Application for a Certificate of Site Compatibility



ROLETTE WIND POWER PROJECT

PREPARED FOR:
Rolette Power Development, LLC

SUBMITTED TO:
North Dakota Public Service Commission

PREPARED BY:
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Exhibit 1
Rolette Power Development, LLC

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1. Introduction

Rolette Power Development, LLC (Rolette Power), is submitting this application for a Certificate of Site Compatibility (Certificate) to the North Dakota Public Service Commission (Commission) to construct the Rolette Wind Power Project (Project). The project would encompass an approximately 14,720 acre Project Area and would be located approximately three miles south of the City of Rolette, in Rolette County, North Dakota. The Project would generate approximately 100 megawatts (MW) of electricity and would result in the construction of up to 59 wind turbines, depending on capacity of the turbines that are placed. Please refer to FIGURE A-1. PROJECT LOCATION ON PAGE A-1, in Appendix A.

Rolette Power is a North Dakota limited liability company and is jointly owned by M-Power, LLC and Border Power, LLC. Rolette Power does not currently own or operate any facilities. Rolette Power proposes to begin construction by 2015, with an anticipated in-service date of end of 2015 or early 2016.

While Rolette Power has yet to identify the specific area or areas to be served by the Project, Rolette Power anticipates that a portion of the Project's output would serve the needs of one or more regional utilities and their customers. Any remaining portion of the Project's output would likely serve the needs of one or more utilities located within the Midcontinent Independent System Operator (MISO) service territory, the Western Area Power Administration (WAPA) service territory, or within a service territory adjacent to either the MISO or WAPA service territories. A generator lead line associated with Project interconnection would be subject to local, rather than Commission review and approval.

The turbine size and manufacturer has not yet been determined for the proposed Project. It is anticipated that a power purchase agreement will be completed in the near future. As the turbine is not known at this time, this application assumes a 'worst-case scenario' regarding environmental impacts. These assumptions include impact analysis based on the maximum number of potential turbine locations (59), largest possible rotor diameter (117 meter RD), tallest hub height (96 meter HH), loudest turbine and highest shadow flicker hours. This would ensure that the desired Certificate would cover the greatest impact possible.

1.1. Compliance with the Energy Conversion and Transmission Facility Siting Act Chapter 49-22

The North Dakota Energy Conversion and Transmission Facility Siting Act requires an application for a Certificate to meet the criteria outlined in North Dakota Century Code (NDCC) 49-22. The siting of an energy conversion facility is to be made in an orderly manner compatible with environmental preservation and the efficient use of resources (NDCC 49-22-02).

Rolette Power has presented information required by the North Dakota Energy Conversion and Transmission Facility Siting Act. Rolette Power has considered the exclusion and avoidance areas, the selection criteria, and the policy criteria in the design of the Project, in accordance with Chapter 49-22 of the NDCC and Chapter 69-06-08 of the North Dakota Administrative Code (NDAC). Information regarding Project design, wind resources and technical information has been included in this document to allow a thorough understanding of the Project and to aid in review by the Commission, regulatory agencies and the public. The table below provides a summary of information included in this application and the section of the document in which each is addressed. Please refer to TABLE 1. CERTIFICATE COMPLETION CHECKLIST.

Table 1. Certificate Completion Checklist

STATE AUTHORITY	DESCRIPTION	SECTION
Chapter 69-06-04	*Certificate of Site Compatibility*	
Section 2	*Contents*	
a. (1)	A description of the type of energy conversion facility proposed.	1.0, 4.0–4.2
a. (2)	A description of the gross design capacity.	4.0, 6.1, 6.3
a. (3)	A description of the net design capacity.	1.3.3
a. (4)	A description of the estimated thermal efficiency of the energy conversion process and the assumption upon which the estimate is based.	N/A
a. (5)	A description of the number of acres that the proposed facility will occupy.	1.3.1, 7.3
a. (6) a	A description of the anticipated time schedule for obtaining the certificate of site compatibility.	1.4
a. (6) b	A description of the anticipated time schedule for completing land acquisition.	1.4
a. (6) c	A description of the anticipated time schedule for starting construction.	1.4
a. (6) d	A description of the anticipated time schedule for completing construction.	1.4
a. (6) e	A description of the anticipated time schedule for testing operations.	1.4
a. (6) f	A description of the anticipated time schedule for commencing commercial production.	1.4
a. (6) g	A description of the anticipated time schedule for beginning any expansions or additions.	1.4
b.	Copies or any evaluative studies or assessments of the environmental impact of the proposed facility submitted to any federal, regional, state, or local agency.	Appendices B–C
c.	An analysis of the need for the proposed facility based on present and projected demand for the product or products to be produced by the proposed facility, including the most recent system studies supporting the analysis of the need.	2.1
d.	A description of any feasible alternative methods of serving the need.	2.2
e.	A Study Area that includes the proposed facility site, of sufficient size to enable the Commission to evaluate the factors addressed in North Dakota Century Code section 49-22-09.	1.2
f.	A discussion of the utility's policies and commitments to limit the environmental impact of its facilities, including copies of board resolutions and management directives.	7.0–7.18, Appendix F
g.	A map identifying the criteria that provides the basis of the specific location of the proposed facility within the Study Area.	Figure 4, Appendix A
h.	A discussion of the criteria evaluated within the Study Area, including exclusion areas, avoidance areas, selection criteria, policy criteria, design and construction limitations, and economic considerations.	3.0–3.6
i.	A discussion of the mitigative measures that the applicant will take to minimize adverse impacts which result from the location, construction, and operation of the proposed facility.	7.0–7.18
j.	The qualifications of each person involved in the facility site location study.	12.0
k.	A map of the Study Area showing the location of the proposed facility and the criteria evaluated.	Appendix A
l.	An eight and one-half-inch by eleven-inch black and white map suitable for newspaper publication depicting the site area.	Appendix G
m.	A discussion of present and future natural resource development in the area.	1.2, 7.3, 11.8
n.	Map and GIS requirements. The applicant shall provide information that is complete, current, presented clearly and concisely, and supported by appropriate references to technical and other written material available to the Commission.	Appendix A
NDCC Section 49-22-08	*Description of Application Requirements*	
a.	A description of the size and type of facility.	1.3
b.	A summary of any studies which have been made of the environmental impact of the facility.	7.6, 7.7, 7.8, 7.14 – 7.17
c.	A statement explaining the need for the facility.	2.1
d.	An identification of the location of the preferred site for any energy conversion facility.	1.3.1, Appendix A
e.	An identification of the location of the preferred corridor for any transmission facility.	N/A
f.	A description of the merits and detriments of any location identified and a comprehensive analysis with supporting data showing the reasons why the preferred location is best suited for the facility.	1.1–3.6, 7.0–7.18
g.	A description of mitigative measures that will be taken to minimize all foreseen adverse impacts resulting from the location, construction, and operation of the proposed facility.	7.0–7.18
h.	An evaluation of the proposed site or corridor with regard to the applicable considerations set out in section 49-22-09 and the criteria established pursuant to section 49-22-05.1.	3.1–3.6, 11.1–11.11

STATE AUTHORITY	DESCRIPTION	SECTION
i.	Such other information as the applicant may consider relevant or the Commission may require.	Complete Application including Appendices and Figures
NDCC 49-22-09	*Factors to be considered in evaluating applications and the designation of sites, corridors, and routes.*	
1.	Available research and investigations relating to the effects of the location, construction, and operation of the proposed facility on public health and welfare, natural resources, and the environment.	7.0–7.18
2.	The effects of new energy conversion and transmission technologies and systems designed to minimize adverse environmental effects.	11.2
3.	The potential for beneficial uses of waste energy from a proposed energy conversion facility.	11.3
4.	Adverse direct and indirect environmental effects which cannot be avoided should the proposed site or route be designed.	7.0–7.18, 11.4
5.	Alternatives to the proposed site, corridor, or route which are developed during the hearing process and which minimize adverse effects.	11.5
6.	Irreversible and irretrievable commitments of natural resources should the proposed site, corridor, or route be designed.	11.6
7.	The direct and indirect economic impacts of the proposed facility.	7.10, 11.7
8.	Existing plans of the state, local government, and private entities for other developments at or in the vicinity of the proposed site, corridor, or route.	7.3, 7.4, 11.8
9.	The effect of the proposed site or route on existing scenic areas, historic sites and structures, and paleontological or archaeological sites.	7.7, 7.8, 11.9
10.	The effect of the proposed site or route on areas which are unique because of biological wealth or because they are habitats for rare and endangered species.	7.13–7.17
11.	Problems raised by federal agencies, other state agencies, and local entities.	11.11

1.2. Flexibility in Siting

Rolette Power has contracted KLJ to evaluate the proposed site to ensure compliance with the exclusion and avoidance criteria per Section 49-22-05.1 of the NDCC and Chapter 69-06-08 of the NDAC. Rolette Power has also consulted with resource agencies and local entities regarding the Project. Comments received through this consultation process were taken into consideration during siting of the wind turbines and are further addressed throughout relevant sections of this application.

The initial Study Area for the proposed Project encompassed 75 square miles located south and west of the City of Rolette, North Dakota. KLJ conducted a Critical Issues Analysis in April, 2013 to identify potential issues within the Study Area. With a successful operating wind farm owned by Iberdrola Renewables, LLC just to the south, another proposed project just north of Rolette, combined with substantial interest expressed by local landowners, the local leaders were motivated to look into the feasibility of developing the area between the two projects. Based upon preliminary wind resource and transmission interconnection studies, it was determined that this area held strong potential for development. The Project would connect to the grid via one of several points of interconnection. A generator lead line associated with Project interconnection would be subject to local, rather than Commission review and approval. Preliminary transmission studies indicated potential outlets in all directions with minimal costs to the point of interconnection. This, coupled with its geographic proximity to load growth in northwestern North Dakota, were the driving factors in selecting this area for further investment and development.

Wind turbine siting locations were determined using engineering input from EAPC Wind Energy (EAPC), an engineering firm that is noted for developing and designing wind projects. Compilation and assessment of wind resource data has been ongoing since July 29th, 2011. Two meteorological towers are currently located on-site. The first tower was installed on December 13th, 2012 and the second tower was installed one year later on December 11th, 2013. EAPC has also been collecting data using a sonic detection and ranging (SODAR) monitor that has been on-site for two years. The SODAR allows collection of wind data at heights up to 120 meters above ground level (AGL). The two meteorological towers have collected data which allows for the computation of important variables, including average and annualized wind speeds, shear exponent, turbulence intensity, Weibell parameters and air density. These variables have been used to predict a net annual capacity factor range from 39.4 percent to 46.3 percent (after 12 percent deduction loss and wake losses). In terms of the value of the wind regime, these net capacity factors put this Project Area in the top 10 percent nationally. Wind speeds within the Project Area at a hub height of 95 m AGL have been measured at 7.7 meters per second (mps).

EAPC has filed the proposed locations with the Federal Aviation Administration (FAA) to assure compliance and coordination. Approval for the proposed locations was provided by the FAA on February 25, 2015.

Based on data received through agency feedback, literature reviews, site studies and general preferences of landowners, the Project Area has been narrowed down to approximately 14,720 acres. The Project Area consists of portions of 30 contiguous sections of land determined to have the most potential for wind production.

Rolette Power has worked with its landowners/partners in selecting the best possible site for turbines, access roads and other associated facilities. It is Rolette Power's intent to minimize impacts to areas of concern and focus its resources and attention toward economically and environmentally feasible sites.

1.3. Project Summary

The Project will be located in southwestern Rolette County, North Dakota. The planned nameplate (gross) capacity for the Project is up to 100 MW of wind energy capacity. Rolette Power continues to assess its turbine options, but anticipates that it will use a turbine model with an output of between 1.7 MW – 3.0 MW. The Project's facilities will include:

- Wind turbines and related equipment;
- New gravel access roads and improvements to existing roads;
- Underground electrical collection and communication lines;
- O&M building;
- Project substation;
- Permanent meteorological tower(s) (80 meters tall)

1.3.1. Proposed Site

Rolette Power selected the proposed 14,720-acre Project Area in Rolette County to construct a 100 MW wind farm based on extensive studies of wind resources, evaluation of environmental considerations, profitability, and landowner willingness. A 700 foot buffer separates all project facilities from the edge of the Project Area.

The Project Area is comprised primarily of grasslands and agricultural land in southwestern Rolette County, North Dakota. It is situated south and west of the City of Rolette. Please refer to TABLE 2. SITE LOCATION for further site location details.

Table 2. Site Location

TOWNSHIP NAME	TOWNSHIP	RANGE	SECTIONS
Rice	159N	71W	7–9, 16–21 and 29–31
Finnegan	159N	72W	13–16, 19–30, 35 and 36

1.3.2. Project Layout

In this Application, Rolette Power is providing its proposed Project layout. The exact turbine model has not yet been determined, but the Project layout is designed to accommodate any of four turbine models under consideration, including: (i) the GE 1.7-100 (1.7 MW); (ii) the Vestas V110–2.0 (2.0 MW); (iii) the Siemens SWT 2.3-113 (2.3 MW); and (iv) the Vestas V117–3.3 (3.3 MW). In other words, the turbine sites will not change, but the number of turbine sites used will depend on the final turbine model selected. For example, if the GE 1.7-100 is selected, up to 59 wind turbines will be installed; if the Vestas V110-2.0 is selected, up to 50 wind turbines will be installed; if the Siemens SWT 2.3-113 is selected, up to 43 turbines will be installed; and if the Vestas V117-3.3 is selected, up to 30 turbines would be installed. Rolette Power reserves the right to select alternate turbines representative of the same class and range of turbines as those described above.

1.3.3. Projected Output

Preliminary analysis has indicated a projected output ranging from 419,964 MW hours per year (MWh/y) to 466,836 MWh/y, depending on the wind turbine selected. A more accurate prediction of output would depend upon final wind turbine selection and the final design and layout of the facility.

1.4. Project Schedule

The proposed Project is anticipated to begin construction in 2015, provided all pre-construction permits and approvals have been obtained. Given the intermittency of the Federal Production Tax Credit (PTC), Rolette Power is positioning its Project development timing and investments in such a manner that it can respond to another extension of the PTCs. The proposed Project schedule is as follows:

- **Certificate of Site Compatibility:** Rolette Power anticipates the Certificate would be issued by the Commission by August 2015.
- **Land Acquisition:** All land that is proposed to house Project facilities is subject to an easement allowing for construction of the Project.
- **Permits:** Rolette Power plans to file an application for a Conditional Use Permit (CUP) with Rolette County in February 2015. Rolette Power would acquire all other permits necessary for construction of the Project prior to conducting the work for which the permit is required.

- **Equipment and Construction:** Project construction is anticipated to begin in August 2015 and be completed by the end of 2015 or early 2016.
- **Commercial Testing:** Commercial testing is anticipated to take place in late 2015 or early 2016.
- **Commercial Operations:** Rolette Power anticipates full commercial operation to occur by the end of 2015 or in early 2016.
- **Expansion or Addition:** Definitive plans and schedules for addition or expansion have not been determined at this time. However, should the opportunity arise for expansion or addition to the proposed Project, Rolette Power would take action to develop additional regions of the Study Area that have been deemed suitable for expansion.

1.5. Project Ownership

Rolette Power is jointly owned by M-Power, LLC and Border Power, LLC. This is a landowner-driven, community based project. Its initial development was led by the Rolette Area Development Authority (Rolette ADA), Rolette Job Development Authority (Rolette JDA), the City of Rolette and the Rural Economic Partnership (REAP) Investment Fund of Minot, North Dakota. The initiative began with a promising wind resource study commissioned by the community development entities in 2006. In September 2010, the Rolette leaders sought the help of M-Power, LLC of Finley, North Dakota. M-Power had recently completed a successful landowner-driven, community based 170 MW wind project in Griggs and Steele Counties, North Dakota.

After several exploratory meetings which revealed common interests and mutual approaches to landowner, community, and investor goals, Rolette Power was formed in June of 2012. The Project would be constructed, owned and operated by Rolette Power. Rolette Power is a project development company with only two owners, each with a 50 percent share of the company. The registered owners are M-Power, LLC of Finley, ND and Border Power, LLC of Rolette, ND. Border Power's ownership consists of 27 participating landowners within the footprint of the proposed wind farm in Rolette County, 46 local investors, 30 M-Power investors, and community development organizations, including the Rolette ADA; the Rolette JDA; the City of Rolette; and the REAP Investment Fund of Minot, North Dakota. M-Power's ownership consists of 97 participating landowners in its wind farm footprints in Griggs and Steele Counties, 64 local investors, as well as four community development organizations, including: Zone Investments, LLC, the Griggs-Steele Wind Development Group, Steele County JDA, and Hope Area Investments, LLC.

2. Need for Facility

2.1. Need Analysis

A need exists for additional electric generation sources in North Dakota. Due partly to high heating demand in winter and North Dakota's energy-intensive industrial sector, North Dakota's per capita energy consumption is among the highest in the country. Further, North Dakota has established objectives calling for renewable energy consumption. In 2007, the North Dakota Legislature enacted a statutory provision adopting the national '25×25' initiative, which establishes a goal of having not less than 25 percent of the total energy consumed within the United States provided by renewable resources by January 1, 2025.[1] North Dakota also has a statutory goal that 10 percent of all electricity sold at retail within the state by the year 2015 be obtained from eligible renewable energy and recycled energy sources.[2] While many North Dakota utilities are on track to meet their 2015 goals, additional renewable resources are needed to meet the 25×25 initiative.

In addition, a regional need exists for renewable energy produced in North Dakota. Currently, 11 of the states with MISO presence have renewable portfolio standards. MISO estimates nearly 48 million additional MWh of renewables would need to be added by 2021 and approximately 55 million MWh would be needed by 2026 to meet the collective requirements of those standards.[3] Given Rolette Power's proximity to the MISO market, energy from Rolette Power's proposed Project may be utilized to meet the existing renewable energy needs of one or more utilities in the MISO region, as well as other utilities located in adjacent Regional Transmission Organizations (RTO). Independent System Operators (ISO) may also utilize the energy produced by the Project. Regional ISOs include WAPA, Pennsylvania, Jersey Maryland Power Pool (PJM) or Tennessee Valley Authority (TVA).

Thus, the renewable energy that may be produced by Rolette Power's proposed Project would help meet the significant regional need for renewable energy. Rolette Power plans to sell the energy produced by the Project to one or more utilities that need additional renewable energy to comply with state, and/or if applicable, federal renewable energy standards and objectives, to diversify their generation portfolios, or to otherwise meet their generation needs.

2.2. Alternatives

Potential alternatives to wind generation include electrical generation using coal, natural gas, solar energy, geothermal, hydropower or biomass.

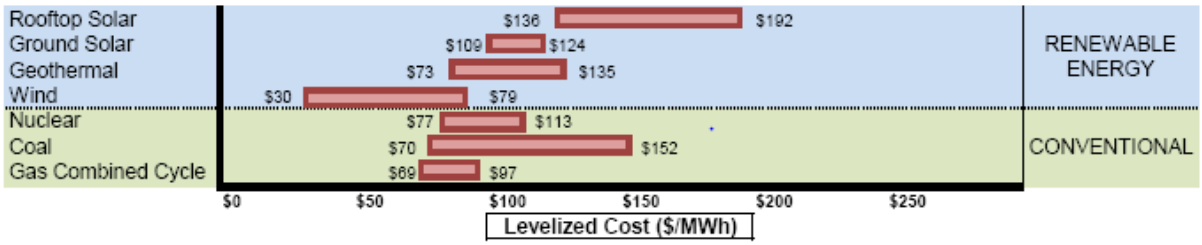
Wind energy is currently among the most cost-effective generation resources. As demonstrated in Lazard's September 2014 Levelized Cost of Energy Analysis (Version 8.0), wind energy is cost competitive with long-term estimates of both renewable and conventional generation technologies under certain scenarios. TABLE 3. COMPARING THE COST OF ENERGY shows the results of Lazard's comparison of the unsubsidized "levelized cost of energy" for various renewable and conventional technologies on a $/MWh basis.

1 See N.D.C.C. § 17-01-01.

2 See N.D.C.C. § 49-02-28

3 MISO, "Multi Value Project Portfolio Results and Analysis," January 10, 2012, at 19.

Table 3. Comparing the Cost of Energy



Source: Lazard 2014

Due to wind energy's cost effectiveness and the Project's purpose of providing North Dakota and the region with additional renewable energy, coal and natural gas were not considered further. Additionally, based on the size, type and timing of the Project, it is unlikely that an alternative source of renewable energy would meet the same need. As discussed in SECTION 1.2. FLEXIBILITY IN SITING, the Project's location is optimal for wind generation, as has been further demonstrated by the operational wind farm located south of the Project, owned by Iberdrola Renewables, LLC, and the proposed wind farm located north of Rolette. A 100 MW ground-based solar energy project would take a large, contiguous block of farmland out of agricultural production. The necessary hydrological profile for a 100 MW hydropower project is not available in the Project Area. In addition, there is not a steady, sustainable fuel source for a 100 MW biomass plant.

2.3. Ten-Year Plan

In accordance with Section 49-22-04 of the NDCC and Chapter 69-06-02 of the NDAC, Rolette Power submitted a Ten-Year Plan for years 2014–2024. A copy of the June 2014 Rolette Power Ten-Year Plan is on file with the Commission, and the Ten-Year Plan is consistent with this application for a Certificate.

3. Site Selection Criteria

Site selection for the Project was based upon the criteria described under NDAC Chapter 69-06-08. These criteria were utilized in the analysis of the potential location of the Rolette Wind Power Project.

The initial Study Area for the proposed Project encompassed 75 square miles located south and west of the City of Rolette, North Dakota. Based on data received through agency feedback, literature reviews, site studies and general preferences of landowners, the Project Area has been narrowed down to approximately 14,720 acres. Rolette Power is evaluating the proposed Project Area to determine the location of up to 59 wind turbines in Rolette County. Siting for wind turbines considers several factors. The siting for the 59 wind turbines has been based upon capitalizing on the identified positive wind regime while accounting for the necessary setbacks and avoiding environmentally sensitive areas as defined by Commission regulations as well as agency consultation. These criteria are discussed further in the following section.

3.1. Exclusion Areas[4]

Per Section 69-06-08-01-1 of the NDAC, certain geographical areas shall be excluded from energy facility siting consideration. NDAC Section 69-06-08-01-2 also lists geographic areas that "must be excluded in the consideration of a site for a wind energy conversion facility." Rolette County does not provide additional exclusion area criteria. Please refer to FIGURE A-2. EXCLUSION AREAS ON PAGE A-2 in Appendix A and TABLE 4. SUMMARY OF EXCLUSION AREAS ON PAGE 10.



3.2. Avoidance Areas[5]

Per Section 69-06-08-01-3 of the NDAC, certain geographical areas may not be approved as sites for energy conservation facilities unless the applicant shows that, under the circumstances, there is no reasonable alternative. In determining whether an avoidance area should be designated for a facility, the Commission may consider, among other things, the following: the proposed management of adverse impacts; the orderly siting of facilities; system reliability and integrity; the efficient use of resources; and alternative sites. Economic considerations alone will not justify approval of these areas. In addition, a buffer zone of a reasonable width to protect the integrity of the area must be included. Rolette County does not provide additional avoidance area criteria. Please refer to FIGURE A-3. AVOIDANCE AREA ON PAGE A-3 and TABLE 5. SUMMARY OF AVOIDANCE AREAS ON PAGE 11.

4 As defined in NDAC 69-06-01-01, exclusion criteria are defined as "criteria that remove areas from consideration for energy conversion facility sites and transmission facility routes." Exclusion areas are composed of these limiting criteria.

5 As defined in NDAC 69-06-01-01, avoidance criteria are defined as "criteria that remove areas from consideration for energy conversion facility sites and transmission facility routes unless it is shown that under the circumstances there are no reasonable alternatives." Avoidance areas are composed of these limiting criteria.

Table 4. Summary of Exclusion Areas

EXCLUSION AREA	PRESENT WITHIN PROJECT AREA	DESCRIPTION	SECTION ADDRESSED
Designated or registered national areas; parks; memorial parks; historic sites and landmarks; natural landmarks; historic districts; monuments; wilderness areas; wildlife areas; wild, scenic, or recreational rivers; wildlife refuges; and grasslands.	Present	A small waterfowl production area (WPA) is located within the southernmost edge of the Project boundary; however, no Project facilities would be located within 0.5 miles of the WPA.	7.3, 7.7, 7.8, 7.13, 7.14, 7.15, 7.16
Designated or registered state: parks; forests; forest management lands; historic sites; monuments; historical markers; archaeological sites; grasslands; wild, scenic, or recreational rivers; game refuges; game management areas; management areas; and nature preserves.	None	N/A	7.3, 7.7, 7.8, 7.14, 7.15, 7.16
County parks and recreation areas; municipal parks; parks owned or administered by other governmental subdivisions; hardwood draws; and enrolled woodlands.	None	N/A	7.4, 7.9
Prime farmland and unique farmland, as defined by the land inventory and monitoring division of the soil conservation service, United States Department of Agriculture in 7 CFR part 657; provided, however, that if the Commission finds that the prime farmland and unique farmland that will be removed from use for the life of the facility is of such small acreage as to be of negligible impact on agricultural productions, this exclusion does not apply.	Present	The Project is proposed to permanently impact less than 0.6% of the total land that could be considered prime farmland or farmland or statewide importance. Therefore, Rolette Power requests that the Commission determine that a prime farmland exclusion shall not apply to the Project.	7.10
Irrigated land.	None	N/A	—
Areas critical to the life stages of threatened or endangered animal or plant species.	None	N/A	7.17
Areas where animal or plant species that are unique or rare to this state would be irreversibly damaged.	None	N/A	7.15, 7.16, 7.17
Areas within one thousand two hundred feet of the geographic center of an intercontinental ballistic missile (ICBM) launch or launch control facility.	None	N/A	7.3
Areas less than one and one-tenth times the height of the turbine from interstate or state roadway right of way.	None	N/A	7.4
Areas less than one and one-tenth times the height of the turbine plus seventy-five feet from the centerline of any county or maintained township roadway.	Present	No turbines will be located within these exclusion areas.	Table 5
Areas less than one and one-tenth times the height of the turbine from any railroad right of way.	None	N/A	—
Areas less than one and one-tenth times the height of the turbine from a one hundred fifteen kilovolt or higher transmission line.	Present	No turbines will be located within these exclusion areas.	Table 5
Areas less than one and one-tenth times the height of the turbine from the property line of a nonparticipating landowner, unless a variance is granted. A variance may be granted if an authorized representative or agent of the permittee and affected parties with associated wind rights file a written agreement expressing all parties' support for a variance to reduce the setback requirement in this subsection. A nonparticipating landowner is a landowner that has not signed a wind option or an easement agreement with the permittee of the wind energy conversion facility as defined in North Dakota Century Code chapter 17-04.	None	An 80-acre parcel of land owned by a nonparticipating landowner is located within the Project Area in Section 24, Township 159N, Range 72W. However, the nearest turbine is not located less than one and one-tenth times the height of the turbine from the property line of the nonparticipating landowner. In addition, the nearest turbine is not located less than one and one-tenth times the height of the turbine from the property line of nonparticipating landowners outside of the Project Area.	Figure 2, Appendix A

Table 5. Summary of Avoidance Areas

AVOIDANCE AREA	PRESENT WITHIN PROJECT SITE	DESCRIPTION	SECTION ADDRESSED
Historical resources which are not designated as exclusion areas.	Present	Rolette Power has completed a Class III cultural resource inventory for all turbine locations and a majority of its access road and collection line locations. Rolette Power will complete a Class III cultural resource inventory of remaining access road and collection line locations in the spring of 2015. Rolette Power will also complete a Class II visual impact survey. Sites with potential cultural resources would be avoided. A 100-foot buffer would be used for sites that are eligible for listing on the National Register of Historic Places or unevaluated sites.	7.8
Areas within the city limits of a city or the boundaries of a military installation.	None	N/A	7.5
Areas within known floodplains as defined by the geographical boundaries of the 100-year flood.	None	N/A	7.13
Areas that are geologically unstable.	None	N/A	7.12
Woodlands and wetlands.	Present	The proposed Project would result in no permanent wetland impacts as wetlands would be avoided to the extent possible. Due to the nature and location of wetlands identified within the Project Area, some collector lines would need to be bored underneath wetlands or will be plowed through. Trees are sparsely located throughout the Project Area and the Project has been designed to minimize tree removal to the extent possible. Tree removal and replacement would be coordinated with landowners.	7.10, 7.14, 7.15
Areas of recreational significance which are not designated as exclusion areas.	None	N/A	7.3
A geographic area where, due to operation of the facility, the sound levels within one hundred feet of an inhabited residence or community building will exceed fifty dB(A). The sound level avoidance area criteria may be waived in writing by the owner of the occupied residence or the community building.	None	Rolette Power has completed a noise assessment, and under the worst-case scenario, noise levels did not exceed fifty dB(A) within one hundred feet of an inhabited residence or community building. Rolette Power used a 1,400 foot setback from occupied residences to minimize the potential for noise impacts.	7.6

3.3. Selection Criteria[6]

Per section 69-06-08-01-5 of the NDAC, a site shall be approved in an area only when it is demonstrated to the Commission by the applicant that any significant adverse effects resulting from the location, construction, and operation of the facility in that area, as they relate to the following, would be at an acceptable minimum, or that those effects would be managed and maintained at an acceptable minimum. Please refer to TABLE 6. SUMMARY OF SELECTION CRITERIA.

6 As defined in NDAC 69-06-01-01, selection criteria is defined as 'criteria' that guide and govern the selection of energy conversion facility sits and transmission facility corridors and routes in order to minimize adverse human and environmental impact after the exclusion and avoidance criteria have been applied.

Table 6. Summary of Selection Criteria

SELECTION CRITERIA	POTENTIAL ADVERSE EFFECT FROM PROJECT	SECTION ADDRESSED
The impact upon agriculture:		
(1) Agricultural production.	The Project would not result in a significant loss of agricultural production. Out of approximately 2,980 acres of prime farmland and approximately 1,124 acres of farmland of statewide importance in the Project Area, approximately 17.4 acres (0.6%) of prime farmland and 5.5 acres (0.5%) of farmland of statewide importance would be permanently impacted due to wind turbine and access road construction.	7.3, 7.10, 7.15
(2) Family farms and ranches.	Economic losses to producers due to conversion of farmland may occur; however, economic losses are anticipated to be minor in comparison to additional income provided by the wind farm. Additionally, Rolette Power has maintained a distance of 1,400 feet from occupied homes in order to minimize the turbine induced noise impacts at each residence	7.2, 7.10
(3) Land which the owner demonstrates has soil, topography, drainage, and an available water supply that cause the land to be economically suitable for irrigation.	No impacted owners have expressed concerns over land that is economically suitable for irrigation. No adverse impacts are anticipated.	N/A
(4) Surface drainage patterns and ground water flow patterns.	No adverse impacts are anticipated to surface drainage or groundwater flow patterns.	7.12, 7.13
(5) The agricultural quality of the cropland.	No adverse impacts to agricultural quality of cropland are anticipated. Landowners would be compensated as part owners in the proposed Project. Rolette Power would alleviate any compaction issues caused by construction activities, if some occur.	7.3, 7.10
The impact upon the availability and adequacy of:		
(1) Law enforcement.	No adverse impacts are anticipated.	—
(2) School systems and education programs.	No adverse impacts to school systems and education programs are anticipated.	7.4
(3) Governmental services and facilities.	No adverse impacts to government services and facilities are anticipated.	7.4
(4) General and mental health care facilities.	No adverse impacts to general and mental health care facilities are anticipated.	7.4
(5) Recreational programs and facilities.	Sportsmen, landowners and birdwatchers that make use of PLOTS land and other portions of the Project Area may be impacted by the sight and possibly the sound of wind turbines. The impacts are anticipated to be minor.	7.9
(6) Transportation facilities and networks.	There would be an increase in truck traffic during construction activities, up to approximately 200 additional daily trips during peak construction may occur. During facility operations no adverse impacts are anticipated.	7.4
(7) Retail service facilities.	No adverse impacts are anticipated to retail service facilities.	—
(8) Utility services.	No adverse impacts are anticipated to utility services.	7.4
The impact upon:		
(1) Local institutions.	No adverse impacts to local institutions are anticipated.	7.4
(2) Noise-sensitive land uses.	Noise sensitive land uses within the Project Area include residences near turbine sites. Rolette Power has maintained a 1,400-foot setback distance for the placement of all turbines. A noise analysis was conducted to analyze potential noise impacts to residences and concluded the Project is consistent with a rural setting and the Commission's avoidance criteria; therefore, adverse impacts are not anticipated.	7.6
(3) Rural residences and businesses.	No turbines would be placed within 1,400 feet of occupied residences and businesses; therefore, no adverse impacts are anticipated.	7.6

SELECTION CRITERIA	POTENTIAL ADVERSE EFFECT FROM PROJECT	SECTION ADDRESSED
(4) Aquifers.	No aquifers occur within the Project area; therefore, no adverse impacts to aquifers are anticipated.	7.12
(5) Human health and safety.	No adverse impacts to human health and safety are anticipated.	7.5
(6) Animal health and safety.	Generally, no adverse impacts to domestic animal health or safety concerns are anticipated. Coordination is ongoing with USFWS to ensure that any potential risks to avian and bat species are minimized and/or mitigated prior to construction.	7.16, 7.17
(7) Plant life.	Temporary and permanent vegetation impacts would occur during construction. Approximately 41.7 acres of grasslands would be permanently impacted by the Project.	7.15
(8) Temporary and permanent housing.	No substantial impacts on permanent housing are anticipated. During construction, out-of-town laborers would likely use local lodging facilities. The operations and maintenance of the facility would require few long-term laborers, and adequate permanent housing would be available in Rolette County to accommodate these laborers.	7.2
(9) Temporary and permanent skilled and unskilled labor.	Economic benefits may occur to temporary and permanent skilled and unskilled labor during construction. No long-term adverse impacts are anticipated. Local contractors would be utilized wherever possible. The Project is expected to boost the local economy.	3.6, 6.5.4
The cumulative effects of the location of the facility in relation to existing and planned facilities and other industrial development.		
Cumulative effects	No effects anticipated. The Project generally avoids developed areas and would comply with local ordinances. Existing turbines to the south of the Project do exist at the Iberdrola Wind Farm. However, the turbines are far enough away (approximately two mile separation between existing turbines and proposed new turbines) where the cumulative impact between the existing and proposed turbines are negligible.	7.3, 11.8

3.4. Policy Criteria[7]

Per section 69-06-08-01-6 of the NDAC, the Commission may give preference to an applicant that would maximize benefits through the adoption of up to 13 criteria related to the applicant's policies and practices (The Commission may also require the adoption of such policies and practices). The table below identifies those 13 criteria and describes whether and how the applicant's policies and practices are consistent with these policy criteria. Please refer to TABLE 7. SUMMARY OF POLICY CRITERIA. In addition, the Commission may also give preference to an applicant that would maximize interstate benefits.

7 As defined in NDAC 69-06-01-01 policy criteria is defined as 'criteria' that guide and govern the selection of energy conversion facility sits and transmission facility corridors and routes in order to maximize benefits during the construction and operation of a facility.

Table 7. Summary of Policy Criteria

POLICY CRITERIA	APPLICANT'S POLICIES AND PRACTICES	SECTION ADDRESSED
Recycling of the conversion byproducts and effluents	None	N/A
Energy conservation through location, process, and design	The proposed Project has been designed to maximize energy conversion where available.	1.2, 2.2
Training and utilization of available labor in this state for the general and specialized skills required	Rolette Power would use skilled and trained labor from this state wherever possible.	3.6
Use of a primary energy source or raw material located within the state	The energy generated would come from the available wind resources of the state.	1.0, 2.1
Nonrelocation of residents	No relocation of residences is anticipated.	7.2.1
The dedication of an area adjacent to the facility to land uses such as recreation, agriculture, or wildlife management	The proposed Project is not anticipated to impact adjacent land uses. As such, Rolette Power does not currently anticipate dedicating any adjacent areas for land uses such as recreation, agriculture, or wildlife management.	7.9.1
Economies of construction and operation	As an up to 100 MW wind energy project, Rolette Power would benefit from economies of scale related to the Project's construction and operation. Wind energy projects have one-time costs that remain relatively stable despite the scale of the project. Therefore, a larger project would have cost advantages in comparison to a smaller project because the fixed costs are spread out over more units of output. Some examples of wind energy project costs that remain similar despite the size of the project include: an on-site office space, crane mobilization, and substation procurement and construction.	3.6, 7.2
Secondary uses of appropriate associated facilities for recreation and the enhancement of wildlife	None	N/A
Use of citizen coordinating committees	Rolette Power has worked with landowners throughout the Project process.	1.2, 1.5
A commitment of a portion of the energy produced for use in this state	Energy produced by the proposed facility would enter a local or regional grid. Because Rolette Power does not currently have a power purchase agreement, there is not a geographic commitment of the energy. A portion of the energy produced may ultimately be available for use within the state.	2.1
Labor relations	No impacts to labor relations are anticipated.	7.2
The coordination of facilities	Coordination would take place with the appropriate entities or individuals.	6.4, 6.5, 7.4
Monitoring of impacts	Rolette Power and its construction contractors would monitor construction activities and use Best Management Practices throughout Project construction. During Project operation and restoration, Rolette Power would monitor the Project and assess impacts.	7.0–7.18

Exclusion and avoidance areas, along with selection and policy criteria described in this section, were evaluated and taken into account when determining the Project Area and preliminary individual siting of the wind turbines. Discussion of impacts on the above-listed areas and criteria are described in SECTION 7. ENVIRONMENTAL ANALYSIS ON PAGE 28.

3.5. Design and Construction Limitations

When determining the location for the proposed Project, Rolette Power considered the following design and construction limitations: wind resources, interconnection to the electrical transmission system,

environmental constraints, and landowners and local support. Rolette Power has assessed the meteorological conditions of the Project Area to ensure that the site has an economically viable wind resource.

Further, capacity for interconnection to the existing electrical transmission system is also a significant factor in Project design. The Project holds potential for either a MISO or a WAPA interconnection to the transmission grid. Rolette Power has retained the services of Power System Engineering, Inc. of Minneapolis, who are conducting detailed studies to determine the most cost-effective approach for interconnection. A number of transmission interconnection options have been studied. Among the three preferred options, there is potential for an interconnection solution that would maximize the use of existing infrastructure and minimize the need for new transmission lines and upgrades to existing lines.

Site control is also critical to the Project. Rolette Power secured voluntary easement agreements with landowners in the Project Area.

Several site-specific limitations also affected the Project's design and construction, including:

- Avoidance of permanent impacts on wetlands, including USFWS wetland easements;
- Avoidance and minimization of impacts to grasslands, including USFWS grassland easements;
- Avoidance or mitigation of impacts on archeological sites; and
- Setback requirements from features including occupied residences, property lines and existing roads.

See SECTION 7. ENVIRONMENTAL ANALYSIS for a more detailed discussion of the site-specific resources and mitigation measures utilized.

3.6. Economic Considerations

Rolette Power would distribute the renewable energy resource for the benefit of local and regional area residents. Further, according to a study conducted by North Carolina Coastal Wind Working Group, every 100 MW of wind power installed provides 310 full-time equivalent (FTE) manufacturing jobs, 67 contracting and installation jobs, and 9.5 annual jobs in operation and maintenance (O&M). These high-skilled, high-paying positions would contribute payroll dollars to the rural portions of North Dakota. These full-time personnel are likely to live in the immediate or surrounding communities near the proposed Project. In addition, easement payments would be made to landowners for placement of wind turbines, access roads, and collector lines.

The economics of a wind farm is driven, first and foremost, by the value of the wind regime. There has been an ongoing compilation and assessment of wind resource data since July 29, 2011. EAPC has been collecting data using a SODAR monitor that has been on-site for two years. The SODAR has provided data that predicts a net annual capacity factor range from 39.4 percent to 46.3 percent (after 12 percent deduction loss and wake losses). In terms of the value of the wind regime, these net capacity factors put this Project Area in the top 10 percent nationally. Wind speeds within the Project Area at a hub height of 95 m AGL have been measured at 7.7 mps.

The selection of the point of interconnection and RTO, another important economic consideration, would depend upon the off-taker of the wind power and its load location(s); however, as discussed in SECTION 3.5 previously, Rolette Power believes that multiple, cost-effective interconnection options are available. Rolette Power would distribute the renewable energy generated by the Project for the benefit of local and regional residents.

4. General Description of the Proposed Facility

The Project would generate approximately 100 MW of electricity and would potentially consist of up to 59 wind turbines, depending on capacity of the turbines that are placed. Please refer to FIGURE A-4. FACILITIES LAYOUT ON PAGE A-4, in Appendix A.

4.1. Wind Power Technology

Wind turbines convert the kinetic energy of the wind into the rotational energy of a rotor and drivetrain. This energy is in turn converted into electrical power by industrial generators integrated within the wind turbine housing. In the technologies considered for this facility, this would be accomplished through a gear train which would amplify the speed of the rotor to achieve the higher speed required of the generator. An automated 'pitch' system would control the speed of the rotor by turning the face of each rotor blade into or out of the wind. Such a system would typically operate in a wind speed range of 7 to 56 miles per hour (mph) beyond which the system would activate a brake to arrest rotation. Constant power output would be further accomplished through the use of power electronics which convert generator output to achieve required output voltage and frequency control. An integrated wind speed and direction monitoring system works with a 'yaw' motion control system to keep the face of the turbine presented into the wind.

Voltage from the turbine generator would be increased through the use of industrial step-up transformers, which commonly increase the voltage to 34.5 kV (kilovolt) for injection into a collection system. The collection system would consist of electrical cable, often organized into discrete circuits of interconnected wind turbines. These circuits would be connected to a substation which would further increase the voltage to levels required for the targeted transmission system. The substation would also provide protective isolation switching and energy measurement functions.

Monitoring and control of each wind turbine would be accomplished through the use of software typically provided by the wind turbine supplier. Information would be carried on communication lines connected to each turbine and transmitted from the wind energy facility by telephone carrier. This would allow remote monitoring and control by turbine suppliers, operation and maintenance providers and wind farm owners.

A specific turbine has not been determined at this point in time. The possible turbine output ranges from 1.7–3.3 MW. Turbine selection would be dependent on Project design parameters and negotiations with turbine manufacturers. Possible turbines are, but are not limited to, the following: GE 1.7-100 on a 96 meter HH (100 meter RD); Siemens SWT 2.3-113 on a 92.5 meter HH (113 meter RD), Vestas V110 – 2.0 on a 95 meter HH (110 meter RD), and Vestas V117-3.3 on a 91.5 meter HH (117 meter RD).

4.1.1. Wind Energy Center Layout

The following sections discuss the proposed layout in terms of orientation and spacing and proposed infrastructure.

Orientation and Spacing

- Turbines would be oriented to maximize energy capture from the dominant wind directions (prevailing wind at the Project Area is centered on 300 degrees WNW) and to make most effective use of the available topography, while avoiding sensitive surface features, cultural resources and/or geotechnical constraints.

- The main driving factor in determining turbine spacing is mechanical loads on the turbines. The spacing is not determined by software, but rather by judgment and knowledge of mechanical loads. The selected spacing was evaluated in terms of wake losses and loads by separate software.

- During turbine spacing development, a 1,000 meter by 400 meter ellipse centered on 300 degrees was applied. This is approximately a 10 RD spacing in dominant wind directions and 4 RD in non-prevailing directions. There are minor exceptions throughout the Project Area, but these spacings should satisfy all turbine manufacturer's requirements and not necessitate special operating parameters (i.e., sector-wise curtailment).

Associated Infrastructure

- Each turbine would sit atop a concrete foundation whose size and design would be finalized once geotechnical analyses have been completed and the chosen turbine selected.

- Each turbine would also have an associated crane pad occupying an area of approximately 125 × 25 feet. The crane pad would provide a working surface for the crane during turbine erection and subsequent maintenance.

- Construction and service access to each turbine location would be facilitated by a compacted gravel access road. These would be designed in consultation with the landowner and constructed by Rolette Power so as to minimize total land consumption, cost, and impact to land use.

- An electrical collection system consisting of buried conductors would interconnect all turbines to the wind farm substation. This system would operate at 34.5 kV, and would be buried in the service road shoulder to minimize cost and land consumption, while facilitating access.

4.2. Associated Facilities

In addition to the turbines and step-up transformers, the Project would include the following associated facilities:

Access Roads

Construction and service access to each turbine location would be facilitated by a compacted gravel road. They have been designed in consultation with landowners and would be constructed so as to minimize impact to land use and cost. These roads would provide access to turbine sites both during and after construction. Temporary construction impacts associated with the access roads would be approximately 50 feet. The roads would be approximately 30 feet wide and have a Class 5 gravel surface, which would support the size and weight of maintenance vehicles.

Operation and Maintenance Building

An O&M building would be constructed within the Project Area to provide a year-round workspace, equipment storage and to facilitate basic maintenance activities. The O&M building would be constructed near a year-round maintained public road. Three options were considered near the intersection of 80th Street NE

and Thorne Road for the location of the O&M building. The three options are located in the SE ¼ of Section 22, Township 159N, Range 72W; SW ¼ of Section 23, Township 159N, Range 72W; and the NW ¼ of Section 26, Township 159N, Range 72W.

Substation

Electrical collection system lines from the proposed project would be connected to a common substation facility. The substation would likely be constructed adjacent to the O&M building described above. The substation would be designed to provide voltage step-up from the collection system 34.5 kV to the 115 kV or lower transmission voltages. This facility would also provide a point of energy metering and various collection system and facility isolation and protective functions. The facility would be fenced to provide site security and safety.

Temporary Facilities

Other temporary facilities would be required for the construction phase of the Project, including a concrete batch plant, a laydown area for equipment, intersection improvements to facilitate over-length turning, crane paths and working pads and a staging area for turbine delivery.

For approximate acreage of temporary and permanent impacts, please refer to TABLE 8. ESTIMATED IMPACTS FROM PROJECT FACILITIES.

Table 8. Estimated Impacts from Project Facilities

PROJECT FACILITIES	DESCRIPTION OF TEMP IMPACTS	APPROXIMATE TEMP IMPACTS	DESCRIPTION OF PERM IMPACTS	APPROXIMATE PERM IMPACTS
Turbines	Turbine site that is octagonal or circular in shape measuring 600 feet in diameter and includes crane pads, laydown area, rotor assembly area and work space	356.0 acres	Each turbine base is typically octagonal or circular in shape and covers 10,000 square feet	12.8 acres for all turbines
Access Roads	50 foot wide impacts associated with construction of access roads	134.2 acres	The roads would be approximately 30 feet wide (including in/outslopes) and have a Class 5 gravel surface	71.5 acres
Collector lines	A 50 foot construction impact corridor has been estimated for the equipment used to install the collector lines	87.7 acres	Impacts associated with collector line installation are all temporary in nature, with the exception of junction boxes	0.1 acres
Substation /O&M Building /Staging Area / Concrete Batch Plant	All of these facilities would be located at one site location	0 acres(potential for no temporary impacts as entire site may be converted)	At the completion of construction, only the substation and O&M building would remain	Largest potential site is 6.3 acres (substation would be approximately 400 × 400 feet and the O&M building would be 4,000 square feet)

4.3. Land Rights

The Project Area consists of 14,720 acres with 27 participating landowners. All land within the Project Area is under easement agreements, except for one nonparticipating landowner, that consists of an 80-acre parcel of land in Section 24, Township 159 North, Range 72 West. The landowners within the footprint of the proposed Project are part owners of Border Power. All land with wind farm facilities located upon them are under easement agreements.

5. Proposed Site

5.1. Identification of Project Site

The Project Area identified for the proposed Project was based on the wind regime, landowner interest, and the ability and proximity to interconnect to the existing electrical system.

As described in SECTION 1.2. FLEXIBILITY IN SITING, the initial Study Area was 75 square miles. Based on data received through agency feedback, literature reviews and site studies, the current Project Area was narrowed down to approximately 14,720 acres. The Project Area mostly consists of agricultural lands, grasslands and wetlands with scattered farmsteads occurring throughout. A 700-foot buffer separates all project facilities from the edge of the Project Area.

5.2. Wind Resource Areas – General

The United States Department of Energy (DOE) and the North Dakota Division of Community Services has conducted wind resource assessment studies in North Dakota. According to the DOE, annual average wind speeds of 6.5 mps and above is suitable for wind power projects. The October 2010 US DOE wind map for the state of North Dakota indicates that the wind resources within the Project Area average 7 to 7.5 mps at a height of 80 meters above the ground.

5.3. Wind Characteristics in Project Site

Engineering input from EAPC was used to place meteorological towers and determine wind turbine locations. There has been ongoing compilation and assessment of wind resource data since July 29, 2011. Two meteorological towers are currently on-site. The first tower was installed on December 13, 2012 and the other tower was installed on December 11, 2013. EAPC has also been collecting data using a SODAR monitor that has been on-site for two years. The SODAR allows collection of wind data at heights up to 120 meters AGL. The two meteorological towers have collected data which allows for the computation of important variables, including average and annualized wind speeds, shear exponent, turbulence intensity, Weibell parameters and air density. These variables have been used to predict a net annual capacity factor range from 39.4 percent to 46.3 percent (after 12 percent deduction loss and wake losses). In terms of the value of the wind regime, these net capacity factors put this Project Area in the top 10 percent nationally. Wind speeds within the Project Area at a hub height of 95 m AGL have been measured at 7.7 mps.

6. Engineering and Operational Design Analysis

This section provides an overall summary of the Project, including Project layout and associated facilities, turbine components, electrical systems, construction, schedule, operations, and site decommission. Please refer to FIGURE A-4. FACILITIES LAYOUT ON PAGE A-4, in Appendix A. Feasible turbine options for the Project are available from a variety of manufacturers. Turbine type would affect the number and configuration of the turbine array.

6.1. Project Layout and Associated Facilities

The Project would consist of an array of wind turbines, transformers, and access roads. The turbines would be interconnected by communication and electric power collection cables within the Project Area. In addition, the wind farm facilities would include a Project O&M building and substation.

Access roads and O&M facilities would be installed as appropriate to facilitate Project construction, operation, and maintenance.

Design of the electrical system and interconnection details would be finalized based on discussions with buyers. The collector lines would deliver the power to the Project substation, which would transform the energy to 115 kV or lower.

The 100 MW Project would include the use of Supervisory Control and Data Acquisition (SCADA), a computer-controlled communications system, to provide automatic, independent operation and remote supervision, allowing for simultaneous control of many wind turbines. Rolette Power would be responsible for the 100 MW Project operations and maintenance until the time it is determined the Project should be decommissioned.

6.2. Description of Wind Turbines

Rolette Power seeks the flexibility to select the most appropriate technology for the Project to ensure optimization of wind and land resources and cost efficiency and is assessing multiple turbine options.

6.2.1. Turbine Types

Rolette Power is considering four turbine types for the Project. TABLE 9. TURBINE TYPE CHARACTERISTICS FOR THE PROJECT describes the characteristics of each of the four turbine types. The turbine output possibilities range from 1.7 MW – 3.3 MW. The Project layout is designed to accommodate any of the four turbine models under consideration. Turbine selection is dependent on Project design parameters and negotiations with turbine manufacturers. Rolette Power reserves the right to select alternate turbines representative of the same class and range of turbines.

Table 9. Turbine Type Characteristics for the Project

TURBINE TYPE	ROTOR DIAMETER (METERS–FEET)	ROTOR SWEPT AREA (METERS^2 – FEET^2)	CUT-IN WIND SPEED (m/s)	RATED POWER (MW)	CUT-OUT WIND SPEED (m/s)	BLADE LENGTH (METERS – FEET)	HUB HEIGHT (METERS – FEET)	BLADE HEIGHT (HIGHEST) (METERS – FEET)	BLADE HEIGHT (LOWEST) (METERS – FEET)	MAX # OF PROJECT TURBINES
GE 1.7-100	100–328	7,854 – 84,540	3.0	1.7	23.0	48.7–160	96.0–315	144.7–475	47.3–155	59
Siemens SWT 2.3-113	113–371	10,000 – 107,640	3.0	2.3	25.0	55.0–180	92.5–303	147.5–484	37.5–123	50
Vestas V110-2.0	110–360	9,503 – 102,290	3.0	2.0	20.0	54.0–170	95.0–312	149.0–489	41.0–135	43
Vestas V117-3.3	117–384	10,751 – 115,720	3.0	3.3	25.0	57.2–188	91.5–300	150–492	33–108	30

6.2.2. Rotor

The maximum nominal rotor diameter under consideration is 117 meters. The rotor consists of three blades mounted to a rotor hub. The hub is attached to the nacelle, which houses the generator, brake, cooling system, and other electrical and mechanical systems.

6.2.3. Tower

The towers, on which the nacelle is mounted, would be constructed of conical tubular steel, with a hub height range from 92.5 to 96 meters. All tower welds would be made according to specifications established by the American National Standards Institute (ANSI). Surfaces of the tower components would be sandblasted and coated to protect against corrosion. A secured door at the base of the tower would provide internal access to the turbine.

6.2.4. Lightning Protection

Lightning and grounding protection for all wind farm equipment is designed and constructed to be compliant to all applicable National Electrical Code (NEC) and National Electric Safety Code (NESC) requirements. Grounding and shielding components are integrated into the foundation and structural elements of all equipment and conductor lines. In particular, each wind turbine would include conductive elements in the blades and a complete grounding and shielding network within the turbine, tower and foundation.

6.3. Description of Electrical System

A step-up transformer would be installed at the base of each turbine to raise the voltage to 34.5 kV—the power collection line voltage. The collector lines would be buried to a depth of approximately four feet in trenches adjacent to the Project access roads or across terrain as is applicable. The collection line system would deliver the power from the wind farm to the new Project substation.

A number of transmission interconnection options have been studied. Among the three preferred options, there is potential for an interconnection solution that would maximize the use of existing infrastructure and minimize the need for new transmission lines and upgrades to existing lines. From the proposed location of the collector substation, Rolette Power has the potential to move power in all directions including Minot,

Grand Forks, points farther south, or into Canada. The most economically viable option would depend upon the intended off-taker and its ultimate loads.

6.4. Rolette Power Energy Center Construction

As previously discussed, the Project consists of approximately 100 MW in the Project area. A variety of activities must be completed to carry the Project through construction. Below is a preliminary list of activities necessary to develop the Project. Pre-construction, construction, and post-construction activities for the Project include:

- Geotechnical analysis;
- Order all necessary turbine components (towers, nacelles, blades, foundations, and transformers);
- Construct access roads and collector lines;
- Design and construct the Project substation;
- Install tower foundations and underground cables;
- Place towers and set turbines;
- Test facility; and
- Begin commercial production.

Permanent access road locations would be dependent on turbine placement. These roads would provide access both during and after construction. The roads would be approximately 30 feet wide and have a Class 5 gravel surface. Class 5 gravel is considered adequate to support the size and weight of maintenance vehicles. Access roads would be sited in coordination with local landowners and completed in accordance with local building requirements. Access roads would be constructed in locations which minimize impacts to the environment. Haul road permits would be acquired from townships, Rolette County and the North Dakota Department of Transportation when required and Rolette Power would negotiate a road use and maintenance agreement with Rolette County. Culverts or other drainage methods would be installed as needed. Land surface disturbed by construction activities and associated with permanent infrastructure would be reseeded in kind with the surrounding vegetation.

During the construction phase, construction equipment and worker vehicles would travel to and from the site. Rolette Power estimates that there would be approximately 200 trips generated per day during peak construction periods. Peak construction periods are anticipated to be when the majority of the foundation and tower assembly are taking place. Upon completion of construction, heavy equipment would be removed from the site.

6.4.1. Construction Management

A contractor has not been designated for the proposed Project at this time. The contractor would undertake the following activities:

- Obtaining building, electrical, grading, road and utility permits;
- Performing civil, structural and electrical engineering;
- Facilitating surveying and geotechnical analysis;
- Forecasting Project labor needs;
- Facilitating subcontractor involvement;
- Securing construction materials;
- Overseeing construction tasks, including: site and access road development; foundation excavation and pouring; electrical and communications installation; turbine and meteorological tower erection; substation installation; and system testing; and
- Managing the Project budget.

During construction, coordination would be ongoing between the Project development and construction teams. The construction manager would provide ongoing correspondence with local officials, citizens groups and landowners. Before the Project becomes fully operational, O&M staff would be integrated into Project construction. The O&M staff would work cooperatively with the construction manager to ensure a smooth transition from construction through commissioning and operating the facility.

6.4.2. Foundation Design

The freestanding turbine towers would be connected by anchor bolts to an underground concrete foundation. The foundation would be designed to anchor the turbine in all weather conditions. Design parameters of the foundations would be dependent upon geotechnical surveys, tower load specifications and cost considerations. Foundations for similar sized turbines are typically octagonal or circular in shape, 40 to 60 feet in diameter and 7 to 10 feet thick.

6.4.3. Commissioning

Upon completion of the construction phase, the Project would undergo detailed inspection and testing procedures before being commissioned. Inspection and testing would occur for each individual component of the wind turbines, as well as associated systems.

6.5. Project Operation and Maintenance

Each wind turbine would communicate directly with the SCADA system for performance monitoring, energy reporting and troubleshooting. Typically, each wind turbine would operate autonomously—making its own control decisions. Rolette Power would enter into contractual agreements with the most appropriate O&M contractor to provide on-site service and maintenance for the Project.

6.5.1. Project Control Management and Service

Rolette Power and the O&M contractor would control, monitor, operate and maintain the Project by means of a SCADA computer software program. In addition to regularly scheduled on-site visits, the wind farm would be monitored via computer.

The SCADA system provides data on turbine generation and production, availability, meteorology and communications. SCADA also relays alarms and communication errors. In addition, SCADA collects performance data and parameters for each turbine, changes machine status and collects data to assist with problem diagnostics and troubleshooting.

6.5.2. Maintenance Schedule

Rolette Power would remotely monitor the Project on a daily basis using SCADA. The O&M contractor would provide routine on-site inspections to ensure the Project is operating as planned. The following schedule is anticipated to be used for service activities:

- **First Service Inspection:** The first service inspection would take place one to three months after the turbines have been commissioned. Focus would be placed on bolt tightening, greasing and oil filtering.
- **Semi-Annual Service Inspection:** Semi-annual service inspections would commence six months after the first inspection. This inspection would consist of lubrication and safety testing.
- **Annual Service Inspection:** The annual service inspection would include the same items as the semi-annual service inspection plus bolt tightening and a full component check.
- **Two-Year Service Inspection:** The two-year service inspection would include items checked during the annual inspection, as well as terminal connector tightening.
- **Five-Year Service Inspection:** The five-year service inspection would include items checked during the annual inspection, as well as braking system inspection, oil and grease testing, balance check and terminal connector tightening.

6.5.3. General Maintenance Duties

Each wind turbine would require periodic scheduled maintenance in accordance with schedules and procedures required by the turbine warranty. Generally, scheduled maintenance is conducted in two separate inspections at approximately six-month intervals. On average, the turbines would require 40 to 50 person hours of scheduled mechanical and electrical maintenance per year. Usually, no more than two turbines are serviced at any single time.

6.5.4. Operations and Maintenance Building

The O&M building would be located adjacent to the Project substation located at the intersection of 80th Street NE and 34th Avenue NE. The O&M building would consist of approximately 4,000 square feet of space divided roughly in half between staffing space to accommodate full time employees and work space for maintaining turbine components and storage of equipment and supplies.

6.6. Decommissioning and Restoration

At the end of the Project's useful life, Rolette Power would remove the wind facilities in accordance with North Dakota Wind Turbine Decommissioning Guidelines (NDAC Section 69-09-09). This includes:

- Dismantling and removal of all towers, turbine generators, transformers, and overhead cables;
- Removal of underground electrical cables to a depth of 24 inches (60.96 centimeters);
- Removal of foundations, buildings, and ancillary equipment to a depth of 3 feet below existing ground surface;
- Removal of surface road material and restoration of the roads and turbine sites to substantially the same physical condition that existed immediately before construction; and
- Grading, adding topsoil, and reseeding according to Natural Resource Conservation Service technical guide recommendations and other agency recommendations, areas disturbed by the construction of the facility or decommissioning activities, unless the landowner requests in writing that the access roads or other land surface areas be retained.

Rolette Power also reserves the right to explore alternatives regarding Project decommissioning. Retrofitting the turbines and power system with upgrades based on new technology may allow the Project to produce efficiently and successfully for many more years. Based on estimated costs of decommissioning and the salvage value of decommissioned equipment, it is anticipated that the salvage value of the Project would exceed the cost of decommissioning. In accordance with NDAC Section 69-09-09-06, Rolette Power would file a decommissioning plan with the Commission prior to the commencement of operation of the Project.

7. Environmental Analysis

This section describes the existing conditions within the Project Area. The existing conditions, or affected environment, are the baseline conditions that may be affected by the proposed Project. This section discusses the direct environmental impacts of the proposed Project within the Project Area, and for certain resource categories, the area immediately surrounding the Project Area which may be impacted. Indirect impacts are identified in the resource discussions where applicable. Mitigation measures, such as Best Management Practices (BMPs), which would avoid, minimize, or mitigate impacts, are discussed where appropriate.

Impacts discussed in the following sections are related to the placement of 59 turbines and associated access roads, collector lines, O&M building and substation. The discussion will assume the greatest possible impacts associated with the proposed Project.

7.1. Description of Environmental Setting

The Project Area consists of approximately 14,720 acres of land approximately three miles south of the City of Rolette, in Rolette County, North Dakota. Please refer to FIGURE A-1. PROJECT LOCATION ON PAGE A-1, in Appendix A. The Project Area is located approximately 0.5 miles north of Pierce County and approximately 6.5 miles east of Bottineau County. Land use is comprised primarily of grasslands (45 percent) and cultivated lands (38 percent), accounting for 83 percent of the Project Area. Developed areas, open water, wetlands and woodlands comprise the remaining 17 percent of land use within the Project Area. Cities and small unincorporated towns near the Project Area include Rolette, Rugby, Overly, Mylo, Wolford and Willow City.

7.2. Demographics

The proposed Project would be located in a rural area in northern North Dakota. There are no indications of any new residential construction within the project area. The Project Area is located within portions of Finnegan and Rice Townships in Rolette County. Major employment industries within this county include education, health and social services, accommodation and food services, public administration, retail trade and agriculture. Please refer to TABLE 10. DEMOGRAPHIC TRENDS.

Table 10. Demographic Trends

COUNTY/TOWNSHIP	POPULATION IN 2013	PER CAPITA INCOME	% OF INDIVIDUALS BELOW POVERTY LEVEL
Rolette County	14,582	$15,502	36.0%
Statewide	723,393	$29,732	11.9%

Source: *US Bureau of the Census, Census 2014.*

7.2.1. Demographic Impacts/Mitigation

The Project is designed to be socioeconomically beneficial to landowners, local governments, and communities. The proposed Project would result in increased income to landowners receiving easement payments and to landowner-investors receiving profits from the sale of electricity, which could raise the per capita income in Rolette County.

Construction of the Project would provide temporary increases to the revenue of the area through increased demand for lodging, food services, fuel, and general supplies. Personal income would also be generated by circulation and recirculation of dollars paid out by the Project as business expenditures and state and local taxes.

Moreover, the potential exists for the Project to use local contractors for sub-contracting work (e.g., gravel, fill and civil work). General skilled labor is expected to be available in Rolette County or North Dakota to serve the Project's basic infrastructure and site development needs. Specialized labor would be required for certain aspects of the Project. It may be necessary to import specialized labor from other areas of North Dakota or neighboring states because the relatively short construction duration often precludes special training of local or regional labor.

No substantial impacts on permanent housing are anticipated. No relocation of residences is anticipated. During construction, out-of-town laborers would likely use local lodging facilities. The operations and maintenance of the facility would require few long-term laborers, and adequate permanent housing would be available in Rolette County to accommodate these laborers.

Because Rolette Power anticipates that the Project would be socioeconomically beneficial to the local population and would not impact long-term population trends, no mitigation measures are anticipated.

7.3. Land Use

The Project Area is located in a rural setting of North Dakota predominantly comprised of grasslands and cultivated land. Please refer to FIGURE A-5. LAND USE ON PAGE A-5, in Appendix A and TABLE 11. LAND USE. Permanent and temporary impacts were calculated based on the descriptions in TABLE 8. ESTIMATED IMPACTS FROM PROJECT FACILITIES ON PAGE 19.

Table 11. Land Use

LAND CLASSIFICATION	ACREAGE	PERCENT OF PROJECT AREA	PERMANENT IMPACTS (ACRES)	TEMPORARY IMPACTS (ACRES)
Cultivated	5,559	38	36.6	266.8
Developed	631	4	7.8	23.4
Grasslands	6,636	45	41.7	248.0
Open Waters	656	5	<0.1	0.7
Wetlands	1,188	8	4.6	38.4
Woodlands	50	<1	<0.1	0.6

Numbers obtained using USDA NASS data

In addition to the general land uses noted above, US Fish and Wildlife Service (USFWS) wetland and grassland easements are located within the Project Area. USFWS wetland easements consist of easements acquired to protect certain wetland basins on a property. USFWS grassland easements restrict native rangeland from being converted to cropland. Several USFWS wetland easements have been identified in the Project Area. One grassland easement is also found within the Project Area.

The USFWS also administers the National Wildlife Refuge System, which includes National Wildlife Refuges (NWR) and Waterfowl Production Areas (WPA). NWR's serve the purpose of preserving and protecting

lands for fish and wildlife and their habitat. WPA's are lands protected and/or restricted for the purpose of waterfowl production. There are no NWR's within the Project Area as the nearest NWR, Lords Lake, is approximately 14 miles to the northwest. A small WPA is located within the southernmost edge of the Project Area in Section 35, Township 159 North, Range 72 West.

In addition, Private Land Opened to Sportsman (PLOTS), which are administered through an agreement between the North Dakota Game & Fish Department (NDGFD) and individual landowners, occur throughout the Project Area and provide hunting and bird watching opportunities to outdoor enthusiasts.



The PLOTS can also work in conjunction with Conservation Reserve Program (CRP) lands that are administered by the Farm Service Agency (FSA). Agricultural landowners may enroll their land into the CRP, essentially taking the land out of production for a given timeframe to provide habitat for wildlife, minimize soil erosion and improve water resources, while receiving annual payments.

The Minot Air Force Base was consulted to determine if any turbine sites lie within 1,200 feet of the geographic center of an Intercontinental Ballistic Missile (ICBM) launch or launch control facility. The Minot Air Force Base found no issues of encroachment to Air Force assets from construction of the proposed Project. Please refer to APPENDIX B for the correspondence from the Minot Air Force Base regarding the potential encroachment upon Air Force assets.

7.3.1. Land Use Impacts/Mitigation

Construction of the Project would result in the permanent conversion of approximately 0.6 percent (90.7 acres) of the total land within the Project Area from existing land uses into a renewable energy resource and its associated facilities. Temporary impacts from the proposed Project would result in the disturbance of approximately 3.9 percent (577.9 acres) of the total land within the Project Area. Temporary land conversion associated with construction staging areas and underground collector lines would cease following construction and would be returned to pre-construction land uses, which would primarily consist of agricultural and recreational practices on grasslands and cultivated lands.

All wetland basins under USFWS easements would be avoided. Some collection lines would likely need to bore underneath basins to avoid impacts. The one USFWS grassland easement within the Project Area would also be avoided.

Construction of the Project may result in temporary or permanent impacts to land currently enrolled in CRP. If CRP lands cannot be avoided, Rolette Power would coordinate with the FSA to determine seeding specifications for the reclamation of temporarily disturbed land and payment requirements for permanently disturbed land.

It is not anticipated that the conversion of existing land use would result in a trend toward modification of existing land use patterns. Conflicts with the existing development plans of state, local, or private entities within the Project Area are not anticipated as the Project generally avoids developed areas.

7.4. Public Services

Local Services

The majority of public services and infrastructure are located in the town of Rolette, which is approximately three miles north of the Project Area. Rolette contains a medical clinic, a city fire hall, a golf course, a public school for grades kindergarten through 12th grade, public swimming pool, businesses and churches. The Project Area is located in a rural part of North Dakota mainly used for agricultural and pastoral purposes. Please refer to FIGURE A-6. INFRASTRUCTURE ON PAGE A-6, in Appendix A.

Electrical Service

Electrical service in the Project Area is provided by North Central Electric Cooperative (NCELC). Transmission infrastructure includes overhead electrical lines. Two utility lines, totaling approximately 6 miles, proceed in a general north/south alignment within the Project Area.

Roads and Traffic

Major roadways near the project area include ND Highway 66 to the north, ND Highway 3 to the west and ND Highway 17 to the south. Other roadways in the Project Area include well maintained gravel roadways and two-track trails used for agricultural purposes.

North Dakota Department of Transportation (NDDOT) traffic counts have been conducted for the three major highways located to the north, south and west of the Project Area. The 2013 average annual daily traffic (AADT) volumes included 630 vehicles on ND Highway 66, 350 vehicles on ND Highway 17 and 250 vehicles on ND Highway 3. No traffic counts were conducted for roadways within the Project Area. It is anticipated that traffic on most of these roadways is well below 100 vehicles per day. Much of the traffic loads on the roadways in the Project Area can be contributed to agricultural traffic or rural residences.

Water Supply

Rural water is supplied to the Project Area by All Seasons Water Users District. It is common for rural residences in the area to utilize private wells for alternative uses, such as agriculture. According to North Dakota State Water Commission data, there are 10 domestic/stock wells located within the Project Area. In addition, no sole source aquifers occur within the Project Area. The nearest aquifer is approximately 0.5 miles southwest of the Project Area.

Telephone, Fiber Optic, and Microwave Communications

Telephone and fiber optic communications do currently exist within the Project Area. Coordination with Turtle Mountain Communications is ongoing to determine locations and potential impacts. No fixed point-to-point microwave communications were identified within the Project Area. A microwave beam path study was conducted in May 2013.

7.4.1. Public Service Impacts/Mitigation

Local Services

Impacts to local services in and around the Project Area are not anticipated; therefore, no mitigation is required.

Electrical Service

The O&M building would require electricity for running equipment and monitoring wind turbines. In addition, the turbines would require a small amount of electricity when not powered by the wind. Electricity would be needed for heating of lubricants, orienting the turbines in the proper direction and changing the pitch of the blade when cut in wind speeds are sufficient and powering red aircraft lights. This electricity will be provided through the proposed collector lines.

The proposed wind farm would have a positive impact on the electrical services in the region. A number of transmission interconnection options have been studied. From the proposed location of the substation, Rolette Power has the potential to move power in all directions including Minot, Grand Forks, points further south, or into Canada. To the extent that wind generation from this Project and other wind farms in North Dakota reduce the demand for coal-fired generation in North Dakota, negative environmental impacts may be incrementally reduced.

Roads and Traffic

Existing roadways within the Project Area would be utilized to the extent feasible; however, construction of new roads would be required to provide access to the proposed turbine locations. In order to reduce the overall Project footprint, constructed roadways may connect several turbine locations in a string. Newly constructed roadways would be approximately 30 feet wide. Roadways would be constructed in locations which minimize impacts to the environment. Haul road permits would be acquired from townships, Rolette County and the North Dakota Department of Transportation, when required and Rolette Power would negotiate a road use and maintenance agreement with Rolette County. As part of these permits, roadways would be returned to pre-existing conditions, in coordination with local authorities, in order to mitigate any stress impacts of turbine construction on the roadway network. Improvements made to roadways may be left in place if requested by local County and Township authorities as determined through coordination during the reclamation process.

Traffic volumes would increase with construction of the wind farm taking place. Additional traffic can be expected from workers and large trucks delivering equipment or turbine parts. It is estimated that there may be up to approximately 200 trips generated per day during peak construction periods. Traffic related to maintenance of the proposed facilities is anticipated to be minor. Permits for transportation of large equipment would be required from the North Dakota Department of Transportation, townships and Rolette County prior to construction and would be the responsibility of the contractor. Due to the rural nature of the Project Area, traffic on county roadways would increase from the current low AADT. However, the increase in traffic is not expected to be at a volume that would disrupt residences or travel in the Project Area. Therefore, no mitigation is required.

Water Supply

The water supply for residents within the Project Area is not anticipated to be permanently impacted by the proposed Project. Temporary construction impacts are not anticipated but would be coordinated with effected individuals and All Seasons Water Users District.

Telephone, Fiber Optic and Microwave Communications

The telecommunications infrastructure and services that could potentially be impacted by the Project's construction or operations include underground telephone and fiber optic cables, amplitude modulation (AM) and frequency modulation (FM) radio broadcasts, off-air television and land mobile radio.

Rolette Power is engaged in ongoing coordination with Turtle Mountain Communications to determine locations and potential impacts to existing telephone and fiber optic equipment. If the Project's facilities cross or otherwise affect existing telephone or fiber optic equipment, Rolette Power would coordinate with Turtle Mountain Communications and any other service providers to avoid interference with their facilities. When the Project is constructed, Rolette Power would provide information about the Project's facility locations to North Dakota One Call. If the Project negatively impacts telecommunication services, Rolette Power would provide a specific mitigation plan and take the necessary steps to restore all impacted services.

Because no microwave beam paths cross the Project Area, no further constraints are required for siting the turbines with respect to avoidance of potential impacts to microwave communication in the area. Please refer to FIGURE A-7. MICROWAVE BEAM PATHS ON PAGE A-7, in Appendix A.

7.5. Human Health and Safety

Air Traffic

The FAA regulates federal airspace. Due to their height, wind turbines may have an effect on airports and navigable airspace. The FAA evaluates the proposed Project on aeronautical compatibility.

The Rolette Airport (2H9) is the nearest public-use airport to the Project Area and is located approximately 3.6 miles north of the nearest turbine location. There are an additional three public-use airports within 25 miles of the Project Area. The Rugby Municipal Airport (RUG) is located approximately 12 miles to the south, the Rolla Municipal Airport (06D) is approximately 22 miles to the northeast, and Towner Municipal Airport (D61) is approximately 23 miles southwest of the Project area.

Private registered airports were not identified in the Project Area.

Electromagnetic Fields

The term 'electromagnetic fields' (EMFs) refers to two separate fields: electric fields and magnetic fields. Electric fields arise from the voltage or electrical charges, and magnetic fields arise from the flow of electricity or current that travels along transmission lines, power collector lines, substation transformers, house wiring, and electrical appliances. The intensity of the electric field is related to the voltage of the line and the intensity and the magnetic field is related to the current flow through the conductors (wire). EMF can occur indoors and outdoors.

Hazardous Materials/Hazardous Waste

Coordination with the North Dakota Department of Health (NDDH), and review of the United States Environmental Protection Agency (EPA) hazardous materials databases revealed no hazardous material sites within the Project Area. The nearest hazardous materials handlers are located approximately three miles north of the Project Area, in the City of Rolette. No underground storage tanks (USTs), groundwater releases, active clean-up sites or landfill locations were identified. A review of the Emergency Response Notification System listings from the National Response Center found no incidents within the Project Area. The closest reported call was in regards to a brownfield re-development site located 1 mile east of Dunseith, North Dakota, approximately 15 miles northwest of the Project Area.

Security

The Project Area is located directly southwest of Rolette. Very few residences are located in or around the Project Area and no towns are located within the boundaries of the Project Area.

7.5.1. Human Health and Safety Impacts/Mitigation

Air Traffic

Construction of wind turbines may influence aircraft operations in the Project Area. The FAA requires a Notice of Proposed Construction (Form 7460-1) be submitted for any object that would extend more than 200 feet AGL. Approval for the proposed locations was provided by the FAA on February 25, 2015. According to comments received on Form 7460-1, the majority of wind turbines will need to be lit with synchronized red lights to enhance safety for the aircraft. All wind turbines must be painted with white paint. The FAA published Advisory Circulars (AC) defines the standards for marking and lighting structures to promote aviation safety. Chapter 13, *Marking and Lighting Wind Turbine Farms*, in the regulations and policies document AC 70/7460-1K, Obstruction Marking and Lighting, provides guidelines to mark and light wind farms. This marking/lighting is intended to assist pilots in identifying and avoiding these obstacles. Any temporary or permanent structure that exceeds an overall height of 200 feet AGL, or exceeds any obstruction standard contained in 14 CFR (Part 77) should normally be marked and/or lighted.

Electromagnetic Fields

The Project would have no impacts to public health and safety due to EMF. As outlined in SECTION 4.2. ASSOCIATED FACILITIES, the wind turbines have been set back 1,400 feet from occupied residences, and collector lines would be buried to a depth of approximately 4 feet.

Hazardous Materials/Hazardous Waste

It is not anticipated that hazardous waste sites would be encountered within the Project Area during construction. If hazardous waste sites are encountered, construction would be suspended and the NDDH would be contacted immediately to determine the best method for removal or clean up.

Any hazardous materials used for the construction of the Project would be contained according to the North Dakota Pollutant Discharge Elimination System (NDPDES) Permit. In addition, a storm water pollution prevention plan (SWPPP) would need to be developed as part of the NDPDES permit. Hazardous materials used for maintenance would be stored inside a building or surrounded by a containment area to prevent contamination from spills. There would be no underground storage tanks installed at the Project site. On-site storage

of turbine petroleum products in the maintenance facility is anticipated to be minimal. It is not anticipated that a Spill Prevention, Control and Countermeasure (SPCC) Plan would be necessary as the Project is not located near navigable waters of the US.

Security

The wind turbines and O&M building would be locked and secured when not in use by maintenance personnel and the substation would be fenced. It is anticipated that construction of the Project would not impact the security of surrounding residents or communities as it is largely a rural area and the turbines would not abut residences; therefore, no mitigation is required.

7.6. Noise

The Project is located in a rural setting in northern North Dakota. Noise contributors in the Project Area typically include farm machinery and roadway traffic. Noise levels in rural settings typically range from 35 to 45 decibels (dB(A)).

7.6.1. Noise Impacts/Mitigation

Sound is generated by wind turbines due to turbulence at the blade tips, from mechanical systems in the hub or nacelle (which radiates throughout the structure), and from transformers at the base of the turbine mast. Blade noise increases with wind speed until maximum blade rotational speed is reached, which usually occurs when wind speeds reach 8–10 mps at the turbine hub. EAPC conducted a noise analysis for the proposed Project. The Noise Analysis is located in APPENDIX C. SOUND AND SHADOW FLICKER SUMMARY REPORT. The noise analysis studied all four turbine models identified in SECTION 6.2.1. TURBINE TYPES ON PAGE 22, and assessed a worst-case scenario. The worst-case scenario assumed that: (i) all wind turbines locations will be used, (ii) the turbines will be operated at a wind speed resulting in the loudest noise possible being emitted, and (iii) no ground attenuation will occur. The worst-case scenario did not result in any residences experiencing noise levels above 50 dB(A).

Implementing the Commission's 1,400-foot setback between turbines and residences would reduce any potential turbine-related noise at residences to levels consistent with those of a rural setting. As a result, further mitigation of turbine-related noise is not anticipated to be necessary. However, if individual cases arise indicating a potential noise concern, the concern would be investigated and mitigation measures implemented, as appropriate.

7.7. Visual

The visual landscape of the Project Area consists of a rural setting including agricultural fields, tree rows, grasslands and wetlands. The Project Area is largely void of large-scale developments and, in keeping with the rural nature of the area, is dotted with farmsteads. The current view shed is relatively unobstructed and largely void of manmade obstructions; however, the Iberdrola Wind Farm to the south is visible from the Project Area. No visually sensitive areas, such as National Parks, exist in or are directly adjacent to the Project Area.

Lands within the Project Area are utilized mainly for agricultural purposes. Crops grown in the project area consist mainly of wheat, canola, barley, soybeans and sunflowers, with limited amounts of alternative crops grown. The native vegetation in the project area is mainly composed of western wheatgrass, green

needlegrass, bluestem, and needle and thread along with prairie cordgrass and reedgrass occurring near wetlands. Wetlands of various hydrology, soils, and vegetation exist within the Project Area. In addition, numerous small drainages exist within the Project Area.

EAPC conducted a worst-case scenario and a refined preliminary shadow flicker analysis within the Project Area, as well as areas adjacent to the Project Area that contained occupied residences that may potentially be impacted by the proposed Project. Shadow flicker may result during certain conditions when the combination of lighting, location, and rotation of turbine blades can cast flickering shadows. The worst case scenario assumes that (i) all turbine locations are used, (ii) the wind turbines are always operating, perpendicular to the sun, with no cloud cover, (iii) all shadows within 1.5 kilometers (km) are visible, and (iv) the sensors are 'Greenhouses'. Greenhouse sensor mode indicates that a shadow cast from any direction will be accumulated in the results. The worst case scenario used the Vestas V117-3.3 turbine model on a 91.5 meter HH, which produced the worst case shadow flicker. The shadow flicker analysis can be found in APPENDIX C. SOUND AND SHADOW FLICKER SUMMARY REPORT.

7.7.1. Visual Impacts/Mitigation

Visual and aesthetic impacts would result from construction of the proposed Project. Measuring the aesthetic value of a specific landscape is difficult and may vary based on an individual's personal values, experiences, or preferences. The Iberdrola wind farm is located just to the south and another proposed wind farm would be located just north of the City of Rolette. The proposed Project, along with existing and other proposed wind farms, would create additional visual contrast to the natural landscape in the area. The degree of visual contrast would vary based on the viewpoint distance and location in relation to the wind farms.

No local, state, or federal guidelines exist that determine the threshold for shadow flicker. However, cases in Europe indicate that less than 30 hours of shadow flicker per year is acceptable. EAPC's worst-case scenario shadow flicker analysis indicated 9 residences that would receive 30 or more hours of shadow flicker per year. A refined analysis was performed to determine if any turbines should be moved or if other forms of mitigation are warranted. This revised analysis included sunshine probabilities and operational statistics. The refined analysis resulted in two home locations, both owned by participating landowners, having more than 30 hours a year of shadow flicker anticipated. To determine if this was of high concern and if the relocation of turbines would be necessary, a detailed shadow flicker analysis taking into consideration local obstacles (i.e., tree breaks) was performed. When taking into consideration local obstacles, and using a conservative estimate of the tree height (5 m), one of the house locations has approximately 22:00 hours per year of flicker predicted and the other house has approximately 29:59 hours per year of flicker predicted. Mitigation measures are not planned at this time due to the 1,400-foot turbine setback from residences and acceptable shadow flicker levels. However, if individual cases arise indicating a potential shadow flicker concern, the concern would be investigated and consultations conducted, as appropriate.

Additional impacts to adjacent land users may occur from tower lighting or marking. The FAA requires specific lighting depending on Project location. Mitigation options for such impacts are limited because the lighting and markings are designed to be visible to pilots. In order to minimize visual impacts to adjacent land users, wind turbine lighting would not exceed FAA lighting requirements (see the air traffic impacts discussion in SECTION 7.5.1 ON PAGE 34). Additionally, the use of setback distances from occupied residences is anticipated to alleviate some of the direct visual impacts to adjacent residents by reducing the intensity of the lights through distance buffers.

7.8. Cultural and Archaeological Resources

The State Historical Society of North Dakota, State Historic Preservation Office (SHPO) requested in their May 14, 2014 letter that a Class I Literature Review and a Class III pedestrian survey be conducted within the physical area of potential effect (APE). The APE subject to the Class III survey is defined as any ground surface areas directly or that have the potential to be disturbed by any construction or installation activities associated with the wind farm. The Class II reconnaissance or visual impact survey will be completed for the surrounding area.

KLJ conducted a literature review of the Project Area at the SHPO on June 10, 2014. The literature review revealed seven previously recorded cultural resources identified during four previous inventories. Cultural resources identified include five historic site leads, a historic depression and an architectural/historic cultural resource. The historic depression is recommended as Not Eligible for inclusion on the National Register of Historic Places (NRHP). All remaining cultural resources are *unevaluated*. Of the seven previously recorded cultural resources, one site lead, 32ROx8, is located within the APE.

KLJ archaeologists conducted a Class III Intensive Cultural Resources Inventory of a 571.3-acre APE on June 23–26, 2014. The Class III inventory was conducted using parallel transects spaced no more than 20 meters apart covering the 571.3-acre APE. To ensure correct coverage, the APE was displayed on handheld GPS Trimbles. This cultural resource survey included the access roads and tower locations. During this survey, four new sites and four isolated finds were recorded. Due to access road reroutes and the preliminary collector line locations, an additional 260.9 acres were surveyed from November 2–5, 2014; however, due to weather conditions (ground snow cover), the survey work could not be completed and will be completed once conditions improve. Prior to the weather delay, approximately 50 percent of the total collector lines had been subject to the Class III. One additional cultural resource, a historic farmstead has been recorded to date.

7.8.1. Cultural and Archaeological Resources Impacts/Mitigation

Any ground disturbing activity within the Project Area can potentially impact known or unknown cultural resources. There may also be possible concerns regarding visual impacts to historic properties within and adjacent to the Project Area.

Wind turbines, access roads, and associated facilities have been sited to avoid archaeological sites identified to date. Class III survey work discussed above will be completed as soon as weather permits. Soil probes will also be done as part of the Class III survey as requested by SHPO. Probes will be taken in areas with high potential for subsurface archaeological resources. Before the Project's construction, Rolette Power would also prepare an Unanticipated Discoveries Plan. The plan would detail a process for prompt communication and action regarding the discovery of previously unknown archaeological resources or human remains, should they be encountered during construction. Once the plan is fully developed, it would be submitted to SHPO for review and approval.

KLJ met with SHPO staff on January 9, 2015 to determine the visual APE for the proposed Project. SHPO determined an APE for visual impacts and identified 34 farmsteads that required Class II visual surveys to be conducted. Coordination with SHPO will be on-going and the Class II and III survey work will be completed once weather conditions improve.

7.9. Recreational Resources

There are no designated recreation areas such as public or private parks or designated trails in the Project Area; however, numerous recreational opportunities exist in and around the Project Area. A golf course is located outside of the City of Rolette. Tourists pass through the area on their way to the International Peace Gardens and local museums. Lakes/ponds, wetlands, and streams are found throughout the Project Area. These areas may be used for hunting, bird watching, and potentially fishing purposes.

Coordination with the USFWS revealed numerous USFWS wetland easements located within and adjacent to the Project Area. USFWS easements consist of easements on tracts of land to protect certain wetland basins on the property, and grassland easements restrict native rangeland from being converted to cropland. One grassland easement is found within the Project Area. While USFWS easements do not grant public access to the property, they do provide large amounts of habitat for wildlife species which naturally attracts outdoor enthusiasts to the surrounding area. In addition, PLOTS lands occur throughout the Project Area providing hunting and bird watching opportunities. The USFWS administers the National Wildlife Refuge System, which includes NWR and WPAs. NWRs serve the purpose of preserving and protecting lands for fish and wildlife and their habitat. WPAs are lands protected and/or restricted for the purpose of waterfowl production. There are no NWRs within the Project Area as the nearest NWR, Lords Lake, is approximately 14 miles to the northwest. A small WPA is located within the southernmost edge of the Project Area in Section 35, Township 159 North, Range 72 West.

