE CITY	UT	N/A		
4N2725A000506	L & L FARMS LLC	822 S HIGHWAY 395 #PMB 423	HERMISTON	OR	97838		
4N2725A000600	BT PROPERTY LLC	55 GLENLAKE PKWY	ATLANTA	GA	N/A		
4N2725A000700	BOUNDS ROGER S	PO BOX 148	HERMISTON	OR	97838		
4N2725A000900	FARMLAND RESERVE INC	PO BOX 511196	SALT LAKE CITY	UT	N/A		
4N2725A000901	FARMLAND RESERVE INC	PO BOX 511196	SALT LAKE CITY	UT	N/A		
4N2725A000902	FARMLAND RESERVE INC	PO BOX 511196	SALT LAKE CITY	UT	N/A		
4N27360000300	MO.MM, LLC	1903 JADWIN AVE	RICHLAND	WA	N/A		
4N27360000400	ROCK-IT LLC	74854 WASHINGTON AVE	IRRIGON	OR	N/A		
4N27360000500	ROCK-IT LLC	74854 WASHINGTON AVE	IRRIGON	OR	N/A		
4N27360000600	ROCK-IT LLC	74854 WASHINGTON AVE	IRRIGON	OR	N/A		
4N27360000700	ROCK-IT LLC	74854 WASHINGTON AVE	IRRIGON	OR	N/A		
4N27360000800	ROCK-IT LLC	74854 WASHINGTON AVE	IRRIGON	OR	N/A		
4N27360000900	GIRTH DOG LLC	33896 E WALLS RD	HERMISTON	OR	97838		
4N27360001000	WALKER WESLEY A & SHELLEY A	28286 STAFFORD HANSEL RD	HERMISTON	OR	97838		
4N27360001100	GIRTH DOG LLC	33896 E WALLS RD	HERMISTON	OR	97838		
4N27360001200	GIRTH DOG LLC	33896 E WALLS RD	HERMISTON	OR	97838		
4N27360001300	GIRTH DOG LLC	33896 E WALLS RD	HERMISTON	OR	97838		
4N27360001400	ROCK-IT LLC	74854 WASHINGTON AVE	IRRIGON	OR	N/A		
4N27360001500	ROCK-IT LLC	74854 WASHINGTON AVE	IRRIGON	OR	N/A		
4N27360001600	MO.MM, LLC	1903 JADWIN AVE	RICHLAND	WA	N/A		
4N27360001700	EAGLE RIVER RANCH LLC	PO BOX 1255	HERMISTON	OR	97838		
4N27360001800	GIRTH DOG LLC	33896 E WALLS RD	HERMISTON	OR	97838		
4N2819D000800	GASS MARGARET A	20130 S SOUTH END RD	OREGON CITY	OR	97045		
4N28300000100	ART MORTGAGE BORROWER PROPCO	18818 TELLER AVE #STE 277	IRVINE	CA	N/A		
4N28300000200	HERMISTON GENERATING CO & PACIFICORP	78145 WESTLAND RD	HERMISTON	OR	97838		
4N28300000400	UMATILLA ELECTRIC CO-OP ASSN	PO BOX 1148	HERMISTON	OR	97838		
4N28300000500	UMATILLA ELECTRIC CO-OP ASSN	PO BOX 1148	HERMISTON	OR	97838		
4N28300000600	LIBERATED L & E LLC	2229 E AVENUE Q	PALMDALE	CA	N/A		
4N28300000700	DRIFTWOOD MEACHAM LLC	78001 COTTONWOOD BEND RD	HERMISTON	OR	97838		
4N28300000800	CRAFT RICK A	1118 N MICHIGAN AVE	CALDWELL	ID	N/A		
4N28300000900	CRAFT THOMAS D	PO BOX 4532	PORTLAND	OR	N/A		
4N28300001000	DRIFTWOOD MEACHAM LLC	78001 COTTONWOOD BEND RD	HERMISTON	OR	97838		
4N28300001100	VADATA INC	PO BOX 80416	SEATTLE	WA	N/A		
4N28300001100A1	VADATA INC	PO BOX 80416	SEATTEL	WA	N/A		
4N28300001200	PERENNIAL POWER HOLDINGS INC	300 MADISON AVE	NEW YORK	NY	N/A		
4N28300001500	HERMISTON GENERATING CO & PACIFICORP	78145 WESTLAND RD	HERMISTON	OR	97838		
