MERIDIAN WIND PARK

Acoustical Report – Porter Township

B&V PROJECT NO. 198674

PREPARED FOR

DTE Electric Company

17 MARCH 2021

BLACK & VEATCH

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1.0 Introduction

Black & Veatch is providing project development services for a new wind park in Saginaw and Midland counties, Michigan. The wind park is expected to include 77 wind turbines spanning Jonesfield, Mt. Haley, and Porter Townships. This report focuses on the 25 turbine locations proposed in Porter Township and will discuss the regulatory requirements, ambient sound level survey results, and the results of acoustical modeling.

2.0 Regulatory Summary

The proposed Meridian Wind Park must comply with sound level limits set forth in Jonesfield, Mt. Haley, and Porter Township ordinances. The following sections summarize the requirements in Porter township.

2.1 PORTER TOWNSHIP

Porter Township Ordinance #249, paragraph 3.6 limits sound pressure levels from a wind energy system (wind turbine) to 55 dBA at the habitable structure closest to the wind energy system (wind turbine). If the ambient sound level exceeds 55 dBA, the sound pressure level limit rises to the ambient sound level plus 5 dBA.

3.0 Ambient Sound Level Survey

An ambient sound level survey of the proposed Meridian Wind Park was completed 15 October 2018 through 17 October 2018 in Midland and Saginaw County, Michigan. Three measurement locations were selected within the boundary of the proposed site to measure and monitor the ambient acoustical environment. One measurement location was selected in each township, representative of the expected worst-case receptors based on the current turbine arrangement. The survey was completed to quantify and qualify the existing acoustical environment at the site in support of the permitting process.

3.1 SURVEY PROCEDURE

The ambient sound level survey was completed in accordance with relevant portions of general industry standards including ANSI S1.13, ANSI S12.9, ANSI S12.18, ASTM E1014, and ISO 1996. All sound levels were measured using Type 1 or Type 2 sound level meters that met the requirements of ANSI S1.4. The sound level meters were capable of determining specific average and statistical sound levels over a specified duration. The microphones were equipped with windscreens provided by the manufacturer. All equipment was laboratory calibrated within twelve months prior to the survey and the calibrations are traceable to the National Institute of Standards and Technology (NIST). (See Appendix A).

In order to effectively quantify and qualify the existing sound levels, the ambient survey included both continuous sound level monitoring and short-term sound level measurements. Ambient sound levels were measured at locations corresponding to sound sensitive receptors identified prior to and during the ambient sound level survey. The exact survey locations were identified at the time of the survey and were selected to capture acoustical environments

representative of the nearby sound-sensitive receptors (e.g., participating residences and/or non-participating residences).

3.1.1 Continuous Monitoring

Continuous sound monitors were placed at three monitoring locations for at least 38 hours. The measurement periods included at least two (2) evening and nighttime periods between 7:00 p.m. on 15 October 2018 and 10:00 a.m. on 17 October 2018. The continuous sound monitors were locked and secured within a case in the public right-of-way (ROW). They were unmanned, but periodically inspected by Black & Veatch professionals to ensure continuous operation. The microphone was placed approximately 5 feet above the ground.

3.1.2 Short-Term Monitoring

Attended short-term monitoring was conducted at a continuous sound monitoring location not equipped to record octave band sound level data, and one additional location in order to further quantify the existing acoustical environment near the existing Gratiot Wind Park to the southwest. These measurements were attended and performed by Black & Veatch acoustical professionals.

3.2 SOUND MEASUREMENT LOCATIONS

The sound measurement locations (SMLs) listed in Table 1 (shown in Figure 2) were selected to correspond to receptors (i.e., residences) that will be within close proximity of project wind turbines, with at least one receptor located within each affected township. Continuous sound level monitoring was completed at SML1, SML2, and SML3. The additional measurement location (SML4) was added to determine the existing wind farm sound levels to the southwest of the proposed boundary. Wind speed data from nearby MBS International Airport is included for informational purposes in Appendix B.

Table 1 – Sound Measurement Locations

SOUND MEASUREMENT LOCATION	LAT/LONG	SITE DESCRIPTION	CONTINUOUS MONITORING	SHORT-TERM MONITORING
SML1	N 43.502287 W -84.389520	Country Road – Porter Township	X	X
SML2	N 43.454885 W -84.350469	Country Road – Jonesfield Township	X	N/A
SML3	N 43.507124 W -84.350726	Country Road – Mt. Haley Township	X	X
SML4	N43.466186 W -84.419672	Country Road in Porter Township near boundary of existing Gratiot wind park.	N/A	X