7.9.1. Recreational Resources Impacts/Mitigation

Impacts on recreational resources from construction of the proposed Project would be mainly visual in nature. Sportsmen, landowners and birdwatchers that make use of PLOTS land and other portions of the Project Area would likely be impacted by the sight and possibly the sound of wind turbines. The Project may also cause minor impacts to migrating birds that frequently use this area. All wetland basins under USFWS easements would be avoided. Some collection lines would likely need to bore underneath basins to avoid impacts. The one USFWS grassland easement within the Project Area would also be avoided.

Since it is not anticipated that any significant recreational resources would be removed from service by implementation of the Project, no adjacent land would be converted or dedicated to recreational use or wildlife management. No other mitigation is anticipated.

7.10. Effects on Land-Based Economics

Agriculture/Farming

According to the USDA 2012 Census of Agriculture, Rolette County contains 649 farms which primarily produce wheat, corn and raise cattle. The market value of agricultural products sold in Rolette County was $107.9 million in 2012, with a per farm average of $166,301.

Prime farmland is the land that has the best combination of physical and soil characteristics for producing food, feed, forage, fiber, and oilseed crops. The US Department of Agriculture Natural Resources Conservations Service (NRCS) has two classifications for prime farmland: (i) where all areas of the soil series are classified prime farmland; and (ii) where only the drained areas of the soil series are prime farmland. The NRCS also identifies farmland of statewide and local importance, which is land that is important for the production of food, feed, fiber, forage, and oilseed crops. Generally, additional farmlands of statewide or

local importance include those that are nearly prime and that produce high yields of crops in an economic manner when treated and managed according to acceptable farming methods. Some may produce as high a yield as prime farmland soils if conditions are favorable. Approximately 20 percent of the Project Area is comprised of soils that are classified as prime farmland; with approximately 69 percent of the Project Area comprised of soils that are neither prime nor statewide important farmland. Please refer to TABLE 12. FARMLAND CLASSIFICATION and FIGURE A-8. PRIME AND UNIQUE FARMLAND ON PAGE A-8, in Appendix A.

Table 12. Farmland Classification

FARMLAND CLASSIFICATION	ACRES WITHIN THE PROJECT AREA	PERCENT OF PROJECT AREA
Prime	2,980	20
Prime if Drained	373	3
Statewide Importance	1,124	8
Not Prime	10,243	69

Numbers obtained using USDA NASS data.

Woodlands

Wooded areas within the Project Area consist of shelter belts and wooded ravines. There are no economically significant forestry resources located within the Project Area.

7.10.1. Land Based Economics Impacts/Mitigation

Agriculture/Farming

Construction of the proposed Project would result in the permanent conversion of approximately 90.7 acres and the temporary conversion of approximately 577.9 acres of land into a renewable, alternative energy source. Of the land that would be permanently converted into an energy source, approximately 17.4 acres are considered to be prime farmland and 5.5 acres are considered to be farmland of statewide importance. Though the Project would result in the conversion of potential farmland to use as a wind farm, economic losses to producers due to this land conversion are anticipated to be minor in comparison to the additional income provided by the wind farm. Long-term benefits would be seen in the form of profits associated with part ownership in Rolette Power and the proposed Project. This additional income would also be reflected as an increase to the county tax base. Additional money brought into the community would most likely be seen in increased spending at local businesses and improvements to the communities and counties.

Woodlands

Impacts to woodlands from the placement of wind turbines and associated facilities are anticipated to be minor in nature. Tree removal and replacement would be coordinated with landowners.

7.11. Soils

There are 54 soil types found within the Project Area. The majority of these soil types are loamy soils. Loamy soils are a broad textural class of soils that contain a mixture of sand, silt, and clay particles. While most soils contain some mixture of these three particles, an ideal loam exhibits the properties of sand, silt, and clay in approximately equal proportions (not equal amounts). The presence of clay in a soil has a greater influence on a soil than the presence of silt or sand; therefore, a soil name can include the modifier 'clay' with as little as 20 percent clay, while a soil must contain at least 40 percent sand or 45 percent silt in order to contain those respective modifiers in its name. Soils identified as sandy loams have moderately coarse textures, silt loams have medium textures, and clay loams have moderately fine textures. Soil types located within the Project Area include loams, silt loams, sandy loams, and clay loams.



Of the 54 soil types within the Project Area, 28 soil types are classified by the NRCS as prime farmland if drained, 19 are classified as prime farmland, 5 are classified as farmland of statewide importance and 2 are not classified as prime farmland or farmland of statewide importance. Please refer to TABLE 13. SOILS SUMMARY.

7.11.1. Soils Impacts/Mitigation

Impacts to soils associated with the proposed Project are not expected to be significant. Soil impacts would be localized, and BMPs would be implemented to minimize these impacts. Surface disturbance caused by construction of the wind turbines and infrastructure improvements would result in the soil surface becoming more prone to erosion. Another soil resource issue is soil compaction, which can occur by use of heavy equipment. Silt and clay soils are especially susceptible to this. Mitigation for soil impacts would not be required, though BMPs to reduce impacts should be implemented. These may include the use of erosion and sediment control during and after construction, noxious weed control, segregating topsoil from subsurface materials, reseeding of disturbed areas, the use of construction equipment appropriately sized to the scope and scale of the Project, ensuring access road grades fit closely with the natural terrain, proper on-site disposal of soil cuttings from turbine foundation construction and maintaining proper drainage.

Table 13. Soils Summary

MAP UNIT SYMBOL	SOIL TYPE	PRIME FARMLAND	FARMLAND OF STATEWIDE IMPORTANCE	PRIME FARMLAND IF DRAINED
F211A	Fram-Wyard loams, 0 to 3 percent slopes	X		
F216A	Fram loam, saline, 0 to 3 percent slopes			X
F224A	Cathay-Larson loams, 0 to 3 percent slopes			X
F224B	Cathay-Larson loams, 3 to 6 percent slopes			X
F229A	Heimdal-Emrick loams, 0 to 3 percent slopes	X		
F229B	Heimdal-Emrick loams, 3 to 6 percent slopes	X		
F229C	Heimdal-Esmond-Sisseton loams, 6 to 9 percent slopes			X
F229D	Heimdal-Esmond-Sisseton loams, 9 to 15 percent slopes			X
F229F	Esmond-Heimdal loams, 15 to 35 percent slopes			X
F230B	Heimdal-Esmond loams, 3 to 6 percent slopes	X		
F231A	Embden-Heimdal complex, 0 to 3 percent slopes	X		
F231B	Embden-Heimdal complex, 3 to 6 percent slopes	X		
F250A	Divide loam, 0 to 2 percent slopes	X		
F252A	Wyrene sandy loam, 0 to 2 percent slopes		X	
F270A	Arvilla sandy loam, 0 to 2 percent slopes			X
F272B	Arvilla-Sioux complex, 2 to 6 percent slopes			X
F329A	Wyndmere fine sandy loam, 0 to 2 percent slopes	X		
F32A	Fossum fine sandy loam, very poorly drained, 0 to 1 percent slopes			X
F350A	Ulen-Hamar fine sandy loams, 0 to 2 percent slopes		X	
F358A	Letcher fine sandy loam, 0 to 2 percent slopes			X
F358B	Letcher fine sandy loam, 2 to 6 percent slopes			X
F362A	Stirum-Arveson, saline fine sandy loams, 0 to 1 percent slopes			X
F366A	Hecla loamy fine sand, 0 to 2 percent slopes		X	
F367A	Hecla fine sandy loam, 0 to 2 percent slopes		X	
F369A	Hecla-Garborg loamy fine sands, 0 to 2 percent slopes		X	
F376A	Embden fine sandy loam, 0 to 2 percent slopes	X		
F377B	Embden-Egeland fine sandy loams, 2 to 6 percent slopes	X		
F378A	Egeland-Embden fine sandy loams, 0 to 2 percent slopes	X		
F37A	Venlo fine sandy loam, 0 to 1 percent slopes			X
F384B	Maddock-Hecla loamy fine sands, 0 to 6 percent slopes			X
F38A	Arveson fine sandy loam, 0 to 1 percent slopes			
F399E	Maddock-Serden loamy fine sands, 6 to 25 percent slopes			X
F3A	Parnell silty clay loam, 0 to 1 percent slopes			X
F431A	Bearden silt loam, 0 to 2 percent slopes	X		
F43A	Colvin silt loam, 0 to 1 percent slopes			
F447A	Colvin-Borup complex, saline, 0 to 1 percent slopes			X
F44A	Colvin silt loam, very poorly drained, 0 to 1 percent slopes			X
F453A	Bearden silt loam, saline, 0 to 2 percent slopes			X
F454A	Glyndon loam, 0 to 2 percent slopes	X		
F467A	Aberdeen-Nahon silt loams, 0 to 2 percent slopes			X
F482A	Great Bend-Overly silt loams, 0 to 2 percent slopes	X		
F485A	Gardena loam, 0 to 2 percent slopes	X		

Source: USDA NRCS Web Soil Survey Application, Soil Maps
Numbers obtained using USDA NASS data.

MAP UNIT SYMBOL	SOIL TYPE	PRIME FARMLAND	FARMLAND OF STATEWIDE IMPORTANCE	PRIME FARMLAND IF DRAINED
F486A	Gardena-Eckman loams, 0 to 2 percent slopes	X		
F486B	Gardena-Eckman loams, 2 to 6 percent slopes	X		
F4A	Southam silty clay loam, 0 to 1 percent slopes			X
F523A	Lowe-Fluvaquents, channeled complex, 0 to 2 percent slopes, frequently flooded			X
F554A	Harriet loam, 0 to 1 percent slopes, occasionally flooded			X
F731A	Swenoda fine sandy loam, 0 to 3 percent slopes	X		
F732B	Swenoda-Barnes complex, 3 to 6 percent slopes	X		
F735A	Towner loamy fine sand, 0 to 3 percent slopes			X
F735B	Towner-Dickey loamy fine sands, 3 to 6 percent slopes			X
F750C	Dickey-Esmond-Embden complex, 3 to 9 percent slopes			X
F750E	Dickey-Esmond-Embden complex, 6 to 25 percent slopes			X
F812E	Claire-Lohnes complex, 6 to 25 percent slopes			X

Source: USDA NRCS Web Soil Survey Application, Soil Maps
Numbers obtained using USDA NASS data.

7.12. Geologic and Groundwater Resources

Surface geology within the Project Area is considered part of the Coleharbor Formation, which consists of glacial sediment including pockets of cross bedded sands and gravels as well as layers of silt and clay, approximately 100–200 feet thick. Due to these geological sequences, the region in which the Project Area is located is commonly referred to as the prairie pothole region which was formed as large ice chucks left by the glaciers melted, forming wetland basins. Please refer to FIGURE A-9. GEOLOGIC AND GROUND WATER RESOURCES ON PAGE A-9, in Appendix A.

No aquifers are located within the Project Area; however, two shallow glacial drift aquifers are in close proximity. The Shell Valley Aquifer is located to the northeast of the Project Area and the nearest aquifer is unnamed and located approximately 0.5 miles southwest of the Project Area. According to data from the North Dakota Industrial Commission (NDIC), Department of Mineral Resources, Oil and Gas Division, there are no active oil wells in the Project Area.

7.12.1. Geologic and Groundwater Impacts/Mitigation

Due to the absence of aquifers or geological formations within the Project Area, impacts to geologic and/or groundwater resources are not anticipated. No mitigation is required.

7.13. Surface Water and Floodplain Resources

The Project Area occurs in the prairie pothole region of North Dakota, in the Devils Lake Watershed Basin. This region is dotted with wetland basins of various sizes and water regimes. In addition, smaller streams, drainages and larger water bodies occur within the Project Area. Please refer to FIGURE A-10. SURFACE WATERS AND USFWS NWI ON PAGE A-10, in Appendix A. These water complexes may be used for hunting, bird watching, and potentially fishing purposes; however, they are likely not utilized for boating activities other than occasional occurrences of smaller watercraft associated with hunting or fishing. A search revealed no flood

rating maps compiled for the Project Area due to its rural location. In addition, the North Dakota State Water Commission (NDSWC) stated in a letter that there are no floodplains identified and/or mapped within the Project Area.

7.13.1. Surface Water and Floodplain Resources Impacts/Mitigation

Project facilities have been designed to avoid impacts on surface water resources to the extent practicable. Wind turbines would be built on uplands to avoid surface water resources in the lower elevations to the extent practicable. However, Project facilities, such as underground electrical collector lines, access roads, turbine pads, and the O&M building, would impact land and, therefore, potentially impact surface water runoff within the Project Area. These impacts are expected to be minimal. Impacts to surface water would be avoided and/or minimized through use of BMPs. The Project would not impact known floodplain areas.

7.14. Wetlands

Wetlands are defined both in the 1977 Executive Order 11990, Protection of Wetlands, and in Section 404 of the Clean Water Act (CWA) of 1986, as those areas that are inundated by surface or groundwater with a frequency to support and, under normal circumstances, do or would support a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Three parameters that define a wetland, as outlined in the Federal Manual for Delineating Jurisdictional Wetlands (United States Army Corps of Engineers, 1987), are hydric soils, hydrophytic vegetation, and hydrology. Wetlands generally include swamps, marshes, bogs, and similar areas. Wetlands are important natural resources that often serve many functions, such as providing habitat for wildlife, storing floodwaters, recharging groundwater, and improving water quality through purification.

The Project Area is located in the ecoregion identified by the US Geological Survey (USGS) as the Glacial Lake Deltas of North Dakota. The ecoregion is composed of a flat to gently rolling landscape with glacial drift. The subhumid conditions foster a grassland transitional between the tall and short grass prairie. High concentrations of temporary and seasonal wetlands create favorable conditions for duck nesting and migration. Dunes in the delta areas have a thin vegetative cover and high risks for wind erosion, and thus are used mainly for grazing or irrigated agriculture.

A field wetland delineation was completed in conjunction with the proposed Project. The study area for this delineation was approximately 650 acres in size and covered all of the proposed turbine, access road, O&M building and substation locations. A total of 43 individual wetland basins and two areas of other water were identified within the wetland study area. All or a portion of these wetlands may fall under the jurisdiction of the United States Army Corps of Engineers (USACE). In addition, several of these wetland basins are protected by USFWS wetland easements. Please refer to FIGURE A-10. SURFACE WATERS AND USFWS NWI ON PAGE A-10, in Appendix A.

7.14.1. Wetland Impacts/Mitigation

Coordination with USFWS has been ongoing throughout the development of the Project to ensure that permanent impacts to USFWS wetland easement basins are avoided. The proposed Project would result in no permanent wetland impacts as wetlands and wetland basins have been avoided to the extent possible. Due to the nature and location of wetlands identified within the Project Area, some collector lines would need to be bored underneath wetlands or will be plowed through as determined by USFWS staff. Turbines,

access roads, substation and the O&M building would all avoid impacts to wetlands within the Project Area. Therefore, no mitigation is proposed.

7.15. Vegetation

Primary vegetation communities in North Dakota include short grass prairie in the drier western part of the state and tall grass prairie in the eastern part of the state. In between the short and tall grass prairies is a transitional area called the mixed grass prairie, which consists of a mixture of both short and tall grasses. According to the NDGFD *North Dakota Comprehensive Wildlife Strategy*, the Project Area is located within the EPA designated Level III Ecoregion of the Northern Glaciated Plains, commonly referred to as the Drift Prairie. This ecoregion is associated with eastern mixed-grass prairie. Vegetation of the mixed-grass prairie consists mainly of wheatgrass (*Agropyron cristatum* and *Pascopyrum smithii*), bluestem (*Andropogon gerardii* and *Schizachyrium scoparium*), and needlegrass (*Achnatherum sp.*), with tall grass prairie mainly comprised of bluestem.

Approximately 45 percent of the Project Area consists of grassland. One USFWS administered Farmers Home Administration (FmHA) easement occurs within the project area. This easement is in place to protect grassland vegetation, primarily native prairie. Approximately 14 percent of the project area consists of CRP lands.

Woodlands comprise less than 1 percent of the total Project Area. Trees within the Project Area consist of wooded draws and planted hardwood shelterbelts for wind protection around farmsteads or in cropland fields.

7.15.1. Vegetation Impacts/Mitigation

The wind turbines and associated facilities would be constructed on both cropland and grasslands. Access roads have been sited to follow section lines wherever practicable and lessen the impact and fragmentation of existing grasslands. Approximately 41.7 acres of grassland would be permanently impacted and approximately 248.0 acres of grassland would be temporarily impacted by construction of the Project. Following construction, the temporarily disturbed areas would be re-vegetated with a seed mixture consistent with the surrounding vegetation and free of noxious weeds. Once re-vegetated, these areas would be available for their present use (e.g., cultivation, grazing, and prairie) following construction.

The grassland easement within the Project Area would be avoided. Construction of the Project may result in temporary or permanent impacts to CRP land. If CRP lands cannot be avoided, Rolette Power would coordinate with the landowners and FSA to determine seeding specifications for the reclamation of temporarily disturbed land and payment requirements for permanently disturbed land.

7.16. Wildlife

Avian Species

The Project Area lies within a major bird migration route following the Great Plains of the U.S. and Canada, known as the Central Flyway. Within the Central Flyway lies the Prairie Pothole Region, which provides migration and breeding habitat in the form of abundant grasslands and wetland basins for millions of ducks, geese and other bird species. The NDGFD manages roughly 2,600 acres of land within the Project Area.

Protection is provided for bald and golden eagles, as well as 836 species of migratory birds (58 of which are hunted), through the Bald and Golden Eagle Protection Act (BGEPA) and the Migratory Bird Treaty Act (MBTA). Both laws are intended to prohibit 'take' and regulate impacts to eagles and other migratory birds from direct mortality, habitat degradation, and/or displacement of individual birds. 'Take' is defined as hunt, capture, kill, possess, sell, purchase, ship, transport, carry, or export any part, nest, or egg of a migratory bird.

To determine the presence of bird species that may occur within the Project Area, the North Dakota Parks and Recreation Department (NDPRD) Natural Heritage Inventory and the North American Breeding Bird Survey databases were reviewed. The North American Breeding Bird Survey (BBS) is an annual survey conducted at the height of the breeding season (June), with over 4,100 routes surveyed within Canada and the U.S. No breeding bird routes were identified within the Project Area. The nearest survey route is Rolla, approximately 14 miles northeast of the Project Area. The Rolla route has been surveyed annually from 1969–2013. Over the 36 years of surveys (surveys were not conducted for 8 of the years), approximately 34,000 individuals have been identified, comprising 116 species of songbirds, shorebirds, raptors and waterfowl. Based on the number of birds identified on the Rolla survey route, along with the high species diversity and high quality habitat within the Project Area, it can be assumed that a large number of bird nests would occur within the Project Area.

Species of habitat fragmentation concern (SHFC) find "that separation of their habitats into smaller blocks reduces connectivity such that the individuals in the remaining habitat segments may suffer from effects such as decreased survival, reproduction, distribution, or use of the area". As of February 2013, the USFWS of North Dakota has identified 11 SHFC, 9 of which have primary habitat within the Project Area. Seven of the SHFC have been recorded during the BBS survey. Additionally, three SHFC species were recorded during the field survey. Please refer to TABLE 14. SPECIES OF HABITAT FRAGMENTATION CONCERN.

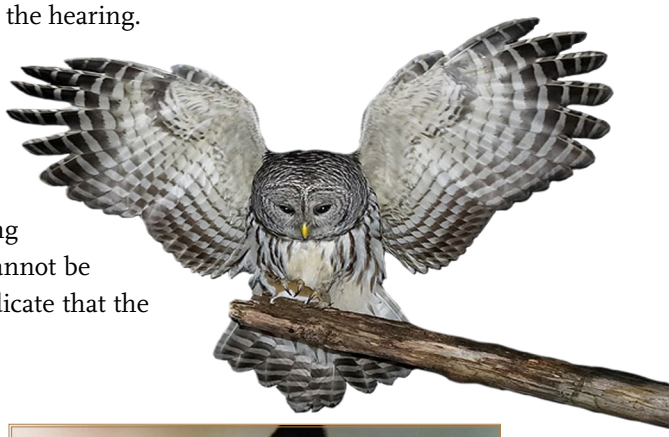
Table 14. Species of Habitat Fragmentation Concern

COMMON NAME	SCIENTIFIC NAME	PRIMARY HABITAT	SPECIES IDENTIFIED ON ROLLA SURVEY ROUTE	SPECIES IDENTIFIED DURING FIELD SURVEY *
Baird's Sparrow	*Ammodramus bairdii*	X		
Bobolink	*Dolichonyx oryzivorus*	X	X	X
Chestnut-collared Longspur	*Calcarius ornatus*	X	X	
Grasshopper Sparrow	*Ammodramus savannarum*	X	X	
Greater Prairie Chicken	*Tympanuchus cupido*			
Greater Sage Grouse	*Centrocercus urophasianus*			
Northern Harrier	*Circus cyaneus*	X	X	X
Sedge Wren	*Cistothorus platensis*	X	X	
Sharp-tailed Grouse	*Tympanuchus phasianellus*	X	X	
Sprague's Pipit	*Anthus spragueii*	X		
Upland Sandpiper	*Bartramia longicauda*	X	X	X

Source: Hagen et al, 2005 & USFWS North Dakota Field Office (http://www.fws.gov/northdakotafieldoffice/wind_power.htm)

* Species were recorded by casual observation. No methodology was used to determine bird diversity or density within the Project area.

Review of bald and golden eagle habitat revealed only bald eagle habitat occurs near the Project Area. According to a response letter to KLJ from the USFWS Bismarck Ecological Field Office, one bald eagle nest is recorded within the Project Area. The exact location of the eagle nest within the Project Area is unknown since location data is not available from the USFWS and no eagle nests were located during the field surveys. A letter was sent to Kevin Shelley of USFWS requesting guidance on how to proceed with the proposed Project regarding the potential of an eagle nest within the project area. No response has been received at this time. Guidance or clarification from USFWS will be received prior to the hearing.



According to the BBS data, no bald or golden eagles have been identified on either route. Review of 2013 NDGFD raptor data revealed no documented eagles or nests occurring within the Project Area. Additionally, the NDPRD Natural Heritage Inventory Database (NHID) has no documentation of eagles or eagle nests occurring within the Project Area. The NHID notes that the absence of data cannot be construed to mean no significant resources are present, but may indicate that the Project Area has not been surveyed.

Mammals



The Project Area contains suitable habitat for a variety of mammals, including white tail deer, moose, rabbit, fox, coyote, ground squirrels, beaver and muskrat. All of these species can be found throughout North Dakota and are generalists in their habitat selection. Muskrat and beaver require wetlands for their life cycle. During the field surveys, evidence and direct observations of coyote, ground squirrels, white-tailed deer and moose were recorded within the Project Area. An active coyote den was observed within the NE ¼ of Section 23, Township 159 North, Range 72 West. Direct observations and evidence of white-tailed deer occurred throughout the Project Area. Additionally, evidence of moose was observed within the Project Area. All of these species can be found throughout North Dakota and do not require special habitat types. Wetlands are required in the life cycle of the muskrat and beaver.



Bat Species

According to a study of bat distribution and habitat use conducted by Gillam and Barnhart, 2010, eleven bat species are found in North Dakota. Areas of highest bat diversity contain a range of elevations, vegetation types and roost types (rock crevices and trees), such as the Badlands, Missouri River Valley and the Turtle Mountains. Seven bat species have been documented within the Turtle Mountains, located approximately 14 miles north of the Project Area. Potential sites for roosting and hibernation are found within the Project Area in the form of trees. In addition, bats may use the Project Area for foraging or as a migration route to or from the Turtle Mountains.



7.16.1. Wildlife Impacts/Mitigation

Avian Species

Potential impacts to avian species from the construction of the Project include turbine rotor strikes, direct impacts to nests or individuals during construction of the Project; as well as, the removal, degradation, and fragmentation of habitat. To prevent bird strikes with transmission lines, all collector lines would be buried underground. To minimize degradation of habitat, a majority of the turbines have been sited on existing cropland to avoid disturbing grassland habitats. Additionally, all areas of temporary disturbance would be reclaimed with vegetation consistent with the surrounding vegetation types and approved by the landowner. Tree impacts would be mitigated in kind, as approved by the landowner. Coordination and discussion with USFWS is ongoing to determine appropriate mitigation/minimization measures. These measures will be included in the Bird & Bat Conservation Strategy (BBCS), which would be completed prior to operation of the proposed Project.

Mammals

Ground clearing activities associated with construction of the turbines and associated facilities would result in the direct conversion of habitat; as well as, the degradation and fragmentation of habitat for ground dwelling mammals and other wildlife species. The white-tailed deer, coyote, fox, rabbit, raccoon and badger discussed in the previous section are habitat generalists and can readily relocate to adjacent unaffected areas and continue to thrive. To minimize impacts to beaver and muskrat, wetlands in the Project Area would be avoided. To minimize degradation of habitat, all areas of temporary disturbance would be reclaimed with vegetation consistent with the surrounding vegetation types and approved by the landowner. Additionally, tree impacts would be mitigated in kind, as approved by the landowner.

Bat Species

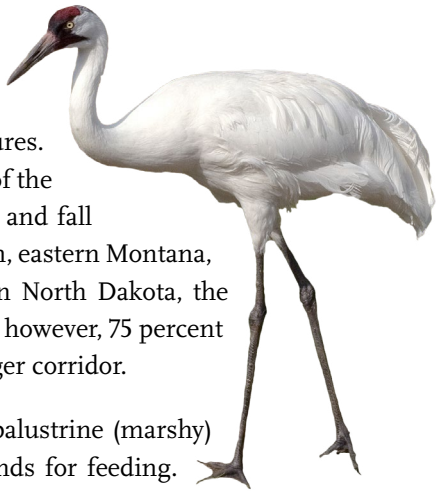
Potential impacts to bat species from the construction of the Project include turbine rotor strikes, barotrauma from turbine blades, as well as the removal, degradation, and fragmentation of foraging habitat. Turbines and access roads have been sited to avoid wooded draws and shelterbelts to the extent possible and minimal tree removal is expected. Coordination with USFWS is ongoing to determine appropriate mitigation/minimization measures. These measures will be included in the BBCS, which would be completed prior to operation of the proposed Project.

7.17. Rare and Unique Natural Resources

7.17.1. Federal Listed Species

An inquiry via the USFWS Environmental Conservation Online System – Information, Planning, and Conservation (ECOS-IPaC) website and the USFWS County Occurrence of Endangered, Threatened and Candidate Species and Designated Critical Habitat in North Dakota (January 2015) identified the following federally protected resources within Rolette County: Dakota skipper (T), proposed Dakota skipper critical habitat, northern long-eared bat (proposed E), Sprague's pipit (C), whooping crane (E) and gray wolf (E). Please refer to APPENDIX D. USFWS SPECIES LIST.

Whooping Crane (Grus Americana)



The whooping crane (*Grus americana*) was listed as a federally endangered species in 1967 due to declines in populations from alteration and destruction of habitat from widespread agricultural activities and hunting pressures. Currently, the only self-sustaining population of whooping cranes consists of the Aransas-Wood Buffalo Population (AWBP), which migrates during spring and fall through a 2,400-mile long by 200-mile wide corridor spanning Saskatchewan, eastern Montana, North Dakota, South Dakota, Nebraska, Kansas, Oklahoma, and Texas. In North Dakota, the migratory corridor extends approximately 220 miles wide from east to west; however, 75 percent of the sightings occur within an 80-mile wide band centered within the larger corridor.

Whooping cranes use shallow, seasonally and semi-permanently flooded palustrine (marshy) wetlands for roosting, and various cropland (grains) and emergent wetlands for feeding. Suitable stopover habitat for whooping cranes include areas of shallow water without visual obstructions and slight slopes (less than five percent). Feeding and palustrine roosting locations for whooping cranes are typically less than 0.5 miles apart; however, distance from feeding to roosting sites can be separated by more than 1-mile.

The Project Area is located on the eastern edge of the whooping crane corridor, in which 95 percent of all whooping crane sightings within the state of North Dakota have occurred. According to the 2013 NASS data, potential whooping crane habitat exists in the Project Area in the form of wetlands, grasslands (many of these are CRP lands) and croplands, which could be used for feeding. Since the Cooperative Whooping Crane Tracking Project (CWCTP) was initiated in 1975, sightings of whooping cranes in the Central Flyway have been collected by a network of Federal and State cooperating agencies. Review of the CWCTP database showed the closest recorded whooping crane sighting occurred in 1994, approximately 9 miles east of the Project Area. FIGURE A-II. WHOOPING CRANE MIGRATION CORRIDOR ON PAGE A-II, in Appendix A identifies the North Dakota whooping crane migration corridor, along with sightings of whooping cranes from 1955–2009.

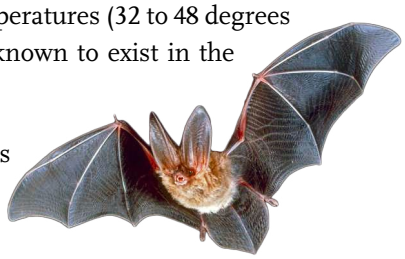
Gray Wolf (Canis lupus)



The gray wolf is the largest wild canine species in North America. It is found throughout northern Canada, Alaska, and the forested areas of Northern Michigan, Minnesota, and Wisconsin and has been re-introduced to Yellowstone National Park in Wyoming. While the gray wolf is not common in North Dakota, occasionally individual wolves do pass through the state. Historically, preferred habitat includes biomes such as boreal forest, temperate deciduous forest and temperate grassland. Gray wolves live in packs of up to 21 members, although some individuals do roam alone (USFWS, 2012). The Project Area occurs approximately 14 miles south of the Turtle Mountains, where suitable habitat may occur.

Northern Long-Eared Bat (Myotis septentrionalis)

The northern long-eared bat (*Myotis septentrionalis*) is proposed for listing as a federally endangered species due to the widespread decline in bat populations from the fungus known as white-nose syndrome (*Pseudogymnoascus destructans*). The Western Population of northern long-eared bats occurs partially in North Dakota, where the bats have been observed during the summer in the Turtle Mountains, Missouri River Valley and the Badlands. Northern long-eared bats spend winter months hibernating in caves and mines (hibernacula) and the summer/fall months roosting in trees or snags. Preferred hibernacula include large caves or mines with large passages and entrances; constant, cooler temperatures (32 to 48 degrees Fahrenheit); and high humidity with no air currents. No hibernacula are known to exist in the state, however this may be a function of lack of adequate survey data.



Suitable habitat for summer maternity/non-maternity activities, as well as spring staging/fall swarming would include forests and woodlots, as well as fencerows, riparian forests and other wooded corridors. Density and canopy cover is variable within these forested habitats, which may be interspersed with wetlands, agricultural or fallow fields, or pastures. Potential roosts sites include live trees or snags that are greater than or equal to 3 inches diameter at breast height (DBH) and may include the following: exfoliating bark, cracks, crevices, or cavities. Isolated trees may be potential roost sites if they exhibit the characteristics described above and are less than 1,000 feet from the nearest roosting site or suitable forested habitat.

Based on a desktop analysis of the 2013 NASS data and NAIP imagery, no suitable winter habitat in the form of caves or mines is located within the Project Area; however, wooded draws and shelterbelts for potential summer habitat are present. The species has been observed in the Turtle Mountains, approximately 14 miles north of the Project Area.



Dakota Skipper (Hesperia dacotae)

The Dakota skipper was listed as a federally threatened species in 2014 due to population decline from widespread conversation of native grassland. These butterflies historically ranged from southern Saskatchewan and Manitoba, to North and South Dakota, Minnesota, Iowa and Illinois. They are now considered extirpated from Illinois and Iowa. Preferred habitat for the Dakota skipper within the Project Area consists of 'Type A' habitat, which contains low wet-mesic prairie consisting of bluestem grasses and wildflowers such as wood lily (*Lilium philadelphicum*), harebell (*Campanula rotundifolia*), and mountain deathcamas (*Zigadenus elegans*). Dakota skippers remain in the larvae stage throughout most of the year and are most visible during their adult flight stage, which occurs from mid-June to early July. According to 2013 NASS data, the Project Area consists of approximately 45 percent grasslands. During the field surveys, a majority of these grasslands were identified as introduced species, such as smooth brome and Kentucky blue, no bluestem grasses were identified within the Project Area.

Dakota Skipper Proposed Critical Habitat

Critical habitat for the Dakota skipper has been proposed for 14 prairie units in North Dakota. The physical and biological features that are essential to the conservation of the species, referred to as the primary constituent elements, require special consideration for protection. The primary constituent elements for Dakota skipper critical habitat include wet-mesic tall or mixed-grass remnant untilled prairie, native grasses/forbs, and dispersal habitat consisting of native high-quality remnant prairie that connects habitats. The nearest proposed critical habitat is North Dakota Unit 9, Rolette County, approximately 14 miles north of the Project Area.

Sprague's Pipit (Anthus spragueii)



The Sprague's pipit (*Anthus spragueii*) is a small, ground nesting bird that breeds on open grasslands throughout the Northern Great Plains and winters in grasslands in the southern plains, the southwest, and Mexico. Within North Dakota, the Sprague's pipit breeds on well-drained, open grasslands, feeding mostly on insects, spiders and seeds. During the breeding season, this species prefers large patches of native grassland with a minimum size requirement thought to be approximately 360 acres; they have not been observed in patches of grassland less than approximately 72 acres. Native grassland with grass height between 4 to 12 inches and lacking shrubs is preferred; however, they will occasionally use non-native planted grassland. Previous research has indicated Sprague's pipits avoid disturbances and edge habitat up to 1,148 feet due to roads and wind turbines.

7.17.2. State Listed Species

In addition to the threatened and endangered species and conservation priority species discussed above, the NDPRD NHID identifies wildlife and plant state sensitive species and ecosystems known to occur in North Dakota. A search of the database identified no species or ecosystems of concern within the Project Area. The NHID notes that the absence of data cannot be construed to mean no significant resources are present, but may indicate that the Project Area has not been surveyed.

7.17.3. Rare and Unique Natural Resources Impacts/Mitigation

Meetings with USFWS, Rolette Power and KLJ will be ongoing throughout project development. Rolette Power is committed to working with USFWS and will implement minimization and conservation methods as necessary.

Whooping Crane

Potential impacts to whooping crane from the construction of the Project include turbine rotor strikes, as well as the removal, degradation, and fragmentation of migration habitat. The Project Area is located on the eastern edge of the whooping crane migration corridor, where 95 percent of sightings have occurred. Suitable stopover habitat occurs within our Project Area, as well as throughout the prairie pothole region of the US and Canada. According to a response letter to KLJ from the USFWS Bismarck Ecological Field Office, collisions with power lines are the greatest known source of mortality for fledged whooping cranes. Additionally, USFWS stated due to the low maneuverability of whooping cranes, it is likely they are susceptible to collisions with wind turbines; however, further research is needed. Rolette Power has committed to

burying all collector lines within the Project Area, eliminating the potential for whooping crane collisions. Additionally, to avoid impacts to potential roosting sites, wetlands in the Project Area would be avoided.

Coordination and discussion to determine appropriate mitigation/minimization measures is ongoing with USFWS. These measures will be included in the BBCS, which would be completed prior to operation of the proposed Project.

Gray Wolf

Stressors as a result of project construction and operation have the potential to cause gray wolves to permanently avoid the area and become injured and/or killed by collisions with vehicles; however, construction of the proposed Project is not expected to elevate these stressors above existing baseline conditions. Turbines and access roads have been sited to avoid wooded draws and shelterbelts to the extent possible and minimal tree removal is expected. The proposed Project is anticipated to have no effect on the gray wolf.

Northern Long-eared Bat

Turbines and access roads have been sited to avoid wooded draws and shelterbelts to the extent possible and minimal tree removal is expected. Coordination and discussion to determine appropriate mitigation/minimization measures is ongoing with USFWS. These measures will be included in the BBCS, which would be completed prior to operation of the proposed Project.

Dakota Skipper

Potential impacts to Dakota skipper include direct impacts to individuals during construction of the Project, as well as the removal, degradation, and fragmentation of potential habitat. During the field surveys, a majority of the vegetation observed within the Project Area consisted of introduced grasses, such as smooth brome, Kentucky blue, and cropland. It is unlikely the Dakota skipper occurs within the Project Area due to the lack of preferred habitat and the previous agricultural land use. In the unlikely event Dakota skipper occurs within the Project Area, minimization measures would be implemented. To minimize degradation of habitat, a majority of the turbines have been sited on existing cropland to avoid disturbing grassland habitats. Additionally, all areas of temporary disturbance would be reclaimed with vegetation consistent with the surrounding vegetation types and approved by the landowner. To prevent further fragmentation on the landscape, existing access roads would be used to the extent practicable.

Dakota Skipper Proposed Critical Habitat

Proposed critical habitat for the Dakota skipper is located 14 miles from the Project Area. Due to the distance of the proposed Project from the proposed critical habitat, no impacts or mitigation are proposed.

Sprague's Pipit

Potential impacts to Sprague's pipit from the construction of the Project include turbine rotor strikes, direct impacts to nests or individuals during construction of the Project, as well as the removal, degradation, and fragmentation of habitat. Sprague's pipits have low site fidelity rates, as is typical of many passerines breeding in northern grasslands where habitat suitability varies with annual weather patterns, fire frequency and grazing intensity. However, due to large expanses of grasslands required as habitat for this species, it has been listed as one of the Species of Habitat Fragmentation Concern for North Dakota. To prevent bird strikes with transmission lines, all collector lines would be buried underground. To minimize degradation

of habitat, a majority of the turbines have been sited on existing cropland to avoid disturbing grassland habitats. Additionally, all areas of temporary disturbance would be reclaimed with vegetation consistent with the surrounding vegetation types and approved by the landowner. To prevent further fragmentation on the landscape, existing access roads would be used to the extent practicable. Coordination and discussion to determine appropriate mitigation/minimization measures is ongoing with USFWS. These measures will be included in the BBCS, which would be completed prior to operation of the proposed Project.

7.18. Summary of Impacts

Please refer to TABLE 15. SUMMARY OF IMPACTS AND MITIGATION.

Table 15. Summary of Impacts and Mitigation

RESOURCE	POTENTIAL IMPACT	PROPOSED MITIGATION
Demographics	Profits to landowners from part ownership in the Project may increase per capita income within the Project Area and surrounding counties. No long-term changes to demographics are anticipated.	No mitigation is proposed.
Land Use	Conversion of 3.9 percent of total land in Project Area; of which, 0.6 percent would be permanently converted. The proposed Project may result in temporary or permanent impacts to CRP lands.	No mitigation is proposed for general land use conversion. Coordination would occur with FSA for CRP conversion and areas of temporary disturbance would be reclaimed and re-seeded according to FSA requirements.
Public Services	Construction of the Project would impact local roadways through increased stress due to increased traffic and hauling. Additionally, electric, telephone, and fiber optic lines may be impacted by construction. Impacts to radio frequencies may also occur.	Local utility companies would be contacted prior to construction. Roadways would be returned to pre-existing conditions unless otherwise requested by County and Township authorities during coordination.
Human Health and Safety	No adverse impacts are anticipated.	No adverse impacts are anticipated; however, mitigation for impacts to landowners would be dealt with on a case-by-case basis.
Noise	Noise levels would be consistent with a rural setting; therefore, no adverse impacts are anticipated.	No mitigation is proposed. However, if individual cases arise indicating a potential noise concern, the concern would be investigated and consultations conducted, as appropriate.
Visual	Visual and aesthetic impacts would result from construction of turbines. In addition, two residences may experience shadow flicker approximately 30 hours per year. Use of setbacks and minimum FAA lighting and marking requirements are anticipated to minimize visual impacts.	If individual cases arise indicating a potential shadow flicker concern, the concern would be investigated and consultations conducted, as appropriate.
Cultural and Archaeological Resources	Identified cultural resource sites would be avoided; therefore, no historic properties would be affected.	Wind turbines, access roads, and associated facilities were sited to avoid archaeological sites and traditional cultural properties. Before the Project's construction, Rolette Power will also prepare an Unanticipated Discoveries Plan. The plan will detail a process for prompt communication and action regarding the discovery of previously unknown archaeological resources or human remains, should they be encountered during construction.
Recreational Resources	Minor adverse impacts to sportsmen and landowners in the area due to sights and sounds associated with wind turbines.	Minor impacts; therefore, no mitigation is proposed.
Land Based Economics	Permanent conversion of 90.7 acres and temporary conversion of 577.9 acres, many of which consist of farmland.	Areas of temporary disturbance would be re-vegetated or available for agricultural purposes, following construction. Economic loss to producers due to land conversion is anticipated to be minor in comparison to additional income provided by the wind farm.
Soils	May cause soil surface to become more prone to wind and water erosion and may result in soil compaction.	Erosion and sediment control during and after construction, segregation of topsoil, noxious weed control and reseeding.

RESOURCE		POTENTIAL IMPACT	PROPOSED MITIGATION
Geologic and Groundwater Impacts		No adverse impacts anticipated.	No mitigation is proposed.
Surface Water and Floodplain Resources		No adverse impacts anticipated.	Use of BMPs such as silt fence, straw wattles, earth berms, retention ponds, and/or rock check dams.
Wetlands		The proposed Project would result in no wetland impacts as wetlands and wetland basins have been avoided.	The proposed Project would result in no permanent wetland impacts. Due to the nature and location of wetlands identified within the Project Area, some collector lines would need to be bored underneath wetlands or will be plowed through. Turbines, access roads, substation and the O&M building would all avoid impacts to wetlands within the Project Area. Therefore, no mitigation is proposed.
Vegetation		Temporary and permanent vegetation impacts would occur during construction. Approximately 41.7 acres of grasslands would be permanently impacted and approximately 248.0 acres of grasslands would be temporarily impacted by construction of the Project. Grassland easements would be avoided.	Following construction, disturbed areas would be re-vegetated with a seed mixture free of noxious weeds. If CRP lands cannot be avoided, Rolette Power would coordinate with the local FSA to determine seeding specifications for the reclamation of temporarily disturbed land and payment requirements for permanently disturbed land.
Wildlife	Mammal Species	The Project would impact potential habitat for ground dwelling mammals.	Disturbed areas would be re-vegetated, as appropriate. Additional mitigation measures may be implemented. Coordination with the USFWS is ongoing.
	Avian Species	The Project may result in impacts to avian species through increasing the potential for bird strikes with the turbine rotors.	All collector lines would be buried. Post-construction mitigation measures may be implemented. Coordination with the USFWS is ongoing.
	Bat Species	Potential sites for roosting and hibernation are found within the Project Area in the form of trees. In addition, bats may use the Project Area for foraging or as a migration route to or from the Turtle Mountains.	Coordination and discussion to determine appropriate mitigation/minimization measures is ongoing with USFWS.
Rare and Unique Resources	Federal Listed Species	Coordination is ongoing with the USFWS to determine potential impacts to the whooping crane, gray wolf, northern long-eared bat, Dakota Skipper and Sprague's pipit.	Coordination and discussion to determine appropriate mitigation/minimization measures is ongoing with USFWS. These measures will be included in the BBCS, which would be completed prior to operation of the proposed Project.
	State Listed Species	A search of the NHID database identified no species or ecosystems of concern within the Project Area.	No mitigation is proposed.

8. Public Coordination

A Commission Hearing would be held in conjunction with the approval of this application. These meetings are open to the public, at this time a hearing has not been scheduled. Public notice of these meetings would be given by advertisement in local newspapers or as otherwise directed by the Commission.

9. Agency Coordination

To initiate early communication and coordination, a scoping package was sent to federal, tribal, state, and local agencies and other interested parties on May 10, 2013. This scoping package included information on the Project and a Project location map. At the end of the comment period, 12 responses were received. These comments have been referenced and incorporated where appropriate within the document. Please refer to APPENDIX E. SCOPING PACKAGE for the scoping letter, mailing list, and responses. In addition, a meeting was held by USFWS, Rolette Power and KLJ. The agenda consisted of discussing the proposed Project; as well as, potential threatened and endangered species or other protected species as outlined in the USFWS scoping response.

10. Identification of Potential Permits/Approvals

A permitting matrix was created showing potential federal, state, and local permits that may be needed prior to construction of a wind farm within the Project Area. Please refer to TABLE 16. POTENTIAL PERMITS/APPROVALS.

Table 16. Potential Permits/Approvals

AGENCY	PERMIT/APPROVAL	APPLICABILITY	APPROXIMATE PROCESSING TIME
FAA	Notice of Proposed Construction of Alteration Form 7460-1	Potential affected airspace determination	60 days
	Notice of Actual Construction or Alteration Form 7460-II	Notice of actual construction begin and end dates	At least 10 days prior to start of construction & within 5 days of each wind turbine reaching their greatest height.
USFWS	Incidental Take Permit	Potential take of a threatened or endangered species	24 months
	Right of way / Easement	If siting turbines or access roads on wetland or grassland easements	Varies by district
USDA—NRCS	Farmland Impact Conversion Rating Form AD-1006	Conversion of prime or unique farmland (only for projects with federal involvement)	45 days
	Right of way / Easement	If siting turbines or access roads on CRP land	Varies
State Permits/Approvals			
North Dakota PSC	Certificate of Site Compatibility	Construction of energy conversion facility	No more than 6 months after a completed application for certificate of site compatibility
	Corridor Certificate & Route Permit Application	Construction of a transmission facility	No more than 3 months after a completed application for certificate of corridor compatibility
NDDH	North Dakota Pollutant Discharge Elimination System General Permit for Stormwater Discharge Related to Construction (includes SWPPP)	Disturbing over 1 acre	7 days prior to start of construction
	Potable/Wastewater Permit	If installing septic tank	7 days
ND State Electrical Board	Electrical Permit	Installation of electrical facilities	Varies
Local Permits/Approvals			
Counties / Townships	Approach Permits	Installation of approach roads	7 days
	Building Permits	Construction of infrastructure	45 days
	Conditional Use Permit	Siting of turbines on property not zoned for such a use	45 days
	Road Inspections/Reviews	Using local roadways for haul roads	Varies
	Utility Crossing Permits	Encroaching on roadways	Varies based on type of roadway

11. Factors Considered

The North Dakota Energy Conversion and Transmission Facility Siting Act (see NDCC Section 49-22-09) lists the following factors to guide the Commission in assessing and designating the site for the proposed facility.

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

SECTION 7. ENVIRONMENTAL ANALYSIS ON PAGE 28 provides background information and discusses impacts concerning public health and welfare, natural resources, and the environment. In addition, TABLE 15. SUMMARY OF IMPACTS AND MITIGATION ON PAGE 52 provides a summary of impacts and proposed mitigation measures.

11.2. Minimizing Adverse Environmental Effects

Rolette Power would utilize the most current technologies available to minimize environmental impacts. Technologies, such as equipment selection and turbine siting, can be implemented to optimize wind power generation while minimizing environmental impacts. Please refer to SECTION 7. ENVIRONMENTAL ANALYSIS for a complete analysis of environmental effects and associated mitigation measures.

11.3. Potential for Beneficial Uses of Waste Energy

Since wind energy does not create waste energy, there would be no use of waste energy associated with this Project.

11.4. Unavoidable Adverse Environmental Effects

Unavoidable adverse environmental effects are described for each resource area in SECTION 7. ENVIRONMENTAL ANALYSIS. Unavoidable permanent ground disturbance would include the permanent conversion of approximately 90.7 acres of land to a renewable energy generation resource and alteration of the visual landscape through construction and lighting of turbines for the life of the Project. Any additional acreage that would be temporarily impacted during construction would be restored to its original condition to the extent practicable following construction. Rolette Power selected its site so as to minimize unavoidable environmental impacts, and would implement appropriate mitigation measures throughout Project development.

11.5. Alternatives to the Proposed Site

The initial Study Area for the proposed Project encompassed 75 square miles located south and west of the City of Rolette, North Dakota. Based on data received through agency feedback, literature reviews and site studies, the current Project Area has been narrowed down to approximately 14,720 acres. It is believed that the current Project Area exemplifies the best alternative for the development of the wind farm. The Project Area was created large enough to allow for flexibility in turbine siting.

11.6. Irreversible and Irretrievable Commitment of Natural Resources

With a renewable energy project, such as the proposed Project, there are relatively few irreversible and irretrievable commitments of natural resources. Project construction activities are expected to be the primary

source of the irreversible and irretrievable commitment of natural resources. Natural resources will be used in the fabrication and preparation of construction materials, such as concrete, steel, and aggregate, and the vehicles traveling to and from the site during construction will use hydrocarbon fuel. While these materials may not be retrievable after use, these materials are not in short supply, and their use will not have an adverse effect on the availability of these resources. Further, the anticipated benefits will outweigh the irretrievable commitment of resources for the Project.

11.7. Direct and Indirect Economic Impacts

Direct economic impacts would result from the permanent conversion of approximately 90.7 acres and the temporary conversion of approximately 577.9 acres of land into a renewable, alternative energy source. However, the majority of the Project Area would still be available for agricultural practices.

Although the Project would result in the conversion of potential farmland for use as a wind farm, economic losses to producers due to land conversion are anticipated to be minor in comparison to the additional income provided by the wind farm. Long-term benefits would be seen in the form of profits associated with part ownership in Rolette Power. This additional income would also be reflected as an increase to the county tax base.

The Project may also indirectly benefit economies in surrounding communities due to temporary construction jobs and increased spending at local businesses.

11.8. Existing Development Plans of the State, Local Government and Private Entities at or in the Vicinity of the Site

Existing turbines to the south of the Project do exist at the Iberdrola Wind Farm; however, the turbines are far enough away (approximately two mile separation between existing turbines and proposed new turbines) where the cumulative impact between the existing and proposed turbines are negligible. Conflicts with the existing development plans of state, local, or private entities within the Project Area are not anticipated. The Project would comply with county and township zoning ordinances, as applicable.

11.9. Effect of Site on Cultural Resources

Wind turbines, access roads, and associated facilities were sited to avoid archaeological sites and traditional cultural properties. Before the Project's construction, Rolette Power will also prepare an Unanticipated Discovery Plan. The plan will detail a process for prompt communication and action regarding the discovery of previously unknown archaeological resources or human remains, should they be encountered during construction. Once the plan is fully developed, it will be submitted to SHPO for review and approval. Rolette Power will work with SHPO to avoid or mitigate any impacts. See SECTION 7.8. CULTURAL AND ARCHAEOLOGICAL RESOURCES ON PAGE 37 for further discussion of cultural resource survey efforts and SHPO consultation.

11.10. Effect of Site on Biological Resources

Efforts would be made to avoid or minimize impacts to biological resources during and after construction. Wildlife impacts are anticipated to be minimal; however, the potential for avian collisions with the wind

turbines exists. The site would be designed to minimize impacts to avian species. Rolette Power is committed to working with USFWS and is currently conducting discussions regarding minimization and conservation efforts for the threatened and endangered species and other protected species. It is anticipated that additional minimization and/or mitigation measures would be implemented, as needed.

11.11. Agency Comments

A scoping package was distributed to local, state, and federal agencies and other interested parties on May 10, 2013. At the end of the comment period, 12 responses were received. The following sections summarize these responses.

11.11.1. US Department of Agriculture – Natural Resources Conservation Service

In a letter dated June 11, 2013, NRCS stated that it has a major responsibility with the Farmland Protection Policy Act (FPPA) in documenting conversion of farmland to non-agriculture use when federal funds are utilized. If important Farmland occupies these sites, FPPA may apply. After a final decision has been made on a permanent site, the form AD-1006 will need to be completed should federal funds be utilized for construction.

11.11.2. US Department of Defense – Army Corps of Engineers

In a letter dated May 15, 2013, the USACE addressed flood concerns by stating that the Project does not appear to be located within Corps owned or operated lands, and no floodplain or flood risk information can be provided. Additionally, the USACE recommended coordination with the US EPA, NDDH, USFWS, NDGFD and SHPO.

11.11.3. US Department of Defense – Army Corps of Engineers, North Dakota Regulatory Office

In a letter dated May 13, 2013, USACE provided that if the Project results in work over, in, or under navigable waters (Section 10 of the Rivers and Harbors Act) or the discharge of dredged or fill materials into waters of the United States (Section 404 Clean Water Act), a Section 10 and/or Section 404 permit will need to be acquired from the North Dakota Regulatory Office.

11.11.4. US Department of the Interior – Bureau of Indian Affairs

In a letter dated May 23, 2013, the Bureau of Indian Affairs (BIA) had no environmental objections to the Project. In addition, the Project would not affect cultural resources on tribal or individual landholdings for which the BIA is responsible.

11.11.5. US Department of the Interior – Fish & Wildlife Service, J. Clark Salyer Wetland Management District

In a letter dated May 20, 2013, the J. Clark Salyer Wetland Management District identified USFWS-owned WPAs, wetland easements and FmHA grassland easements within the Project Area. The USFWS recommends avoidance of these areas and, if they cannot be avoided, minimization of impacts to maintain the integrity of the production area and easements. Additional discussion regarding coordination with USFWS with respect to these areas is included in SECTION 7. ENVIRONMENTAL ANALYSIS ON PAGE 28.

11.11.6. US Department of the Interior – Fish & Wildlife Service, North Dakota Field Office

In a letter dated July 8, 2013, the USFWS explained that it holds certain resources in trust and manages them for the benefit of the American People. These resources include migratory birds, bald and golden eagles, inter-jurisdictional fisheries, federally-listed threatened and endangered species of plants and animals and their habitats, and units of the National Wildlife Refuge System. When planning an activity, Project proponents should give careful consideration to potential impacts to those trust resources and compliance with the laws mentioned above. Additional discussion regarding coordination with USFWS with respect to these areas is included in SECTION 7. ENVIRONMENTAL ANALYSIS ON PAGE 28.

11.11.7. North Dakota Department of Commerce

Per letter dated May 17, 2013, the North Dakota Department of Commerce reviewed the letter and provided consultation clearance for the Project through the North Dakota Federal Program Review Process. They requested the opportunity for complete review of applications for renewal or continuation grants within one year after May 17, 2013.

11.11.8. North Dakota Department of Health

In a letter dated May 17, 2013, the NDDH stated that they believed the environmental impacts from the proposed construction will be minor and can be controlled by proper construction methods. These methods included minimizing fugitive dust emissions, adverse effects to water bodies, noise, and obtaining a North Dakota Discharge Elimination System permit. Included in the letter were construction and environmental disturbance requirements of the Department. It was also stated that the Department owns no land in or adjacent to the Project Area and that they believe the Project is consistent with the State Implementation Plan the Control of Air Pollution for the State of North Dakota. Additional discussion of coordination with NDDH is provided in SECTION 7.5. HUMAN HEALTH AND SAFETY ON PAGE 33.

11.11.9. North Dakota Department of Transportation

In a letter dated June 28, 2013, NDDOT explained that if there are any plans to approve approaches, it will be necessary to contact the NDDOT district. Additionally, if because of this Project any work needs to be done on highway right of way, appropriate permits and risk management documents will need to be obtained from the District Engineer.

11.11.10. North Dakota Game & Fish Department

Per the North Dakota Game & Fish Department's May 30, 2013 letter, NDGFD stated that its primary concern with regard to the Project is disturbance or loss of native prairie. They request that native prairie be avoided to the greatest extent practicable and micro-siting of turbines be done on previously disturbed lands. Furthermore, the Department recommended that unavoidable wetland impacts be mitigated in-kind, aboveground structures not be placed in wetlands, drainage patterns be unaltered, and routine avian and bat mortality monitoring.

11.11.11. North Dakota State Water Commission

The NDSWC responded, via May 16, 2013 letter, that the Project is not in an identified floodplain; a Drain Permit may be needed (application enclosed); all waste material must be disposed of properly and not within floodways; no sole-source aquifers have been designated within the state; and the Project sponsor is responsible for contacting local, state, and federal officials to determine required permits and approvals.

11.11.12. State Historical Society of North Dakota

In a letter dated May 14, 2013, the SHPO for the State Historical Society of North Dakota recommended a Class I Cultural Resource inventory, a Class II Reconnaissance or Visual Impact survey and a Class III Cultural Resource Inventory be completed for the Project. Additional discussion of coordination with SHPO is included in SECTION 7.8. CULTURAL AND ARCHAEOLOGICAL RESOURCES ON PAGE 37.

11.11.13. North Central Electric Cooperative, Inc.

In a letter dated June 4, 2013, the North Central Electric Cooperative, Inc. provided a map that identified overhead and underground distribution lines for the Project Area.

11.11.14. Agencies Solicited but no Response Received

Of the 58 agencies and other interested parties that were solicited, 46 did not respond. To see the comprehensive list of agencies solicited, please refer to APPENDIX E. SCOPING PACKAGE.

12. Qualifications of Contributors to Siting Study

Alex Nisbet

Alex is an environmental planner that has done on-site work as well as written reports for Environmental Assessments, Environmental Assessment Addendums, Biological Assessments and Environmental Reports. He has experience coordinating with city, county, state and federal agencies for various projects and tasks. Alex is a licensed attorney in North Dakota and earned his JD from the University of North Dakota School of Law where he concentrated on environmental law. The core courses that pertained to his concentration included Environmental Law, Energy Law, Property, Administrative Law, State and Local Government and Water Law. Alex also has a strong scientific background from his undergraduate studies at UND.

Grady Wolf

Grady has 13 years of experience in completing environmental surveys, planning and project management associated with land and water management issues. He leads numerous complex environmental projects requiring NEPA and other permitting compliance for a variety of federal, state and local agencies. Grady has managed and authored more than 50 Environmental Assessments as well as numerous Environmental Assessment Addendums, Categorical Exclusions, Biological Assessments and Environmental Reports. His experience includes project management, conducting biological and botanical studies, authoring resource reports, impact analysis and wetland delineations, mitigation and monitoring. Grady has extensive experience in the energy and renewable energy fields. His background includes holistic management on agricultural lands including watershed planning, dealing with water quality issues, fish and wildlife concerns and botanical studies. Grady has coordinated efforts for securing funding, acquiring permits, completed mitigation plans for projects through state and federal agencies and managed the projects during implementation.

Mike Huffington

Mike is an environmental planner with five year of environmental consulting experience throughout North Dakota, South Dakota and Minnesota. His responsibilities have included NEPA documentation; public and agency coordination; scoping; permitting; impact assessment; and wetland delineation, mitigation and monitoring. Mike holds a master's degree in Natural Resources Management from North Dakota State University and a bachelor's degree in Biology from St. John's University. Mike is also a certified professional wetland delineator within the state of Minnesota.

Tim Dodson

Timothy serves as a Principle Investigator at KLJ. Throughout his career, he has been involved in over 120 surveys for identifying cultural resources in North Dakota, Minnesota, Montana, Colorado and Virginia. He has been involved in excavations in Manitoba, Colorado, Virginia, England and the United Arab Emirates (U.A.E.). Timothy has authored/co-authored more than 60 technical reports on surveys, testing, and mitigation of cultural resources for the Section 106 process in North Dakota, Montana, Colorado, Minnesota and Virginia. A large percentage of his Northern Plains experience has been serving as a Principle Investigator for various transportation, oil and gas pipeline projects and wind farms.

Skip Skattum

Skip holds a B.A. degree in Education from the University of North Dakota and an Associate of Applied Science degree in Geographic Information Systems from the Alexandria Technical School. Skip has 13 years of experience working with a variety of clients on environmental documentation including mapping, modeling, and impact quantification. He has managed GIS projects involving the securing of funds, project implementation, project design, and management.

Brandon Storm, PhD

Dr. Storm started working directly in the wind energy sector when he became part of EAPC in August 2008. Since that time, he has acquired a working knowledge of several software packages utilized in wind energy, including WindPro, WAsP Engineering, ArcGIS, and several CFD software packages, in particular Meteodyn WT. Brandon has direct experience in wind farm design, wind speed and annual energy estimates, wake effects, losses and uncertainty analyses, and environmental impacts. Brandon also conducts training courses for one of the industry's leading wind farm design tools, WindPro.

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Acronym List

A

AADT (average annual daily traffic) 31
AC (Advisory Circulars) 34
AGL (above ground level) 4
AM (amplitude modulation) 33
ANSI (American National Standards Institute) 23
APE (area of potential effect) 37
AWBP (Aransas-Wood Buffalo Population) 48

B

BBCS (Bird & Bat Conservation Strategy) 47
BBS (Breeding Bird Survey) 45
BGEPA (Bald and Golden Eagle Protection Act) 45
BIA (Bureau of Indian Affairs) 59
BMPs (Best Management Practices) 28

C

CRP (Conservation Reserve Program) 30
CUP (Conditional Use Permit) 5
CWA (Clean Water Act) 43
CWCTP (Cooperative Whooping Crane Tracking Project) 48

D

dB(A) (decibels) 35
DBH (diameter at breast height) 49
DOE (Department of Energy) 21

E

EAPC (EAPC Wind Energy) 4
ECOS-IPaC (Environmental Conservation Online System – Information, Planning, and Conservation) 47
EMFs (electromagnetic fields) 33
EPA (Environmental Protection Agency) 34

F

FAA (Federal Aviation Administration) 4
FM (frequency modulation) 33
FmHA (Farmers Home Administration) 44
FPPA (Farmland Protection Policy Act) 59
FSA (Farm Service Agency) 30
FTE (full-time equivalent) 15

I

ICBM (intercontinental ballistic missile) 10
ICBM (Intercontinental Ballistic Missile) 30
ISO (Independent System Operators) 7

K

kV (kilovolt) 17

M

MBTA (Migratory Bird Treaty Act) 45
MISO (Midcontinent Independent System Operator) 1
mph (miles per hour) 17
mps (meters per second) 4
MWh/y (MW hours per year) 5
MW (megawatts) 1

N

NCELC (North Central Electric Cooperative) 31
NDAC (North Dakota Administrative Code) 1
NDCC (North Dakota Century Code) 1
NDDH (North Dakota Department of Health) 34
NDDOT (North Dakota Department of Transportation) 31
NDGFD (North Dakota Game & Fish Department) 30
NDIC (North Dakota Industrial Commission) 42
NDPDES (North Dakota Pollutant Discharge Elimination System) 34
NDPRD (North Dakota Parks and Recreation Department) 45
NDSWC (North Dakota State Water Commission) 43
NEC (National Electrical Code) 23
NESC (National Electric Safety Code) 23
NHID (Natural Heritage Inventory Database) 46
NRCS (Natural Resources Conservations Service) 38
NRHP (National Register of Historic Places) 37
NWR (National Wildlife Refuges) 29

O

O&M (operation and maintenance) 15

P

PJM (Pennsylvania, Jersey Maryland Power Pool) 7
PLOTS (Private Land Opened to Sportsman) 30
PTC (Production Tax Credit) 5

R

REAP (Rural Economic Partnership) 6

Rolette ADA (Rolette Area Development Authority) 6
Rolette JDA (Rolette Job Development Authority) 6
RTO (Regional Transmission Organizations) 7
RUG (Rugby Municipal Airport) 33

S

SCADA (Supervisory Control and Data Acquisition) 22
SHFC (Species of habitat fragmentation concern) 45
SHPO (State Historic Preservation Office) 37
SODAR (sonic detection and ranging) 4
SPCC (Spill Prevention, Control and Countermeasure) 35
SWPPP (storm water pollution prevention plan) 34

T

TVA (Tennessee Valley Authority) 7

U

USACE (United States Army Corps of Engineers) 43
USFWS (US Fish and Wildlife Service) 29
USGS (US Geological Survey) 43
USTs (underground storage tanks) 34

W

WAPA (Western Area Power Administration) 1
WBD (Watershed Boundary Dataset) 64
WPA (waterfowl production area) 10
WPA (Waterfowl Production Areas) 29