4N28300001600	STRAND MARY E & PAUL J	77941 COTTONWOOD BEND RD	HERMISTON	OR	97838		

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Receptor ID	Owner Name	Address	City	State	Zip Code	UTM_X	UTM_Y
4N28300001700	CORIA EVA P	242 E MAIN ST ##181	HERMISTON	OR	97838		
4N28300001800	BELL MERRY SUSAN	PO BOX 754	HERMISTON	OR	97838		
4N28300001900	BUCKALLEW CREGG A & M MARY	77867 COTTONWOOD BEND RD	HERMISTON	OR	97838		
4N28300002000	LIBERATED L & E LLC	80261 S EDWARDS RD	HERMISTON	OR	97838		
4N28300002100	LIBERATED L & E LLC	2229 E AVENUE Q	PALMDALE	CA	N/A		
4N28300002200	JTJ ENTERPRISES LLC	PO BOX 38	PENDLETON	OR	97801		
4N28300002201	MCDANIELS ELDON	111003 E WINDWARD LN	KENNEWICK	WA	99338		
4N28300002202	JTJ ENTERPRISES LLC	PO BOX 38	PENDLETON	OR	97801		
4N28300002203	JTJ ENTERPRISES LLC	PO BOX 38	PENDLETON	OR	97801		
4N28300002400	J & A COELHO LLC	PO BOX 953	HERMISTON	OR	97838		
4N28310000100	WESTLAND IRRIG DIST	PO BOX 944	HERMISTON	OR	97838		
4N28310000300	JTJ ENTERPRISES LLC	PO BOX 38	PENDLETON	OR	97801		
4N28310000301	MCDANIELS ELDON	111003 E WINDWARD LN	KENNEWICK	WA	99338		
4N28310000400	BARTON GEORGE H	1390 SW 11TH ST	HERMISTON	OR	97838		
4N28310000400A1	J R ZUKIN CORP	PO BOX 331	THE DALLES	OR	N/A		
4N28310000401	GB HERMISTON LLC	277 STEWART RD	PACIFIC	WA	N/A		
4N28310000402	BARTON GEORGE H	1390 SW 11TH ST	HERMISTON	OR	97838		
4N28310000403	OLD DOMINION FREIGHT LINE INC	500 OLD DOMINION WAY	THOMASVILLE	NC	N/A		
4N28310000404	BARTON GEORGE H	1390 SW 11TH ST	HERMISTON	OR	97838		
4N28310000500	BARTON RICHARD R	PO BOX 376	HERMISTON	OR	97838		
4N28310000600	WOOD DANIEL J & DEBORA L	33256 E WALLS RD	HERMISTON	OR	97838		
4N28310000700	WOOD DANIEL J & DEBORA L	33256 E WALLS RD	HERMISTON	OR	97838		
4N28310000800	SHARKEY PHILIP E & LORA L	29689 NOBLE RD	HERMISTON	OR	97838		
4N28310000900	SMITH RAYMON J & LEAH JOY	29704 NOBLE RD	HERMISTON	OR	97838		
4N28310001000	JOHNSTON ANDREW DEAN	29616 NOBLE RD	HERMISTON	OR	97838		
4N28310001100	SMITH RAYMON J & LEAH JOY	39704 NOBLE RD	HERMISTON	OR	97838		
4N28310001200	PEDRO MARK ANTHONY & MORGAN ALEXIS	29592 NOBLE RD	HERMISTON	OR	97838		
4N28310001300	PEDRO MARK ANTHONY & MORGAN ALEXIS	29592 NOBLE RD	HERMISTON	OR	97838		
4N28310001400	FREDERICKSON ERICK D & TRESIA A	29330 NOBLE RD	HERMISTON	OR	97838		
4N28310001500	ELDRIDGE MARK D & VERONICA G (TRS)	430 MTN CITY HIGHWAY #UNIT 11	ELKO	NV	N/A		
4N28310001600	NOBLE HARRY E & HELEN M	29206 NOBLE RD	HERMISTON	OR	97838		