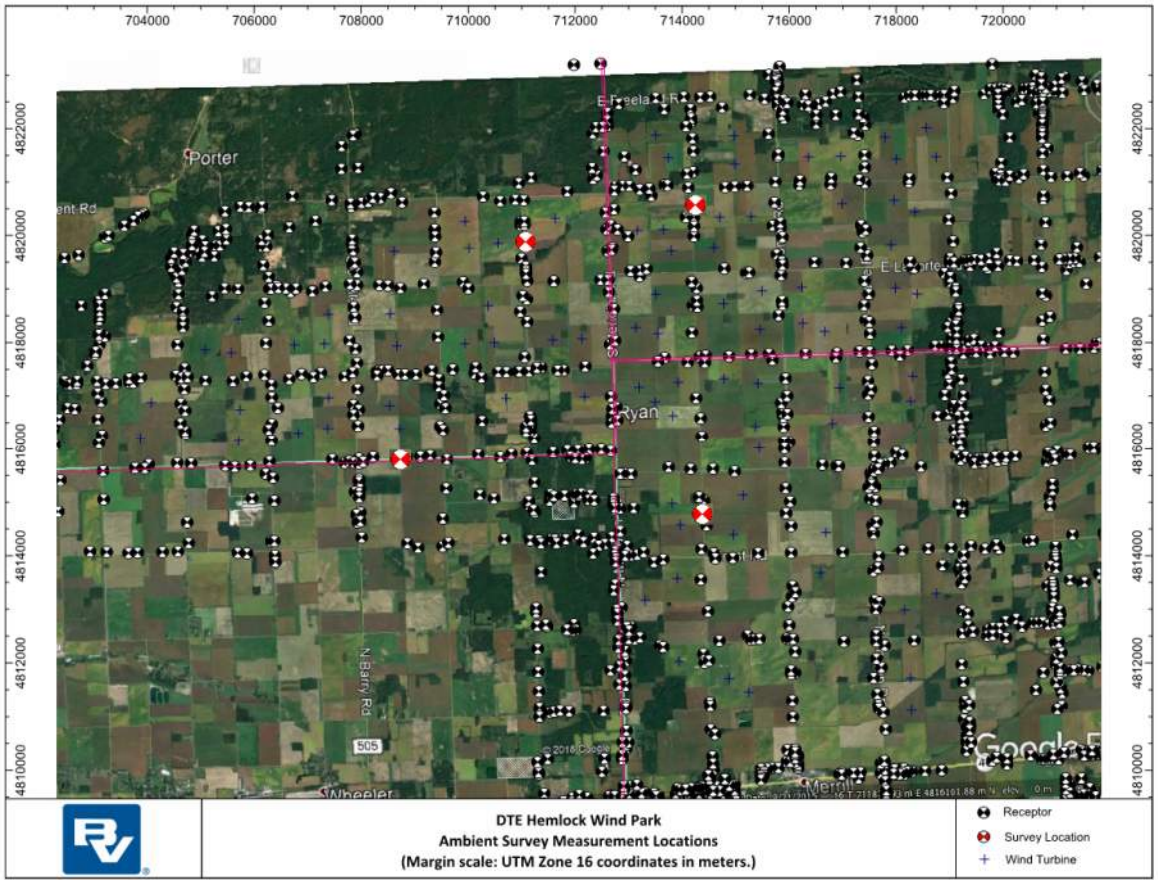


Figure 1 - Sound Measurement Locations

3.3 SURVEY RESULTS

3.3.1 Sound Measurement Location 1

An acoustical monitor was placed at SML1 to collect ambient measurements during daytime and evening hours. Average wind speeds measured intermittently at microphone height during the survey ranged from 3 to 9 mph. The noticeable sound sources were wind in grass, birds and insects, distant traffic and farm equipment. Background L_{90} sound levels ranged from 28 dBA[1] to 48 dBA and are shown in Figure 3. Short-term measurements are shown in Figure 4.

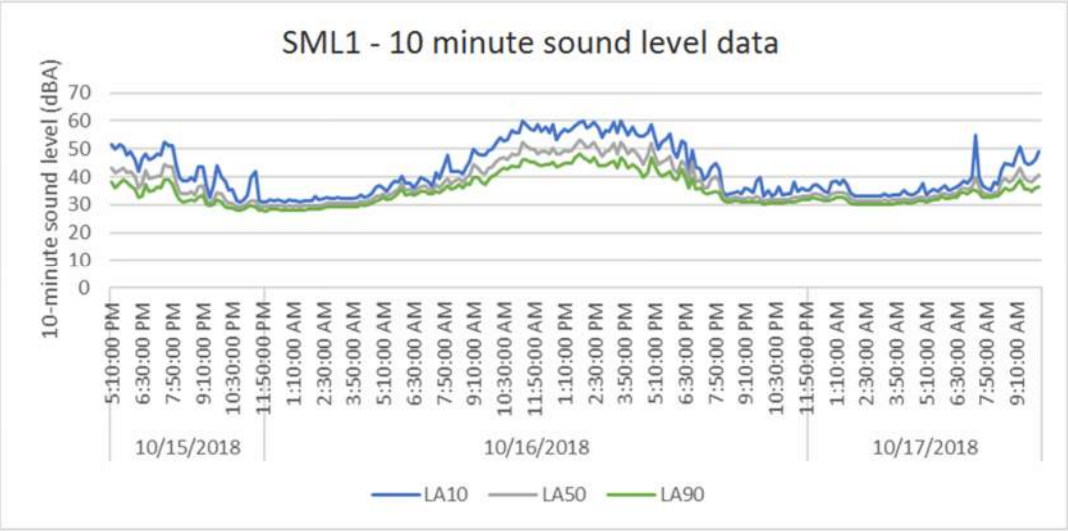


Figure 2 - SML1 continuous sound level data

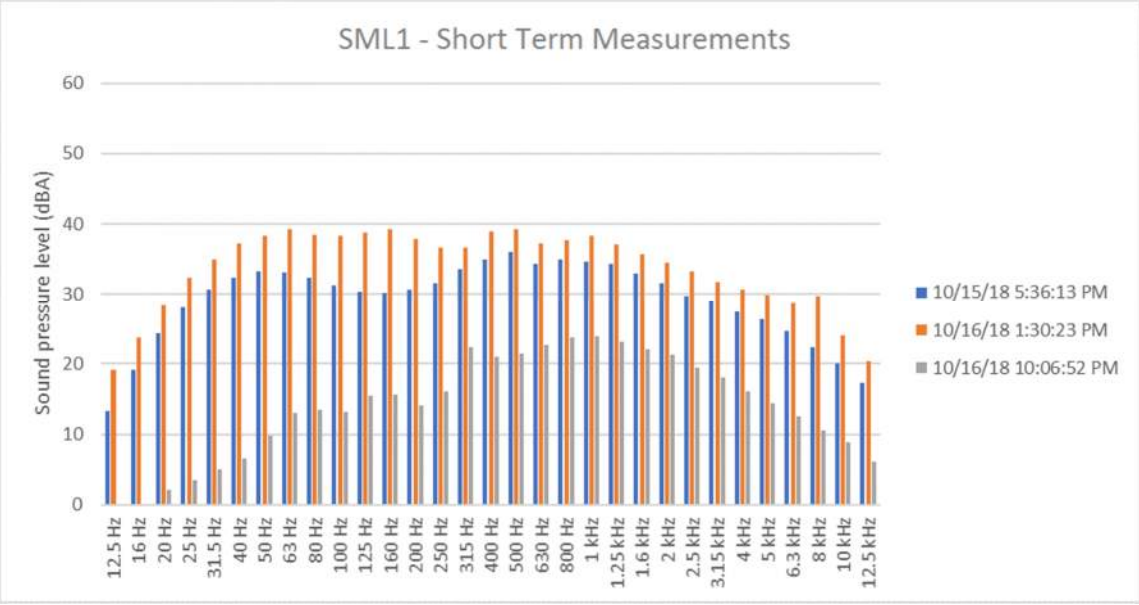


Figure 3 - SML1 short term L_{eq} measurement data

[1] Sound levels under 30 dBA may have been impacted by equipment electrical noise floor of ≤20 dBA

3.3.2 Sound Measurement Location 2

An acoustical monitor was placed at SML2 to collect ambient measurements during daytime and evening hours. Average wind speeds measured intermittently at microphone height during the survey ranged from 2 to 14 mph. The perceived sound sources were wind in grass and crops, distant traffic, and faint sound from Gratiot wind park. Background L_{90} sound levels ranged from 20 dBA[2] to 51 dBA as shown in Figure 5.

The acoustical monitor at SML2 collected one-third octave band data through the survey. 10-minute excerpts of that measured data are included in Figure 6, for comparison to short-term measurements at other locations.