Appendix A. Figures



Figure A-1. Project Location

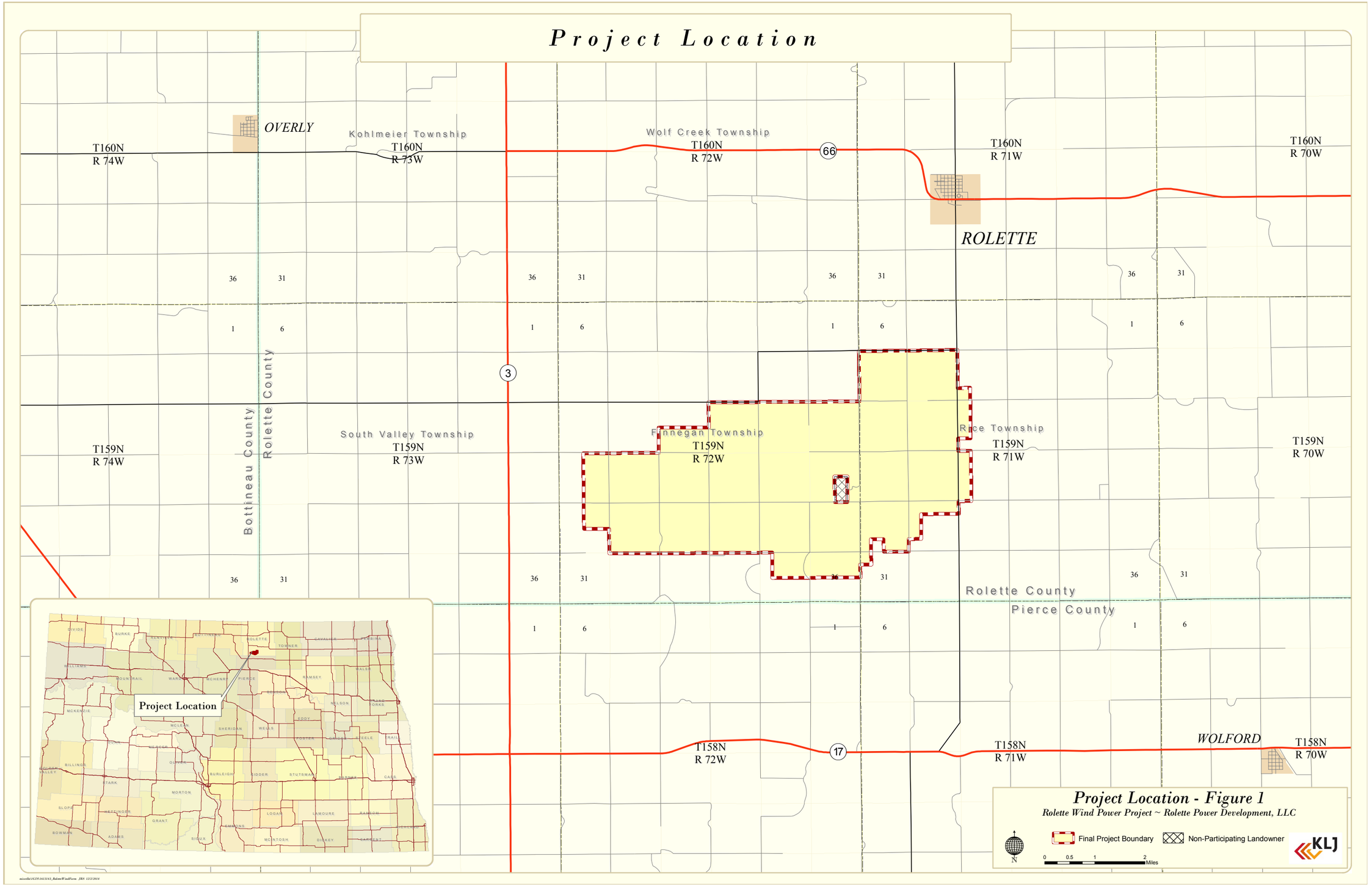


Figure A-2. Exclusion Areas

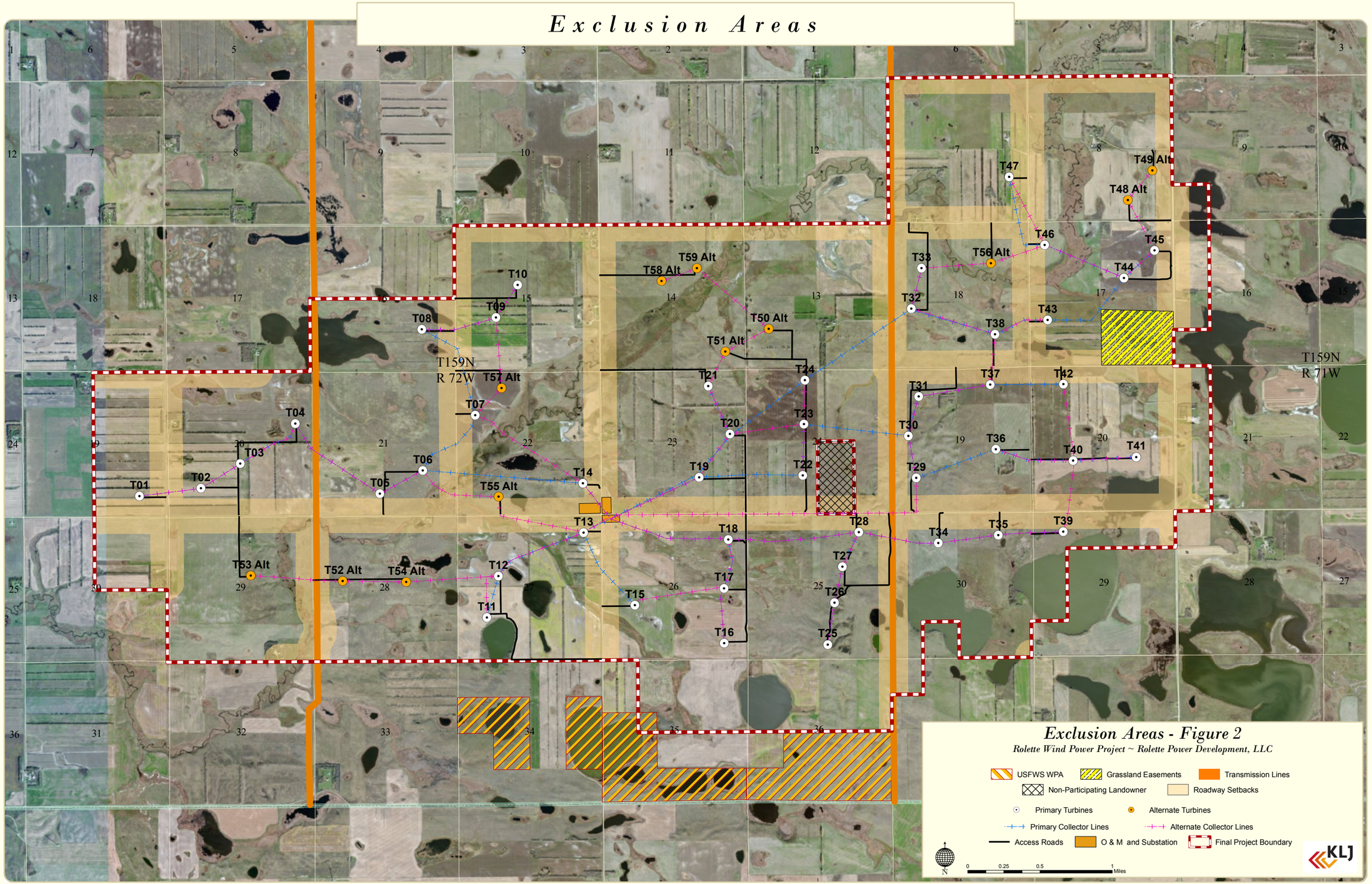


Figure A-3. Avoidance Area

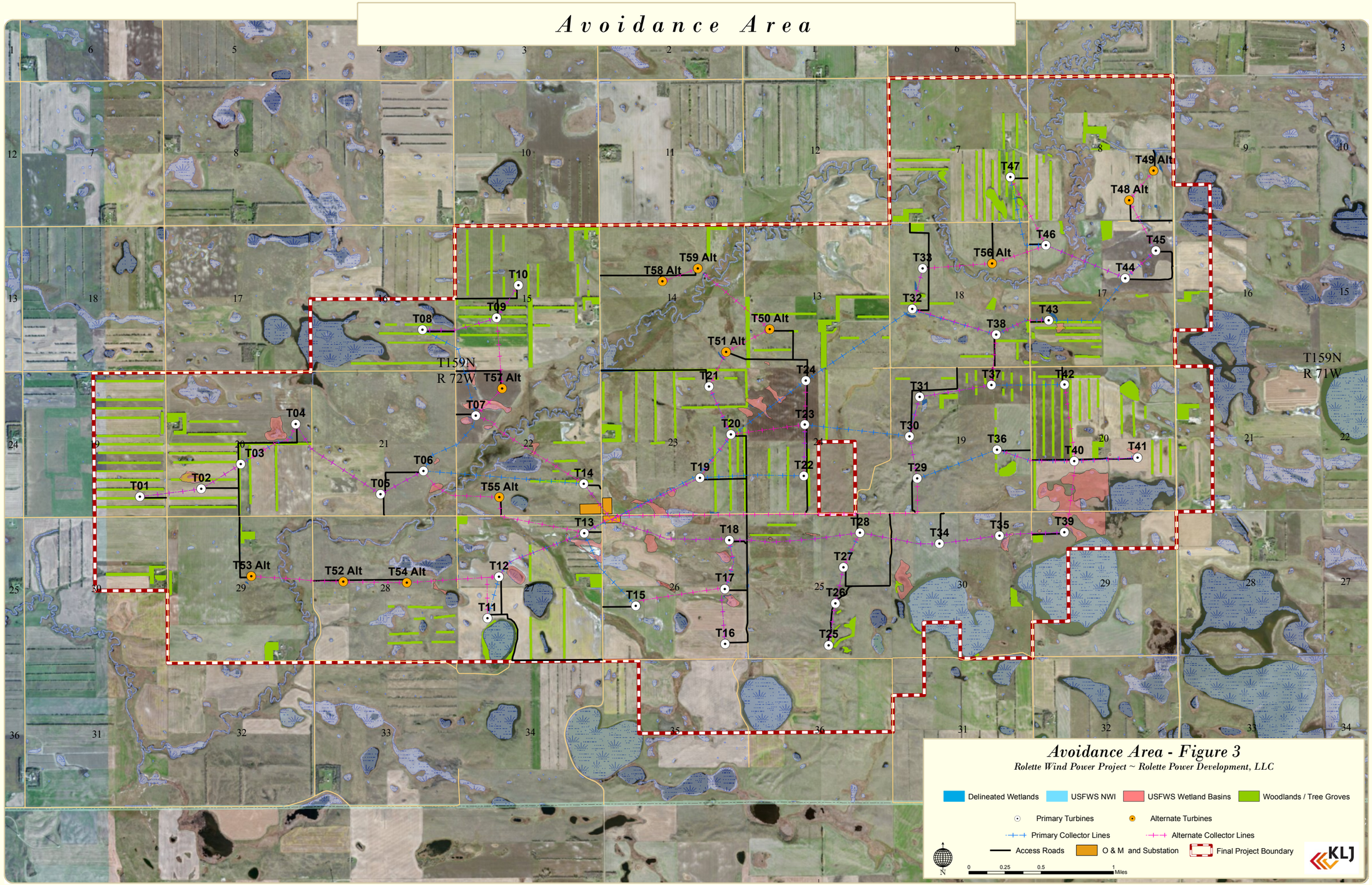


Figure A-4. Facilities Layout

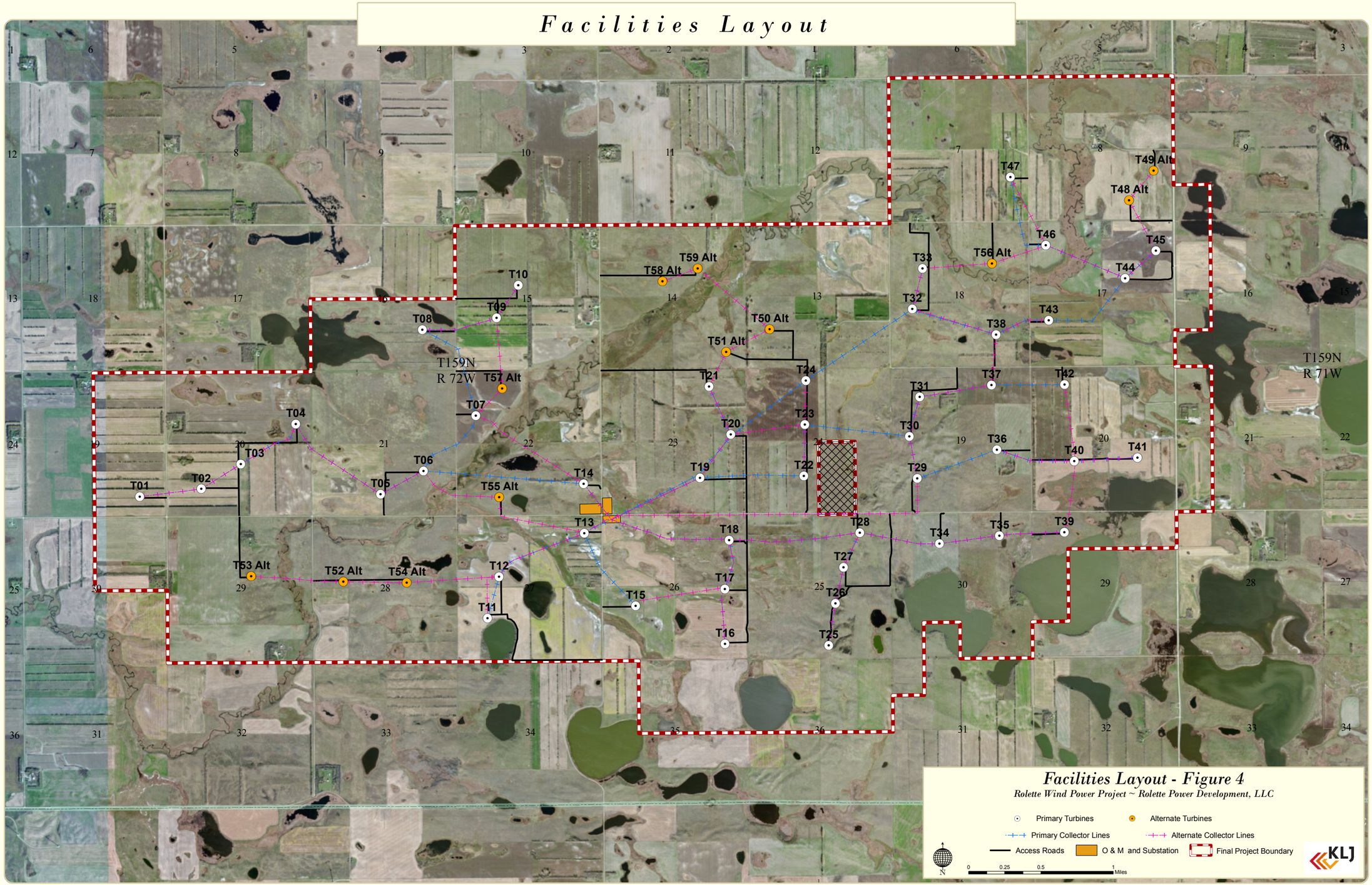


Figure A-5. Land Use

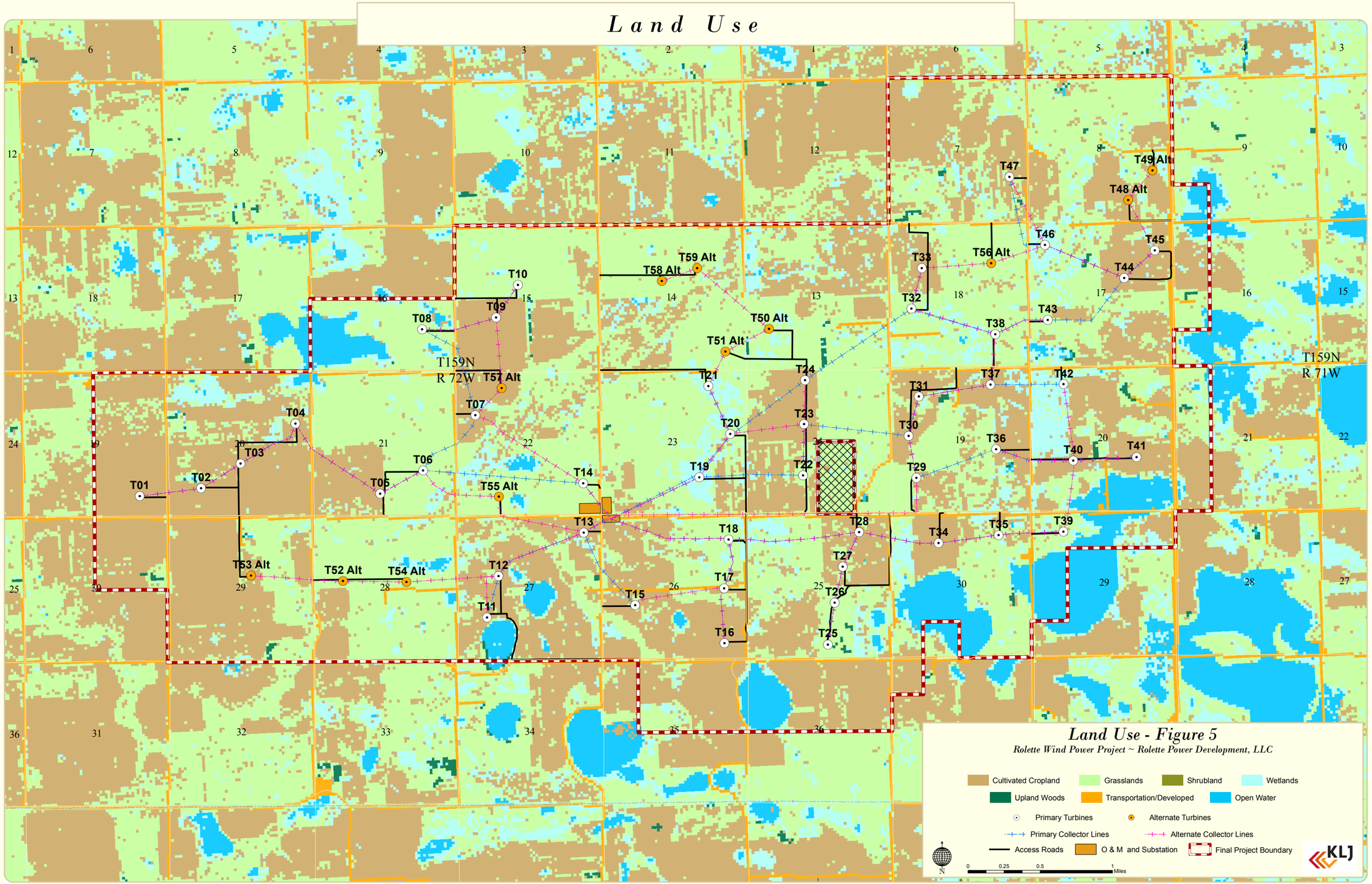


Figure A-6. Infrastructure

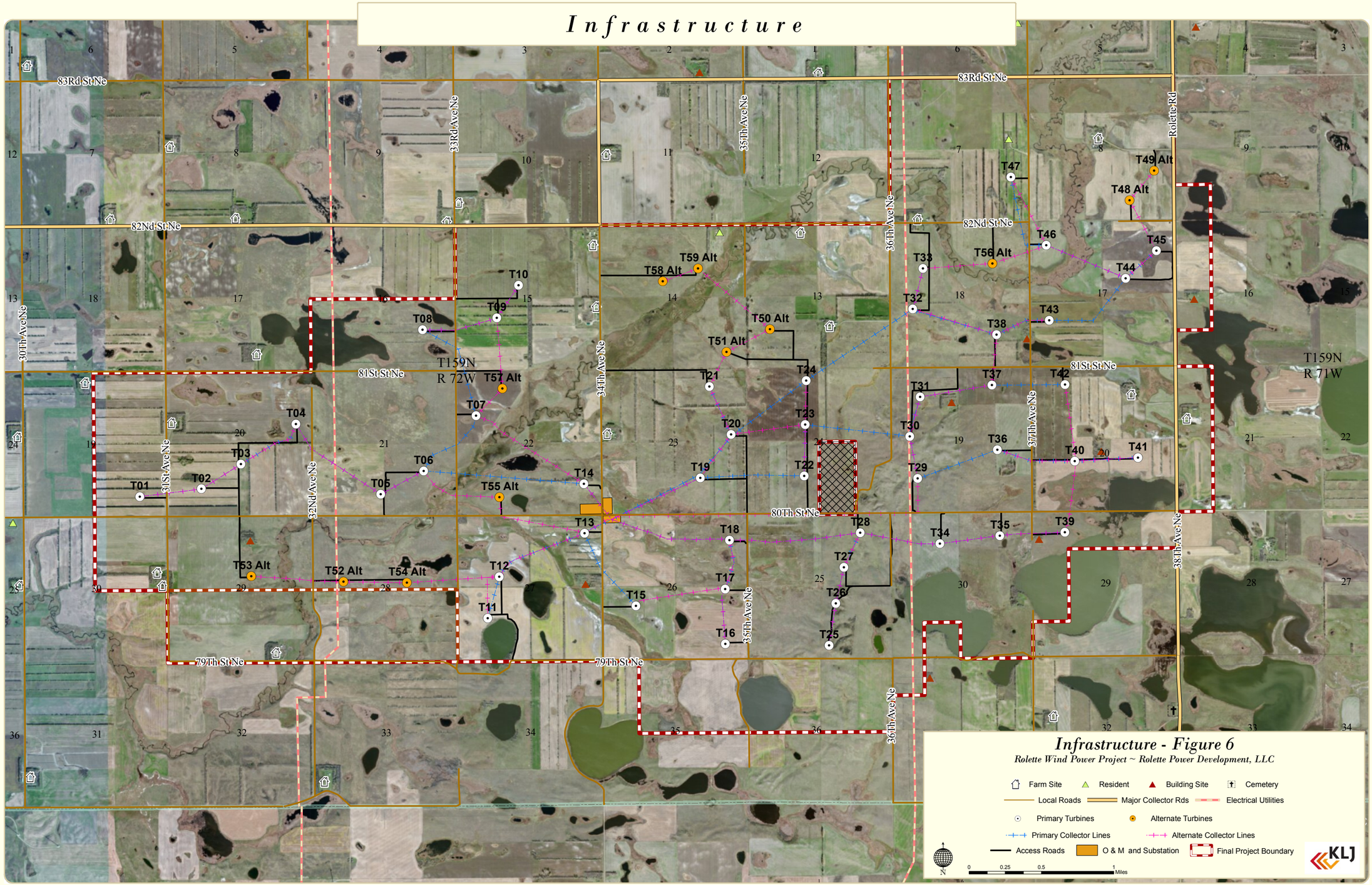


Figure A-7. Microwave Beam Paths

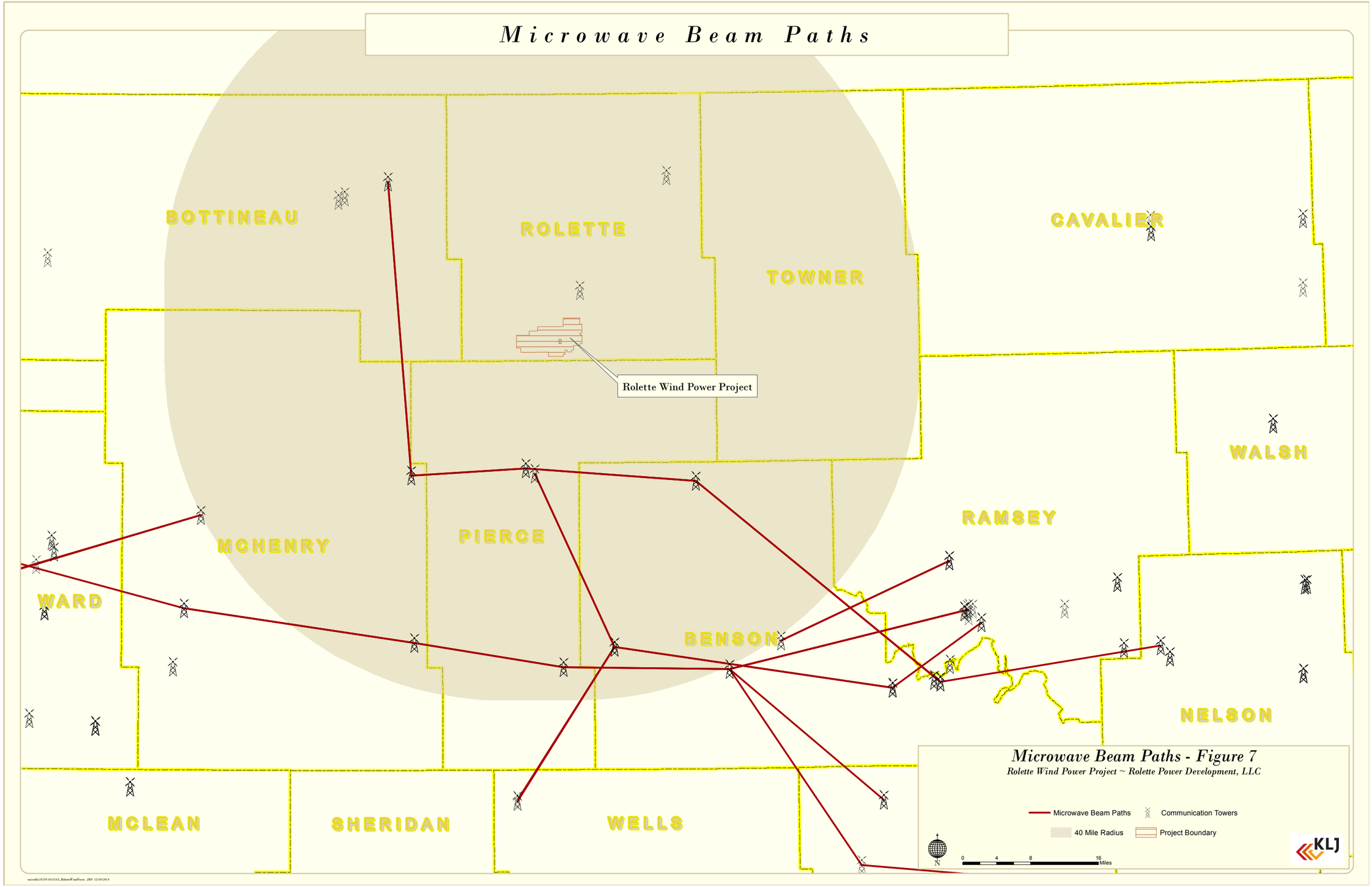


Figure A-8. Prime and Unique Farmland

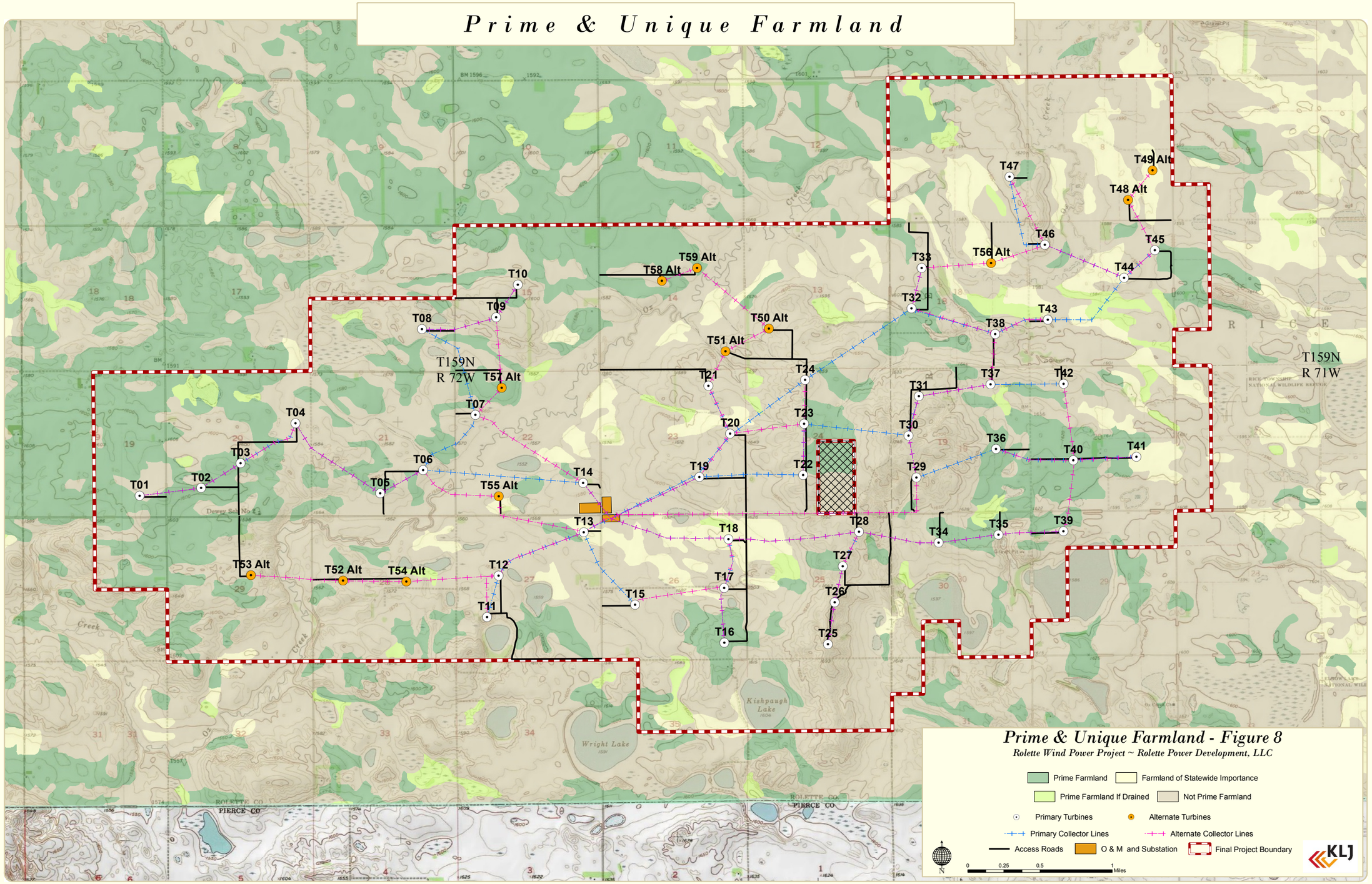


Figure A-9. Geologic and Ground Water Resources

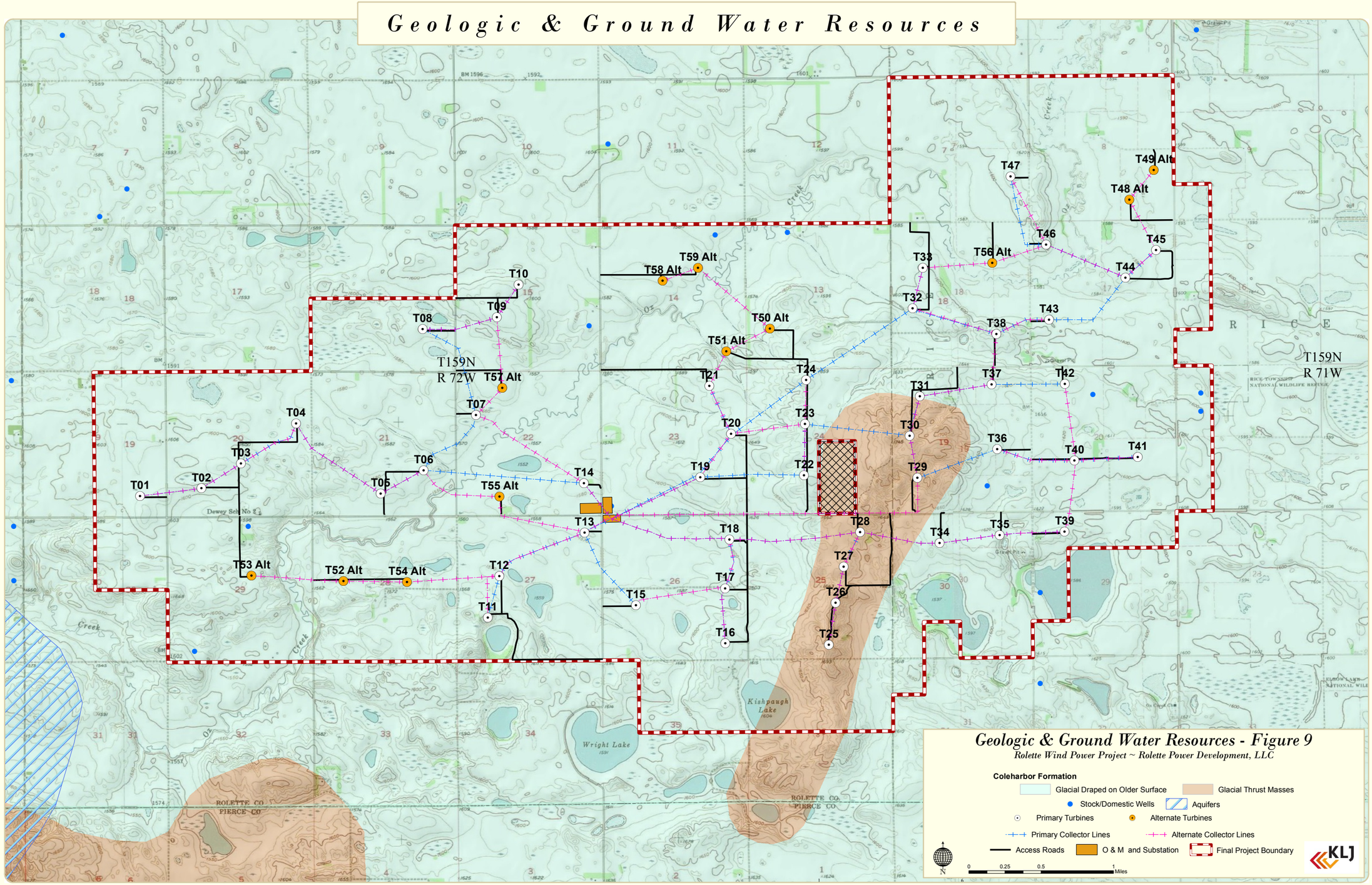


Figure A-10.Surface Waters and USFWS NWI

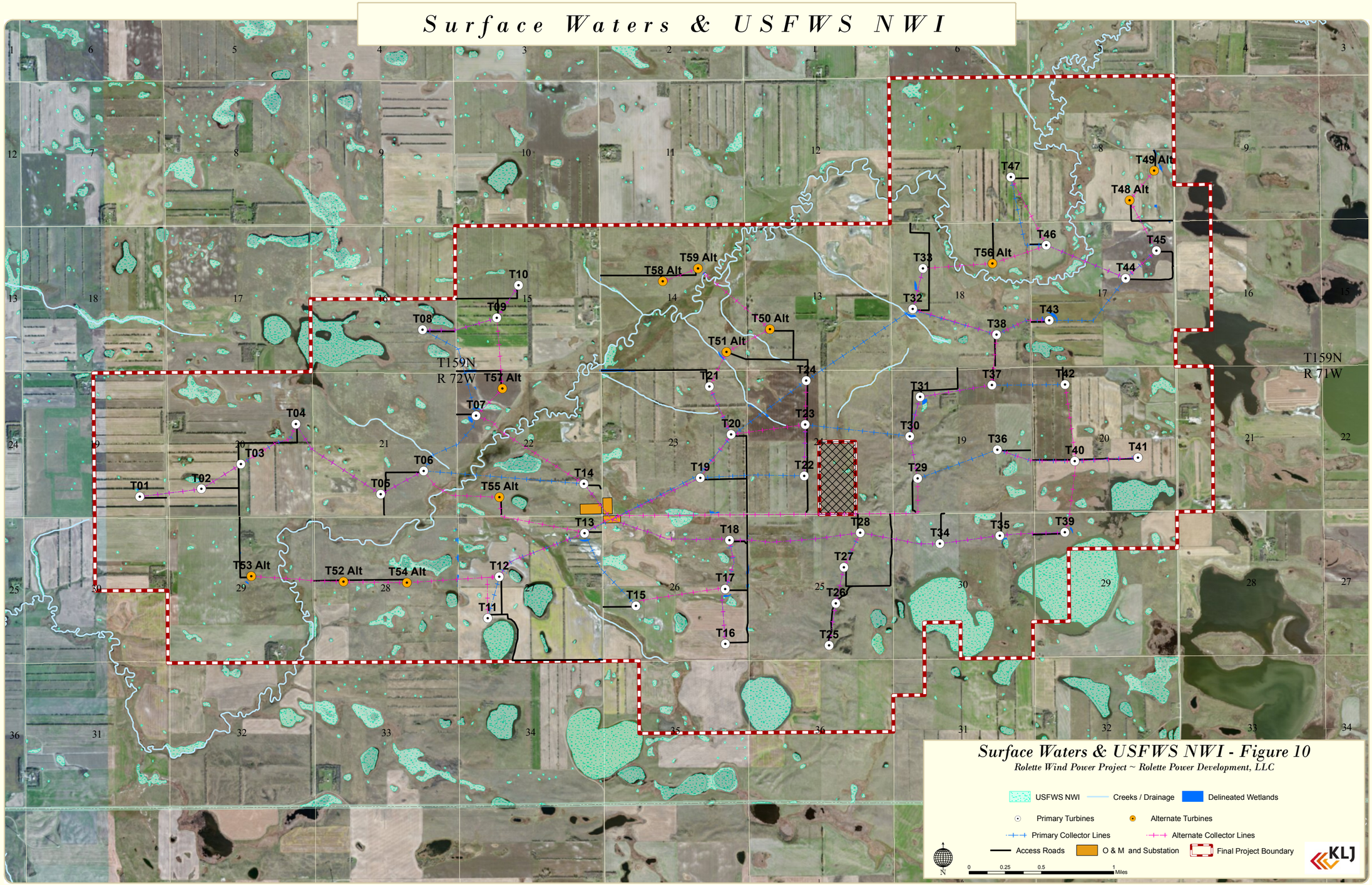
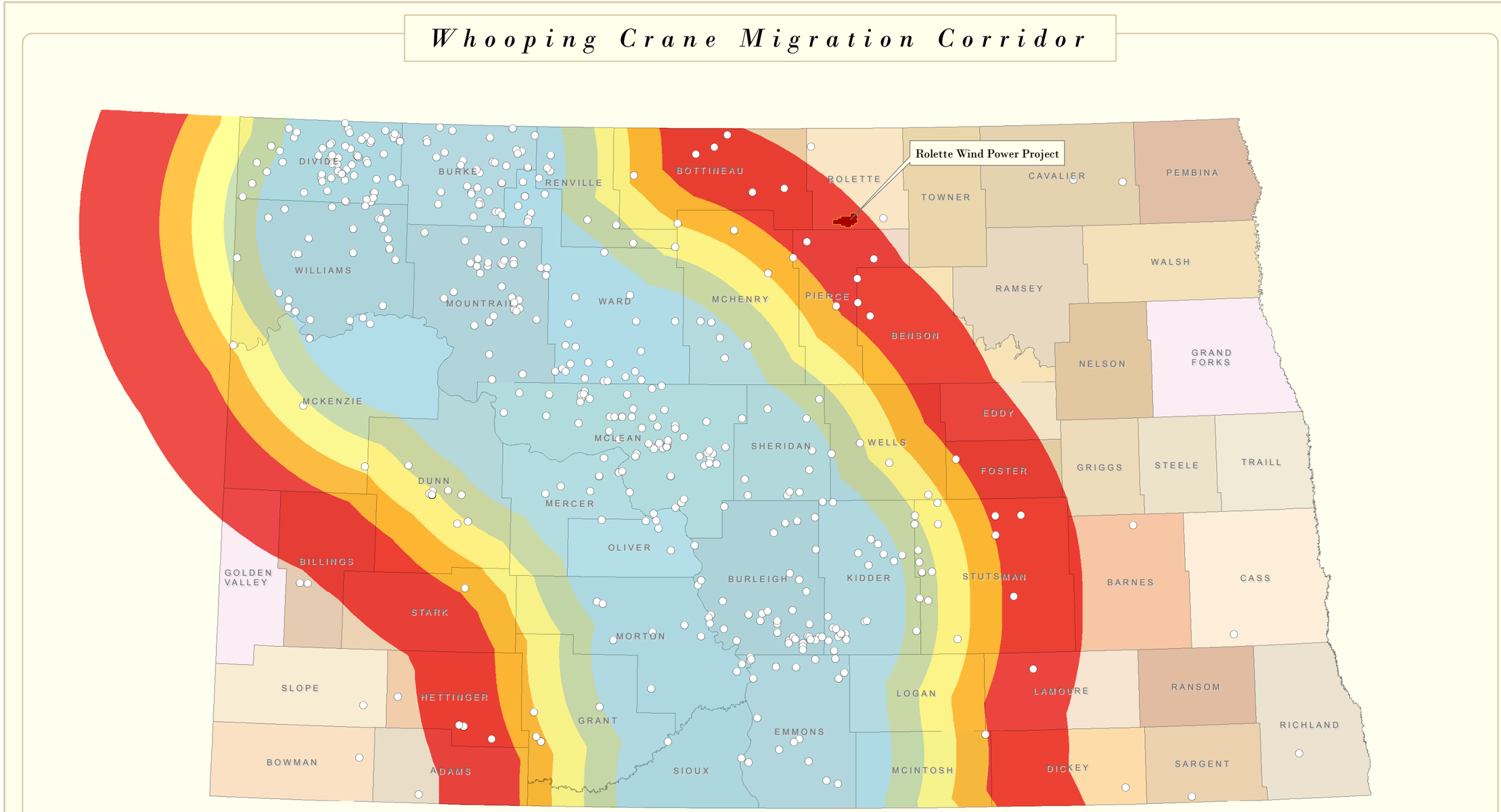


Figure A-11. Whooping Crane Migration Corridor



Appendix B. Minot Air Force Base Correspondence



Alex Nisbet

From: FONTE, BENJAMIN R 2d Lt USAF AFGSC 5 CES/CEN <benjamin.fonte.1@us.af.mil>
Sent: Friday, January 16, 2015 10:03 AM
To: Alex Nisbet
Subject: RE: Rolette Wind Farm

Alex,

Upon review of the proposed Rolette Wind Project in Rolette County, I have found no issues of encroachment to Air Force assets in the area at this time.

I appreciate your coordination with Minot Air Force Base. Please do not hesitate to contact me for any future coordination. I can be reached by email, benjamin.fonte.1@us.af.mil, or phone, 701-723-4844.

Ben Fonte, 2d Lt, USAF
5 CES, Minot AFB ND
Comm: 701-723-4844
DSN: 453-4844

-----Original Message-----
From: Alex Nisbet [mailto:Alex.Nisbet@kljeng.com]
Sent: Wednesday, January 07, 2015 4:34 PM
To: FONTE, BENJAMIN R 2d Lt USAF AFGSC 5 CES/CEN
Subject: Rolette Wind Farm

Ben,

I have attached the Project Location Map for the proposed Rolette Wind Project located approximately three miles south of Rolette, ND. Please let me know if the proposed location would cause any issues with facilities that your agency controls. Thank you for your time.

Alex Nisbet
http://kljeng.com/wp-content/themes/klj/assets/images/logos/signature.jpgKLJ
701-775-1109 Direct
701-989-4884 Cell
2750 Gateway Drive, Suite A
Grand Forks, ND 58203
kljeng.com <http://www.kljeng.com/>

http://kljeng.com/wp-content/themes/klj/assets/images/logos/facebooklogo.jpg <http://www.facebook.com/kljeng>

http://kljeng.com/wp-content/themes/klj/assets/images/logos/twitterlogo.jpg <http://www.twitter.com/kljeng>

http://kljeng.com/wp-content/themes/klj/assets/images/logos/LinkedInlogo.jpg
<http://www.linkedin.com/company/515606?trk=tyah>

http://www.intranet.kljeng.com/corporate/ManualsGuides/Administration-Operations%20Information/IST/youtubelogo.jpg <http://www.youtube.com/kljeng>

http://kljeng.com/wp-content/themes/klj/assets/images/logos/feedburnerlogo.jpg
<http://feeds.feedburner.com/KadrmasLeeJackson>

Appendix C. Sound and Shadow Flicker Summary Report



Summary Report:

Rolette Wind Farm
Sound and Shadow Flicker Analysis
Rolette, North Dakota

March 10,

2015

Submitted To:
Warren Enyart
Rolette Power Development, LLC
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Finley, ND 58230
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Author: Brandon Storm, PhD

Checked By: Jay Haley, P.E., Partner

Approved By: Jay Haley, P.E., Partner

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Report Update

EAPC bears no responsibility to update this report for any changes occurring subsequent to the final issuance of this report.

Revision History

Revision No.	Revision Purpose	Date	Revised By
0	Original	12/08/2014	B. Storm
1	V117 Inclusion	01/20/2015	B. Storm
2	V117 Sound Increase	02/16/2015	B. Storm
3	Clarification	03/10/2015	B. Storm

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APPENDIX C: ALTERNATIVE GROUND ATTENUATION SOUND MAP **10**

APPENDIX D: GENERAL GROUND ATTENUATION SOUND MAP **12**

APPENDIX E: WINDPRO SHADOW FLICKER REPORT **14**

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APPENDIX I: WINDPRO SOUND ANALYSIS WITH GENERAL GROUND ATTENUATION **73**

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Table 2: WindPRO estimated shadow flicker hours for worst case and realistic scenarios. Only receptors with reported shadow hours listed. 3

Table 3: Noise estimates from windPRO assuming various ground attenuation. Results presented for locations with no ground attenuation results above 35 dB(A). Values are reported at the center of the house. The windPRO reports state the distance required to travel to reach the 50 dB(A) limit, which all are beyond 100 ft. 5

Executive Summary

EAPC was hired by Rolette Power Development, LLC to provide a shadow flicker and sound analysis on residences within and surrounding the proposed wind farm of 59 wind turbines near Rolette, ND. The wind farm borders an existing wind farm to the south. Coordinates of the proposed turbines as well as occupied residences were determined by EAPC through aerial images and site-visits. A map of the turbine locations and assumed occupied residences are shown in the Appendices.

At the time this report was issued, a specific turbine had not been selected. This report outlines the impacts using a variety of machines that are representative of likely turbine candidates. In particular, three of the larger turbine manufacture's (i.e., Vestas, Siemens, General Electric) plausible machines for the wind regime were evaluated (Table 1).

Existing turbines to the south of the project do exist. However, the turbines are far enough away (approximately 2 mile separation between the existing turbines and proposed new turbines) where the cumulative impact between the existing and proposed turbines are negligible. No more additional shadow flicker hours or significant increase in noise is observed at any of the house locations being evaluated when both projects are taken into consideration.

While the noise produced from turbines varies, a 108.5 dB(A) turbine mounted on a 84 m hub height (HH) (i.e., V117-3.3) produces the loudest sound level of the machines evaluated. The worst case flicker resulted from the V117-3.3 turbine on a 91.5 m HH. Details for the above stated results are presented in the rest of this report.

All analyzed locations resulted in final realistic shadow flicker results below 30 hours per year and sound levels below 50 dB(A) within 100 ft of the analyzed homes independent of which turbine was evaluated. Maps depicting the results can be found in Appendices A through D.

Table 1: Specifications of turbines evaluated within this report for the Rolette wind farm.

Manufacturer	Model	Name plate capacity (kW)	Rotor diameter (m)	Hub height* (m)	Sound level (dB(A))
Siemens	SWT-2.3-113	2,300	113	92.5	105.0
GE Wind Energy	GE 1.7-100	1,700	100	96	107.0
Vestas	V110-2.0	2,000	100	95	107.0
Vestas	V117-3.3	3,300	117	91.5	108.5

* All turbines were also evaluated as 80 m HH except the V117-3.3 on 84 m HH

Shadow Flicker

For preliminary screening purposes, an absolute worst case shadow flicker scenario was analyzed using windPRO for the V117-3.3 on a 91.5 m HH. The worst case scenario assumes that the wind turbines are always operating, perpendicular to the sun, no cloud cover, all shadows within 1.5 km are visible, and that the sensors are "Greenhouses." Greenhouse sensor mode indicates that a shadow cast from any direction will be accumulated in the results. In reality, individual rooms and windows would need to be modeled to determine the full impact on a house (i.e., if there are no windows on the side of a house where a shadow is cast, it would not be counted).

The worst case scenario resulted in nine locations being above 30 hours a year (an arbitrary value). House locations 14, 15, 16, 17, 18, 19, 21, 79, and 80 are the locations that were above 30 hours per year (Table 2).

A refined analysis was performed to determine if any turbines should be moved or if other forms of mitigation are warranted. This revised analysis included sunshine probabilities and operational statistics (Appendix A and E). The refined analysis resulted in two home locations, location 15 and 16, having more than 30 hours a year of shadow flicker anticipated, (Table 2).

To determine if this location was of high concern and if turbines were justified to be moved, a detailed shadow flicker analysis taking into consideration local obstacles (i.e., tree breaks) was performed. When taking into consideration local obstacles, and using a conservative estimate of the tree height (5.5 m), house location 15 has approximately 22:00 hours per year of flicker predicted, and location 16 has approximately 29:59 hours per year of flicker predicted. It is likely that no further analysis will be necessary with the current layout and home locations. Details regarding the refined shadow flicker analysis for homes 15 and 16 can be found in Appendix F.

Table 2: WindPRO estimated shadow flicker hours for worst case and realistic scenarios. Only receptors with reported shadow hours listed.

Receptor	Worst Case Shadow (hrs/yr)	Shadow Days (days/yr)	Max Shadow (hrs/yr)	Realistic Shadow* (hrs/yr)
H03	11:33	38	0:27	4:55
H04	8:33	32	0:25	3:46
H12	21:11	70	0:31	7:27
H14	47:58	153	0:45	19:47
H15	73:58	177	1:01	30:31/22:00
H16	83:00	255	0:42	33:40/29:59
H17	40:28	96	0:37	14:57
H18	62:09	158	0:41	19:07
H19	34:36:	119	0:29	13:32
H20	11:13	32	0:37	3:53
H21	50:17	115	1:01	16:39
H23	23:54	76	0:27	7:38
H78	17:24	34	0:38	4:41
H79	39:28	68	0:57	12:56
H80	57:13	100	1:10	21:29

* No obstacles taken into consideration except for locations H15 and H16, hours with obstacles reported second.

Sound

For preliminary screening purposes, a worst case noise scenario was analyzed using windPRO. The worst case scenario assumes that the wind turbines are operating at a wind speed that results in the loudest noise being emitted. According to information obtained within windPRO, the loudest normal operating noise level emitted from the turbines in consideration was 108.5 dB(A) for the Vestas V117-3.3. Detailed information regarding the noise emission in terms of octave data was not available for the V117-3.3 turbine, therefore generic octave data for a sound level of 108.5 dB(A) was generated. The noise emission level of 108.5 dB(A) occurs for hub height wind speeds at 10 m/s. While it is very likely a hub height of greater than 84 m will be selected, the sound analysis of a hub height of 84 m resulted in the highest noise level at the modeled receptors. Therefore, all the results presented from here on are based on 84 m hub heights, and would only improve with higher hub heights.

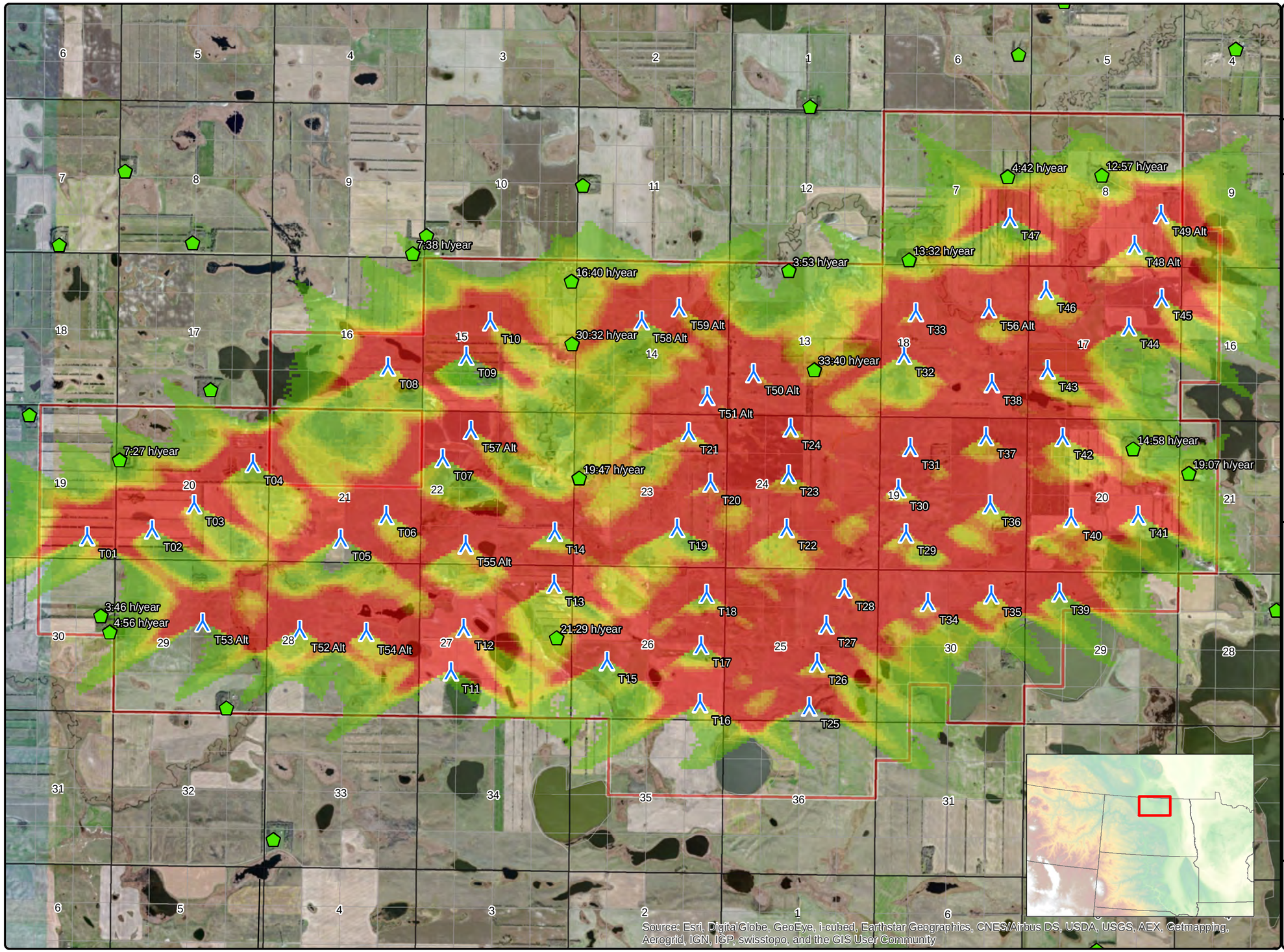
The windPRO analysis used the ISO 9613-2 General noise calculation model three different ways; with no ground attenuation, General Attenuation (Ground Factor of 0.7), and Alternative Attenuation. Noise levels were modeled 1.5 m above ground level (AGL) at the potential occupied residences and did not incorporate ambient noise. The worst case scenario (no ground attenuation) resulted in no locations being above 50 dB(A) (Table 3). The results reported are at the center of the house. Distances required to travel to reach the 50 dB(A) limit are found within the windPRO reports, though all of those distances are beyond the 100 ft requirement. Results and maps depicting the worst case noise scenario results are shown in Appendix B and Appendix G.

While no receptors exceeded the limit of 50 dB(A) within 100 ft of a residence, a more refined analysis was still performed. The refined analyses included the same assumptions and calculations as the worst case scenario, except that the Alternative ground attenuation option and General Ground attenuation option within windPRO were utilized. The Alternative ground attenuation option takes into account local terrain (e.g. hills and valleys) as well as a porous surface, while the General ground attenuation option assumes flat terrain or sloping terrain, and a porous surface. The Alternative method does take into account varying terrain. The results from the refined study can be found in Appendices B, C, H, and I. With the more refined and realistic calculations, all locations had a predicted noise level below 46 dB(A) at the site center. It is anticipated that any turbine selected with the layout evaluated would satisfy North Dakota State regulations regarding acceptable sound levels.

Table 3: Noise estimates from windPRO assuming various ground attenuation. Results presented for locations with no ground attenuation results above 35 dB(A). Values are reported at the center of the house. The windPRO reports state the distance required to travel to reach the 50 dB(A) limit, which all are beyond 100 ft.

Sensor	No Ground Atten. (dB(A))	Alt. Ground Atten. (dB(A))	General Ground Atten. (dB(A))
H02	36.6	32.4	32.0
H03	43.3	39.7	38.7
H04	43.9	40.5	39.3
H05	43.0	39.3	38.3
H06	37.3	33.1	32.7
H07	39.1	34.9	34.4
H08	36.6	32.2	32.1
H10	37.2	33.1	32.6
H11	38.7	34.7	34.1
H12	45.1	41.8	40.6
H13	43.3	39.6	38.6
H14	47.8	44.5	43.2
H15	46.6	43.2	42.0
H16	48.9	45.6	44.3
H17	47.4	44.2	42.9
H18	45.1	41.7	40.5
H19	47.6	44.6	43.0
H20	44.6	40.7	39.9
H21	45.3	41.7	40.6
H22	42.1	38.2	37.4
H23	42.8	39.0	38.2
H25	36.8	32.5	32.2
H28	38.6	34.3	34.0
H29	38.5	34.3	33.9
H30	36.4	32.1	31.9
H31	36.6	31.8	32.0
H32	35.2	30.8	30.8
H68	38.1	33.9	33.5
H75	40.7	36.6	36.0
H78	47.7	45.7	43.4
H79	46.0	42.7	41.4
H80	48.9	46.1	44.4

Appendix A: Realistic Shadow Flicker Map



0 0.25 0.5 0.75 1 Mile

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Rolette Power
Realistic Shadow Flicker

Client

Rolette Power Development, LLC

Project Description

47 Primary WTG locations & 12 Alts (Rev. 8) for V117-3.3 on 91.5 m HH. Realistic shadow flicker map and data at receptors (hrs/yr). Assumes statistical reduction due to sunshine probability, turbine orientation and operation probability. Sensors in "greenhouse" mode. No obstacles assumed.

Location: Rolette, ND

Project #: 20131290

Issue Dates

1	Original	2015.01.20
#	*Description*	*Date*

Drawn By: BS | *Checked By: JH*

Legend

- WTG Rev 8
- Occupied Res.

Realistic Shadow Flicker (hrs/yr)

- < 5
- 5 - 10
- 10 - 15
- 15 - 20
- 20 - 25
- 25 - 30
- 30 - 35
- 35 - 40
- 40 - 45
- > 45
- Project Boundary

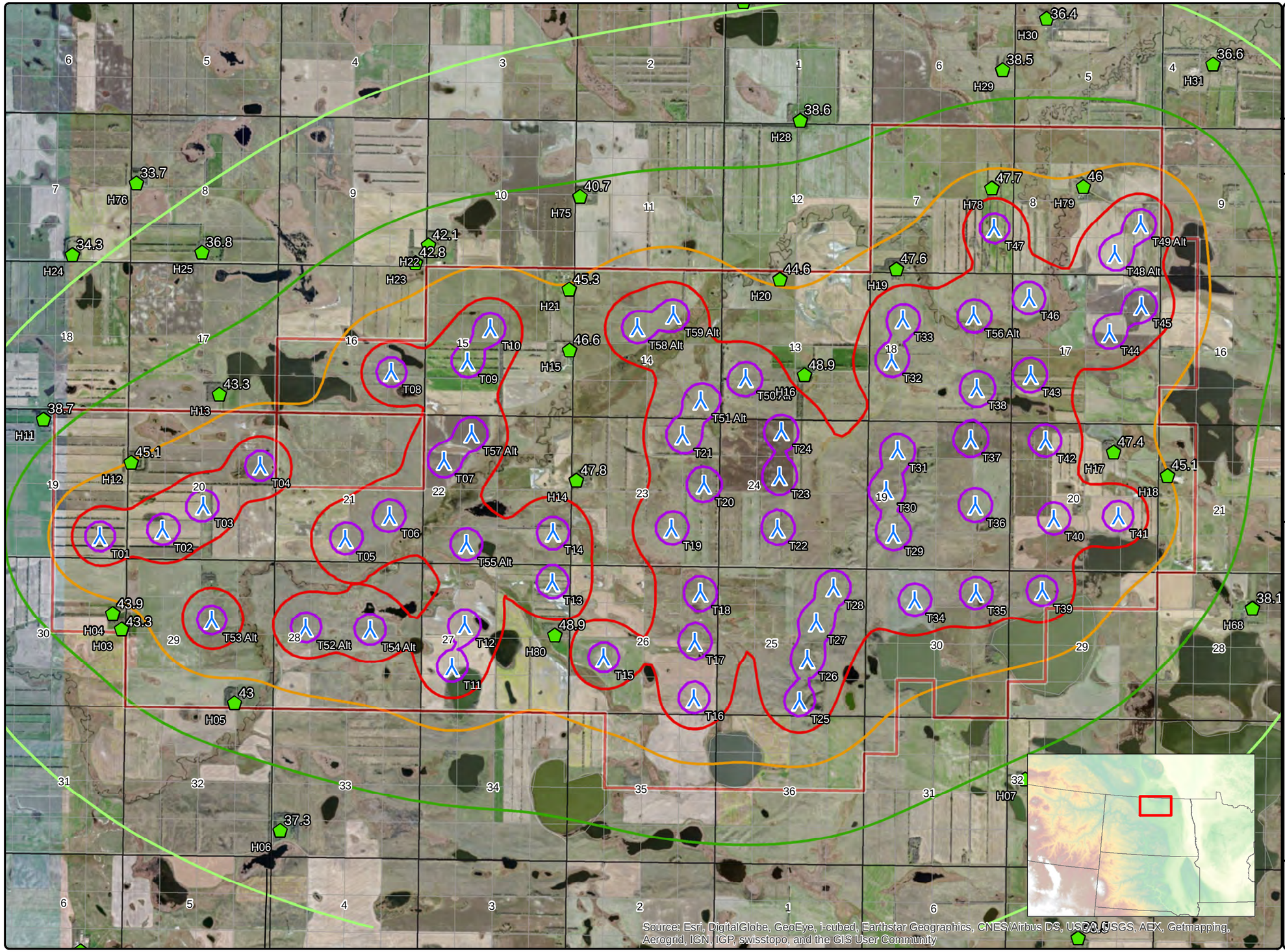
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Appendix B: No Ground Attenuation Sound Map



Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

0 0.25 0.5 0.75 1 Mile

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Rolette Power
Worst Case Sound

Client

Rolette Power Development, LLC

Project Description

47 Primary WTG locations & 12 Alts (Rev. 8) for V117-3.3 on 84 m HH. Worst case noise map and data at receptors (dB(A)). Assumes WTGs at rated noise of 108.5 dB(A) for new WTGs ISO-9613-2 General model. No ground attenuation.

Location: Rolette, ND

Project #: 20131290

Issue Dates

1	Original	2015.02.16
#	*Description*	*Date*

Drawn By: BS *Checked By: JH*

Legend

- WTG Rev 8
- Occupied Res.
- Project Boundary

Sound Level (dB(A))

- 35
- 40
- 45
- 50
- 55

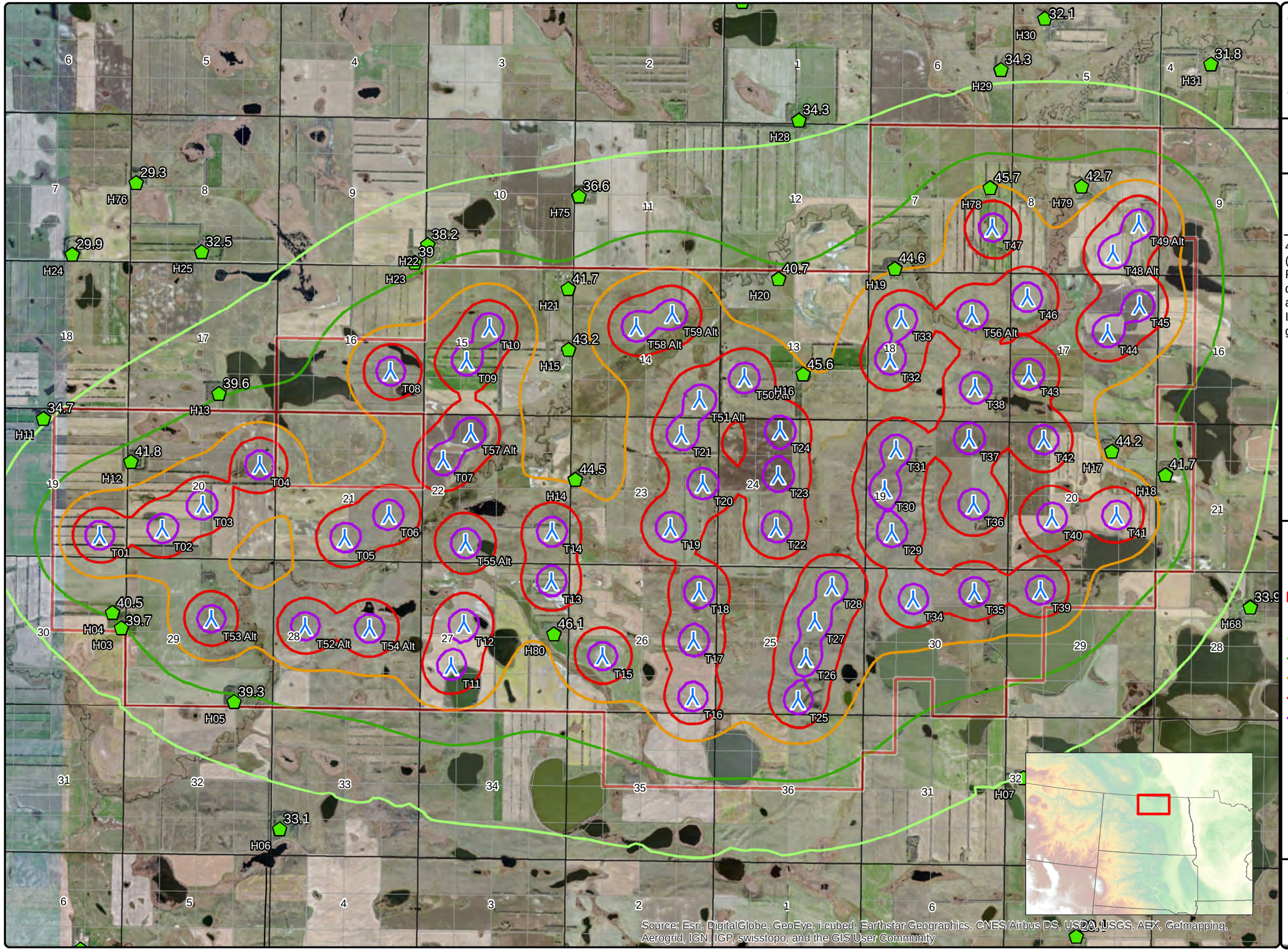
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Appendix C: Alternative Ground Attenuation Sound Map



0 0.25 0.5 0.75 1 Mile

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Rolette Power
Realistic Case Sound 1

Client

Rolette Power Development, LLC

Project Description

47 Primary WTG locations & 12 Alts (Rev. 8) for V117-3.3 on 84 m HH. Realistic case noise map and data at receptors (dB(A)). Assumes WTGs at rated noise of 108.5 dB(A) for new WTGs ISO-9613-2 General model. Alternative ground attenuation.

Location: Rolette, ND

Project #: 20131290

Issue Dates

1	Original	2015.02.16
#	*Description*	*Date*

Drawn By: BS *Checked By: JH*

Legend

- WTG Rev 8
- Occupied Res.
- Project Boundary

Sound Level (dB(A))

- 35
- 40
- 45
- 50
- 55

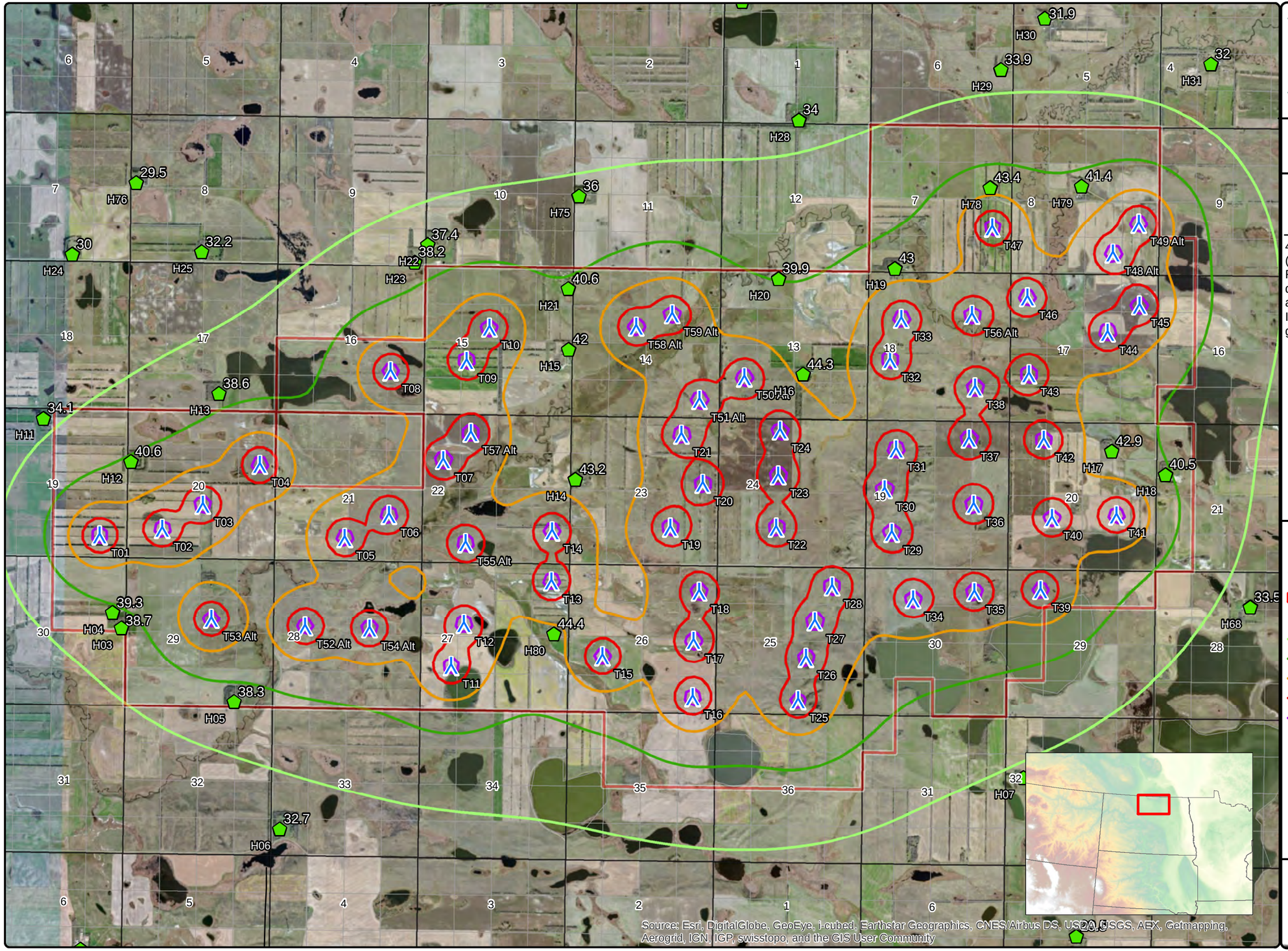
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Appendix D: General Ground Attenuation Sound Map



0 0.25 0.5 0.75 1 Mile

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Rolette Power
Realistic Case Sound 2

Client

Rolette Power Development, LLC

Project Description

47 Primary WTG locations & 12 Alts (Rev. 8) for V117-3.3 on 84 m HH. Realistic case noise map and data at receptors (dB(A)). Assumes WTGs at rated noise of 108.5 dB(A) for new WTGs ISO-9613-2 General model. General ground attenuation.

Location: Rolette, ND

Project #: 20131290

Issue Dates

1	Original	2015.02.16
#	*Description*	*Date*

Drawn By: BS | *Checked By: JH*

Legend

WTG Rev 8

Occupied Res.

Project Boundary

Sound Level (dB(A))

35

40

45

50

55

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Appendix E: windPRO Shadow Flicker Report

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

Description:
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1/20/2015 1:58 PM / 1
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US-GRAND FORKS, ND 58201
+1 701 775 3000
wind@eapc.net
Calculated:
1/14/2015 4:45 PM/2.9.285

SHADOW - Main Result

Calculation: V117-3.3 91.5 HH Shadow Rev 8 w/ Alts, No Obstacles

Assumptions for shadow calculations

Maximum distance for influence	1,500	m
Minimum sun height over horizon for influence	3	°
Day step for calculation	1	days
Time step for calculation	1	minutes

Sunshine probability S (Average daily sunshine hours) [BISMARCK]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4.92	5.13	7.45	8.03	10.20	11.21	11.69	10.35	8.68	5.69	4.02	3.69

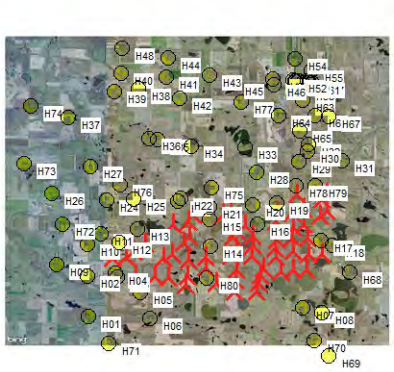
Operational hours are calculated from WTGs in calculation and wind distribution:
9146 (Short-term to MERRA)

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
524	474	586	541	606	835	754	637	557	1,091	1,182	765	8,552

Idle start wind speed: Cut in wind speed from power curve

A ZVI (Zones of Visual Influence) calculation is performed before flicker calculation so non visible WTG do not contribute to calculated flicker values. A WTG will be visible if it is visible from any part of the receiver window. The ZVI calculation is based on the following assumptions:
Height contours used: Height Contours: 121203_10ftHCLs_7kmBuffer.wpo (3)
Obstacles not used in calculation
Eye height: 1.5 m
Grid resolution: 10.0 m



Scale 1:400,000
New WTG Shadow receptor

WTGs

	UTM (north)-WGS84 Zone: 14				WTG type						
	East	North	Z [m]	Row data/Description	Valid	Manufact.	Type-generator	Power, rated [kW]	Rotor diameter [m]	Hub height [m]	RPM [RPM]
T01	426,404	5,380,816	490.7	T01	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T02	427,088	5,380,888	490.7	T02	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T03	427,532	5,381,154	490.6	T03	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T04	428,153	5,381,587	484.6	T04	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T05	429,079	5,380,790	481.6	T05	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T06	429,560	5,381,041	481.6	T06	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T07	430,155	5,381,640	478.5	T07	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T08	429,579	5,382,607	487.7	T08	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T09	430,407	5,382,722	496.8	T09	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T10	430,657	5,383,084	491.0	T10	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T11	430,242	5,379,390	490.7	T11	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T12	430,379	5,379,847	480.0	T12	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T13	431,335	5,380,312	481.2	T13	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T14	431,340	5,380,862	481.6	T14	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T15	431,891	5,379,497	484.6	T15	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T16	432,876	5,379,052	496.9	T16	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T17	432,886	5,379,665	487.7	T17	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T18	432,945	5,380,204	489.6	T18	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T19	432,633	5,380,904	496.8	T19	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T20	432,985	5,381,379	499.9	T20	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T21	432,753	5,381,916	493.8	T21	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T22	433,787	5,380,903	516.3	T22	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T23	433,809	5,381,470	515.1	T23	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T24	433,830	5,381,961	512.1	T24	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T25	434,026	5,379,018	527.3	T25	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T26	434,112	5,379,482	520.4	T26	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T27	434,209	5,379,879	512.1	T27	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T28	434,398	5,380,261	515.1	T28	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T29	435,048	5,380,847	518.2	T29	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T30	434,970	5,381,321	525.3	T30	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T31	435,093	5,381,756	514.4	T31	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T32	435,029	5,382,733	490.7	T32	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T33	435,153	5,383,180	487.7	T33	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T34	435,280	5,380,120	499.9	T34	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0

To be continued on next page...

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

Description:
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Calculated:
1/14/2015 4:45 PM/2.9.285

SHADOW - Main Result

Calculation: V117-3.3 91.5 HH Shadow Rev 8 w/ Alts, No Obstacles

...continued from previous page

	UTM (north)-WGS84 Zone: 14					WTG type						
	East	North	Z [m]	Row data/Description	Valid	Manufact.	Type-generator	Power, rated [kW]	Rotor diameter [m]	Hub height [m]	RPM [RPM]
T35	435,948	5,380,198	493.8	T35	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T36	435,940	5,381,153	497.4	T36	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T37	435,892	5,381,871	496.8	T37	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T38	435,956	5,382,432	496.8	T38	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T39	436,670	5,380,219	493.8	T39	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T40	436,795	5,381,008	493.6	T40	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T41	437,500	5,381,035	490.7	T41	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T42	436,705	5,381,860	496.8	T42	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T43	436,544	5,382,577	486.6	T43	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T44	437,401	5,383,031	484.6	T44	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T45	437,748	5,383,328	484.6	T45	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T46	436,528	5,383,414	491.2	T46	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T47	436,146	5,384,176	493.8	T47	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T48 Alt	437,462	5,383,893	484.9	T48 Alt	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T49 Alt	437,741	5,384,219	486.5	T49 Alt	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T50 Alt	433,440	5,382,540	491.0	T50 Alt	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T51 Alt	432,950	5,382,296	487.7	T51 Alt	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T52 Alt	428,647	5,379,825	484.6	T52 Alt	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T53 Alt	427,624	5,379,906	487.7	T53 Alt	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T54 Alt	429,351	5,379,803	481.6	T54 Alt	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T55 Alt	430,397	5,380,730	475.9	T55 Alt	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T56 Alt	435,924	5,383,222	484.6	T56 Alt	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T57 Alt	430,454	5,381,937	481.6	T57 Alt	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T58 Alt	432,258	5,383,093	481.6	T58 Alt	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T59 Alt	432,653	5,383,230	479.6	T59 Alt	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0

Shadow receptor-Input

	UTM (north)-WGS84 Zone: 14								
No.	East	North	Z [m]	Width [m]	Height [m]	Height a.g.l. [m]	Degrees from south cw [°]	Slope of window [°]	Direction mode
H01	425,103	5,377,690	482.7	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H02	425,068	5,379,854	474.1	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H03	426,643	5,379,805	491.7	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H04	426,549	5,379,974	491.0	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H05	427,874	5,379,000	474.0	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H06	428,371	5,377,613	488.9	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H07	436,489	5,378,172	496.8	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H08	437,470	5,377,901	494.2	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H09	423,456	5,380,441	468.5	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H10	425,063	5,381,519	490.7	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H11	425,794	5,382,095	484.6	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H12	426,747	5,381,621	488.2	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H13	427,710	5,382,364	484.6	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H14	431,600	5,381,428	480.6	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H15	431,525	5,382,848	481.6	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H16	434,082	5,382,575	494.6	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H17	437,449	5,381,736	489.6	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H18	438,036	5,381,480	487.7	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H19	435,083	5,383,732	482.5	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H20	433,814	5,383,618	481.3	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H21	431,519	5,383,509	482.5	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H22	429,988	5,383,991	485.4	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H23	429,842	5,383,799	486.0	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H24	426,110	5,383,888	484.6	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H25	427,520	5,383,912	487.7	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H26	423,216	5,384,199	475.5	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H27	425,207	5,385,626	484.6	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H28	434,037	5,385,350	487.7	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H29	436,241	5,385,900	487.5	1.0	1.0	1.0	0.0	90.0	"Green house mode"

To be continued on next page...

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

Description:
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SHADOW - Main Result

Calculation: V117-3.3 91.5 HH Shadow Rev 8 w/ Alts, No Obstacles

...continued from previous page

UTM (north)-WGS84 Zone: 14

No.	East	North	Z	Width	Height	Height a.g.l.	Degrees from south cw	Slope of window	Direction mode
			[m]	[m]	[m]	[m]	[°]	[°]	
H30	436,720	5,386,461	487.7	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H31	438,532	5,385,959	492.7	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H32	436,777	5,386,821	487.7	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H33	433,417	5,386,642	489.8	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H34	430,581	5,386,696	484.6	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H35	428,790	5,387,073	487.7	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H36	428,339	5,387,121	487.8	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H37	424,038	5,388,227	476.1	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H38	427,771	5,389,763	485.6	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H39	426,492	5,389,606	486.3	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H40	426,881	5,390,596	478.5	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H41	429,239	5,390,383	484.6	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H42	429,976	5,389,256	485.3	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H43	431,513	5,390,474	486.5	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H44	429,367	5,391,413	484.6	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H45	432,691	5,390,026	492.8	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H46	434,940	5,389,948	488.7	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H47	434,910	5,390,254	489.5	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H48	426,887	5,391,926	484.6	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H49	436,271	5,390,194	493.4	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H50	436,212	5,390,180	493.3	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H51	436,128	5,390,182	493.0	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H52	436,045	5,390,169	492.7	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H53	435,952	5,390,222	492.0	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H54	436,061	5,391,348	494.3	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H55	436,924	5,390,748	494.9	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H56	436,493	5,390,085	493.8	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H57	436,955	5,390,062	494.2	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H58	436,487	5,389,750	493.8	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H59	436,695	5,390,178	493.8	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H60	436,792	5,390,176	493.9	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H61	436,761	5,390,069	493.8	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H62	436,848	5,390,074	494.0	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H63	436,447	5,389,149	491.4	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H64	435,203	5,388,342	487.7	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H65	436,340	5,387,513	487.7	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H66	437,143	5,388,366	492.2	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H67	437,850	5,388,298	492.1	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H68	438,962	5,380,033	490.7	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H69	437,832	5,375,631	496.6	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H70	437,063	5,376,441	493.8	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H71	426,198	5,376,299	477.3	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H72	423,740	5,382,611	473.1	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H73	421,712	5,385,818	484.6	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H74	422,066	5,388,846	472.5	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H75	431,638	5,384,520	487.7	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H76	426,805	5,384,667	485.2	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H77	433,190	5,389,038	493.8	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H78	436,125	5,384,612	492.2	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H79	437,120	5,384,628	484.8	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H80	431,362	5,379,742	479.8	1.0	1.0	1.0	0.0	90.0	"Green house mode"

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
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SHADOW - Main Result

Calculation: V117-3.3 91.5 HH Shadow Rev 8 w/ Alts, No Obstacles

Calculation Results

Shadow receptor

No.	Shadow, worst case: Shadow hours per year [h/year]	Shadow, worst case: Shadow days per year [days/year]	Shadow, worst case: Max shadow hours per day [h/day]	Shadow, expected values: Shadow hours per year [h/year]
H01	0:00	0	0:00	0:00
H02	0:00	0	0:00	0:00
H03	11:33	38	0:27	4:55
H04	8:33	32	0:25	3:46
H05	0:00	0	0:00	0:00
H06	0:00	0	0:00	0:00
H07	0:00	0	0:00	0:00
H08	0:00	0	0:00	0:00
H09	0:00	0	0:00	0:00
H10	0:00	0	0:00	0:00
H11	0:00	0	0:00	0:00
H12	21:11	70	0:31	7:27
H13	0:00	0	0:00	0:00
H14	47:58	153	0:45	19:47
H15	73:58	177	1:01	30:31
H16	83:00	255	0:42	33:40
H17	40:28	96	0:37	14:57
H18	62:09	158	0:41	19:07
H19	34:36	119	0:29	13:32
H20	11:13	32	0:37	3:53
H21	50:17	115	1:01	16:39
H22	0:00	0	0:00	0:00
H23	23:54	76	0:27	7:38
H24	0:00	0	0:00	0:00
H25	0:00	0	0:00	0:00
H26	0:00	0	0:00	0:00
H27	0:00	0	0:00	0:00
H28	0:00	0	0:00	0:00
H29	0:00	0	0:00	0:00
H30	0:00	0	0:00	0:00
H31	0:00	0	0:00	0:00
H32	0:00	0	0:00	0:00
H33	0:00	0	0:00	0:00
H34	0:00	0	0:00	0:00
H35	0:00	0	0:00	0:00
H36	0:00	0	0:00	0:00
H37	0:00	0	0:00	0:00
H38	0:00	0	0:00	0:00
H39	0:00	0	0:00	0:00
H40	0:00	0	0:00	0:00
H41	0:00	0	0:00	0:00
H42	0:00	0	0:00	0:00
H43	0:00	0	0:00	0:00
H44	0:00	0	0:00	0:00
H45	0:00	0	0:00	0:00
H46	0:00	0	0:00	0:00
H47	0:00	0	0:00	0:00
H48	0:00	0	0:00	0:00
H49	0:00	0	0:00	0:00
H50	0:00	0	0:00	0:00
H51	0:00	0	0:00	0:00
H52	0:00	0	0:00	0:00
H53	0:00	0	0:00	0:00
H54	0:00	0	0:00	0:00
H55	0:00	0	0:00	0:00
H56	0:00	0	0:00	0:00
H57	0:00	0	0:00	0:00
H58	0:00	0	0:00	0:00
H59	0:00	0	0:00	0:00

To be continued on next page...

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
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Calculated:
1/14/2015 4:45 PM/2.9.285

SHADOW - Main Result

Calculation: V117-3.3 91.5 HH Shadow Rev 8 w/ Alts, No Obstacles

...continued from previous page

No.	Shadow, worst case: Shadow hours per year [h/year]	Shadow, worst case: Shadow days per year [days/year]	Shadow, worst case: Max shadow hours per day [h/day]	Shadow, expected values: Shadow hours per year [h/year]
H60	0:00	0	0:00	0:00
H61	0:00	0	0:00	0:00
H62	0:00	0	0:00	0:00
H63	0:00	0	0:00	0:00
H64	0:00	0	0:00	0:00
H65	0:00	0	0:00	0:00
H66	0:00	0	0:00	0:00
H67	0:00	0	0:00	0:00
H68	0:00	0	0:00	0:00
H69	0:00	0	0:00	0:00
H70	0:00	0	0:00	0:00
H71	0:00	0	0:00	0:00
H72	0:00	0	0:00	0:00
H73	0:00	0	0:00	0:00
H74	0:00	0	0:00	0:00
H75	0:00	0	0:00	0:00
H76	0:00	0	0:00	0:00
H77	0:00	0	0:00	0:00
H78	17:24	34	0:38	4:41
H79	39:28	68	0:57	12:56
H80	57:13	100	1:10	21:29

Total amount of flickering on the shadow receptors caused by each WTG

No.	Name	Worst case [h/year]	Expected [h/year]
T01	T01	0:00	0:00
T02	T02	0:00	0:00
T03	T03	17:11	5:41
T04	T04	4:00	1:45
T05	T05	0:00	0:00
T06	T06	0:00	0:00
T07	T07	3:44	1:37
T08	T08	0:00	0:00
T09	T09	18:19	6:42
T10	T10	57:45	20:53
T11	T11	8:12	2:57
T12	T12	11:40	5:03
T13	T13	0:00	0:00
T14	T14	0:00	0:00
T15	T15	37:21	13:28
T16	T16	0:00	0:00
T17	T17	0:00	0:00
T18	T18	0:00	0:00
T19	T19	10:03	3:25
T20	T20	5:34	2:26
T21	T21	17:05	7:13
T22	T22	0:00	0:00
T23	T23	0:00	0:00
T24	T24	0:00	0:00
T25	T25	0:00	0:00
T26	T26	0:00	0:00
T27	T27	0:00	0:00
T28	T28	0:00	0:00
T29	T29	0:00	0:00
T30	T30	0:00	0:00
T31	T31	13:15	4:21
T32	T32	13:04	5:33
T33	T33	22:04	9:22
T34	T34	0:00	0:00

To be continued on next page...

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

Description:
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wind@eapc.net

Calculated:
1/14/2015 4:45 PM/2.9.285

SHADOW - Main Result

Calculation: V117-3.3 91.5 HH Shadow Rev 8 w/ Alts, No Obstacles

...continued from previous page

No.	Name	Worst case [h/year]	Expected [h/year]
T35	T35	0:00	0:00
T36	T36	0:00	0:00
T37	T37	0:00	0:00
T38	T38	0:00	0:00
T39	T39	0:00	0:00
T40	T40	21:36	6:11
T41	T41	50:15	14:37
T42	T42	30:46	13:30
T43	T43	0:00	0:00
T44	T44	0:00	0:00
T45	T45	0:00	0:00
T46	T46	4:03	1:33
T47	T47	44:16	15:25
T48 Alt	T48 Alt	0:00	0:00
T49 Alt	T49 Alt	28:25	9:16
T50 Alt	T50 Alt	28:38	12:22
T51 Alt	T51 Alt	6:36	2:23
T52 Alt	T52 Alt	0:00	0:00
T53 Alt	T53 Alt	20:06	8:41
T54 Alt	T54 Alt	0:00	0:00
T55 Alt	T55 Alt	5:25	1:37
T56 Alt	T56 Alt	14:44	4:50
T57 Alt	T57 Alt	23:36	8:34
T58 Alt	T58 Alt	51:44	20:47
T59 Alt	T59 Alt	22:57	9:07

Project:

20131290 Rolette Power Development

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1/20/2015 1:58 PM / 7
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Calculated:
1/14/2015 4:45 PM/2.9.285

SHADOW - Calendar

Calculation: V117-3.3 91.5 HH Shadow Rev 8 w/ Alts, No Obstacles **Shadow receptor:** H03 - Shadow Receptor: 1.0 × 1.0 Azimuth: 0.0° Slope: 90.0° (170)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BISMARCK]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4.92	5.13	7.45	8.03	10.20	11.21	11.69	10.35	8.68	5.69	4.02	3.69

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
524	474	586	541	606	835	754	637	557	1,091	1,182	765	8,552

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April		May	June	July	August		September		October	November	December
1	08:33	08:11	07:23	07:20		06:22	05:43	05:42	06:14		06:57	07:20 (T53 Alt)	07:39	07:26	08:11
	16:55	17:38	18:22	20:09		20:53	21:33	21:46	21:20		20:26	27 07:47 (T53 Alt)	19:23	17:22	16:48
2	08:33	08:09	07:22	07:18	07:39 (T53 Alt)	06:20	05:43	05:43	06:15		06:58	07:22 (T53 Alt)	07:40	07:27	08:12
	16:56	17:40	18:23	20:10	2 07:41 (T53 Alt)	20:54	21:34	21:46	21:19		20:24	25 07:47 (T53 Alt)	19:21	17:20	16:47
3	08:33	08:08	07:20	07:16	07:37 (T53 Alt)	06:19	05:42	05:43	06:16		06:59	07:23 (T53 Alt)	07:42	07:29	08:13
	16:57	17:41	18:25	20:12	7 07:44 (T53 Alt)	20:56	21:35	21:46	21:18		20:22	23 07:46 (T53 Alt)	19:19	17:19	16:47
4	08:33	08:07	07:18	07:14	07:35 (T53 Alt)	06:17	05:41	05:44	06:18		07:01	07:24 (T53 Alt)	07:43	07:30	08:14
	16:58	17:43	18:26	20:13	11 07:46 (T53 Alt)	20:57	21:36	21:46	21:16		20:20	21 07:45 (T53 Alt)	19:17	17:17	16:46
5	08:32	08:05	07:16	07:12	07:33 (T53 Alt)	06:15	05:41	05:45	06:19		07:02	07:26 (T53 Alt)	07:45	07:32	08:16
	16:59	17:45	18:28	20:15	14 07:47 (T53 Alt)	20:59	21:37	21:45	21:15		20:18	19 07:45 (T53 Alt)	19:15	17:16	16:46
6	08:32	08:04	07:14	07:10	07:31 (T53 Alt)	06:14	05:40	05:45	06:21		07:04	07:27 (T53 Alt)	07:46	07:34	08:17
	17:00	17:46	18:30	20:16	16 07:47 (T53 Alt)	21:00	21:37	21:45	21:13		20:15	17 07:44 (T53 Alt)	19:13	17:14	16:46
7	08:32	08:02	07:12	07:08	07:29 (T53 Alt)	06:12	05:40	05:46	06:22		07:05	07:28 (T53 Alt)	07:48	07:35	08:18
	17:02	17:48	18:31	20:18	19 07:48 (T53 Alt)	21:01	21:38	21:45	21:11		20:13	14 07:42 (T53 Alt)	19:11	17:13	16:45
8	08:32	08:01	08:10	07:05	07:27 (T53 Alt)	06:11	05:39	05:47	06:23		07:06	07:30 (T53 Alt)	07:49	07:37	08:19
	17:03	17:50	18:33	20:19	21 07:48 (T53 Alt)	21:03	21:39	21:44	21:10		20:11	11 07:41 (T53 Alt)	19:09	17:11	16:45
9	08:31	07:59	08:08	07:03	07:25 (T53 Alt)	06:09	05:39	05:48	06:25		07:08	07:31 (T53 Alt)	07:51	07:38	08:20
	17:04	17:51	19:34	20:21	23 07:48 (T53 Alt)	21:04	21:40	21:44	21:08		20:09	7 07:38 (T53 Alt)	19:06	17:10	16:45
10	08:31	07:57	08:05	07:01	07:23 (T53 Alt)	06:08	05:39	05:49	06:26		07:09	07:32 (T53 Alt)	07:52	07:40	08:21
	17:05	17:53	19:36	20:22	25 07:48 (T53 Alt)	21:06	21:41	21:43	21:07		20:07	3 07:35 (T53 Alt)	19:04	17:08	16:45
11	08:30	07:56	08:03	06:59	07:21 (T53 Alt)	06:06	05:38	05:50	06:27		07:11		07:54	07:41	08:22
	17:07	17:54	19:37	20:24	27 07:48 (T53 Alt)	21:07	21:41	21:42	21:05		20:05		19:02	17:07	16:45
12	08:30	07:54	08:01	06:57	07:20 (T53 Alt)	06:05	05:38	05:51	06:29		07:12		07:55	07:43	08:23
	17:08	17:56	19:39	20:25	27 07:47 (T53 Alt)	21:08	21:42	21:42	21:03		20:03		19:00	17:06	16:45
13	08:29	07:53	07:59	06:55	07:20 (T53 Alt)	06:03	05:38	05:52	06:30		07:13		07:57	07:45	08:24
	17:09	17:58	19:40	20:26	27 07:47 (T53 Alt)	21:10	21:43	21:41	21:02		20:01		18:56	17:04	16:45
14	08:29	07:51	07:57	06:53	07:20 (T53 Alt)	06:02	05:38	05:53	06:32		07:15		07:58	07:46	08:25
	17:11	17:59	19:42	20:28	26 07:46 (T53 Alt)	21:11	21:43	21:40	21:00		19:59		18:54	17:03	16:45
15	08:28	07:49	07:55	06:51	07:20 (T53 Alt)	06:01	05:38	05:54	06:33		07:16		08:00	07:48	08:26
	17:12	18:01	19:43	20:29	25 07:45 (T53 Alt)	21:13	21:44	21:39	20:58		19:57		18:53	17:02	16:45
16	08:27	07:48	07:53	06:50	07:22 (T53 Alt)	05:59	05:38	05:55	06:34		07:18		08:01	07:49	08:26
	17:13	18:01	19:45	20:31	22 07:44 (T53 Alt)	21:14	21:44	21:39	20:56		19:55		18:51	17:01	16:45
17	08:27	07:46	07:51	06:48	07:23 (T53 Alt)	05:58	05:38	05:56	06:36		07:19		08:03	07:51	08:27
	17:15	18:03	19:46	20:32	20 07:43 (T53 Alt)	21:15	21:45	21:38	20:54		19:52		18:49	17:00	16:46
18	08:26	07:44	07:49	06:46	07:24 (T53 Alt)	05:57	05:38	05:57	06:37		07:20		08:04	07:52	08:28
	17:16	18:04	19:48	20:34	17 07:41 (T53 Alt)	21:16	21:45	21:37	20:53		19:50		18:47	16:58	16:46
19	08:25	07:42	07:47	06:44	07:26 (T53 Alt)	05:56	05:38	05:58	06:38		07:22		08:06	07:54	08:28
	17:18	18:06	19:49	20:35	12 07:38 (T53 Alt)	21:18	21:45	21:36	20:51		19:48		18:45	16:57	16:46
20	08:24	07:40	07:45	06:42	07:30 (T53 Alt)	05:54	05:38	05:59	06:40		07:23		08:07	07:55	08:29
	17:19	18:07	19:51	20:37	3 07:33 (T53 Alt)	21:19	21:46	21:35	20:49		19:46		18:43	16:56	16:47
21	08:23	07:39	07:43	06:40		05:53	05:38	06:00	06:41		07:25		08:09	07:57	08:30
	17:21	18:09	19:52	20:38		21:20	21:46	21:34	20:47		19:44		18:41	16:55	16:47
22	08:22	07:37	07:41	06:38		05:52	05:38	06:01	06:43		07:26		08:10	07:58	08:30
	17:22	18:11	19:54	20:40		21:22	21:46	21:33	20:45		19:42		18:39	16:54	16:48
23	08:21	07:35	07:39	06:36		05:51	05:38	06:02	06:44		07:27		08:12	08:00	08:31
	17:24	18:12	19:55	20:41		21:23	21:46	21:32	20:43	5 07:38 (T53 Alt)	19:40		18:37	16:53	16:48
24	08:20	07:33	07:36	06:34		05:50	05:39	06:04	06:45		07:29 (T53 Alt)	07:29	08:13	08:01	08:31
	17:25	18:14	19:57	20:43		21:24	21:47	21:31	20:41	13 07:42 (T53 Alt)	19:38		18:36	16:53	16:49
25	08:19	07:31	07:34	06:33		05:49	05:39	06:05	06:47		07:27 (T53 Alt)	07:30	08:15	08:03	08:32
	17:27	18:15	19:58	20:44		21:25	21:47	21:29	20:40	17 07:44 (T53 Alt)	19:36		18:34	16:52	16:49
26	08:18	07:29	07:32	06:31		05:48	05:39	06:06	06:48		07:25 (T53 Alt)	07:32	08:16	08:04	08:32
	17:28	18:17	20:00	20:46		21:26	21:47	21:28	20:38	20 07:45 (T53 Alt)	19:33		18:32	16:51	16:50
27	08:17	07:27	07:30	06:29		05:47	05:40	06:07	06:50		07:24 (T53 Alt)	07:33	08:18	08:05	08:32
	17:30	18:19	20:01	20:47		21:27	21:47	21:27	20:36	22 07:46 (T53 Alt)	19:31		18:30	16:50	16:51
28	08:16	07:25	07:28	06:27		05:46	05:40	06:09	06:51		07:22 (T53 Alt)	07:35	08:19	08:07	08:32
	17:32	18:20	20:03	20:48		21:29	21:47	21:26	20:34	25 07:47 (T53 Alt)	19:29		18:29	16:50	16:51
29	08:15		07:26	06:25		05:45	05:41	06:10	06:52		07:21 (T53 Alt)	07:36	08:21	08:08	08:33
	17:33		20:04	20:50		21:30	21:47	21:24	20:32	26 07:47 (T53 Alt)	19:27		18:27	16:49	16:52
30	08:13		07:24	06:24		05:45	05:41	06:11	06:54		07:21 (T53 Alt)	07:37	08:23	08:09	08:33
	17:35		20:06	20:51		21:31	21:47	21:23	20:30	27 07:48 (T53 Alt)	19:25		18:25	16:48	16:53
31	08:12		07:22			05:44		06:13	06:55		07:20 (T53 Alt)		08:24		08:33
	17:36		20:07			21:32		21:22	20:28	27 07:47 (T53 Alt)			18:23		16:54
Potential sun hours	273	285	368	410		472	482	486	445		379		336	277	260
Total, worst case					344					182		167			
Sun reduction					0.59					0.72		0.69			
Oper. time red.					0.98					0.98		0.98			
Wind dir. red.					0.68					0.68		0.68			
Total reduction					0.39					0.48		0.45			
Total, real					133					87		76			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
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Calculated:
1/14/2015 4:45 PM/2.9.285

SHADOW - Calendar

Calculation: V117-3.3 91.5 HH Shadow Rev 8 w/ Alts, No Obstacles **Shadow receptor:** H04 - Shadow Receptor: 1.0 × 1.0 Azimuth: 0.0° Slope: 90.0° (171)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BISMARCK]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4.92	5.13	7.45	8.03	10.20	11.21	11.69	10.35	8.68	5.69	4.02	3.69

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
524	474	586	541	606	835	754	637	557	1,091	1,182	765	8,552

Idle start wind speed: Cut in wind speed from power curve

	January	February	March		April		May	June	July	August	September		October	November	December
1	08:33	08:11	07:23		07:20	08:00 (T53 Alt)	06:22	05:43	05:42	06:14	06:57		07:39	07:26	08:11
	16:55	17:38	18:22		20:09	8 08:08 (T53 Alt)	20:53	21:33	21:46	21:20	20:26		19:23	17:22	16:48
2	08:33	08:09	07:22		07:18		06:20	05:43	05:43	06:15	06:58		07:40	07:27	08:12
	16:56	17:40	18:23		20:10		20:54	21:34	21:46	21:19	20:24		19:21	17:20	16:47
3	08:33	08:08	07:20		07:16		06:19	05:42	05:43	06:16	06:59		07:42	07:29	08:13
	16:57	17:41	18:25		20:12		20:56	21:35	21:46	21:18	20:22		19:19	17:19	16:47
4	08:33	08:07	07:18		07:14		06:17	05:41	05:44	06:18	07:01		07:43	07:30	08:14
	16:58	17:43	18:26		20:13		20:57	21:36	21:46	21:16	20:20		19:17	17:17	16:46
5	08:32	08:05	07:16		07:12		06:15	05:41	05:45	06:19	07:02		07:45	07:32	08:16
	16:59	17:45	18:28		20:15		20:59	21:37	21:45	21:15	20:18		19:15	17:16	16:46
6	08:32	08:04	07:14		07:10		06:14	05:40	05:45	06:21	07:04		07:46	07:34	08:17
	17:00	17:46	18:30		20:16		21:00	21:37	21:45	21:13	20:16		19:13	17:14	16:46
7	08:32	08:02	07:12		07:08		06:12	05:40	05:46	06:22	07:05		07:48	07:35	08:18
	17:02	17:48	18:31		20:18		21:01	21:38	21:45	21:11	20:13		19:11	17:13	16:45
8	08:32	08:01	08:10		07:05		06:11	05:39	05:47	06:23	07:06		07:49	07:37	08:19
	17:03	17:50	18:33		20:19		21:03	21:39	21:44	21:10	20:11		19:09	17:11	16:45
9	08:31	07:59	08:08		07:03		06:09	05:39	05:48	06:25	07:08		07:51	07:38	08:20
	17:04	17:51	19:34		20:21		21:04	21:40	21:44	21:08	20:09		19:06	17:10	16:45
10	08:31	07:58	08:05		07:01		06:08	05:39	05:49	06:26	07:09		07:52	07:40	08:21
	17:05	17:53	19:36		20:22		21:06	21:41	21:43	21:07	20:07		19:04	17:08	16:45
11	08:30	07:56	08:03		06:59		06:06	05:38	05:50	06:27	07:11		07:54 (T53 Alt)	07:54	07:41	08:22
	17:07	17:54	19:37		20:24		21:07	21:41	21:42	21:05	20:05	6	08:00 (T53 Alt)	19:02	17:07	16:45
12	08:30	07:54	08:01		06:57		06:05	05:38	05:51	06:29	07:12		07:50 (T53 Alt)	07:55	07:43	08:23
	17:08	17:56	19:39		20:25		21:08	21:42	21:42	21:03	20:03	13	08:03 (T53 Alt)	19:00	17:06	16:45
13	08:29	07:53	07:59		06:55		06:03	05:38	05:52	06:30	07:13		07:48 (T53 Alt)	07:57	07:45	08:24
	17:09	17:58	19:40		20:26		21:10	21:43	21:41	21:02	20:01	17	08:05 (T53 Alt)	18:56	17:04	16:45
14	08:29	07:51	07:57		06:53		06:02	05:38	05:53	06:32	07:15		07:46 (T53 Alt)	07:58	07:46	08:25
	17:11	17:59	19:42		20:28		21:11	21:43	21:40	21:00	19:59	20	08:06 (T53 Alt)	18:54	17:03	16:45
15	08:28	07:49	07:55		06:51		06:01	05:38	05:54	06:33	07:16		07:44 (T53 Alt)	08:00	07:48	08:26
	17:12	18:01	19:43		20:29		21:13	21:44	21:39	20:58	19:57	22	08:06 (T53 Alt)	18:53	17:02	16:45
16	08:27	07:48	07:53		06:50		05:59	05:38	05:55	06:34	07:18		07:44 (T53 Alt)	08:01	07:49	08:26
	17:13	18:01	19:45		20:31		21:14	21:44	21:39	20:56	19:55	23	08:07 (T53 Alt)	18:51	17:01	16:45
17	08:27	07:46	07:51	08:13 (T53 Alt)	06:48		05:58	05:38	05:56	06:36	07:19		07:43 (T53 Alt)	08:03	07:51	08:27
	17:15	18:03	19:46	1 08:14 (T53 Alt)	20:32		21:15	21:45	21:38	20:54	19:52	24	08:07 (T53 Alt)	18:49	17:00	16:46
18	08:26	07:44	07:49	08:11 (T53 Alt)	06:46		05:57	05:38	05:57	06:37	07:20		07:43 (T53 Alt)	08:04	07:52	08:28
	17:16	18:04	19:48	6 08:17 (T53 Alt)	20:34		21:16	21:45	21:37	20:53	19:50	24	08:07 (T53 Alt)	18:47	16:58	16:46
19	08:25	07:42	07:47	08:09 (T53 Alt)	06:44		05:56	05:38	05:58	06:38	07:22		07:45 (T53 Alt)	08:06	07:54	08:29
	17:18	18:06	19:49	9 08:18 (T53 Alt)	20:35		21:18	21:45	21:36	20:51	19:48	22	08:07 (T53 Alt)	18:45	16:57	16:46
20	08:24	07:40	07:45	08:07 (T53 Alt)	06:42		05:54	05:38	05:59	06:40	07:23		07:46 (T53 Alt)	08:07	07:55	08:29
	17:19	18:07	19:51	12 08:19 (T53 Alt)	20:37		21:19	21:46	21:35	20:49	19:46	20	08:06 (T53 Alt)	18:43	16:56	16:47
21	08:23	07:39	07:43	08:04 (T53 Alt)	06:40		05:53	05:38	06:00	06:41	07:25		07:48 (T53 Alt)	08:09	07:57	08:30
	17:21	18:09	19:52	15 08:19 (T53 Alt)	20:38		21:20	21:46	21:34	20:47	19:44	18	08:06 (T53 Alt)	18:41	16:55	16:47
22	08:22	07:37	07:41	08:02 (T53 Alt)	06:38		05:52	05:38	06:01	06:43	07:26		07:49 (T53 Alt)	08:10	07:58	08:30
	17:22	18:11	19:54	17 08:19 (T53 Alt)	20:40		21:22	21:46	21:33	20:45	19:42	16	08:05 (T53 Alt)	18:39	16:54	16:48
23	08:21	07:35	07:39	08:00 (T53 Alt)	06:36		05:51	05:38	06:02	06:44	07:27		07:50 (T53 Alt)	08:12	08:00	08:31
	17:24	18:12	19:55	20 08:20 (T53 Alt)	20:41		21:23	21:46	21:32	20:43	19:40	13	08:03 (T53 Alt)	18:37	16:53	16:48
24	08:20	07:33	07:36	07:58 (T53 Alt)	06:34		05:50	05:39	06:04	06:45	07:29		07:52 (T53 Alt)	08:13	08:01	08:31
	17:25	18:14	19:57	22 08:20 (T53 Alt)	20:43		21:24	21:47	21:31	20:41	19:38	10	08:02 (T53 Alt)	18:36	16:53	16:49
25	08:19	07:31	07:34	07:56 (T53 Alt)	06:33		05:49	05:39	06:05	06:47	07:30		07:53 (T53 Alt)	08:15	08:03	08:32
	17:27	18:15	19:58	23 08:19 (T53 Alt)	20:44		21:25	21:47	21:29	20:40	19:36	7	08:00 (T53 Alt)	18:34	16:52	16:49
26	08:18	07:29	07:32	07:54 (T53 Alt)	06:31		05:48	05:39	06:06	06:48	07:32		07:55 (T53 Alt)	08:16	08:04	08:32
	17:28	18:17	20:00	25 08:19 (T53 Alt)	20:46		21:26	21:47	21:28	20:38	19:33	3	07:58 (T53 Alt)	18:32	16:51	16:50
27	08:17	07:27	07:30	07:54 (T53 Alt)	06:29		05:47	05:40	06:07	06:50	07:33			08:18	08:05	08:32
	17:30	18:19	20:01	24 08:18 (T53 Alt)	20:47		21:27	21:47	21:27	20:36	19:31			18:30	16:50	16:51
28	08:16	07:25	07:28	07:55 (T53 Alt)	06:27		05:46	05:40	06:09	06:51	07:35			08:19	08:07	08:32
	17:32	18:20	20:03	22 08:17 (T53 Alt)	20:48		21:29	21:47	21:26	20:34	19:29			18:29	16:50	16:51
29	08:15		07:26	07:56 (T53 Alt)	06:25		05:45	05:41	06:10	06:52	07:36			08:21	08:08	08:33
	17:33		20:04	20 08:16 (T53 Alt)	20:50		21:30	21:47	21:24	20:32	19:27			18:27	16:49	16:52
30	08:13		07:24	07:57 (T53 Alt)	06:24		05:45	05:41	06:11	06:54	07:37			08:23	08:09	08:33
	17:35		20:06	17 08:14 (T53 Alt)	20:51		21:31	21:47	21:23	20:30	19:25			18:25	16:48	16:53
31	08:12		07:22	07:58 (T53 Alt)			05:44		06:13	06:55				08:24		08:33
	17:36		20:07	14 08:12 (T53 Alt)			21:32		21:22	20:28				18:23		16:54
Potential sun hours	273	285	368		410		472	482	486	445	379		336	277	260	
Total, worst case			247		8						258					
Sun reduction			0.63		0.59						0.69					
Oper. time red.			0.98		0.98						0.98					
Wind dir. red.			0.69		0.69						0.69					
Total reduction			0.42		0.40						0.46					
Total, real			104		3						119					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Project:

20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

Description:

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wind@eapc.net

Calculated:
1/14/2015 4:45 PM/2.9.285

SHADOW - Calendar

Calculation: V117-3.3 91.5 HH Shadow Rev 8 w/ Alts, No Obstacles **Shadow receptor:** H12 - Shadow Receptor: 1.0 × 1.0 Azimuth: 0.0° Slope: 90.0° (179)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BISMARCK]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4.92	5.13	7.45	8.03	10.20	11.21	11.69	10.35	8.68	5.69	4.02	3.69

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
524	474	586	541	606	835	754	637	557	1,091	1,182	765	8,552

Idle start wind speed: Cut in wind speed from power curve

	January		February		March		April		May	June
1	08:33		08:11		08:35 (T03)	07:23		07:52 (T04)	06:22	05:43
	16:55		17:38	17	08:52 (T03)	18:22	20:09	07:57 (T04)	20:53	21:33
2	08:33		08:09		08:33 (T03)	07:22	07:18		06:20	05:42
	16:56		17:40	20	08:53 (T03)	18:23	20:10		20:54	21:34
3	08:33		08:08		08:32 (T03)	07:20	07:16		06:19	05:42
	16:57		17:41	22	08:54 (T03)	18:25	20:12		20:56	21:35
4	08:33		08:07		08:31 (T03)	07:18	07:14		06:17	05:41
	16:58		17:43	25	08:56 (T03)	18:26	20:13		20:57	21:36
5	08:33		08:05		08:29 (T03)	07:16	07:12		06:15	05:41
	16:59		17:45	27	08:56 (T03)	18:28	20:15		20:59	21:37
6	08:32		08:04		08:27 (T03)	07:14	07:10		06:14	05:40
	17:00		17:46	29	08:56 (T03)	18:30	20:16		21:00	21:38
7	08:32		08:02		08:27 (T03)	07:12	07:07		06:12	05:40
	17:02		17:48	30	08:57 (T03)	18:31	20:18		21:01	21:38
8	08:32		08:01		08:26 (T03)	08:10	07:05		06:11	05:39
	17:03		17:49	31	08:57 (T03)	18:33	20:19		21:03	21:39
9	08:31		07:59		08:27 (T03)	08:08	07:03		06:09	05:39
	17:04		17:51	30	08:57 (T03)	19:34	20:21		21:04	21:40
10	08:31		07:58		08:27 (T03)	08:05	07:01		06:08	05:39
	17:05		17:53	30	08:57 (T03)	19:36	20:22		21:06	21:41
11	08:30		07:56		08:27 (T03)	08:03	06:59		06:06	05:38
	17:07		17:54	29	08:56 (T03)	19:37	20:24		21:07	21:41
12	08:30		07:54		08:28 (T03)	08:01	06:57		06:05	05:38
	17:08		17:56	29	08:57 (T03)	19:39	20:25		21:08	21:42
13	08:29		07:53		08:28 (T03)	07:59	06:55		06:03	05:38
	17:09		17:58	28	08:56 (T03)	19:40	20:26		21:10	21:43
14	08:29		07:51		08:28 (T03)	07:57	06:53		06:02	05:38
	17:11		17:59	27	08:55 (T03)	19:42	20:28		21:11	21:43
15	08:28		07:49		08:29 (T03)	07:55	06:51		06:01	05:38
	17:12		18:01	25	08:54 (T03)	19:43	20:29		21:13	21:44
16	08:27		07:48		08:31 (T03)	07:53	06:49		05:59	05:38
	17:13		18:01	23	08:54 (T03)	19:45	20:31		21:14	21:44
17	08:27		07:46		08:32 (T03)	07:51	06:48		05:58	05:38
	17:15		18:03	20	08:52 (T03)	19:46	20:32		21:15	21:45
18	08:26		07:44		08:33 (T03)	07:49	06:46		05:57	05:38
	17:16		18:04	17	08:50 (T03)	19:48	20:34		21:17	21:45
19	08:25		07:42		08:36 (T03)	07:47	06:44		05:56	05:38
	17:18		18:06	11	08:47 (T03)	19:49	20:35		21:18	21:45
20	08:24		07:40			07:45	06:42		05:54	05:38
	17:19		18:07			19:51	20:37		21:19	21:46
21	08:23		07:39			07:43	06:40		05:53	05:38
	17:21		18:09			19:52	20:38		21:20	21:46
22	08:22		07:37			07:41	08:02 (T04)	06:38	05:52	05:38
	17:22		18:11			19:54	3 08:05 (T04)	20:40	21:22	21:46
23	08:21		07:35			07:39	08:00 (T04)	06:36	05:51	05:38
	17:24		18:12			19:55	6 08:06 (T04)	20:41	21:23	21:47
24	08:20		07:33			07:36	07:58 (T04)	06:34	05:50	05:39
	17:25		18:14			19:57	9 08:07 (T04)	20:43	21:24	21:47
25	08:19		07:31			07:34	07:56 (T04)	06:33	05:49	05:39
	17:27		18:15			19:58	11 08:07 (T04)	20:44	21:25	21:47
26	08:18		07:29			07:32	07:54 (T04)	06:31	05:48	05:39
	17:28		18:17			20:00	13 08:07 (T04)	20:46	21:26	21:47
27	08:17		07:27			07:30	07:52 (T04)	06:29	05:47	05:40
	17:30		18:19			20:01	14 08:06 (T04)	20:47	21:28	21:47
28	08:16	08:40 (T03)	07:25			07:28	07:50 (T04)	06:27	05:46	05:40
	17:32	4 08:44 (T03)	18:20			20:03	16 08:06 (T04)	20:49	21:29	21:47
29	08:15	08:39 (T03)				07:26	07:48 (T04)	06:25	05:45	05:41
	17:33	9 08:48 (T03)				20:04	17 08:05 (T04)	20:50	21:30	21:47
30	08:13	08:38 (T03)				07:24	07:49 (T04)	06:24	05:45	05:41
	17:35	12 08:50 (T03)				20:06	14 08:03 (T04)	20:51	21:31	21:47
31	08:12	08:36 (T03)				07:22	07:50 (T04)		05:44	
	17:36	15 08:51 (T03)				20:07	12 08:02 (T04)		21:32	
Potential sun hours	273		285			368		410	472	482
Total, worst case		40		470		115		5		
Sun reduction		0.56		0.50		0.63		0.59		
Oper. time red.		0.98		0.98		0.98		0.98		
Wind dir. red.		0.69		0.69		0.69		0.69		
Total reduction		0.38		0.34		0.42		0.39		
Total, real		15		160		48		2		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

Description:

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1/20/2015 1:58 PM / 10

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wind@eapc.net

Calculated:
1/14/2015 4:45 PM/2.9.285

SHADOW - Calendar

Calculation: V117-3.3 91.5 HH Shadow Rev 8 w/ Alts, No Obstacles **Shadow receptor:** H12 - Shadow Receptor: 1.0 × 1.0 Azimuth: 0.0° Slope: 90.0° (179)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BISMARCK]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4.92	5.13	7.45	8.03	10.20	11.21	11.69	10.35	8.68	5.69	4.02	3.69

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
524	474	586	541	606	835	754	637	557	1,091	1,182	765	8,552

Idle start wind speed: Cut in wind speed from power curve

	July		August		September		October		November		December	
1	05:42		06:14		06:57		07:39		07:26		07:56 (T03)	08:11
	21:47		21:20		20:26		19:23		17:22	31	08:27 (T03)	16:48
2	05:42		06:15		06:58		07:40		07:27		07:56 (T03)	08:12
	21:46		21:19		20:24		19:21		17:20	30	08:26 (T03)	16:47
3	05:43		06:16		06:59		07:42		07:29		07:56 (T03)	08:13
	21:46		21:18		20:22		19:19		17:19	30	08:26 (T03)	16:47
4	05:44		06:18		07:01		07:43		07:31		07:56 (T03)	08:14
	21:46		21:16		20:20		19:17		17:17	31	08:27 (T03)	16:46
5	05:45		06:19		07:02		07:45		07:32		07:57 (T03)	08:16
	21:45		21:15		20:18		19:15		17:16	29	08:26 (T03)	16:46
6	05:45		06:20		07:04		07:46		07:34		07:59 (T03)	08:17
	21:45		21:13		20:16		19:13		17:14	27	08:26 (T03)	16:46
7	05:46		06:22		07:05		07:48		07:35		08:01 (T03)	08:18
	21:45		21:11		20:13		19:11		17:13	24	08:25 (T03)	16:45
8	05:47		06:23		07:06		07:49		07:37		08:03 (T03)	08:19
	21:44		21:10		20:11		19:08		17:11	22	08:25 (T03)	16:45
9	05:48		06:25		07:08		07:51		07:38		08:04 (T03)	08:20
	21:44		21:08		20:09		19:06		17:10	20	08:24 (T03)	16:45
10	05:49		06:26		07:09		07:52		07:40		08:06 (T03)	08:21
	21:43		21:07		20:07		19:04		17:08	17	08:23 (T03)	16:45
11	05:50		06:27		07:11		07:46 (T04)	07:54	07:42		08:08 (T03)	08:22
	21:42		21:05		20:05	3	07:49 (T04)	19:02	17:07	15	08:23 (T03)	16:45
12	05:50		06:29		07:12		07:42 (T04)	07:55	07:43		08:09 (T03)	08:23
	21:42		21:03		20:03	10	07:52 (T04)	19:00	17:06	12	08:21 (T03)	16:45
13	05:51		06:30		07:13		07:40 (T04)	07:57	07:45		08:11 (T03)	08:24
	21:41		21:02		20:01	14	07:54 (T04)	18:56	17:04	8	08:19 (T03)	16:45
14	05:52		06:31		07:15		07:38 (T04)	07:58	07:46		08:13 (T03)	08:25
	21:40		21:00		19:59	17	07:55 (T04)	18:54	17:03	4	08:17 (T03)	16:45
15	05:53		06:33		07:16		07:39 (T04)	08:00	07:48			08:26
	21:40		20:58		19:57	16	07:55 (T04)	18:53	17:02			16:45
16	05:55		06:34		07:18		07:41 (T04)	08:01	07:49			08:26
	21:39		20:56		19:55	15	07:56 (T04)	18:51	17:01			16:45
17	05:56		06:36		07:19		07:42 (T04)	08:03	07:51			08:27
	21:38		20:55		19:52	13	07:55 (T04)	18:49	16:59			16:45
18	05:57		06:37		07:20		07:43 (T04)	08:04	07:52			08:28
	21:37		20:53		19:50	11	07:54 (T04)	18:47	16:58			16:46
19	05:58		06:38		07:22		07:45 (T04)	08:06	07:54			08:29
	21:36		20:51		19:48	9	07:54 (T04)	18:45	16:57			16:46
20	05:59		06:40		07:23		07:46 (T04)	08:07	07:55			08:29
	21:35		20:49		19:46	7	07:53 (T04)	18:43	16:56			16:47
21	06:00		06:41		07:25		07:48 (T04)	08:09	07:57			08:30
	21:34		20:47		19:44	4	07:52 (T04)	18:41	16:55			16:47
22	06:01		06:43		07:26		07:49 (T04)	08:10	09:10 (T03)		07:58	08:30
	21:33		20:45		19:42	1	07:50 (T04)	18:39	3	09:13 (T03)	16:54	16:47
23	06:02		06:44		07:27			08:12		09:05 (T03)	08:00	08:31
	21:32		20:43		19:40			18:37	13	09:18 (T03)	16:53	16:48
24	06:04		06:45		07:29			08:13		09:02 (T03)	08:01	08:31
	21:31		20:41		19:38			18:36	18	09:20 (T03)	16:53	16:49
25	06:05		06:47		07:30			08:15		09:01 (T03)	08:03	08:32
	21:30		20:40		19:36			18:34	21	09:22 (T03)	16:52	16:49
26	06:06		06:48		07:32			08:16		09:00 (T03)	08:04	08:32
	21:28		20:38		19:33			18:32	24	09:24 (T03)	16:51	16:50
27	06:07		06:50		07:33			08:18		08:58 (T03)	08:05	08:32
	21:27		20:36		19:31			18:30	26	09:24 (T03)	16:50	16:51
28	06:09		06:51		07:35			08:19		08:58 (T03)	08:07	08:32
	21:26		20:34		19:29			18:29	27	09:25 (T03)	16:50	16:51
29	06:10		06:52		07:36			08:21		08:57 (T03)	08:08	08:33
	21:25		20:32		19:27			18:27	29	09:26 (T03)	16:49	16:52
30	06:11		06:54		07:37			08:23		08:56 (T03)	08:09	08:33
	21:23		20:30		19:25			18:25	30	09:26 (T03)	16:48	16:53
31	06:12		06:55					08:24		08:56 (T03)		08:33
	21:22		20:28					18:23	30	09:26 (T03)		16:54
Potential sun hours	487		445		379			336			277	260
Total, worst case					120			221			300	
Sun reduction					0.69			0.52			0.44	
Oper. time red.					0.98			0.98			0.98	
Wind dir. red.					0.69			0.69			0.69	
Total reduction					0.46			0.35			0.29	
Total, real					55			78			88	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

Description:

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Calculated:
1/14/2015 4:45 PM/2.9.285

SHADOW - Calendar

Calculation: V117-3.3 91.5 HH Shadow Rev 8 w/ Alts, No Obstacles **Shadow receptor:** H14 - Shadow Receptor: 1.0 × 1.0 Azimuth: 0.0° Slope: 90.0° (181)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BISMARCK]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4.92	5.13	7.45	8.03	10.20	11.21	11.69	10.35	8.68	5.69	4.02	3.69

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
524	474	586	541	606	835	754	637	557	1,091	1,182	765	8,552

Idle start wind speed: Cut in wind speed from power curve

	January		February		March		April		May		June	
1	08:33		08:10		16:57 (T55 Alt)		07:20		07:54 (T20)		06:22	
	16:55		17:38	13	17:10 (T55 Alt)		20:09	11	08:05 (T20)		20:53	
2	08:33		08:09		16:57 (T55 Alt)		07:17		07:57 (T20)		06:20	
	16:56		17:39	14	17:11 (T55 Alt)		20:10	3	08:00 (T20)		20:54	
3	08:33		08:08		16:58 (T55 Alt)		07:15				06:18	
	16:57		17:41	15	17:13 (T55 Alt)		20:11				20:55	
4	08:32		08:06		16:58 (T55 Alt)		07:13				06:17	
	16:58		17:43	17	17:15 (T55 Alt)		20:13				20:57	
5	08:32		08:05		16:59 (T55 Alt)		07:11		19:49 (T07)		06:15	20:29 (T57 Alt)
	16:59		17:44	18	17:17 (T55 Alt)		20:14	2	19:51 (T07)		20:58	3 20:32 (T57 Alt)
6	08:32		08:03		08:27 (T19)		07:09		19:48 (T07)		06:13	06:37 (T21)
	17:00		17:46	21	17:16 (T55 Alt)		20:16	5	19:53 (T07)		21:00	9 20:34 (T57 Alt)
7	08:32		08:02		08:26 (T19)		07:07		19:47 (T07)		06:12	06:35 (T21)
	17:01		17:48	23	17:16 (T55 Alt)		20:17	7	19:54 (T07)		21:01	16 20:35 (T57 Alt)
8	08:31		08:00		08:24 (T19)		07:05		19:46 (T07)		06:10	06:34 (T21)
	17:03		17:49	24	17:14 (T55 Alt)		20:19	10	19:56 (T07)		21:03	20 20:37 (T57 Alt)
9	08:31		07:59		08:22 (T19)		07:03		19:46 (T07)		06:09	06:32 (T21)
	17:04		17:51	21	17:11 (T55 Alt)		20:20	11	19:57 (T07)		21:04	24 20:37 (T57 Alt)
10	08:31		07:57		08:21 (T19)		07:01		19:46 (T07)		06:07	06:31 (T21)
	17:05		17:52	17	08:38 (T19)		20:22	12	19:58 (T07)		21:05	28 20:39 (T57 Alt)
11	08:30		07:56		08:19 (T19)		06:59		19:46 (T07)		06:06	06:30 (T21)
	17:06		17:54	20	08:39 (T19)		20:23	14	20:00 (T07)		21:07	32 20:41 (T57 Alt)
12	08:30		07:54		08:17 (T19)		06:57		19:46 (T07)		06:04	06:28 (T21)
	17:08		17:56	22	08:39 (T19)		20:25	15	20:01 (T07)		21:08	35 20:41 (T57 Alt)
13	08:29		07:52		08:16 (T19)		06:55		19:46 (T07)		06:03	06:27 (T21)
	17:09		17:57	24	08:40 (T19)		20:26	15	20:01 (T07)		21:10	38 20:43 (T57 Alt)
14	08:29		07:51		08:16 (T19)		06:53		19:48 (T07)		06:02	06:26 (T21)
	17:10		17:59	24	08:40 (T19)		20:28	12	20:00 (T07)		21:11	40 20:44 (T57 Alt)
15	08:28		07:49		08:16 (T19)		06:51		19:49 (T07)		06:00	06:25 (T21)
	17:12		18:01	24	08:40 (T19)		20:29	8	19:57 (T07)		21:12	43 20:46 (T57 Alt)
16	08:27		07:47		08:16 (T19)		06:49				05:59	06:23 (T21)
	17:13		18:01	23	08:39 (T19)		20:31				21:14	45 20:46 (T57 Alt)
17	08:26		07:46		08:16 (T19)		06:47				05:58	06:24 (T21)
	17:15		18:02	23	08:39 (T19)		20:32				21:15	43 20:46 (T57 Alt)
18	08:26		07:44		08:17 (T19)		06:45				05:57	06:24 (T21)
	17:16		18:04	22	08:39 (T19)		20:34				21:16	42 20:46 (T57 Alt)
19	08:25		07:42		08:18 (T19)		06:43				05:55	06:24 (T21)
	17:17		18:06	20	08:38 (T19)		20:35				21:18	42 20:46 (T57 Alt)
20	08:24		07:40		08:19 (T19)		06:42				05:54	06:25 (T21)
	17:19		18:07	17	08:36 (T19)		20:37				21:19	39 20:45 (T57 Alt)
21	08:23		07:38		08:20 (T19)		07:42		08:04 (T20)		06:40	05:53
	17:20		18:09	15	08:35 (T19)		19:52	2	08:06 (T20)		20:38	21:20 37 20:44 (T57 Alt)
22	08:22		07:37		08:22 (T19)		07:40		08:02 (T20)		06:38	05:52 06:26 (T21)
	17:22		18:10	10	08:32 (T19)		19:54	7	08:09 (T20)		20:39	21:21 34 20:44 (T57 Alt)
23	08:21		07:35				07:38		08:00 (T20)		06:36	05:51 06:26 (T21)
	17:23		18:12				19:55	10	08:10 (T20)		20:41	21:23 32 20:43 (T57 Alt)
24	08:20		07:33				07:36		07:58 (T20)		06:34	05:50 06:27 (T21)
	17:25		18:14				19:57	13	08:11 (T20)		20:42	21:24 27 20:41 (T57 Alt)
25	08:19		07:31				07:34		07:56 (T20)		06:32	05:49 06:28 (T21)
	17:27		18:15				19:58	15	08:11 (T20)		20:44	21:25 21 20:39 (T57 Alt)
26	08:18		07:29				07:32		07:54 (T20)		06:30	05:48 06:28 (T21)
	17:28		18:17				20:00	17	08:11 (T20)		20:45	21:26 15 06:43 (T21)
27	08:17	16:58 (T55 Alt)	07:27				07:30		07:52 (T20)		06:29	05:47 06:29 (T21)
	17:30	2 17:00 (T55 Alt)	18:18				20:01	19	08:11 (T20)		20:47	21:27 12 06:41 (T21)
28	08:16	16:57 (T55 Alt)	07:25				07:28		07:52 (T20)		06:27	05:46 06:31 (T21)
	17:31	5 17:02 (T55 Alt)	18:20				20:03	19	08:11 (T20)		20:48	21:28 10 06:41 (T21)
29	08:14	16:57 (T55 Alt)					07:26		07:51 (T20)		06:25	05:45 06:33 (T21)
	17:33	7 17:04 (T55 Alt)					20:04	18	08:09 (T20)		20:50	21:29 6 06:39 (T21)
30	08:13	16:56 (T55 Alt)					07:24		07:51 (T20)		06:23	05:44
	17:35	10 17:06 (T55 Alt)					20:06	17	08:08 (T20)		20:51	21:31
31	08:12	16:57 (T55 Alt)					07:22		07:52 (T20)			05:44
	17:36	11 17:08 (T55 Alt)					20:07	15	08:07 (T20)			21:32
Potential sun hours	273		285				368		410		472	482
Total, worst case		35		427				152		125		693
Sun reduction		0.56		0.50				0.63		0.59		0.67
Oper. time red.		0.98		0.98				0.98		0.98		0.98
Wind dir. red.		0.64		0.68				0.69		0.69		0.67
Total reduction		0.35		0.33				0.42		0.39		0.44
Total, real		12		142				64		49		303

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
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Finley, ND 58230

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Calculated:
1/14/2015 4:45 PM/2.9.285

SHADOW - Calendar

Calculation: V117-3.3 91.5 HH Shadow Rev 8 w/ Alts, No Obstacles **Shadow receptor:** H14 - Shadow Receptor: 1.0 × 1.0 Azimuth: 0.0° Slope: 90.0° (181)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BISMARCK]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4.92	5.13	7.45	8.03	10.20	11.21	11.69	10.35	8.68	5.69	4.02	3.69

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
524	474	586	541	606	835	754	637	557	1,091	1,182	765	8,552

Idle start wind speed: Cut in wind speed from power curve

	July		August		September		October		November		December	
1	05:42		06:14		06:39 (T21)		06:56		19:44 (T07)		07:39	
	21:46		21:20	33	20:51 (T57 Alt)	15	20:25	15	19:59 (T07)		19:23	
2	05:42		06:15		06:41 (T21)		06:58		19:44 (T07)		07:40	
	21:46		21:19	31	20:51 (T57 Alt)		20:23	12	19:56 (T07)		19:21	
3	05:43		06:16		06:42 (T21)		06:59		19:44 (T07)		07:42	
	21:46		21:17	27	20:49 (T57 Alt)		20:21	11	19:55 (T07)		19:19	
4	05:44		06:18		06:43 (T21)		07:01		19:43 (T07)		07:43	
	21:45		21:16	22	20:47 (T57 Alt)		20:19	10	19:53 (T07)		19:16	
5	05:44		06:19		06:44 (T21)		07:02		19:43 (T07)		07:44	
	21:45		21:14	18	20:46 (T57 Alt)		20:17	7	19:50 (T07)		19:14	
6	05:45		06:20		06:46 (T21)		07:03		19:44 (T07)		07:46	
	21:45		21:13	13	20:45 (T57 Alt)		20:15	5	19:49 (T07)		19:12	
7	05:46		06:22		06:47 (T21)		07:05		19:44 (T07)		07:47	
	21:44		21:11	6	20:43 (T57 Alt)		20:13	2	19:46 (T07)		19:10	
8	05:47		06:23		20:39 (T57 Alt)		07:06				07:49	
	21:44		21:10	2	20:41 (T57 Alt)		20:11				19:08	
9	05:48		06:24				07:08				07:50	
	21:43		21:08				20:09				19:06	
10	05:48		06:26				07:09				07:52	
	21:43		21:06				20:07				19:04	
11	05:49		06:27				07:10		07:47 (T20)		07:53	
	21:42		21:05				20:05	11	07:58 (T20)		19:02	
12	05:50		06:28				07:12		07:45 (T20)		07:55	
	21:41		21:03				20:03	14	07:59 (T20)		19:00	
13	05:51		06:30				07:13		07:43 (T20)		07:56	
	21:41		21:01				20:01	16	07:59 (T20)		18:56	
14	05:52		06:31				07:15		07:42 (T20)		07:58	
	21:40	3	21:00				19:59	18	08:00 (T20)		18:54	
15	05:53		06:33				07:16		07:41 (T20)		07:59	
	21:39	8	20:58				19:56	19	08:00 (T20)		18:52	
16	05:54		06:34				07:17		07:40 (T20)		08:01	
	21:38	11	20:56				19:54	20	08:00 (T20)		18:50	
17	05:55		06:35				07:19		07:42 (T20)		08:02	
	21:38	14	20:54				19:52	18	08:00 (T20)		18:48	
18	05:56		06:37				07:20		07:43 (T20)		08:04	
	21:37	17	20:52				19:50	16	07:59 (T20)		18:46	
19	05:58		06:38				07:22		07:44 (T20)		08:05	
	21:36	24	20:51				19:48	13	07:57 (T20)		18:45	
20	05:59		06:40				07:23		07:46 (T20)		08:07	
	21:35	29	20:49				19:46	11	07:57 (T20)		18:43	
21	06:00		06:41				07:24		07:47 (T20)		08:08	
	21:34	34	20:47				19:44	8	07:55 (T20)		18:41	
22	06:01		06:42				07:26		07:49 (T20)		08:10	
	21:33	36	20:45				19:42	4	07:53 (T20)		18:39	
23	06:02		06:44				07:27				08:11	
	21:32	38	20:43				19:40				18:37	
24	06:03		06:45				07:29				08:13	
	21:30	41	20:41				19:37				18:35	
25	06:05		06:47				07:30				08:15	
	21:29	42	20:39				19:35				18:34	
26	06:06		06:48				07:31				08:16	
	21:28	44	20:37				19:33				18:32	
27	06:07		06:49				07:33				08:18	
	21:27	45	20:35				19:31				18:30	
28	06:08		06:51		19:51 (T07)		07:34				08:19	
	21:26	44	20:33	8	19:59 (T07)		19:29				18:28	
29	06:10		06:52		19:48 (T07)		07:36				08:21	
	21:24	42	20:31	13	20:01 (T07)		19:27				18:27	
30	06:11		06:54		19:46 (T07)		07:37				08:22	
	21:23	39	20:29	15	20:01 (T07)		19:25				18:25	
31	06:12		06:55		19:46 (T07)						08:24	
	21:22	36	20:27	15	20:01 (T07)						18:23	
Potential sun hours	486		445		379		336		277		260	
Total, worst case	547		203		230		250		216			
Sun reduction	0.74		0.72		0.69		0.52		0.44			
Oper. time red.	0.98		0.98		0.98		0.98		0.98			
Wind dir. red.	0.67		0.68		0.69		0.69		0.65			
Total reduction	0.48		0.48		0.46		0.35		0.28			
Total, real	265		97		106		89		60			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

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Calculated:
1/14/2015 4:45 PM/2.9.285

SHADOW - Calendar

Calculation: V117-3.3 91.5 HH Shadow Rev 8 w/ Alts, No Obstacles **Shadow receptor:** H15 - Shadow Receptor: 1.0 × 1.0 Azimuth: 0.0° Slope: 90.0° (182)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BISMARCK]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4.92	5.13	7.45	8.03	10.20	11.21	11.69	10.35	8.68	5.69	4.02	3.69

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
524	474	586	541	606	835	754	637	557	1,091	1,182	765	8,552

Idle start wind speed: Cut in wind speed from power curve

	January			February		March			April			May			June		
1	08:33		16:10 (T57 Alt)	08:11		07:23			07:20			06:22		06:45 (T58 Alt)	05:43		
	16:55	13	16:23 (T57 Alt)	17:38		18:21			20:09			20:53	56	20:19 (T10)	21:33		
2	08:33		16:10 (T57 Alt)	08:09		07:21			07:17			06:20		06:43 (T58 Alt)	05:42		
	16:56	14	16:24 (T57 Alt)	17:39		18:23			20:10			20:54	58	20:18 (T10)	21:34		
3	08:33		16:11 (T57 Alt)	08:08		07:19			07:15			06:18		06:41 (T58 Alt)	05:42		
	16:57	14	16:25 (T57 Alt)	17:41		18:25			20:11			20:56	59	20:17 (T10)	21:35		
4	08:33		16:12 (T57 Alt)	08:06		07:17			07:13			06:17		06:40 (T58 Alt)	05:41		
	16:58	15	16:27 (T57 Alt)	17:43		18:26			20:13			20:57	60	20:17 (T10)	21:36		
5	08:32		16:12 (T57 Alt)	08:05		07:15			07:11			06:15		06:38 (T58 Alt)	05:40		
	16:59	16	16:28 (T57 Alt)	17:44		18:28			20:14			20:58	61	20:16 (T10)	21:36		
6	08:32		16:12 (T57 Alt)	08:03		07:13			07:09			06:13		06:37 (T59 Alt)	05:40		
	17:00	17	16:29 (T57 Alt)	17:46		18:29			20:16			21:00	60	20:15 (T10)	21:37		
7	08:32		16:13 (T57 Alt)	08:02		07:11			07:07			06:12		06:36 (T59 Alt)	05:39		
	17:01	17	16:30 (T57 Alt)	17:48		18:31			20:17			21:01	59	20:14 (T10)	21:38		
8	08:32		16:13 (T57 Alt)	08:00		08:09			07:05			06:10		06:37 (T58 Alt)	05:39		
	17:02	18	16:31 (T57 Alt)	17:49		18:32			20:19			21:03	56	20:13 (T10)	21:39		
9	08:31		16:14 (T57 Alt)	07:59		08:07			07:03			06:09		06:36 (T58 Alt)	05:39		
	17:04	19	16:33 (T57 Alt)	17:51		19:34			20:20			21:04	55	20:11 (T10)	21:40		
10	08:31		16:14 (T57 Alt)	07:57		08:05			07:01			06:07		06:36 (T58 Alt)	05:38		
	17:05	20	16:34 (T57 Alt)	17:52		19:35			20:22			21:05	51	20:10 (T10)	21:40		
11	08:30		16:15 (T57 Alt)	07:56		08:03			06:59			06:06		06:37 (T58 Alt)	05:38		
	17:06	20	16:35 (T57 Alt)	17:54		19:37			20:23			21:07	45	20:07 (T10)	21:41		
12	08:30		16:16 (T57 Alt)	07:54		08:01		19:08 (T09)	06:57			06:04		06:36 (T58 Alt)	05:38		
	17:08	18	16:34 (T57 Alt)	17:56		19:39	8	19:16 (T09)	20:25			21:08	36	07:12 (T58 Alt)	21:42		
13	08:29		16:17 (T57 Alt)	07:52		07:59		19:06 (T09)	06:55			06:03		06:37 (T58 Alt)	05:38		
	17:09	18	16:35 (T57 Alt)	17:57		19:40	11	19:17 (T09)	20:26			21:10	35	07:12 (T58 Alt)	21:42		
14	08:29		16:18 (T57 Alt)	07:51		07:57		19:04 (T09)	06:53			06:02		06:37 (T58 Alt)	05:37		
	17:10	17	16:35 (T57 Alt)	17:59		19:42	15	19:19 (T09)	20:28			21:11	36	07:13 (T58 Alt)	21:43		
15	08:28		16:19 (T57 Alt)	07:49		07:55		19:03 (T09)	06:51			06:00		06:37 (T58 Alt)	05:37		
	17:12	15	16:34 (T57 Alt)	18:01		19:43	18	19:21 (T09)	20:29			21:12	35	07:12 (T58 Alt)	21:44		
16	08:27		16:19 (T57 Alt)	07:47		07:53		19:02 (T09)	06:49			05:59		06:37 (T58 Alt)	05:37		
	17:13	15	16:34 (T57 Alt)	18:01		19:45	20	19:22 (T09)	20:31			21:14	34	07:11 (T58 Alt)	21:44		
17	08:27		16:21 (T57 Alt)	07:46		07:51		19:01 (T09)	06:47			05:58		06:38 (T58 Alt)	05:37		
	17:14	12	16:33 (T57 Alt)	18:02		19:46	23	19:24 (T09)	20:32			21:15	33	07:11 (T58 Alt)	21:44		
18	08:26		16:22 (T57 Alt)	07:44		07:49		19:01 (T09)	06:45		20:00 (T10)	05:56		06:38 (T58 Alt)	05:37		
	17:16	10	16:32 (T57 Alt)	18:04		19:48	24	19:25 (T09)	20:34	9	20:09 (T10)	21:16	33	07:11 (T58 Alt)	21:45		
19	08:25		16:25 (T57 Alt)	07:42		07:47		19:00 (T09)	06:43		19:58 (T10)	05:55		06:39 (T58 Alt)	05:37		
	17:17	4	16:29 (T57 Alt)	18:05		19:49	24	19:24 (T09)	20:35	13	20:11 (T10)	21:18	31	07:10 (T58 Alt)	21:45		
20	08:24			07:40		07:45		19:00 (T09)	06:42		19:55 (T10)	05:54		06:39 (T58 Alt)	05:37		
	17:19			18:07		19:51	23	19:23 (T09)	20:37	18	20:13 (T10)	21:19	31	07:10 (T58 Alt)	21:46		
21	08:23			07:38		07:42		19:00 (T09)	06:40		19:54 (T10)	05:53		06:40 (T58 Alt)	05:38		
	17:20			18:09		19:52	23	19:23 (T09)	20:38	20	20:14 (T10)	21:20	29	07:09 (T58 Alt)	21:46		
22	08:22			07:37		07:40		19:00 (T09)	06:38		19:52 (T10)	05:52		06:41 (T58 Alt)	05:38		
	17:22			18:10		19:54	22	19:22 (T09)	20:39	23	20:15 (T10)	21:21	28	07:09 (T58 Alt)	21:46		
23	08:21			07:35		07:38		19:01 (T09)	06:36		19:51 (T10)	05:51		06:42 (T58 Alt)	05:38		
	17:23			18:12		19:55	20	19:21 (T09)	20:41	25	20:16 (T10)	21:23	26	07:08 (T58 Alt)	21:46		
24	08:20			07:33		07:36		19:02 (T09)	06:34		19:50 (T10)	05:50		06:42 (T58 Alt)	05:38		
	17:25			18:14		19:57	17	19:19 (T09)	20:42	27	20:17 (T10)	21:24	25	07:07 (T58 Alt)	21:46		
25	08:19			07:31		07:34		19:04 (T09)	06:32		19:50 (T10)	05:49		06:43 (T58 Alt)	05:39		
	17:27			18:15		19:58	13	19:17 (T09)	20:44	29	20:19 (T10)	21:25	23	07:06 (T58 Alt)	21:47		
26	08:18			07:29		07:32		19:07 (T09)	06:30		06:53 (T58 Alt)	05:48		06:44 (T58 Alt)	05:39		
	17:28			18:17		20:00	7	19:14 (T09)	20:45	39	20:19 (T10)	21:26	21	07:05 (T58 Alt)	21:47		
27	08:17			07:27		07:30			06:29		06:51 (T58 Alt)	05:47		06:45 (T58 Alt)	05:40		
	17:30			18:18		20:01			20:47	45	20:19 (T10)	21:27	19	07:04 (T58 Alt)	21:47		
28	08:16			07:25		07:28			06:27		06:50 (T58 Alt)	05:46		06:47 (T58 Alt)	05:40		
	17:31			18:20		20:03			20:48	48	20:20 (T10)	21:28	17	07:04 (T58 Alt)	21:47		
29	08:14					07:26			06:25		06:48 (T58 Alt)	05:45		06:49 (T58 Alt)	05:40		
	17:33					20:04			20:50	51	20:19 (T10)	21:30	13	07:02 (T58 Alt)	21:47		
30	08:13					07:24			06:23		06:46 (T58 Alt)	05:44		06:50 (T58 Alt)	05:41		
	17:34					20:06			20:51	54	20:19 (T10)	21:31	10	07:00 (T58 Alt)	21:46		
31	08:12					07:22						05:44		06:53 (T58 Alt)			
	17:36					20:07						21:32	4	06:57 (T58 Alt)			
Potential sun hours	273			285		368			410			472			482		
Total, worst case		292					268			401			1139				
Sun reduction		0.56					0.63			0.59			0.67				
Oper. time red.		0.98					0.98			0.98			0.98				
Wind dir. red.		0.61					0.67			0.67			0.66				
Total reduction		0.33					0.41			0.38			0.43				
Total, real		97					110			154			487				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

Description:

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Calculated:
1/14/2015 4:45 PM/2.9.285

SHADOW - Calendar

Calculation: V117-3.3 91.5 HH Shadow Rev 8 w/ Alts, No Obstacles **Shadow receptor:** H15 - Shadow Receptor: 1.0 × 1.0 Azimuth: 0.0° Slope: 90.0° (182)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BISMARCK]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4.92	5.13	7.45	8.03	10.20	11.21	11.69	10.35	8.68	5.69	4.02	3.69

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
524	474	586	541	606	835	754	637	557	1,091	1,182	765	8,552

Idle start wind speed: Cut in wind speed from power curve

	July		August		September		October		November		December	
1	05:42		06:13	06:47 (T58 Alt)	06:56		07:39	18:46 (T09)	07:26		08:11	15:57 (T57 Alt)
	21:46		21:20 38	20:14 (T10)	20:25		19:23 9	18:55 (T09)	17:22		16:47 20	16:17 (T57 Alt)
2	05:42		06:15	06:47 (T58 Alt)	06:58		07:40	18:50 (T09)	07:27		08:12	15:57 (T57 Alt)
	21:46		21:19 48	20:19 (T10)	20:23		19:21 4	18:54 (T09)	17:20		16:47 20	16:17 (T57 Alt)
3	05:43		06:16	06:47 (T58 Alt)	06:59		07:42		07:29		08:13	15:57 (T57 Alt)
	21:46		21:17 52	20:21 (T10)	20:21		19:19		17:18		16:46 19	16:16 (T57 Alt)
4	05:44		06:17	06:47 (T58 Alt)	07:01		07:43		07:30		08:14	15:58 (T57 Alt)
	21:46		21:16 55	20:22 (T10)	20:19		19:16		17:17		16:46 18	16:16 (T57 Alt)
5	05:44		06:19	06:46 (T58 Alt)	07:02		07:44		07:32		08:15	15:58 (T57 Alt)
	21:45		21:14 58	20:23 (T10)	20:17		19:14		17:15		16:46 17	16:15 (T57 Alt)
6	05:45		06:20	06:46 (T59 Alt)	07:03		07:46		07:33		08:17	15:58 (T57 Alt)
	21:45		21:13 61	20:25 (T10)	20:15		19:12		17:14		16:45 17	16:15 (T57 Alt)
7	05:46		06:22	06:47 (T58 Alt)	07:05		07:47		07:35		08:18	15:58 (T57 Alt)
	21:44		21:11 60	20:25 (T10)	20:13		19:10		17:12		16:45 16	16:14 (T57 Alt)
8	05:47		06:23	06:48 (T58 Alt)	07:06		07:49		07:37		08:19	15:59 (T57 Alt)
	21:44		21:10 60	20:26 (T10)	20:11		19:08		17:11		16:45 15	16:14 (T57 Alt)
9	05:47		06:24	06:50 (T58 Alt)	07:08		07:50		07:38		08:20	16:00 (T57 Alt)
	21:43		21:08 60	20:27 (T10)	20:09		19:06		17:09		16:45 14	16:14 (T57 Alt)
10	05:48		06:26	06:51 (T58 Alt)	07:09		07:52		07:40		08:21	16:00 (T57 Alt)
	21:43		21:06 59	20:27 (T10)	20:07		19:04		17:08		16:45 14	16:14 (T57 Alt)
11	05:49		06:27	06:52 (T58 Alt)	07:10		07:53		07:41		08:22	16:01 (T57 Alt)
	21:42		21:05 57	20:27 (T10)	20:05		19:02		17:07		16:45 13	16:14 (T57 Alt)
12	05:50		06:28	06:53 (T58 Alt)	07:12		07:55		07:43		08:23	16:01 (T57 Alt)
	21:42		21:03 56	20:27 (T10)	20:03		19:00		17:05		16:44 13	16:14 (T57 Alt)
13	05:51	07:00 (T58 Alt)	06:30	06:55 (T58 Alt)	07:13		07:56		07:44		08:24	16:02 (T57 Alt)
	21:41 8	07:08 (T58 Alt)	21:01 53	20:27 (T10)	20:01		18:56		17:04		16:45 12	16:14 (T57 Alt)
14	05:52	06:58 (T58 Alt)	06:31	06:56 (T58 Alt)	07:15		07:58		07:46		08:25	16:02 (T57 Alt)
	21:40 12	07:10 (T58 Alt)	21:00 51	20:27 (T10)	19:59		18:54		17:03		16:45 11	16:13 (T57 Alt)
15	05:53	06:56 (T58 Alt)	06:33	06:57 (T58 Alt)	07:16		07:59		07:47		08:25	16:02 (T57 Alt)
	21:39 16	07:12 (T58 Alt)	20:58 48	20:26 (T10)	19:56		18:52		17:02		16:45 11	16:13 (T57 Alt)
16	05:54	06:55 (T58 Alt)	06:34	06:59 (T58 Alt)	07:17		08:01		07:49		08:26	16:03 (T57 Alt)
	21:38 18	07:13 (T58 Alt)	20:56 44	20:27 (T10)	19:54		18:50		17:00		16:45 11	16:14 (T57 Alt)
17	05:55	06:54 (T58 Alt)	06:35	07:00 (T58 Alt)	07:19	18:57 (T09)	08:02		07:51		08:27	16:04 (T57 Alt)
	21:38 20	07:14 (T58 Alt)	20:54 38	20:26 (T10)	19:52 4	19:01 (T09)	18:48		16:59		16:45 10	16:14 (T57 Alt)
18	05:56	06:53 (T58 Alt)	06:37	19:56 (T10)	07:20	18:52 (T09)	08:04		07:52		08:28	16:04 (T57 Alt)
	21:37 22	07:15 (T58 Alt)	20:52 29	20:25 (T10)	19:50 12	19:04 (T09)	18:46		16:58		16:45 10	16:14 (T57 Alt)
19	05:57	06:52 (T58 Alt)	06:38	19:57 (T10)	07:22	18:49 (T09)	08:05		07:54		08:28	16:04 (T57 Alt)
	21:36 24	07:16 (T58 Alt)	20:51 27	20:24 (T10)	19:48 16	19:05 (T09)	18:45		16:57		16:46 10	16:14 (T57 Alt)
20	05:59	06:52 (T58 Alt)	06:40	19:57 (T10)	07:23	18:48 (T09)	08:07		07:55		08:29	16:05 (T57 Alt)
	21:35 25	07:17 (T58 Alt)	20:49 25	20:22 (T10)	19:46 19	19:07 (T09)	18:43		16:56		16:46 10	16:15 (T57 Alt)
21	06:00	06:51 (T58 Alt)	06:41	19:57 (T10)	07:24	18:46 (T09)	08:08		07:57		08:30	16:05 (T57 Alt)
	21:34 27	07:18 (T58 Alt)	20:47 22	20:19 (T10)	19:44 21	19:07 (T09)	18:41		16:55		16:47 10	16:15 (T57 Alt)
22	06:01	06:50 (T58 Alt)	06:42	19:59 (T10)	07:26	18:46 (T09)	08:10		07:58		08:30	16:06 (T57 Alt)
	21:33 29	07:19 (T58 Alt)	20:45 19	20:18 (T10)	19:42 22	19:08 (T09)	18:39		16:54		16:47 10	16:16 (T57 Alt)
23	06:02	06:50 (T58 Alt)	06:44	19:59 (T10)	07:27	18:44 (T09)	08:11		08:00	16:03 (T57 Alt)	08:31	16:06 (T57 Alt)
	21:32 30	07:20 (T58 Alt)	20:43 17	20:16 (T10)	19:40 24	19:08 (T09)	18:37		16:53 3	16:06 (T57 Alt)	16:48 10	16:16 (T57 Alt)
24	06:03	06:50 (T58 Alt)	06:45	20:01 (T10)	07:29	18:43 (T09)	08:13		08:01	16:01 (T57 Alt)	08:31	16:06 (T57 Alt)
	21:30 31	07:21 (T58 Alt)	20:41 13	20:14 (T10)	19:37 24	19:07 (T09)	18:35		16:52 9	16:10 (T57 Alt)	16:48 10	16:16 (T57 Alt)
25	06:05	06:49 (T58 Alt)	06:47	20:04 (T10)	07:30	18:44 (T09)	08:15		08:02	15:59 (T57 Alt)	08:31	16:08 (T57 Alt)
	21:29 32	07:21 (T58 Alt)	20:39 9	20:13 (T10)	19:35 24	19:08 (T09)	18:33		16:51 12	16:11 (T57 Alt)	16:49 10	16:18 (T57 Alt)
26	06:06	06:48 (T58 Alt)	06:48		07:31	18:43 (T09)	08:16		08:04	15:59 (T57 Alt)	08:32	16:08 (T57 Alt)
	21:28 34	07:22 (T58 Alt)	20:37		19:33 23	19:06 (T09)	18:32		16:51 14	16:13 (T57 Alt)	16:50 10	16:18 (T57 Alt)
27	06:07	06:48 (T58 Alt)	06:49		07:33	18:44 (T09)	08:18		08:05	15:58 (T57 Alt)	08:32	16:08 (T57 Alt)
	21:27 34	07:22 (T58 Alt)	20:35		19:31 20	19:04 (T09)	18:30		16:50 15	16:13 (T57 Alt)	16:50 11	16:19 (T57 Alt)
28	06:08	06:47 (T58 Alt)	06:51		07:34	18:43 (T09)	08:19		08:07	15:58 (T57 Alt)	08:32	16:08 (T57 Alt)
	21:26 35	07:22 (T58 Alt)	20:33		19:29 19	19:02 (T09)	18:28		16:49 17	16:15 (T57 Alt)	16:51 11	16:19 (T57 Alt)
29	06:10	06:48 (T58 Alt)	06:52		07:36	18:45 (T09)	08:21		08:08	15:57 (T57 Alt)	08:32	16:08 (T57 Alt)
	21:24 35	07:23 (T58 Alt)	20:31		19:27 15	19:00 (T09)	18:27		16:49 18	16:15 (T57 Alt)	16:52 12	16:20 (T57 Alt)
30	06:11	06:47 (T58 Alt)	06:54		07:37	18:45 (T09)	08:22		08:09	15:57 (T57 Alt)	08:33	16:10 (T57 Alt)
	21:23 36	07:23 (T58 Alt)	20:29		19:25 13	18:58 (T09)	18:25		16:48 18	16:15 (T57 Alt)	16:53 12	16:22 (T57 Alt)
31	06:12	06:47 (T58 Alt)	06:55				08:24				08:33	16:10 (T57 Alt)
	21:22 36	07:23 (T58 Alt)	20:27				18:23				16:54 13	16:23 (T57 Alt)
Potential sun hours	487		445		379		336		277		260	
Total, worst case	504		1059		256		13		106		400	
Sun reduction	0.74		0.72		0.69		0.52		0.44		0.44	
Oper. time red.	0.98		0.98		0.98		0.98		0.98		0.98	
Wind dir. red.	0.65		0.66		0.67		0.67		0.61		0.61	
Total reduction	0.47		0.47		0.45		0.34		0.26		0.26	
Total, real	237		494		115		4		27		105	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

Description:

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Calculated:
1/14/2015 4:45 PM/2.9.285

SHADOW - Calendar

Calculation: V117-3.3 91.5 HH Shadow Rev 8 w/ Alts, No Obstacles **Shadow receptor:** H16 - Shadow Receptor: 1.0 × 1.0 Azimuth: 0.0° Slope: 90.0° (183)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BISMARCK]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4.92	5.13	7.45	8.03	10.20	11.21	11.69	10.35	8.68	5.69	4.02	3.69

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
524	474	586	541	606	835	754	637	557	1,091	1,182	765	8,552

Idle start wind speed: Cut in wind speed from power curve

January			February			March			April			May			June		
1 | 08:33			| 08:10			| 07:23		17:46 (T51 Alt) | 07:19		18:52 (T50 Alt) | 06:22			| 05:43		06:09 (T33)
| 16:55			| 17:38			| 18:21	12	17:58 (T51 Alt) | 20:08	40	19:32 (T50 Alt) | 20:53			| 21:33	16	06:25 (T33)
2 | 08:33			| 08:09			| 07:21		17:45 (T51 Alt) | 07:17		18:52 (T50 Alt) | 06:20			| 05:42		06:08 (T33)
| 16:56			| 17:39			| 18:23	14	17:59 (T51 Alt) | 20:10	39	19:31 (T50 Alt) | 20:54			| 21:34	16	06:24 (T33)
3 | 08:32			| 08:08			| 07:19		17:45 (T51 Alt) | 07:15		18:52 (T50 Alt) | 06:18			| 05:41		06:08 (T33)
| 16:57			| 17:41			| 18:24	16	18:01 (T51 Alt) | 20:11	38	19:30 (T50 Alt) | 20:55			| 21:34	17	06:25 (T33)
4 | 08:32		09:00 (T31) | 08:06		17:13 (T21) | 07:17				17:45 (T51 Alt) | 07:13		18:53 (T50 Alt) | 06:17			| 05:41		06:07 (T33)
| 16:58	1	09:01 (T31) | 17:42	2	17:15 (T21) | 18:26	18	18:03 (T51 Alt) | 20:13	36	19:29 (T50 Alt) | 20:57			| 21:35	18	06:25 (T33)
5 | 08:32		08:59 (T31) | 08:05		17:12 (T21) | 07:15				17:45 (T51 Alt) | 07:11		18:54 (T50 Alt) | 06:15			| 05:40		06:07 (T33)
| 16:59	3	09:02 (T31) | 17:44	5	17:17 (T21) | 18:28	19	18:04 (T51 Alt) | 20:14	34	19:28 (T50 Alt) | 20:58			| 21:36	19	06:26 (T33)
6 | 08:32		08:59 (T31) | 08:03		17:11 (T21) | 07:13				17:45 (T51 Alt) | 07:09		18:55 (T50 Alt) | 06:13			| 05:40		06:06 (T33)
| 17:00	5	09:04 (T31) | 17:46	7	17:18 (T21) | 18:29	21	18:06 (T51 Alt) | 20:16	32	19:27 (T50 Alt) | 21:00			| 21:37	19	06:25 (T33)
7 | 08:32		08:59 (T31) | 08:02		17:11 (T21) | 07:11				17:45 (T51 Alt) | 07:07		18:56 (T50 Alt) | 06:12			| 05:39		06:06 (T33)
| 17:01	7	09:06 (T31) | 17:47	9	17:20 (T21) | 18:31	22	18:07 (T51 Alt) | 20:17	29	19:25 (T50 Alt) | 21:01			| 21:38	20	06:26 (T33)
8 | 08:31		08:58 (T31) | 08:00		17:11 (T21) | 08:09				18:46 (T51 Alt) | 07:05		07:27 (T32) | 06:10			| 05:39		06:05 (T33)
| 17:02	8	09:06 (T31) | 17:49	11	17:22 (T21) | 18:32	20	19:06 (T51 Alt) | 20:19	29	19:24 (T50 Alt) | 21:03			| 21:39	20	06:25 (T33)
9 | 08:31		08:58 (T31) | 07:59		17:11 (T21) | 08:07				18:47 (T51 Alt) | 07:03		07:25 (T32) | 06:09			| 05:39		06:05 (T33)
| 17:04	10	09:08 (T31) | 17:51	12	17:23 (T21) | 19:34	17	19:04 (T51 Alt) | 20:20	29	19:21 (T50 Alt) | 21:04			| 21:40	21	06:26 (T33)
10 | 08:31		08:57 (T31) | 07:57		17:12 (T21) | 08:05				18:49 (T51 Alt) | 07:01		07:23 (T32) | 06:07			| 05:38		06:05 (T33)
| 17:05	11	09:08 (T31) | 17:52	14	17:26 (T21) | 19:35	13	19:02 (T51 Alt) | 20:22	28	19:18 (T50 Alt) | 21:05			| 21:40	21	06:26 (T33)
11 | 08:30		08:57 (T31) | 07:56		17:12 (T21) | 08:03				18:51 (T51 Alt) | 06:59		07:21 (T32) | 06:06			| 05:38		06:05 (T33)
| 17:06	13	09:10 (T31) | 17:54	15	17:27 (T21) | 19:37	8	18:59 (T51 Alt) | 20:23	23	19:14 (T50 Alt) | 21:07			| 21:41	21	06:26 (T33)
12 | 08:30		08:56 (T31) | 07:54		17:12 (T21) | 08:01				| 06:57		07:19 (T32) | 06:04			| 05:38		06:04 (T33)
| 17:07	14	09:10 (T31) | 17:56	17	17:29 (T21) | 19:38				| 20:25	16	07:35 (T32) | 21:08			| 21:42	22	06:26 (T33)
13 | 08:29		08:55 (T31) | 07:52		17:13 (T21) | 07:59				| 06:55		07:17 (T32) | 06:03			| 05:37		06:04 (T33)
| 17:09	16	09:11 (T31) | 17:57	15	17:28 (T21) | 19:40				| 20:26	19	07:36 (T32) | 21:09			| 21:42	22	06:26 (T33)
14 | 08:28		08:55 (T31) | 07:51		17:15 (T21) | 07:57				| 06:53		07:15 (T32) | 06:02			| 05:37		06:04 (T33)
| 17:10	17	09:12 (T31) | 17:59	12	17:27 (T21) | 19:41				| 20:28	21	07:36 (T32) | 21:11			| 21:43	22	06:26 (T33)
15 | 08:28		08:54 (T31) | 07:49		17:17 (T21) | 07:55				| 06:51		07:13 (T32) | 06:00			| 05:37		06:04 (T33)
| 17:12	19	09:13 (T31) | 18:00	7	17:24 (T21) | 19:43				| 20:29	23	07:36 (T32) | 21:12			| 21:43	22	06:26 (T33)
16 | 08:27		08:53 (T31) | 07:47			| 07:53		19:11 (T50 Alt) | 06:49		07:11 (T32) | 05:59			| 05:37		06:04 (T33)
| 17:13	20	09:13 (T31) | 18:00			| 19:45	11	19:22 (T50 Alt) | 20:31	25	07:36 (T32) | 21:14			| 21:44	22	06:26 (T33)
17 | 08:26		08:52 (T31) | 07:45			| 07:51		19:07 (T50 Alt) | 06:47		07:09 (T32) | 05:58			| 05:37		06:04 (T33)
| 17:14	22	09:14 (T31) | 18:02			| 19:46	17	19:24 (T50 Alt) | 20:32	27	07:36 (T32) | 21:15			| 21:44	23	06:27 (T33)
18 | 08:26		08:52 (T31) | 07:44			| 07:49		19:03 (T50 Alt) | 06:45		07:07 (T32) | 05:56			| 05:37		06:04 (T33)
| 17:16	22	09:14 (T31) | 18:04			| 19:48	21	19:24 (T50 Alt) | 20:33	29	07:36 (T32) | 21:16			| 21:45	23	06:27 (T33)
19 | 08:25		08:52 (T31) | 07:42			| 07:47		19:01 (T50 Alt) | 06:43		07:07 (T32) | 05:55			| 05:37		06:04 (T33)
| 17:17	22	09:14 (T31) | 18:05			| 19:49	25	19:26 (T50 Alt) | 20:35	28	07:35 (T32) | 21:17			| 21:45	23	06:27 (T33)
20 | 08:24		08:52 (T31) | 07:40			| 07:44		19:00 (T50 Alt) | 06:41		07:08 (T32) | 05:54			| 05:37		06:06 (T33)
| 17:19	23	09:15 (T31) | 18:07			| 19:51	28	19:28 (T50 Alt) | 20:36	27	07:35 (T32) | 21:19			| 21:45	22	06:28 (T33)
21 | 08:23		08:53 (T31) | 07:38			| 07:42		18:58 (T50 Alt) | 06:39		07:08 (T32) | 05:53			| 05:38		06:06 (T33)
| 17:20	22	09:15 (T31) | 18:09			| 19:52	31	19:29 (T50 Alt) | 20:38	26	07:34 (T32) | 21:20			| 21:46	22	06:28 (T33)
22 | 08:22		08:53 (T31) | 07:36			| 07:40		18:57 (T50 Alt) | 06:38		07:08 (T32) | 05:52		06:17 (T33) | 05:38		06:06 (T33)
| 17:22	22	09:15 (T31) | 18:10			| 19:54	34	19:31 (T50 Alt) | 20:39	25	07:33 (T32) | 21:21	3	06:20 (T33) | 21:46	22	06:28 (T33)
23 | 08:21		08:54 (T31) | 07:35			| 07:38		18:56 (T50 Alt) | 06:36		07:09 (T32) | 05:51		06:16 (T33) | 05:38		06:06 (T33)
| 17:23	21	09:15 (T31) | 18:12			| 19:55	36	19:32 (T50 Alt) | 20:41	23	07:32 (T32) | 21:22	4	06:20 (T33) | 21:46	22	06:28 (T33)
24 | 08:20		08:55 (T31) | 07:33			| 07:36		18:55 (T50 Alt) | 06:34		07:09 (T32) | 05:50		06:15 (T33) | 05:38		06:06 (T33)
| 17:25	20	09:15 (T31) | 18:13			| 19:57	39	19:34 (T50 Alt) | 20:42	22	07:31 (T32) | 21:24	6	06:21 (T33) | 21:46	23	06:29 (T33)
25 | 08:19		08:56 (T31) | 07:31			| 07:34		18:54 (T50 Alt) | 06:32		07:11 (T32) | 05:49		06:14 (T33) | 05:39		06:06 (T33)
| 17:26	19	09:15 (T31) | 18:15			| 19:58	40	19:34 (T50 Alt) | 20:44	19	07:30 (T32) | 21:25	8	06:22 (T33) | 21:46	23	06:29 (T33)
26 | 08:18		08:57 (T31) | 07:29		17:50 (T51 Alt) | 07:32				18:54 (T50 Alt) | 06:30		07:12 (T32) | 05:48		06:13 (T33) | 05:39		06:06 (T33)
| 17:28	18	09:15 (T31) | 18:17	3	17:53 (T51 Alt) | 19:59	41			19:35 (T50 Alt) | 20:45	16	07:28 (T32) | 21:26	9	06:22 (T33) | 21:47	22	06:28 (T33)
27 | 08:17		08:57 (T31) | 07:27		17:49 (T51 Alt) | 07:30				18:52 (T50 Alt) | 06:28		07:14 (T32) | 05:47		06:12 (T33) | 05:39		06:07 (T33)
| 17:30	16	09:13 (T31) | 18:18	5	17:54 (T51 Alt) | 20:01	42			19:34 (T50 Alt) | 20:47	11	07:25 (T32) | 21:27	10	06:22 (T33) | 21:47	22	06:29 (T33)
28 | 08:15		08:59 (T31) | 07:25		17:47 (T51 Alt) | 07:28				18:52 (T50 Alt) | 06:27		| 05:46		06:11 (T33) | 05:40		06:07 (T33)
| 17:31	14	09:13 (T31) | 18:20	9	17:56 (T51 Alt) | 20:02	42			19:34 (T50 Alt) | 20:48		| 21:28	12	06:23 (T33) | 21:46	22	06:29 (T33)
29 | 08:14		09:01 (T31) |		| 07:26				18:52 (T50 Alt) | 06:25		| 05:45		06:11 (T33) | 05:40		06:08 (T33)
| 17:33	10	09:11 (T31) |		| 20:04	41			19:33 (T50 Alt) | 20:50		| 21:29	13	06:24 (T33) | 21:46	22	06:30 (T33)
30 | 08:13		09:05 (T31) |		| 07:24				18:52 (T50 Alt) | 06:23		| 05:44		06:10 (T33) | 05:41		06:08 (T33)
| 17:34	2	09:07 (T31) |		| 20:05	41			19:33 (T50 Alt) | 20:51		| 21:30	14	06:24 (T33) | 21:46	22	06:30 (T33)
31 | 08:12		|		| 07:21				18:52 (T50 Alt) |		| 05:43		06:09 (T33) |		
| 17:36		|		| 20:07	41			19:33 (T50 Alt) |		| 21:31	15	06:24 (T33) |		
Potential sun hours | 273		| 285		| 368			| 410			| 472			| 482		
Total, worst case |	397	|	143	|	710		|	714		|	94		|	631	
Sun reduction |	0.56	|	0.50	|	0.63		|	0.59		|	0.67		|	0.70	
Oper. time red. |	0.98	|	0.98	|	0.98		|	0.98		|	0.98		|	0.98	
Wind dir. red. |	0.68	|	0.65	|	0.67		|	0.67		|	0.64		|	0.64	
Total reduction |	0.37	|	0.32	|	0.41		|	0.39		|	0.42		|	0.44	
Total, real |	147	|	46	|	293		|	276		|	39		|	276	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

Description:

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Printed/Page
1/20/2015 1:58 PM / 16

Licensed user:
EAPC Wind Energy
3100 DeMers Avenue
US-GRAND FORKS, ND 58201
+1 701 775 3000
wind@eapc.net

Calculated:
1/14/2015 4:45 PM/2.9.285

SHADOW - Calendar

Calculation: V117-3.3 91.5 HH Shadow Rev 8 w/ Alts, No Obstacles **Shadow receptor:** H16 - Shadow Receptor: 1.0 × 1.0 Azimuth: 0.0° Slope: 90.0° (183)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BISMARCK]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4.92	5.13	7.45	8.03	10.20	11.21	11.69	10.35	8.68	5.69	4.02	3.69

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
524	474	586	541	606	835	754	637	557	1,091	1,182	765	8,552

Idle start wind speed: Cut in wind speed from power curve

	July		August		September		October		November		December	
1	05:41	06:09 (T33)	06:13		06:56	07:20 (T32)	07:39		07:25	16:40 (T21)	08:10	08:39 (T31)
	21:46	21 06:30 (T33)	21:20		20:25	23 19:13 (T50 Alt)	19:23		17:21	14 16:54 (T21)	16:47	13 08:52 (T31)
2	05:42	06:09 (T33)	06:15		06:58	07:21 (T32)	07:40	18:33 (T51 Alt)	07:27	16:41 (T21)	08:12	08:40 (T31)
	21:46	21 06:30 (T33)	21:19		20:23	28 19:16 (T50 Alt)	19:20	2 18:35 (T51 Alt)	17:20	12 16:53 (T21)	16:47	11 08:51 (T31)
3	05:43	06:10 (T33)	06:16		06:59	07:23 (T32)	07:41	18:27 (T51 Alt)	07:29	16:41 (T21)	08:13	08:41 (T31)
	21:46	21 06:31 (T33)	21:17		20:21	29 19:19 (T50 Alt)	19:18	12 18:39 (T51 Alt)	17:18	10 16:51 (T21)	16:46	10 08:51 (T31)
4	05:43	06:11 (T33)	06:17		07:00	07:24 (T32)	07:43	18:25 (T51 Alt)	07:30	16:41 (T21)	08:14	08:43 (T31)
	21:45	20 06:31 (T33)	21:16		20:19	29 19:21 (T50 Alt)	19:16	16 18:41 (T51 Alt)	17:17	8 16:49 (T21)	16:46	8 08:51 (T31)
5	05:44	06:11 (T33)	06:19		07:02	18:52 (T50 Alt)	07:44	18:23 (T51 Alt)	07:32	16:41 (T21)	08:15	08:44 (T31)
	21:45	20 06:31 (T33)	21:14		20:17	29 19:21 (T50 Alt)	19:14	19 18:42 (T51 Alt)	17:15	7 16:48 (T21)	16:46	7 08:51 (T31)
6	05:45	06:12 (T33)	06:20		07:03	18:51 (T50 Alt)	07:46	18:22 (T51 Alt)	07:33	16:42 (T21)	08:16	08:45 (T31)
	21:45	19 06:31 (T33)	21:13		20:15	32 19:23 (T50 Alt)	19:12	21 18:43 (T51 Alt)	17:14	4 16:46 (T21)	16:45	5 08:50 (T31)
7	05:46	06:13 (T33)	06:21		07:05	18:49 (T50 Alt)	07:47	18:21 (T51 Alt)	07:35	16:44 (T21)	08:18	08:46 (T31)
	21:44	19 06:32 (T33)	21:11		20:13	34 19:23 (T50 Alt)	19:10	22 18:43 (T51 Alt)	17:12	1 16:45 (T21)	16:45	3 08:49 (T31)
8	05:46	06:14 (T33)	06:23		07:06	18:47 (T50 Alt)	07:49	18:21 (T51 Alt)	07:36		08:19	08:47 (T31)
	21:44	18 06:32 (T33)	21:10		20:11	37 19:24 (T50 Alt)	19:08	20 18:41 (T51 Alt)	17:11		16:45	1 08:48 (T31)
9	05:47	06:14 (T33)	06:24		07:07	18:47 (T50 Alt)	07:50	18:20 (T51 Alt)	07:38		08:20	
	21:43	18 06:32 (T33)	21:08		20:09	38 19:25 (T50 Alt)	19:06	18 18:38 (T51 Alt)	17:09		16:45	
10	05:48	06:15 (T33)	06:26		07:09	18:45 (T50 Alt)	07:52	18:20 (T51 Alt)	07:40		08:21	
	21:43	17 06:32 (T33)	21:06		20:07	39 19:24 (T50 Alt)	19:04	17 18:37 (T51 Alt)	17:08		16:44	
11	05:49	06:16 (T33)	06:27		07:10	18:44 (T50 Alt)	07:53	18:19 (T51 Alt)	07:41		08:22	
	21:42	16 06:32 (T33)	21:05		20:05	40 19:24 (T50 Alt)	19:02	15 18:34 (T51 Alt)	17:06		16:44	
12	05:50	06:17 (T33)	06:28		07:12	18:44 (T50 Alt)	07:55	18:20 (T51 Alt)	07:43	08:36 (T31)	08:23	
	21:41	15 06:32 (T33)	21:03		20:03	41 19:25 (T50 Alt)	19:00	13 18:33 (T51 Alt)	17:05	3 08:39 (T31)	16:44	
13	05:51	06:18 (T33)	06:30		07:13	18:43 (T50 Alt)	07:56	18:20 (T51 Alt)	07:44	08:33 (T31)	08:24	
	21:41	14 06:32 (T33)	21:01		20:01	41 19:24 (T50 Alt)	18:56	10 18:30 (T51 Alt)	17:04	10 08:43 (T31)	16:44	
14	05:52	06:19 (T33)	06:31		07:14	18:42 (T50 Alt)	07:58	18:21 (T51 Alt)	07:46	08:31 (T31)	08:24	
	21:40	13 06:32 (T33)	20:59		19:58	42 19:24 (T50 Alt)	18:54	8 18:29 (T51 Alt)	17:03	14 08:45 (T31)	16:44	
15	05:53	06:20 (T33)	06:32		07:16	18:42 (T50 Alt)	07:59	18:21 (T51 Alt)	07:47	08:30 (T31)	08:25	
	21:39	12 06:32 (T33)	20:58		19:56	42 19:24 (T50 Alt)	18:52	5 18:26 (T51 Alt)	17:01	16 08:46 (T31)	16:45	
16	05:54	06:21 (T33)	06:34	07:21 (T32)	07:17	18:42 (T50 Alt)	08:01	18:23 (T51 Alt)	07:49	08:30 (T31)	08:26	
	21:38	11 06:32 (T33)	20:56	12 07:33 (T32)	19:54	41 19:23 (T50 Alt)	18:50	1 18:24 (T51 Alt)	17:00	18 08:48 (T31)	16:45	
17	05:55	06:22 (T33)	06:35	07:19 (T32)	07:19	18:42 (T50 Alt)	08:02		07:50	08:29 (T31)	08:27	
	21:37	10 06:32 (T33)	20:54	16 07:35 (T32)	19:52	41 19:23 (T50 Alt)	18:48		16:59	19 08:48 (T31)	16:45	
18	05:56	06:23 (T33)	06:37	07:16 (T32)	07:20	18:42 (T50 Alt)	08:04		07:52	08:29 (T31)	08:28	
	21:37	8 06:31 (T33)	20:52	20 07:36 (T32)	19:50	40 19:22 (T50 Alt)	18:46		16:58	20 08:49 (T31)	16:45	
19	05:57	06:24 (T33)	06:38	07:16 (T32)	07:21	18:41 (T50 Alt)	08:05		07:53	08:29 (T31)	08:28	
	21:36	7 06:31 (T33)	20:50	22 07:38 (T32)	19:48	40 19:21 (T50 Alt)	18:44		16:57	21 08:50 (T31)	16:46	
20	05:58	06:25 (T33)	06:39	07:14 (T32)	07:23	18:42 (T50 Alt)	08:07		07:55	08:28 (T31)	08:29	
	21:35	5 06:30 (T33)	20:49	24 07:38 (T32)	19:46	37 19:19 (T50 Alt)	18:43		16:56	22 08:50 (T31)	16:46	
21	06:00	06:26 (T33)	06:41	07:13 (T32)	07:24	18:42 (T50 Alt)	08:08		07:56	08:29 (T31)	08:29	
	21:34	4 06:30 (T33)	20:47	25 07:38 (T32)	19:44	35 19:17 (T50 Alt)	18:41		16:55	22 08:51 (T31)	16:47	
22	06:01	06:27 (T33)	06:42	07:13 (T32)	07:26	18:43 (T50 Alt)	08:10		07:58	08:28 (T31)	08:30	
	21:33	2 06:29 (T33)	20:45	26 07:39 (T32)	19:42	32 19:15 (T50 Alt)	18:39		16:54	23 08:51 (T31)	16:47	
23	06:02		06:44	07:12 (T32)	07:27	18:44 (T50 Alt)	08:11		07:59	08:29 (T31)	08:30	
	21:31		20:43	27 07:39 (T32)	19:39	29 19:13 (T50 Alt)	18:37		16:53	22 08:51 (T31)	16:48	
24	06:03		06:45	07:11 (T32)	07:29	18:44 (T50 Alt)	08:13		08:01	08:29 (T31)	08:31	
	21:30		20:41	28 07:39 (T32)	19:37	26 19:10 (T50 Alt)	18:35		16:52	22 08:51 (T31)	16:48	
25	06:04		06:46	07:11 (T32)	07:30	18:46 (T50 Alt)	08:14		08:02	08:30 (T31)	08:31	
	21:29		20:39	28 07:39 (T32)	19:35	23 19:09 (T50 Alt)	18:33		16:51	22 08:52 (T31)	16:49	
26	06:06		06:48	07:12 (T32)	07:31	18:48 (T50 Alt)	08:16		08:04	08:32 (T31)	08:32	
	21:28		20:37	27 07:39 (T32)	19:33	18 19:06 (T50 Alt)	18:32		16:50	20 08:52 (T31)	16:49	
27	06:07		06:49	07:13 (T32)	07:33	18:51 (T50 Alt)	08:18	17:46 (T21)	08:05	08:33 (T31)	08:32	
	21:27		20:35	25 07:38 (T32)	19:31	13 19:04 (T50 Alt)	18:30	9 17:55 (T21)	16:50	19 08:52 (T31)	16:50	
28	06:08		06:51	07:15 (T32)	07:34		08:19	17:44 (T21)	08:06	08:34 (T31)	08:32	
	21:25		20:33	23 07:38 (T32)	19:29		18:28	13 17:57 (T21)	16:49	17 08:51 (T31)	16:51	
29	06:09		06:52	07:16 (T32)	07:36		08:21	17:42 (T21)	08:08	08:36 (T31)	08:32	
	21:24		20:31	21 07:37 (T32)	19:27		18:26	15 17:57 (T21)	16:48	16 08:52 (T31)	16:52	
30	06:11		06:53	07:17 (T32)	07:37		08:22	17:42 (T21)	08:09	08:37 (T31)	08:32	
	21:23		20:29	19 07:36 (T32)	19:25		18:25	16 17:58 (T21)	16:48	14 08:51 (T31)	16:53	
31	06:12		06:55	07:19 (T32)			08:24	17:41 (T21)			08:32	
	21:21		20:27	16 07:35 (T32)			18:23	16 17:57 (T21)			16:53	
Potential sun hours	487		445		379		336		277		260	
Total, worst case		311		359		899		268		396		58
Sun reduction		0.74		0.72		0.69		0.52		0.44		0.44
Oper. time red.		0.98		0.98		0.98		0.98		0.98		0.98
Wind dir. red.		0.64		0.67		0.68		0.65		0.67		0.68
Total reduction		0.47		0.47		0.46		0.33		0.29		0.29
Total, real		145		168		410		89		113		17

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

Description:

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Calculated:
1/14/2015 4:45 PM/2.9.285

SHADOW - Calendar

Calculation: V117-3.3 91.5 HH Shadow Rev 8 w/ Alts, No Obstacles **Shadow receptor:** H17 - Shadow Receptor: 1.0 × 1.0 Azimuth: 0.0° Slope: 90.0° (184)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BISMARCK]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4.92	5.13	7.45	8.03	10.20	11.21	11.69	10.35	8.68	5.69	4.02	3.69

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
524	474	586	541	606	835	754	637	557	1,091	1,182	765	8,552

Idle start wind speed: Cut in wind speed from power curve

	January			February	March	April			May			June
1	08:32		15:36 (T40)	08:10	07:23	07:19			06:21		19:33 (T42)	05:43
	16:55	24	16:00 (T40)	17:37	18:21	20:08			20:52	19	19:52 (T42)	21:32
2	08:32		15:36 (T40)	08:09	07:21	07:17			06:20		19:36 (T42)	05:42
	16:56	24	16:00 (T40)	17:39	18:23	20:10			20:54	15	19:51 (T42)	21:33
3	08:32		15:37 (T40)	08:07	07:19	07:15			06:18		19:39 (T42)	05:41
	16:57	23	16:00 (T40)	17:41	18:24	20:11			20:55	7	19:46 (T42)	21:34
4	08:32		15:38 (T40)	08:06	07:17	07:13			06:16			05:41
	16:58	23	16:01 (T40)	17:42	18:26	20:13			20:57			21:35
5	08:32		15:39 (T40)	08:05	07:15	07:11			06:15			05:40
	16:59	21	16:00 (T40)	17:44	18:27	20:14			20:58			21:36
6	08:32		15:40 (T40)	08:03	07:13	07:09			06:13			05:40
	17:00	20	16:00 (T40)	17:46	18:29	20:16			20:59			21:37
7	08:31		15:40 (T40)	08:02	07:11	07:07			06:12			05:39
	17:01	19	15:59 (T40)	17:47	18:31	20:17			21:01			21:38
8	08:31		15:42 (T40)	08:00	08:09	07:05		19:42 (T42)	06:10			05:39
	17:02	18	16:00 (T40)	17:49	18:32	20:19	13	19:55 (T42)	21:02			21:39
9	08:31		15:44 (T40)	07:59	08:07	07:03		19:38 (T42)	06:09			05:38
	17:03	16	16:00 (T40)	17:51	19:34	20:20	19	19:57 (T42)	21:04			21:39
10	08:30		15:45 (T40)	07:57	08:05	07:01		19:36 (T42)	06:07			05:38
	17:05	13	15:58 (T40)	17:52	19:35	20:21	22	19:58 (T42)	21:05			21:40
11	08:30		15:47 (T40)	07:55	08:03	06:59		19:34 (T42)	06:06			05:38
	17:06	10	15:57 (T40)	17:54	19:37	20:23	26	20:00 (T42)	21:07			21:41
12	08:29		15:50 (T40)	07:54	08:01	06:57		19:33 (T42)	06:04			05:38
	17:07	5	15:55 (T40)	17:55	19:38	20:24	28	20:01 (T42)	21:08			21:41
13	08:29			07:52	07:59	06:55		19:31 (T42)	06:03			05:37
	17:09			17:57	19:40	20:26	31	20:02 (T42)	21:09			21:42
14	08:28			07:50	07:57	06:53		19:30 (T42)	06:01			05:37
	17:10			17:59	19:41	20:27	33	20:03 (T42)	21:11			21:43
15	08:28			07:49	07:55	06:51		19:29 (T42)	06:00			05:37
	17:11			18:00	19:43	20:29	34	20:03 (T42)	21:12			21:43
16	08:27			07:47	07:53	06:49		19:28 (T42)	05:59			05:37
	17:13			18:00	19:44	20:30	35	20:03 (T42)	21:13			21:44
17	08:26			07:45	07:51	06:47		19:28 (T42)	05:57			05:37
	17:14			18:02	19:46	20:32	35	20:03 (T42)	21:15			21:44
18	08:25			07:43	07:48	06:45		19:27 (T42)	05:56			05:37
	17:16			18:04	19:47	20:33	36	20:03 (T42)	21:16			21:45
19	08:25			07:42	07:46	06:43		19:27 (T42)	05:55			05:37
	17:17			18:05	19:49	20:35	36	20:03 (T42)	21:17			21:45
20	08:24			07:40	07:44	06:41		19:26 (T42)	05:54			05:37
	17:19			18:07	19:50	20:36	37	20:03 (T42)	21:19			21:45
21	08:23			07:38	07:42	06:39		19:27 (T42)	05:53			05:37
	17:20			18:08	19:52	20:38	36	20:03 (T42)	21:20			21:46
22	08:22			07:36	07:40	06:37		19:27 (T42)	05:52			05:38
	17:22			18:10	19:53	20:39	35	20:02 (T42)	21:21			21:46
23	08:21			07:34	07:38	06:36		19:27 (T42)	05:50			05:38
	17:23			18:12	19:55	20:41	35	20:02 (T42)	21:22			21:46
24	08:20			07:32	07:36	06:34		19:27 (T42)	05:49			05:38
	17:25			18:13	19:56	20:42	34	20:01 (T42)	21:23			21:46
25	08:19			07:31	07:34	06:32		19:27 (T42)	05:48			05:38
	17:26			18:15	19:58	20:44	33	20:00 (T42)	21:25			21:46
26	08:18			07:29	07:32	06:30		19:28 (T42)	05:47			05:39
	17:28			18:16	19:59	20:45	32	20:00 (T42)	21:26			21:46
27	08:16			07:27	07:30	06:28		19:29 (T42)	05:47			05:39
	17:29			18:18	20:01	20:46	30	19:59 (T42)	21:27			21:46
28	08:15			07:25	07:28	06:27		19:29 (T42)	05:46			05:40
	17:31			18:20	20:02	20:48	28	19:57 (T42)	21:28			21:46
29	08:14				07:25	06:25		19:31 (T42)	05:45			05:40
	17:33				20:04	20:49	25	19:56 (T42)	21:29			21:46
30	08:13				07:23	06:23		19:32 (T42)	05:44			05:41
	17:34				20:05	20:51	23	19:55 (T42)	21:30			21:46
31	08:12				07:21				05:43			
	17:36				20:07				21:31			
Potential sun hours	273			285	368	410			472			482
Total, worst case		216					696			41		
Sun reduction		0.56					0.59			0.67		
Oper. time red.		0.98					0.98			0.98		
Wind dir. red.		0.60					0.69			0.69		
Total reduction		0.32					0.39			0.44		
Total, real		69					271			18		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

Description:

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Calculated:
1/14/2015 4:45 PM/2.9.285

SHADOW - Calendar

Calculation: V117-3.3 91.5 HH Shadow Rev 8 w/ Alts, No Obstacles **Shadow receptor:** H17 - Shadow Receptor: 1.0 × 1.0 Azimuth: 0.0° Slope: 90.0° (184)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BISMARCK]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4.92	5.13	7.45	8.03	10.20	11.21	11.69	10.35	8.68	5.69	4.02	3.69

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
524	474	586	541	606	835	754	637	557	1,091	1,182	765	8,552

Idle start wind speed: Cut in wind speed from power curve

	July		August		September		October		November		December	
1	05:41		06:13		06:56		19:33 (T42)	07:38		07:25		08:10		15:29 (T40)
	21:46		21:20		20:25	26	19:59 (T42)	19:22		17:21		16:47	10	15:39 (T40)
2	05:42		06:15		06:57		19:34 (T42)	07:40		07:27		08:11		15:28 (T40)
	21:46		21:18		20:23	22	19:56 (T42)	19:20		17:20		16:47	13	15:41 (T40)
3	05:43		06:16		06:59		19:35 (T42)	07:41		07:28		08:13		15:27 (T40)
	21:45		21:17		20:21	19	19:54 (T42)	19:18		17:18		16:46	16	15:43 (T40)
4	05:43		06:17		07:00		19:38 (T42)	07:43		07:30		08:14		15:26 (T40)
	21:45		21:16		20:19	14	19:52 (T42)	19:16		17:16		16:46	18	15:44 (T40)
5	05:44		06:19		07:02			07:44		07:32		08:15		15:27 (T40)
	21:45		21:14		20:17			19:14		17:15		16:45	18	15:45 (T40)
6	05:45		06:20		07:03			07:46		07:33		08:16		15:26 (T40)
	21:44		21:12		20:15			19:12		17:13		16:45	20	15:46 (T40)
7	05:46		06:21		07:04			07:47		07:35		08:17		15:26 (T40)
	21:44		21:11		20:13			19:10		17:12		16:45	21	15:47 (T40)
8	05:46		06:23		07:06			07:49		07:36		08:18		15:26 (T40)
	21:44		21:09		20:11			19:08		17:10		16:45	22	15:48 (T40)
9	05:47		06:24		07:07			07:50		07:38		08:20		15:26 (T40)
	21:43		21:08		20:09			19:06		17:09		16:44	22	15:48 (T40)
10	05:48		06:25		19:48 (T42)	07:09		07:51		07:39		08:21		15:26 (T40)
	21:42		21:06	9	19:57 (T42)	20:07		19:04		17:08		16:44	23	15:49 (T40)
11	05:49		06:27		19:44 (T42)	07:10		07:53		07:41		08:22		15:26 (T40)
	21:42		21:04	16	20:00 (T42)	20:05		19:02		17:06		16:44	24	15:50 (T40)
12	05:50		06:28		19:41 (T42)	07:11		07:54		07:42		08:22		15:26 (T40)
	21:41		21:03	20	20:01 (T42)	20:02		19:00		17:05		16:44	25	15:51 (T40)
13	05:51		06:29		19:39 (T42)	07:13		07:56		07:44		08:23		15:26 (T40)
	21:40		21:01	24	20:03 (T42)	20:00		18:56		17:04		16:44	25	15:51 (T40)
14	05:52		06:31		19:38 (T42)	07:14		07:57		07:46		08:24		15:27 (T40)
	21:40		20:59	26	20:04 (T42)	19:58		18:54		17:02		16:44	25	15:52 (T40)
15	05:53		06:32		19:37 (T42)	07:16		07:59		07:47		08:25		15:27 (T40)
	21:39		20:58	28	20:05 (T42)	19:56		18:52		17:01		16:44	26	15:53 (T40)
16	05:54		06:34		19:35 (T42)	07:17		08:00		07:49		08:26		15:28 (T40)
	21:38		20:56	30	20:05 (T42)	19:54		18:50		17:00		16:45	26	15:54 (T40)
17	05:55		06:35		19:35 (T42)	07:18		08:02		07:50		08:27		15:27 (T40)
	21:37		20:54	32	20:07 (T42)	19:52		18:48		16:59		16:45	26	15:53 (T40)
18	05:56		06:36		19:34 (T42)	07:20		08:03		07:52		08:27		15:28 (T40)
	21:36		20:52	33	20:07 (T42)	19:50		18:46		16:58		16:45	26	15:54 (T40)
19	05:57		06:38		19:33 (T42)	07:21		08:05		07:53		08:28		15:29 (T40)
	21:35		20:50	34	20:07 (T42)	19:48		18:44		16:57		16:46	26	15:55 (T40)
20	05:58		06:39		19:33 (T42)	07:23		08:07		07:55		08:29		15:28 (T40)
	21:34		20:48	35	20:08 (T42)	19:46		18:42		16:56		16:46	27	15:55 (T40)
21	05:59		06:41		19:32 (T42)	07:24		08:08		07:56		08:29		15:29 (T40)
	21:33		20:47	35	20:07 (T42)	19:43		18:40		16:55		16:46	27	15:56 (T40)
22	06:01		06:42		19:31 (T42)	07:25		08:10		07:58		08:30		15:29 (T40)
	21:32		20:45	36	20:07 (T42)	19:41		18:39		16:54		16:47	27	15:56 (T40)
23	06:02		06:43		19:31 (T42)	07:27		08:11		07:59		08:30		15:30 (T40)
	21:31		20:43	36	20:07 (T42)	19:39		18:37		16:53		16:47	27	15:57 (T40)
24	06:03		06:45		19:30 (T42)	07:28		08:13		08:01		08:31		15:31 (T40)
	21:30		20:41	37	20:07 (T42)	19:37		18:35		16:52		16:48	26	15:57 (T40)
25	06:04		06:46		19:30 (T42)	07:30		08:14		08:02		08:31		15:31 (T40)
	21:29		20:39	36	20:06 (T42)	19:35		18:33		16:51		16:49	26	15:57 (T40)
26	06:05		06:48		19:31 (T42)	07:31		08:16		08:03		08:31		15:32 (T40)
	21:28		20:37	35	20:06 (T42)	19:33		18:31		16:50		16:49	26	15:58 (T40)
27	06:07		06:49		19:30 (T42)	07:33		08:17		08:05		08:32		15:32 (T40)
	21:27		20:35	35	20:05 (T42)	19:31		18:30		16:50		16:50	27	15:59 (T40)
28	06:08		06:50		19:30 (T42)	07:34		08:19		08:06		08:32		15:33 (T40)
	21:25		20:33	34	20:04 (T42)	19:29		18:28		16:49		16:51	26	15:59 (T40)
29	06:09		06:52		19:31 (T42)	07:35		08:20		08:08		08:32		15:33 (T40)
	21:24		20:31	33	20:04 (T42)	19:27		18:26		16:48		16:52	26	15:59 (T40)
30	06:11		06:53		19:31 (T42)	07:37		08:22		08:09		15:32 (T40)	08:32	15:34 (T40)
	21:23		20:29	31	20:02 (T42)	19:24		18:25		16:48	4	15:36 (T40)	16:52	25 15:59 (T40)
31	06:12		06:55		19:32 (T42)			08:24					08:32	15:35 (T40)
	21:21		20:27	28	20:00 (T42)			18:23					16:53	25 16:00 (T40)
Potential sun hours	487		445		379			336		277			260	
Total, worst case				663		81				4				727
Sun reduction				0.72		0.69				0.44				0.44
Oper. time red.				0.98		0.98				0.98				0.98
Wind dir. red.				0.69		0.69				0.60				0.60
Total reduction				0.48		0.46				0.25				0.25
Total, real				317		37				1				184