4N28310001800	WAGNER-BELLINGHAM PAULA & BELLINGHAM J	77333 COL JORDAN RD	HERMISTON	OR	97838		
4N28310001900	CHAIREZ SAUL V	PO BOX 221	HERMISTON	OR	97838		
4N28310002000	VAZZA VINCENT C &LOHMAN JANICE	77225 COL JORDAN RD	HERMISTON	OR	97838		
4N28310002100	CURTIS BERT W	29416 NOBLE RD	HERMISTON	OR	97838		
4N28310002200	PEDRO MARK ANTHONY & MORGAN ALEXIS	29592 NOBLE RD	HERMISTON	OR	97838		
4N28310002300	BOETTCHER TRUST	29957 NOBLE RD	HERMISTON	OR	97838		
4N28C00002206	CONAGRA FOODS LAMB WESTON INC	PO BOX 1900	PASCO	WA	99302		
4N28C00002208	7S FARMING LLC	78638 WALKER RD	HERMISTON	OR	97838		
4N28C00002220	HERMISTON GENERATING CO & PACIFICORP	825 NE MULTNOMAH ST #STE 1900	PORTLAND	OR	N/A		
4N28C00002221	CONAGRA FOODS LAMB WESTON INC	PO BOX 1900	PASCO	WA	99302		
4N28C00002700	SMITH CONNIE A	29224 BLOOM RD	HERMISTON	OR	97838		
4N28C00002701	DYER JERRY E	78401 COTTONWOOD BEND RD	HERMISTON	OR	97838		
4N28C00002800	BRITT SIDNEY & RANDY RAE	78540 BIG BUTTERCREEK RD	ECHO	OR	97826		

List of Noise Sensitive Property Owners within One Mile of the Site Boundary

Receptor ID	Owner Name	Address	City	State	Zip Code	UTM_X	UTM_Y
4N28C00002801	DAVIS CRIS & LINDA	29336 FEEDVILLE RD	HERMISTON	OR	97838		
4N28C00002802	BRITT SIDNEY & RANDY RAE	78540 BIG BUTTERCREEK RD	ECHO	OR	97826		
4N28C00002900	HERMISTON GENERATING CO LP	78145 WESTLAND RD	HERMISTON	OR	97838		
4N28C00002903	BISHOP KAREN	382 NW 10TH ST	HERMISTON	OR	97838		
4N28C00002904	TERRA POMA LAND LLC	PO BOX 862	HERMISTON	OR	97838		
4N28C00003000	HIBLER LLC	2405 S JANEEN ST	BOISE	ID	83709		
4N28C00003800	SNAKCORP INC	100 LINCOLN WAY E	MASSILON	OH	N/A		
4N28C00003801	CASTILLO HECTOR M	29290 NW LIVESTOCK RD	HERMISTON	OR	97838		
4N28C00003802	SERNA AMY & ANTONIO	29296 NW LIVESTOCK RD	HERMISTON	OR	97838		
4N28C00003900	SNAKCORP INC	100 LINCOLN WAY E	MASSILON	OH	N/A		
4N28C00004000	UNION PACIFIC RR CO	1400 DOUGLAS ST #STOP 1690	OMAHA	NE	N/A		
4N28C00004100	TCNB LLC	PO BOX 209	NORTH POWDER	OR	97867		
4N28C00005300	OREGON HEREFORD RANCH LLC	76707 HIGHWAY 207	ECHO	OR	97826		
4N28C00005400	MUELLER FRANK	PO BOX 27	HERMISTON	OR	97838		
4N28C00005602	BOETTCHER TRUST	29957 NOBLE RD	HERMISTON	OR	97838		
4N28C00005705	GALVEZ HUGO	29290 NW LIVESTOCK RD	HERMISTON	OR	97838		
4N28C00005706	BOETTCHER JARI E & SHELEA J	22957 NOBLE RD	HERMISTON	OR	97838		
4N28C00005708	WHITE RICHARD H & TAMARA L	704 OLD HIGHWAY 8	ROOSEVELT	WA	N/A		
4N28C00005800	BOETTCHER TRUST	29957 NOBLE RD	HERMISTON	OR	97838		
4N28C00005802	SALEM SALEM G & MARILYN K	29831 NOBLE RD	HERMISTON	OR	97838		

Note: N/A = not available