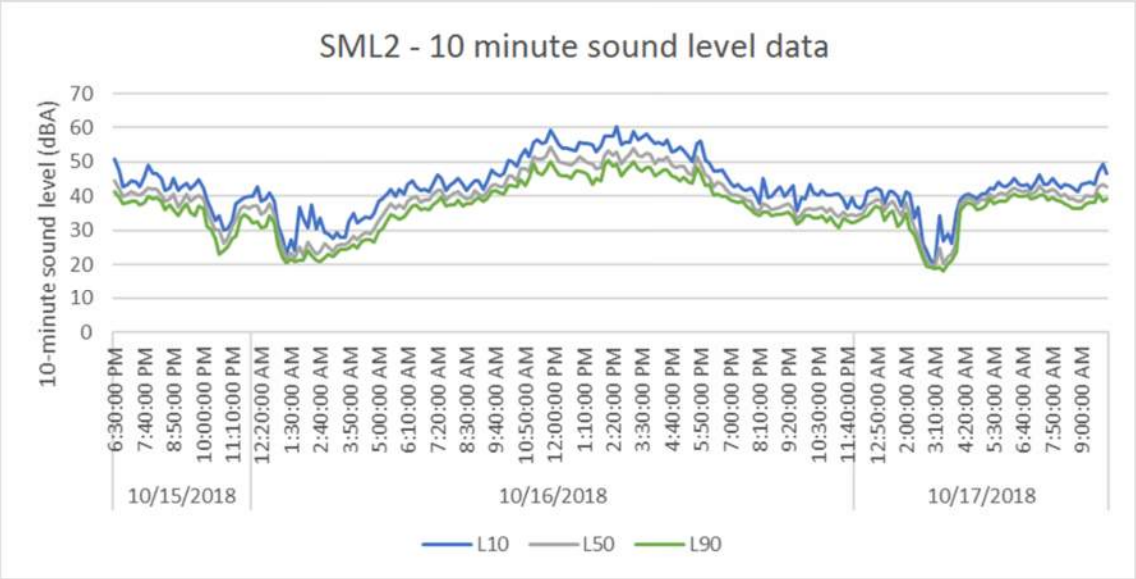


Figure 4 - SML2 continuous sound level data

[2] Sound levels under 27 dBA may have been impacted by equipment electrical noise floor of ≤17 dBA.

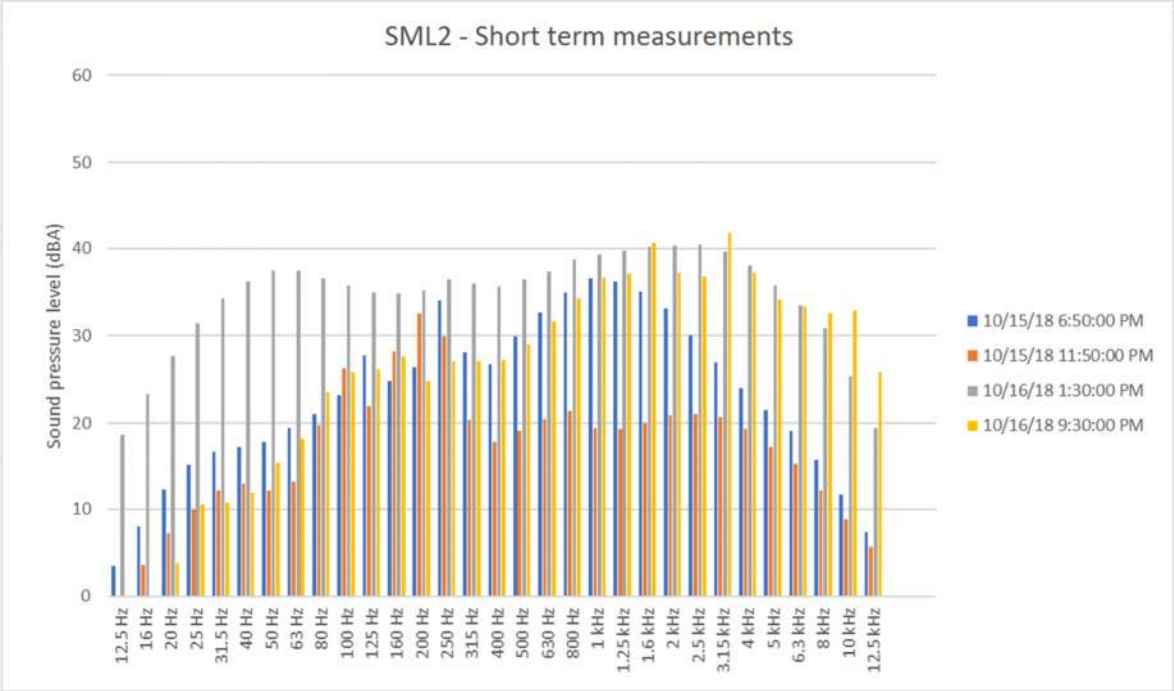


Figure 5 - SML2 L_{eq} spectrum measurement data

3.3.3 Sound Measurement Location 3

An acoustical monitor was placed at SML3 to collect ambient measurements during daytime and evening hours. Average wind speeds measured intermittently at microphone height during the survey ranged from 2 to 8 mph. The noticeable sound sources were wind in grass and crops, faint sound from pole-mounted electrical equipment nearby, distant traffic, and trickling water from drain tiles and culvert near road. Background L_{90} sound levels ranged from 20 dBA[3] to 51 dBA as shown in Figure 7. Short-term measurements are shown in Figure 8.