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

Description:

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wind@eapc.net

Calculated:
1/14/2015 4:45 PM/2.9.285

SHADOW - Calendar

Calculation: V117-3.3 91.5 HH Shadow Rev 8 w/ Alts, No Obstacles **Shadow receptor:** H18 - Shadow Receptor: 1.0 × 1.0 Azimuth: 0.0° Slope: 90.0° (185)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BISMARCK]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4.92	5.13	7.45	8.03	10.20	11.21	11.69	10.35	8.68	5.69	4.02	3.69

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
524	474	586	541	606	835	754	637	557	1,091	1,182	765	8,552

Idle start wind speed: Cut in wind speed from power curve

	January		February		March	April		May		June	
1	08:32		16:03 (T41)	08:10	16:05 (T41)	07:23	07:19	06:21		20:05 (T42)	05:43
	16:55	20	16:23 (T41)	17:37 38	16:43 (T41)	18:21	20:08	20:52	12	20:17 (T42)	21:32
2	08:32		16:03 (T41)	08:09	16:07 (T41)	07:21	07:17	06:20		20:07 (T42)	05:42
	16:55	21	16:24 (T41)	17:39 36	16:43 (T41)	18:23	20:10	20:54	9	20:16 (T42)	21:33
3	08:32		16:03 (T41)	08:07	16:07 (T41)	07:19	07:15	06:18			05:41
	16:57	22	16:25 (T41)	17:41 35	16:42 (T41)	18:24	20:11	20:55			21:34
4	08:32		16:02 (T41)	08:06	16:08 (T41)	07:17	07:13	06:16			05:41
	16:58	24	16:26 (T41)	17:42 33	16:41 (T41)	18:26	20:13	20:57			21:35
5	08:32		16:02 (T41)	08:05	16:09 (T41)	07:15	07:11	06:15			05:40
	16:59	25	16:27 (T41)	17:44 31	16:40 (T41)	18:27	20:14	20:58			21:36
6	08:32		16:02 (T41)	08:03	16:11 (T41)	07:13	07:09	06:13			05:40
	17:00	27	16:29 (T41)	17:46 29	16:40 (T41)	18:29	20:16	20:59			21:37
7	08:31		16:01 (T41)	08:02	16:12 (T41)	07:11	07:07	06:12			05:39
	17:01	28	16:29 (T41)	17:47 26	16:38 (T41)	18:31	20:17	21:01			21:38
8	08:31		16:02 (T41)	08:00	16:15 (T41)	08:09	07:05	06:10			05:39
	17:02	29	16:31 (T41)	17:49 22	16:37 (T41)	18:32	20:19	21:02			21:39
9	08:31		16:02 (T41)	07:59	16:17 (T41)	08:07	07:03	06:09			05:38
	17:03	31	16:33 (T41)	17:50 17	16:34 (T41)	19:34	20:20	21:04			21:39
10	08:30		16:02 (T41)	07:57	16:20 (T41)	08:05	07:01	06:07			05:38
	17:05	32	16:34 (T41)	17:52 10	16:30 (T41)	19:35	20:21	21:05			21:40
11	08:30		16:01 (T41)	07:55		08:03	06:59	06:06			05:38
	17:06	33	16:34 (T41)	17:54		19:37	20:23	21:06			21:41
12	08:29		16:02 (T41)	07:54		08:01	06:57	06:04			05:37
	17:07	34	16:36 (T41)	17:55		19:38	20:24	21:08			21:41
13	08:29		16:01 (T41)	07:52		07:59	06:55	06:03			05:37
	17:09	35	16:36 (T41)	17:57		19:40	20:26	21:09			21:42
14	08:28		16:01 (T41)	07:50	17:31 (T40)	07:57	06:53	06:01			05:37
	17:10	36	16:37 (T41)	17:59 1	17:32 (T40)	19:41	20:27	21:11			21:43
15	08:28		16:02 (T41)	07:49	17:30 (T40)	07:55	06:51	06:00			05:37
	17:11	36	16:38 (T41)	18:00 4	17:34 (T40)	19:43	20:29	21:12			21:43
16	08:27		16:02 (T41)	07:47	17:29 (T40)	07:53	06:49	05:59			05:37
	17:13	37	16:39 (T41)	18:00 7	17:36 (T40)	19:44	20:30	21:13			21:44
17	08:26		16:01 (T41)	07:45	17:27 (T40)	07:50	06:47	05:57			05:37
	17:14	39	16:40 (T41)	18:02 10	17:37 (T40)	19:46	20:32	21:15			21:44
18	08:25		16:01 (T41)	07:43	17:27 (T40)	07:48	06:45	05:56			05:37
	17:16	39	16:40 (T41)	18:04 12	17:39 (T40)	19:47	20:33	21:16			21:44
19	08:24		16:01 (T41)	07:42	17:26 (T40)	07:46	06:43	20:08 (T42)	05:55		05:37
	17:17	40	16:41 (T41)	18:05 15	17:41 (T40)	19:49	20:35 2	20:10 (T42)	21:17		21:45
20	08:24		16:01 (T41)	07:40	17:27 (T40)	07:44	06:41	20:06 (T42)	05:54		05:37
	17:19	40	16:41 (T41)	18:07 16	17:43 (T40)	19:50	20:36 6	20:12 (T42)	21:18		21:45
21	08:23		16:02 (T41)	07:38	17:26 (T40)	07:42	06:39	20:05 (T42)	05:53		05:37
	17:20	40	16:42 (T41)	18:08 19	17:45 (T40)	19:52	20:38 9	20:14 (T42)	21:20		21:45
22	08:22		16:02 (T41)	07:36	17:26 (T40)	07:40	06:37	20:04 (T42)	05:52		05:38
	17:22	40	16:42 (T41)	18:10 20	17:46 (T40)	19:53	20:39 11	20:15 (T42)	21:21		21:46
23	08:21		16:02 (T41)	07:34	17:27 (T40)	07:38	06:36	20:03 (T42)	05:50		05:38
	17:23	41	16:43 (T41)	18:12 19	17:46 (T40)	19:55	20:41 13	20:16 (T42)	21:22		21:46
24	08:20		16:02 (T41)	07:32	17:27 (T40)	07:36	06:34	20:02 (T42)	05:49		05:38
	17:25	41	16:43 (T41)	18:13 18	17:45 (T40)	19:56	20:42 15	20:17 (T42)	21:23		21:46
25	08:19		16:03 (T41)	07:31	17:28 (T40)	07:34	06:32	20:02 (T42)	05:48		05:38
	17:26	41	16:44 (T41)	18:15 16	17:44 (T40)	19:58	20:44 16	20:18 (T42)	21:25		21:46
26	08:18		16:02 (T41)	07:29	17:30 (T40)	07:32	06:30	20:03 (T42)	05:47		05:39
	17:28	41	16:43 (T41)	18:16 12	17:42 (T40)	19:59	20:45 18	20:21 (T42)	21:26		21:46
27	08:16		16:03 (T41)	07:27	17:33 (T40)	07:30	06:28	20:02 (T42)	05:47		05:39
	17:29	40	16:43 (T41)	18:18 6	17:39 (T40)	20:01	20:46 20	20:22 (T42)	21:27		21:46
28	08:15		16:04 (T41)	07:25		07:28	06:27	20:02 (T42)	05:46		05:40
	17:31	40	16:44 (T41)	18:20		20:02	20:48 19	20:21 (T42)	21:28		21:46
29	08:14		16:03 (T41)			07:25	06:25	20:04 (T42)	05:45		05:40
	17:33	40	16:43 (T41)			20:04	20:49 17	20:21 (T42)	21:29		21:46
30	08:13		16:04 (T41)			07:23	06:23	20:04 (T42)	05:44		05:41
	17:34	39	16:43 (T41)			20:05	20:51 15	20:19 (T42)	21:30		21:46
31	08:11		16:05 (T41)			07:21			05:43		
	17:36	38	16:43 (T41)			20:07			21:31		
Potential sun hours	273		285			368	410		472		482
Total, worst case		1069		452			161		21		
Sun reduction		0.56		0.50			0.59		0.67		
Oper. time red.		0.98		0.98			0.98		0.98		
Wind dir. red.		0.61		0.63			0.68		0.68		
Total reduction		0.33		0.31			0.39		0.44		
Total, real		356		139			63		9		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

Description:

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1/20/2015 1:58 PM / 20
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Calculated:
1/14/2015 4:45 PM/2.9.285

SHADOW - Calendar

Calculation: V117-3.3 91.5 HH Shadow Rev 8 w/ Alts, No Obstacles **Shadow receptor:** H18 - Shadow Receptor: 1.0 × 1.0 Azimuth: 0.0° Slope: 90.0° (185)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BISMARCK]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4.92	5.13	7.45	8.03	10.20	11.21	11.69	10.35	8.68	5.69	4.02	3.69

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
524	474	586	541	606	835	754	637	557	1,091	1,182	765	8,552

Idle start wind speed: Cut in wind speed from power curve

	July		August		September		October		November		December	
1	05:41		06:13		06:56		07:38		07:25		08:10	
	21:46		21:20		20:25		19:22		17:21	12	16:47	33
2	05:42		06:14		06:57		07:40		07:27		08:11	
	21:46		21:18		20:23		19:20		17:20	18	16:47	32
3	05:43		06:16		06:59		07:41		07:28		08:13	
	21:45		21:17		20:21		19:18		17:18	23	16:46	31
4	05:43		06:17		07:00		07:43		07:30		08:14	
	21:45		21:15		20:19		19:16		17:16	26	16:46	29
5	05:44		06:19		07:02		07:44		07:31		08:15	
	21:45		21:14		20:17		19:14		17:15	29	16:45	28
6	05:45		06:20		07:03		07:46		07:33		08:16	
	21:44		21:12		20:15		19:12		17:13	31	16:45	27
7	05:45		06:21		07:04		07:47		07:35		08:17	
	21:44		21:11		20:13		19:10		17:12	33	16:45	25
8	05:46		06:23		07:06		07:48		07:36		08:18	
	21:43		21:09		20:11		19:08		17:10	34	16:45	24
9	05:47		06:24		07:07		07:50		07:38		08:19	
	21:43		21:08		20:09		19:06		17:09	37	16:44	23
10	05:48		06:25	20:19 (T42)	07:09		07:51		07:39		08:20	
	21:42		21:06	2 20:21 (T42)	20:07		19:04		17:08	37	16:44	21
11	05:49		06:27	20:15 (T42)	07:10		07:53		07:41		08:21	
	21:42		21:04	10 20:25 (T42)	20:05		19:02		17:06	38	16:44	20
12	05:50		06:28	20:13 (T42)	07:11		07:54		07:42		08:22	
	21:41		21:03	13 20:26 (T42)	20:02		19:00		17:05	39	16:44	19
13	05:51		06:29	20:11 (T42)	07:13		07:56		07:44		08:23	
	21:40		21:01	16 20:27 (T42)	20:00		18:56		17:04	40	16:44	18
14	05:52		06:31	20:11 (T42)	07:14		07:57		07:46		08:24	
	21:40		20:59	17 20:28 (T42)	19:58		18:54		17:02	40	16:44	17
15	05:53		06:32	20:10 (T42)	07:16		07:59	18:04 (T40)	07:47		08:25	
	21:39		20:57	19 20:29 (T42)	19:56		18:52	8 18:12 (T40)	17:01	40	16:44	17
16	05:54		06:34	20:09 (T42)	07:17		08:00	18:01 (T40)	07:49		08:26	
	21:38		20:56	19 20:28 (T42)	19:54		18:50	14 18:15 (T40)	17:00	41	16:45	16
17	05:55		06:35	20:09 (T42)	07:18		08:02	17:59 (T40)	07:50		08:27	
	21:37		20:54	18 20:27 (T42)	19:52		18:48	16 18:15 (T40)	16:59	41	16:47	15
18	05:56		06:36	20:09 (T42)	07:20		08:03	17:58 (T40)	07:52		08:27	
	21:36		20:52	16 20:25 (T42)	19:50		18:46	19 18:17 (T40)	16:58	41	16:47	15
19	05:57		06:38	20:08 (T42)	07:21		08:05	17:58 (T40)	07:53		08:28	
	21:35		20:50	15 20:23 (T42)	19:48		18:44	20 18:18 (T40)	16:57	41	16:46	15
20	05:58		06:39	20:09 (T42)	07:23		08:06	17:57 (T40)	07:55		08:29	
	21:34		20:48	13 20:22 (T42)	19:46		18:42	19 18:16 (T40)	16:56	40	16:46	14
21	05:59		06:41	20:09 (T42)	07:24		08:08	17:57 (T40)	07:56		08:29	
	21:33		20:47	10 20:19 (T42)	19:43		18:40	18 18:15 (T40)	16:55	40	16:46	14
22	06:01		06:42	20:09 (T42)	07:25		08:10	17:56 (T40)	07:58		08:30	
	21:32		20:45	8 20:17 (T42)	19:41		18:39	16 18:12 (T40)	16:54	40	16:47	14
23	06:02		06:43	20:11 (T42)	07:27		08:11	17:57 (T40)	07:59		08:30	
	21:31		20:43	5 20:16 (T42)	19:39		18:37	13 18:10 (T40)	16:53	40	16:47	14
24	06:03		06:45	20:12 (T42)	07:28		08:13	17:57 (T40)	08:01		08:31	
	21:30		20:41	2 20:14 (T42)	19:37		18:35	12 18:09 (T40)	16:52	39	16:48	14
25	06:04		06:46		07:30		08:14	17:57 (T40)	08:02		08:31	
	21:29		20:39		19:35		18:33	9 18:06 (T40)	16:51	39	16:49	15
26	06:05		06:48		07:31		08:16	17:58 (T40)	08:03		08:31	
	21:28		20:37		19:33		18:31	7 18:05 (T40)	16:50	37	16:49	15
27	06:07		06:49		07:33		08:17	18:00 (T40)	08:05		08:32	
	21:26		20:35		19:31		18:30	3 18:03 (T40)	16:50	37	16:50	16
28	06:08		06:50		07:34		08:19		08:06		08:32	
	21:25		20:33		19:29		18:28		16:49	36	16:51	16
29	06:09		06:52		07:35		08:20		08:07		08:32	
	21:24		20:31		19:27		18:26		16:48	35	16:52	17
30	06:11		06:53		07:37		08:22		08:09		08:32	
	21:23		20:29		19:24		18:25		16:48	34	16:52	18
31	06:12		06:55				08:24				08:32	
	21:21		20:27				18:23				16:53	19
Potential sun hours	487		445		379		336		277		260	
Total, worst case			183				174		1058		611	
Sun reduction			0.72				0.52		0.44		0.44	
Oper. time red.			0.98				0.98		0.98		0.98	
Wind dir. red.			0.68				0.65		0.61		0.61	
Total reduction			0.48				0.33		0.26		0.26	
Total, real			87				58		275		161	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
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wind@eapc.net
Calculated:
1/14/2015 4:45 PM/2.9.285

SHADOW - Calendar

Calculation: V117-3.3 91.5 HH Shadow Rev 8 w/ Alts, No Obstacles **Shadow receptor:** H19 - Shadow Receptor: 1.0 × 1.0 Azimuth: 0.0° Slope: 90.0° (186)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BISMARCK]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4.92	5.13	7.45	8.03	10.20	11.21	11.69	10.35	8.68	5.69	4.02	3.69

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
524	474	586	541	606	835	754	637	557	1,091	1,182	765	8,552

Idle start wind speed: Cut in wind speed from power curve

January			February			March			April			May			June		
1	08:33		08:10		08:35 (T56 Alt)	07:23			07:19			06:21			05:43		
	16:55		17:38	19	08:54 (T56 Alt)	18:21			20:08			20:52			21:33		
2	08:33		08:09		08:33 (T56 Alt)	07:21			07:17			06:20			05:42		
	16:56		17:39	21	08:54 (T56 Alt)	18:23			20:10			20:54			21:33		
3	08:32		08:08		08:32 (T56 Alt)	07:19			07:15			06:18			05:41		
	16:57		17:41	23	08:55 (T56 Alt)	18:24			20:11			20:55			21:34		
4	08:32		08:06		08:30 (T56 Alt)	07:17		07:39 (T46)	07:13			06:16			05:41		
	16:58		17:42	25	08:55 (T56 Alt)	18:26	4	07:43 (T46)	20:13			20:57			21:35		
5	08:32		08:05		08:29 (T56 Alt)	07:15		07:37 (T46)	07:11			06:15		06:38 (T47)	05:40		
	16:59		17:44	27	08:56 (T56 Alt)	18:28	7	07:44 (T46)	20:14			20:58	3	06:41 (T47)	21:36		
6	08:32		08:03		08:28 (T56 Alt)	07:13		07:35 (T46)	07:09			06:13		06:37 (T47)	05:40		
	17:00		17:46	28	08:56 (T56 Alt)	18:29	10	07:45 (T46)	20:16			21:00	7	06:44 (T47)	21:37		
7	08:32		08:02		08:27 (T56 Alt)	07:11		07:33 (T46)	07:07			06:12		06:35 (T47)	05:39		
	17:01		17:47	29	08:56 (T56 Alt)	18:31	12	07:45 (T46)	20:17			21:01	10	06:45 (T47)	21:38		
8	08:31		08:00		08:28 (T56 Alt)	08:09		08:31 (T46)	07:05			06:10		06:34 (T47)	05:39		
	17:02		17:49	28	08:56 (T56 Alt)	18:32	14	08:45 (T46)	20:19			21:03	12	06:46 (T47)	21:39		
9	08:31		07:59		08:28 (T56 Alt)	08:07		08:29 (T46)	07:03			06:09		06:32 (T47)	05:38		
	17:03		17:51	28	08:56 (T56 Alt)	19:34	16	08:45 (T46)	20:20			21:04	15	06:47 (T47)	21:40		
10	08:31		07:57		08:29 (T56 Alt)	08:05		08:27 (T46)	07:01			06:07		06:31 (T47)	05:38		
	17:05		17:52	27	08:56 (T56 Alt)	19:35	17	08:44 (T46)	20:22			21:05	17	06:48 (T47)	21:40		
11	08:30		07:56		08:29 (T56 Alt)	08:03		08:27 (T46)	06:59			06:06		06:29 (T47)	05:38		
	17:06		17:54	26	08:55 (T56 Alt)	19:37	16	08:43 (T46)	20:23			21:07	19	06:48 (T47)	21:41		
12	08:30		07:54		08:30 (T56 Alt)	08:01		08:28 (T46)	06:57			06:04		06:28 (T47)	05:38		
	17:07		17:56	24	08:54 (T56 Alt)	19:38	14	08:42 (T46)	20:25			21:08	20	06:48 (T47)	21:42		
13	08:29		07:52		08:30 (T56 Alt)	07:59		08:30 (T46)	06:55			06:03		06:27 (T47)	05:37		
	17:09		17:57	23	08:53 (T56 Alt)	19:40	10	08:40 (T46)	20:26			21:09	22	06:49 (T47)	21:42		
14	08:28		07:51		08:32 (T56 Alt)	07:57			06:53			06:01		06:26 (T47)	05:37		
	17:10		17:59	21	08:53 (T56 Alt)	19:41			20:28			21:11	23	06:49 (T47)	21:43		
15	08:28		07:49		08:34 (T56 Alt)	07:55			06:51			06:00		06:24 (T47)	05:37		
	17:11		18:00	17	08:51 (T56 Alt)	19:43			20:29			21:12	25	06:49 (T47)	21:43		
16	08:27		07:47		08:36 (T56 Alt)	07:53			06:49			05:59		06:24 (T47)	05:37		
	17:13		18:00	12	08:48 (T56 Alt)	19:44			20:30			21:14	25	06:49 (T47)	21:44		
17	08:26		07:45		08:40 (T56 Alt)	07:51			06:47			05:58		06:24 (T47)	05:37		
	17:14		18:02	4	08:44 (T56 Alt)	19:46			20:32			21:15	25	06:49 (T47)	21:44		
18	08:26		07:44			07:49			06:45			05:56		06:25 (T47)	05:37		
	17:16		18:04			19:47			20:33			21:16	24	06:49 (T47)	21:45		
19	08:25		07:42			07:46			06:43			05:55		06:25 (T47)	05:37		
	17:17		18:05			19:49			20:35			21:17	24	06:49 (T47)	21:45		
20	08:24		07:40			07:44			06:41			05:54		06:25 (T47)	05:37		
	17:19		18:07			19:50			20:36			21:19	24	06:49 (T47)	21:45		
21	08:23		07:38			07:42			06:39			05:53		06:26 (T47)	05:37		
	17:20		18:09			19:52			20:38			21:20	23	06:49 (T47)	21:46		
22	08:22		07:36			07:40			06:38			05:52		06:26 (T47)	05:38		
	17:22		18:10			19:53			20:39			21:21	22	06:48 (T47)	21:46		
23	08:21		07:34			07:38			06:36			05:51		06:27 (T47)	05:38		
	17:23		18:12			19:55			20:41			21:22	21	06:48 (T47)	21:46		
24	08:20		07:33			07:36			06:34			05:49		06:27 (T47)	05:38		
	17:25		18:13			19:56			20:42			21:24	20	06:47 (T47)	21:46		
25	08:19		07:31			07:34			06:32			05:48		06:28 (T47)	05:38		
	17:26		18:15			19:58			20:44			21:25	19	06:47 (T47)	21:46		
26	08:18		08:43 (T56 Alt)	07:29		07:32			06:30			05:48		06:29 (T47)	05:39		
	17:28	1	08:44 (T56 Alt)	18:17		19:59			20:45			21:26	17	06:46 (T47)	21:46		
27	08:17		08:41 (T56 Alt)	07:27		07:30			06:28			05:47		06:29 (T47)	05:39		
	17:29	5	08:46 (T56 Alt)	18:18		20:01			20:47			21:27	16	06:45 (T47)	21:47		
28	08:15		08:40 (T56 Alt)	07:25		07:28			06:27			05:46		06:30 (T47)	05:40		
	17:31	9	08:49 (T56 Alt)	18:20		20:02			20:48			21:28	14	06:44 (T47)	21:46		
29	08:14		08:39 (T56 Alt)			07:26			06:25			05:45		06:32 (T47)	05:40		
	17:33	11	08:50 (T56 Alt)			20:04			20:50			21:29	12	06:44 (T47)	21:46		
30	08:13		08:37 (T56 Alt)			07:24			06:23			05:44		06:33 (T47)	05:41		
	17:34	14	08:51 (T56 Alt)			20:05			20:51			21:30	9	06:42 (T47)	21:46		
31	08:12		08:36 (T56 Alt)			07:21						05:43		06:35 (T47)			
	17:36	17	08:53 (T56 Alt)			20:07						21:31	5	06:40 (T47)			
Potential sun hours	273			285		368			410			472			482		
Total, worst case	57			382		120						473					
Sun reduction	0.56			0.50		0.63						0.67					
Oper. time red.	0.98			0.98		0.98						0.98					
Wind dir. red.	0.69			0.69		0.68						0.65					
Total reduction	0.38			0.34		0.42						0.43					
Total, real	22			131		50						202					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

Description:

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1/20/2015 1:58 PM / 22
Licensed user:
EAPC Wind Energy
3100 DeMers Avenue
US-GRAND FORKS, ND 58201
+1 701 775 3000
wind@eapc.net
Calculated:
1/14/2015 4:45 PM/2.9.285

SHADOW - Calendar

Calculation: V117-3.3 91.5 HH Shadow Rev 8 w/ Alts, No Obstacles **Shadow receptor:** H19 - Shadow Receptor: 1.0 × 1.0 Azimuth: 0.0° Slope: 90.0° (186)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BISMARCK]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4.92	5.13	7.45	8.03	10.20	11.21	11.69	10.35	8.68	5.69	4.02	3.69

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
524	474	586	541	606	835	754	637	557	1,091	1,182	765	8,552

Idle start wind speed: Cut in wind speed from power curve

	July		August		September		October		November		December	
1	05:41		06:13		06:39 (T47)	06:56	07:38		08:08 (T46)	07:25	07:58 (T56 Alt)	08:10
	21:46		21:20	20	06:59 (T47)	20:25	19:23	12	08:20 (T46)	17:21	27 08:25 (T56 Alt)	16:47
2	05:42		06:15		06:40 (T47)	06:58	07:40		08:06 (T46)	07:27	07:58 (T56 Alt)	08:12
	21:46		21:19	18	06:58 (T47)	20:23	19:20	16	08:22 (T46)	17:20	28 08:26 (T56 Alt)	16:47
3	05:43		06:16		06:42 (T47)	06:59	07:41		08:05 (T46)	07:29	07:58 (T56 Alt)	08:13
	21:46		21:17	16	06:58 (T47)	20:21	19:18	17	08:22 (T46)	17:18	28 08:26 (T56 Alt)	16:46
4	05:43		06:17		06:43 (T47)	07:00	07:43		08:06 (T46)	07:30	07:57 (T56 Alt)	08:14
	21:45		21:16	14	06:57 (T47)	20:19	19:16	16	08:22 (T46)	17:17	29 08:26 (T56 Alt)	16:46
5	05:44		06:19		06:44 (T47)	07:02	07:44		08:07 (T46)	07:32	07:57 (T56 Alt)	08:15
	21:45		21:14	12	06:56 (T47)	20:17	19:14	15	08:22 (T46)	17:15	29 08:26 (T56 Alt)	16:45
6	05:45		06:20		06:45 (T47)	07:03	07:46		08:09 (T46)	07:33	07:59 (T56 Alt)	08:16
	21:45		21:13	9	06:54 (T47)	20:15	19:12	13	08:22 (T46)	17:13	27 08:26 (T56 Alt)	16:45
7	05:46		06:21		06:47 (T47)	07:05	07:47		08:10 (T46)	07:35	08:01 (T56 Alt)	08:18
	21:44		21:11	6	06:53 (T47)	20:13	19:10	11	08:21 (T46)	17:12	25 08:26 (T56 Alt)	16:45
8	05:46		06:23			07:06	07:49		08:12 (T46)	07:36	08:02 (T56 Alt)	08:19
	21:44		21:09			20:11	19:08	8	08:20 (T46)	17:11	23 08:25 (T56 Alt)	16:45
9	05:47		06:24			07:07	07:50		08:13 (T46)	07:38	08:04 (T56 Alt)	08:20
	21:43		21:08			20:09	19:06	6	08:19 (T46)	17:09	21 08:25 (T56 Alt)	16:44
10	05:48		06:25			07:09	07:52		08:15 (T46)	07:40	08:06 (T56 Alt)	08:21
	21:43		21:06			20:07	19:04	2	08:17 (T46)	17:08	19 08:25 (T56 Alt)	16:44
11	05:49		06:27			07:10	07:53			07:41	08:07 (T56 Alt)	08:22
	21:42		21:05			20:05	19:02			17:06	16 08:23 (T56 Alt)	16:44
12	05:50		06:28			07:12	07:55			07:43	08:09 (T56 Alt)	08:23
	21:41		21:03			20:03	19:00			17:05	14 08:23 (T56 Alt)	16:44
13	05:51		06:42 (T47)	06:30		07:13	07:56			07:44	08:11 (T56 Alt)	08:24
	21:41	8	06:50 (T47)	21:01		20:00	18:56			17:04	11 08:22 (T56 Alt)	16:44
14	05:52		06:41 (T47)	06:31		07:14	07:58			07:46	08:12 (T56 Alt)	08:24
	21:40	11	06:52 (T47)	20:59		19:58	18:54			17:03	8 08:20 (T56 Alt)	16:44
15	05:53		06:40 (T47)	06:32		07:16	07:59			07:47	08:14 (T56 Alt)	08:25
	21:39	13	06:53 (T47)	20:58		19:56	18:52			17:01	5 08:19 (T56 Alt)	16:45
16	05:54		06:39 (T47)	06:34		07:17	08:01			07:49		08:26
	21:38	15	06:54 (T47)	20:56		19:54	18:50			17:00		16:45
17	05:55		06:38 (T47)	06:35		07:19	08:02			07:50		08:27
	21:37	17	06:55 (T47)	20:54		19:52	18:48			16:59		16:45
18	05:56		06:38 (T47)	06:37		07:20	08:04			07:52		08:28
	21:37	18	06:56 (T47)	20:52		19:50	18:46			16:58		16:45
19	05:57		06:37 (T47)	06:38		07:21	08:05			07:53		08:28
	21:36	20	06:57 (T47)	20:50		19:48	18:44			16:57		16:46
20	05:58		06:37 (T47)	06:39		07:23	08:07			07:55		08:29
	21:35	20	06:57 (T47)	20:49		19:46	18:42			16:56		16:46
21	06:00		06:36 (T47)	06:41		07:24	08:08			07:56		08:29
	21:34	22	06:58 (T47)	20:47		19:44	18:41			16:55		16:46
22	06:01		06:36 (T47)	06:42		07:26	08:10			07:58		08:30
	21:33	22	06:58 (T47)	20:45		19:41	18:39			16:54		16:47
23	06:02		06:35 (T47)	06:44		07:27	08:11			07:59		08:30
	21:31	23	06:58 (T47)	20:43		19:39	18:37			16:53		16:47
24	06:03		06:35 (T47)	06:45		07:28	08:13			08:01		08:31
	21:30	24	06:59 (T47)	20:41		19:37	18:35			16:52		16:48
25	06:04		06:35 (T47)	06:46		07:30	08:14		09:09 (T56 Alt)	08:02		08:31
	21:29	25	07:00 (T47)	20:39		19:35	18:33	7	09:16 (T56 Alt)	16:51		16:49
26	06:06		06:35 (T47)	06:48		07:31	08:16		09:04 (T56 Alt)	08:04		08:32
	21:28	25	07:00 (T47)	20:37		19:33	18:32	15	09:19 (T56 Alt)	16:50		16:49
27	06:07		06:35 (T47)	06:49		07:33	08:18		09:03 (T56 Alt)	08:05		08:32
	21:27	25	07:00 (T47)	20:35		19:31	18:30	18	09:21 (T56 Alt)	16:50		16:50
28	06:08		06:35 (T47)	06:51		07:34	08:19		09:02 (T56 Alt)	08:06		08:32
	21:25	25	07:00 (T47)	20:33		19:29	18:28	21	09:23 (T56 Alt)	16:49		16:51
29	06:09		06:35 (T47)	06:52		07:36	08:21		09:00 (T56 Alt)	08:08		08:32
	21:24	24	06:59 (T47)	20:31		19:27	18:26	23	09:23 (T56 Alt)	16:48		16:52
30	06:11		06:37 (T47)	06:53		07:37	08:11 (T46)	08:22	08:59 (T56 Alt)	08:09		08:32
	21:23	23	07:00 (T47)	20:29		19:25	7 08:18 (T46)	18:25	25 09:24 (T56 Alt)	16:48		16:52
31	06:12		06:38 (T47)	06:55				08:24	08:59 (T56 Alt)			08:32
	21:21	21	06:59 (T47)	20:27				18:23	26 09:25 (T56 Alt)			16:53
Potential sun hours	487		445		379		336		277			260
Total, worst case	381		95		7		251		310			
Sun reduction	0.74		0.72		0.69		0.52		0.44			
Oper. time red.	0.98		0.98		0.98		0.98		0.98			
Wind dir. red.	0.65		0.65		0.68		0.69		0.69			
Total reduction	0.47		0.46		0.46		0.35		0.29			
Total, real	181		44		3		89		91			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

Description:

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1/20/2015 1:58 PM / 23
Licensed user:
EAPC Wind Energy
3100 DeMers Avenue
US-GRAND FORKS, ND 58201
+1 701 775 3000
wind@eapc.net
Calculated:
1/14/2015 4:45 PM/2.9.285

SHADOW - Calendar

Calculation: V117-3.3 91.5 HH Shadow Rev 8 w/ Alts, No Obstacles **Shadow receptor:** H20 - Shadow Receptor: 1.0 × 1.0 Azimuth: 0.0° Slope: 90.0° (187)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BISMARCK]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4.92	5.13	7.45	8.03	10.20	11.21	11.69	10.35	8.68	5.69	4.02	3.69

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
524	474	586	541	606	835	754	637	557	1,091	1,182	765	8,552

Idle start wind speed: Cut in wind speed from power curve

	January		February		March		April	May	June	July	August	September	October		November	December
1	08:33		08:10		07:23	07:46 (T33)	07:19	06:22	05:43	05:41	06:13	06:56	07:39		07:25	08:10
	16:55		17:38		18:21	35 17:51 (T59 Alt)	20:08	20:53	21:33	21:46	21:20	20:25	19:23		17:21	16:47
2	08:33		08:09		07:21	07:46 (T33)	07:17	06:20	05:42	05:42	06:15	06:58	07:40		07:27	08:12
	16:56		17:39		18:23	31 17:49 (T59 Alt)	20:10	20:54	21:34	21:46	21:19	20:23	19:20		17:20	16:47
3	08:33		08:08		07:19	07:47 (T33)	07:15	06:18	05:41	05:43	06:16	06:59	07:41		07:29	08:13
	16:57		17:41		18:24	24 17:47 (T59 Alt)	20:11	20:55	21:35	21:46	21:17	20:21	19:18		17:18	16:46
4	08:32		08:06		07:17	07:49 (T33)	07:13	06:17	05:41	05:43	06:17	07:00	07:43		07:30	08:14
	16:58		17:42		18:26	11 08:00 (T33)	20:13	20:57	21:35	21:45	21:16	20:19	19:16		17:17	16:46
5	08:32		08:05		07:15	07:52 (T33)	07:11	06:15	05:40	05:44	06:19	07:02	07:44		07:32	08:15
	16:59		17:44		18:28	4 07:56 (T33)	20:14	20:58	21:36	21:45	21:14	20:17	19:14		17:15	16:46
6	08:32		08:03		07:13		07:09	06:13	05:40	05:45	06:20	07:03	07:46		07:33	08:16
	17:00		17:46		18:29		20:16	21:00	21:37	21:45	21:13	20:15	19:12		17:14	16:45
7	08:32		08:02		07:11		07:07	06:12	05:39	05:46	06:21	07:05	07:47		07:35	08:18
	17:01		17:47		18:31		20:17	21:01	21:38	21:44	21:11	20:13	19:10		17:12	16:45
8	08:31		08:00		08:09		07:05	06:10	05:39	05:46	06:23	07:06	07:49		07:36	08:19
	17:02		17:49		18:32		20:19	21:03	21:39	21:44	21:10	20:11	19:08		17:11	16:45
9	08:31		07:59		08:07		07:03	06:09	05:38	05:47	06:24	07:07	07:50	08:25 (T33)	07:38	08:20
	17:04		17:51		19:34		20:20	21:04	21:40	21:43	21:08	20:09	19:06	8 08:33 (T33)	17:09	16:45
10	08:31		07:57		08:05		07:01	06:07	05:38	05:48	06:25	07:09	07:52	08:23 (T33)	07:40	08:21
	17:05		17:52		19:35		20:22	21:05	21:40	21:43	21:06	20:07	19:04	17 18:19 (T59 Alt)	17:08	16:44
11	08:30		07:56		08:03		06:59	06:06	05:38	05:49	06:27	07:10	07:53	08:21 (T33)	07:41	08:22
	17:06		17:54		19:37		20:23	21:07	21:41	21:42	21:05	20:05	19:02	27 18:22 (T59 Alt)	17:06	16:44
12	08:30		07:54		08:01		06:57	06:04	05:38	05:50	06:28	07:12	07:55	08:20 (T33)	07:43	08:23
	17:07		17:56		19:38		20:25	21:08	21:42	21:41	21:03	20:03	19:00	32 18:24 (T59 Alt)	17:05	16:44
13	08:29		07:52		07:59		06:55	06:03	05:37	05:51	06:30	07:13	07:56	08:19 (T33)	07:44	08:24
	17:09		17:57		19:40		20:26	21:10	21:42	21:41	21:01	20:01	18:56	36 18:25 (T59 Alt)	17:04	16:44
14	08:28		07:51		07:57		06:53	06:02	05:37	05:52	06:31	07:14	07:58	08:21 (T33)	07:46	08:25
	17:10		17:59		19:41		20:28	21:11	21:43	21:40	20:59	19:58	18:54	37 18:26 (T59 Alt)	17:03	16:44
15	08:28		07:49		07:55		06:51	06:00	05:37	05:53	06:32	07:16	07:59	08:23 (T33)	07:47	08:25
	17:11		18:00		19:43		20:29	21:12	21:43	21:39	20:58	19:56	18:52	37 18:27 (T59 Alt)	17:01	16:45
16	08:27		07:47		07:53		06:49	05:59	05:37	05:54	06:34	07:17	08:01	08:24 (T33)	07:49	08:26
	17:13		18:00		19:45		20:31	21:14	21:44	21:38	20:56	19:54	18:50	33 18:24 (T59 Alt)	17:00	16:45
17	08:26		07:45		07:51		06:47	05:58	05:37	05:55	06:35	07:19	08:02	08:26 (T33)	07:50	08:27
	17:14		18:02		19:46		20:32	21:15	21:44	21:38	20:54	19:52	18:48	30 18:23 (T59 Alt)	16:59	16:45
18	08:26		07:44	17:38 (T59 Alt)	07:49		06:45	05:56	05:37	05:56	06:37	07:20	08:04	08:27 (T33)	07:52	08:28
	17:16		18:04	2 17:40 (T59 Alt)	19:48		20:34	21:16	21:45	21:37	20:52	19:50	18:46	25 18:20 (T59 Alt)	16:58	16:45
19	08:25		07:42	17:36 (T59 Alt)	07:47		06:43	05:55	05:37	05:57	06:38	07:21	08:05	08:29 (T33)	07:53	08:28
	17:17		18:05	5 17:41 (T59 Alt)	19:49		20:35	21:18	21:45	21:36	20:51	19:48	18:44	21 18:19 (T59 Alt)	16:57	16:46
20	08:24		07:40	17:35 (T59 Alt)	07:44		06:41	05:54	05:37	05:58	06:39	07:23	08:07	08:30 (T33)	07:55	08:29
	17:19		18:07	8 17:43 (T59 Alt)	19:51		20:36	21:19	21:46	21:35	20:49	19:46	18:43	14 18:16 (T59 Alt)	16:56	16:46
21	08:23		07:38	17:34 (T59 Alt)	07:42		06:39	05:53	05:37	06:00	06:41	07:24	08:08	18:05 (T59 Alt)	07:56	08:29
	17:20		18:09	11 17:45 (T59 Alt)	19:52		20:38	21:20	21:46	21:34	20:47	19:44	18:41	9 18:14 (T59 Alt)	16:55	16:46
22	08:22		07:36	07:59 (T33)	07:40		06:38	05:52	05:38	06:01	06:42	07:26	08:10	18:06 (T59 Alt)	07:58	08:30
	17:22		18:10	17 17:46 (T59 Alt)	19:54		20:39	21:21	21:46	21:33	20:45	19:42	18:39	7 18:13 (T59 Alt)	16:54	16:47
23	08:21		07:35	07:57 (T33)	07:38		06:36	05:51	05:38	06:02	06:44	07:27	08:11	18:06 (T59 Alt)	07:59	08:30
	17:23		18:12	22 17:48 (T59 Alt)	19:55		20:41	21:23	21:46	21:32	20:43	19:39	18:37	4 18:10 (T59 Alt)	16:53	16:48
24	08:20		07:33	07:55 (T33)	07:36		06:34	05:50	05:38	06:03	06:45	07:29	08:13	18:08 (T59 Alt)	08:01	08:31
	17:25		18:13	26 17:49 (T59 Alt)	19:57		20:42	21:24	21:46	21:30	20:41	19:37	18:35	1 18:09 (T59 Alt)	16:52	16:48
25	08:19		07:31	07:53 (T33)	07:34		06:32	05:49	05:39	06:04	06:46	07:30	08:14		08:02	08:31
	17:26		18:15	31 17:51 (T59 Alt)	19:58		20:44	21:25	21:46	21:29	20:39	19:35	18:33		16:51	16:49
26	08:18		07:29	07:51 (T33)	07:32		06:30	05:48	05:39	06:06	06:48	07:31	08:16		08:04	08:32
	17:28		18:17	35 17:53 (T59 Alt)	20:00		20:45	21:26	21:47	21:28	20:37	19:33	18:32		16:50	16:49
27	08:17		07:27	07:49 (T33)	07:30		06:28	05:47	05:39	06:07	06:49	07:33	08:18		08:05	08:32
	17:30		18:18	37 17:53 (T59 Alt)	20:01		20:47	21:27	21:47	21:27	20:35	19:31	18:30		16:50	16:50
28	08:16		07:25	07:47 (T33)	07:28		06:27	05:46	05:40	06:08	06:51	07:34	08:19		08:06	08:32
	17:31		18:20	36 17:52 (T59 Alt)	20:02		20:48	21:28	21:47	21:26	20:33	19:29	18:28		16:49	16:51
29	08:14				07:26		06:25	05:45	05:40	06:09	06:52	07:36	08:21		08:08	08:32
	17:33				20:04		20:50	21:29	21:46	21:24	20:31	19:27	18:26		16:48	16:52
30	08:13				07:24		06:23	05:44	05:41	06:11	06:53	07:37	08:22		08:09	08:32
	17:34				20:05		20:51	21:31	21:46	21:23	20:29	19:25	18:25		16:48	16:53
31	08:12				07:21			05:43		06:12	06:55		08:24			08:33
	17:36				20:07			21:32		21:22	20:27		18:23			16:53
Potential sun hours	273		285		368		410	472	482	487	445	379	336		277	260
Total, worst case				230		105								338		
Sun reduction				0.50		0.63								0.52		
Oper. time red.				0.98		0.98								0.98		
Wind dir. red.				0.66		0.67								0.66		
Total reduction				0.33		0.41								0.34		
Total, real				75		43								115		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

Description:

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1/20/2015 1:58 PM / 24
Licensed user:
EAPC Wind Energy
3100 DeMers Avenue
US-GRAND FORKS, ND 58201
+1 701 775 3000
wind@eapc.net
Calculated:
1/14/2015 4:45 PM/2.9.285

SHADOW - Calendar

Calculation: V117-3.3 91.5 HH Shadow Rev 8 w/ Alts, No Obstacles **Shadow receptor:** H21 - Shadow Receptor: 1.0 × 1.0 Azimuth: 0.0° Slope: 90.0° (188)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BISMARCK]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4.92	5.13	7.45	8.03	10.20	11.21	11.69	10.35	8.68	5.69	4.02	3.69

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
524	474	586	541	606	835	754	637	557	1,091	1,182	765	8,552

Idle start wind speed: Cut in wind speed from power curve

	January		February		March		April	May	June
1	08:33		08:11		08:35 (T58 Alt)	07:23	07:46 (T59 Alt)	07:20	06:22	05:43
	16:55		17:38	21	16:53 (T09)	18:21	5	07:51 (T59 Alt)	20:09	20:53	21:33
2	08:33		08:09		08:33 (T58 Alt)	07:21		07:44 (T59 Alt)	07:17	06:20	05:42
	16:56		17:39	16	16:48 (T09)	18:23	8	07:52 (T59 Alt)	20:10	20:54	21:34
3	08:33		08:08		08:32 (T58 Alt)	07:19		07:42 (T59 Alt)	07:15	06:18	05:41
	16:57		17:41	17	08:49 (T58 Alt)	18:25	11	07:53 (T59 Alt)	20:11	20:56	21:35
4	08:33		08:06		08:30 (T58 Alt)	07:17		07:40 (T59 Alt)	07:13	06:17	05:41
	16:58		17:43	24	17:15 (T10)	18:26	14	07:54 (T59 Alt)	20:13	20:57	21:36
5	08:32		08:05		08:29 (T58 Alt)	07:15		07:38 (T59 Alt)	07:11	06:15	05:40
	16:59		17:44	31	17:17 (T10)	18:28	16	07:54 (T59 Alt)	20:14	20:58	21:36
6	08:32		08:03		08:27 (T58 Alt)	07:13		07:35 (T59 Alt)	07:09	06:13	05:40
	17:00		17:46	37	17:18 (T10)	18:29	18	07:53 (T59 Alt)	20:16	21:00	21:37
7	08:32		08:02		08:26 (T58 Alt)	07:11		07:33 (T59 Alt)	07:07	06:12	05:39
	17:01		17:48	43	17:21 (T10)	18:31	20	07:53 (T59 Alt)	20:17	21:01	21:38
8	08:32		08:00		08:24 (T58 Alt)	08:09		08:31 (T59 Alt)	07:05	06:10	05:39
	17:02		17:49	47	17:22 (T10)	18:32	22	08:53 (T59 Alt)	20:19	21:03	21:39
9	08:31		07:59		08:22 (T58 Alt)	08:07		08:30 (T59 Alt)	07:03	06:09	05:39
	17:04		17:51	52	17:23 (T10)	19:34	22	08:52 (T59 Alt)	20:20	21:04	21:40
10	08:31		07:57		08:22 (T58 Alt)	08:05		08:30 (T59 Alt)	07:01	06:07	05:38
	17:05		17:52	56	17:26 (T10)	19:35	21	08:51 (T59 Alt)	20:22	21:06	21:40
11	08:30		07:56		08:21 (T58 Alt)	08:03		08:31 (T59 Alt)	06:59	06:06	05:38
	17:06		17:54	58	17:27 (T10)	19:37	19	08:50 (T59 Alt)	20:23	21:07	21:41
12	08:30		07:54		08:21 (T58 Alt)	08:01		08:32 (T59 Alt)	06:57	06:04	05:38
	17:08		17:56	61	17:29 (T10)	19:39	16	08:48 (T59 Alt)	20:25	21:08	21:42
13	08:29	16:38 (T09)	07:52		08:22 (T58 Alt)	07:59		08:34 (T59 Alt)	06:55	06:03	05:38
	17:09	1 16:39 (T09)	17:57	61	17:30 (T10)	19:40	12	08:46 (T59 Alt)	20:26	21:10	21:42
14	08:29	16:36 (T09)	07:51		08:22 (T58 Alt)	07:57		08:38 (T59 Alt)	06:53	06:02	05:37
	17:10	4 16:40 (T09)	17:59	61	17:30 (T10)	19:42	4	08:42 (T59 Alt)	20:28	21:11	21:43
15	08:28	16:36 (T09)	07:49		08:22 (T58 Alt)	07:55			06:51	06:00	05:37
	17:12	5 16:41 (T09)	18:01	59	17:29 (T10)	19:43			20:29	21:12	21:44
16	08:27	16:35 (T09)	07:47		08:22 (T58 Alt)	07:53			06:49	05:59	05:37
	17:13	7 16:42 (T09)	18:01	59	17:29 (T10)	19:45			20:31	21:14	21:44
17	08:27	16:35 (T09)	07:46		08:24 (T58 Alt)	07:51			06:47	05:58	05:37
	17:14	9 16:44 (T09)	18:02	57	17:30 (T10)	19:46			20:32	21:15	21:45
18	08:26	16:34 (T09)	07:44		08:24 (T58 Alt)	07:49			06:45	05:56	05:37
	17:16	11 16:45 (T09)	18:04	55	17:29 (T10)	19:48			20:34	21:16	21:45
19	08:25	16:34 (T09)	07:42		08:25 (T58 Alt)	07:47			06:43	05:55	05:37
	17:17	13 16:47 (T09)	18:05	51	17:28 (T10)	19:49			20:35	21:18	21:45
20	08:24	16:35 (T09)	07:40		08:26 (T58 Alt)	07:45			06:41	05:54	05:37
	17:19	15 16:50 (T09)	18:07	47	17:27 (T10)	19:51			20:37	21:19	21:46
21	08:23	16:34 (T09)	07:38		08:28 (T58 Alt)	07:42			06:40	05:53	05:38
	17:20	16 16:50 (T09)	18:09	41	17:26 (T10)	19:52			20:38	21:20	21:46
22	08:22	16:34 (T09)	07:37		08:30 (T58 Alt)	07:40			06:38	05:52	05:38
	17:22	18 16:52 (T09)	18:10	33	17:24 (T10)	19:54			20:40	21:21	21:46
23	08:21	16:34 (T09)	07:35		08:34 (T58 Alt)	07:38			06:36	05:51	05:38
	17:23	20 16:54 (T09)	18:12	20	17:22 (T10)	19:55			20:41	21:23	21:46
24	08:20	16:35 (T09)	07:33		17:10 (T10)	07:36			06:34	05:50	05:38
	17:25	20 16:55 (T09)	18:14	9	17:19 (T10)	19:57			20:42	21:24	21:47
25	08:19	16:35 (T09)	07:31			07:34			06:32	05:49	05:39
	17:27	21 16:56 (T09)	18:15			19:58			20:44	21:25	21:47
26	08:18	16:36 (T09)	07:29			07:32			06:30	05:48	05:39
	17:28	21 16:57 (T09)	18:17			20:00			20:45	21:26	21:47
27	08:17	16:37 (T09)	07:27			07:30			06:29	05:47	05:39
	17:30	20 16:57 (T09)	18:18			20:01			20:47	21:27	21:47
28	08:16	16:37 (T09)	07:25		07:48 (T59 Alt)	07:28			06:27	05:46	05:40
	17:31	19 16:56 (T09)	18:20	1	07:49 (T59 Alt)	20:03			20:48	21:28	21:47
29	08:14	16:38 (T09)				07:26			06:25	05:45	05:40
	17:33	18 16:56 (T09)				20:04			20:50	21:30	21:47
30	08:13	08:38 (T58 Alt)				07:24			06:23	05:44	05:41
	17:34	16 16:55 (T09)				20:06			20:51	21:31	21:46
31	08:12	08:36 (T58 Alt)				07:22				05:44	
	17:36	21 16:54 (T09)				20:07				21:32	
Potential sun hours	273		285			368		410	472	482	
Total, worst case		275		1017		208					
Sun reduction		0.56		0.50		0.63					
Oper. time red.		0.98		0.98		0.98					
Wind dir. red.		0.63		0.67		0.68					
Total reduction		0.34		0.33		0.42					
Total, real		94		336		87					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

Description:

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1/20/2015 1:58 PM / 25
Licensed user:
EAPC Wind Energy
3100 DeMers Avenue
US-GRAND FORKS, ND 58201
+1 701 775 3000
wind@eapc.net
Calculated:
1/14/2015 4:45 PM/2.9.285

SHADOW - Calendar

Calculation: V117-3.3 91.5 HH Shadow Rev 8 w/ Alts, No Obstacles **Shadow receptor:** H21 - Shadow Receptor: 1.0 × 1.0 Azimuth: 0.0° Slope: 90.0° (188)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BISMARCK]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4.92	5.13	7.45	8.03	10.20	11.21	11.69	10.35	8.68	5.69	4.02	3.69

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
524	474	586	541	606	835	754	637	557	1,091	1,182	765	8,552

Idle start wind speed: Cut in wind speed from power curve

	July		August		September		October			November			December	
1	05:42		06:13		06:56		07:39		08:12 (T59 Alt)	07:26		07:51 (T58 Alt)	08:11	
	21:46		21:20		20:25		19:23	14	08:26 (T59 Alt)	17:22	56	16:55 (T10)	16:47	
2	05:42		06:15		06:58		07:40		08:10 (T59 Alt)	07:27		07:52 (T58 Alt)	08:12	
	21:46		21:19		20:23		19:21	18	08:28 (T59 Alt)	17:20	52	16:53 (T10)	16:47	
3	05:43		06:16		06:59		07:42		08:09 (T59 Alt)	07:29		07:54 (T58 Alt)	08:13	
	21:46		21:17		20:21		19:19	20	08:29 (T59 Alt)	17:18	46	16:51 (T10)	16:46	
4	05:43		06:17		07:01		07:43		08:08 (T59 Alt)	07:30		07:56 (T58 Alt)	08:14	
	21:46		21:16		20:19		19:16	22	08:30 (T59 Alt)	17:17	42	16:50 (T10)	16:46	
5	05:44		06:19		07:02		07:44		08:07 (T59 Alt)	07:32		07:57 (T58 Alt)	08:15	
	21:45		21:14		20:17		19:14	22	08:29 (T59 Alt)	17:15	36	16:48 (T10)	16:46	
6	05:45		06:20		07:03		07:46		08:09 (T59 Alt)	07:33		07:59 (T58 Alt)	08:17	
	21:45		21:13		20:15		19:12	21	08:30 (T59 Alt)	17:14	30	16:46 (T10)	16:45	
7	05:46		06:22		07:05		07:47		08:10 (T59 Alt)	07:35		08:01 (T58 Alt)	08:18	
	21:44		21:11		20:13		19:10	19	08:29 (T59 Alt)	17:12	21	16:45 (T10)	16:45	
8	05:47		06:23		07:06		07:49		08:12 (T59 Alt)	07:37		08:02 (T58 Alt)	08:19	
	21:44		21:10		20:11		19:08	17	08:29 (T59 Alt)	17:11	17	08:19 (T58 Alt)	16:45	
9	05:47		06:24		07:08		07:50		08:13 (T59 Alt)	07:38		08:04 (T58 Alt)	08:20	
	21:43		21:08		20:09		19:06	15	08:28 (T59 Alt)	17:09	18	16:20 (T09)	16:45	
10	05:48		06:26		07:09		07:52		08:15 (T59 Alt)	07:40		08:06 (T58 Alt)	08:21	
	21:43		21:06		20:07		19:04	13	08:28 (T59 Alt)	17:08	21	16:24 (T09)	16:45	
11	05:49		06:27		07:10		07:53		08:16 (T59 Alt)	07:41		08:07 (T58 Alt)	08:22	
	21:42		21:05		20:05		19:02	10	08:26 (T59 Alt)	17:07	21	16:25 (T09)	16:44	
12	05:50		06:28		07:12		07:55		08:18 (T59 Alt)	07:43		08:09 (T58 Alt)	08:23	
	21:42		21:03		20:03		19:00	7	08:25 (T59 Alt)	17:05	17	16:26 (T09)	16:44	
13	05:51		06:30		07:13		07:56		08:20 (T59 Alt)	07:44		16:10 (T09)	08:24	
	21:41		21:01		20:01		18:56	3	08:23 (T59 Alt)	17:04	18	16:28 (T09)	16:45	
14	05:52		06:31		07:15		07:58			07:46		16:10 (T09)	08:25	
	21:40		21:00		19:59		18:54			17:03	19	16:29 (T09)	16:45	
15	05:53		06:33		07:16		07:59			07:48		16:09 (T09)	08:25	
	21:39		20:58		19:56		18:52			17:01	20	16:29 (T09)	16:45	
16	05:54		06:34		07:17		08:01			07:49		16:09 (T09)	08:26	
	21:39		20:56		19:54		18:50			17:00	20	16:29 (T09)	16:45	
17	05:55		06:35		07:19		08:02			07:51		16:08 (T09)	08:27	
	21:38		20:54		19:52		18:48			16:59	21	16:29 (T09)	16:45	
18	05:56		06:37		07:20		08:04		17:40 (T10)	07:52		16:09 (T09)	08:28	
	21:37		20:52		19:50		18:46	11	17:51 (T10)	16:58	20	16:29 (T09)	16:45	
19	05:57		06:38		07:22		08:05		09:03 (T58 Alt)	07:54		16:09 (T09)	08:28	
	21:36		20:51		19:48		18:45	26	17:54 (T10)	16:57	20	16:29 (T09)	16:46	
20	05:59		06:40		07:23		08:07		09:00 (T58 Alt)	07:55		16:09 (T09)	08:29	
	21:35		20:49		19:46		18:43	36	17:56 (T10)	16:56	18	16:27 (T09)	16:46	
21	06:00		06:41		07:24		08:08		08:57 (T58 Alt)	07:57		16:10 (T09)	08:30	
	21:34		20:47		19:44		18:41	44	17:57 (T10)	16:55	16	16:26 (T09)	16:47	
22	06:01		06:42		07:26		08:10		08:56 (T58 Alt)	07:58		16:11 (T09)	08:30	
	21:33		20:45		19:42		18:39	49	17:58 (T10)	16:54	15	16:26 (T09)	16:47	
23	06:02		06:44		07:27		08:11		08:54 (T58 Alt)	08:00		16:11 (T09)	08:31	
	21:32		20:43		19:40		18:37	52	17:58 (T10)	16:53	13	16:24 (T09)	16:48	
24	06:03		06:45		07:29		08:13		08:53 (T58 Alt)	08:01		16:12 (T09)	08:31	
	21:31		20:41		19:37		18:35	56	17:59 (T10)	16:52	11	16:23 (T09)	16:48	
25	06:05		06:47		07:30		08:15		08:53 (T58 Alt)	08:02		16:13 (T09)	08:31	
	21:29		20:39		19:35		18:33	57	17:59 (T10)	16:51	9	16:22 (T09)	16:49	
26	06:06		06:48		07:31		08:16		08:52 (T58 Alt)	08:04		16:14 (T09)	08:32	
	21:28		20:37		19:33		18:32	59	17:59 (T10)	16:51	8	16:22 (T09)	16:50	
27	06:07		06:49		07:33		08:18		08:51 (T58 Alt)	08:05		16:15 (T09)	08:32	
	21:27		20:35		19:31		18:30	61	17:59 (T10)	16:50	5	16:20 (T09)	16:50	
28	06:08		06:51		07:34		08:19		08:51 (T58 Alt)	08:07		16:16 (T09)	08:32	
	21:26		20:33		19:29		18:28	61	17:59 (T10)	16:49	4	16:20 (T09)	16:51	
29	06:10		06:52		07:36		08:21		08:50 (T58 Alt)	08:08		16:18 (T09)	08:32	
	21:24		20:31		19:27		18:27	61	17:58 (T10)	16:49	1	16:19 (T09)	16:52	
30	06:11		06:54		07:37		08:22		08:51 (T58 Alt)	08:09			08:33	
	21:23		20:29		19:25	10	08:25 (T59 Alt)	18:25	59	17:58 (T10)	16:48			16:53
31	06:12		06:55					08:24		08:51 (T58 Alt)				08:33
	21:22		20:27					18:23	59	17:57 (T10)				16:54
Potential sun hours	487		445		379			336			277			260
Total, worst case					10			892			615			
Sun reduction					0.69			0.52			0.44			
Oper. time red.					0.98			0.98			0.98			
Wind dir. red.					0.68			0.67			0.65			
Total reduction					0.46			0.34			0.28			
Total, real					5			307			171			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

Description:

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1/20/2015 1:58 PM / 26
Licensed user:
EAPC Wind Energy
3100 DeMers Avenue
US-GRAND FORKS, ND 58201
+1 701 775 3000
wind@eapc.net
Calculated:
1/14/2015 4:45 PM/2.9.285

SHADOW - Calendar

Calculation: V117-3.3 91.5 HH Shadow Rev 8 w/ Alts, No Obstacles **Shadow receptor:** H23 - Shadow Receptor: 1.0 × 1.0 Azimuth: 0.0° Slope: 90.0° (190)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BISMARCK]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4.92	5.13	7.45	8.03	10.20	11.21	11.69	10.35	8.68	5.69	4.02	3.69

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
524	474	586	541	606	835	754	637	557	1,091	1,182	765	8,552

Idle start wind speed: Cut in wind speed from power curve

	January		February	March	April	May	June	July	August	September	October	November		December	
1	08:33	09:01 (T10)	08:11	07:23	07:20	06:22	05:43	05:42	06:14	06:56	07:39	07:26		08:11	08:39 (T10)
	16:55 16	09:17 (T10)	17:38	18:22	20:09	20:53	21:33	21:46	21:20	20:26	19:23	17:22		16:47 25	09:04 (T10)
2	08:33	09:00 (T10)	08:09	07:21	07:18	06:20	05:42	05:42	06:15	06:58	07:40	07:27		08:12	08:40 (T10)
	16:56 16	09:16 (T10)	17:39	18:23	20:10	20:54	21:34	21:46	21:19	20:24	19:21	17:20		16:47 24	09:04 (T10)
3	08:33	09:00 (T10)	08:08	07:19	07:15	06:18	05:42	05:43	06:16	06:59	07:42	07:29		08:13	08:42 (T10)
	16:57 17	09:17 (T10)	17:41	18:25	20:12	20:56	21:35	21:46	21:17	20:22	19:19	17:18		16:46 23	09:05 (T10)
4	08:33	09:00 (T10)	08:06	07:17	07:13	06:17	05:41	05:44	06:18	07:01	07:43	07:30		08:14	08:43 (T10)
	16:58 18	09:18 (T10)	17:43	18:26	20:13	20:57	21:36	21:46	21:16	20:19	19:17	17:17		16:46 22	09:05 (T10)
5	08:32	09:00 (T10)	08:05	07:15	07:11	06:15	05:40	05:44	06:19	07:02	07:45	07:32		08:16	08:44 (T10)
	16:59 19	09:19 (T10)	17:44	18:28	20:15	20:59	21:37	21:45	21:14	20:17	19:14	17:15		16:46 21	09:05 (T10)
6	08:32	08:59 (T10)	08:04	07:13	07:09	06:14	05:40	05:45	06:20	07:03	07:46	07:34		08:17	08:45 (T10)
	17:00 20	09:19 (T10)	17:46	18:29	20:16	21:00	21:37	21:45	21:13	20:15	19:12	17:14		16:45 20	09:05 (T10)
7	08:32	08:59 (T10)	08:02	07:11	07:07	06:12	05:39	05:46	06:22	07:05	07:47	07:35		08:18	08:46 (T10)
	17:01 21	09:20 (T10)	17:48	18:31	20:17	21:01	21:38	21:45	21:11	20:13	19:10	17:12		16:45 19	09:05 (T10)
8	08:32	08:59 (T10)	08:01	08:09	07:05	06:10	05:39	05:47	06:23	07:06	07:49	07:37		08:19	08:48 (T10)
	17:03 22	09:21 (T10)	17:49	18:33	20:19	21:03	21:39	21:44	21:10	20:11	19:08	17:11		16:45 18	09:06 (T10)
9	08:31	08:58 (T10)	07:59	08:07	07:03	06:09	05:39	05:48	06:24	07:08	07:50	07:38		08:20	08:49 (T10)
	17:04 23	09:21 (T10)	17:51	19:34	20:20	21:04	21:40	21:43	21:08	20:09	19:06	17:09		16:45 17	09:06 (T10)
10	08:31	08:58 (T10)	07:57	08:05	07:01	06:07	05:38	05:48	06:26	07:09	07:52	07:40		08:21	08:50 (T10)
	17:05 24	09:22 (T10)	17:53	19:36	20:22	21:06	21:41	21:43	21:07	20:07	19:04	17:08		16:45 16	09:06 (T10)
11	08:30	08:57 (T10)	07:56	08:03	06:59	06:06	05:38	05:49	06:27	07:10	07:53	07:41		08:22	08:51 (T10)
	17:06 25	09:22 (T10)	17:54	19:37	20:23	21:07	21:41	21:42	21:05	20:05	19:02	17:07		16:45 16	09:07 (T10)
12	08:30	08:56 (T10)	07:54	08:01	06:57	06:05	05:38	05:50	06:28	07:12	07:55	07:43		08:23	08:52 (T10)
	17:08 27	09:23 (T10)	17:56	19:39	20:25	21:08	21:42	21:42	21:03	20:03	19:00	17:05		16:45 15	09:07 (T10)
13	08:29	08:57 (T10)	07:53	07:59	06:55	06:03	05:38	05:51	06:30	07:13	07:56	07:45		08:24	08:53 (T10)
	17:09 27	09:24 (T10)	17:57	19:40	20:26	21:10	21:43	21:41	21:01	20:01	18:56	17:04		16:45 14	09:07 (T10)
14	08:29	08:57 (T10)	07:51	07:57	06:53	06:02	05:37	05:52	06:31	07:15	07:58	07:46	08:45 (T10)	08:25	08:54 (T10)
	17:10 27	09:24 (T10)	17:59	19:42	20:28	21:11	21:43	21:40	21:00	19:59	18:54	17:03 4	08:49 (T10)	16:45 14	09:08 (T10)
15	08:28	08:57 (T10)	07:49	07:55	06:51	06:00	05:37	05:53	06:33	07:16	07:59	07:48	08:41 (T10)	08:26	08:54 (T10)
	17:12 27	09:24 (T10)	18:01	19:43	20:29	21:12	21:44	21:39	20:58	19:57	18:52	17:02 11	08:52 (T10)	16:45 13	09:07 (T10)
16	08:27	08:57 (T10)	07:47	07:53	06:49	05:59	05:37	05:54	06:34	07:17	08:01	07:49	08:39 (T10)	08:26	08:55 (T10)
	17:13 27	09:24 (T10)	18:01	19:45	20:31	21:14	21:44	21:39	20:56	19:54	18:50	17:00 15	08:54 (T10)	16:45 12	09:07 (T10)
17	08:27	08:58 (T10)	07:46	07:51	06:47	05:58	05:37	05:55	06:35	07:19	08:02	07:51	08:39 (T10)	08:27	08:56 (T10)
	17:15 26	09:24 (T10)	18:02	19:46	20:32	21:15	21:45	21:38	20:54	19:52	18:48	16:59 17	08:56 (T10)	16:45 12	09:08 (T10)
18	08:26	08:59 (T10)	07:44	07:49	06:45	05:57	05:37	05:56	06:37	07:20	08:04	07:52	08:37 (T10)	08:28	08:57 (T10)
	17:16 26	09:25 (T10)	18:04	19:48	20:34	21:16	21:45	21:37	20:53	19:50	18:47	16:58 20	08:57 (T10)	16:46 12	09:09 (T10)
19	08:25	09:00 (T10)	07:42	07:47	06:43	05:55	05:37	05:58	06:38	07:22	08:05	07:54	08:37 (T10)	08:28	08:57 (T10)
	17:17 25	09:25 (T10)	18:06	19:49	20:35	21:18	21:45	21:36	20:51	19:48	18:45	16:57 21	08:58 (T10)	16:46 11	09:08 (T10)
20	08:24	09:00 (T10)	07:40	07:45	06:42	05:54	05:38	05:59	06:40	07:23	08:07	07:55	08:36 (T10)	08:29	08:58 (T10)
	17:19 25	09:25 (T10)	18:07	19:51	20:37	21:19	21:46	21:35	20:49	19:46	18:43	16:56 23	08:59 (T10)	16:46 11	09:09 (T10)
21	08:23	09:01 (T10)	07:38	07:43	06:40	05:53	05:38	06:00	06:41	07:24	08:08	07:57	08:36 (T10)	08:30	08:58 (T10)
	17:20 24	09:25 (T10)	18:09	19:52	20:38	21:20	21:46	21:34	20:47	19:44	18:41	16:55 24	09:00 (T10)	16:47 11	09:09 (T10)
22	08:22	09:02 (T10)	07:37	07:40	06:38	05:52	05:38	06:01	06:42	07:26	08:10	07:58	08:36 (T10)	08:30	08:59 (T10)
	17:22 23	09:25 (T10)	18:10	19:54	20:40	21:22	21:46	21:33	20:45	19:42	18:39	16:54 25	09:01 (T10)	16:47 11	09:10 (T10)
23	08:21	09:02 (T10)	07:35	07:38	06:36	05:51	05:38	06:02	06:44	07:27	08:12	08:00	08:36 (T10)	08:31	08:59 (T10)
	17:24 21	09:23 (T10)	18:12	19:55	20:41	21:23	21:46	21:32	20:43	19:40	18:37	16:53 25	09:01 (T10)	16:48 11	09:10 (T10)
24	08:20	09:03 (T10)	07:33	07:36	06:34	05:50	05:38	06:03	06:45	07:29	08:13	08:01	08:36 (T10)	08:31	09:00 (T10)
	17:25 20	09:23 (T10)	18:14	19:57	20:43	21:24	21:47	21:31	20:41	19:38	18:35	16:52 26	09:02 (T10)	16:48 11	09:11 (T10)
25	08:19	09:05 (T10)	07:31	07:34	06:32	05:49	05:39	06:05	06:47	07:30	08:15	08:02	08:36 (T10)	08:31	09:00 (T10)
	17:27 17	09:22 (T10)	18:15	19:58	20:44	21:25	21:47	21:29	20:39	19:35	18:34	16:51 26	09:02 (T10)	16:49 12	09:12 (T10)
26	08:18	09:07 (T10)	07:29	07:32	06:30	05:48	05:39	06:06	06:48	07:32	08:16	08:04	08:36 (T10)	08:32	09:00 (T10)
	17:28 14	09:21 (T10)	18:17	20:00	20:45	21:26	21:47	21:28	20:37	19:33	18:32	16:51 27	09:03 (T10)	16:50 12	09:12 (T10)
27	08:17	09:09 (T10)	07:27	07:30	06:29	05:47	05:40	06:07	06:49	07:33	08:18	08:05	08:36 (T10)	08:32	09:00 (T10)
	17:30 11	09:20 (T10)	18:18	20:01	20:47	21:27	21:47	21:27	20:36	19:31	18:30	16:50 27	09:03 (T10)	16:50 12	09:12 (T10)
28	08:16	09:12 (T10)	07:25	07:28	06:27	05:46	05:40	06:08	06:51	07:34	08:19	08:07	08:37 (T10)	08:32	09:00 (T10)
	17:31 4	09:16 (T10)	18:20	20:03	20:48	21:29	21:47	21:26	20:34	19:29	18:28	16:49 27	09:04 (T10)	16:51 13	09:13 (T10)
29	08:15			07:26	06:25	05:45	05:41	06:10	06:52	07:36	08:21	08:08	08:37 (T10)	08:33	09:01 (T10)
	17:33			20:04	20:50	21:30	21:47	21:24	20:32	19:27	18:27	16:49 27	09:04 (T10)	16:52 13	09:14 (T10)
30	08:13			07:24	06:23	05:44	05:41	06:11	06:54	07:37	08:23	08:09	08:38 (T10)	08:33	09:01 (T10)
	17:35			20:06	20:51	21:31	21:47	21:23	20:30	19:25	18:25	16:48 27	09:05 (T10)	16:53 14	09:15 (T10)
31	08:12			07:22		05:44		06:12	06:55		08:24			08:33	09:01 (T10)
	17:36			20:07		21:32		21:22	20:28		18:23			16:54 15	09:16 (T10)
Potential sun hours	273		285	368	410	472	482	487	445	379	336	277		260	
Total, worst case		592											372		470
Sun reduction		0.56											0.44		0.44
Oper. time red.		0.98											0.98		0.98
Wind dir. red.		0.67											0.67		0.67
Total reduction		0.37											0.28		0.29
Total, real		217											106		136

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

Description:

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1/20/2015 1:58 PM / 27
Licensed user:
EAPC Wind Energy
3100 DeMers Avenue
US-GRAND FORKS, ND 58201
+1 701 775 3000
wind@eapc.net
Calculated:
1/14/2015 4:45 PM/2.9.285

SHADOW - Calendar

Calculation: V117-3.3 91.5 HH Shadow Rev 8 w/ Alts, No Obstacles **Shadow receptor:** H78 - Shadow Receptor: 1.0 × 1.0 Azimuth: 0.0° Slope: 90.0° (245)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BISMARCK]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4.92	5.13	7.45	8.03	10.20	11.21	11.69	10.35	8.68	5.69	4.02	3.69

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
524	474	586	541	606	835	754	637	557	1,091	1,182	765	8,552

Idle start wind speed: Cut in wind speed from power curve

	January			February	March	April	May	June	July	August	September	October	November	December		
1	08:33		12:11 (T47)	08:10	07:23	07:19	06:21	05:43	05:41	06:13	06:56	07:38	07:25	08:10		
	16:54	31	12:42 (T47)	17:37	18:21	20:08	20:52	21:32	21:46	21:20	20:25	19:22	17:21	16:47		
2	08:33		12:12 (T47)	08:09	07:21	07:17	06:20	05:42	05:42	06:15	06:57	07:40	07:27	08:12		
	16:55	29	12:41 (T47)	17:39	18:23	20:10	20:54	21:33	21:46	21:19	20:23	19:20	17:20	16:47		
3	08:32		12:14 (T47)	08:08	07:19	07:15	06:18	05:41	05:43	06:16	06:59	07:41	07:28	08:13		
	16:56	27	12:41 (T47)	17:41	18:24	20:11	20:55	21:34	21:46	21:17	20:21	19:18	17:18	16:46		
4	08:32		12:16 (T47)	08:06	07:17	07:13	06:16	05:41	05:43	06:17	07:00	07:43	07:30	08:14		
	16:58	24	12:40 (T47)	17:42	18:26	20:13	20:57	21:35	21:45	21:16	20:19	19:16	17:16	16:46		
5	08:32		12:17 (T47)	08:05	07:15	07:11	06:15	05:40	05:44	06:19	07:02	07:44	07:32	08:15		12:09 (T47)
	16:59	21	12:38 (T47)	17:44	18:27	20:14	20:58	21:36	21:45	21:14	20:17	19:14	17:15	16:45	11	12:20 (T47)
6	08:32		12:20 (T47)	08:03	07:13	07:09	06:13	05:40	05:45	06:20	07:03	07:46	07:33	08:16		12:06 (T47)
	17:00	17	12:37 (T47)	17:46	18:29	20:16	21:00	21:37	21:45	21:13	20:15	19:12	17:13	16:45	17	12:23 (T47)
7	08:32		12:23 (T47)	08:02	07:11	07:07	06:12	05:39	05:45	06:21	07:05	07:47	07:35	08:18		12:04 (T47)
	17:01	12	12:35 (T47)	17:47	18:31	20:17	21:01	21:38	21:44	21:11	20:13	19:10	17:12	16:45	21	12:25 (T47)
8	08:31			08:00	08:09	07:05	06:10	05:39	05:46	06:23	07:06	07:49	07:36	08:19		12:03 (T47)
	17:02			17:49	18:32	20:19	21:02	21:39	21:44	21:09	20:11	19:08	17:10	16:45	24	12:27 (T47)
9	08:31			07:59	08:07	07:03	06:09	05:38	05:47	06:24	07:07	07:50	07:38	08:20		12:02 (T47)
	17:03			17:51	19:34	20:20	21:04	21:40	21:43	21:08	20:09	19:06	17:09	16:44	27	12:29 (T47)
10	08:31			07:57	08:05	07:01	06:07	05:38	05:48	06:25	07:09	07:52	07:40	08:21		12:01 (T47)
	17:05			17:52	19:35	20:22	21:05	21:40	21:43	21:06	20:07	19:04	17:08	16:44	29	12:30 (T47)
11	08:30			07:55	08:03	06:59	06:06	05:38	05:49	06:27	07:10	07:53	07:41	08:22		12:01 (T47)
	17:06			17:54	19:37	20:23	21:07	21:41	21:42	21:05	20:05	19:02	17:06	16:44	31	12:32 (T47)
12	08:30			07:54	08:01	06:57	06:04	05:37	05:50	06:28	07:12	07:55	07:43	08:23		12:00 (T47)
	17:07			17:55	19:38	20:25	21:08	21:42	21:41	21:03	20:03	19:00	17:05	16:44	33	12:33 (T47)
13	08:29			07:52	07:59	06:55	06:03	05:37	05:51	06:29	07:13	07:56	07:44	08:24		12:00 (T47)
	17:09			17:57	19:40	20:26	21:09	21:42	21:41	21:01	20:00	18:56	17:04	16:44	34	12:34 (T47)
14	08:28			07:51	07:57	06:53	06:01	05:37	05:52	06:31	07:14	07:58	07:46	08:24		12:00 (T47)
	17:10			17:59	19:41	20:28	21:11	21:43	21:40	20:59	19:58	18:54	17:02	16:44	35	12:35 (T47)
15	08:28			07:49	07:55	06:51	06:00	05:37	05:53	06:32	07:16	07:59	07:47	08:25		12:01 (T47)
	17:11			18:00	19:43	20:29	21:12	21:43	21:39	20:58	19:56	18:52	17:01	16:44	35	12:36 (T47)
16	08:27			07:47	07:53	06:49	05:59	05:37	05:54	06:34	07:17	08:01	07:49	08:26		12:01 (T47)
	17:13			18:00	19:44	20:30	21:13	21:44	21:38	20:56	19:54	18:50	17:00	16:45	36	12:37 (T47)
17	08:26			07:45	07:51	06:47	05:57	05:37	05:55	06:35	07:19	08:02	07:50	08:27		12:01 (T47)
	17:14			18:02	19:46	20:32	21:15	21:44	21:37	20:54	19:52	18:48	16:59	16:45	37	12:38 (T47)
18	08:26			07:44	07:48	06:45	05:56	05:37	05:56	06:36	07:20	08:04	07:52	08:28		12:01 (T47)
	17:16			18:04	19:47	20:33	21:16	21:45	21:37	20:52	19:50	18:46	16:58	16:45	37	12:38 (T47)
19	08:25			07:42	07:46	06:43	05:55	05:37	05:57	06:38	07:21	08:05	07:53	08:28		12:01 (T47)
	17:17			18:05	19:49	20:35	21:17	21:45	21:36	20:50	19:48	18:44	16:57	16:45	38	12:39 (T47)
20	08:24			07:40	07:44	06:41	05:54	05:37	05:58	06:39	07:23	08:07	07:55	08:29		12:01 (T47)
	17:19			18:07	19:50	20:36	21:19	21:45	21:35	20:49	19:46	18:42	16:56	16:46	38	12:39 (T47)
21	08:23			07:38	07:42	06:39	05:53	05:37	05:59	06:41	07:24	08:08	07:56	08:29		12:02 (T47)
	17:20			18:08	19:52	20:38	21:20	21:46	21:34	20:47	19:44	18:41	16:55	16:46	38	12:40 (T47)
22	08:22			07:36	07:40	06:37	05:52	05:38	06:01	06:42	07:26	08:10	07:58	08:30		12:02 (T47)
	17:22			18:10	19:53	20:39	21:21	21:46	21:33	20:45	19:41	18:39	16:54	16:47	38	12:40 (T47)
23	08:21			07:34	07:38	06:36	05:50	05:38	06:02	06:43	07:27	08:11	07:59	08:30		12:03 (T47)
	17:23			18:12	19:55	20:41	21:22	21:46	21:31	20:43	19:39	18:37	16:53	16:47	38	12:41 (T47)
24	08:20			07:33	07:36	06:34	05:49	05:38	06:03	06:45	07:28	08:13	08:01	08:31		12:03 (T47)
	17:25			18:13	19:56	20:42	21:24	21:46	21:30	20:41	19:37	18:35	16:52	16:48	38	12:41 (T47)
25	08:19			07:31	07:34	06:32	05:48	05:38	06:04	06:46	07:30	08:14	08:02	08:31		12:05 (T47)
	17:26			18:15	19:58	20:44	21:25	21:46	21:29	20:39	19:35	18:33	16:51	16:49	37	12:42 (T47)
26	08:18			07:29	07:32	06:30	05:47	05:39	06:05	06:48	07:31	08:16	08:04	08:32		12:05 (T47)
	17:28			18:16	19:59	20:45	21:26	21:46	21:28	20:37	19:33	18:31	16:50	16:49	37	12:42 (T47)
27	08:17			07:27	07:30	06:28	05:47	05:39	06:07	06:49	07:33	08:17	08:05	08:32		12:06 (T47)
	17:29			18:18	20:01	20:47	21:27	21:46	21:27	20:35	19:31	18:30	16:50	16:50	36	12:42 (T47)
28	08:15			07:25	07:28	06:27	05:46	05:40	06:08	06:50	07:34	08:19	08:06	08:32		12:06 (T47)
	17:31			18:20	20:02	20:48	21:28	21:46	21:25	20:33	19:29	18:28	16:49	16:51	36	12:42 (T47)
29	08:14				07:26	06:25	05:45	05:40	06:09	06:52	07:36	08:21	08:08	08:32		12:07 (T47)
	17:33				20:04	20:50	21:29	21:46	21:24	20:31	19:27	18:26	16:48	16:52	35	12:42 (T47)
30	08:13				07:23	06:23	05:44	05:41	06:11	06:53	07:37	08:22	08:09	08:32		12:08 (T47)
	17:34				20:05	20:51	21:30	21:46	21:23	20:29	19:25	18:25	16:48	16:52	34	12:42 (T47)
31	08:12				07:21		05:43		06:12	06:55		08:24		08:32		12:09 (T47)
	17:36				20:07		21:31		21:21	20:27		18:23		16:53	33	12:42 (T47)
Potential sun hours	273			285	368	410	472	482	487	445	379	336	277	259		
Total, worst case		161													883	
Sun reduction		0.56													0.44	
Oper. time red.		0.98													0.98	
Wind dir. red.		0.60													0.60	
Total reduction		0.33													0.26	
Total, real		53													229	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

Description:

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Licensed user:
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US-GRAND FORKS, ND 58201
+1 701 775 3000
wind@eapc.net

Calculated:
1/14/2015 4:45 PM/2.9.285

SHADOW - Calendar

Calculation: V117-3.3 91.5 HH Shadow Rev 8 w/ Alts, No Obstacles **Shadow receptor:** H79 - Shadow Receptor: 1.0 × 1.0 Azimuth: 0.0° Slope: 90.0° (246)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BISMARCK]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4.92	5.13	7.45	8.03	10.20	11.21	11.69	10.35	8.68	5.69	4.02	3.69

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
524	474	586	541	606	835	754	637	557	1,091	1,182	765	8,552

Idle start wind speed: Cut in wind speed from power curve

	January		February		March	April	May	June	July	August	September	October		November		December
1	08:32		08:10		08:35 (T49 Alt)	07:23	07:19	06:21	05:42	05:41	06:13	06:56	07:38		07:25	08:04 (T49 Alt)	08:10
	16:54		17:37	34	09:09 (T49 Alt)	18:21	20:08	20:52	21:32	21:46	21:20	20:25	19:22		17:21	51 16:54 (T47)	16:47
2	08:32		08:09		08:35 (T49 Alt)	07:21	07:17	06:20	05:42	05:42	06:14	06:57	07:40		07:27	08:04 (T49 Alt)	08:12
	16:55		17:39	35	09:10 (T49 Alt)	18:23	20:10	20:54	21:33	21:46	21:19	20:23	19:20		17:20	48 16:53 (T47)	16:47
3	08:32		08:08		08:35 (T49 Alt)	07:19	07:15	06:18	05:41	05:42	06:16	06:59	07:41		07:28	08:05 (T49 Alt)	08:13
	16:56		17:41	36	09:11 (T49 Alt)	18:24	20:11	20:55	21:34	21:46	21:17	20:21	19:18		17:18	44 16:51 (T47)	16:46
4	08:32		08:06		08:34 (T49 Alt)	07:17	07:13	06:16	05:41	05:43	06:17	07:00	07:43		07:30	08:04 (T49 Alt)	08:14
	16:58		17:42	37	09:11 (T49 Alt)	18:26	20:13	20:57	21:35	21:45	21:16	20:19	19:16		17:16	41 16:49 (T47)	16:46
5	08:32		08:05		08:35 (T49 Alt)	07:15	07:11	06:15	05:40	05:44	06:18	07:02	07:44		07:32	08:04 (T49 Alt)	08:15
	16:59		17:44	37	09:12 (T49 Alt)	18:27	20:14	20:58	21:36	21:45	21:14	20:17	19:14		17:15	38 08:42 (T49 Alt)	16:45
6	08:32		08:03		08:34 (T49 Alt)	07:13	07:09	06:13	05:40	05:45	06:20	07:03	07:46		07:33	08:05 (T49 Alt)	08:16
	17:00		17:46	38	09:12 (T49 Alt)	18:29	20:16	21:00	21:37	21:45	21:13	20:15	19:12		17:13	37 08:42 (T49 Alt)	16:45
7	08:32		08:02		08:34 (T49 Alt)	07:11	07:07	06:12	05:39	05:45	06:21	07:04	07:47		07:35	08:04 (T49 Alt)	08:17
	17:01		17:47	42	17:19 (T47)	18:31	20:17	21:01	21:38	21:44	21:11	20:13	19:10		17:12	37 08:41 (T49 Alt)	16:45
8	08:31		08:00		08:35 (T49 Alt)	08:09	07:05	06:10	05:39	05:46	06:23	07:06	07:49		07:36	08:05 (T49 Alt)	08:19
	17:02		17:49	45	17:22 (T47)	18:32	20:19	21:02	21:39	21:44	21:09	20:11	19:08		17:10	36 08:41 (T49 Alt)	16:44
9	08:31		07:59		08:35 (T49 Alt)	08:07	07:03	06:08	05:38	05:47	06:24	07:07	07:50		07:38	08:06 (T49 Alt)	08:20
	17:03		17:50	48	17:23 (T47)	19:34	20:20	21:04	21:39	21:43	21:08	20:09	19:06		17:09	35 08:41 (T49 Alt)	16:44
10	08:30		07:57		08:35 (T49 Alt)	08:05	07:01	06:07	05:38	05:48	06:25	07:09	07:52		07:39	08:07 (T49 Alt)	08:21
	17:05		17:52	51	17:25 (T47)	19:35	20:22	21:05	21:40	21:43	21:06	20:07	19:04		17:08	34 08:41 (T49 Alt)	16:44
11	08:30		07:55		08:36 (T49 Alt)	08:03	06:59	06:06	05:38	05:49	06:27	07:10	07:53		07:41	08:07 (T49 Alt)	08:22
	17:06		17:54	53	17:27 (T47)	19:37	20:23	21:07	21:41	21:42	21:04	20:05	19:02		17:06	33 08:40 (T49 Alt)	16:44
12	08:30		07:54		08:36 (T49 Alt)	08:01	06:57	06:04	05:37	05:50	06:28	07:11	07:54		07:43	08:09 (T49 Alt)	08:23
	17:07		17:55	55	17:29 (T47)	19:38	20:24	21:08	21:42	21:41	21:03	20:02	19:00		17:05	31 08:40 (T49 Alt)	16:44
13	08:29		07:52		08:36 (T49 Alt)	07:59	06:55	06:03	05:37	05:51	06:29	07:13	07:56		07:44	08:11 (T49 Alt)	08:24
	17:09		17:57	56	17:30 (T47)	19:40	20:26	21:09	21:42	21:41	21:01	20:00	18:56		17:04	28 08:39 (T49 Alt)	16:44
14	08:28		07:50		08:38 (T49 Alt)	07:57	06:53	06:01	05:37	05:52	06:31	07:14	07:57		07:46	08:12 (T49 Alt)	08:24
	17:10		17:59	56	17:33 (T47)	19:41	20:27	21:11	21:43	21:40	20:59	19:58	18:54		17:02	26 08:38 (T49 Alt)	16:44
15	08:28		07:49		08:38 (T49 Alt)	07:55	06:51	06:00	05:37	05:53	06:32	07:16	07:59		07:47	08:14 (T49 Alt)	08:25
	17:11		18:00	57	17:34 (T47)	19:43	20:29	21:12	21:43	21:39	20:58	19:56	18:52		17:01	23 08:37 (T49 Alt)	16:44
16	08:27		07:47		08:39 (T49 Alt)	07:53	06:49	05:59	05:37	05:54	06:34	07:17	08:00		07:49	08:16 (T49 Alt)	08:26
	17:13		18:00	54	17:34 (T47)	19:44	20:30	21:13	21:44	21:38	20:56	19:54	18:50		17:00	21 08:37 (T49 Alt)	16:45
17	08:26		07:45		08:40 (T49 Alt)	07:51	06:47	05:57	05:37	05:55	06:35	07:18	08:02		07:50	08:17 (T49 Alt)	08:27
	17:14		18:02	51	17:33 (T47)	19:46	20:32	21:15	21:44	21:37	20:54	19:52	18:48		16:59	18 08:35 (T49 Alt)	16:45
18	08:25		07:44		08:42 (T49 Alt)	07:48	06:45	05:56	05:37	05:56	06:36	07:20	08:04		07:52	08:19 (T49 Alt)	08:27
	17:16		18:04	47	17:33 (T47)	19:47	20:33	21:16	21:45	21:36	20:52	19:50	18:46	11 17:57 (T47)	16:58	15 08:34 (T49 Alt)	16:45
19	08:25		07:42		08:45 (T49 Alt)	07:46	06:43	05:55	05:37	05:57	06:38	07:21	08:05	17:44 (T47)	07:53	08:21 (T49 Alt)	08:28
	17:17		18:05	41	17:33 (T47)	19:49	20:35	21:17	21:45	21:36	20:50	19:48	18:44	16 18:00 (T47)	16:57	12 08:33 (T49 Alt)	16:45
20	08:24		07:40		08:49 (T49 Alt)	07:44	06:41	05:54	05:37	05:58	06:39	07:23	08:07	17:42 (T47)	07:55	08:22 (T49 Alt)	08:29
	17:19		18:07	31	17:32 (T47)	19:50	20:36	21:19	21:45	21:35	20:49	19:46	18:42	19 18:01 (T47)	16:56	7 08:29 (T49 Alt)	16:46
21	08:23		07:38		17:10 (T47)	07:42	06:39	05:53	05:37	05:59	06:41	07:24	08:08	17:41 (T47)	07:56		08:29
	17:20		18:08	21	17:31 (T47)	19:52	20:38	21:20	21:46	21:34	20:47	19:43	18:40	21 18:02 (T47)	16:55		16:46
22	08:22	08:47 (T49 Alt)	07:36		17:12 (T47)	07:40	06:37	05:51	05:37	06:01	06:42	07:26	08:10	09:18 (T49 Alt)	07:58		08:30
	17:22	7 08:54 (T49 Alt)	18:10	18	17:30 (T47)	19:53	20:39	21:21	21:46	21:32	20:45	19:41	18:39	35 18:03 (T47)	16:54		16:47
23	08:21	08:46 (T49 Alt)	07:34		17:13 (T47)	07:38	06:36	05:50	05:38	06:02	06:43	07:27	08:11	09:14 (T49 Alt)	07:59		08:30
	17:23	12 08:58 (T49 Alt)	18:12	15	17:28 (T47)	19:55	20:41	21:22	21:46	21:31	20:43	19:39	18:37	42 18:03 (T47)	16:53		16:47
24	08:20	08:45 (T49 Alt)	07:33		17:16 (T47)	07:36	06:34	05:49	05:38	06:03	06:45	07:28	08:13	09:12 (T49 Alt)	08:01		08:31
	17:25	15 09:00 (T49 Alt)	18:13	9	17:25 (T47)	19:56	20:42	21:24	21:46	21:30	20:41	19:37	18:35	48 18:03 (T47)	16:52		16:48
25	08:19	08:44 (T49 Alt)	07:31			07:34	06:32	05:48	05:38	06:04	06:46	07:30	08:14	09:11 (T49 Alt)	08:02		08:31
	17:26	18 09:02 (T49 Alt)	18:15			19:58	20:44	21:25	21:46	21:29	20:39	19:35	18:33	52 18:04 (T47)	16:51		16:48
26	08:18	08:43 (T49 Alt)	07:29			07:32	06:30	05:47	05:39	06:05	06:48	07:31	08:16	09:09 (T49 Alt)	08:04		08:31
	17:28	21 09:04 (T49 Alt)	18:16			19:59	20:45	21:26	21:46	21:28	20:37	19:33	18:31	53 18:03 (T47)	16:50		16:49
27	08:17	08:41 (T49 Alt)	07:27			07:30	06:28	05:46	05:39	06:07	06:49	07:33	08:17	09:08 (T49 Alt)	08:05		08:32
	17:29	24 09:05 (T49 Alt)	18:18			20:01	20:47	21:27	21:46	21:27	20:35	19:31	18:30	55 18:03 (T47)	16:50		16:50
28	08:15	08:40 (T49 Alt)	07:25			07:28	06:27	05:46	05:40	06:08	06:50	07:34	08:19	09:07 (T49 Alt)	08:06		08:32
	17:31	26 09:06 (T49 Alt)	18:20			20:02	20:48	21:28	21:46	21:25	20:33	19:29	18:28	57 18:02 (T47)	16:49		16:51
29	08:14	08:39 (T49 Alt)				07:25	06:25	05:45	05:40	06:09	06:52	07:35	08:21	09:06 (T49 Alt)	08:08		08:32
	17:33	28 09:07 (T49 Alt)				20:04	20:49	21:29	21:46	21:24	20:31	19:27	18:26	55 17:59 (T47)	16:48		16:51
30	08:13	08:37 (T49 Alt)				07:23	06:23	05:44	05:41	06:11	06:53	07:37	08:22	09:05 (T49 Alt)	08:09		08:32
	17:34	31 09:08 (T49 Alt)				20:05	20:51	21:30	21:46	21:23	20:29	19:24	18:24	55 17:58 (T47)	16:48		16:52
31	08:12	08:36 (T49 Alt)				07:21		05:43		06:12	06:55		08:24	09:05 (T49 Alt)			08:32
	17:36	33 09:09 (T49 Alt)				20:07		21:31		21:21	20:27		18:23	52 17:56 (T47)			16:53
Potential sun hours	273		285			368	410	472	482	487	445	379	336		277		259
Total, worst case		215		967										571		615	
Sun reduction		0.56		0.50										0.52		0.44	
Oper. time red.		0.98		0.98										0.98		0.98	
Wind dir. red.		0.69		0.67										0.67		0.69	
Total reduction		0.38		0.33										0.34		0.29	
Total, real		81		321										195		179	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

Description:

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Licensed user:
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US-GRAND FORKS, ND 58201
+1 701 775 3000
wind@eapc.net

Calculated:
1/14/2015 4:45 PM/2.9.285

SHADOW - Calendar

Calculation: V117-3.3 91.5 HH Shadow Rev 8 w/ Alts, No Obstacles **Shadow receptor:** H80 - Shadow Receptor: 1.0 × 1.0 Azimuth: 0.0° Slope: 90.0° (247)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BISMARCK]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4.92	5.13	7.45	8.03	10.20	11.21	11.69	10.35	8.68	5.69	4.02	3.69

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
524	474	586	541	606	835	754	637	557	1,091	1,182	765	8,552

Idle start wind speed: Cut in wind speed from power curve

	January	February		March		April		May	June	July	August	September		October		November	December
1	08:33	08:10		07:23		08:07 (T15)	07:20	19:39 (T12)	06:22	05:43	05:42	06:14		06:56		19:29 (T12)	07:39		08:57 (T15)	07:25	08:10
	16:55	17:38		18:22	69	17:56 (T11)	20:09	19:45 (T12)	20:53	21:33	21:46	21:20		20:25	26	19:55 (T12)	19:23	16	09:13 (T15)	17:22	16:48
2	08:33	08:09		07:21		08:07 (T15)	07:18	19:36 (T12)	06:20	05:42	05:42	06:15		06:58		19:28 (T12)	07:40		08:54 (T15)	07:27	08:12
	16:56	17:39		18:23	67	17:55 (T11)	20:10	19:47 (T12)	20:54	21:34	21:46	21:19		20:23	27	19:55 (T12)	19:21	23	09:17 (T15)	17:20	16:47
3	08:33	08:08		07:19		08:08 (T15)	07:15	19:35 (T12)	06:18	05:42	05:43	06:16		06:59		19:28 (T12)	07:42		08:51 (T15)	07:29	08:13
	16:57	17:41		18:25	65	17:55 (T11)	20:11	19:48 (T12)	20:55	21:34	21:46	21:17		20:21	27	19:55 (T12)	19:19	28	09:19 (T15)	17:18	16:47
4	08:32	08:06		07:17		08:08 (T15)	07:13	19:33 (T12)	06:17	05:41	05:44	06:18		07:01		19:27 (T12)	07:43		08:50 (T15)	07:30	08:14
	16:58	17:43		18:26	62	17:54 (T11)	20:13	19:50 (T12)	20:57	21:35	21:45	21:16		20:19	26	19:53 (T12)	19:16	31	09:21 (T15)	17:17	16:46
5	08:32	08:05		07:15		08:08 (T15)	07:11	19:32 (T12)	06:15	05:41	05:44	06:19		07:02		19:27 (T12)	07:44		08:47 (T15)	07:32	08:15
	16:59	17:44		18:28	57	17:51 (T11)	20:14	19:51 (T12)	20:58	21:36	21:45	21:14		20:17	23	19:50 (T12)	19:14	35	09:22 (T15)	17:15	16:46
6	08:32	08:03		07:13		08:08 (T15)	07:09	19:31 (T12)	06:14	05:40	05:45	06:20		07:03		19:27 (T12)	07:46		08:46 (T15)	07:33	08:16
	17:00	17:46		18:29	52	17:49 (T11)	20:16	19:53 (T12)	21:00	21:37	21:45	21:13		20:15	22	19:49 (T12)	19:12	37	09:23 (T15)	17:14	16:45
7	08:32	08:02		07:11		08:09 (T15)	07:07	19:31 (T12)	06:12	05:40	05:46	06:22		07:05		19:27 (T12)	07:47		08:45 (T15)	07:35	08:18
	17:01	17:48		18:31	42	17:45 (T11)	20:17	19:54 (T12)	21:01	21:38	21:44	21:11		20:13	19	19:46 (T12)	19:10	47	18:23 (T11)	17:12	16:45
8	08:31	08:00		08:09		09:10 (T15)	07:05	19:30 (T12)	06:10	05:39	05:47	06:23		07:06		19:27 (T12)	07:49		08:44 (T15)	07:37	08:19
	17:03	17:49		18:32	35	09:45 (T15)	20:19	19:56 (T12)	21:03	21:39	21:44	21:10		20:11	17	19:44 (T12)	19:08	55	18:26 (T11)	17:11	16:45
9	08:31	07:59		08:07		09:11 (T15)	07:03	19:30 (T12)	06:09	05:39	05:48	06:24		07:08		19:29 (T12)	07:50		08:42 (T15)	07:38	08:20
	17:04	17:51		19:34	33	09:44 (T15)	20:20	19:57 (T12)	21:04	21:40	21:43	21:08		20:09	14	19:43 (T12)	19:06	61	18:27 (T11)	17:09	16:45
10	08:31	07:57		08:05		09:13 (T15)	07:01	19:30 (T12)	06:07	05:38	05:48	06:26		07:09		19:29 (T12)	07:52		08:42 (T15)	07:40	08:21
	17:05	17:53		19:36	29	09:42 (T15)	20:22	19:57 (T12)	21:05	21:40	21:43	21:06		20:07	11	19:40 (T12)	19:04	63	18:28 (T11)	17:08	16:45
11	08:30	07:56		08:03		09:14 (T15)	06:59	19:30 (T12)	06:06	05:38	05:49	06:27		07:10		19:32 (T12)	07:53		08:41 (T15)	07:41	08:22
	17:06	17:54	11	08:37 (T15)	19:37	09:39 (T15)	20:23	19:56 (T12)	21:07	21:41	21:42	21:05		20:05	7	19:39 (T12)	19:02	65	18:28 (T11)	17:07	16:45
12	08:30	07:54		08:22 (T15)	08:01	09:17 (T15)	06:57	19:30 (T12)	06:05	05:38	05:50	06:28		07:12		19:34 (T12)	07:55		08:41 (T15)	07:43	08:23
	17:08	17:56	18	08:40 (T15)	19:39	09:36 (T15)	20:25	19:56 (T12)	21:08	21:42	21:41	21:03		20:03	2	19:36 (T12)	19:00	68	18:29 (T11)	17:05	16:45
13	08:29	07:52		08:20 (T15)	07:59	09:21 (T15)	06:55	19:30 (T12)	06:03	05:38	05:51	06:30		07:13			07:56		08:40 (T15)	07:44	08:24
	17:09	17:57	24	08:44 (T15)	19:40	09:31 (T15)	20:26	19:55 (T12)	21:10	21:42	21:41	21:01		20:01			18:56	68	18:28 (T11)	17:04	16:45
14	08:28	07:51		08:17 (T15)	07:57		06:53	19:31 (T12)	06:02	05:38	05:52	06:31		07:15			07:58		08:40 (T15)	07:46	08:25
	17:10	17:59	28	08:45 (T15)	19:42		20:28	19:53 (T12)	21:11	21:43	21:40	21:00		19:59			18:54	70	18:29 (T11)	17:03	16:45
15	08:28	07:49		08:16 (T15)	07:55		06:51	19:32 (T12)	06:00	05:37	05:53	06:33		07:16			07:59		08:40 (T15)	07:47	08:25
	17:12	18:01	31	08:47 (T15)	19:43		20:29	19:52 (T12)	21:12	21:43	21:39	20:58		19:56			18:52	67	18:27 (T11)	17:02	16:45
16	08:27	07:47		08:14 (T15)	07:53		06:49	19:33 (T12)	05:59	05:37	05:54	06:34		07:17			08:01		08:39 (T15)	07:49	08:26
	17:13	18:01	34	08:48 (T15)	19:45		20:31	19:50 (T12)	21:14	21:44	21:38	20:56		19:54			18:50	65	18:24 (T11)	17:00	16:45
17	08:26	07:46		08:12 (T15)	07:51		06:47	19:35 (T12)	05:58	05:37	05:55	06:35		07:19			08:02		08:39 (T15)	07:50	08:27
	17:15	18:02	37	08:49 (T15)	19:46		20:32	19:48 (T12)	21:15	21:44	21:38	20:54		19:52			18:48	63	18:23 (T11)	16:59	16:45
18	08:26	07:44		08:12 (T15)	07:49		06:45	19:38 (T12)	05:57	05:37	05:56	06:37		07:20			08:04		08:39 (T15)	07:52	08:28
	17:16	18:04	39	08:51 (T15)	19:48		20:34	19:43 (T12)	21:16	21:45	21:37	20:52		19:50			18:46	59	18:20 (T11)	16:58	16:46
19	08:25	07:42		08:11 (T15)	07:47		06:43		05:55	05:37	05:58	06:38		07:22			08:05		08:39 (T15)	07:54	08:28
	17:18	18:06	41	08:52 (T15)	19:49		20:35		21:18	21:45	21:36	20:51		19:48			18:45	57	18:19 (T11)	16:57	16:46
20	08:24	07:40		08:10 (T15)	07:45		06:42		05:54	05:38	05:59	06:40		07:23			08:07		08:40 (T15)	07:55	08:29
	17:19	18:07	42	08:52 (T15)	19:51		20:37		21:19	21:45	21:35	20:49		19:46			18:43	52	18:17 (T11)	16:56	16:46
21	08:23	07:38		08:09 (T15)	07:43		06:40		05:53	05:38	06:00	06:41		07:24			08:08		08:40 (T15)	07:56	08:29
	17:20	18:09	49	17:45 (T11)	19:52		20:38		21:20	21:46	21:34	20:47		19:44			18:41	48	18:15 (T11)	16:55	16:47
22	08:22	07:36		08:09 (T15)	07:40		06:38		05:52	05:38	06:01	06:42		07:26			08:10		08:41 (T15)	07:58	08:30
	17:22	18:10	53	17:46 (T11)	19:54		20:39		21:21	21:46	21:33	20:45		19:42			18:39	41	09:22 (T15)	16:54	16:47
23	08:21	07:35		08:08 (T15)	07:38		06:36		05:51	05:38	06:02	06:44		07:27			08:11		08:41 (T15)	07:59	08:30
	17:24	18:12	58	17:48 (T11)	19:55		20:41		21:23	21:46	21:32	20:43		19:40			18:37	40	09:21 (T15)	16:53	16:48
24	08:20	07:33		08:07 (T15)	07:36		06:34		05:50	05:39	06:03	06:45		07:29			08:13		08:42 (T15)	08:01	08:31
	17:25	18:14	62	17:50 (T11)	19:57		20:42		21:24	21:46	21:30	20:41		19:37			18:35	38	09:20 (T15)	16:52	16:48
25	08:19	07:31		08:07 (T15)	07:34		06:32		05:49	05:39	06:05	06:47	19:41 (T12)	07:30			08:15		08:43 (T15)	08:02	08:31
	17:27	18:15	64	17:51 (T11)	19:58		20:44		21:25	21:46	21:29	20:39	7 19:48 (T12)	19:35			18:34	36	09:19 (T15)	16:52	16:49
26	08:18	07:29		08:07 (T15)	07:32		06:30		05:48	05:39	06:06	06:48	19:37 (T12)	07:31			08:16		08:44 (T15)	08:04	08:32
	17:28	18:17	66	17:53 (T11)	20:00		20:45		21:26	21:47	21:28	20:37	14 19:51 (T12)	19:33			18:32	33	09:17 (T15)	16:51	16:50
27	08:17	07:27		08:06 (T15)	07:30		06:29		05:47	05:40	06:07	06:49	19:34 (T12)	07:33			08:18		08:45 (T15)	08:05	08:32
	17:30	18:18	69	17:54 (T11)	20:01		20:47		21:27	21:47	21:27	20:35	18 19:52 (T12)	19:31			18:30	31	09:16 (T15)	16:50	16:50
28	08:16	07:25		08:07 (T15)	07:28		06:27		05:46	05:40	06:08	06:51	19:33 (T12)	07:34			08:19		08:47 (T15)	08:06	08:32
	17:31	18:20	69	17:56 (T11)	20:03		20:48		21:28	21:47	21:26	20:33	21 19:54 (T12)	19:29			18:28	28	09:15 (T15)	16:49	16:51
29	08:14				07:26		06:25		05:45	05:41	06:10	06:52	19:32 (T12)	07:36			08:21		08:49 (T15)	08:08	08:32
	17:33				20:04		20:50		21:29	21:46	21:24	20:31	22 19:54 (T12)	19:27			18:27	23	09:12 (T15)	16:49	16:52
30	08:13				07:24		06:23		05:44	05:41	06:11	06:54	19:30 (T12)	07:37			08:22		08:52 (T15)	08:09	08:32
	17:35				20:06		20:51		21:30	21:46	21:23	20:29	25 19:55 (T12)	19:25			18:25	17	09:09 (T15)	16:48	16:53
31	08:12				07:22	19:43 (T12)			05:44		06:12	06:55	19:30 (T12)				08:24		08:57 (T15)		08:33
	17:36				20:07	1 19:44 (T12)			21:32		21:22	20:27	26 19:56 (T12)				18:23	8	09:05 (T15)		16:54
Potential sun hours	273	285		368		410		472	482	486	445			379			336			277	260
Total, worst case			795		566		345					133			221			1373			
Sun reduction			0.50		0.63		0.59					0.72			0.69			0.52			
Oper. time red.			0.98		0.98		0.98					0.98			0.98			0.98			
Wind dir. red.			0.69		0.68		0.69					0.69			0.69			0.68			
Total reduction			0.34		0.42		0.40					0.48			0.46			0.35			
Total, real			268		237		136					64			102			481			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

Description:

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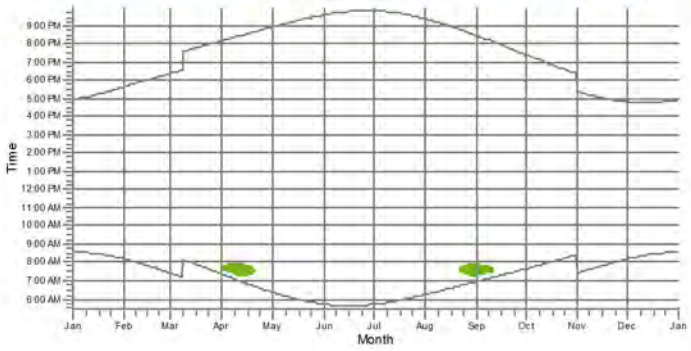
Licensed user:
EAPC Wind Energy
3100 DeMers Avenue
US-GRAND FORKS, ND 58201
+1 701 775 3000
wind@eapc.net

Calculated:
1/14/2015 4:45 PM/2.9.285

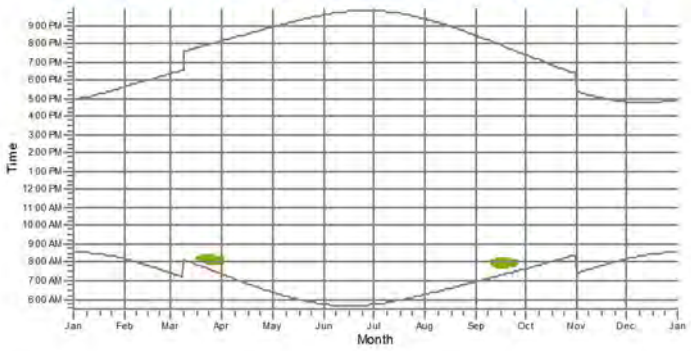
SHADOW - Calendar, graphical

Calculation: V117-3.3 91.5 HH Shadow Rev 8 w/ Alts, No Obstacles

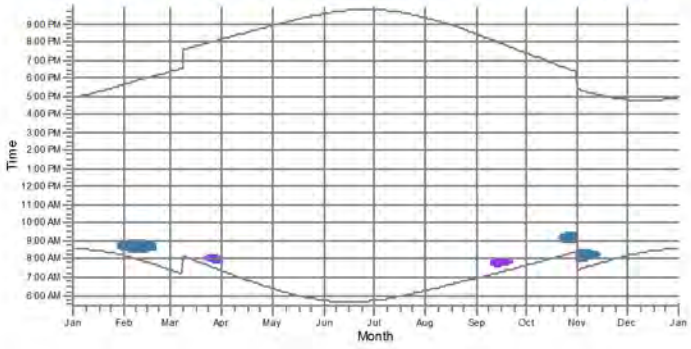
H03: Shadow Receptor: 1.0 × 1.0 Azimuth: 0.0° Slope: 90.0° (170)



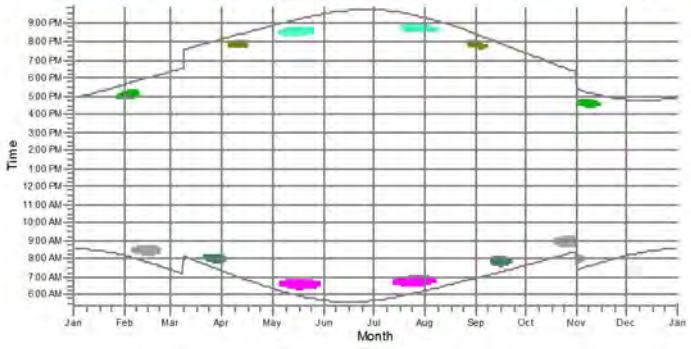
H04: Shadow Receptor: 1.0 × 1.0 Azimuth: 0.0° Slope: 90.0° (171)



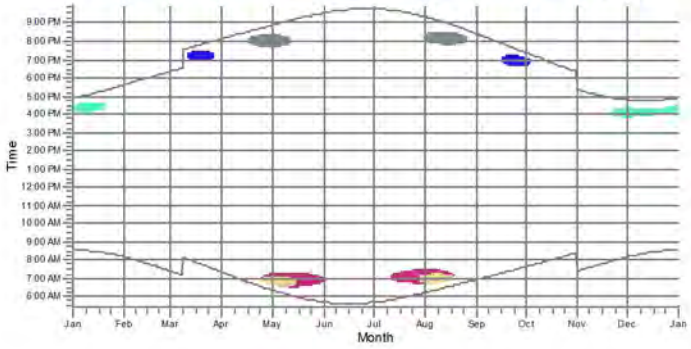
H12: Shadow Receptor: 1.0 × 1.0 Azimuth: 0.0° Slope: 90.0° (179)



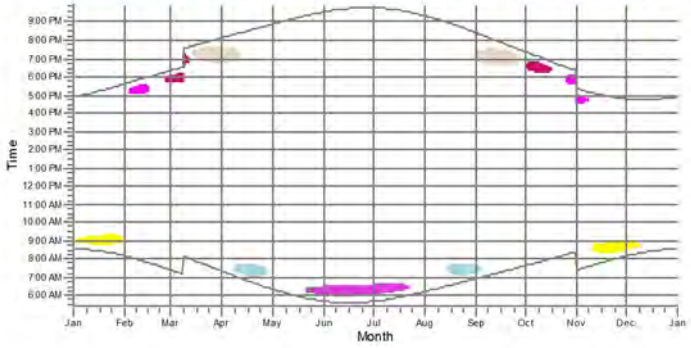
H14: Shadow Receptor: 1.0 × 1.0 Azimuth: 0.0° Slope: 90.0° (181)



H15: Shadow Receptor: 1.0 × 1.0 Azimuth: 0.0° Slope: 90.0° (182)



H16: Shadow Receptor: 1.0 × 1.0 Azimuth: 0.0° Slope: 90.0° (183)



WTGs

T31: T31	T19: T19	T33: T33	T10: T10	T51 Alt: T51 Alt	T57 Alt: T57 Alt
T21: T21	T20: T20	T09: T09	T04: T04	T53 Alt: T53 Alt	T58 Alt: T58 Alt
T07: T07	T32: T32	T03: T03	T50 Alt: T50 Alt	T55 Alt: T55 Alt	T59 Alt: T59 Alt

Project:

20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
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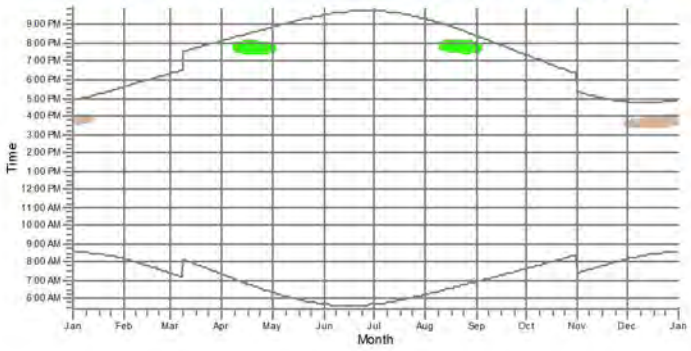
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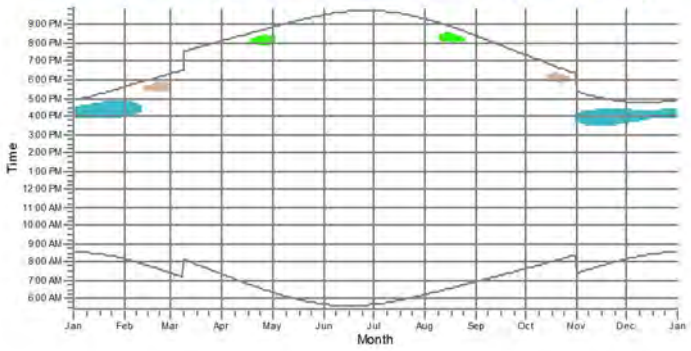
SHADOW - Calendar, graphical

Calculation: V117-3.3 91.5 HH Shadow Rev 8 w/ Alts, No Obstacles

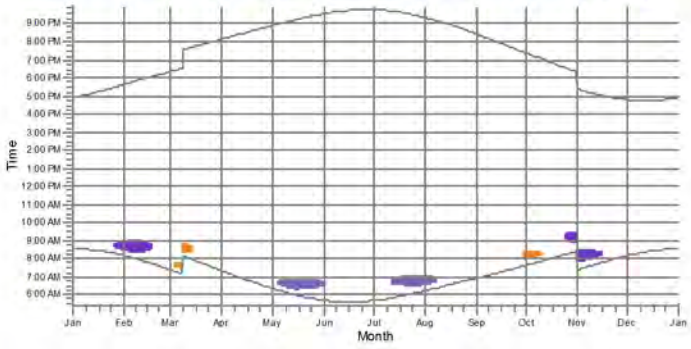
H17: Shadow Receptor: 1.0 × 1.0 Azimuth: 0.0° Slope: 90.0° (184)



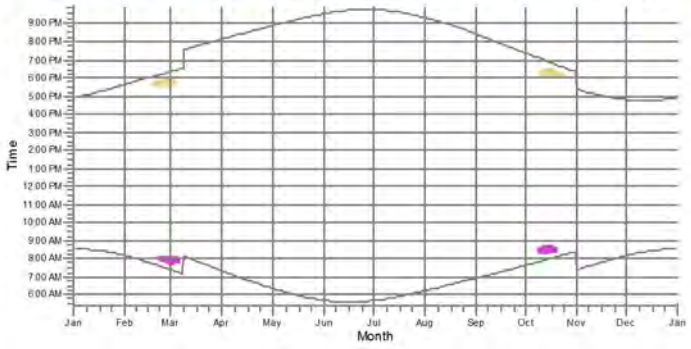
H18: Shadow Receptor: 1.0 × 1.0 Azimuth: 0.0° Slope: 90.0° (185)



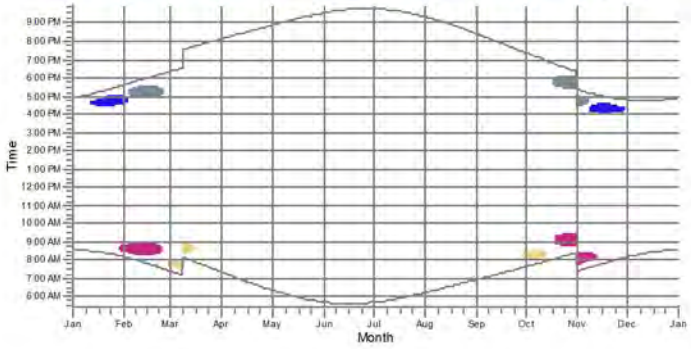
H19: Shadow Receptor: 1.0 × 1.0 Azimuth: 0.0° Slope: 90.0° (186)



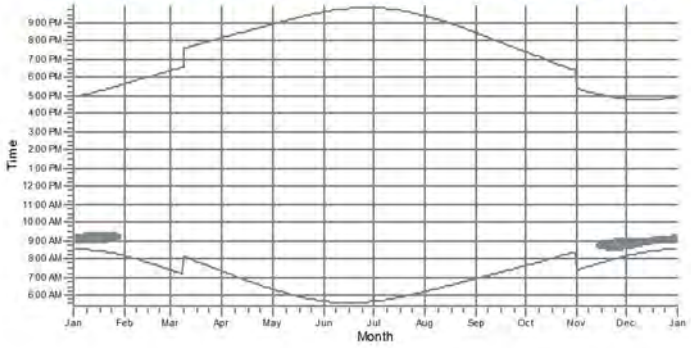
H20: Shadow Receptor: 1.0 × 1.0 Azimuth: 0.0° Slope: 90.0° (187)



H21: Shadow Receptor: 1.0 × 1.0 Azimuth: 0.0° Slope: 90.0° (188)



H23: Shadow Receptor: 1.0 × 1.0 Azimuth: 0.0° Slope: 90.0° (190)



WTGs

T40: T40	T41: T41	T47: T47	T09: T09	T56 Alt: T56 Alt	T59 Alt: T59 Alt	
T42: T42	T46: T46	T33: T33	T10: T10	T58 Alt: T58 Alt		

Project:
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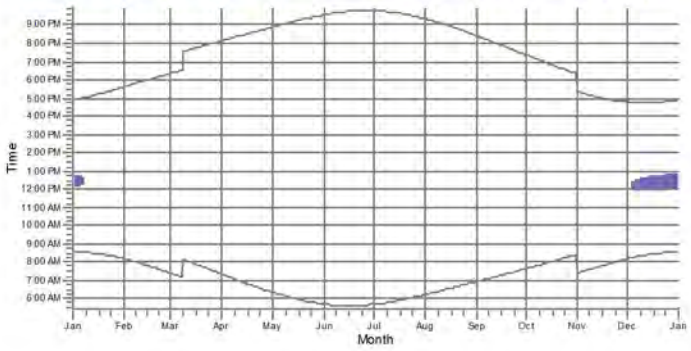
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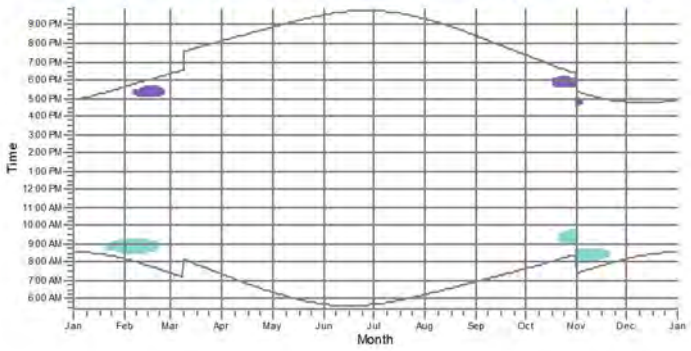
SHADOW - Calendar, graphical

Calculation: V117-3.3 91.5 HH Shadow Rev 8 w/ Alts, No Obstacles

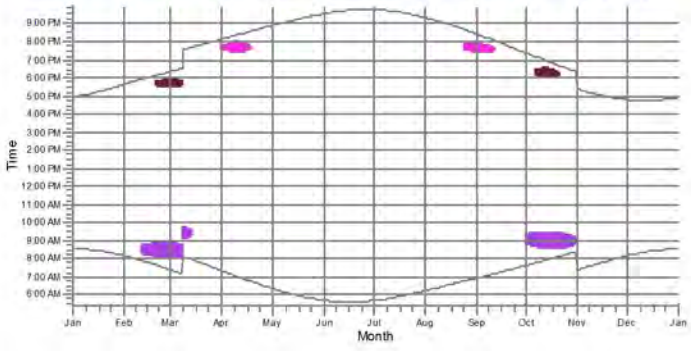
H78: Shadow Receptor: 1.0 × 1.0 Azimuth: 0.0° Slope: 90.0° (245)



H79: Shadow Receptor: 1.0 × 1.0 Azimuth: 0.0° Slope: 90.0° (246)



H80: Shadow Receptor: 1.0 × 1.0 Azimuth: 0.0° Slope: 90.0° (247)



WTGs

T12: T12 T11: T11 T47: T47 T15: T15 T49 Alt: T49 Alt

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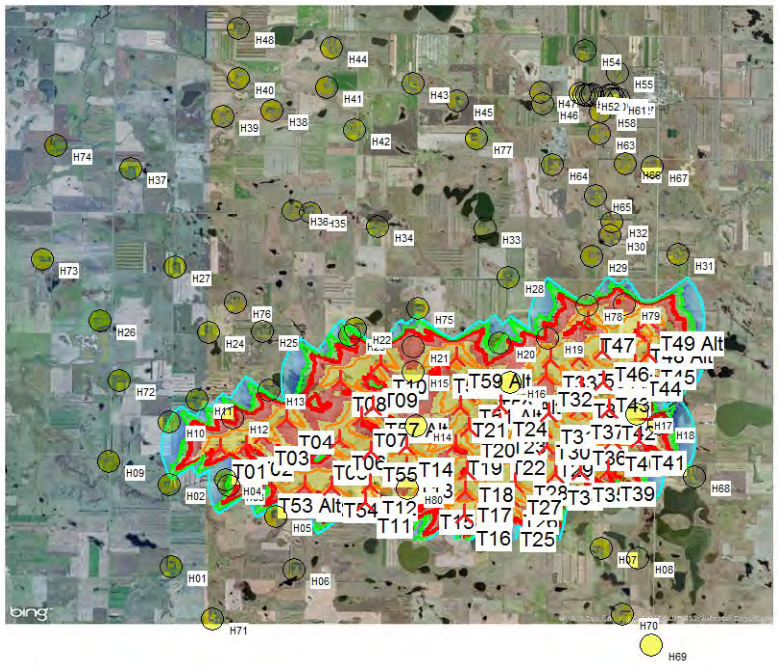
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SHADOW - Map

Calculation: V117-3.3 91.5 HH Shadow Rev 8 w/ Alts, No Obstacles



0 2.5 5 7.5 10km

Map: Overview Aerail , Print scale 1:200,000, Map center UTM (north)-WGS84 Zone: 14 East: 433,452 North: 5,381,458

New WTG
Shadow receptor

Flicker map level: Height Contours: 121203_10ftHCLs_7kmBuffer.wpo (3)

Appendix F: windPRO Shadow Flicker Report H15 & H16 with Obstacles

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SHADOW - Main Result

Calculation: V117-3.3 91.5 HH Shadow Rev 8 w/ Alts, With obstacles H15 & H16

Assumptions for shadow calculations

Maximum distance for influence	1,500	m
Minimum sun height over horizon for influence	3	°
Day step for calculation	1	days
Time step for calculation	1	minutes

Sunshine probability S (Average daily sunshine hours) [BISMARCK]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4.92	5.13	7.45	8.03	10.20	11.21	11.69	10.35	8.68	5.69	4.02	3.69

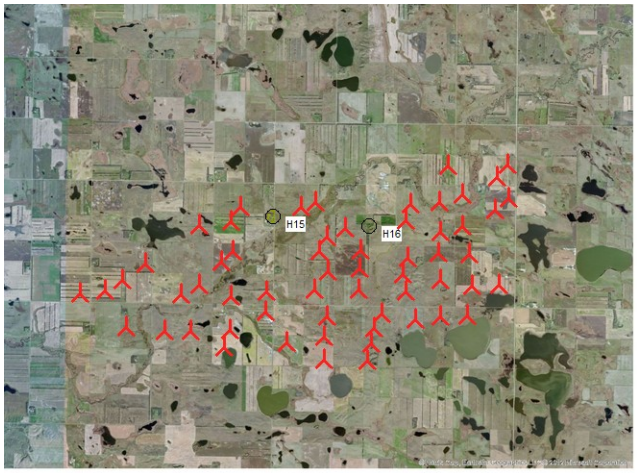
Operational hours are calculated from WTGs in calculation and wind distribution:
9146 (Short-term to MERRA)

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
524	474	586	541	606	835	754	637	557	1,091	1,182	765	8,552

Idle start wind speed: Cut in wind speed from power curve

A ZVI (Zones of Visual Influence) calculation is performed before flicker calculation so non visible WTG do not contribute to calculated flicker values. A WTG will be visible if it is visible from any part of the receiver window. The ZVI calculation is based on the following assumptions:
Height contours used: Height Contours: 121203_10ftHCLs_7kmBuffer.wpo (3)
Obstacles used in calculation
Eye height: 1.5 m
Grid resolution: 10.0 m



Scale 1:200,000
New WTG
Shadow receptor

WTGs

	UTM (north)-WGS84 Zone: 14				WTG type						
	East	North	Z [m]	Row data/Description	Valid	Manufact.	Type-generator	Power, rated [kW]	Rotor diameter [m]	Hub height [m]	RPM [RPM]
T01	426,404	5,380,816	490.7	T01	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T02	427,088	5,380,888	490.7	T02	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T03	427,532	5,381,154	490.6	T03	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T04	428,153	5,381,587	484.6	T04	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T05	429,079	5,380,790	481.6	T05	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T06	429,560	5,381,041	481.6	T06	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T07	430,155	5,381,640	478.5	T07	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T08	429,579	5,382,607	487.7	T08	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T09	430,407	5,382,722	496.8	T09	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T10	430,657	5,383,084	491.0	T10	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T11	430,242	5,379,390	490.7	T11	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T12	430,379	5,379,847	480.0	T12	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T13	431,335	5,380,312	481.2	T13	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T14	431,340	5,380,862	481.6	T14	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T15	431,891	5,379,497	484.6	T15	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T16	432,876	5,379,052	496.9	T16	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T17	432,886	5,379,665	487.7	T17	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T18	432,945	5,380,204	489.6	T18	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T19	432,633	5,380,904	496.8	T19	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T20	432,985	5,381,379	499.9	T20	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T21	432,753	5,381,916	493.8	T21	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T22	433,787	5,380,903	516.3	T22	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T23	433,809	5,381,470	515.1	T23	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T24	433,830	5,381,961	512.1	T24	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T25	434,026	5,379,018	527.3	T25	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T26	434,112	5,379,482	520.4	T26	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T27	434,209	5,379,879	512.1	T27	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T28	434,398	5,380,261	515.1	T28	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T29	435,048	5,380,847	518.2	T29	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T30	434,970	5,381,321	525.3	T30	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T31	435,093	5,381,756	514.4	T31	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T32	435,029	5,382,733	490.7	T32	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T33	435,153	5,383,180	487.7	T33	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T34	435,280	5,380,120	499.9	T34	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0

To be continued on next page...

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SHADOW - Main Result

Calculation: V117-3.3 91.5 HH Shadow Rev 8 w/ Alts, With obstacles H15 & H16

...continued from previous page

	UTM (north)-WGS84 Zone: 14						WTG type					
	East	North	Z [m]	Row data/Description	Valid	Manufact.	Type-generator	Power, rated [kW]	Rotor diameter [m]	Hub height [m]	RPM [RPM]
T35	435,948	5,380,198	493.8	T35	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T36	435,940	5,381,153	497.4	T36	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T37	435,892	5,381,871	496.8	T37	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T38	435,956	5,382,432	496.8	T38	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T39	436,670	5,380,219	493.8	T39	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T40	436,795	5,381,008	493.6	T40	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T41	437,500	5,381,035	490.7	T41	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T42	436,705	5,381,860	496.8	T42	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T43	436,544	5,382,577	486.6	T43	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T44	437,401	5,383,031	484.6	T44	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T45	437,748	5,383,328	484.6	T45	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T46	436,528	5,383,414	491.2	T46	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T47	436,146	5,384,176	493.8	T47	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T48 Alt	437,462	5,383,893	484.9	T48 Alt	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T49 Alt	437,741	5,384,219	486.5	T49 Alt	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T50 Alt	433,440	5,382,540	491.0	T50 Alt	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T51 Alt	432,950	5,382,296	487.7	T51 Alt	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T52 Alt	428,647	5,379,825	484.6	T52 Alt	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T53 Alt	427,624	5,379,906	487.7	T53 Alt	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T54 Alt	429,351	5,379,803	481.6	T54 Alt	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T55 Alt	430,397	5,380,730	475.9	T55 Alt	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T56 Alt	435,924	5,383,222	484.6	T56 Alt	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T57 Alt	430,454	5,381,937	481.6	T57 Alt	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T58 Alt	432,258	5,383,093	481.6	T58 Alt	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0
T59 Alt	432,653	5,383,230	479.6	T59 Alt	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	91.5	0.0

Shadow receptor-Input

	UTM (north)-WGS84 Zone: 14								
No.	East	North	Z [m]	Width [m]	Height [m]	Height a.g.l. [m]	Degrees from south cw [°]	Slope of window [°]	Direction mode
H15	431,525	5,382,848	481.6	1.0	1.0	1.0	0.0	90.0	"Green house mode"
H16	434,082	5,382,575	494.6	1.0	1.0	1.0	0.0	90.0	"Green house mode"

Calculation Results

Shadow receptor

	Shadow, worst case			Shadow, expected values
No.	Shadow hours per year [h/year]	Shadow days per year [days/year]	Max shadow hours per day [h/day]	Shadow hours per year [h/year]
H15	54:50	161	0:37	22:00
H16	72:13	202	0:42	29:59

Total amount of flickering on the shadow receptors caused by each WTG

No.	Name	Worst case [h/year]	Expected [h/year]
T01	T01	0:00	0:00
T02	T02	0:00	0:00
T03	T03	0:00	0:00
T04	T04	0:00	0:00
T05	T05	0:00	0:00
T06	T06	0:00	0:00
T07	T07	0:00	0:00
T08	T08	0:00	0:00
T09	T09	8:57	3:50
T10	T10	0:00	0:00
T11	T11	0:00	0:00
T12	T12	0:00	0:00

To be continued on next page...

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

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Calculated:
1/19/2015 4:29 PM/2.9.285

SHADOW - Main Result

Calculation: V117-3.3 91.5 HH Shadow Rev 8 w/ Alts, With obstacles H15 & H16

...continued from previous page

No.	Name	Worst case [h/year]	Expected [h/year]
T13	T13	0:00	0:00
T14	T14	0:00	0:00
T15	T15	0:00	0:00
T16	T16	0:00	0:00
T17	T17	0:00	0:00
T18	T18	0:00	0:00
T19	T19	0:00	0:00
T20	T20	0:00	0:00
T21	T21	0:00	0:00
T22	T22	0:00	0:00
T23	T23	0:00	0:00
T24	T24	0:00	0:00
T25	T25	0:00	0:00
T26	T26	0:00	0:00
T27	T27	0:00	0:00
T28	T28	0:00	0:00
T29	T29	0:00	0:00
T30	T30	0:00	0:00
T31	T31	13:15	4:21
T32	T32	13:04	5:33
T33	T33	17:16	7:40
T34	T34	0:00	0:00
T35	T35	0:00	0:00
T36	T36	0:00	0:00
T37	T37	0:00	0:00
T38	T38	0:00	0:00
T39	T39	0:00	0:00
T40	T40	0:00	0:00
T41	T41	0:00	0:00
T42	T42	0:00	0:00
T43	T43	0:00	0:00
T44	T44	0:00	0:00
T45	T45	0:00	0:00
T46	T46	0:00	0:00
T47	T47	0:00	0:00
T48 Alt	T48 Alt	0:00	0:00
T49 Alt	T49 Alt	0:00	0:00
T50 Alt	T50 Alt	28:38	12:22
T51 Alt	T51 Alt	0:00	0:00
T52 Alt	T52 Alt	0:00	0:00
T53 Alt	T53 Alt	0:00	0:00
T54 Alt	T54 Alt	0:00	0:00
T55 Alt	T55 Alt	0:00	0:00
T56 Alt	T56 Alt	0:00	0:00
T57 Alt	T57 Alt	13:18	3:49
T58 Alt	T58 Alt	32:32	14:23
T59 Alt	T59 Alt	9:32	4:10

Project:

20131290 Rolette Power Development

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Calculated:
1/19/2015 4:29 PM/2.9.285

SHADOW - Calendar

Calculation: V117-3.3 91.5 HH Shadow Rev 8 w/ Alts, With obstacles H15 & H16 **Shadow receptor:** H15 - Shadow Receptor: 1.0 × 1.0 Azimuth: 0.0° Slope: 90.0° (22)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BISMARCK]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4.92	5.13	7.45	8.03	10.20	11.21	11.69	10.35	8.68	5.69	4.02	3.69

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
524	474	586	541	606	835	754	637	557	1,091	1,182	765	8,552

Idle start wind speed: Cut in wind speed from power curve

	January			February		March			April			May			June	
1	08:33		16:10 (T57 Alt)	08:11		07:23			07:20			06:22		06:45 (T58 Alt)	05:43	
	16:55	13	16:23 (T57 Alt)	17:38		18:21			20:09			20:53	26	07:11 (T58 Alt)	21:33	
2	08:33		16:10 (T57 Alt)	08:09		07:21			07:17			06:20		06:43 (T58 Alt)	05:42	
	16:56	14	16:24 (T57 Alt)	17:39		18:23			20:10			20:54	28	07:11 (T58 Alt)	21:34	
3	08:33		16:11 (T57 Alt)	08:08		07:19			07:15			06:18		06:41 (T58 Alt)	05:42	
	16:57	14	16:25 (T57 Alt)	17:41		18:25			20:11			20:56	30	07:11 (T58 Alt)	21:35	
4	08:33		16:12 (T57 Alt)	08:06		07:17			07:13			06:17		06:40 (T58 Alt)	05:41	
	16:58	15	16:27 (T57 Alt)	17:43		18:26			20:13			20:57	32	07:12 (T58 Alt)	21:36	
5	08:32		16:12 (T57 Alt)	08:05		07:15			07:11			06:15		06:38 (T58 Alt)	05:40	
	16:59	16	16:28 (T57 Alt)	17:44		18:28			20:14			20:58	34	07:12 (T58 Alt)	21:36	
6	08:32		16:12 (T57 Alt)	08:03		07:13			07:09			06:13		06:37 (T59 Alt)	05:40	
	17:00	17	16:29 (T57 Alt)	17:46		18:29			20:16			21:00	36	07:13 (T58 Alt)	21:37	
7	08:32		16:13 (T57 Alt)	08:02		07:11			07:07			06:12		06:36 (T59 Alt)	05:39	
	17:01	17	16:30 (T57 Alt)	17:48		18:31			20:17			21:01	36	07:12 (T58 Alt)	21:38	
8	08:32		16:13 (T57 Alt)	08:00		08:09			07:05			06:10		06:37 (T58 Alt)	05:39	
	17:02	18	16:31 (T57 Alt)	17:49		18:32			20:19			21:03	36	07:13 (T58 Alt)	21:39	
9	08:31		16:14 (T57 Alt)	07:59		08:07			07:03			06:09		06:36 (T58 Alt)	05:39	
	17:04	19	16:33 (T57 Alt)	17:51		19:34			20:20			21:04	37	07:13 (T58 Alt)	21:40	
10	08:31		16:14 (T57 Alt)	07:57		08:05			07:01			06:07		06:36 (T58 Alt)	05:38	
	17:05	20	16:34 (T57 Alt)	17:52		19:35			20:22			21:05	37	07:13 (T58 Alt)	21:40	
11	08:30		16:15 (T57 Alt)	07:56		08:03			06:59			06:06		06:37 (T58 Alt)	05:38	
	17:06	20	16:35 (T57 Alt)	17:54		19:37			20:23			21:07	36	07:13 (T58 Alt)	21:41	
12	08:30		16:16 (T57 Alt)	07:54		08:01		19:08 (T09)	06:57			06:04		06:36 (T58 Alt)	05:38	
	17:08	18	16:34 (T57 Alt)	17:56		19:39	8	19:16 (T09)	20:25			21:08	36	07:12 (T58 Alt)	21:42	
13	08:29		16:17 (T57 Alt)	07:52		07:59		19:06 (T09)	06:55			06:03		06:37 (T58 Alt)	05:38	
	17:09	18	16:35 (T57 Alt)	17:57		19:40	11	19:17 (T09)	20:26			21:10	35	07:12 (T58 Alt)	21:42	
14	08:29		16:18 (T57 Alt)	07:51		07:57		19:04 (T09)	06:53			06:02		06:37 (T58 Alt)	05:37	
	17:10	17	16:35 (T57 Alt)	17:59		19:42	15	19:19 (T09)	20:28			21:11	36	07:13 (T58 Alt)	21:43	
15	08:28		16:19 (T57 Alt)	07:49		07:55		19:03 (T09)	06:51			06:00		06:37 (T58 Alt)	05:37	
	17:12	15	16:34 (T57 Alt)	18:01		19:43	18	19:21 (T09)	20:29			21:12	35	07:12 (T58 Alt)	21:44	
16	08:27		16:19 (T57 Alt)	07:47		07:53		19:02 (T09)	06:49			05:59		06:37 (T58 Alt)	05:37	
	17:13	15	16:34 (T57 Alt)	18:01		19:45	20	19:22 (T09)	20:31			21:14	34	07:11 (T58 Alt)	21:44	
17	08:27		16:21 (T57 Alt)	07:46		07:51		19:01 (T09)	06:47			05:58		06:38 (T58 Alt)	05:37	
	17:14	12	16:33 (T57 Alt)	18:02		19:46	23	19:24 (T09)	20:32			21:15	33	07:11 (T58 Alt)	21:44	
18	08:26		16:22 (T57 Alt)	07:44		07:49		19:01 (T09)	06:45			05:56		06:38 (T58 Alt)	05:37	
	17:16	10	16:32 (T57 Alt)	18:04		19:48	24	19:25 (T09)	20:34			21:16	33	07:11 (T58 Alt)	21:45	
19	08:25		16:25 (T57 Alt)	07:42		07:47		19:00 (T09)	06:43			05:55		06:39 (T58 Alt)	05:37	
	17:17	4	16:29 (T57 Alt)	18:05		19:49	24	19:24 (T09)	20:35			21:18	31	07:10 (T58 Alt)	21:45	
20	08:24			07:40		07:45		19:00 (T09)	06:42			05:54		06:39 (T58 Alt)	05:37	
	17:19			18:07		19:51	23	19:23 (T09)	20:37			21:19	31	07:10 (T58 Alt)	21:46	
21	08:23			07:38		07:42		19:00 (T09)	06:40			05:53		06:40 (T58 Alt)	05:38	
	17:20			18:09		19:52	23	19:23 (T09)	20:38			21:20	29	07:09 (T58 Alt)	21:46	
22	08:22			07:37		07:40		19:00 (T09)	06:38			05:52		06:41 (T58 Alt)	05:38	
	17:22			18:10		19:54	22	19:22 (T09)	20:39			21:21	28	07:09 (T58 Alt)	21:46	
23	08:21			07:35		07:38		19:01 (T09)	06:36			05:51		06:42 (T58 Alt)	05:38	
	17:23			18:12		19:55	20	19:21 (T09)	20:41			21:23	26	07:08 (T58 Alt)	21:46	
24	08:20			07:33		07:36		19:02 (T09)	06:34			05:50		06:42 (T58 Alt)	05:38	
	17:25			18:14		19:57	17	19:19 (T09)	20:42			21:24	25	07:07 (T58 Alt)	21:46	
25	08:19			07:31		07:34		19:04 (T09)	06:32			05:49		06:43 (T58 Alt)	05:39	
	17:27			18:15		19:58	13	19:17 (T09)	20:44			21:25	23	07:06 (T58 Alt)	21:47	
26	08:18			07:29		07:32		19:07 (T09)	06:30		06:53 (T58 Alt)	05:48		06:44 (T58 Alt)	05:39	
	17:28			18:17		20:00	7	19:14 (T09)	20:45	9	07:02 (T58 Alt)	21:26	21	07:05 (T58 Alt)	21:47	
27	08:17			07:27		07:30			06:29		06:51 (T58 Alt)	05:47		06:45 (T58 Alt)	05:40	
	17:30			18:18		20:01			20:47	14	07:05 (T58 Alt)	21:27	19	07:04 (T58 Alt)	21:47	
28	08:16			07:25		07:28			06:27		06:50 (T58 Alt)	05:46		06:47 (T58 Alt)	05:40	
	17:31			18:20		20:03			20:48	17	07:07 (T58 Alt)	21:28	17	07:04 (T58 Alt)	21:47	
29	08:14					07:26			06:25		06:48 (T58 Alt)	05:45		06:49 (T58 Alt)	05:40	
	17:33					20:04			20:50	20	07:08 (T58 Alt)	21:30	13	07:02 (T58 Alt)	21:47	
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31	08:12					07:22						05:44		06:53 (T58 Alt)		
	17:36					20:07						21:32	4	06:57 (T58 Alt)		
Potential sun hours	273			285		368			410			472			482	
Total, worst case		292					268			83			887			
Sun reduction		0.56					0.63			0.59			0.67			
Oper. time red.		0.98					0.98			0.98			0.98			
Wind dir. red.		0.61					0.67			0.65			0.65			
Total reduction		0.33					0.41			0.37			0.42			
Total, real		97					110			31			375			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

20131290 Rolette Power Development

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SHADOW - Calendar

Calculation: V117-3.3 91.5 HH Shadow Rev 8 w/ Alts, With obstacles H15 & H16 **Shadow receptor:** H15 - Shadow Receptor: 1.0 × 1.0 Azimuth: 0.0° Slope: 90.0° (22)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BISMARCK]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
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Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
524	474	586	541	606	835	754	637	557	1,091	1,182	765	8,552

Idle start wind speed: Cut in wind speed from power curve

July			August			September			October			November			December		
1	05:42			06:13		06:47 (T58 Alt)	06:56			07:39		18:46 (T09)	07:26			08:11		15:57 (T57 Alt)
	21:46			21:20	36	07:23 (T58 Alt)	20:25			19:23	9	18:55 (T09)	17:22			16:47	20	16:17 (T57 Alt)
2	05:42			06:15		06:47 (T58 Alt)	06:58			07:40		18:50 (T09)	07:27			08:12		15:57 (T57 Alt)
	21:46			21:19	37	07:24 (T58 Alt)	20:23			19:21	4	18:54 (T09)	17:20			16:47	20	16:17 (T57 Alt)
3	05:43			06:16		06:47 (T58 Alt)	06:59			07:42			07:29			08:13		15:57 (T57 Alt)
	21:46			21:17	36	07:23 (T58 Alt)	20:21			19:19			17:18			16:46	19	16:16 (T57 Alt)
4	05:44			06:17		06:47 (T58 Alt)	07:01			07:43			07:30			08:14		15:58 (T57 Alt)
	21:46			21:16	36	07:23 (T58 Alt)	20:19			19:16			17:17			16:46	18	16:16 (T57 Alt)
5	05:44			06:19		06:46 (T58 Alt)	07:02			07:44			07:32			08:15		15:58 (T57 Alt)
	21:45			21:14	37	07:23 (T58 Alt)	20:17			19:14			17:15			16:46	17	16:15 (T57 Alt)
6	05:45			06:20		06:46 (T59 Alt)	07:03			07:46			07:33			08:17		15:58 (T57 Alt)
	21:45			21:13	37	07:23 (T58 Alt)	20:15			19:12			17:14			16:45	17	16:15 (T57 Alt)
7	05:46			06:22		06:47 (T58 Alt)	07:05			07:47			07:35			08:18		15:58 (T57 Alt)
	21:44			21:11	35	07:22 (T58 Alt)	20:13			19:10			17:12			16:45	16	16:14 (T57 Alt)
8	05:47			06:23		06:48 (T58 Alt)	07:06			07:49			07:37			08:19		15:59 (T57 Alt)
	21:44			21:10	33	07:21 (T58 Alt)	20:11			19:08			17:11			16:45	15	16:14 (T57 Alt)
9	05:47			06:24		06:50 (T58 Alt)	07:08			07:50			07:38			08:20		16:00 (T57 Alt)
	21:43			21:08	32	07:22 (T58 Alt)	20:09			19:06			17:09			16:45	14	16:14 (T57 Alt)
10	05:48			06:26		06:51 (T58 Alt)	07:09			07:52			07:40			08:21		16:00 (T57 Alt)
	21:43			21:06	30	07:21 (T58 Alt)	20:07			19:04			17:08			16:45	14	16:14 (T57 Alt)
11	05:49			06:27		06:52 (T58 Alt)	07:10			07:53			07:41			08:22		16:01 (T57 Alt)
	21:42			21:05	27	07:19 (T58 Alt)	20:05			19:02			17:07			16:45	13	16:14 (T57 Alt)
12	05:50			06:28		06:53 (T58 Alt)	07:12			07:55			07:43			08:23		16:01 (T57 Alt)
	21:42			21:03	25	07:18 (T58 Alt)	20:03			19:00			17:05			16:44	13	16:14 (T57 Alt)
13	05:51		07:00 (T58 Alt)	06:30		06:55 (T58 Alt)	07:13			07:56			07:44			08:24		16:02 (T57 Alt)
	21:41	8	07:08 (T58 Alt)	21:01	22	07:17 (T58 Alt)	20:01			18:56			17:04			16:45	12	16:14 (T57 Alt)
14	05:52		06:58 (T58 Alt)	06:31		06:56 (T58 Alt)	07:15			07:58			07:46			08:25		16:02 (T57 Alt)
	21:40	12	07:10 (T58 Alt)	21:00	20	07:16 (T58 Alt)	19:59			18:54			17:03			16:45	11	16:13 (T57 Alt)
15	05:53		06:56 (T58 Alt)	06:33		06:57 (T58 Alt)	07:16			07:59			07:47			08:25		16:02 (T57 Alt)
	21:39	16	07:12 (T58 Alt)	20:58	17	07:14 (T58 Alt)	19:56			18:52			17:02			16:45	11	16:13 (T57 Alt)
16	05:54		06:55 (T58 Alt)	06:34		06:59 (T58 Alt)	07:17			08:01			07:49			08:26		16:03 (T57 Alt)
	21:38	18	07:13 (T58 Alt)	20:56	13	07:12 (T58 Alt)	19:54			18:50			17:00			16:45	11	16:14 (T57 Alt)
17	05:55		06:54 (T58 Alt)	06:35		07:00 (T58 Alt)	07:19		18:57 (T09)	08:02			07:51			08:27		16:04 (T57 Alt)
	21:38	20	07:14 (T58 Alt)	20:54	8	07:08 (T58 Alt)	19:52	4	19:01 (T09)	18:48			16:59			16:45	10	16:14 (T57 Alt)
18	05:56		06:53 (T58 Alt)	06:37			07:20		18:52 (T09)	08:04			07:52			08:28		16:04 (T57 Alt)
	21:37	22	07:15 (T58 Alt)	20:52			19:50	12	19:04 (T09)	18:46			16:58			16:45	10	16:14 (T57 Alt)
19	05:57		06:52 (T58 Alt)	06:38			07:22		18:49 (T09)	08:05			07:54			08:28		16:04 (T57 Alt)
	21:36	24	07:16 (T58 Alt)	20:51			19:48	16	19:05 (T09)	18:45			16:57			16:46	10	16:14 (T57 Alt)
20	05:59		06:52 (T58 Alt)	06:40			07:23		18:48 (T09)	08:07			07:55			08:29		16:05 (T57 Alt)
	21:35	25	07:17 (T58 Alt)	20:49			19:46	19	19:07 (T09)	18:43			16:56			16:46	10	16:15 (T57 Alt)
21	06:00		06:51 (T58 Alt)	06:41			07:24		18:46 (T09)	08:08			07:57			08:30		16:05 (T57 Alt)
	21:34	27	07:18 (T58 Alt)	20:47			19:44	21	19:07 (T09)	18:41			16:55			16:47	10	16:15 (T57 Alt)
22	06:01		06:50 (T58 Alt)	06:42			07:26		18:46 (T09)	08:10			07:58			08:30		16:06 (T57 Alt)
	21:33	29	07:19 (T58 Alt)	20:45			19:42	22	19:08 (T09)	18:39			16:54			16:47	10	16:16 (T57 Alt)
23	06:02		06:50 (T58 Alt)	06:44			07:27		18:44 (T09)	08:11			08:00		16:03 (T57 Alt)	08:31		16:06 (T57 Alt)
	21:32	30	07:20 (T58 Alt)	20:43			19:40	24	19:08 (T09)	18:37			16:53	3	16:06 (T57 Alt)	16:48	10	16:16 (T57 Alt)
24	06:03		06:50 (T58 Alt)	06:45			07:29		18:43 (T09)	08:13			08:01		16:01 (T57 Alt)	08:31		16:06 (T57 Alt)
	21:30	31	07:21 (T58 Alt)	20:41			19:37	24	19:07 (T09)	18:35			16:52	9	16:10 (T57 Alt)	16:48	10	16:16 (T57 Alt)
25	06:05		06:49 (T58 Alt)	06:47			07:30		18:44 (T09)	08:15			08:02		15:59 (T57 Alt)	08:31		16:08 (T57 Alt)
	21:29	32	07:21 (T58 Alt)	20:39			19:35	24	19:08 (T09)	18:33			16:51	12	16:11 (T57 Alt)	16:49	10	16:18 (T57 Alt)
26	06:06		06:48 (T58 Alt)	06:48			07:31		18:43 (T09)	08:16			08:04		15:59 (T57 Alt)	08:32		16:08 (T57 Alt)
	21:28	34	07:22 (T58 Alt)	20:37			19:33	23	19:06 (T09)	18:32			16:51	14	16:13 (T57 Alt)	16:50	10	16:18 (T57 Alt)
27	06:07		06:48 (T58 Alt)	06:49			07:33		18:44 (T09)	08:18			08:05		15:58 (T57 Alt)	08:32		16:08 (T57 Alt)
	21:27	34	07:22 (T58 Alt)	20:35			19:31	20	19:04 (T09)	18:30			16:50	15	16:13 (T57 Alt)	16:50	11	16:19 (T57 Alt)
28	06:08		06:47 (T58 Alt)	06:51			07:34		18:43 (T09)	08:19			08:07		15:58 (T57 Alt)	08:32		16:08 (T57 Alt)
	21:26	35	07:22 (T58 Alt)	20:33			19:29	19	19:02 (T09)	18:28			16:49	17	16:15 (T57 Alt)	16:51	11	16:19 (T57 Alt)
29	06:10		06:48 (T58 Alt)	06:52			07:36		18:45 (T09)	08:21			08:08		15:57 (T57 Alt)	08:32		16:08 (T57 Alt)
	21:24	35	07:23 (T58 Alt)	20:31			19:27	15	19:00 (T09)	18:27			16:49	18	16:15 (T57 Alt)	16:52	12	16:20 (T57 Alt)
30	06:11		06:47 (T58 Alt)	06:54			07:37		18:45 (T09)	08:22			08:09		15:57 (T57 Alt)	08:33		16:10 (T57 Alt)
	21:23	36	07:23 (T58 Alt)	20:29			19:25	13	18:58 (T09)	18:25			16:48	18	16:15 (T57 Alt)	16:53	12	16:22 (T57 Alt)
31	06:12		06:47 (T58 Alt)	06:55						08:24						08:33		16:10 (T57 Alt)
	21:22	36	07:23 (T58 Alt)	20:27						18:23						16:54	13	16:23 (T57 Alt)
Potential sun hours	487			445			379			336			277			260		
Total, worst case		504			481			256			13			106			400	
Sun reduction		0.74			0.72			0.69			0.52			0.44			0.44	
Oper. time red.		0.98			0.98			0.98			0.98			0.98			0.98	
Wind dir. red.		0.65			0.65			0.67			0.67			0.61			0.61	
Total reduction		0.47			0.46			0.45			0.34			0.26			0.26	
Total, real		237			219			115			4			27			105	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

Description:

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Calculated:
1/19/2015 4:29 PM/2.9.285

SHADOW - Calendar

Calculation: V117-3.3 91.5 HH Shadow Rev 8 w/ Alts, With obstacles H15 & H16 **Shadow receptor:** H16 - Shadow Receptor: 1.0 × 1.0 Azimuth: 0.0° Slope: 90.0° (23)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BISMARCK]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4.92	5.13	7.45	8.03	10.20	11.21	11.69	10.35	8.68	5.69	4.02	3.69

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
524	474	586	541	606	835	754	637	557	1,091	1,182	765	8,552

Idle start wind speed: Cut in wind speed from power curve

	January			February		March			April			May			June		
1	08:33			08:10		07:23			07:19			18:52 (T50 Alt)	06:22		05:43		06:09 (T33)
	16:55			17:38		18:21			20:08	40		19:32 (T50 Alt)	20:53		21:33	16	06:25 (T33)
2	08:33			08:09		07:21			07:17			18:52 (T50 Alt)	06:20		05:42		06:08 (T33)
	16:56			17:39		18:23			20:10	39		19:31 (T50 Alt)	20:54		21:34	16	06:24 (T33)
3	08:32			08:08		07:19			07:15			18:52 (T50 Alt)	06:18		05:41		06:08 (T33)
	16:57			17:41		18:24			20:11	38		19:30 (T50 Alt)	20:55		21:34	17	06:25 (T33)
4	08:32		09:00 (T31)	08:06		07:17			07:13			18:53 (T50 Alt)	06:17		05:41		06:07 (T33)
	16:58	1	09:01 (T31)	17:42		18:26			20:13	36		19:29 (T50 Alt)	20:57		21:35	18	06:25 (T33)
5	08:32		08:59 (T31)	08:05		07:15			07:11			18:54 (T50 Alt)	06:15		05:40		06:07 (T33)
	16:59	3	09:02 (T31)	17:44		18:28			20:14	34		19:28 (T50 Alt)	20:58		21:36	19	06:26 (T33)
6	08:32		08:59 (T31)	08:03		07:13			07:09			18:55 (T50 Alt)	06:13		05:40		06:06 (T33)
	17:00	5	09:04 (T31)	17:46		18:29			20:16	32		19:27 (T50 Alt)	21:00		21:37	19	06:25 (T33)
7	08:32		08:59 (T31)	08:02		07:11			07:07			18:56 (T50 Alt)	06:12		05:39		06:06 (T33)
	17:01	7	09:06 (T31)	17:47		18:31			20:17	29		19:25 (T50 Alt)	21:01		21:38	20	06:26 (T33)
8	08:31		08:58 (T31)	08:00		08:09			07:05			07:27 (T32)	06:10		05:39		06:05 (T33)
	17:02	8	09:06 (T31)	17:49		18:32			20:19	29		19:24 (T50 Alt)	21:03		21:39	20	06:25 (T33)
9	08:31		08:58 (T31)	07:59		08:07			07:03			07:25 (T32)	06:09		05:39		06:05 (T33)
	17:04	10	09:08 (T31)	17:51		19:34			20:20	29		19:21 (T50 Alt)	21:04		21:40	21	06:26 (T33)
10	08:31		08:57 (T31)	07:57		08:05			07:01			07:23 (T32)	06:07		05:38		06:05 (T33)
	17:05	11	09:08 (T31)	17:52		19:35			20:22	28		19:18 (T50 Alt)	21:05		21:40	21	06:26 (T33)
11	08:30		08:57 (T31)	07:56		08:03			06:59			07:21 (T32)	06:06		05:38		06:05 (T33)
	17:06	13	09:10 (T31)	17:54		19:37			20:23	23		19:14 (T50 Alt)	21:07		21:41	21	06:26 (T33)
12	08:30		08:56 (T31)	07:54		08:01			06:57			07:19 (T32)	06:04		05:38		06:04 (T33)
	17:07	14	09:10 (T31)	17:56		19:38			20:25	16		07:35 (T32)	21:08		21:42	22	06:26 (T33)
13	08:29		08:55 (T31)	07:52		07:59			06:55			07:17 (T32)	06:03		05:37		06:04 (T33)
	17:09	16	09:11 (T31)	17:57		19:40			20:26	19		07:36 (T32)	21:09		21:42	22	06:26 (T33)
14	08:28		08:55 (T31)	07:51		07:57			06:53			07:15 (T32)	06:02		05:37		06:04 (T33)
	17:10	17	09:12 (T31)	17:59		19:41			20:28	21		07:36 (T32)	21:11		21:43	22	06:26 (T33)
15	08:28		08:54 (T31)	07:49		07:55			06:51			07:13 (T32)	06:00		05:37		06:04 (T33)
	17:12	19	09:13 (T31)	18:00		19:43			20:29	23		07:36 (T32)	21:12		21:43	22	06:26 (T33)
16	08:27		08:53 (T31)	07:47		07:53		19:11 (T50 Alt)	06:49			07:11 (T32)	05:59		05:37		06:04 (T33)
	17:13	20	09:13 (T31)	18:00		19:45	11	19:22 (T50 Alt)	20:31	25		07:36 (T32)	21:14		21:44	22	06:26 (T33)
17	08:26		08:52 (T31)	07:45		07:51		19:07 (T50 Alt)	06:47			07:09 (T32)	05:58		05:37		06:04 (T33)
	17:14	22	09:14 (T31)	18:02		19:46	17	19:24 (T50 Alt)	20:32	27		07:36 (T32)	21:15		21:44	23	06:27 (T33)
18	08:26		08:52 (T31)	07:44		07:49		19:03 (T50 Alt)	06:45			07:07 (T32)	05:56		05:37		06:04 (T33)
	17:16	22	09:14 (T31)	18:04		19:48	21	19:24 (T50 Alt)	20:33	29		07:36 (T32)	21:16		21:45	23	06:27 (T33)
19	08:25		08:52 (T31)	07:42		07:47		19:01 (T50 Alt)	06:43			07:07 (T32)	05:55		05:37		06:04 (T33)
	17:17	22	09:14 (T31)	18:05		19:49	25	19:26 (T50 Alt)	20:35	28		07:35 (T32)	21:17		21:45	23	06:27 (T33)
20	08:24		08:52 (T31)	07:40		07:44		19:00 (T50 Alt)	06:41			07:08 (T32)	05:54		05:37		06:06 (T33)
	17:19	23	09:15 (T31)	18:07		19:51	28	19:28 (T50 Alt)	20:36	27		07:35 (T32)	21:19		21:45	22	06:28 (T33)
21	08:23		08:53 (T31)	07:38		07:42		18:58 (T50 Alt)	06:39			07:08 (T32)	05:53		05:38		06:06 (T33)
	17:20	22	09:15 (T31)	18:09		19:52	31	19:29 (T50 Alt)	20:38	26		07:34 (T32)	21:20		21:46	22	06:28 (T33)
22	08:22		08:53 (T31)	07:36		07:40		18:57 (T50 Alt)	06:38			07:08 (T32)	05:52	06:17 (T33)	05:38		06:06 (T33)
	17:22	22	09:15 (T31)	18:10		19:54	34	19:31 (T50 Alt)	20:39	25		07:33 (T32)	21:21	3 06:20 (T33)	21:46	22	06:28 (T33)
23	08:21		08:54 (T31)	07:35		07:38		18:56 (T50 Alt)	06:36			07:09 (T32)	05:51	06:16 (T33)	05:38		06:06 (T33)
	17:23	21	09:15 (T31)	18:12		19:55	36	19:32 (T50 Alt)	20:41	23		07:32 (T32)	21:22	4 06:20 (T33)	21:46	22	06:28 (T33)
24	08:20		08:55 (T31)	07:33		07:36		18:55 (T50 Alt)	06:34			07:09 (T32)	05:50	06:15 (T33)	05:38		06:06 (T33)
	17:25	20	09:15 (T31)	18:13		19:57	39	19:34 (T50 Alt)	20:42	22		07:31 (T32)	21:24	6 06:21 (T33)	21:46	23	06:29 (T33)
25	08:19		08:56 (T31)	07:31		07:34		18:54 (T50 Alt)	06:32			07:11 (T32)	05:49	06:14 (T33)	05:39		06:06 (T33)
	17:26	19	09:15 (T31)	18:15		19:58	40	19:34 (T50 Alt)	20:44	19		07:30 (T32)	21:25	8 06:22 (T33)	21:46	23	06:29 (T33)
26	08:18		08:57 (T31)	07:29		07:32		18:54 (T50 Alt)	06:30			07:12 (T32)	05:48	06:13 (T33)	05:39		06:06 (T33)
	17:28	18	09:15 (T31)	18:17		19:59	41	19:35 (T50 Alt)	20:45	16		07:28 (T32)	21:26	9 06:22 (T33)	21:47	22	06:28 (T33)
27	08:17		08:57 (T31)	07:27		07:30		18:52 (T50 Alt)	06:28			07:14 (T32)	05:47	06:12 (T33)	05:39		06:07 (T33)
	17:30	16	09:13 (T31)	18:18		20:01	42	19:34 (T50 Alt)	20:47	11		07:25 (T32)	21:27	10 06:22 (T33)	21:47	22	06:29 (T33)
28	08:15		08:59 (T31)	07:25		07:28		18:52 (T50 Alt)	06:27				05:46	06:11 (T33)	05:40		06:07 (T33)
	17:31	14	09:13 (T31)	18:20		20:02	42	19:34 (T50 Alt)	20:48				21:28	12 06:23 (T33)	21:46	22	06:29 (T33)
29	08:14		09:01 (T31)			07:26		18:52 (T50 Alt)	06:25				05:45	06:11 (T33)	05:40		06:08 (T33)
	17:33	10	09:11 (T31)			20:04	41	19:33 (T50 Alt)	20:50				21:29	13 06:24 (T33)	21:46	22	06:30 (T33)
30	08:13		09:05 (T31)			07:24		18:52 (T50 Alt)	06:23				05:44	06:10 (T33)	05:41		06:08 (T33)
	17:34	2	09:07 (T31)			20:05	41	19:33 (T50 Alt)	20:51				21:30	14 06:24 (T33)	21:46	22	06:30 (T33)
31	08:12					07:21		18:52 (T50 Alt)					05:43	06:09 (T33)			
	17:36					20:07	41	19:33 (T50 Alt)					21:31	15 06:24 (T33)			
Potential sun hours	273			285		368			410			472			482		
Total, worst case		397					530			714			94			631	
Sun reduction		0.56					0.63			0.59			0.67			0.70	
Oper. time red.		0.98					0.98			0.98			0.98			0.98	
Wind dir. red.		0.68					0.68			0.67			0.64			0.64	
Total reduction		0.37					0.42			0.39			0.42			0.44	
Total, real		147					222			276			40			276	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

Description:

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wind@eapc.net

Calculated:
1/19/2015 4:29 PM/2.9.285

SHADOW - Calendar

Calculation: V117-3.3 91.5 HH Shadow Rev 8 w/ Alts, With obstacles H15 & H16 **Shadow receptor:** H16 - Shadow Receptor: 1.0 × 1.0 Azimuth: 0.0° Slope: 90.0° (23)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [BISMARCK]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4.92	5.13	7.45	8.03	10.20	11.21	11.69	10.35	8.68	5.69	4.02	3.69

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
524	474	586	541	606	835	754	637	557	1,091	1,182	765	8,552

Idle start wind speed: Cut in wind speed from power curve

	July		August		September		October	November		December	
1	05:41	06:09 (T33)	06:13		06:56	07:20 (T32)	07:39	07:25		08:10	08:39 (T31)
	21:46	21 06:30 (T33)	21:20		20:25	23 19:13 (T50 Alt)	19:23	17:21		16:47	13 08:52 (T31)
2	05:42	06:09 (T33)	06:15		06:58	07:21 (T32)	07:40	07:27		08:12	08:40 (T31)
	21:46	21 06:30 (T33)	21:19		20:23	28 19:16 (T50 Alt)	19:20	17:20		16:47	11 08:51 (T31)
3	05:43	06:10 (T33)	06:16		06:59	07:23 (T32)	07:41	07:29		08:13	08:41 (T31)
	21:46	21 06:31 (T33)	21:17		20:21	29 19:19 (T50 Alt)	19:18	17:18		16:46	10 08:51 (T31)
4	05:43	06:11 (T33)	06:17		07:00	07:24 (T32)	07:43	07:30		08:14	08:43 (T31)
	21:45	20 06:31 (T33)	21:16		20:19	29 19:21 (T50 Alt)	19:16	17:17		16:46	8 08:51 (T31)
5	05:44	06:11 (T33)	06:19		07:02	18:52 (T50 Alt)	07:44	07:32		08:15	08:44 (T31)
	21:45	20 06:31 (T33)	21:14		20:17	29 19:21 (T50 Alt)	19:14	17:15		16:46	7 08:51 (T31)
6	05:45	06:12 (T33)	06:20		07:03	18:51 (T50 Alt)	07:46	07:33		08:16	08:45 (T31)
	21:45	19 06:31 (T33)	21:13		20:15	32 19:23 (T50 Alt)	19:12	17:14		16:45	5 08:50 (T31)
7	05:46	06:13 (T33)	06:21		07:05	18:49 (T50 Alt)	07:47	07:35		08:18	08:46 (T31)
	21:44	19 06:32 (T33)	21:11		20:13	34 19:23 (T50 Alt)	19:10	17:12		16:45	3 08:49 (T31)
8	05:46	06:14 (T33)	06:23		07:06	18:47 (T50 Alt)	07:49	07:36		08:19	08:47 (T31)
	21:44	18 06:32 (T33)	21:10		20:11	37 19:24 (T50 Alt)	19:08	17:11		16:45	1 08:48 (T31)
9	05:47	06:14 (T33)	06:24		07:07	18:47 (T50 Alt)	07:50	07:38		08:20	
	21:43	18 06:32 (T33)	21:08		20:09	38 19:25 (T50 Alt)	19:06	17:09		16:45	
10	05:48	06:15 (T33)	06:26		07:09	18:45 (T50 Alt)	07:52	07:40		08:21	
	21:43	17 06:32 (T33)	21:06		20:07	39 19:24 (T50 Alt)	19:04	17:08		16:44	
11	05:49	06:16 (T33)	06:27		07:10	18:44 (T50 Alt)	07:53	07:41		08:22	
	21:42	16 06:32 (T33)	21:05		20:05	40 19:24 (T50 Alt)	19:02	17:06		16:44	
12	05:50	06:17 (T33)	06:28		07:12	18:44 (T50 Alt)	07:55	07:43	08:36 (T31)	08:23	
	21:41	15 06:32 (T33)	21:03		20:03	41 19:25 (T50 Alt)	19:00	17:05	3 08:39 (T31)	16:44	
13	05:51	06:18 (T33)	06:30		07:13	18:43 (T50 Alt)	07:56	07:44	08:33 (T31)	08:24	
	21:41	14 06:32 (T33)	21:01		20:01	41 19:24 (T50 Alt)	18:56	17:04	10 08:43 (T31)	16:44	
14	05:52	06:19 (T33)	06:31		07:14	18:42 (T50 Alt)	07:58	07:46	08:31 (T31)	08:24	
	21:40	13 06:32 (T33)	20:59		19:58	42 19:24 (T50 Alt)	18:54	17:03	14 08:45 (T31)	16:44	
15	05:53	06:20 (T33)	06:32		07:16	18:42 (T50 Alt)	07:59	07:47	08:30 (T31)	08:25	
	21:39	12 06:32 (T33)	20:58		19:56	42 19:24 (T50 Alt)	18:52	17:01	16 08:46 (T31)	16:45	
16	05:54	06:21 (T33)	06:34	07:21 (T32)	07:17	18:42 (T50 Alt)	08:01	07:49	08:30 (T31)	08:26	
	21:38	11 06:32 (T33)	20:56	12 07:33 (T32)	19:54	41 19:23 (T50 Alt)	18:50	17:00	18 08:48 (T31)	16:45	
17	05:55	06:22 (T33)	06:35	07:19 (T32)	07:19	18:42 (T50 Alt)	08:02	07:50	08:29 (T31)	08:27	
	21:37	10 06:32 (T33)	20:54	16 07:35 (T32)	19:52	41 19:23 (T50 Alt)	18:48	16:59	19 08:48 (T31)	16:45	
18	05:56	06:23 (T33)	06:37	07:16 (T32)	07:20	18:42 (T50 Alt)	08:04	07:52	08:29 (T31)	08:28	
	21:37	8 06:31 (T33)	20:52	20 07:36 (T32)	19:50	40 19:22 (T50 Alt)	18:46	16:58	20 08:49 (T31)	16:45	
19	05:57	06:24 (T33)	06:38	07:16 (T32)	07:21	18:41 (T50 Alt)	08:05	07:53	08:29 (T31)	08:28	
	21:36	7 06:31 (T33)	20:50	22 07:38 (T32)	19:48	40 19:21 (T50 Alt)	18:44	16:57	21 08:50 (T31)	16:46	
20	05:58	06:25 (T33)	06:39	07:14 (T32)	07:23	18:42 (T50 Alt)	08:07	07:55	08:28 (T31)	08:29	
	21:35	5 06:30 (T33)	20:49	24 07:38 (T32)	19:46	37 19:19 (T50 Alt)	18:43	16:56	22 08:50 (T31)	16:46	
21	06:00	06:26 (T33)	06:41	07:13 (T32)	07:24	18:42 (T50 Alt)	08:08	07:56	08:29 (T31)	08:29	
	21:34	4 06:30 (T33)	20:47	25 07:38 (T32)	19:44	35 19:17 (T50 Alt)	18:41	16:55	22 08:51 (T31)	16:47	
22	06:01	06:27 (T33)	06:42	07:13 (T32)	07:26	18:43 (T50 Alt)	08:10	07:58	08:28 (T31)	08:30	
	21:33	2 06:29 (T33)	20:45	26 07:39 (T32)	19:42	32 19:15 (T50 Alt)	18:39	16:54	23 08:51 (T31)	16:47	
23	06:02		06:44	07:12 (T32)	07:27	18:44 (T50 Alt)	08:11	07:59	08:29 (T31)	08:30	
	21:31		20:43	27 07:39 (T32)	19:39	29 19:13 (T50 Alt)	18:37	16:53	22 08:51 (T31)	16:48	
24	06:03		06:45	07:11 (T32)	07:29	18:44 (T50 Alt)	08:13	08:01	08:29 (T31)	08:31	
	21:30		20:41	28 07:39 (T32)	19:37	26 19:10 (T50 Alt)	18:35	16:52	22 08:51 (T31)	16:48	
25	06:04		06:46	07:11 (T32)	07:30	18:46 (T50 Alt)	08:14	08:02	08:30 (T31)	08:31	
	21:29		20:39	28 07:39 (T32)	19:35	23 19:09 (T50 Alt)	18:33	16:51	22 08:52 (T31)	16:49	
26	06:06		06:48	07:12 (T32)	07:31	18:48 (T50 Alt)	08:16	08:04	08:32 (T31)	08:32	
	21:28		20:37	27 07:39 (T32)	19:33	18 19:06 (T50 Alt)	18:32	16:50	20 08:52 (T31)	16:49	
27	06:07		06:49	07:13 (T32)	07:33	18:51 (T50 Alt)	08:18	08:05	08:33 (T31)	08:32	
	21:27		20:35	25 07:38 (T32)	19:31	13 19:04 (T50 Alt)	18:30	16:50	19 08:52 (T31)	16:50	
28	06:08		06:51	07:15 (T32)	07:34		08:19	08:06	08:34 (T31)	08:32	
	21:25		20:33	23 07:38 (T32)	19:29		18:28	16:49	17 08:51 (T31)	16:51	
29	06:09		06:52	07:16 (T32)	07:36		08:21	08:08	08:36 (T31)	08:32	
	21:24		20:31	21 07:37 (T32)	19:27		18:26	16:48	16 08:52 (T31)	16:52	
30	06:11		06:53	07:17 (T32)	07:37		08:22	08:09	08:37 (T31)	08:32	
	21:23		20:29	19 07:36 (T32)	19:25		18:25	16:48	14 08:51 (T31)	16:53	
31	06:12		06:55	07:19 (T32)			08:24			08:32	
	21:21		20:27	16 07:35 (T32)			18:23			16:53	
Potential sun hours	487		445		379		336	277		260	
Total, worst case		311		359		899			340		58
Sun reduction		0.74		0.72		0.69			0.44		0.44
Oper. time red.		0.98		0.98		0.98			0.98		0.98
Wind dir. red.		0.64		0.67		0.68			0.68		0.68
Total reduction		0.47		0.47		0.46			0.29		0.29
Total, real		145		169		411			98		17

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

Description:

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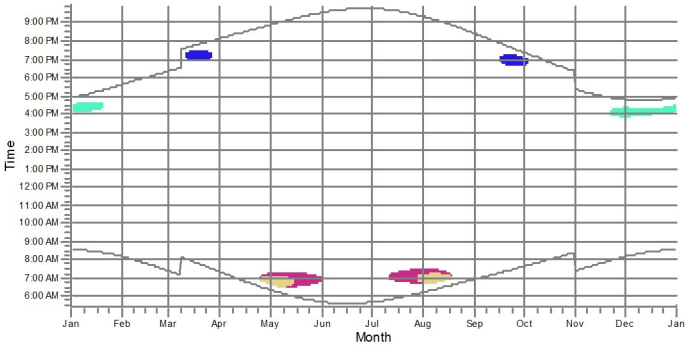
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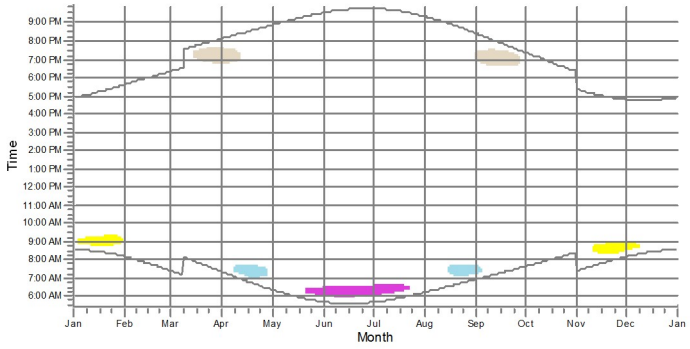
SHADOW - Calendar, graphical

Calculation: V117-3.3 91.5 HH Shadow Rev 8 w/ Alts, With obstacles H15 & H16

H15: Shadow Receptor: 1.0 × 1.0 Azimuth: 0.0° Slope: 90.0° (22)



H16: Shadow Receptor: 1.0 × 1.0 Azimuth: 0.0° Slope: 90.0° (23)



WTGs

T31: T31	T33: T33	T50 Alt: T50 Alt	T58 Alt: T58 Alt
T32: T32	T09: T09	T57 Alt: T57 Alt	T59 Alt: T59 Alt

Appendix G: windPRO Sound Analysis with No Ground Attenuation

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
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Finley, ND 58230

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wind@eapc.net
Calculated:
2/16/2015 3:33 PM/2.9.285

DECIBEL - Main Result

Calculation: V117-3.3 84m HH Rev 8 No Ground Attenuation

Noise calculation model:
ISO 9613-2 General
Wind speed:
95% rated power
Ground attenuation:
None
Meteorological coefficient, C0:
0.0 dB
Type of demand in calculation:
1: WTG noise is compared to demand (DK, DE, SE, NL etc.)
Noise values in calculation:
All noise values are mean values (Lwa) (Normal)
Pure tones:
Pure and Impulse tone penalty are added to WTG source noise
Height above ground level, when no value in NSA object:
1.5 m Don't allow override of model height with height from NSA object
Deviation from "official" noise demands. Negative is more restrictive, positive is less restrictive.:
0.0 dB(A)



Scale 1:400,000
New WTG
Noise sensitive area

WTGs

	UTM (north)-WGS84 Zone: 14				WTG type							Noise data						
	East	North	Z	Row data/Description	Valid	Manufact.	Type-generator	Power, rated	Rotor diameter	Hub height	Creator	Name	Wind speed	Status	LwA,ref	Pure tones	
			[m]					[kW]	[m]	[m]			[m/s]		[dB(A)]		
T01	426,404	5,380,816	490.7	T01	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T02	427,088	5,380,888	490.7	T02	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T03	427,532	5,381,154	490.6	T03	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T04	428,153	5,381,587	484.6	T04	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T05	429,079	5,380,790	481.6	T05	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T06	429,560	5,381,041	481.6	T06	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T07	430,155	5,381,640	478.5	T07	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T08	429,579	5,382,607	487.7	T08	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T09	430,407	5,382,722	496.8	T09	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T10	430,657	5,383,084	491.0	T10	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T11	430,242	5,379,390	490.7	T11	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T12	430,379	5,379,847	480.0	T12	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T13	431,335	5,380,312	481.2	T13	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T14	431,340	5,380,862	481.6	T14	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T15	431,891	5,379,497	484.6	T15	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T16	432,876	5,379,052	496.9	T16	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T17	432,886	5,379,665	487.7	T17	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T18	432,945	5,380,204	489.6	T18	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T19	432,633	5,380,904	496.8	T19	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T20	432,985	5,381,379	499.9	T20	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T21	432,753	5,381,916	493.8	T21	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T22	433,787	5,380,903	516.3	T22	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T23	433,809	5,381,470	515.1	T23	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T24	433,830	5,381,961	512.1	T24	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T25	434,026	5,379,018	527.3	T25	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T26	434,112	5,379,482	520.4	T26	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T27	434,209	5,379,879	512.1	T27	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T28	434,398	5,380,261	515.1	T28	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T29	435,048	5,380,847	518.2	T29	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T30	434,970	5,381,321	525.3	T30	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T31	435,093	5,381,756	514.4	T31	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T32	435,029	5,382,733	490.7	T32	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T33	435,153	5,383,180	487.7	T33	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T34	435,280	5,380,120	499.9	T34	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T35	435,948	5,380,198	493.8	T35	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T36	435,940	5,381,153	497.4	T36	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T37	435,892	5,381,871	496.8	T37	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T38	435,956	5,382,432	496.8	T38	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T39	436,670	5,380,219	493.8	T39	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T40	436,795	5,381,008	493.6	T40	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T41	437,500	5,381,035	490.7	T41	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T42	436,705	5,381,860	496.8	T42	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T43	436,544	5,382,577	486.6	T43	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h

To be continued on next page...