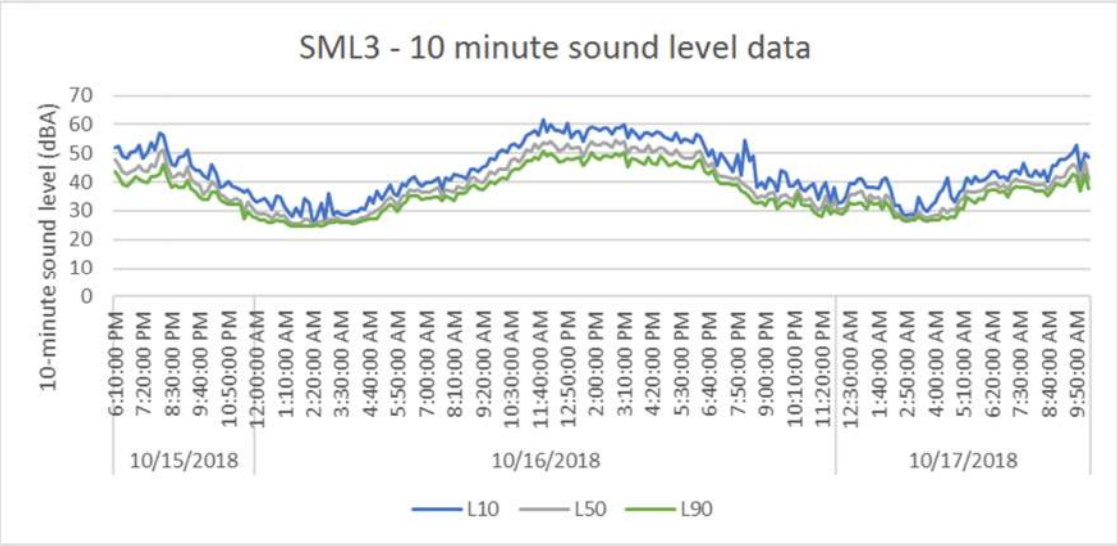


Figure 6 - SML3 continuous sound level data

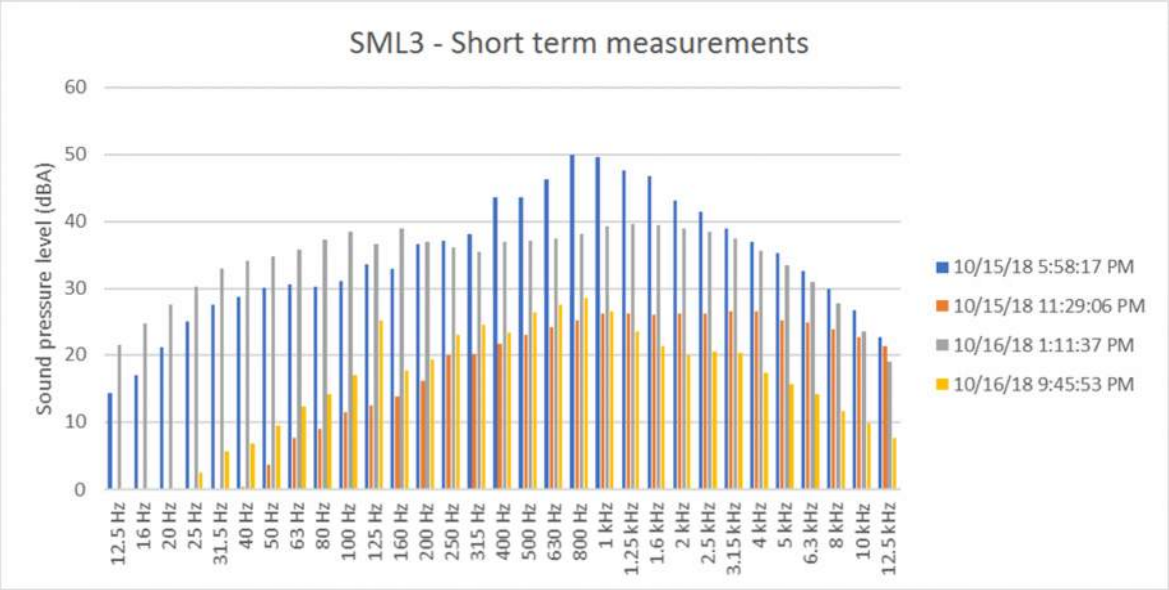


Figure 7 - SML3 short term L_{eq} measurement data

[3] Sound levels under 29 dBA may have been impacted by equipment electrical noise floor of ≤19 dBA.

3.3.4 Sound Measurement Location 4

Short term measurements were conducted at SML4 to quantify the ambient acoustical environment near the edge of the proposed wind park, and to measure the impact of neighboring Gratiot Wind Park to the southwest. Average wind speeds during the measurements ranged from 4 to 17 mph. The noticeable sound sources were wind turbines in Gratiot Wind Park, wind in trees, crops, powerlines, and occasional distant traffic. Results of the short term measurements are shown in Figure 9.

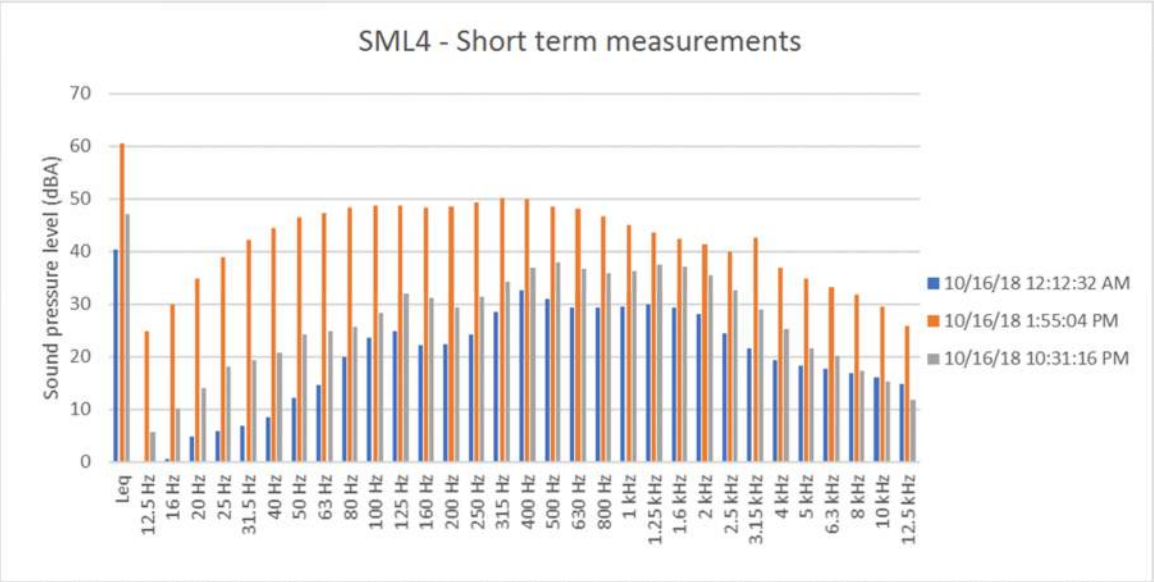


Figure 8 - SML4 short term Leq measurement data

4.0 Acoustical Model

The environmental sound levels resulting from the operation of 77 Meridian Wind Park WTGs were predicted using commercial acoustical modeling software (DataKustik CadnaA version 2021) that implements ISO 9613 calculation methodologies.

4.1 SOUND SOURCES

Two types of turbines are expected to be implemented in the Wind Park, 67 of which will be 2.82 MW GE 2.82-127 turbines, the remaining ten will be 3.6 MW Vestas V136. Only GE turbines will be present in Porter Township. Each WTG is assumed to be an omnidirectional point source located at hub height. Hub height for the GE 2.82-127 turbines is 89 meters, and 82 meters for the Vestas V136 turbines. Sound sources other than the Meridian WTGs were not included in the acoustical model.

Vendor provided sound power level data was incorporated in the acoustical model. The vendor provided sound power level for the Vestas turbine is 108.5 dBA. The vendor provided sound power level for the GE turbine is 110 dBA.

Vendor supplied mitigation was implemented for both turbine types. The Vestas serrated trailing edge (STE) blade reduces overall sound power level to 105.5 dBA. For GE turbines, a low noise trailing edge (LNTE) blade option reduces overall sound power level to 108.5 dBA. Sound modelling for Porter Township assumes that all wind turbines in the township are supplied with LNTE blades.

In addition to the vendor supplied mitigation, operational controls to further reduce turbine sound levels were implemented at some turbines. GE 'Noise Reduced Operation' (NRO) mode limits turbine rotation speed, thereby reducing turbine sound levels. GE NRO is categorized by the overall sound power level of the turbine at the reduced speed, from NRO 108 (108 dBA sound power level) to NRO 105 (105 dBA sound power level). NRO was applied to the model to certain GE turbines, a full list of turbines with preliminary assumed operational profiles is included in Appendix C.

4.2 RECEPTORS

Over 1500 receptors, including residences, schools, hospitals, churches, and public libraries, were included in the acoustical model based on data provided by the project team. Receptors were given a height of 2 m (6.5 feet) above the ground, a requirement in Mt. Haley Township regulations which was applied in the entire facility.

4.3 SOUND PROPAGATION

The following assumptions were included in the acoustical model, which yield conservative results in terms of sound propagation (i.e., including a safety margin for actual operation):

- Terrain / topography based on the most current GIS data available.
- Ground is assumed to be acoustically "mixed" (G = 0.5) in accordance with conservative modeling assumptions required by ordinance in nearby Mt. Haley

Township. For most of the year, this is a conservative assumption since the ground within the Wind Park is mainly cultivated farmland, which is usually considered “porous” ground.