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

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Calculated:
2/16/2015 3:33 PM/2.9.285

DECIBEL - Main Result

Calculation: V117-3.3 84m HH Rev 8 No Ground Attenuation

...continued from previous page

	UTM (north)-WGS84 Zone: 14				WTG type							Noise data					
	East	North	Z	Row data/Description	Valid	Manufact.	Type-generator	Power, rated	Rotor diameter	Hub height	Creator	Name	Wind speed	Status	LwA,ref	Pure tones	
			[m]					[kW]	[m]	[m]			[m/s]		[dB(A)]		
T44	437,401	5,383,031	484.6	T44	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T45	437,748	5,383,328	484.6	T45	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T46	436,528	5,383,414	491.2	T46	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T47	436,146	5,384,176	493.8	T47	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T48 Alt	437,462	5,383,893	484.9	T48 Alt	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T49 Alt	437,741	5,384,219	486.5	T49 Alt	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T50 Alt	433,440	5,382,540	491.0	T50 Alt	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T51 Alt	432,950	5,382,296	487.7	T51 Alt	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T52 Alt	428,647	5,379,825	484.6	T52 Alt	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T53 Alt	427,624	5,379,906	487.7	T53 Alt	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T54 Alt	429,351	5,379,803	481.6	T54 Alt	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T55 Alt	430,397	5,380,730	475.9	T55 Alt	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T56 Alt	435,924	5,383,222	484.6	T56 Alt	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T57 Alt	430,454	5,381,937	481.6	T57 Alt	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T58 Alt	432,258	5,383,093	481.6	T58 Alt	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T59 Alt	432,653	5,383,230	479.6	T59 Alt	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h

h) Generic octave distribution used

Calculation Results

Sound Level

Noise sensitive area		UTM (north)-WGS84 Zone: 14			Demands	Sound Level		Demands fulfilled ?
No.	Name	East	North	Z	Imission height	Noise	From WTGs	Distance to noise demand	Noise
				[m]	[m]	[dB(A)]	[dB(A)]	[m]	
H01	Noise sensitive point: User defined (2)	425,103	5,377,690	482.7	1.5	50.0	32.1	3,045	Yes
H02	Noise sensitive point: User defined (3)	425,068	5,379,854	474.1	1.5	50.0	36.6	1,343	Yes
H03	Noise sensitive point: User defined (4)	426,643	5,379,805	491.7	1.5	50.0	43.3	669	Yes
H04	Noise sensitive point: User defined (5)	426,549	5,379,974	491.0	1.5	50.0	43.9	532	Yes
H05	Noise sensitive point: User defined (6)	427,874	5,379,000	474.0	1.5	50.0	43.0	623	Yes
H06	Noise sensitive point: User defined (7)	428,371	5,377,613	488.9	1.5	50.0	37.3	1,897	Yes
H07	Noise sensitive point: User defined (8)	436,489	5,378,172	496.8	1.5	50.0	39.1	1,710	Yes
H08	Noise sensitive point: User defined (9)	437,470	5,377,901	494.2	1.5	50.0	36.6	2,119	Yes
H09	Noise sensitive point: User defined (10)	423,456	5,380,441	468.5	1.5	50.0	31.3	2,669	Yes
H10	Noise sensitive point: User defined (11)	425,063	5,381,519	490.7	1.5	50.0	37.2	1,211	Yes
H11	Noise sensitive point: User defined (12)	425,794	5,382,095	484.6	1.5	50.0	38.7	1,106	Yes
H12	Noise sensitive point: User defined (13)	426,747	5,381,621	488.2	1.5	50.0	45.1	434	Yes
H13	Noise sensitive point: User defined (14)	427,710	5,382,364	484.6	1.5	50.0	43.3	573	Yes
H14	Noise sensitive point: User defined (15)	431,600	5,381,428	480.6	1.5	50.0	47.8	247	Yes
H15	Noise sensitive point: User defined (16)	431,525	5,382,848	481.6	1.5	50.0	46.6	420	Yes
H16	Noise sensitive point: User defined (17)	434,082	5,382,575	494.6	1.5	50.0	48.9	159	Yes
H17	Noise sensitive point: User defined (18)	437,449	5,381,736	489.6	1.5	50.0	47.4	339	Yes
H18	Noise sensitive point: User defined (19)	438,036	5,381,480	487.7	1.5	50.0	45.1	371	Yes
H19	Noise sensitive point: User defined (20)	435,083	5,383,732	482.5	1.5	50.0	47.6	187	Yes
H20	Noise sensitive point: User defined (21)	433,814	5,383,618	481.3	1.5	50.0	44.6	756	Yes
H21	Noise sensitive point: User defined (22)	431,519	5,383,509	482.5	1.5	50.0	45.3	500	Yes
H22	Noise sensitive point: User defined (23)	429,988	5,383,991	485.4	1.5	50.0	42.1	781	Yes
H23	Noise sensitive point: User defined (24)	429,842	5,383,799	486.0	1.5	50.0	42.8	726	Yes
H24	Noise sensitive point: User defined (25)	426,110	5,383,888	484.6	1.5	50.0	34.3	2,722	Yes
H25	Noise sensitive point: User defined (26)	427,520	5,383,912	487.7	1.5	50.0	36.8	2,090	Yes
H26	Noise sensitive point: User defined (27)	423,216	5,384,199	475.5	1.5	50.0	28.3	4,341	Yes
H27	Noise sensitive point: User defined (28)	425,207	5,385,626	484.6	1.5	50.0	29.6	4,639	Yes
H28	Noise sensitive point: User defined (29)	434,037	5,385,350	487.7	1.5	50.0	38.6	2,078	Yes
H29	Noise sensitive point: User defined (30)	436,241	5,385,900	487.5	1.5	50.0	38.5	1,404	Yes
H30	Noise sensitive point: User defined (31)	436,720	5,386,461	487.7	1.5	50.0	36.4	2,032	Yes
H31	Noise sensitive point: User defined (32)	438,532	5,385,959	492.7	1.5	50.0	36.6	1,588	Yes
H32	Noise sensitive point: User defined (33)	436,777	5,386,821	487.7	1.5	50.0	35.2	2,396	Yes

To be continued on next page...

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
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Finley, ND 58230

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DECIBEL - Main Result

Calculation: V117-3.3 84m HH Rev 8 No Ground Attenuation

...continued from previous page

Noise sensitive area		UTM (north)-WGS84 Zone: 14				Demands	Sound Level		Demands fulfilled ?
No.	Name	East	North	Z	Imission height	Noise	From WTGs	Distance to noise demand	Noise
				[m]	[m]	[dB(A)]	[dB(A)]	[m]	
H33	Noise sensitive point: User defined (34)	433,417	5,386,642	489.8	1.5	50.0	34.8	3,148	Yes
H34	Noise sensitive point: User defined (35)	430,581	5,386,696	484.6	1.5	50.0	33.3	3,282	Yes
H35	Noise sensitive point: User defined (36)	428,790	5,387,073	487.7	1.5	50.0	31.2	4,064	Yes
H36	Noise sensitive point: User defined (37)	428,339	5,387,121	487.8	1.5	50.0	30.7	4,315	Yes
H37	Noise sensitive point: User defined (38)	424,038	5,388,227	476.1	1.5	50.0	25.0	7,465	Yes
H38	Noise sensitive point: User defined (39)	427,771	5,389,763	485.6	1.5	50.0	26.1	6,937	Yes
H39	Noise sensitive point: User defined (40)	426,492	5,389,606	486.3	1.5	50.0	25.5	7,325	Yes
H40	Noise sensitive point: User defined (41)	426,881	5,390,596	478.5	1.5	50.0	24.5	8,068	Yes
H41	Noise sensitive point: User defined (42)	429,239	5,390,383	484.6	1.5	50.0	26.1	7,102	Yes
H42	Noise sensitive point: User defined (43)	429,976	5,389,256	485.3	1.5	50.0	28.1	5,878	Yes
H43	Noise sensitive point: User defined (44)	431,513	5,390,474	486.5	1.5	50.0	26.9	6,972	Yes
H44	Noise sensitive point: User defined (45)	429,367	5,391,413	484.6	1.5	50.0	24.8	8,096	Yes
H45	Noise sensitive point: User defined (46)	432,691	5,390,026	492.8	1.5	50.0	27.9	6,442	Yes
H46	Noise sensitive point: User defined (47)	434,940	5,389,948	488.7	1.5	50.0	28.3	5,576	Yes
H47	Noise sensitive point: User defined (48)	434,910	5,390,254	489.5	1.5	50.0	27.7	5,882	Yes
H48	Noise sensitive point: User defined (49)	426,887	5,391,926	484.6	1.5	50.0	23.0	9,273	Yes
H49	Noise sensitive point: User defined (50)	436,271	5,390,194	493.4	1.5	50.0	27.7	5,697	Yes
H50	Noise sensitive point: User defined (51)	436,212	5,390,180	493.3	1.5	50.0	27.7	5,682	Yes
H51	Noise sensitive point: User defined (52)	436,128	5,390,182	493.0	1.5	50.0	27.7	5,684	Yes
H52	Noise sensitive point: User defined (53)	436,045	5,390,169	492.7	1.5	50.0	27.8	5,672	Yes
H53	Noise sensitive point: User defined (54)	435,952	5,390,222	492.0	1.5	50.0	27.7	5,728	Yes
H54	Noise sensitive point: User defined (55)	436,061	5,391,348	494.3	1.5	50.0	25.9	6,851	Yes
H55	Noise sensitive point: User defined (56)	436,924	5,390,748	494.9	1.5	50.0	26.6	6,246	Yes
H56	Noise sensitive point: User defined (57)	436,493	5,390,085	493.8	1.5	50.0	27.8	5,597	Yes
H57	Noise sensitive point: User defined (58)	436,955	5,390,062	494.2	1.5	50.0	27.7	5,562	Yes
H58	Noise sensitive point: User defined (59)	436,487	5,389,750	493.8	1.5	50.0	28.4	5,262	Yes
H59	Noise sensitive point: User defined (60)	436,695	5,390,178	493.8	1.5	50.0	27.6	5,705	Yes
H60	Noise sensitive point: User defined (61)	436,792	5,390,176	493.9	1.5	50.0	27.6	5,698	Yes
H61	Noise sensitive point: User defined (62)	436,761	5,390,069	493.8	1.5	50.0	27.8	5,597	Yes
H62	Noise sensitive point: User defined (63)	436,848	5,390,074	494.0	1.5	50.0	27.8	5,588	Yes
H63	Noise sensitive point: User defined (64)	436,447	5,389,149	491.4	1.5	50.0	29.6	4,660	Yes
H64	Noise sensitive point: User defined (65)	435,203	5,388,342	487.7	1.5	50.0	31.3	3,951	Yes
H65	Noise sensitive point: User defined (66)	436,340	5,387,513	487.7	1.5	50.0	33.3	3,020	Yes
H66	Noise sensitive point: User defined (67)	437,143	5,388,366	492.2	1.5	50.0	31.0	3,856	Yes
H67	Noise sensitive point: User defined (68)	437,850	5,388,298	492.1	1.5	50.0	30.8	3,750	Yes
H68	Noise sensitive point: User defined (69)	438,962	5,380,033	490.7	1.5	50.0	38.1	1,452	Yes
H69	Noise sensitive point: User defined (70)	437,832	5,375,631	496.6	1.5	50.0	31.0	4,397	Yes
H70	Noise sensitive point: User defined (71)	437,063	5,376,441	493.8	1.5	50.0	33.5	3,460	Yes
H71	Noise sensitive point: User defined (72)	426,198	5,376,299	477.3	1.5	50.0	31.1	3,569	Yes
H72	Noise sensitive point: User defined (73)	423,740	5,382,611	473.1	1.5	50.0	31.1	2,909	Yes
H73	Noise sensitive point: User defined (74)	421,712	5,385,818	484.6	1.5	50.0	24.6	6,551	Yes
H74	Noise sensitive point: User defined (75)	422,066	5,388,846	472.5	1.5	50.0	22.5	8,817	Yes
H75	Noise sensitive point: User defined (76)	431,638	5,384,520	487.7	1.5	50.0	40.7	1,187	Yes
H76	Noise sensitive point: User defined (77)	426,805	5,384,667	485.2	1.5	50.0	33.7	3,040	Yes
H77	Noise sensitive point: User defined (78)	433,190	5,389,038	493.8	1.5	50.0	29.7	5,371	Yes
H78	Noise sensitive point: User defined (79)	436,125	5,384,612	492.2	1.5	50.0	47.7	117	Yes
H79	Noise sensitive point: User defined (80)	437,120	5,384,628	484.8	1.5	50.0	46.0	357	Yes
H80	Noise sensitive point: User defined (81)	431,362	5,379,742	479.8	1.5	50.0	48.9	165	Yes

Project:

20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

Description:

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DECIBEL - Main Result

Calculation: V117-3.3 84m HH Rev 8 No Ground Attenuation

Distances (m)

	WTG																						
NSA	T22	T31	T30	T24	T21	T27	T26	T37	T38	T07	T29	T36	T28	T34	T35	T19	T40	T42	T41	T43	T44	T39
H01	9259	10786	10514	9716	8740	9365	9185	11570	11844	6413	10434	11377	9644	10463	11131	8187	12154	12328	12840	12441	13408	11840
H02	8782	10204	10010	9012	7957	9141	9051	11010	11189	5391	10029	10949	9339	10216	10885	7637	11784	11808	12488	11795	12736	11608
H03	7228	8672	8464	7503	6464	7566	7476	9476	9676	3962	8469	9394	7769	8643	9313	6090	10223	10270	10926	10282	11232	10036
H04	7297	8728	8528	7547	6501	7660	7579	9533	9723	3972	8544	9465	7854	8733	9402	6154	10298	10329	11002	10328	11275	10124
H05	6212	7727	7466	6651	5684	6395	6256	8516	8781	3489	7408	8348	6645	7491	8162	5125	9144	9282	9839	9379	10345	8880
H06	6337	7896	7569	6979	6141	6262	6037	8642	8986	4404	7419	8356	6583	7350	8006	5384	9082	9354	9749	9562	10531	8699
H07	3842	3846	3496	4629	5289	2848	2714	3747	4293	7221	3039	3031	2955	2292	2097	4726	2852	3694	3036	4405	4944	2055
H08	4751	4529	4236	5453	6194	3814	3712	4272	4777	8215	3814	3594	3873	3117	2755	5694	3179	4032	3134	4767	5130	2452
H09	10341	11711	11548	10485	9413	10767	10699	12517	12658	6805	11599	12504	10944	11829	12494	9188	13351	13325	14057	13261	14184	13216
H10	8746	10033	9909	8778	7700	9292	9275	10834	10931	5093	10007	10883	9420	10313	10965	7594	11743	11647	12446	11530	12431	11680
H11	8081	9305	9209	8037	6961	8702	8719	10100	10168	4385	9338	10190	8798	9690	10330	6941	11055	10913	11754	10761	11645	11037
H12	7077	8347	8228	7091	6013	7662	7669	9148	9245	3408	8337	9205	7771	8664	9310	5929	10067	9961	10769	9844	10747	10022
H13	6250	7408	7335	6133	5063	6958	7021	8196	8246	2550	7493	8319	7011	7896	8518	5134	9186	9009	9880	8837	9714	9213
H14	2249	3508	3372	2293	1252	3034	3178	4314	4470	1460	3496	4349	3032	3906	4519	1158	5212	5123	5913	5076	6019	5212
H15	2983	3731	3768	2470	1542	4002	4245	4475	4450	1827	4051	4729	3866	4642	5156	2237	5582	5273	6244	5026	5879	5778
H16	1698	1301	1537	664	1483	2699	3094	1942	1879	4037	1979	2340	2336	2732	3022	2212	3133	2719	3749	2462	3351	3500
H17	3756	2356	2513	3626	4699	3735	4027	1563	1647	7295	2560	1618	3389	2705	2149	4888	979	754	703	1235	1296	1705
H18	4288	2956	3070	4233	5301	4149	4404	2180	2288	7883	3054	2121	3837	3073	2450	5434	1328	1384	697	1852	1676	1859
H19	3112	1976	2414	2169	2954	3951	4360	2029	1566	5354	2885	2718	3538	3617	3638	3742	3217	2477	3622	1862	2422	3855
H20	2715	2259	2571	1657	2006	3760	4147	2715	2448	4159	3033	3255	3408	3793	4031	2960	3962	3384	4501	2922	3635	4440
H21	3455	3981	4086	2782	2015	4518	4790	4669	4566	2314	4420	5010	4341	5063	5530	2833	5839	5442	6472	5111	5902	6112
H22	4896	5573	5652	4345	3457	5893	6111	6273	6168	2357	5957	6594	5776	6557	7065	4065	7432	7047	8073	6707	7475	7673
H23	4894	5635	5695	4391	3467	5868	6072	6350	6265	2182	5985	6647	5769	6566	7089	4021	7492	7132	8142	6812	7598	7710
H24	8237	9233	9224	7957	6930	9037	9135	9987	9953	4628	9441	10203	9047	9914	10507	7173	11066	10787	11742	10516	11324	11179
H25	6952	7874	7888	6605	5601	7810	7942	8617	8565	3479	8128	8861	7787	8637	9210	5932	9719	9411	10386	9122	9921	9867
H26	11073	12126	12101	10847	9806	11811	11873	12888	12862	7396	12297	13084	11855	12735	13346	9976	13949	13690	14630	13426	14233	14030
H27	9794	10617	10670	9370	8409	10680	10819	11325	11214	6354	10940	11628	10643	11480	12035	8800	12474	12099	13122	11740	12468	12674
H28	4454	3746	4136	3395	3666	5474	5869	3943	3492	5370	4615	4608	5102	5376	5495	4662	5144	4393	5533	3738	4086	5767
H29	5567	4300	4752	4618	5295	6355	6762	4045	3480	7429	5192	4757	5933	5859	5710	6163	4923	4067	5025	3337	3095	5697
H30	6284	4979	5430	5348	6033	7045	7451	4665	4101	8145	5858	5365	6621	6502	6310	6898	5454	4601	5482	3888	3497	6242
H31	6934	5431	5848	6172	7053	7460	7842	4867	4368	9425	6186	5460	7040	6683	6314	7769	5247	4488	5031	3923	3139	6034
H32	6630	5338	5789	5684	6344	7402	7808	5029	4465	8408	6219	5729	6978	6866	6675	7224	5813	4962	5831	4250	3841	6603
H33	5751	5166	5543	4699	4772	6809	7194	5375	4916	5972	6020	6041	6456	6783	6923	5791	6569	5803	6936	5129	5377	7200
H34	6621	6691	6939	5742	5250	7722	8032	7175	6861	5074	7359	7710	7482	8083	8428	6144	8424	7803	8940	7247	7743	8890
H35	7940	8246	8443	7179	6504	9006	9271	8803	8538	5602	8827	9283	8824	9512	9925	7268	10043	9478	10598	8963	9513	10444
H36	8267	8626	8810	7535	6825	9322	9575	9198	8945	5774	9185	9664	9153	9859	10287	7555	10434	9883	10998	9379	9943	10819
H37	12194	12810	12931	11625	10760	13158	13340	13450	13252	8989	13254	13846	13069	13861	14364	11291	14658	14177	15263	13723	14338	14956
H38	10709	10850	11095	9878	9295	11796	12079	11324	10988	8466	11508	11869	11585	12222	12584	10105	12573	11928	13070	11340	11750	13049
H39	11356	11645	11854	10597	9916	12416	12671	12173	11876	8768	12244	12677	12241	12931	13339	10650	13419	12818	13951	12266	12738	13846
H40	11902	12066	12307	11084	10480	12983	13259	12543	12207	9536	12718	13086	12780	13427	13796	11270	13792	13147	14289	12557	12958	14266
H41	10515	10426	10722	9592	9167	11620	11941	10804	10408	8791	11166	11406	11361	11909	12196	10068	12041	11331	12475	10691	10985	12591
H42	9181	9080	9376	8250	7848	10288	10613	9462	9073	7618	9820	10061	10024	10564	10850	8764	10702	9999	11144	9367	9690	11246
H43	9837	9425	9784	8823	8647	10933	11295	9654	9188	8938	10255	10319	10613	11018	11192	9635	10840	10058	11178	9363	9491	11479
H44	11402	11227	11543	10453	10083	12509	12840	11560	11139	9805	11996	12185	12235	12748	13003	11005	12784	12046	13185	11384	11611	13366
H45	9189	8612	8998	8145	8110	10260	10640	8761	8266	8761	9477	9449	9914	10239	10354	9122	9908	9099	10196	8386	8433	10583
H46	9118	8194	8627	8064	8324	10096	10499	8133	7584	9587	9101	8852	9703	9834	9802	9334	9130	8279	9273	7544	7342	9882
H47	9418	8500	8933	8363	8612	10399	10802	8441	7892	9839	9408	9159	10007	10141	10109	9623	9436	8584	9576	7849	7641	10188
H48	13004	13068	13334	12145	11602	14097	14390	13498	13129	10793	13760	14072	13874	14486	14821	12430	14744	14061	15207	13441	13772	15257
H49	9617	8520	8968	8587	8995	10519	10928	8332	7768	10516	9427	9047	10108	10123	10001	9977	9201	8346	9241	7622	7252	9983
H50	9589	8498	8946	8557	8959	10494	10903	8316	7752	10470	9405	9031	10084	10103	9985	9943	9191	8335	9235	7610	7248	9972
H51	9570	8490	8936	8536	8928	10480	10889	8315	7752	10423	9397	9031	10071	10098	9986	9914	9198	8342	9249	7616	7264	9978
H52	9537	8467	8913	8502	8885	10453	10861	8300	7738	10365	9375	9017	10044	10078	9971	9873	9192	8335	9249	7608	7266	9970
H53	9567	8510	8955	8529	8901	10489	10897	8352	7790	10356	9418	9069	10082	10124	10024	9891	9252	8396	9317	7668	7336	10029
H54	10690	9641	10086	9648	9995	11618	12025	9479	8917	11363	10550	10196	11211	11255	11151	10992	10366	9510	10413	8784	8425	11146
H55	10333	9177	9627	9316	9767	11203	11612	8937	8372	11348	10077	9645	10787	10754	10595	10739	9741	8891	9730	8180	7732	10532
H56	9572	8446	8895	8549	8984	10459	10868	8236	7672	10559	9350	8949	10045	10039	9902	9959	9082	8228	9106	7508	7112	9868
H57	9691	8513	8964	8683	9166	10547	10956	8260	7695	10825	9410	8967	10129	10082	9915	10127	9055	8206	9043	7496	7045	9847
H58	9250	8115	8564	8230	8678	10131	10540	7902	7337	10289	9018	8614	9717	9705	9567	9649	8747	7893	8774	7173	6781	9533
H59	9720	8573	9023	8702	9154	10595	11004	8346	7781	10755	9475	9057	10180	10157	10008	10125	9171	8318	9178	7602	7182	9959
H60	9748	8590	9041	8733	9195	10616	11025	8354	7789	10813	9490	9063	10200	10169	10014	10162	9168	8317	9168	7603	7171	9958
H61	9636	8479	8929	8622	9085	10505	10914	8244	7679	10709	9380	8954	10089	10059	9904	10052	9061	8209	9064	7495	7067	9850
H62	9668	8502	8952	8656	9128	10531	10940	8259	7694	10767	9401	8967	10115	10077	9917	10092	9066	8216	9062	7503	7065	9857
H63	8664	7516	7966	7650	8122	9536	9945	7300	6735	9797	8419	8012	9122	9104	8965	9084	8148	7294	8182	6573	6192	8933
H64	7573	6587	7025	6527	6877	8521	8927	6508	5958	8390	7496	7227	8121	8222	8178	7870	7505	6654	7660	5919	5748	8254

To be continued on next page...

Project:

20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

Description:

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Calculated:
2/16/2015 3:33 PM/2.9.285

DECIBEL - Main Result

Calculation: V117-3.3 84m HH Rev 8 No Ground Attenuation

...continued from previous page

	WTG																						
NSA	T22	T31	T30	T24	T21	T27	T26	T37	T38	T07	T29	T36	T28	T34	T35	T19	T40	T42	T41	T43	T44	T39
H65	7086	5891	6342	6093	6648	7926	8335	5660	5095	8529	6790	6373	7508	7469	7325	7578	6521	5665	6581	4940	4606	7301
H66	8183	6921	7373	7211	7802	8980	9387	6615	6052	9699	7805	7313	8558	8454	8255	8719	7366	6521	7340	5820	5341	8161
H67	8438	7100	7548	7505	8168	9173	9576	6719	6164	10176	7960	7396	8747	8572	8320	9049	7366	6539	7271	5868	5286	8165
H68	5248	4235	4195	5482	6488	4756	4882	3578	3846	8952	3998	3223	4570	3683	3019	6389	2376	2904	1772	3510	3380	2300
H69	6645	6709	6369	7489	8081	5583	5354	6534	7055	9749	5913	5837	5764	5164	4940	7405	5476	6330	5414	7064	7412	4733
H70	5535	5668	5310	6397	6968	4468	4237	5555	6092	8646	4845	4844	4657	4088	3919	6289	4575	5431	4615	6158	6598	3798
H71	8876	10435	10108	9503	8632	8774	8530	11181	11525	6647	9950	10884	9107	9853	10501	7913	11596	11888	12254	12102	13070	11182
H72	10191	11385	11304	10111	9040	10819	10834	12174	12217	6488	11445	12287	10914	11806	12444	9055	13153	12987	13850	12804	13668	13149
H73	13037	13984	14000	12717	11710	13836	13925	14719	14641	9420	14232	14973	13850	14716	15305	11975	15831	15507	16497	15182	15935	15972
H74	14159	14832	14938	13631	12737	15095	15257	15486	15299	10833	15248	15864	15026	15835	16355	13218	16685	16221	17298	15777	16401	16962
H75	4207	4425	4619	3369	2833	5305	5613	5011	4796	3239	5012	5463	5076	5712	6104	3750	6239	5723	6820	5277	5953	6620
H76	7932	8784	8824	7528	6553	8817	8960	9507	9420	4515	9085	9788	8779	9618	10177	6937	10639	10290	11295	9961	10722	10821
H77	8157	7527	7920	7106	7135	9215	9601	7660	7162	7996	8399	8351	8860	9160	9260	8153	8802	7993	9090	7280	7336	9481
H78	4384	3037	3488	3506	4317	5106	5511	2751	2187	6669	3916	3464	4682	4571	4418	5094	3666	2813	3832	2078	2032	4427
H79	4998	3516	3944	4235	5141	5570	5961	3019	2485	7579	4311	3670	5146	4869	4582	5831	3635	2799	3613	2130	1622	4432
H80	2689	4240	3938	3319	2581	2850	2762	5005	5324	2249	3848	4791	3080	3937	4609	1722	5579	5747	6273	5907	6877	5329

	WTG																				
NSA	T46	T18	T16	T17	T45	T25	T20	T14	T12	T11	T32	T47	T33	T09	T03	T10	T06	T08	T13	T01	T15	T02
H01	12779	8235	7891	8030	13845	9021	8703	6997	5700	5413	11134	12807	11452	7312	4231	7742	5576	6650	6761	3386	7024	3764
H02	12000	7884	7849	7820	13147	8997	8063	6352	5311	5195	10369	11891	10619	6061	2786	6455	4646	5285	6284	1646	6832	2269
H03	10523	6314	6278	6245	11650	7425	6535	4814	3736	3623	8882	10460	9155	4762	1616	5183	3168	4059	4720	1039	5257	1171
H04	10555	6400	6394	6345	11690	7538	6588	4873	3832	3739	8918	10477	9182	4737	1536	5152	3194	4014	4798	854	5363	1061
H05	9715	5212	5002	5056	10781	6152	5638	3934	2644	2400	8070	9758	8394	4502	2181	4942	2647	3990	3702	2336	4048	2045
H06	10009	5257	4729	4959	10981	5827	5956	4401	3004	2580	8399	10175	8774	5500	3639	5929	3628	5138	4009	3759	3992	3517
H07	5242	4086	3719	3900	5307	2604	4750	5809	6335	6365	4789	6014	5183	7595	9440	7625	7499	8211	5580	10426	4785	9785
H08	5593	5078	4736	4912	5434	3621	5676	6808	7353	7380	5414	6413	5765	8551	10457	8560	8510	9188	6592	11443	5803	10803
H09	13406	9492	9522	9462	14581	10665	9575	7895	6948	6867	11798	13228	12013	7316	4138	7671	6133	6495	7880	2972	8488	3660
H10	11621	7991	8193	8040	12813	9305	7923	6311	5573	5600	10040	11397	10226	5478	2496	5809	4522	4645	6387	1514	7121	2121
H11	10815	7396	7708	7497	12017	8788	7227	5681	5106	5206	9257	10559	9422	4656	1976	4963	3911	3820	5821	1417	6627	1770
H12	9944	6358	6646	6443	11133	7730	6243	4655	4042	4146	8356	9740	8549	3822	913	4175	2872	2999	4771	875	5565	809
H13	8880	5663	6137	5837	10084	7148	5366	3928	3669	3906	7328	8628	7488	2721	1223	3034	2274	1885	4166	2025	5070	1602
H14	5313	1818	2697	2182	6435	3420	1386	623	1998	2449	3669	5312	3961	1760	4077	1906	2076	2340	1147	5232	1953	4544
H15	5035	3001	4029	3462	6241	4574	2071	1995	3212	3688	3506	4808	3643	1125	4337	900	2670	1961	2543	5509	3371	4851
H16	2586	2629	3724	3146	3743	3557	1623	3233	4599	4989	960	2612	1230	3677	6702	3463	4775	4503	3559	7877	3778	7194
H17	1914	4758	5302	5011	1620	4371	4478	6171	7318	7579	2617	2766	2712	7110	9934	6924	7920	7918	6277	11083	5992	10395
H18	2452	5249	5703	5460	1870	4705	5052	6724	7829	8069	3258	3292	3347	7729	10509	7551	8487	8532	6802	11651	6457	10964
H19	1480	4125	5174	4622	2695	4831	3152	4717	6101	6503	1000	1152	556	4783	7979	4473	6144	5618	5074	9156	5303	8486
H20	2722	3523	4661	4060	3945	4605	2387	3704	5101	5535	1503	2398	1409	3522	6748	3202	4974	4354	4132	7922	4548	7259
H21	5010	3599	4659	4080	6232	5143	2585	2653	3835	4312	3595	4675	3649	1362	4631	961	3151	2139	3202	5781	4029	5148
H22	6565	4804	5721	5207	7788	6406	3975	3409	4162	4608	5196	6161	5228	1336	3752	1127	2981	1443	3918	4788	4880	4247
H23	6697	4749	5634	5134	7920	6353	3966	3297	3988	4427	5295	6315	5347	1216	3512	1084	2772	1220	3793	4552	4765	4007
H24	10429	7764	8317	7984	11651	9294	7318	6042	5878	6108	8993	10040	9071	4453	3082	4618	4473	3698	6332	3086	7260	3156
H25	9022	6571	7232	6843	10245	8141	6023	4888	4970	5278	7601	8630	7668	3123	2758	3244	3522	2438	5246	3291	6213	3055
H26	13335	10517	10946	10680	14558	11987	10168	8783	8381	8514	11904	12930	11980	7342	5282	7524	7087	6559	9002	4648	9867	5095
H27	11535	9448	10101	9721	12750	11020	8862	7766	7755	8015	10239	11035	10242	5956	5040	6014	6322	5313	8111	4957	9069	5098
H28	3155	5260	6404	5800	4226	6332	4108	5236	6608	7066	2799	2414	2440	4481	7741	4069	6214	5234	5717	8878	6234	8258
H29	2503	6581	7630	7080	2981	7230	5571	7029	8426	8853	3391	1727	2930	6643	9918	6254	8261	7431	7436	11073	7741	10435
H30	3053	7307	8347	7803	3297	7916	6306	7765	9163	9590	4094	2356	3636	7337	10611	6940	8980	8114	8174	11760	8474	11128
H31	3239	8021	8927	8455	2745	8275	7193	8815	10190	10577	4762	2979	4375	8746	12004	8383	10231	9560	9148	13173	9266	12517
H32	3416	7646	8693	8145	3625	8274	6632	8067	9464	9896	4446	2719	3987	7574	10844	7171	9246	8341	8484	11986	8804	11361
H33	4483	6455	7609	6997	5453	7648	5280	6142	7443	7917	4228	3678	3873	4942	8047	4503	6801	5568	6664	9117	7306	8554
H34	6793	6909	7981	7399	7919	8415	5835	5883	6852	7314	5957	6109	5768	3978	6325	3613	5746	4210	6428	7213	7317	6778
H35	8559	8027	9002	8465	9709	9607	7072	6714	7399	7819	7600	7906	7459	4642	6051	4404	6081	4535	7224	6696	8186	6415
H36	8989	8310	9257	8733	10145	9900	7386	6941	7555	7962	8001	8344	7872	4861	6021	4655	6201	4681	7439	6595	8411	6358
H37	13385	11987	12739	12312	14559	13586	11267	10371	10509	10797	12288	12768	12207	8419	7889	8382	9063	7892	10765	7780	11742	7948
H38	10816	10869	11865	11320	11872	12433	9873	9590	10253	10663	10104	10068	9891	7518	8612	7276	8904	7381	10101	9051	11062	8902
H39	11792	11403	12335	11820	12888	12995	10480	9998	10505	10883	10960	11076	10785	7920	8516	7738	9098	7649	10480	8790	11460	8739
H40	12027	12031	13008	12472	13073	13605	11055	10707	11304	11699	11323	11272	11110	8628	9464	8408	9923	8432	11207	9792	12177	9711
H41	10084	10832	11900	11321	11053	12332	9752	9750	10597	11039	9594	9286	9320	7750	9386	7435	9348	7783	10287	9978	11204	9736
H42	8778	9526	10608	10023	9775	11010	8432	8504	9418	9870	8251	7992	7982	6548	8463	6209	8226	6661	9047	9165	9945	8853
H43	8660	10369	11503	10896	9484	11728	9213	9614	10687	11157	8502	7819	8152	7830	10135	7439	9633	8101	10164	10926	10984	10558
H44	10736	11766	12849	12264	11645	13242	10666	10734	11610	12055	10363	9916	10063	8753	10422	8428	10374	8808	11274	11003	12180	10769
H45	7645	9825	10976	10363	8393	11089	8651	9263	10438	10914	7659	6794	7275	7653	10263	7234	9515	8045	9808	11151	10559	10719
H46	6724	9946	11090	10486	7191	10968	8789	9773	11083	11556	7216	5897	6771	8530	11498	8091	10406	9090	10288	12500	10887	11989

To be continued on next page...

Project:

20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

Description:

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Calculated:
2/16/2015 3:33 PM/2.9.285

DECIBEL - Main Result

Calculation: V117-3.3 84m HH Rev 8 No Ground Attenuation

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	WTG																						
NSA	T46	T18	T16	T17	T45	T25	T20	T14	T12	T11	T32	T47	T33	T09	T03	T10	T06	T08	T13	T01	T15	T02
H47	7029	10240	11385	10781	7485	11271	9081	10048	11351	11824	7522	6203	7078	8775	11715	8336	10654	9321	10565	12705	11173	12203
H48	12861	13194	14199	13650	13852	14751	12183	11926	12574	12977	12280	12074	12034	9854	10791	9612	11208	9700	12437	11120	13399	11040
H49	6785	10529	11648	11060	7023	11399	9407	10555	11907	12372	7564	6019	7103	9498	12573	9059	11350	10116	11046	13613	11559	13074
H50	6773	10497	11617	11028	7022	11374	9373	10515	11866	12331	7540	6004	7080	9451	12522	9012	11304	10067	11007	13560	11524	13023
H51	6780	10473	11595	11005	7043	11360	9347	10478	11826	12293	7530	6006	7070	9401	12466	8962	11256	10013	10972	13501	11494	12965
H52	6772	10436	11560	10969	7050	11332	9307	10429	11775	12242	7505	5994	7046	9340	12399	8901	11197	9949	10924	13432	11452	12898
H53	6832	10459	11586	10993	7124	11368	9327	10435	11777	12245	7546	6049	7087	9327	12374	8888	11187	9930	10933	13403	11468	12872
H54	7948	11571	12702	12107	8196	12497	10432	11500	12828	13299	8677	7173	8218	10314	13291	9874	12186	10882	12005	14289	12563	13782
H55	7345	11270	12377	11796	7466	12083	10163	11354	12715	13178	8236	6618	7772	10338	13426	9900	12184	10964	11838	14468	12325	13927
H56	6671	10498	11611	11027	6873	11339	9386	10565	11925	12388	7496	5919	7034	9552	12652	9114	11396	10184	11051	13700	11545	13155
H57	6662	10642	11741	11165	6781	11426	9547	10778	12149	12608	7578	5941	7114	9836	12967	9400	11665	10487	11254	14029	11716	13473
H58	6336	10182	11291	10709	6545	11011	9074	10271	11635	12097	7167	5585	6704	9293	12413	8856	11128	9937	10753	13472	11236	12918
H59	6766	10655	11763	11182	6930	11475	9549	10745	12109	12571	7629	6027	7166	9753	12861	9316	11593	10390	11228	13912	11712	13364
H60	6767	10688	11793	11213	6914	11496	9585	10792	12158	12619	7649	6035	7185	9814	12928	9377	11651	10455	11273	13983	11750	13433
H61	6659	10577	11682	11102	6813	11384	9474	10684	12051	12512	7538	5925	7074	9713	12832	9276	11548	10356	11164	13888	11640	13336
H62	6668	10613	11716	11138	6806	11410	9514	10733	12101	12561	7563	5940	7099	9774	12898	9337	11606	10421	11211	13957	11681	13403
H63	5736	9606	10710	10130	5965	10416	8506	9734	11106	11565	6571	4982	6108	8819	11975	8385	10638	9485	10209	13050	10673	12483
H64	5103	8445	9577	8981	5623	9398	7307	8419	9769	10235	5612	4271	5162	7388	10512	6951	9228	8032	8913	11579	9445	11019
H65	4103	8059	9143	8574	4416	8805	6991	8321	9711	10157	4957	3343	4493	7625	10864	7205	9373	8353	8769	11982	9168	11379
H66	4990	9178	10245	9687	5074	9854	8130	9486	10878	11322	6017	4307	5555	8788	12016	8365	10543	9507	9930	13127	10307	12531
H67	5060	9464	10499	9958	4971	10037	8458	9883	11280	11715	6239	4460	5785	9300	12550	8884	11018	10039	10306	13674	10629	13066
H68	4166	6020	6165	6087	3512	5039	6127	7667	8585	8744	4771	5009	4941	8967	11485	8848	9456	9730	7632	12582	7091	11904
H69	7891	6693	6022	6382	7697	5095	7519	8337	8563	8470	7635	8710	8010	10267	11687	10345	9884	10806	8008	12549	7088	11961
H70	6993	5579	4934	5277	6921	3983	6405	7232	7502	7431	6613	7789	7004	9151	10633	9229	8801	9697	6913	11522	6007	10921
H71	12543	7795	7223	7487	13521	8287	8478	6875	5484	5090	10926	12689	11293	7680	5035	8119	5813	7157	6519	4522	6530	4674
H72	12813	9514	9805	9609	14026	10895	9327	7799	7191	7256	11290	12504	11427	6668	4062	6933	6028	5839	7936	3212	8726	3766
H73	15010	12557	13054	12756	16228	14067	12115	10829	10525	10681	13670	14527	13697	9230	7458	9353	9188	8497	11087	6858	11982	7295
H74	15448	13893	14587	14190	16624	15480	13228	12237	12251	12501	14332	14834	14261	10348	9436	10344	10820	9766	12599	9127	13562	9411
H75	5014	4509	5606	5013	6225	5998	3417	3670	4840	5317	3833	4521	3762	2179	5309	1739	4052	2810	4219	6412	5029	5822
H76	9803	7590	8270	7874	11025	9168	7000	5920	6000	6298	8448	9354	8479	4094	3587	4165	4554	3455	6284	3872	7252	3790
H77	6540	8837	9991	9378	7306	10055	7661	8383	9611	10088	6568	5690	6178	6902	9704	6470	8782	7375	8921	10661	9629	10181
H78	1264	5435	6440	5913	2069	5975	4507	6079	7465	7866	2175	437	1731	6022	9263	5677	7473	6846	6437	10436	6640	9774
H79	1351	6083	7007	6524	1444	6407	5258	6899	8264	8645	2822	1074	2442	6978	10198	6645	8368	7807	7217	11374	7326	10706
H80	6338	1649	1664	1526	7324	2761	2306	1120	989	1174	4732	6523	5118	3129	4082	3416	2221	3375	571	5073	583	4425

	WTG													
NSA	T05	T04	T48 Alt	T49 Alt	T50 Alt	T51 Alt	T52 Alt	T53 Alt	T54 Alt	T55 Alt	T56 Alt	T57 Alt	T58 Alt	T59 Alt	T23
H01	5042	4948	13828	14225	9645	9099	4138	3356	4744	6105	12153	6832	8966	9365	9491
H02	4119	3538	13035	13404	8792	8252	3579	2556	4283	5401	11367	5775	7886	8302	8889
H03	2628	2336	11565	11943	7326	6781	2004	986	2708	3867	9890	4367	6507	6917	7357
H04	2658	2275	11595	11970	7353	6809	2104	1077	2807	3922	9922	4371	6505	6918	7413
H05	2158	2602	10764	11162	6596	6052	1131	940	1681	3060	9090	3909	5998	6382	6428
H06	3255	3980	11049	11464	7069	6550	2229	2412	2399	3718	9408	4799	6719	7063	6667
H07	7859	9009	5803	6175	5327	5434	8014	9033	7322	6607	5081	7113	6490	6348	4250
H08	8874	10020	5992	6323	6145	6304	9030	10048	8339	7617	5541	8094	7357	7183	5113
H09	5634	4835	14425	14776	10202	9674	5228	4202	5929	6947	12775	7156	9193	9611	10404
H10	4082	3091	12624	12962	8439	7925	3964	3026	4618	5392	10994	5407	7365	7780	8746
H11	3535	2413	11805	12134	7659	7159	3646	2853	4231	4802	10193	4663	6541	6952	8039
H12	2476	1406	10953	11297	6755	6240	2614	1926	3176	3758	9316	3721	5704	6121	7064
H13	2086	894	9871	10201	5732	5241	2706	2459	3042	3145	8259	2777	4606	5018	6164
H14	2600	3451	6359	6745	2149	1605	3360	4258	2775	1390	4681	1254	1790	2087	2209
H15	3197	3600	6028	6365	1939	1529	4174	4886	3742	2399	4415	1406	773	1191	2667
H16	5312	6011	3627	4011	643	1166	6091	6988	5484	4121	1952	3683	1896	1572	1138
H17	8423	9297	2157	2500	4089	4533	9007	9994	8326	7123	2129	6998	5365	5023	3650
H18	8984	9884	2480	2755	4717	5151	9533	10531	8846	7675	2737	7596	5999	5660	4227
H19	6686	7255	2384	2702	2030	2571	7529	8383	6950	5565	984	4965	2896	2481	2596
H20	5515	6015	3658	3973	1141	1579	6409	7218	5872	4474	2147	3757	1642	1224	2148
H21	3653	3876	5955	6262	2151	1876	4671	5306	4294	2997	4415	1899	848	1168	3066
H22	3328	3025	7474	7756	3744	3413	4376	4720	4236	3286	5986	2106	2441	2772	4578
H23	3104	2783	7620	7910	3812	3453	4149	4481	4026	3119	6110	1960	2517	2868	4600
H24	4291	3077	11352	11636	7453	7023	4790	4260	5214	5325	9837	4762	6199	6576	8070

To be continued on next page...

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

Description:
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wind@eapc.net
Calculated:
2/16/2015 3:33 PM/2.9.285

DECIBEL - Main Result

Calculation: V117-3.3 84m HH Rev 8 No Ground Attenuation

...continued from previous page

	WTG														
NSA	T05	T04	T48 Alt	T49 Alt	T50 Alt	T51 Alt	T52 Alt	T53 Alt	T54 Alt	T55 Alt	T56 Alt	T57 Alt	T58 Alt	T59 Alt	T23
H25	3490	2410	9942	10226	6077	5666	4239	4007	4498	4290	8433	3537	4808	5178	6746
H26	6782	5585	14249	14525	10357	9919	6973	6153	7547	7975	12746	7584	9109	9487	10939
H27	6195	4999	12377	12613	8792	8429	6744	6210	7147	7135	10984	6414	7492	7822	9553
H28	6736	6985	3722	3873	2873	3242	7718	8412	7262	5881	2845	4948	2874	2532	3887
H29	8798	9166	2349	2253	4375	4881	9725	10497	9201	7802	2697	7014	4873	4472	5054
H30	9516	9857	2673	2464	5112	5618	10450	11212	9932	8533	3336	7728	5590	5194	5778
H31	10774	11262	2327	1912	6134	6676	11633	12475	11054	9670	3781	9024	6898	6482	6516
H32	9779	10088	3007	2775	5428	5926	10725	11472	10218	8820	3699	7990	5858	5468	6119
H33	7285	7298	4891	4957	4102	4371	8320	8885	7957	6638	4241	5560	3733	3496	5187
H34	6094	5657	7430	7576	5044	4998	7138	7406	7002	5969	6374	4761	3974	4038	6143
H35	6290	5523	9237	9395	6494	6335	7249	7261	7292	6543	8107	5399	5279	5449	7522
H36	6374	5537	9677	9840	6856	6674	7302	7250	7388	6714	8529	5599	5620	5810	7865
H37	8984	7812	14106	14277	10988	10706	9583	9061	9959	9831	12897	8985	9692	9959	11880
H38	9068	8185	11330	11408	9182	9088	9976	9858	10085	9407	10453	8273	8039	8156	10258
H39	9188	8189	12368	12472	9910	9754	10015	9766	10211	9697	11390	8632	8699	8866	10942
H40	10049	9098	12525	12594	10388	10283	10915	10716	11072	10474	11669	9368	9231	9358	11458
H41	9594	8863	10476	10502	8897	8898	10574	10601	10581	9722	9797	8533	7890	7926	10016
H42	8513	7883	9209	9256	7557	7569	9524	9641	9474	8536	8473	7335	6572	6594	8678
H43	9985	9501	8871	8827	8165	8304	11028	11261	10888	9808	8489	8603	7419	7333	9292
H44	10627	9901	11049	11040	9763	9796	11610	11638	11610	10732	10493	9538	8808	8818	10890
H45	9917	9582	7770	7696	7524	7735	10973	11318	10755	9575	7534	8393	6947	6796	8629
H46	10873	10769	6560	6377	7559	7907	11919	12425	11583	10276	6798	9182	7361	7097	8553
H47	11116	10990	6854	6666	7853	8196	12165	12656	11838	10539	7105	9436	7636	7378	8853
H48	11350	10416	13280	13312	11447	11380	12228	12042	12371	11733	12547	10607	10338	10434	12540
H49	11839	11832	6413	6153	8161	8568	12870	13439	12485	11138	6981	10100	8157	7848	9065
H50	11792	11781	6410	6154	8128	8532	12824	13391	12440	11095	6964	10055	8115	7808	9035
H51	11743	11725	6429	6178	8101	8502	12776	13339	12396	11053	6963	10009	8077	7772	9015
H52	11683	11659	6434	6187	8062	8460	12717	13276	12340	10999	6948	9951	8026	7724	8982
H53	11671	11636	6507	6264	8083	8476	12706	13258	12334	10998	7000	9943	8029	7731	9011
H54	12658	12563	7586	7325	9190	9572	13702	14216	13353	12034	8128	10955	9089	8804	10131
H55	12677	12683	6877	6580	8917	9340	13704	14284	13310	11956	7592	10931	8965	8646	9787
H56	11890	11907	6268	5998	8140	8557	12916	13501	12519	11166	6887	10142	8175	7857	9023
H57	12166	12219	6190	5896	8303	8738	13184	13792	12770	11405	6918	10406	8404	8074	9150
H58	11626	11666	5938	5672	7828	8251	12648	13246	12242	10883	6553	9871	7887	7564	8702
H59	12089	12115	6332	6050	8303	8727	13113	13704	12711	11354	6999	10338	8360	8038	9174
H60	12149	12182	6319	6032	8340	8767	13171	13767	12766	11407	7008	10395	8410	8086	9203
H61	12046	12085	6216	5932	8229	8657	13068	13667	12661	11301	6898	10291	8303	7978	9092
H62	12106	12151	6212	5923	8269	8700	13126	13729	12716	11354	6914	10349	8355	8027	9125
H63	11143	11224	5354	5097	7261	7694	12156	12778	11735	10367	5950	9377	7364	7031	8119
H64	9723	9764	4990	4842	6064	6452	10748	11341	10352	9002	5171	7974	6019	5713	7012
H65	9895	10107	3790	3580	5757	6222	10876	11569	10406	9018	4311	8108	6017	5651	6552
H66	11065	11260	4485	4190	6904	7377	12047	12735	11578	10189	5287	9278	7188	6822	7660
H67	11546	11793	4423	4081	7253	7748	12509	13229	12017	10621	5429	9755	7640	7259	7934
H68	9912	10920	4141	4360	6065	6423	10317	11339	9614	8593	4404	8718	7369	7073	5350
H69	10160	11365	8270	8588	8187	8261	10097	11067	9452	9015	7827	9705	9314	9196	7091
H70	9092	10289	7462	7807	7094	7155	9071	10055	8413	7926	6876	8595	8206	8096	5990
H71	5336	5638	13584	13999	9560	9031	4293	3879	4714	6105	11938	7064	9104	9471	9201
H72	5641	4530	13781	14093	9700	9216	5643	4733	6274	6918	12200	6748	8532	8934	10133
H73	8919	7706	15867	16109	12177	11777	9166	8361	9723	10066	14447	9565	10892	11243	12855
H74	10681	9473	16173	16344	13005	12703	11166	10527	11612	11631	14956	10867	11704	11984	13867
H75	4523	4555	5857	6110	2677	2582	5566	6116	5242	3988	4479	2842	1556	1641	3744
H76	4495	3362	10685	10945	6967	6587	5180	4831	5490	5330	9233	4558	5676	6022	7699
H77	9216	8994	6688	6628	6503	6747	10272	10695	10001	8765	6427	7610	6018	5833	7593
H78	8016	8527	1518	1663	3392	3930	8879	9717	8308	6919	1405	6270	4155	3737	3903
H79	8910	9469	811	744	4232	4778	9739	10605	9146	7771	1846	7189	5099	4681	4576
H80	2512	3702	7378	7793	3485	3007	2716	3742	2012	1381	5738	2375	3469	3719	2996

Appendix H: windPRO Sound Analysis with Alternative Ground Attenuation

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

Description:
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wind@eapc.net

Calculated:
2/16/2015 4:02 PM/2.9.285

DECIBEL - Main Result

Calculation: V117-3.3 84m HH Rev 8 Alt Ground Attenuation

Noise calculation model:
ISO 9613-2 General
Wind speed:
95% rated power
Ground attenuation:
Alternative
Meteorological coefficient, C0:
0.0 dB
Type of demand in calculation:
1: WTG noise is compared to demand (DK, DE, SE, NL etc.)
Noise values in calculation:
All noise values are mean values (Lwa) (Normal)
Pure tones:
Pure and Impulse tone penalty are added to WTG source noise
Height above ground level, when no value in NSA object:
1.5 m Don't allow override of model height with height from NSA object
Deviation from "official" noise demands. Negative is more restrictive, positive is less restrictive.:
0.0 dB(A)



Scale 1:400,000

New WTG Noise sensitive area

WTGs

	UTM (north)-WGS84 Zone: 14				WTG type							Noise data						
	East	North	Z	Row data/Description	Valid	Manufact.	Type-generator	Power, rated	Rotor diameter	Hub height	Creator	Name	Wind speed	Status	LwA,ref	Pure tones	
			[m]					[kW]	[m]	[m]			[m/s]		[dB(A)]		
T01	426,404	5,380,816	490.7	T01	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T02	427,088	5,380,888	490.7	T02	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T03	427,532	5,381,154	490.6	T03	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T04	428,153	5,381,587	484.6	T04	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T05	429,079	5,380,790	481.6	T05	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T06	429,560	5,381,041	481.6	T06	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T07	430,155	5,381,640	478.5	T07	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T08	429,579	5,382,607	487.7	T08	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T09	430,407	5,382,722	496.8	T09	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T10	430,657	5,383,084	491.0	T10	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T11	430,242	5,379,390	490.7	T11	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T12	430,379	5,379,847	480.0	T12	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T13	431,335	5,380,312	481.2	T13	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T14	431,340	5,380,862	481.6	T14	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T15	431,891	5,379,497	484.6	T15	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T16	432,876	5,379,052	496.9	T16	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T17	432,886	5,379,665	487.7	T17	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T18	432,945	5,380,204	489.6	T18	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T19	432,633	5,380,904	496.8	T19	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T20	432,985	5,381,379	499.9	T20	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T21	432,753	5,381,916	493.8	T21	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T22	433,787	5,380,903	516.3	T22	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T23	433,809	5,381,470	515.1	T23	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T24	433,830	5,381,961	512.1	T24	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T25	434,026	5,379,018	527.3	T25	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T26	434,112	5,379,482	520.4	T26	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T27	434,209	5,379,879	512.1	T27	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T28	434,398	5,380,261	515.1	T28	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T29	435,048	5,380,847	518.2	T29	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T30	434,970	5,381,321	525.3	T30	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T31	435,093	5,381,756	514.4	T31	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T32	435,029	5,382,733	490.7	T32	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T33	435,153	5,383,180	487.7	T33	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T34	435,280	5,380,120	499.9	T34	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T35	435,948	5,380,198	493.8	T35	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T36	435,940	5,381,153	497.4	T36	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T37	435,892	5,381,871	496.8	T37	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T38	435,956	5,382,432	496.8	T38	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T39	436,670	5,380,219	493.8	T39	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T40	436,795	5,381,008	493.6	T40	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T41	437,500	5,381,035	490.7	T41	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T42	436,705	5,381,860	496.8	T42	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T43	436,544	5,382,577	486.6	T43	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h

To be continued on next page...

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
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Finley, ND 58230

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DECIBEL - Main Result

Calculation: V117-3.3 84m HH Rev 8 Alt Ground Attenuation

...continued from previous page

	UTM (north)-WGS84 Zone: 14				WTG type							Noise data					
	East	North	Z	Row data/Description	Valid	Manufact.	Type-generator	Power, rated	Rotor diameter	Hub height	Creator	Name	Wind speed	Status	LwA,ref	Pure tones	
			[m]					[kW]	[m]	[m]			[m/s]		[dB(A)]		
T44	437,401	5,383,031	484.6	T44	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T45	437,748	5,383,328	484.6	T45	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T46	436,528	5,383,414	491.2	T46	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T47	436,146	5,384,176	493.8	T47	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T48 Alt	437,462	5,383,893	484.9	T48 Alt	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T49 Alt	437,741	5,384,219	486.5	T49 Alt	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T50 Alt	433,440	5,382,540	491.0	T50 Alt	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T51 Alt	432,950	5,382,296	487.7	T51 Alt	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T52 Alt	428,647	5,379,825	484.6	T52 Alt	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T53 Alt	427,624	5,379,906	487.7	T53 Alt	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T54 Alt	429,351	5,379,803	481.6	T54 Alt	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T55 Alt	430,397	5,380,730	475.9	T55 Alt	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T56 Alt	435,924	5,383,222	484.6	T56 Alt	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T57 Alt	430,454	5,381,937	481.6	T57 Alt	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T58 Alt	432,258	5,383,093	481.6	T58 Alt	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T59 Alt	432,653	5,383,230	479.6	T59 Alt	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h

h) Generic octave distribution used

Calculation Results

Sound Level

Noise sensitive area		UTM (north)-WGS84 Zone: 14				Demands	Sound Level		Demands fulfilled ?
No.	Name	East	North	Z	Imission height	Noise	From WTGs	Distance to noise demand	Noise
				[m]	[m]	[dB(A)]	[dB(A)]	[m]	
H01	Noise sensitive point: User defined (2)	425,103	5,377,690	482.7	1.5	50.0	27.7	3,063	Yes
H02	Noise sensitive point: User defined (3)	425,068	5,379,854	474.1	1.5	50.0	32.4	1,359	Yes
H03	Noise sensitive point: User defined (4)	426,643	5,379,805	491.7	1.5	50.0	39.7	690	Yes
H04	Noise sensitive point: User defined (5)	426,549	5,379,974	491.0	1.5	50.0	40.5	559	Yes
H05	Noise sensitive point: User defined (6)	427,874	5,379,000	474.0	1.5	50.0	39.3	649	Yes
H06	Noise sensitive point: User defined (7)	428,371	5,377,613	488.9	1.5	50.0	33.1	1,932	Yes
H07	Noise sensitive point: User defined (8)	436,489	5,378,172	496.8	1.5	50.0	34.9	1,754	Yes
H08	Noise sensitive point: User defined (9)	437,470	5,377,901	494.2	1.5	50.0	32.2	2,157	Yes
H09	Noise sensitive point: User defined (10)	423,456	5,380,441	468.5	1.5	50.0	26.8	2,682	Yes
H10	Noise sensitive point: User defined (11)	425,063	5,381,519	490.7	1.5	50.0	33.1	1,222	Yes
H11	Noise sensitive point: User defined (12)	425,794	5,382,095	484.6	1.5	50.0	34.7	1,121	Yes
H12	Noise sensitive point: User defined (13)	426,747	5,381,621	488.2	1.5	50.0	41.8	489	Yes
H13	Noise sensitive point: User defined (14)	427,710	5,382,364	484.6	1.5	50.0	39.6	600	Yes
H14	Noise sensitive point: User defined (15)	431,600	5,381,428	480.6	1.5	50.0	44.5	314	Yes
H15	Noise sensitive point: User defined (16)	431,525	5,382,848	481.6	1.5	50.0	43.2	468	Yes
H16	Noise sensitive point: User defined (17)	434,082	5,382,575	494.6	1.5	50.0	45.6	313	Yes
H17	Noise sensitive point: User defined (18)	437,449	5,381,736	489.6	1.5	50.0	44.2	396	Yes
H18	Noise sensitive point: User defined (19)	438,036	5,381,480	487.7	1.5	50.0	41.7	404	Yes
H19	Noise sensitive point: User defined (20)	435,083	5,383,732	482.5	1.5	50.0	44.6	242	Yes
H20	Noise sensitive point: User defined (21)	433,814	5,383,618	481.3	1.5	50.0	40.7	825	Yes
H21	Noise sensitive point: User defined (22)	431,519	5,383,509	482.5	1.5	50.0	41.7	542	Yes
H22	Noise sensitive point: User defined (23)	429,988	5,383,991	485.4	1.5	50.0	38.2	821	Yes
H23	Noise sensitive point: User defined (24)	429,842	5,383,799	486.0	1.5	50.0	39.0	774	Yes
H24	Noise sensitive point: User defined (25)	426,110	5,383,888	484.6	1.5	50.0	29.9	2,769	Yes
H25	Noise sensitive point: User defined (26)	427,520	5,383,912	487.7	1.5	50.0	32.5	2,114	Yes
H26	Noise sensitive point: User defined (27)	423,216	5,384,199	475.5	1.5	50.0	23.7	4,357	Yes
H27	Noise sensitive point: User defined (28)	425,207	5,385,626	484.6	1.5	50.0	25.1	4,662	Yes
H28	Noise sensitive point: User defined (29)	434,037	5,385,350	487.7	1.5	50.0	34.3	2,121	Yes
H29	Noise sensitive point: User defined (30)	436,241	5,385,900	487.5	1.5	50.0	34.3	1,432	Yes
H30	Noise sensitive point: User defined (31)	436,720	5,386,461	487.7	1.5	50.0	32.1	2,061	Yes
H31	Noise sensitive point: User defined (32)	438,532	5,385,959	492.7	1.5	50.0	31.8	1,614	Yes
H32	Noise sensitive point: User defined (33)	436,777	5,386,821	487.7	1.5	50.0	30.8	2,425	Yes

To be continued on next page...

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
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DECIBEL - Main Result

Calculation: V117-3.3 84m HH Rev 8 Alt Ground Attenuation

...continued from previous page

Noise sensitive area		UTM (north)-WGS84 Zone: 14				Demands	Sound Level		Demands fulfilled ?
No.	Name	East	North	Z	Imission height	Noise	From WTGs	Distance to noise demand	Noise
				[m]	[m]	[dB(A)]	[dB(A)]	[m]	
H33	Noise sensitive point: User defined (34)	433,417	5,386,642	489.8	1.5	50.0	30.3	3,190	Yes
H34	Noise sensitive point: User defined (35)	430,581	5,386,696	484.6	1.5	50.0	28.8	3,312	Yes
H35	Noise sensitive point: User defined (36)	428,790	5,387,073	487.7	1.5	50.0	26.7	4,101	Yes
H36	Noise sensitive point: User defined (37)	428,339	5,387,121	487.8	1.5	50.0	26.2	4,350	Yes
H37	Noise sensitive point: User defined (38)	424,038	5,388,227	476.1	1.5	50.0	20.2	7,486	Yes
H38	Noise sensitive point: User defined (39)	427,771	5,389,763	485.6	1.5	50.0	21.5	6,974	Yes
H39	Noise sensitive point: User defined (40)	426,492	5,389,606	486.3	1.5	50.0	20.8	7,355	Yes
H40	Noise sensitive point: User defined (41)	426,881	5,390,596	478.5	1.5	50.0	19.8	8,103	Yes
H41	Noise sensitive point: User defined (42)	429,239	5,390,383	484.6	1.5	50.0	21.5	7,134	Yes
H42	Noise sensitive point: User defined (43)	429,976	5,389,256	485.3	1.5	50.0	23.5	5,910	Yes
H43	Noise sensitive point: User defined (44)	431,513	5,390,474	486.5	1.5	50.0	22.3	7,021	Yes
H44	Noise sensitive point: User defined (45)	429,367	5,391,413	484.6	1.5	50.0	20.2	8,128	Yes
H45	Noise sensitive point: User defined (46)	432,691	5,390,026	492.8	1.5	50.0	23.3	6,487	Yes
H46	Noise sensitive point: User defined (47)	434,940	5,389,948	488.7	1.5	50.0	23.7	5,603	Yes
H47	Noise sensitive point: User defined (48)	434,910	5,390,254	489.5	1.5	50.0	23.1	5,909	Yes
H48	Noise sensitive point: User defined (49)	426,887	5,391,926	484.6	1.5	50.0	18.3	9,310	Yes
H49	Noise sensitive point: User defined (50)	436,271	5,390,194	493.4	1.5	50.0	23.1	5,725	Yes
H50	Noise sensitive point: User defined (51)	436,212	5,390,180	493.3	1.5	50.0	23.1	5,710	Yes
H51	Noise sensitive point: User defined (52)	436,128	5,390,182	493.0	1.5	50.0	23.1	5,712	Yes
H52	Noise sensitive point: User defined (53)	436,045	5,390,169	492.7	1.5	50.0	23.2	5,700	Yes
H53	Noise sensitive point: User defined (54)	435,952	5,390,222	492.0	1.5	50.0	23.1	5,756	Yes
H54	Noise sensitive point: User defined (55)	436,061	5,391,348	494.3	1.5	50.0	21.3	6,879	Yes
H55	Noise sensitive point: User defined (56)	436,924	5,390,748	494.9	1.5	50.0	22.0	6,277	Yes
H56	Noise sensitive point: User defined (57)	436,493	5,390,085	493.8	1.5	50.0	23.2	5,625	Yes
H57	Noise sensitive point: User defined (58)	436,955	5,390,062	494.2	1.5	50.0	23.1	5,593	Yes
H58	Noise sensitive point: User defined (59)	436,487	5,389,750	493.8	1.5	50.0	23.8	5,290	Yes
H59	Noise sensitive point: User defined (60)	436,695	5,390,178	493.8	1.5	50.0	23.0	5,733	Yes
H60	Noise sensitive point: User defined (61)	436,792	5,390,176	493.9	1.5	50.0	23.0	5,729	Yes
H61	Noise sensitive point: User defined (62)	436,761	5,390,069	493.8	1.5	50.0	23.2	5,628	Yes
H62	Noise sensitive point: User defined (63)	436,848	5,390,074	494.0	1.5	50.0	23.2	5,619	Yes
H63	Noise sensitive point: User defined (64)	436,447	5,389,149	491.4	1.5	50.0	25.0	4,688	Yes
H64	Noise sensitive point: User defined (65)	435,203	5,388,342	487.7	1.5	50.0	26.8	3,978	Yes
H65	Noise sensitive point: User defined (66)	436,340	5,387,513	487.7	1.5	50.0	28.8	3,048	Yes
H66	Noise sensitive point: User defined (67)	437,143	5,388,366	492.2	1.5	50.0	26.5	3,887	Yes
H67	Noise sensitive point: User defined (68)	437,850	5,388,298	492.1	1.5	50.0	26.2	3,777	Yes
H68	Noise sensitive point: User defined (69)	438,962	5,380,033	490.7	1.5	50.0	33.9	1,475	Yes
H69	Noise sensitive point: User defined (70)	437,832	5,375,631	496.6	1.5	50.0	26.5	4,435	Yes
H70	Noise sensitive point: User defined (71)	437,063	5,376,441	493.8	1.5	50.0	29.1	3,499	Yes
H71	Noise sensitive point: User defined (72)	426,198	5,376,299	477.3	1.5	50.0	26.4	3,590	Yes
H72	Noise sensitive point: User defined (73)	423,740	5,382,611	473.1	1.5	50.0	26.6	2,924	Yes
H73	Noise sensitive point: User defined (74)	421,712	5,385,818	484.6	1.5	50.0	20.0	6,566	Yes
H74	Noise sensitive point: User defined (75)	422,066	5,388,846	472.5	1.5	50.0	17.9	8,832	Yes
H75	Noise sensitive point: User defined (76)	431,638	5,384,520	487.7	1.5	50.0	36.6	1,240	Yes
H76	Noise sensitive point: User defined (77)	426,805	5,384,667	485.2	1.5	50.0	29.3	3,067	Yes
H77	Noise sensitive point: User defined (78)	433,190	5,389,038	493.8	1.5	50.0	25.1	5,394	Yes
H78	Noise sensitive point: User defined (79)	436,125	5,384,612	492.2	1.5	50.0	45.7	145	Yes
H79	Noise sensitive point: User defined (80)	437,120	5,384,628	484.8	1.5	50.0	42.7	420	Yes
H80	Noise sensitive point: User defined (81)	431,362	5,379,742	479.8	1.5	50.0	46.1	255	Yes

Project:

20131290 Rolette Power Development

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wind@eapc.net

Calculated:
2/16/2015 4:02 PM/2.9.285

DECIBEL - Main Result

Calculation: V117-3.3 84m HH Rev 8 Alt Ground Attenuation

Distances (m)

	WTG																						
NSA	T22	T31	T30	T24	T21	T27	T26	T37	T38	T07	T29	T36	T28	T34	T35	T19	T40	T42	T41	T43	T44	T39
H01	9259	10786	10514	9716	8740	9365	9185	11570	11844	6413	10434	11377	9644	10463	11131	8187	12154	12328	12840	12441	13408	11840
H02	8782	10204	10010	9012	7957	9141	9051	11010	11189	5391	10029	10949	9339	10216	10885	7637	11784	11808	12488	11795	12736	11608
H03	7228	8672	8464	7503	6464	7566	7476	9476	9676	3962	8469	9394	7769	8643	9313	6090	10223	10270	10926	10282	11232	10036
H04	7297	8728	8528	7547	6501	7660	7579	9533	9723	3972	8544	9465	7854	8733	9402	6154	10298	10329	11002	10328	11275	10124
H05	6212	7727	7466	6651	5684	6395	6256	8516	8781	3489	7408	8348	6645	7491	8162	5125	9144	9282	9839	9379	10345	8880
H06	6337	7896	7569	6979	6141	6262	6037	8642	8986	4404	7419	8356	6583	7350	8006	5384	9082	9354	9749	9562	10531	8699
H07	3842	3846	3496	4629	5289	2848	2714	3747	4293	7221	3039	3031	2955	2292	2097	4726	2852	3694	3036	4405	4944	2055
H08	4751	4529	4236	5453	6194	3814	3712	4272	4777	8215	3814	3594	3873	3117	2755	5694	3179	4032	3134	4767	5130	2452
H09	10341	11711	11548	10485	9413	10767	10699	12517	12658	6805	11599	12504	10944	11829	12494	9188	13351	13325	14057	13261	14184	13216
H10	8746	10033	9909	8778	7700	9292	9275	10834	10931	5093	10007	10883	9420	10313	10965	7594	11743	11647	12446	11530	12431	11680
H11	8081	9305	9209	8037	6961	8702	8719	10100	10168	4385	9338	10190	8798	9690	10330	6941	11055	10913	11754	10761	11645	11037
H12	7077	8347	8228	7091	6013	7662	7669	9148	9245	3408	8337	9205	7771	8664	9310	5929	10067	9961	10769	9844	10747	10022
H13	6250	7408	7335	6133	5063	6958	7021	8196	8246	2550	7493	8319	7011	7896	8518	5134	9186	9009	9880	8837	9714	9213
H14	2249	3508	3372	2293	1252	3034	3178	4314	4470	1460	3496	4349	3032	3906	4519	1158	5212	5123	5913	5076	6019	5212
H15	2983	3731	3768	2470	1542	4002	4245	4475	4450	1827	4051	4729	3866	4642	5156	2237	5582	5273	6244	5026	5879	5778
H16	1698	1301	1537	664	1483	2699	3094	1942	1879	4037	1979	2340	2336	2732	3022	2212	3133	2719	3749	2462	3351	3500
H17	3756	2356	2513	3626	4699	3735	4027	1563	1647	7295	2560	1618	3389	2705	2149	4888	979	754	703	1235	1296	1705
H18	4288	2956	3070	4233	5301	4149	4404	2180	2288	7883	3054	2121	3837	3073	2450	5434	1328	1384	697	1852	1676	1859
H19	3112	1976	2414	2169	2954	3951	4360	2029	1566	5354	2885	2718	3538	3617	3638	3742	3217	2477	3622	1862	2422	3855
H20	2715	2259	2571	1657	2006	3760	4147	2715	2448	4159	3033	3255	3408	3793	4031	2960	3962	3384	4501	2922	3635	4440
H21	3455	3981	4086	2782	2015	4518	4790	4669	4566	2314	4420	5010	4341	5063	5530	2833	5839	5442	6472	5111	5902	6112
H22	4896	5573	5652	4345	3457	5893	6111	6273	6168	2357	5957	6594	5776	6557	7065	4065	7432	7047	8073	6707	7475	7673
H23	4894	5635	5695	4391	3467	5868	6072	6350	6265	2182	5985	6647	5769	6566	7089	4021	7492	7132	8142	6812	7598	7710
H24	8237	9233	9224	7957	6930	9037	9135	9987	9953	4628	9441	10203	9047	9914	10507	7173	11066	10787	11742	10516	11324	11179
H25	6952	7874	7888	6605	5601	7810	7942	8617	8565	3479	8128	8861	7787	8637	9210	5932	9719	9411	10386	9122	9921	9867
H26	11073	12126	12101	10847	9806	11811	11873	12888	12862	7396	12297	13084	11855	12735	13346	9976	13949	13690	14630	13426	14233	14030
H27	9794	10617	10670	9370	8409	10680	10819	11325	11214	6354	10940	11628	10643	11480	12035	8800	12474	12099	13122	11740	12468	12674
H28	4454	3746	4136	3395	3666	5474	5869	3943	3492	5370	4615	4608	5102	5376	5495	4662	5144	4393	5533	3738	4086	5767
H29	5567	4300	4752	4618	5295	6355	6762	4045	3480	7429	5192	4757	5933	5859	5710	6163	4923	4067	5025	3337	3095	5697
H30	6284	4979	5430	5348	6033	7045	7451	4665	4101	8145	5858	5365	6621	6502	6310	6898	5454	4601	5482	3888	3497	6242
H31	6934	5431	5848	6172	7053	7460	7842	4867	4368	9425	6186	5460	7040	6683	6314	7769	5247	4488	5031	3923	3139	6034
H32	6630	5338	5789	5684	6344	7402	7808	5029	4465	8408	6219	5729	6978	6866	6675	7224	5813	4962	5831	4250	3841	6603
H33	5751	5166	5543	4699	4772	6809	7194	5375	4916	5972	6020	6041	6456	6783	6923	5791	6569	5803	6936	5129	5377	7200
H34	6621	6691	6939	5742	5250	7722	8032	7175	6861	5074	7359	7710	7482	8083	8428	6144	8424	7803	8940	7247	7743	8890
H35	7940	8246	8443	7179	6504	9006	9271	8803	8538	5602	8827	9283	8824	9512	9925	7268	10043	9478	10598	8963	9513	10444
H36	8267	8626	8810	7535	6825	9322	9575	9198	8945	5774	9185	9664	9153	9859	10287	7555	10434	9883	10998	9379	9943	10819
H37	12194	12810	12931	11625	10760	13158	13340	13450	13252	8989	13254	13846	13069	13861	14364	11291	14658	14177	15263	13723	14338	14956
H38	10709	10850	11095	9878	9295	11796	12079	11324	10988	8466	11508	11869	11585	12222	12584	10105	12573	11928	13070	11340	11750	13049
H39	11356	11645	11854	10597	9916	12416	12671	12173	11876	8768	12244	12677	12241	12931	13339	10650	13419	12818	13951	12266	12738	13846
H40	11902	12066	12307	11084	10480	12983	13259	12543	12207	9536	12718	13086	12780	13427	13796	11270	13792	13147	14289	12557	12958	14266
H41	10515	10426	10722	9592	9167	11620	11941	10804	10408	8791	11166	11406	11361	11909	12196	10068	12041	11331	12475	10691	10985	12591
H42	9181	9080	9376	8250	7848	10288	10613	9462	9073	7618	9820	10061	10024	10564	10850	8764	10702	9999	11144	9367	9690	11246
H43	9837	9425	9784	8823	8647	10933	11295	9654	9188	8938	10255	10319	10613	11018	11192	9635	10840	10058	11178	9363	9491	11479
H44	11402	11227	11543	10453	10083	12509	12840	11560	11139	9805	11996	12185	12235	12748	13003	11005	12784	12046	13185	11384	11611	13366
H45	9189	8612	8998	8145	8110	10260	10640	8761	8266	8761	9477	9449	9914	10239	10354	9122	9908	9099	10196	8386	8433	10583
H46	9118	8194	8627	8064	8324	10096	10499	8133	7584	9587	9101	8852	9703	9834	9802	9334	9130	8279	9273	7544	7342	9882
H47	9418	8500	8933	8363	8612	10399	10802	8441	7892	9839	9408	9159	10007	10141	10109	9623	9436	8584	9576	7849	7641	10188
H48	13004	13068	13334	12145	11602	14097	14390	13498	13129	10793	13760	14072	13874	14486	14821	12430	14744	14061	15207	13441	13772	15257
H49	9617	8520	8968	8587	8995	10519	10928	8332	7768	10516	9427	9047	10108	10123	10001	9977	9201	8346	9241	7622	7252	9983
H50	9589	8498	8946	8557	8959	10494	10903	8316	7752	10470	9405	9031	10084	10103	9985	9943	9191	8335	9235	7610	7248	9972
H51	9570	8490	8936	8536	8928	10480	10889	8315	7752	10423	9397	9031	10071	10098	9986	9914	9198	8342	9249	7616	7264	9978
H52	9537	8467	8913	8502	8885	10453	10861	8300	7738	10365	9375	9017	10044	10078	9971	9873	9192	8335	9249	7608	7266	9970
H53	9567	8510	8955	8529	8901	10489	10897	8352	7790	10356	9418	9069	10082	10124	10024	9891	9252	8396	9317	7668	7336	10029
H54	10690	9641	10086	9648	9995	11618	12025	9479	8917	11363	10550	10196	11211	11255	11151	10992	10366	9510	10413	8784	8425	11146
H55	10333	9177	9627	9316	9767	11203	11612	8937	8372	11348	10077	9645	10787	10754	10595	10739	9741	8891	9730	8180	7732	10532
H56	9572	8446	8895	8549	8984	10459	10868	8236	7672	10559	9350	8949	10045	10039	9902	9959	9082	8228	9106	7508	7112	9868
H57	9691	8513	8964	8683	9166	10547	10956	8260	7695	10825	9410	8967	10129	10082	9915	10127	9055	8206	9043	7496	7045	9847
H58	9250	8115	8564	8230	8678	10131	10540	7902	7337	10289	9018	8614	9717	9705	9567	9649	8747	7893	8774	7173	6781	9533
H59	9720	8573	9023	8702	9154	10595	11004	8346	7781	10755	9475	9057	10180	10157	10008	10125	9171	8318	9178	7602	7182	9959
H60	9748	8590	9041	8733	9195	10616	11025	8354	7789	10813	9490	9063	10200	10169	10014	10162	9168	8317	9168	7603	7171	9958
H61	9636	8479	8929	8622	9085	10505	10914	8244	7679	10709	9380	8954	10089	10059	9904	10052	9061	8209	9064	7495	7067	9850
H62	9668	8502	8952	8656	9128	10531	10940	8259	7694	10767	9401	8967	10115	10077	9917	10092	9066	8216	9062	7503	7065	9857
H63	8664	7516	7966	7650	8122	9536	9945	7300	6735	9797	8419	8012	9122	9104	8965	9084	8148	7294	8182	6573	6192	8933
H64	7573	6587	7025	6527	6877	8521	8927	6508	5958	8390	7496	7227	8121	8222	8178	7870	7505	6654	7660	5919	5748	8254

To be continued on next page...