- The acoustical model considers all receptors to be downwind from all sound sources, which is a conservative assumption. The downwind calculation assumes a wind speed of 1 to 5 m/s (approximately 2 to 11 mph) at 3 to 11 m (approximately 10 to 36 ft) above the ground.
- ISO 9613 calculations are representative of atmospheric conditions causing downward refraction of sound waves, i.e., a moderate temperature inversion such as would be present on a clear, calm night.
- Shielding / attenuation effects of interceding barriers (such as residential buildings) and foliage were not included in the acoustical model.

4.4 MODELING RESULTS

The predicted sound levels resulting from the operation of the Meridian Wind Park are shown in Figure 9. Meridian Wind Park is expected to comply with Ordinance #249 at all receptors in Porter Township.

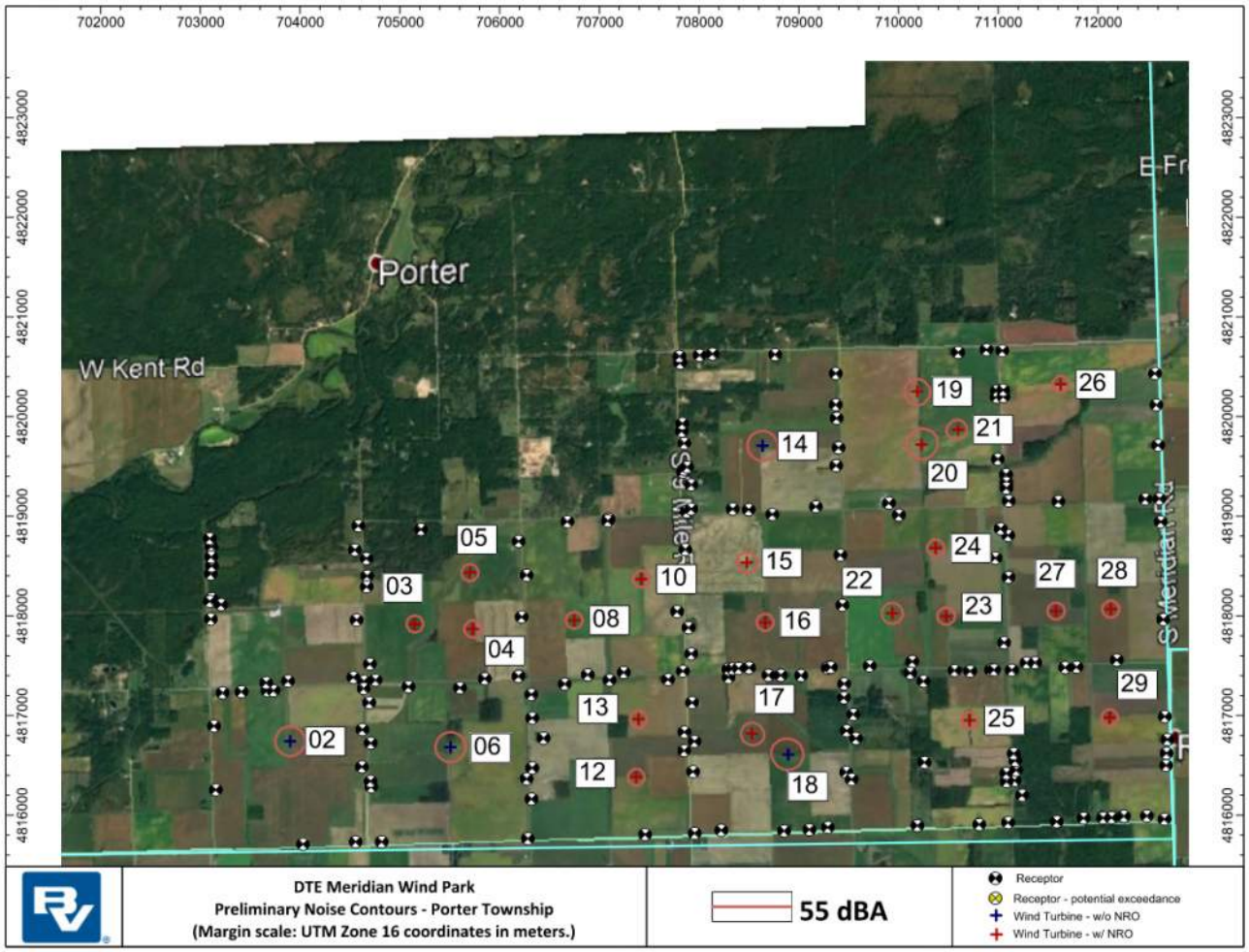
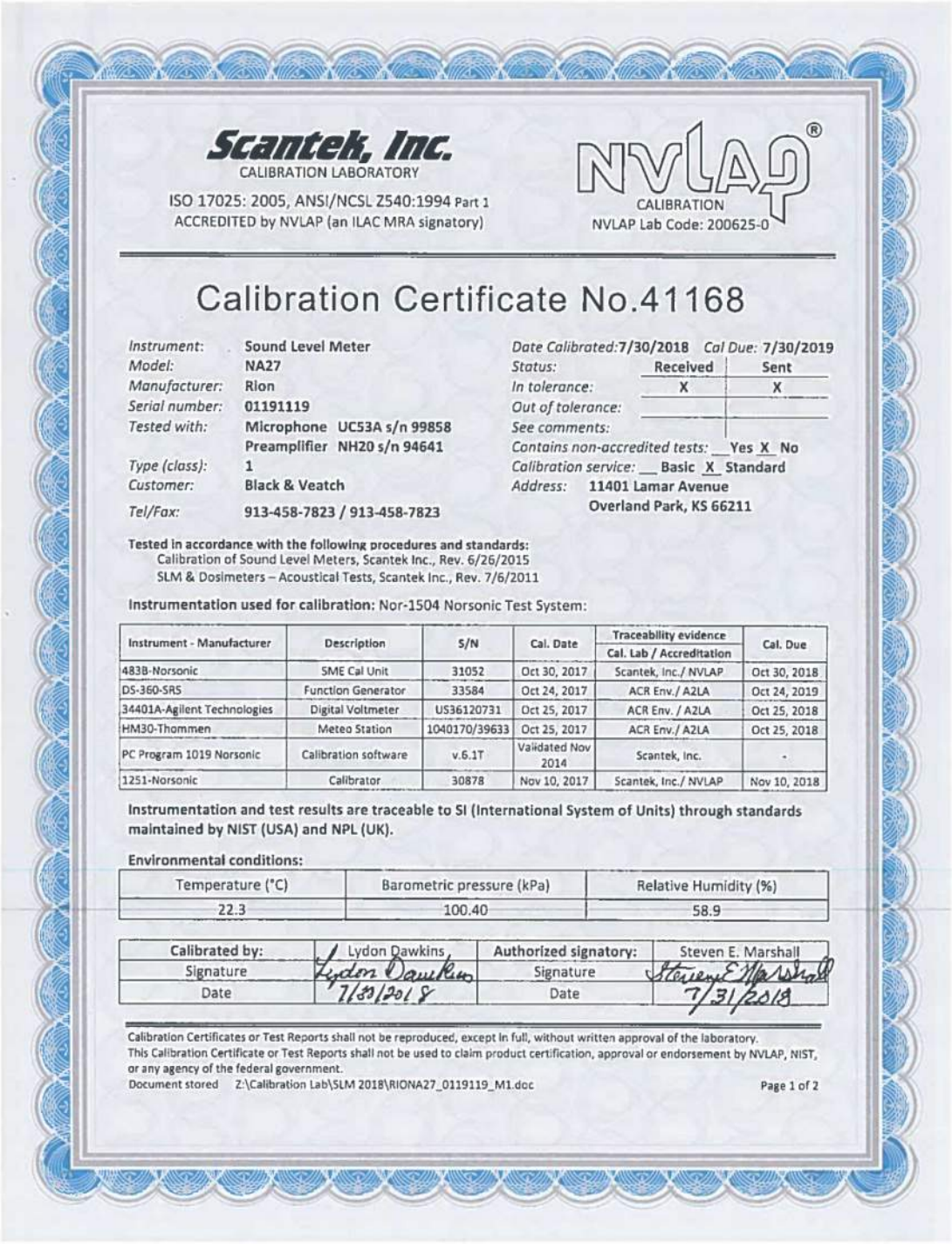


Figure 9 - Predicted sound levels in Porter Township from Meridian Wind Park

Appendix A.



Scantek, Inc.
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ISO 17025: 2005, ANSI/NCSL Z540:1994 Part 1
ACCREDITED by NVLAP (an ILAC MRA signatory)

NVLAP®
CALIBRATION
NVLAP Lab Code: 200625-0

Calibration Certificate No.41168

Instrument: **Sound Level Meter**
Model: **NA27**
Manufacturer: **Rion**
Serial number: **01191119**
Tested with: **Microphone UC53A s/n 99858**
Preamplifier NH20 s/n 94641
Type (class): **1**
Customer: **Black & Veatch**
Tel/Fax: **913-458-7823 / 913-458-7823**

Date Calibrated: **7/30/2018** *Cal Due:* **7/30/2019**

Status:	Received	Sent
In tolerance:	X	X
Out of tolerance:		
See comments:		

Contains non-accredited tests: __ Yes _X_ No
Calibration service: __ Basic _X_ Standard
Address: **11401 Lamar Avenue**
Overland Park, KS 66211

Tested in accordance with the following procedures and standards:
Calibration of Sound Level Meters, Scantek Inc., Rev. 6/26/2015
SLM & Dosimeters – Acoustical Tests, Scantek Inc., Rev. 7/6/2011

Instrumentation used for calibration: Nor-1504 Norsonic Test System:

Instrument - Manufacturer	Description	S/N	Cal. Date	Traceability evidence Cal. Lab / Accreditation	Cal. Due
483B-Norsonic	SME Cal Unit	31052	Oct 30, 2017	Scantek, Inc./ NVLAP	Oct 30, 2018
DS-360-SRS	Function Generator	33584	Oct 24, 2017	ACR Env./ A2LA	Oct 24, 2019
34401A-Agilent Technologies	Digital Voltmeter	US36120731	Oct 25, 2017	ACR Env./ A2LA	Oct 25, 2018
HM30-Thommen	Meteo Station	1040170/39633	Oct 25, 2017	ACR Env./ A2LA	Oct 25, 2018
PC Program 1019 Norsonic	Calibration software	v.6.1T	Validated Nov 2014	Scantek, Inc.	-
1251-Norsonic	Calibrator	30878	Nov 10, 2017	Scantek, Inc./ NVLAP	Nov 10, 2018

Instrumentation and test results are traceable to SI (International System of Units) through standards maintained by NIST (USA) and NPL (UK).

Environmental conditions:

Temperature (°C)	Barometric pressure (kPa)	Relative Humidity (%)
22.3	100.40	58.9

Calibrated by:	Lydon Dawkins	Authorized signatory:	Steven E. Marshall
Signature	Lydon Dawkins	Signature	Steven E Marshall
Date	7/31/2018	Date	7/31/2018

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NVLAP Lab Code: 200625-0

Calibration Certificate No.41164

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Model:	**NL32**	*Status:*	**Received** / **Sent**
Manufacturer:	**Rion**	*In tolerance:*	X / X
Serial number:	**00630458**	*Out of tolerance:*	
Tested with:	**Microphone UC53A s/n 321772** **Preamplifier NH21 s/n 08156**	*See comments:*	
Type (class):	**1**	*Contains non-accredited tests:*	__Yes X No
Customer:	**Black & Veatch**	*Calibration service:*	__ Basic X Standard
Tel/Fax:	**913-458-7823 / 913-458-7823**	*Address:*	**11401 Lamar Avenue** **Overland Park, KS 66211**

Tested in accordance with the following procedures and standards:
Calibration of Sound Level Meters, Scantek Inc., Rev. 6/26/2015
SLM & Dosimeters – Acoustical Tests, Scantek Inc., Rev. 7/6/2011

Instrumentation used for calibration: Nor-1504 Norsonic Test System:

Instrument - Manufacturer	Description	S/N	Cal. Date	Traceability evidence Cal. Lab / Accreditation	Cal. Due
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DS-360-SRS	Function Generator	33584	Oct 24, 2017	ACR Env./ A2LA	Oct 24, 2019
34401A-Agilent Technologies	Digital Voltmeter	US36120731	Oct 25, 2017	ACR Env. / A2LA	Oct 25, 2018
HM30-Thommen	Meteo Station	1040170/39633	Oct 25, 2017	ACR Env./ A2LA	Oct 25, 2018
PC Program 1019 Norsonic	Calibration software	v.6.1T	Validated Nov 2014	Scantek, Inc.	-
1251-Norsonic	Calibrator	30878	Nov 10, 2017	Scantek, Inc./ NVLAP	Nov 10, 2018

Instrumentation and test results are traceable to SI (International System of Units) through standards maintained by NIST (USA) and NPL (UK).

Environmental conditions:

Temperature (°C)	Barometric pressure (kPa)	Relative Humidity (%)
21.9	100.11	58.8

Calibrated by:	Lydon Dawkins	Authorized signatory:	Steven E. Marshall
Signature	Lydon Dawkins	Signature	Steven E. Marshall
Date	7/27/2018	Date	7/30/2018

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CALIBRATION
NVLAP Lab Code: 200625-0

Calibration Certificate No.41163

Instrument:	**Sound Level Meter**	*Date Calibrated:*	**7/28/2018** *Cal Due:* **7/28/2019**
Model:	**NL42**	*Status:*	**Received** / **Sent**
Manufacturer:	**Rion**	*In tolerance:*	X / X
Serial number:	**00546407**	*Out of tolerance:*	
Tested with:	**Microphone UC52 s/n 158311**	*See comments:*	
	Preamplifier NH24 s/n 46620	*Contains non-accredited tests:*	__Yes X No
Type (class):	**2**	*Calibration service:*	__ Basic X Standard
Customer:	**Black & Veatch**	*Address:*	**11401 Lamar Avenue**
Tel/Fax:	**913-458-7823 / 913-458-7823**		**Overland Park, KS 66211**

Tested in accordance with the following procedures and standards:
Calibration of Sound Level Meters, Scantek Inc., Rev. 6/26/2015
SLM & Dosimeters – Acoustical Tests, Scantek Inc., Rev. 7/6/2011

Instrumentation used for calibration: Nor-1504 Norsonic Test System:

Instrument - Manufacturer	Description	S/N	Cal. Date	Traceability evidence Cal. Lab / Accreditation	Cal. Due
483B-Norsonic	SME Cal Unit	31052	Oct 30, 2017	Scantek, Inc./ NVLAP	Oct 30, 2018
DS-360-SRS	Function Generator	33584	Oct 24, 2017	ACR Env./ A2LA	Oct 24, 2019
34401A-Agilent Technologies	Digital Voltmeter	US36120731	Oct 25, 2017	ACR Env. / A2LA	Oct 25, 2018
HM30-Thommen	Meteo Station	1040170/39633	Oct 25, 2017	ACR Env./ A2LA	Oct 25, 2018
PC Program 1019 Norsonic	Calibration software	v.6.1T	Validated Nov 2014	Scantek, Inc.	-
1251-Norsonic	Calibrator	30878	Nov 10, 2017	Scantek, Inc./ NVLAP	Nov 10, 2018
4226-Brüel&Kjær	Multifunction calibrator	2305103	Sep 5, 2017	B&K / A2LA	Sep 5, 2018

Instrumentation and test results are traceable to SI (International System of Units) through standards maintained by NIST (USA) and NPL (UK).

Environmental conditions:

Temperature (°C)	Barometric pressure (kPa)	Relative Humidity (%)
21.7	100.15	58.3

Calibrated by:	Lydon Dawkins	Authorized signatory:	Steven E. Marshall
Signature	Lydon Dawkins	Signature	Steven E Marshall
Date	7/28/2018	Date	7/30/2018

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NVLAP®
CALIBRATION
NVLAP Lab Code: 200625-0

Calibration Certificate No.41161

Instrument:	**Sound Level Meter**
Model:	**NL52**
Manufacturer:	**Rion**
Serial number:	**01232541**
Tested with:	**Microphone UC-59 s/n 05979** **Preamplifier NH25 s/n 32569**
Type (class):	**1**
Customer:	**Black & Veatch**
Tel/Fax:	**913-458-7823 / 913-458-7823**

Date Calibrated: **7/28/2018** *Cal Due:* **7/28/2019**

Status:	Received	Sent
In tolerance:	X	X
Out of tolerance:		
See comments:		

Contains non-accredited tests: __ Yes X No
Calibration service: __ Basic X Standard
Address: **11401 Lamar Avenue**
Overland Park, KS 66211

Tested in accordance with the following procedures and standards:
Calibration of Sound Level Meters, Scantek Inc., Rev. 6/26/2015
SLM & Dosimeters – Acoustical Tests, Scantek Inc., Rev. 7/6/2011

Instrumentation used for calibration: Nor-1504 Norsonic Test System:

Instrument - Manufacturer	Description	S/N	Cal. Date	Traceability evidence Cal. Lab / Accreditation	Cal. Due
483B-Norsonic	SME Cal Unit	31052	Oct 30, 2017	Scantek, Inc./ NVLAP	Oct 30, 2018
DS-360-SRS	Function Generator	33584	Oct 24, 2017	ACR Env./ A2LA	Oct 24, 2019
34401A-Agilent Technologies	Digital Voltmeter	US36120731	Oct 25, 2017	ACR Env. / A2LA	Oct 25, 2018
HM30-Thommen	Meteo Station	1040170/39633	Oct 25, 2017	ACR Env./ A2LA	Oct 25, 2018
PC Program 1019 Norsonic	Calibration software	v.6.1T	Validated Nov 2014	Scantek, Inc.	-
1251-Norsonic	Calibrator	30878	Nov 10, 2017	Scantek, Inc./ NVLAP	Nov 10, 2018

Instrumentation and test results are traceable to SI (International System of Units) through standards maintained by NIST (USA) and NPL (UK).

Environmental conditions:

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21.9	100.09	52.2

Calibrated by:	Lydon Dawkins	Authorized signatory:	Steven E. Marshall
Signature	Lydon Dawkins	Signature	Steven E. Marshall
Date	7/23/2018	Date	7/25/2018

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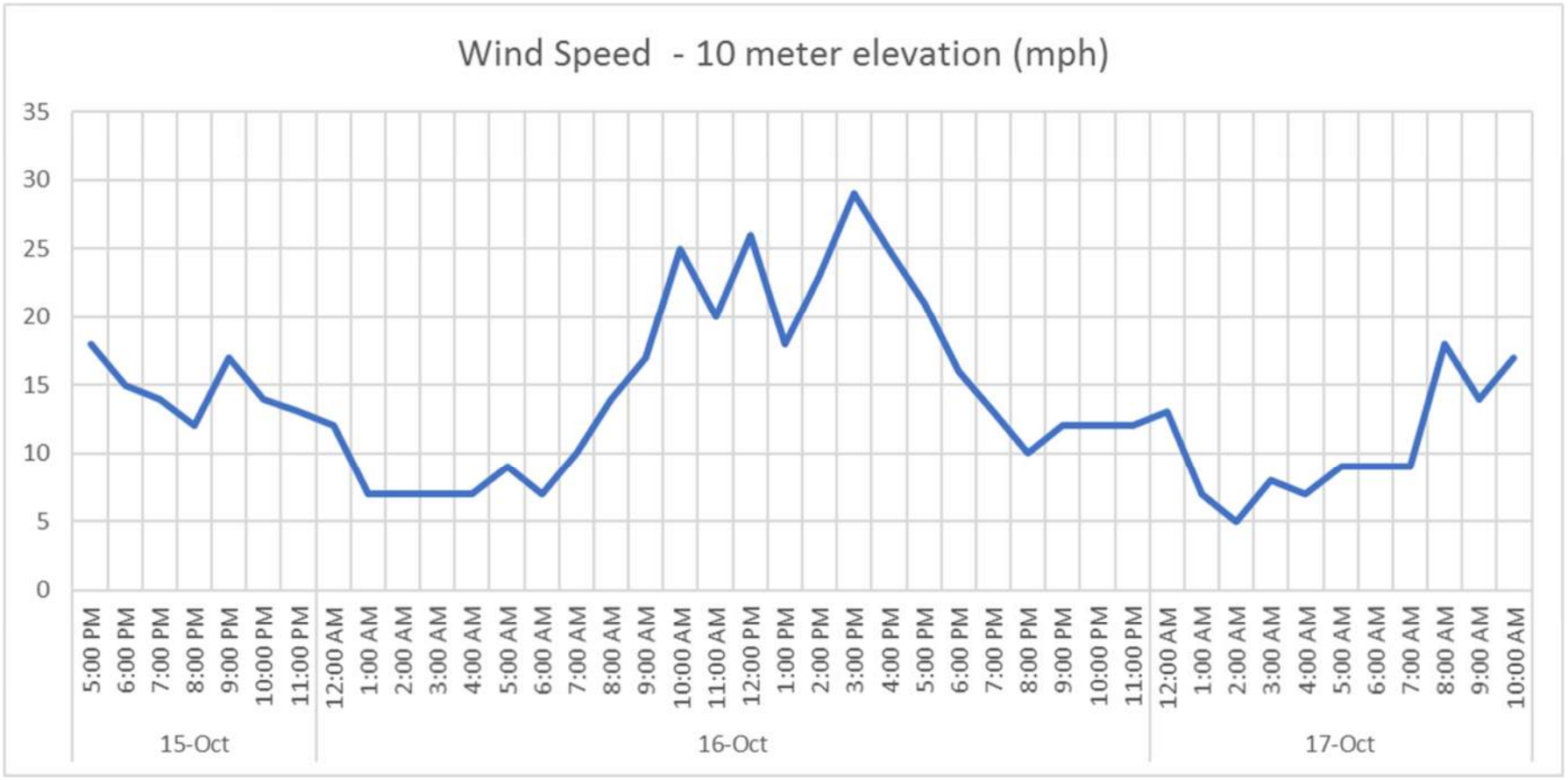
Appendix B.


Wind Speed - 10 meter elevation (mph)
35
30
25
20
15
10
5
0
5:00 PM
6:00 PM
7:00 PM
8:00 PM
9:00 PM
10:00 PM
11:00 PM
12:00 AM
1:00 AM
2:00 AM
3:00 AM
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5:00 AM
6:00 AM
7:00 AM
8:00 AM
9:00 AM
10:00 AM
15-Oct
16-Oct
17-Oct

Appendix C.

Table 2 – Wind turbine modeling parameters

TURBINE	EASTING (M)	NORTHING (M)	SOUND POWER LEVEL(dBA)	VENDOR MITIGATION	ASSUMED OPERATIONAL CONTROLS
2	703900.95	4816741.96	110.5	LNTE	LNTE
3	705150.34	4817917.89	107	LNTE	NRO 105
4	705732.61	4817868.57	107	LNTE	NRO 105
5	705703.82	4818434.99	107	LNTE	NRO 105
6	705508.26	4816682.28	110.5	LNTE	LNTE
8	706748.74	4817955.5	107	LNTE	NRO 105
10	707421.41	4818369.51	107	LNTE	NRO 105
12	707370.53	4816379.66	107	LNTE	NRO 105
13	707393.56	4816962.71	107	LNTE	NRO 105
14	708636.01	4819706.96	110.5	LNTE	LNTE
15	708479.23	4818534.63	108	LNTE	NRO 106
16	708664.35	4817933.34	107	LNTE	NRO 105
17	708528.13	4816818.73	108	LNTE	NRO 106
18	708893.69	4816608.22	110.5	LNTE	LNTE
19	710187.09	4820250.53	109	LNTE	NRO 107
20	710229.26	4819719.2	110	LNTE	NRO108
21	710596.15	4819869.77	107	LNTE	NRO 105
22	709935.39	4818024.97	108	LNTE	NRO 106
23	710478.82	4817996.34	107	LNTE	NRO 105
24	710373.1	4818681.1	107	LNTE	NRO 105
25	710710.98	4816953.08	107	LNTE	NRO 105
26	711625.78	4820324.77	107	LNTE	NRO 105
27	711578	4818048	107	LNTE	NRO 105
28	712127.69	4818068.32	107	LNTE	NRO 105
29	712117.58	4816978.14	107	LNTE	NRO 105
30	713505.44	4821882.04	109	LNTE	NRO 107
31	713746.32	4821456.99	107	LNTE	NRO 105
32	713163.73	4820130.16	110	LNTE	NRO108
33	713648.47	4820113.2	109	LNTE	NRO 107
34	713797.16	4819714.81	109	LNTE	NRO 107
35	713247.7	4818221.3	107	LNTE	NRO 105
36	713508.4	4818921.92	108	LNTE	NRO 106
38	714972.5	4821864.22	110	LNTE	NRO108
39	714990.68	4821338.73	107	LNTE	NRO 105
40	714600.64	4819775.06	109	LNTE	NRO 107
41	714702.45	4820343.58	109	LNTE	NRO 107
42	715288.77	4820374.88	107	LNTE	NRO 105
45	715451.85	4818300.17	107	LNTE	NRO 105

TURBINE	EASTING (M)	NORTHING (M)	SOUND POWER LEVEL (dBA)	VENDOR MITIGATION	ASSUMED OPERATIONAL CONTROLS
46	716358.81	4821588.66	108	LNTE	NRO 106
47	716963.35	4821551.57	107	LNTE	NRO 105
48	716992.21	4820601.82	107	LNTE	NRO 105
49	716235.77	4819031.53	107	LNTE	NRO 105
51	716663.64	4818207.04	107	LNTE	NRO 105
52	717796.24	4821833.75	107	LNTE	NRO 105
54	718556.34	4822019.98	108	LNTE	NRO 106
55	718745.66	4821473.3	108	LNTE	NRO 106
56	717904.22	4819821.97	107	LNTE	NRO 105
58	718354.28	4820441.84	107	LNTE	NRO 105
59	717956.65	4819016.68	107	LNTE	NRO 105
60	718100.48	4818368.22	107	LNTE	NRO 105
61	718398.29	4818906.18	107	LNTE	NRO 105
62	713065.96	4817168.63	107	LNTE	NRO 105
63	713495.04	4816890.82	107	LNTE	NRO 105
64	713822.75	4816621.53	107	LNTE	NRO 105
66	713813.43	4814978.81	107	LNTE	NRO 105
67	713891.39	4814577.8	107	LNTE	NRO 105
68	713310.2	4813183.3	107.5	STE	-
69	713910.47	4813592.64	107	LNTE	NRO 105
70	713931	4812026.6	107.5	STE	-
71	714779.42	4817336.04	107	LNTE	NRO 105
72	715420.56	4817252.07	107	LNTE	NRO 105
73	715367.58	4816422.51	107	LNTE	NRO 105
74	715463	4816044.64	107	LNTE	NRO 105
75	714959.06	4814398.89	107	LNTE	NRO 105
76	715139.08	4815131.36	107	LNTE	NRO 105
77	714878.45	4811710.36	107.5	STE	-
78	715248.71	4811450.93	107.5	STE	-
79	716806.48	4816478.72	108	LNTE	NRO 106
80	716942	4817136.83	107	LNTE	NRO 105
81	716690.66	4814438.73	107.5	STE	-
82	716578.48	4813458.46	107.5	STE	-
83	718308.44	4817368.2	107	LNTE	NRO 105
84	718271.99	4816901.28	107	LNTE	NRO 105
85	718157.44	4812988.95	107.5	STE	-
86	718754.76	4813295.35	107.5	STE	-
87	718272.64	4811714.88	107.5	STE	-
88	718291.06	4811108.57	107.5	STE	-