Project:

20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

Description:

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Calculated:
2/16/2015 4:02 PM/2.9.285

DECIBEL - Main Result

Calculation: V117-3.3 84m HH Rev 8 Alt Ground Attenuation

...continued from previous page

	WTG																						
NSA	T22	T31	T30	T24	T21	T27	T26	T37	T38	T07	T29	T36	T28	T34	T35	T19	T40	T42	T41	T43	T44	T39
H65	7086	5891	6342	6093	6648	7926	8335	5660	5095	8529	6790	6373	7508	7469	7325	7578	6521	5665	6581	4940	4606	7301
H66	8183	6921	7373	7211	7802	8980	9387	6615	6052	9699	7805	7313	8558	8454	8255	8719	7366	6521	7340	5820	5341	8161
H67	8438	7100	7548	7505	8168	9173	9576	6719	6164	10176	7960	7396	8747	8572	8320	9049	7366	6539	7271	5868	5286	8165
H68	5248	4235	4195	5482	6488	4756	4882	3578	3846	8952	3998	3223	4570	3683	3019	6389	2376	2904	1772	3510	3380	2300
H69	6645	6709	6369	7489	8081	5583	5354	6534	7055	9749	5913	5837	5764	5164	4940	7405	5476	6330	5414	7064	7412	4733
H70	5535	5668	5310	6397	6968	4468	4237	5555	6092	8646	4845	4844	4657	4088	3919	6289	4575	5431	4615	6158	6598	3798
H71	8876	10435	10108	9503	8632	8774	8530	11181	11525	6647	9950	10884	9107	9853	10501	7913	11596	11888	12254	12102	13070	11182
H72	10191	11385	11304	10111	9040	10819	10834	12174	12217	6488	11445	12287	10914	11806	12444	9055	13153	12987	13850	12804	13668	13149
H73	13037	13984	14000	12717	11710	13836	13925	14719	14641	9420	14232	14973	13850	14716	15305	11975	15831	15507	16497	15182	15935	15972
H74	14159	14832	14938	13631	12737	15095	15257	15486	15299	10833	15248	15864	15026	15835	16355	13218	16685	16221	17298	15777	16401	16962
H75	4207	4425	4619	3369	2833	5305	5613	5011	4796	3239	5012	5463	5076	5712	6104	3750	6239	5723	6820	5277	5953	6620
H76	7932	8784	8824	7528	6553	8817	8960	9507	9420	4515	9085	9788	8779	9618	10177	6937	10639	10290	11295	9961	10722	10821
H77	8157	7527	7920	7106	7135	9215	9601	7660	7162	7996	8399	8351	8860	9160	9260	8153	8802	7993	9090	7280	7336	9481
H78	4384	3037	3488	3506	4317	5106	5511	2751	2187	6669	3916	3464	4682	4571	4418	5094	3666	2813	3832	2078	2032	4427
H79	4998	3516	3944	4235	5141	5570	5961	3019	2485	7579	4311	3670	5146	4869	4582	5831	3635	2799	3613	2130	1622	4432
H80	2689	4240	3938	3319	2581	2850	2762	5005	5324	2249	3848	4791	3080	3937	4609	1722	5579	5747	6273	5907	6877	5329

	WTG																				
NSA	T46	T18	T16	T17	T45	T25	T20	T14	T12	T11	T32	T47	T33	T09	T03	T10	T06	T08	T13	T01	T15	T02
H01	12779	8235	7891	8030	13845	9021	8703	6997	5700	5413	11134	12807	11452	7312	4231	7742	5576	6650	6761	3386	7024	3764
H02	12000	7884	7849	7820	13147	8997	8063	6352	5311	5195	10369	11891	10619	6061	2786	6455	4646	5285	6284	1646	6832	2269
H03	10523	6314	6278	6245	11650	7425	6535	4814	3736	3623	8882	10460	9155	4762	1616	5183	3168	4059	4720	1039	5257	1171
H04	10555	6400	6394	6345	11690	7538	6588	4873	3832	3739	8918	10477	9182	4737	1536	5152	3194	4014	4798	854	5363	1061
H05	9715	5212	5002	5056	10781	6152	5638	3934	2644	2400	8070	9758	8394	4502	2181	4942	2647	3990	3702	2336	4048	2045
H06	10009	5257	4729	4959	10981	5827	5956	4401	3004	2580	8399	10175	8774	5500	3639	5929	3628	5138	4009	3759	3992	3517
H07	5242	4086	3719	3900	5307	2604	4750	5809	6335	6365	4789	6014	5183	7595	9440	7625	7499	8211	5580	10426	4785	9785
H08	5593	5078	4736	4912	5434	3621	5676	6808	7353	7380	5414	6413	5765	8551	10457	8560	8510	9188	6592	11443	5803	10803
H09	13406	9492	9522	9462	14581	10665	9575	7895	6948	6867	11798	13228	12013	7316	4138	7671	6133	6495	7880	2972	8488	3660
H10	11621	7991	8193	8040	12813	9305	7923	6311	5573	5600	10040	11397	10226	5478	2496	5809	4522	4645	6387	1514	7121	2121
H11	10815	7396	7708	7497	12017	8788	7227	5681	5106	5206	9257	10559	9422	4656	1976	4963	3911	3820	5821	1417	6627	1770
H12	9944	6358	6646	6443	11133	7730	6243	4655	4042	4146	8356	9740	8549	3822	913	4175	2872	2999	4771	875	5565	809
H13	8880	5663	6137	5837	10084	7148	5366	3928	3669	3906	7328	8628	7488	2721	1223	3034	2274	1885	4166	2025	5070	1602
H14	5313	1818	2697	2182	6435	3420	1386	623	1998	2449	3669	5312	3961	1760	4077	1906	2076	2340	1147	5232	1953	4544
H15	5035	3001	4029	3462	6241	4574	2071	1995	3212	3688	3506	4808	3643	1125	4337	900	2670	1961	2543	5509	3371	4851
H16	2586	2629	3724	3146	3743	3557	1623	3233	4599	4989	960	2612	1230	3677	6702	3463	4775	4503	3559	7877	3778	7194
H17	1914	4758	5302	5011	1620	4371	4478	6171	7318	7579	2617	2766	2712	7110	9934	6924	7920	7918	6277	11083	5992	10395
H18	2452	5249	5703	5460	1870	4705	5052	6724	7829	8069	3258	3292	3347	7729	10509	7551	8487	8532	6802	11651	6457	10964
H19	1480	4125	5174	4622	2695	4831	3152	4717	6101	6503	1000	1152	556	4783	7979	4473	6144	5618	5074	9156	5303	8486
H20	2722	3523	4661	4060	3945	4605	2387	3704	5101	5535	1503	2398	1409	3522	6748	3202	4974	4354	4132	7922	4548	7259
H21	5010	3599	4659	4080	6232	5143	2585	2653	3835	4312	3595	4675	3649	1362	4631	961	3151	2139	3202	5781	4029	5148
H22	6565	4804	5721	5207	7788	6406	3975	3409	4162	4608	5196	6161	5228	1336	3752	1127	2981	1443	3918	4788	4880	4247
H23	6697	4749	5634	5134	7920	6353	3966	3297	3988	4427	5295	6315	5347	1216	3512	1084	2772	1220	3793	4552	4765	4007
H24	10429	7764	8317	7984	11651	9294	7318	6042	5878	6108	8993	10040	9071	4453	3082	4618	4473	3698	6332	3086	7260	3156
H25	9022	6571	7232	6843	10245	8141	6023	4888	4970	5278	7601	8630	7668	3123	2758	3244	3522	2438	5246	3291	6213	3055
H26	13335	10517	10946	10680	14558	11987	10168	8783	8381	8514	11904	12930	11980	7342	5282	7524	7087	6559	9002	4648	9867	5095
H27	11535	9448	10101	9721	12750	11020	8862	7766	7755	8015	10239	11035	10242	5956	5040	6014	6322	5313	8111	4957	9069	5098
H28	3155	5260	6404	5800	4226	6332	4108	5236	6608	7066	2799	2414	2440	4481	7741	4069	6214	5234	5717	8878	6234	8258
H29	2503	6581	7630	7080	2981	7230	5571	7029	8426	8853	3391	1727	2930	6643	9918	6254	8261	7431	7436	11073	7741	10435
H30	3053	7307	8347	7803	3297	7916	6306	7765	9163	9590	4094	2356	3636	7337	10611	6940	8980	8114	8174	11760	8474	11128
H31	3239	8021	8927	8455	2745	8275	7193	8815	10190	10577	4762	2979	4375	8746	12004	8383	10231	9560	9148	13173	9266	12517
H32	3416	7646	8693	8145	3625	8274	6632	8067	9464	9896	4446	2719	3987	7574	10844	7171	9246	8341	8484	11986	8804	11361
H33	4483	6455	7609	6997	5453	7648	5280	6142	7443	7917	4228	3678	3873	4942	8047	4503	6801	5568	6664	9117	7306	8554
H34	6793	6909	7981	7399	7919	8415	5835	5883	6852	7314	5957	6109	5768	3978	6325	3613	5746	4210	6428	7213	7317	6778
H35	8559	8027	9002	8465	9709	9607	7072	6714	7399	7819	7600	7906	7459	4642	6051	4404	6081	4535	7224	6696	8186	6415
H36	8989	8310	9257	8733	10145	9900	7386	6941	7555	7962	8001	8344	7872	4861	6021	4655	6201	4681	7439	6595	8411	6358
H37	13385	11987	12739	12312	14559	13586	11267	10371	10509	10797	12288	12768	12207	8419	7889	8382	9063	7892	10765	7780	11742	7948
H38	10816	10869	11865	11320	11872	12433	9873	9590	10253	10663	10104	10068	9891	7518	8612	7276	8904	7381	10101	9051	11062	8902
H39	11792	11403	12335	11820	12888	12995	10480	9998	10505	10883	10960	11076	10785	7920	8516	7738	9098	7649	10480	8790	11460	8739
H40	12027	12031	13008	12472	13073	13605	11055	10707	11304	11699	11323	11272	11110	8628	9464	8408	9923	8432	11207	9792	12177	9711
H41	10084	10832	11900	11321	11053	12332	9752	9750	10597	11039	9594	9286	9320	7750	9386	7435	9348	7783	10287	9978	11204	9736
H42	8778	9526	10608	10023	9775	11010	8432	8504	9418	9870	8251	7992	7982	6548	8463	6209	8226	6661	9047	9165	9945	8853
H43	8660	10369	11503	10896	9484	11728	9213	9614	10687	11157	8502	7819	8152	7830	10135	7439	9633	8101	10164	10926	10984	10558
H44	10736	11766	12849	12264	11645	13242	10666	10734	11610	12055	10363	9916	10063	8753	10422	8428	10374	8808	11274	11003	12180	10769
H45	7645	9825	10976	10363	8393	11089	8651	9263	10438	10914	7659	6794	7275	7653	10263	7234	9515	8045	9808	11151	10559	10719
H46	6724	9946	11090	10486	7191	10968	8789	9773	11083	11556	7216	5897	6771	8530	11498	8091	10406	9090	10288	12500	10887	11989

To be continued on next page...

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
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Calculated:
2/16/2015 4:02 PM/2.9.285

DECIBEL - Main Result

Calculation: V117-3.3 84m HH Rev 8 Alt Ground Attenuation

...continued from previous page

	WTG																						
NSA	T46	T18	T16	T17	T45	T25	T20	T14	T12	T11	T32	T47	T33	T09	T03	T10	T06	T08	T13	T01	T15	T02
H47	7029	10240	11385	10781	7485	11271	9081	10048	11351	11824	7522	6203	7078	8775	11715	8336	10654	9321	10565	12705	11173	12203
H48	12861	13194	14199	13650	13852	14751	12183	11926	12574	12977	12280	12074	12034	9854	10791	9612	11208	9700	12437	11120	13399	11040
H49	6785	10529	11648	11060	7023	11399	9407	10555	11907	12372	7564	6019	7103	9498	12573	9059	11350	10116	11046	13613	11559	13074
H50	6773	10497	11617	11028	7022	11374	9373	10515	11866	12331	7540	6004	7080	9451	12522	9012	11304	10067	11007	13560	11524	13023
H51	6780	10473	11595	11005	7043	11360	9347	10478	11826	12293	7530	6006	7070	9401	12466	8962	11256	10013	10972	13501	11494	12965
H52	6772	10436	11560	10969	7050	11332	9307	10429	11775	12242	7505	5994	7046	9340	12399	8901	11197	9949	10924	13432	11452	12898
H53	6832	10459	11586	10993	7124	11368	9327	10435	11777	12245	7546	6049	7087	9327	12374	8888	11187	9930	10933	13403	11468	12872
H54	7948	11571	12702	12107	8196	12497	10432	11500	12828	13299	8677	7173	8218	10314	13291	9874	12186	10882	12005	14289	12563	13782
H55	7345	11270	12377	11796	7466	12083	10163	11354	12715	13178	8236	6618	7772	10338	13426	9900	12184	10964	11838	14468	12325	13927
H56	6671	10498	11611	11027	6873	11339	9386	10565	11925	12388	7496	5919	7034	9552	12652	9114	11396	10184	11051	13700	11545	13155
H57	6662	10642	11741	11165	6781	11426	9547	10778	12149	12608	7578	5941	7114	9836	12967	9400	11665	10487	11254	14029	11716	13473
H58	6336	10182	11291	10709	6545	11011	9074	10271	11635	12097	7167	5585	6704	9293	12413	8856	11128	9937	10753	13472	11236	12918
H59	6766	10655	11763	11182	6930	11475	9549	10745	12109	12571	7629	6027	7166	9753	12861	9316	11593	10390	11228	13912	11712	13364
H60	6767	10688	11793	11213	6914	11496	9585	10792	12158	12619	7649	6035	7185	9814	12928	9377	11651	10455	11273	13983	11750	13433
H61	6659	10577	11682	11102	6813	11384	9474	10684	12051	12512	7538	5925	7074	9713	12832	9276	11548	10356	11164	13888	11640	13336
H62	6668	10613	11716	11138	6806	11410	9514	10733	12101	12561	7563	5940	7099	9774	12898	9337	11606	10421	11211	13957	11681	13403
H63	5736	9606	10710	10130	5965	10416	8506	9734	11106	11565	6571	4982	6108	8819	11975	8385	10638	9485	10209	13050	10673	12483
H64	5103	8445	9577	8981	5623	9398	7307	8419	9769	10235	5612	4271	5162	7388	10512	6951	9228	8032	8913	11579	9445	11019
H65	4103	8059	9143	8574	4416	8805	6991	8321	9711	10157	4957	3343	4493	7625	10864	7205	9373	8353	8769	11982	9168	11379
H66	4990	9178	10245	9687	5074	9854	8130	9486	10878	11322	6017	4307	5555	8788	12016	8365	10543	9507	9930	13127	10307	12531
H67	5060	9464	10499	9958	4971	10037	8458	9883	11280	11715	6239	4460	5785	9300	12550	8884	11018	10039	10306	13674	10629	13066
H68	4166	6020	6165	6087	3512	5039	6127	7667	8585	8744	4771	5009	4941	8967	11485	8848	9456	9730	7632	12582	7091	11904
H69	7891	6693	6022	6382	7697	5095	7519	8337	8563	8470	7635	8710	8010	10267	11687	10345	9884	10806	8008	12549	7088	11961
H70	6993	5579	4934	5277	6921	3983	6405	7232	7502	7431	6613	7789	7004	9151	10633	9229	8801	9697	6913	11522	6007	10921
H71	12543	7795	7223	7487	13521	8287	8478	6875	5484	5090	10926	12689	11293	7680	5035	8119	5813	7157	6519	4522	6530	4674
H72	12813	9514	9805	9609	14026	10895	9327	7799	7191	7256	11290	12504	11427	6668	4062	6933	6028	5839	7936	3212	8726	3766
H73	15010	12557	13054	12756	16228	14067	12115	10829	10525	10681	13670	14527	13697	9230	7458	9353	9188	8497	11087	6858	11982	7295
H74	15448	13893	14587	14190	16624	15480	13228	12237	12251	12501	14332	14834	14261	10348	9436	10344	10820	9766	12599	9127	13562	9411
H75	5014	4509	5606	5013	6225	5998	3417	3670	4840	5317	3833	4521	3762	2179	5309	1739	4052	2810	4219	6412	5029	5822
H76	9803	7590	8270	7874	11025	9168	7000	5920	6000	6298	8448	9354	8479	4094	3587	4165	4554	3455	6284	3872	7252	3790
H77	6540	8837	9991	9378	7306	10055	7661	8383	9611	10088	6568	5690	6178	6902	9704	6470	8782	7375	8921	10661	9629	10181
H78	1264	5435	6440	5913	2069	5975	4507	6079	7465	7866	2175	437	1731	6022	9263	5677	7473	6846	6437	10436	6640	9774
H79	1351	6083	7007	6524	1444	6407	5258	6899	8264	8645	2822	1074	2442	6978	10198	6645	8368	7807	7217	11374	7326	10706
H80	6338	1649	1664	1526	7324	2761	2306	1120	989	1174	4732	6523	5118	3129	4082	3416	2221	3375	571	5073	583	4425

	WTG													
NSA	T05	T04	T48 Alt	T49 Alt	T50 Alt	T51 Alt	T52 Alt	T53 Alt	T54 Alt	T55 Alt	T56 Alt	T57 Alt	T58 Alt	T59 Alt	T23
H01	5042	4948	13828	14225	9645	9099	4138	3356	4744	6105	12153	6832	8966	9365	9491
H02	4119	3538	13035	13404	8792	8252	3579	2556	4283	5401	11367	5775	7886	8302	8889
H03	2628	2336	11565	11943	7326	6781	2004	986	2708	3867	9890	4367	6507	6917	7357
H04	2658	2275	11595	11970	7353	6809	2104	1077	2807	3922	9922	4371	6505	6918	7413
H05	2158	2602	10764	11162	6596	6052	1131	940	1681	3060	9090	3909	5998	6382	6428
H06	3255	3980	11049	11464	7069	6550	2229	2412	2399	3718	9408	4799	6719	7063	6667
H07	7859	9009	5803	6175	5327	5434	8014	9033	7322	6607	5081	7113	6490	6348	4250
H08	8874	10020	5992	6323	6145	6304	9030	10048	8339	7617	5541	8094	7357	7183	5113
H09	5634	4835	14425	14776	10202	9674	5228	4202	5929	6947	12775	7156	9193	9611	10404
H10	4082	3091	12624	12962	8439	7925	3964	3026	4618	5392	10994	5407	7365	7780	8746
H11	3535	2413	11805	12134	7659	7159	3646	2853	4231	4802	10193	4663	6541	6952	8039
H12	2476	1406	10953	11297	6755	6240	2614	1926	3176	3758	9316	3721	5704	6121	7064
H13	2086	894	9871	10201	5732	5241	2706	2459	3042	3145	8259	2777	4606	5018	6164
H14	2600	3451	6359	6745	2149	1605	3360	4258	2775	1390	4681	1254	1790	2087	2209
H15	3197	3600	6028	6365	1939	1529	4174	4886	3742	2399	4415	1406	773	1191	2667
H16	5312	6011	3627	4011	643	1166	6091	6988	5484	4121	1952	3683	1896	1572	1138
H17	8423	9297	2157	2500	4089	4533	9007	9994	8326	7123	2129	6998	5365	5023	3650
H18	8984	9884	2480	2755	4717	5151	9533	10531	8846	7675	2737	7596	5999	5660	4227
H19	6686	7255	2384	2702	2030	2571	7529	8383	6950	5565	984	4965	2896	2481	2596
H20	5515	6015	3658	3973	1141	1579	6409	7218	5872	4474	2147	3757	1642	1224	2148
H21	3653	3876	5955	6262	2151	1876	4671	5306	4294	2997	4415	1899	848	1168	3066
H22	3328	3025	7474	7756	3744	3413	4376	4720	4236	3286	5986	2106	2441	2772	4578
H23	3104	2783	7620	7910	3812	3453	4149	4481	4026	3119	6110	1960	2517	2868	4600
H24	4291	3077	11352	11636	7453	7023	4790	4260	5214	5325	9837	4762	6199	6576	8070

To be continued on next page...

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
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Calculated:
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DECIBEL - Main Result

Calculation: V117-3.3 84m HH Rev 8 Alt Ground Attenuation

...continued from previous page

	WTG														
NSA	T05	T04	T48 Alt	T49 Alt	T50 Alt	T51 Alt	T52 Alt	T53 Alt	T54 Alt	T55 Alt	T56 Alt	T57 Alt	T58 Alt	T59 Alt	T23
H25	3490	2410	9942	10226	6077	5666	4239	4007	4498	4290	8433	3537	4808	5178	6746
H26	6782	5585	14249	14525	10357	9919	6973	6153	7547	7975	12746	7584	9109	9487	10939
H27	6195	4999	12377	12613	8792	8429	6744	6210	7147	7135	10984	6414	7492	7822	9553
H28	6736	6985	3722	3873	2873	3242	7718	8412	7262	5881	2845	4948	2874	2532	3887
H29	8798	9166	2349	2253	4375	4881	9725	10497	9201	7802	2697	7014	4873	4472	5054
H30	9516	9857	2673	2464	5112	5618	10450	11212	9932	8533	3336	7728	5590	5194	5778
H31	10774	11262	2327	1912	6134	6676	11633	12475	11054	9670	3781	9024	6898	6482	6516
H32	9779	10088	3007	2775	5428	5926	10725	11472	10218	8820	3699	7990	5858	5468	6119
H33	7285	7298	4891	4957	4102	4371	8320	8885	7957	6638	4241	5560	3733	3496	5187
H34	6094	5657	7430	7576	5044	4998	7138	7406	7002	5969	6374	4761	3974	4038	6143
H35	6290	5523	9237	9395	6494	6335	7249	7261	7292	6543	8107	5399	5279	5449	7522
H36	6374	5537	9677	9840	6856	6674	7302	7250	7388	6714	8529	5599	5620	5810	7865
H37	8984	7812	14106	14277	10988	10706	9583	9061	9959	9831	12897	8985	9692	9959	11880
H38	9068	8185	11330	11408	9182	9088	9976	9858	10085	9407	10453	8273	8039	8156	10258
H39	9188	8189	12368	12472	9910	9754	10015	9766	10211	9697	11390	8632	8699	8866	10942
H40	10049	9098	12525	12594	10388	10283	10915	10716	11072	10474	11669	9368	9231	9358	11458
H41	9594	8863	10476	10502	8897	8898	10574	10601	10581	9722	9797	8533	7890	7926	10016
H42	8513	7883	9209	9256	7557	7569	9524	9641	9474	8536	8473	7335	6572	6594	8678
H43	9985	9501	8871	8827	8165	8304	11028	11261	10888	9808	8489	8603	7419	7333	9292
H44	10627	9901	11049	11040	9763	9796	11610	11638	11610	10732	10493	9538	8808	8818	10890
H45	9917	9582	7770	7696	7524	7735	10973	11318	10755	9575	7534	8393	6947	6796	8629
H46	10873	10769	6560	6377	7559	7907	11919	12425	11583	10276	6798	9182	7361	7097	8553
H47	11116	10990	6854	6666	7853	8196	12165	12656	11838	10539	7105	9436	7636	7378	8853
H48	11350	10416	13280	13312	11447	11380	12228	12042	12371	11733	12547	10607	10338	10434	12540
H49	11839	11832	6413	6153	8161	8568	12870	13439	12485	11138	6981	10100	8157	7848	9065
H50	11792	11781	6410	6154	8128	8532	12824	13391	12440	11095	6964	10055	8115	7808	9035
H51	11743	11725	6429	6178	8101	8502	12776	13339	12396	11053	6963	10009	8077	7772	9015
H52	11683	11659	6434	6187	8062	8460	12717	13276	12340	10999	6948	9951	8026	7724	8982
H53	11671	11636	6507	6264	8083	8476	12706	13258	12334	10998	7000	9943	8029	7731	9011
H54	12658	12563	7586	7325	9190	9572	13702	14216	13353	12034	8128	10955	9089	8804	10131
H55	12677	12683	6877	6580	8917	9340	13704	14284	13310	11956	7592	10931	8965	8646	9787
H56	11890	11907	6268	5998	8140	8557	12916	13501	12519	11166	6887	10142	8175	7857	9023
H57	12166	12219	6190	5896	8303	8738	13184	13792	12770	11405	6918	10406	8404	8074	9150
H58	11626	11666	5938	5672	7828	8251	12648	13246	12242	10883	6553	9871	7887	7564	8702
H59	12089	12115	6332	6050	8303	8727	13113	13704	12711	11354	6999	10338	8360	8038	9174
H60	12149	12182	6319	6032	8340	8767	13171	13767	12766	11407	7008	10395	8410	8086	9203
H61	12046	12085	6216	5932	8229	8657	13068	13667	12661	11301	6898	10291	8303	7978	9092
H62	12106	12151	6212	5923	8269	8700	13126	13729	12716	11354	6914	10349	8355	8027	9125
H63	11143	11224	5354	5097	7261	7694	12156	12778	11735	10367	5950	9377	7364	7031	8119
H64	9723	9764	4990	4842	6064	6452	10748	11341	10352	9002	5171	7974	6019	5713	7012
H65	9895	10107	3790	3580	5757	6222	10876	11569	10406	9018	4311	8108	6017	5651	6552
H66	11065	11260	4485	4190	6904	7377	12047	12735	11578	10189	5287	9278	7188	6822	7660
H67	11546	11793	4423	4081	7253	7748	12509	13229	12017	10621	5429	9755	7640	7259	7934
H68	9912	10920	4141	4360	6065	6423	10317	11339	9614	8593	4404	8718	7369	7073	5350
H69	10160	11365	8270	8588	8187	8261	10097	11067	9452	9015	7827	9705	9314	9196	7091
H70	9092	10289	7462	7807	7094	7155	9071	10055	8413	7926	6876	8595	8206	8096	5990
H71	5336	5638	13584	13999	9560	9031	4293	3879	4714	6105	11938	7064	9104	9471	9201
H72	5641	4530	13781	14093	9700	9216	5643	4733	6274	6918	12200	6748	8532	8934	10133
H73	8919	7706	15867	16109	12177	11777	9166	8361	9723	10066	14447	9565	10892	11243	12855
H74	10681	9473	16173	16344	13005	12703	11166	10527	11612	11631	14956	10867	11704	11984	13867
H75	4523	4555	5857	6110	2677	2582	5566	6116	5242	3988	4479	2842	1556	1641	3744
H76	4495	3362	10685	10945	6967	6587	5180	4831	5490	5330	9233	4558	5676	6022	7699
H77	9216	8994	6688	6628	6503	6747	10272	10695	10001	8765	6427	7610	6018	5833	7593
H78	8016	8527	1518	1663	3392	3930	8879	9717	8308	6919	1405	6270	4155	3737	3903
H79	8910	9469	811	744	4232	4778	9739	10605	9146	7771	1846	7189	5099	4681	4576
H80	2512	3702	7378	7793	3485	3007	2716	3742	2012	1381	5738	2375	3469	3719	2996

Appendix I: windPRO Sound Analysis with General Ground Attenuation

Project:

20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

Description:

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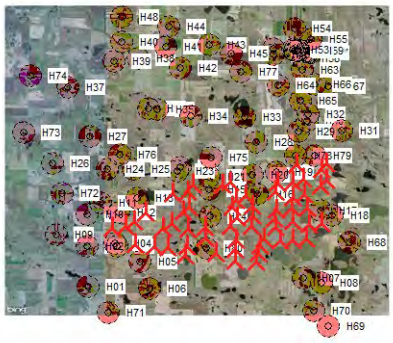
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Calculated:
2/16/2015 4:05 PM/2.9.285

DECIBEL - Main Result

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation

Noise calculation model:
ISO 9613-2 General
Wind speed:
95% rated power
Ground attenuation:
General, Ground factor: 0.7
Meteorological coefficient, C0:
0.0 dB
Type of demand in calculation:
1: WTG noise is compared to demand (DK, DE, SE, NL etc.)
Noise values in calculation:
All noise values are mean values (Lwa) (Normal)
Pure tones:
Pure and Impulse tone penalty are added to WTG source noise
Height above ground level, when no value in NSA object:
1.5 m Don't allow override of model height with height from NSA object
Deviation from "official" noise demands. Negative is more restrictive, positive is less restrictive.:
0.0 dB(A)



Scale 1:400,000

New WTG

Noise sensitive area

WTGs

	UTM (north)-WGS84 Zone: 14				WTG type							Noise data					
	East	North	Z	Row data/Description	Valid	Manufact.	Type-generator	Power, rated	Rotor diameter	Hub height	Creator	Name	Wind speed	Status	LwA,ref	Pure tones	
			[m]					[kW]	[m]	[m]			[m/s]		[dB(A)]		
T01	426,404	5,380,816	490.7	T01	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T02	427,088	5,380,888	490.7	T02	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T03	427,532	5,381,154	490.6	T03	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T04	428,153	5,381,587	484.6	T04	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T05	429,079	5,380,790	481.6	T05	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T06	429,560	5,381,041	481.6	T06	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T07	430,155	5,381,640	478.5	T07	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T08	429,579	5,382,607	487.7	T08	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T09	430,407	5,382,722	496.8	T09	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T10	430,657	5,383,084	491.0	T10	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T11	430,242	5,379,390	490.7	T11	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T12	430,379	5,379,847	480.0	T12	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T13	431,335	5,380,312	481.2	T13	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T14	431,340	5,380,862	481.6	T14	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T15	431,891	5,379,497	484.6	T15	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T16	432,876	5,379,052	496.9	T16	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T17	432,886	5,379,665	487.7	T17	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T18	432,945	5,380,204	489.6	T18	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T19	432,633	5,380,904	496.8	T19	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T20	432,985	5,381,379	499.9	T20	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T21	432,753	5,381,916	493.8	T21	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T22	433,787	5,380,903	516.3	T22	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T23	433,809	5,381,470	515.1	T23	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T24	433,830	5,381,961	512.1	T24	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T25	434,026	5,379,018	527.3	T25	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T26	434,112	5,379,482	520.4	T26	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T27	434,209	5,379,879	512.1	T27	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T28	434,398	5,380,261	515.1	T28	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T29	435,048	5,380,847	518.2	T29	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T30	434,970	5,381,321	525.3	T30	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T31	435,093	5,381,756	514.4	T31	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T32	435,029	5,382,733	490.7	T32	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T33	435,153	5,383,180	487.7	T33	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T34	435,280	5,380,120	499.9	T34	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T35	435,948	5,380,198	493.8	T35	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T36	435,940	5,381,153	497.4	T36	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T37	435,892	5,381,871	496.8	T37	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T38	435,956	5,382,432	496.8	T38	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T39	436,670	5,380,219	493.8	T39	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T40	436,795	5,381,008	493.6	T40	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T41	437,500	5,381,035	490.7	T41	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T42	436,705	5,381,860	496.8	T42	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T43	436,544	5,382,577	486.6	T43	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h

To be continued on next page...

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

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DECIBEL - Main Result

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation

...continued from previous page

	UTM (north)-WGS84 Zone: 14				WTG type							Noise data					
	East	North	Z	Row data/Description	Valid	Manufact.	Type-generator	Power, rated	Rotor diameter	Hub height	Creator	Name	Wind speed	Status	LwA,ref	Pure tones	
			[m]					[kW]	[m]	[m]			[m/s]		[dB(A)]		
T44	437,401	5,383,031	484.6	T44	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T45	437,748	5,383,328	484.6	T45	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T46	436,528	5,383,414	491.2	T46	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T47	436,146	5,384,176	493.8	T47	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T48 Alt	437,462	5,383,893	484.9	T48 Alt	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T49 Alt	437,741	5,384,219	486.5	T49 Alt	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T50 Alt	433,440	5,382,540	491.0	T50 Alt	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T51 Alt	432,950	5,382,296	487.7	T51 Alt	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T52 Alt	428,647	5,379,825	484.6	T52 Alt	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T53 Alt	427,624	5,379,906	487.7	T53 Alt	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T54 Alt	429,351	5,379,803	481.6	T54 Alt	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T55 Alt	430,397	5,380,730	475.9	T55 Alt	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T56 Alt	435,924	5,383,222	484.6	T56 Alt	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T57 Alt	430,454	5,381,937	481.6	T57 Alt	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T58 Alt	432,258	5,383,093	481.6	T58 Alt	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h
T59 Alt	432,653	5,383,230	479.6	T59 Alt	Yes	VESTAS	V117-3.3 GridStreame-3,300	3,300	117.0	84.0	USER	Revised Sound	(95%)	User value	108.5	0 dB	h

h) Generic octave distribution used

Calculation Results

Sound Level

Noise sensitive area		UTM (north)-WGS84 Zone: 14			Demands	Sound Level		Demands fulfilled ?
No.	Name	East	North	Z	Imission height	Noise	From WTGs	Distance to noise demand	Noise
				[m]	[m]	[dB(A)]	[dB(A)]	[m]	
H01	Noise sensitive point: User defined (2)	425,103	5,377,690	482.7	1.5	50.0	28.1	3,172	Yes
H02	Noise sensitive point: User defined (3)	425,068	5,379,854	474.1	1.5	50.0	32.0	1,462	Yes
H03	Noise sensitive point: User defined (4)	426,643	5,379,805	491.7	1.5	50.0	38.7	796	Yes
H04	Noise sensitive point: User defined (5)	426,549	5,379,974	491.0	1.5	50.0	39.3	664	Yes
H05	Noise sensitive point: User defined (6)	427,874	5,379,000	474.0	1.5	50.0	38.3	756	Yes
H06	Noise sensitive point: User defined (7)	428,371	5,377,613	488.9	1.5	50.0	32.7	2,039	Yes
H07	Noise sensitive point: User defined (8)	436,489	5,378,172	496.8	1.5	50.0	34.4	1,860	Yes
H08	Noise sensitive point: User defined (9)	437,470	5,377,901	494.2	1.5	50.0	32.1	2,260	Yes
H09	Noise sensitive point: User defined (10)	423,456	5,380,441	468.5	1.5	50.0	27.3	2,786	Yes
H10	Noise sensitive point: User defined (11)	425,063	5,381,519	490.7	1.5	50.0	32.6	1,333	Yes
H11	Noise sensitive point: User defined (12)	425,794	5,382,095	484.6	1.5	50.0	34.1	1,232	Yes
H12	Noise sensitive point: User defined (13)	426,747	5,381,621	488.2	1.5	50.0	40.6	608	Yes
H13	Noise sensitive point: User defined (14)	427,710	5,382,364	484.6	1.5	50.0	38.6	709	Yes
H14	Noise sensitive point: User defined (15)	431,600	5,381,428	480.6	1.5	50.0	43.2	429	Yes
H15	Noise sensitive point: User defined (16)	431,525	5,382,848	481.6	1.5	50.0	42.0	576	Yes
H16	Noise sensitive point: User defined (17)	434,082	5,382,575	494.6	1.5	50.0	44.3	429	Yes
H17	Noise sensitive point: User defined (18)	437,449	5,381,736	489.6	1.5	50.0	42.9	510	Yes
H18	Noise sensitive point: User defined (19)	438,036	5,381,480	487.7	1.5	50.0	40.5	511	Yes
H19	Noise sensitive point: User defined (20)	435,083	5,383,732	482.5	1.5	50.0	43.0	355	Yes
H20	Noise sensitive point: User defined (21)	433,814	5,383,618	481.3	1.5	50.0	39.9	938	Yes
H21	Noise sensitive point: User defined (22)	431,519	5,383,509	482.5	1.5	50.0	40.6	652	Yes
H22	Noise sensitive point: User defined (23)	429,988	5,383,991	485.4	1.5	50.0	37.4	935	Yes
H23	Noise sensitive point: User defined (24)	429,842	5,383,799	486.0	1.5	50.0	38.2	887	Yes
H24	Noise sensitive point: User defined (25)	426,110	5,383,888	484.6	1.5	50.0	30.0	2,887	Yes
H25	Noise sensitive point: User defined (26)	427,520	5,383,912	487.7	1.5	50.0	32.2	2,219	Yes
H26	Noise sensitive point: User defined (27)	423,216	5,384,199	475.5	1.5	50.0	24.9	4,462	Yes
H27	Noise sensitive point: User defined (28)	425,207	5,385,626	484.6	1.5	50.0	26.1	4,767	Yes
H28	Noise sensitive point: User defined (29)	434,037	5,385,350	487.7	1.5	50.0	34.0	2,228	Yes
H29	Noise sensitive point: User defined (30)	436,241	5,385,900	487.5	1.5	50.0	33.9	1,538	Yes
H30	Noise sensitive point: User defined (31)	436,720	5,386,461	487.7	1.5	50.0	31.9	2,171	Yes
H31	Noise sensitive point: User defined (32)	438,532	5,385,959	492.7	1.5	50.0	32.0	1,718	Yes
H32	Noise sensitive point: User defined (33)	436,777	5,386,821	487.7	1.5	50.0	30.8	2,534	Yes

To be continued on next page...

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
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DECIBEL - Main Result

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation

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Noise sensitive area		UTM (north)-WGS84 Zone: 14				Demands	Sound Level		Demands fulfilled ?
No.	Name	East	North	Z	Imission height	Noise	From WTGs	Distance to noise demand	Noise
				[m]	[m]	[dB(A)]	[dB(A)]	[m]	
H33	Noise sensitive point: User defined (34)	433,417	5,386,642	489.8	1.5	50.0	30.6	3,299	Yes
H34	Noise sensitive point: User defined (35)	430,581	5,386,696	484.6	1.5	50.0	29.3	3,418	Yes
H35	Noise sensitive point: User defined (36)	428,790	5,387,073	487.7	1.5	50.0	27.5	4,210	Yes
H36	Noise sensitive point: User defined (37)	428,339	5,387,121	487.8	1.5	50.0	27.1	4,462	Yes
H37	Noise sensitive point: User defined (38)	424,038	5,388,227	476.1	1.5	50.0	22.4	7,590	Yes
H38	Noise sensitive point: User defined (39)	427,771	5,389,763	485.6	1.5	50.0	23.4	7,081	Yes
H39	Noise sensitive point: User defined (40)	426,492	5,389,606	486.3	1.5	50.0	22.9	7,464	Yes
H40	Noise sensitive point: User defined (41)	426,881	5,390,596	478.5	1.5	50.0	22.1	8,213	Yes
H41	Noise sensitive point: User defined (42)	429,239	5,390,383	484.6	1.5	50.0	23.4	7,245	Yes
H42	Noise sensitive point: User defined (43)	429,976	5,389,256	485.3	1.5	50.0	25.0	6,016	Yes
H43	Noise sensitive point: User defined (44)	431,513	5,390,474	486.5	1.5	50.0	24.0	7,133	Yes
H44	Noise sensitive point: User defined (45)	429,367	5,391,413	484.6	1.5	50.0	22.4	8,237	Yes
H45	Noise sensitive point: User defined (46)	432,691	5,390,026	492.8	1.5	50.0	24.8	6,594	Yes
H46	Noise sensitive point: User defined (47)	434,940	5,389,948	488.7	1.5	50.0	25.1	5,711	Yes
H47	Noise sensitive point: User defined (48)	434,910	5,390,254	489.5	1.5	50.0	24.7	6,017	Yes
H48	Noise sensitive point: User defined (49)	426,887	5,391,926	484.6	1.5	50.0	21.0	9,418	Yes
H49	Noise sensitive point: User defined (50)	436,271	5,390,194	493.4	1.5	50.0	24.6	5,831	Yes
H50	Noise sensitive point: User defined (51)	436,212	5,390,180	493.3	1.5	50.0	24.6	5,816	Yes
H51	Noise sensitive point: User defined (52)	436,128	5,390,182	493.0	1.5	50.0	24.7	5,818	Yes
H52	Noise sensitive point: User defined (53)	436,045	5,390,169	492.7	1.5	50.0	24.7	5,806	Yes
H53	Noise sensitive point: User defined (54)	435,952	5,390,222	492.0	1.5	50.0	24.6	5,862	Yes
H54	Noise sensitive point: User defined (55)	436,061	5,391,348	494.3	1.5	50.0	23.2	6,985	Yes
H55	Noise sensitive point: User defined (56)	436,924	5,390,748	494.9	1.5	50.0	23.7	6,387	Yes
H56	Noise sensitive point: User defined (57)	436,493	5,390,085	493.8	1.5	50.0	24.7	5,731	Yes
H57	Noise sensitive point: User defined (58)	436,955	5,390,062	494.2	1.5	50.0	24.6	5,703	Yes
H58	Noise sensitive point: User defined (59)	436,487	5,389,750	493.8	1.5	50.0	25.2	5,396	Yes
H59	Noise sensitive point: User defined (60)	436,695	5,390,178	493.8	1.5	50.0	24.5	5,839	Yes
H60	Noise sensitive point: User defined (61)	436,792	5,390,176	493.9	1.5	50.0	24.5	5,838	Yes
H61	Noise sensitive point: User defined (62)	436,761	5,390,069	493.8	1.5	50.0	24.7	5,737	Yes
H62	Noise sensitive point: User defined (63)	436,848	5,390,074	494.0	1.5	50.0	24.6	5,729	Yes
H63	Noise sensitive point: User defined (64)	436,447	5,389,149	491.4	1.5	50.0	26.1	4,794	Yes
H64	Noise sensitive point: User defined (65)	435,203	5,388,342	487.7	1.5	50.0	27.6	4,085	Yes
H65	Noise sensitive point: User defined (66)	436,340	5,387,513	487.7	1.5	50.0	29.2	3,154	Yes
H66	Noise sensitive point: User defined (67)	437,143	5,388,366	492.2	1.5	50.0	27.2	3,997	Yes
H67	Noise sensitive point: User defined (68)	437,850	5,388,298	492.1	1.5	50.0	27.0	3,884	Yes
H68	Noise sensitive point: User defined (69)	438,962	5,380,033	490.7	1.5	50.0	33.5	1,584	Yes
H69	Noise sensitive point: User defined (70)	437,832	5,375,631	496.6	1.5	50.0	27.4	4,540	Yes
H70	Noise sensitive point: User defined (71)	437,063	5,376,441	493.8	1.5	50.0	29.5	3,608	Yes
H71	Noise sensitive point: User defined (72)	426,198	5,376,299	477.3	1.5	50.0	27.3	3,692	Yes
H72	Noise sensitive point: User defined (73)	423,740	5,382,611	473.1	1.5	50.0	27.2	3,028	Yes
H73	Noise sensitive point: User defined (74)	421,712	5,385,818	484.6	1.5	50.0	22.1	6,672	Yes
H74	Noise sensitive point: User defined (75)	422,066	5,388,846	472.5	1.5	50.0	20.5	8,943	Yes
H75	Noise sensitive point: User defined (76)	431,638	5,384,520	487.7	1.5	50.0	36.0	1,352	Yes
H76	Noise sensitive point: User defined (77)	426,805	5,384,667	485.2	1.5	50.0	29.5	3,175	Yes
H77	Noise sensitive point: User defined (78)	433,190	5,389,038	493.8	1.5	50.0	26.3	5,505	Yes
H78	Noise sensitive point: User defined (79)	436,125	5,384,612	492.2	1.5	50.0	43.4	251	Yes
H79	Noise sensitive point: User defined (80)	437,120	5,384,628	484.8	1.5	50.0	41.4	540	Yes
H80	Noise sensitive point: User defined (81)	431,362	5,379,742	479.8	1.5	50.0	44.4	372	Yes

Project:

20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

Description:

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Calculated:
2/16/2015 4:05 PM/2.9.285

DECIBEL - Main Result

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation

Distances (m)

	WTG																						
NSA	T22	T31	T30	T24	T21	T27	T26	T37	T38	T07	T29	T36	T28	T34	T35	T19	T40	T42	T41	T43	T44	T39
H01	9259	10786	10514	9716	8740	9365	9185	11570	11844	6413	10434	11377	9644	10463	11131	8187	12154	12328	12840	12441	13408	11840
H02	8782	10204	10010	9012	7957	9141	9051	11010	11189	5391	10029	10949	9339	10216	10885	7637	11784	11808	12488	11795	12736	11608
H03	7228	8672	8464	7503	6464	7566	7476	9476	9676	3962	8469	9394	7769	8643	9313	6090	10223	10270	10926	10282	11232	10036
H04	7297	8728	8528	7547	6501	7660	7579	9533	9723	3972	8544	9465	7854	8733	9402	6154	10298	10329	11002	10328	11275	10124
H05	6212	7727	7466	6651	5684	6395	6256	8516	8781	3489	7408	8348	6645	7491	8162	5125	9144	9282	9839	9379	10345	8880
H06	6337	7896	7569	6979	6141	6262	6037	8642	8986	4404	7419	8356	6583	7350	8006	5384	9082	9354	9749	9562	10531	8699
H07	3842	3846	3496	4629	5289	2848	2714	3747	4293	7221	3039	3031	2955	2292	2097	4726	2852	3694	3036	4405	4944	2055
H08	4751	4529	4236	5453	6194	3814	3712	4272	4777	8215	3814	3594	3873	3117	2755	5694	3179	4032	3134	4767	5130	2452
H09	10341	11711	11548	10485	9413	10767	10699	12517	12658	6805	11599	12504	10944	11829	12494	9188	13351	13325	14057	13261	14184	13216
H10	8746	10033	9909	8778	7700	9292	9275	10834	10931	5093	10007	10883	9420	10313	10965	7594	11743	11647	12446	11530	12431	11680
H11	8081	9305	9209	8037	6961	8702	8719	10100	10168	4385	9338	10190	8798	9690	10330	6941	11055	10913	11754	10761	11645	11037
H12	7077	8347	8228	7091	6013	7662	7669	9148	9245	3408	8337	9205	7771	8664	9310	5929	10067	9961	10769	9844	10747	10022
H13	6250	7408	7335	6133	5063	6958	7021	8196	8246	2550	7493	8319	7011	7896	8518	5134	9186	9009	9880	8837	9714	9213
H14	2249	3508	3372	2293	1252	3034	3178	4314	4470	1460	3496	4349	3032	3906	4519	1158	5212	5123	5913	5076	6019	5212
H15	2983	3731	3768	2470	1542	4002	4245	4475	4450	1827	4051	4729	3866	4642	5156	2237	5582	5273	6244	5026	5879	5778
H16	1698	1301	1537	664	1483	2699	3094	1942	1879	4037	1979	2340	2336	2732	3022	2212	3133	2719	3749	2462	3351	3500
H17	3756	2356	2513	3626	4699	3735	4027	1563	1647	7295	2560	1618	3389	2705	2149	4888	979	754	703	1235	1296	1705
H18	4288	2956	3070	4233	5301	4149	4404	2180	2288	7883	3054	2121	3837	3073	2450	5434	1328	1384	697	1852	1676	1859
H19	3112	1976	2414	2169	2954	3951	4360	2029	1566	5354	2885	2718	3538	3617	3638	3742	3217	2477	3622	1862	2422	3855
H20	2715	2259	2571	1657	2006	3760	4147	2715	2448	4159	3033	3255	3408	3793	4031	2960	3962	3384	4501	2922	3635	4440
H21	3455	3981	4086	2782	2015	4518	4790	4669	4566	2314	4420	5010	4341	5063	5530	2833	5839	5442	6472	5111	5902	6112
H22	4896	5573	5652	4345	3457	5893	6111	6273	6168	2357	5957	6594	5776	6557	7065	4065	7432	7047	8073	6707	7475	7673
H23	4894	5635	5695	4391	3467	5868	6072	6350	6265	2182	5985	6647	5769	6566	7089	4021	7492	7132	8142	6812	7598	7710
H24	8237	9233	9224	7957	6930	9037	9135	9987	9953	4628	9441	10203	9047	9914	10507	7173	11066	10787	11742	10516	11324	11179
H25	6952	7874	7888	6605	5601	7810	7942	8617	8565	3479	8128	8861	7787	8637	9210	5932	9719	9411	10386	9122	9921	9867
H26	11073	12126	12101	10847	9806	11811	11873	12888	12862	7396	12297	13084	11855	12735	13346	9976	13949	13690	14630	13426	14233	14030
H27	9794	10617	10670	9370	8409	10680	10819	11325	11214	6354	10940	11628	10643	11480	12035	8800	12474	12099	13122	11740	12468	12674
H28	4454	3746	4136	3395	3666	5474	5869	3943	3492	5370	4615	4608	5102	5376	5495	4662	5144	4393	5533	3738	4086	5767
H29	5567	4300	4752	4618	5295	6355	6762	4045	3480	7429	5192	4757	5933	5859	5710	6163	4923	4067	5025	3337	3095	5697
H30	6284	4979	5430	5348	6033	7045	7451	4665	4101	8145	5858	5365	6621	6502	6310	6898	5454	4601	5482	3888	3497	6242
H31	6934	5431	5848	6172	7053	7460	7842	4867	4368	9425	6186	5460	7040	6683	6314	7769	5247	4488	5031	3923	3139	6034
H32	6630	5338	5789	5684	6344	7402	7808	5029	4465	8408	6219	5729	6978	6866	6675	7224	5813	4962	5831	4250	3841	6603
H33	5751	5166	5543	4699	4772	6809	7194	5375	4916	5972	6020	6041	6456	6783	6923	5791	6569	5803	6936	5129	5377	7200
H34	6621	6691	6939	5742	5250	7722	8032	7175	6861	5074	7359	7710	7482	8083	8428	6144	8424	7803	8940	7247	7743	8890
H35	7940	8246	8443	7179	6504	9006	9271	8803	8538	5602	8827	9283	8824	9512	9925	7268	10043	9478	10598	8963	9513	10444
H36	8267	8626	8810	7535	6825	9322	9575	9198	8945	5774	9185	9664	9153	9859	10287	7555	10434	9883	10998	9379	9943	10819
H37	12194	12810	12931	11625	10760	13158	13340	13450	13252	8989	13254	13846	13069	13861	14364	11291	14658	14177	15263	13723	14338	14956
H38	10709	10850	11095	9878	9295	11796	12079	11324	10988	8466	11508	11869	11585	12222	12584	10105	12573	11928	13070	11340	11750	13049
H39	11356	11645	11854	10597	9916	12416	12671	12173	11876	8768	12244	12677	12241	12931	13339	10650	13419	12818	13951	12266	12738	13846
H40	11902	12066	12307	11084	10480	12983	13259	12543	12207	9536	12718	13086	12780	13427	13796	11270	13792	13147	14289	12557	12958	14266
H41	10515	10426	10722	9592	9167	11620	11941	10804	10408	8791	11166	11406	11361	11909	12196	10068	12041	11331	12475	10691	10985	12591
H42	9181	9080	9376	8250	7848	10288	10613	9462	9073	7618	9820	10061	10024	10564	10850	8764	10702	9999	11144	9367	9690	11246
H43	9837	9425	9784	8823	8647	10933	11295	9654	9188	8938	10255	10319	10613	11018	11192	9635	10840	10058	11178	9363	9491	11479
H44	11402	11227	11543	10453	10083	12509	12840	11560	11139	9805	11996	12185	12235	12748	13003	11005	12784	12046	13185	11384	11611	13366
H45	9189	8612	8998	8145	8110	10260	10640	8761	8266	8761	9477	9449	9914	10239	10354	9122	9908	9099	10196	8386	8433	10583
H46	9118	8194	8627	8064	8324	10096	10499	8133	7584	9587	9101	8852	9703	9834	9802	9334	9130	8279	9273	7544	7342	9882
H47	9418	8500	8933	8363	8612	10399	10802	8441	7892	9839	9408	9159	10007	10141	10109	9623	9436	8584	9576	7849	7641	10188
H48	13004	13068	13334	12145	11602	14097	14390	13498	13129	10793	13760	14072	13874	14486	14821	12430	14744	14061	15207	13441	13772	15257
H49	9617	8520	8968	8587	8995	10519	10928	8332	7768	10516	9427	9047	10108	10123	10001	9977	9201	8346	9241	7622	7252	9983
H50	9589	8498	8946	8557	8959	10494	10903	8316	7752	10470	9405	9031	10084	10103	9985	9943	9191	8335	9235	7610	7248	9972
H51	9570	8490	8936	8536	8928	10480	10889	8315	7752	10423	9397	9031	10071	10098	9986	9914	9198	8342	9249	7616	7264	9978
H52	9537	8467	8913	8502	8885	10453	10861	8300	7738	10365	9375	9017	10044	10078	9971	9873	9192	8335	9249	7608	7266	9970
H53	9567	8510	8955	8529	8901	10489	10897	8352	7790	10356	9418	9069	10082	10124	10024	9891	9252	8396	9317	7668	7336	10029
H54	10690	9641	10086	9648	9995	11618	12025	9479	8917	11363	10550	10196	11211	11255	11151	10992	10366	9510	10413	8784	8425	11146
H55	10333	9177	9627	9316	9767	11203	11612	8937	8372	11348	10077	9645	10787	10754	10595	10739	9741	8891	9730	8180	7732	10532
H56	9572	8446	8895	8549	8984	10459	10868	8236	7672	10559	9350	8949	10045	10039	9902	9959	9082	8228	9106	7508	7112	9868
H57	9691	8513	8964	8683	9166	10547	10956	8260	7695	10825	9410	8967	10129	10082	9915	10127	9055	8206	9043	7496	7045	9847
H58	9250	8115	8564	8230	8678	10131	10540	7902	7337	10289	9018	8614	9717	9705	9567	9649	8747	7893	8774	7173	6781	9533
H59	9720	8573	9023	8702	9154	10595	11004	8346	7781	10755	9475	9057	10180	10157	10008	10125	9171	8318	9178	7602	7182	9959
H60	9748	8590	9041	8733	9195	10616	11025	8354	7789	10813	9490	9063	10200	10169	10014	10162	9168	8317	9168	7603	7171	9958
H61	9636	8479	8929	8622	9085	10505	10914	8244	7679	10709	9380	8954	10089	10059	9904	10052	9061	8209	9064	7495	7067	9850
H62	9668	8502	8952	8656	9128	10531	10940	8259	7694	10767	9401	8967	10115	10077	9917	10092	9066	8216	9062	7503	7065	9857
H63	8664	7516	7966	7650	8122	9536	9945	7300	6735	9797	8419	8012	9122	9104	8965	9084	8148	7294	8182	6573	6192	8933
H64	7573	6587	7025	6527	6877	8521	8927	6508	5958	8390	7496	7227	8121	8222	8178	7870	7505	6654	7660	5919	5748	8254

To be continued on next page...

Project:

20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

Description:

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Calculated:
2/16/2015 4:05 PM/2.9.285

DECIBEL - Main Result

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation

...continued from previous page

	WTG																						
NSA	T22	T31	T30	T24	T21	T27	T26	T37	T38	T07	T29	T36	T28	T34	T35	T19	T40	T42	T41	T43	T44	T39
H65	7086	5891	6342	6093	6648	7926	8335	5660	5095	8529	6790	6373	7508	7469	7325	7578	6521	5665	6581	4940	4606	7301
H66	8183	6921	7373	7211	7802	8980	9387	6615	6052	9699	7805	7313	8558	8454	8255	8719	7366	6521	7340	5820	5341	8161
H67	8438	7100	7548	7505	8168	9173	9576	6719	6164	10176	7960	7396	8747	8572	8320	9049	7366	6539	7271	5868	5286	8165
H68	5248	4235	4195	5482	6488	4756	4882	3578	3846	8952	3998	3223	4570	3683	3019	6389	2376	2904	1772	3510	3380	2300
H69	6645	6709	6369	7489	8081	5583	5354	6534	7055	9749	5913	5837	5764	5164	4940	7405	5476	6330	5414	7064	7412	4733
H70	5535	5668	5310	6397	6968	4468	4237	5555	6092	8646	4845	4844	4657	4088	3919	6289	4575	5431	4615	6158	6598	3798
H71	8876	10435	10108	9503	8632	8774	8530	11181	11525	6647	9950	10884	9107	9853	10501	7913	11596	11888	12254	12102	13070	11182
H72	10191	11385	11304	10111	9040	10819	10834	12174	12217	6488	11445	12287	10914	11806	12444	9055	13153	12987	13850	12804	13668	13149
H73	13037	13984	14000	12717	11710	13836	13925	14719	14641	9420	14232	14973	13850	14716	15305	11975	15831	15507	16497	15182	15935	15972
H74	14159	14832	14938	13631	12737	15095	15257	15486	15299	10833	15248	15864	15026	15835	16355	13218	16685	16221	17298	15777	16401	16962
H75	4207	4425	4619	3369	2833	5305	5613	5011	4796	3239	5012	5463	5076	5712	6104	3750	6239	5723	6820	5277	5953	6620
H76	7932	8784	8824	7528	6553	8817	8960	9507	9420	4515	9085	9788	8779	9618	10177	6937	10639	10290	11295	9961	10722	10821
H77	8157	7527	7920	7106	7135	9215	9601	7660	7162	7996	8399	8351	8860	9160	9260	8153	8802	7993	9090	7280	7336	9481
H78	4384	3037	3488	3506	4317	5106	5511	2751	2187	6669	3916	3464	4682	4571	4418	5094	3666	2813	3832	2078	2032	4427
H79	4998	3516	3944	4235	5141	5570	5961	3019	2485	7579	4311	3670	5146	4869	4582	5831	3635	2799	3613	2130	1622	4432
H80	2689	4240	3938	3319	2581	2850	2762	5005	5324	2249	3848	4791	3080	3937	4609	1722	5579	5747	6273	5907	6877	5329

	WTG																				
NSA	T46	T18	T16	T17	T45	T25	T20	T14	T12	T11	T32	T47	T33	T09	T03	T10	T06	T08	T13	T01	T15	T02
H01	12779	8235	7891	8030	13845	9021	8703	6997	5700	5413	11134	12807	11452	7312	4231	7742	5576	6650	6761	3386	7024	3764
H02	12000	7884	7849	7820	13147	8997	8063	6352	5311	5195	10369	11891	10619	6061	2786	6455	4646	5285	6284	1646	6832	2269
H03	10523	6314	6278	6245	11650	7425	6535	4814	3736	3623	8882	10460	9155	4762	1616	5183	3168	4059	4720	1039	5257	1171
H04	10555	6400	6394	6345	11690	7538	6588	4873	3832	3739	8918	10477	9182	4737	1536	5152	3194	4014	4798	854	5363	1061
H05	9715	5212	5002	5056	10781	6152	5638	3934	2644	2400	8070	9758	8394	4502	2181	4942	2647	3990	3702	2336	4048	2045
H06	10009	5257	4729	4959	10981	5827	5956	4401	3004	2580	8399	10175	8774	5500	3639	5929	3628	5138	4009	3759	3992	3517
H07	5242	4086	3719	3900	5307	2604	4750	5809	6335	6365	4789	6014	5183	7595	9440	7625	7499	8211	5580	10426	4785	9785
H08	5593	5078	4736	4912	5434	3621	5676	6808	7353	7380	5414	6413	5765	8551	10457	8560	8510	9188	6592	11443	5803	10803
H09	13406	9492	9522	9462	14581	10665	9575	7895	6948	6867	11798	13228	12013	7316	4138	7671	6133	6495	7880	2972	8488	3660
H10	11621	7991	8193	8040	12813	9305	7923	6311	5573	5600	10040	11397	10226	5478	2496	5809	4522	4645	6387	1514	7121	2121
H11	10815	7396	7708	7497	12017	8788	7227	5681	5106	5206	9257	10559	9422	4656	1976	4963	3911	3820	5821	1417	6627	1770
H12	9944	6358	6646	6443	11133	7730	6243	4655	4042	4146	8356	9740	8549	3822	913	4175	2872	2999	4771	875	5565	809
H13	8880	5663	6137	5837	10084	7148	5366	3928	3669	3906	7328	8628	7488	2721	1223	3034	2274	1885	4166	2025	5070	1602
H14	5313	1818	2697	2182	6435	3420	1386	623	1998	2449	3669	5312	3961	1760	4077	1906	2076	2340	1147	5232	1953	4544
H15	5035	3001	4029	3462	6241	4574	2071	1995	3212	3688	3506	4808	3643	1125	4337	900	2670	1961	2543	5509	3371	4851
H16	2586	2629	3724	3146	3743	3557	1623	3233	4599	4989	960	2612	1230	3677	6702	3463	4775	4503	3559	7877	3778	7194
H17	1914	4758	5302	5011	1620	4371	4478	6171	7318	7579	2617	2766	2712	7110	9934	6924	7920	7918	6277	11083	5992	10395
H18	2452	5249	5703	5460	1870	4705	5052	6724	7829	8069	3258	3292	3347	7729	10509	7551	8487	8532	6802	11651	6457	10964
H19	1480	4125	5174	4622	2695	4831	3152	4717	6101	6503	1000	1152	556	4783	7979	4473	6144	5618	5074	9156	5303	8486
H20	2722	3523	4661	4060	3945	4605	2387	3704	5101	5535	1503	2398	1409	3522	6748	3202	4974	4354	4132	7922	4548	7259
H21	5010	3599	4659	4080	6232	5143	2585	2653	3835	4312	3595	4675	3649	1362	4631	961	3151	2139	3202	5781	4029	5148
H22	6565	4804	5721	5207	7788	6406	3975	3409	4162	4608	5196	6161	5228	1336	3752	1127	2981	1443	3918	4788	4880	4247
H23	6697	4749	5634	5134	7920	6353	3966	3297	3988	4427	5295	6315	5347	1216	3512	1084	2772	1220	3793	4552	4765	4007
H24	10429	7764	8317	7984	11651	9294	7318	6042	5878	6108	8993	10040	9071	4453	3082	4618	4473	3698	6332	3086	7260	3156
H25	9022	6571	7232	6843	10245	8141	6023	4888	4970	5278	7601	8630	7668	3123	2758	3244	3522	2438	5246	3291	6213	3055
H26	13335	10517	10946	10680	14558	11987	10168	8783	8381	8514	11904	12930	11980	7342	5282	7524	7087	6559	9002	4648	9867	5095
H27	11535	9448	10101	9721	12750	11020	8862	7766	7755	8015	10239	11035	10242	5956	5040	6014	6322	5313	8111	4957	9069	5098
H28	3155	5260	6404	5800	4226	6332	4108	5236	6608	7066	2799	2414	2440	4481	7741	4069	6214	5234	5717	8878	6234	8258
H29	2503	6581	7630	7080	2981	7230	5571	7029	8426	8853	3391	1727	2930	6643	9918	6254	8261	7431	7436	11073	7741	10435
H30	3053	7307	8347	7803	3297	7916	6306	7765	9163	9590	4094	2356	3636	7337	10611	6940	8980	8114	8174	11760	8474	11128
H31	3239	8021	8927	8455	2745	8275	7193	8815	10190	10577	4762	2979	4375	8746	12004	8383	10231	9560	9148	13173	9266	12517
H32	3416	7646	8693	8145	3625	8274	6632	8067	9464	9896	4446	2719	3987	7574	10844	7171	9246	8341	8484	11986	8804	11361
H33	4483	6455	7609	6997	5453	7648	5280	6142	7443	7917	4228	3678	3873	4942	8047	4503	6801	5568	6664	9117	7306	8554
H34	6793	6909	7981	7399	7919	8415	5835	5883	6852	7314	5957	6109	5768	3978	6325	3613	5746	4210	6428	7213	7317	6778
H35	8559	8027	9002	8465	9709	9607	7072	6714	7399	7819	7600	7906	7459	4642	6051	4404	6081	4535	7224	6696	8186	6415
H36	8989	8310	9257	8733	10145	9900	7386	6941	7555	7962	8001	8344	7872	4861	6021	4655	6201	4681	7439	6595	8411	6358
H37	13385	11987	12739	12312	14559	13586	11267	10371	10509	10797	12288	12768	12207	8419	7889	8382	9063	7892	10765	7780	11742	7948
H38	10816	10869	11865	11320	11872	12433	9873	9590	10253	10663	10104	10068	9891	7518	8612	7276	8904	7381	10101	9051	11062	8902
H39	11792	11403	12335	11820	12888	12995	10480	9998	10505	10883	10960	11076	10785	7920	8516	7738	9098	7649	10480	8790	11460	8739
H40	12027	12031	13008	12472	13073	13605	11055	10707	11304	11699	11323	11272	11110	8628	9464	8408	9923	8432	11207	9792	12177	9711
H41	10084	10832	11900	11321	11053	12332	9752	9750	10597	11039	9594	9286	9320	7750	9386	7435	9348	7783	10287	9978	11204	9736
H42	8778	9526	10608	10023	9775	11010	8432	8504	9418	9870	8251	7992	7982	6548	8463	6209	8226	6661	9047	9165	9945	8853
H43	8660	10369	11503	10896	9484	11728	9213	9614	10687	11157	8502	7819	8152	7830	10135	7439	9633	8101	10164	10926	10984	10558
H44	10736	11766	12849	12264	11645	13242	10666	10734	11610	12055	10363	9916	10063	8753	10422	8428	10374	8808	11274	11003	12180	10769
H45	7645	9825	10976	10363	8393	11089	8651	9263	10438	10914	7659	6794	7275	7653	10263	7234	9515	8045	9808	11151	10559	10719
H46	6724	9946	11090	10486	7191	10968	8789	9773	11083	11556	7216	5897	6771	8530	11498	8091	10406	9090	10288	12500	10887	11989

To be continued on next page...

Project:

20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

Description:

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wind@eapc.net
Calculated:
2/16/2015 4:05 PM/2.9.285

DECIBEL - Main Result

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation

...continued from previous page

	WTG																						
NSA	T46	T18	T16	T17	T45	T25	T20	T14	T12	T11	T32	T47	T33	T09	T03	T10	T06	T08	T13	T01	T15	T02
H47	7029	10240	11385	10781	7485	11271	9081	10048	11351	11824	7522	6203	7078	8775	11715	8336	10654	9321	10565	12705	11173	12203
H48	12861	13194	14199	13650	13852	14751	12183	11926	12574	12977	12280	12074	12034	9854	10791	9612	11208	9700	12437	11120	13399	11040
H49	6785	10529	11648	11060	7023	11399	9407	10555	11907	12372	7564	6019	7103	9498	12573	9059	11350	10116	11046	13613	11559	13074
H50	6773	10497	11617	11028	7022	11374	9373	10515	11866	12331	7540	6004	7080	9451	12522	9012	11304	10067	11007	13560	11524	13023
H51	6780	10473	11595	11005	7043	11360	9347	10478	11826	12293	7530	6006	7070	9401	12466	8962	11256	10013	10972	13501	11494	12965
H52	6772	10436	11560	10969	7050	11332	9307	10429	11775	12242	7505	5994	7046	9340	12399	8901	11197	9949	10924	13432	11452	12898
H53	6832	10459	11586	10993	7124	11368	9327	10435	11777	12245	7546	6049	7087	9327	12374	8888	11187	9930	10933	13403	11468	12872
H54	7948	11571	12702	12107	8196	12497	10432	11500	12828	13299	8677	7173	8218	10314	13291	9874	12186	10882	12005	14289	12563	13782
H55	7345	11270	12377	11796	7466	12083	10163	11354	12715	13178	8236	6618	7772	10338	13426	9900	12184	10964	11838	14468	12325	13927
H56	6671	10498	11611	11027	6873	11339	9386	10565	11925	12388	7496	5919	7034	9552	12652	9114	11396	10184	11051	13700	11545	13155
H57	6662	10642	11741	11165	6781	11426	9547	10778	12149	12608	7578	5941	7114	9836	12967	9400	11665	10487	11254	14029	11716	13473
H58	6336	10182	11291	10709	6545	11011	9074	10271	11635	12097	7167	5585	6704	9293	12413	8856	11128	9937	10753	13472	11236	12918
H59	6766	10655	11763	11182	6930	11475	9549	10745	12109	12571	7629	6027	7166	9753	12861	9316	11593	10390	11228	13912	11712	13364
H60	6767	10688	11793	11213	6914	11496	9585	10792	12158	12619	7649	6035	7185	9814	12928	9377	11651	10455	11273	13983	11750	13433
H61	6659	10577	11682	11102	6813	11384	9474	10684	12051	12512	7538	5925	7074	9713	12832	9276	11548	10356	11164	13888	11640	13336
H62	6668	10613	11716	11138	6806	11410	9514	10733	12101	12561	7563	5940	7099	9774	12898	9337	11606	10421	11211	13957	11681	13403
H63	5736	9606	10710	10130	5965	10416	8506	9734	11106	11565	6571	4982	6108	8819	11975	8385	10638	9485	10209	13050	10673	12483
H64	5103	8445	9577	8981	5623	9398	7307	8419	9769	10235	5612	4271	5162	7388	10512	6951	9228	8032	8913	11579	9445	11019
H65	4103	8059	9143	8574	4416	8805	6991	8321	9711	10157	4957	3343	4493	7625	10864	7205	9373	8353	8769	11982	9168	11379
H66	4990	9178	10245	9687	5074	9854	8130	9486	10878	11322	6017	4307	5555	8788	12016	8365	10543	9507	9930	13127	10307	12531
H67	5060	9464	10499	9958	4971	10037	8458	9883	11280	11715	6239	4460	5785	9300	12550	8884	11018	10039	10306	13674	10629	13066
H68	4166	6020	6165	6087	3512	5039	6127	7667	8585	8744	4771	5009	4941	8967	11485	8848	9456	9730	7632	12582	7091	11904
H69	7891	6693	6022	6382	7697	5095	7519	8337	8563	8470	7635	8710	8010	10267	11687	10345	9884	10806	8008	12549	7088	11961
H70	6993	5579	4934	5277	6921	3983	6405	7232	7502	7431	6613	7789	7004	9151	10633	9229	8801	9697	6913	11522	6007	10921
H71	12543	7795	7223	7487	13521	8287	8478	6875	5484	5090	10926	12689	11293	7680	5035	8119	5813	7157	6519	4522	6530	4674
H72	12813	9514	9805	9609	14026	10895	9327	7799	7191	7256	11290	12504	11427	6668	4062	6933	6028	5839	7936	3212	8726	3766
H73	15010	12557	13054	12756	16228	14067	12115	10829	10525	10681	13670	14527	13697	9230	7458	9353	9188	8497	11087	6858	11982	7295
H74	15448	13893	14587	14190	16624	15480	13228	12237	12251	12501	14332	14834	14261	10348	9436	10344	10820	9766	12599	9127	13562	9411
H75	5014	4509	5606	5013	6225	5998	3417	3670	4840	5317	3833	4521	3762	2179	5309	1739	4052	2810	4219	6412	5029	5822
H76	9803	7590	8270	7874	11025	9168	7000	5920	6000	6298	8448	9354	8479	4094	3587	4165	4554	3455	6284	3872	7252	3790
H77	6540	8837	9991	9378	7306	10055	7661	8383	9611	10088	6568	5690	6178	6902	9704	6470	8782	7375	8921	10661	9629	10181
H78	1264	5435	6440	5913	2069	5975	4507	6079	7465	7866	2175	437	1731	6022	9263	5677	7473	6846	6437	10436	6640	9774
H79	1351	6083	7007	6524	1444	6407	5258	6899	8264	8645	2822	1074	2442	6978	10198	6645	8368	7807	7217	11374	7326	10706
H80	6338	1649	1664	1526	7324	2761	2306	1120	989	1174	4732	6523	5118	3129	4082	3416	2221	3375	571	5073	583	4425

	WTG													
NSA	T05	T04	T48 Alt	T49 Alt	T50 Alt	T51 Alt	T52 Alt	T53 Alt	T54 Alt	T55 Alt	T56 Alt	T57 Alt	T58 Alt	T59 Alt	T23
H01	5042	4948	13828	14225	9645	9099	4138	3356	4744	6105	12153	6832	8966	9365	9491
H02	4119	3538	13035	13404	8792	8252	3579	2556	4283	5401	11367	5775	7886	8302	8889
H03	2628	2336	11565	11943	7326	6781	2004	986	2708	3867	9890	4367	6507	6917	7357
H04	2658	2275	11595	11970	7353	6809	2104	1077	2807	3922	9922	4371	6505	6918	7413
H05	2158	2602	10764	11162	6596	6052	1131	940	1681	3060	9090	3909	5998	6382	6428
H06	3255	3980	11049	11464	7069	6550	2229	2412	2399	3718	9408	4799	6719	7063	6667
H07	7859	9009	5803	6175	5327	5434	8014	9033	7322	6607	5081	7113	6490	6348	4250
H08	8874	10020	5992	6323	6145	6304	9030	10048	8339	7617	5541	8094	7357	7183	5113
H09	5634	4835	14425	14776	10202	9674	5228	4202	5929	6947	12775	7156	9193	9611	10404
H10	4082	3091	12624	12962	8439	7925	3964	3026	4618	5392	10994	5407	7365	7780	8746
H11	3535	2413	11805	12134	7659	7159	3646	2853	4231	4802	10193	4663	6541	6952	8039
H12	2476	1406	10953	11297	6755	6240	2614	1926	3176	3758	9316	3721	5704	6121	7064
H13	2086	894	9871	10201	5732	5241	2706	2459	3042	3145	8259	2777	4606	5018	6164
H14	2600	3451	6359	6745	2149	1605	3360	4258	2775	1390	4681	1254	1790	2087	2209
H15	3197	3600	6028	6365	1939	1529	4174	4886	3742	2399	4415	1406	773	1191	2667
H16	5312	6011	3627	4011	643	1166	6091	6988	5484	4121	1952	3683	1896	1572	1138
H17	8423	9297	2157	2500	4089	4533	9007	9994	8326	7123	2129	6998	5365	5023	3650
H18	8984	9884	2480	2755	4717	5151	9533	10531	8846	7675	2737	7596	5999	5660	4227
H19	6686	7255	2384	2702	2030	2571	7529	8383	6950	5565	984	4965	2896	2481	2596
H20	5515	6015	3658	3973	1141	1579	6409	7218	5872	4474	2147	3757	1642	1224	2148
H21	3653	3876	5955	6262	2151	1876	4671	5306	4294	2997	4415	1899	848	1168	3066
H22	3328	3025	7474	7756	3744	3413	4376	4720	4236	3286	5986	2106	2441	2772	4578
H23	3104	2783	7620	7910	3812	3453	4149	4481	4026	3119	6110	1960	2517	2868	4600
H24	4291	3077	11352	11636	7453	7023	4790	4260	5214	5325	9837	4762	6199	6576	8070

To be continued on next page...

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

Description:
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Calculated:
2/16/2015 4:05 PM/2.9.285

DECIBEL - Main Result

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation

...continued from previous page

	WTG														
NSA	T05	T04	T48 Alt	T49 Alt	T50 Alt	T51 Alt	T52 Alt	T53 Alt	T54 Alt	T55 Alt	T56 Alt	T57 Alt	T58 Alt	T59 Alt	T23
H25	3490	2410	9942	10226	6077	5666	4239	4007	4498	4290	8433	3537	4808	5178	6746
H26	6782	5585	14249	14525	10357	9919	6973	6153	7547	7975	12746	7584	9109	9487	10939
H27	6195	4999	12377	12613	8792	8429	6744	6210	7147	7135	10984	6414	7492	7822	9553
H28	6736	6985	3722	3873	2873	3242	7718	8412	7262	5881	2845	4948	2874	2532	3887
H29	8798	9166	2349	2253	4375	4881	9725	10497	9201	7802	2697	7014	4873	4472	5054
H30	9516	9857	2673	2464	5112	5618	10450	11212	9932	8533	3336	7728	5590	5194	5778
H31	10774	11262	2327	1912	6134	6676	11633	12475	11054	9670	3781	9024	6898	6482	6516
H32	9779	10088	3007	2775	5428	5926	10725	11472	10218	8820	3699	7990	5858	5468	6119
H33	7285	7298	4891	4957	4102	4371	8320	8885	7957	6638	4241	5560	3733	3496	5187
H34	6094	5657	7430	7576	5044	4998	7138	7406	7002	5969	6374	4761	3974	4038	6143
H35	6290	5523	9237	9395	6494	6335	7249	7261	7292	6543	8107	5399	5279	5449	7522
H36	6374	5537	9677	9840	6856	6674	7302	7250	7388	6714	8529	5599	5620	5810	7865
H37	8984	7812	14106	14277	10988	10706	9583	9061	9959	9831	12897	8985	9692	9959	11880
H38	9068	8185	11330	11408	9182	9088	9976	9858	10085	9407	10453	8273	8039	8156	10258
H39	9188	8189	12368	12472	9910	9754	10015	9766	10211	9697	11390	8632	8699	8866	10942
H40	10049	9098	12525	12594	10388	10283	10915	10716	11072	10474	11669	9368	9231	9358	11458
H41	9594	8863	10476	10502	8897	8898	10574	10601	10581	9722	9797	8533	7890	7926	10016
H42	8513	7883	9209	9256	7557	7569	9524	9641	9474	8536	8473	7335	6572	6594	8678
H43	9985	9501	8871	8827	8165	8304	11028	11261	10888	9808	8489	8603	7419	7333	9292
H44	10627	9901	11049	11040	9763	9796	11610	11638	11610	10732	10493	9538	8808	8818	10890
H45	9917	9582	7770	7696	7524	7735	10973	11318	10755	9575	7534	8393	6947	6796	8629
H46	10873	10769	6560	6377	7559	7907	11919	12425	11583	10276	6798	9182	7361	7097	8553
H47	11116	10990	6854	6666	7853	8196	12165	12656	11838	10539	7105	9436	7636	7378	8853
H48	11350	10416	13280	13312	11447	11380	12228	12042	12371	11733	12547	10607	10338	10434	12540
H49	11839	11832	6413	6153	8161	8568	12870	13439	12485	11138	6981	10100	8157	7848	9065
H50	11792	11781	6410	6154	8128	8532	12824	13391	12440	11095	6964	10055	8115	7808	9035
H51	11743	11725	6429	6178	8101	8502	12776	13339	12396	11053	6963	10009	8077	7772	9015
H52	11683	11659	6434	6187	8062	8460	12717	13276	12340	10999	6948	9951	8026	7724	8982
H53	11671	11636	6507	6264	8083	8476	12706	13258	12334	10998	7000	9943	8029	7731	9011
H54	12658	12563	7586	7325	9190	9572	13702	14216	13353	12034	8128	10955	9089	8804	10131
H55	12677	12683	6877	6580	8917	9340	13704	14284	13310	11956	7592	10931	8965	8646	9787
H56	11890	11907	6268	5998	8140	8557	12916	13501	12519	11166	6887	10142	8175	7857	9023
H57	12166	12219	6190	5896	8303	8738	13184	13792	12770	11405	6918	10406	8404	8074	9150
H58	11626	11666	5938	5672	7828	8251	12648	13246	12242	10883	6553	9871	7887	7564	8702
H59	12089	12115	6332	6050	8303	8727	13113	13704	12711	11354	6999	10338	8360	8038	9174
H60	12149	12182	6319	6032	8340	8767	13171	13767	12766	11407	7008	10395	8410	8086	9203
H61	12046	12085	6216	5932	8229	8657	13068	13667	12661	11301	6898	10291	8303	7978	9092
H62	12106	12151	6212	5923	8269	8700	13126	13729	12716	11354	6914	10349	8355	8027	9125
H63	11143	11224	5354	5097	7261	7694	12156	12778	11735	10367	5950	9377	7364	7031	8119
H64	9723	9764	4990	4842	6064	6452	10748	11341	10352	9002	5171	7974	6019	5713	7012
H65	9895	10107	3790	3580	5757	6222	10876	11569	10406	9018	4311	8108	6017	5651	6552
H66	11065	11260	4485	4190	6904	7377	12047	12735	11578	10189	5287	9278	7188	6822	7660
H67	11546	11793	4423	4081	7253	7748	12509	13229	12017	10621	5429	9755	7640	7259	7934
H68	9912	10920	4141	4360	6065	6423	10317	11339	9614	8593	4404	8718	7369	7073	5350
H69	10160	11365	8270	8588	8187	8261	10097	11067	9452	9015	7827	9705	9314	9196	7091
H70	9092	10289	7462	7807	7094	7155	9071	10055	8413	7926	6876	8595	8206	8096	5990
H71	5336	5638	13584	13999	9560	9031	4293	3879	4714	6105	11938	7064	9104	9471	9201
H72	5641	4530	13781	14093	9700	9216	5643	4733	6274	6918	12200	6748	8532	8934	10133
H73	8919	7706	15867	16109	12177	11777	9166	8361	9723	10066	14447	9565	10892	11243	12855
H74	10681	9473	16173	16344	13005	12703	11166	10527	11612	11631	14956	10867	11704	11984	13867
H75	4523	4555	5857	6110	2677	2582	5566	6116	5242	3988	4479	2842	1556	1641	3744
H76	4495	3362	10685	10945	6967	6587	5180	4831	5490	5330	9233	4558	5676	6022	7699
H77	9216	8994	6688	6628	6503	6747	10272	10695	10001	8765	6427	7610	6018	5833	7593
H78	8016	8527	1518	1663	3392	3930	8879	9717	8308	6919	1405	6270	4155	3737	3903
H79	8910	9469	811	744	4232	4778	9739	10605	9146	7771	1846	7189	5099	4681	4576
H80	2512	3702	7378	7793	3485	3007	2716	3742	2012	1381	5738	2375	3469	3719	2996

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
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DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

Assumptions

Calculated L(DW) = LWA,ref + K + Dc - (Adiv + Aatm + Agr + Abar + Amisc) - Cmet
(when calculated with ground attenuation, then Dc = Domega)

LWA,ref:	Sound pressure level at WTG
K:	Pure tone
Dc:	Directivity correction
Adiv:	the attenuation due to geometrical divergence
Aatm:	the attenuation due to atmospheric absorption
Agr:	the attenuation due to ground effect
Abar:	the attenuation due to a barrier
Amisc:	the attenuation due to miscellaneous other effects
Cmet:	Meteorological correction

Calculation Results

Noise sensitive area: H01 Noise sensitive point: User defined (2)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	3,386	3,387	**18.55**	108.5	0.00	81.60	-	-	0.00	0.00	-	0.00
T02	3,764	3,765	**17.29**	108.5	0.00	82.51	-	-	0.00	0.00	-	0.00
T03	4,231	4,232	**15.88**	108.5	0.00	83.53	-	-	0.00	0.00	-	0.00
T04	4,948	4,949	**13.99**	108.5	0.00	84.89	-	-	0.00	0.00	-	0.00
T05	5,042	5,042	**13.77**	108.5	0.00	85.05	-	-	0.00	0.00	-	0.00
T06	5,576	5,577	**12.55**	108.5	0.00	85.93	-	-	0.00	0.00	-	0.00
T07	6,413	6,413	**10.88**	108.5	0.00	87.14	-	-	0.00	0.00	-	0.00
T08	6,650	6,650	**10.45**	108.5	0.00	87.46	-	-	0.00	0.00	-	0.00
T09	7,312	7,312	**9.32**	108.5	0.00	88.28	-	-	0.00	0.00	-	0.00
T10	7,742	7,743	**8.64**	108.5	0.00	88.78	-	-	0.00	0.00	-	0.00
T11	5,413	5,414	**12.91**	108.5	0.00	85.67	-	-	0.00	0.00	-	0.00
T12	5,700	5,700	**12.29**	108.5	0.00	86.12	-	-	0.00	0.00	-	0.00
T13	6,761	6,762	**10.25**	108.5	0.00	87.60	-	-	0.00	0.00	-	0.00
T14	6,997	6,998	**9.84**	108.5	0.00	87.90	-	-	0.00	0.00	-	0.00
T15	7,024	7,025	**9.79**	108.5	0.00	87.93	-	-	0.00	0.00	-	0.00
T16	7,891	7,892	**8.42**	108.5	0.00	88.94	-	-	0.00	0.00	-	0.00
T17	8,030	8,030	**8.21**	108.5	0.00	89.09	-	-	0.00	0.00	-	0.00
T18	8,235	8,235	**7.91**	108.5	0.00	89.31	-	-	0.00	0.00	-	0.00
T19	8,187	8,187	**7.98**	108.5	0.00	89.26	-	-	0.00	0.00	-	0.00
T20	8,703	8,703	**7.27**	108.5	0.00	89.79	-	-	0.00	0.00	-	0.00
T21	8,740	8,740	**7.22**	108.5	0.00	89.83	-	-	0.00	0.00	-	0.00
T22	9,259	9,260	**6.54**	108.5	0.00	90.33	-	-	0.00	0.00	-	0.00
T23	9,491	9,492	**6.25**	108.5	0.00	90.55	-	-	0.00	0.00	-	0.00
T24	9,716	9,717	**5.98**	108.5	0.00	90.75	-	-	0.00	0.00	-	0.00
T25	9,021	9,022	**6.84**	108.5	0.00	90.11	-	-	0.00	0.00	-	0.00
T26	9,185	9,186	**6.63**	108.5	0.00	90.26	-	-	0.00	0.00	-	0.00
T27	9,365	9,366	**6.41**	108.5	0.00	90.43	-	-	0.00	0.00	-	0.00
T28	9,644	9,645	**6.07**	108.5	0.00	90.69	-	-	0.00	0.00	-	0.00
T29	10,434	10,435	**5.15**	108.5	0.00	91.37	-	-	0.00	0.00	-	0.00
T30	10,514	10,515	**5.06**	108.5	0.00	91.44	-	-	0.00	0.00	-	0.00
T31	10,786	10,786	**4.77**	108.5	0.00	91.66	-	-	0.00	0.00	-	0.00
T32	11,134	11,134	**4.40**	108.5	0.00	91.93	-	-	0.00	0.00	-	0.00
T33	11,452	11,452	**4.07**	108.5	0.00	92.18	-	-	0.00	0.00	-	0.00
T34	10,463	10,464	**5.12**	108.5	0.00	91.39	-	-	0.00	0.00	-	0.00
T35	11,131	11,132	**4.40**	108.5	0.00	91.93	-	-	0.00	0.00	-	0.00

To be continued on next page...

Project:
20131290 Rolette Power Development

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DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T36	11,377	11,377	**4.15**	108.5	0.00	92.12	-	-	0.00	0.00	-	0.00
T37	11,570	11,571	**3.95**	108.5	0.00	92.27	-	-	0.00	0.00	-	0.00
T38	11,844	11,844	**3.68**	108.5	0.00	92.47	-	-	0.00	0.00	-	0.00
T39	11,840	11,841	**3.69**	108.5	0.00	92.47	-	-	0.00	0.00	-	0.00
T40	12,154	12,154	**3.38**	108.5	0.00	92.69	-	-	0.00	0.00	-	0.00
T41	12,840	12,841	**2.75**	108.5	0.00	93.17	-	-	0.00	0.00	-	0.00
T42	12,328	12,329	**3.22**	108.5	0.00	92.82	-	-	0.00	0.00	-	0.00
T43	12,441	12,441	**3.12**	108.5	0.00	92.90	-	-	0.00	0.00	-	0.00
T44	13,408	13,408	**2.25**	108.5	0.00	93.55	-	-	0.00	0.00	-	0.00
T45	13,845	13,845	**1.88**	108.5	0.00	93.83	-	-	0.00	0.00	-	0.00
T46	12,779	12,779	**2.81**	108.5	0.00	93.13	-	-	0.00	0.00	-	0.00
T47	12,807	12,807	**2.78**	108.5	0.00	93.15	-	-	0.00	0.00	-	0.00
T48 Alt	13,828	13,828	**1.89**	108.5	0.00	93.82	-	-	0.00	0.00	-	0.00
T49 Alt	14,225	14,225	**1.57**	108.5	0.00	94.06	-	-	0.00	0.00	-	0.00
T50 Alt	9,645	9,645	**6.07**	108.5	0.00	90.69	-	-	0.00	0.00	-	0.00
T51 Alt	9,099	9,099	**6.75**	108.5	0.00	90.18	-	-	0.00	0.00	-	0.00
T52 Alt	4,138	4,139	**16.15**	108.5	0.00	83.34	-	-	0.00	0.00	-	0.00
T53 Alt	3,356	3,357	**18.66**	108.5	0.00	81.52	-	-	0.00	0.00	-	0.00
T54 Alt	4,744	4,745	**14.50**	108.5	0.00	84.52	-	-	0.00	0.00	-	0.00
T55 Alt	6,105	6,106	**11.47**	108.5	0.00	86.71	-	-	0.00	0.00	-	0.00
T56 Alt	12,153	12,153	**3.39**	108.5	0.00	92.69	-	-	0.00	0.00	-	0.00
T57 Alt	6,832	6,832	**10.12**	108.5	0.00	87.69	-	-	0.00	0.00	-	0.00
T58 Alt	8,966	8,966	**6.92**	108.5	0.00	90.05	-	-	0.00	0.00	-	0.00
T59 Alt	9,365	9,365	**6.41**	108.5	0.00	90.43	-	-	0.00	0.00	-	0.00

Sum 28.06

- Data undefined due to calculation with octave data

Noise sensitive area: H02 Noise sensitive point: User defined (3)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	1,646	1,649	**27.28**	108.5	0.00	75.35	-	-	0.00	0.00	-	0.00
T02	2,269	2,271	**23.35**	108.5	0.00	78.13	-	-	0.00	0.00	-	0.00
T03	2,786	2,788	**20.85**	108.5	0.00	79.90	-	-	0.00	0.00	-	0.00
T04	3,538	3,539	**18.03**	108.5	0.00	81.98	-	-	0.00	0.00	-	0.00
T05	4,119	4,120	**16.20**	108.5	0.00	83.30	-	-	0.00	0.00	-	0.00
T06	4,646	4,647	**14.75**	108.5	0.00	84.34	-	-	0.00	0.00	-	0.00
T07	5,391	5,392	**12.96**	108.5	0.00	85.64	-	-	0.00	0.00	-	0.00
T08	5,285	5,286	**13.20**	108.5	0.00	85.46	-	-	0.00	0.00	-	0.00
T09	6,061	6,062	**11.55**	108.5	0.00	86.65	-	-	0.00	0.00	-	0.00
T10	6,455	6,456	**10.80**	108.5	0.00	87.20	-	-	0.00	0.00	-	0.00
T11	5,195	5,196	**13.40**	108.5	0.00	85.31	-	-	0.00	0.00	-	0.00
T12	5,311	5,312	**13.14**	108.5	0.00	85.50	-	-	0.00	0.00	-	0.00
T13	6,284	6,285	**11.12**	108.5	0.00	86.97	-	-	0.00	0.00	-	0.00
T14	6,352	6,353	**10.99**	108.5	0.00	87.06	-	-	0.00	0.00	-	0.00
T15	6,832	6,833	**10.12**	108.5	0.00	87.69	-	-	0.00	0.00	-	0.00
T16	7,849	7,850	**8.48**	108.5	0.00	88.90	-	-	0.00	0.00	-	0.00
T17	7,820	7,821	**8.52**	108.5	0.00	88.87	-	-	0.00	0.00	-	0.00
T18	7,884	7,885	**8.43**	108.5	0.00	88.94	-	-	0.00	0.00	-	0.00
T19	7,637	7,638	**8.80**	108.5	0.00	88.66	-	-	0.00	0.00	-	0.00
T20	8,063	8,063	**8.16**	108.5	0.00	89.13	-	-	0.00	0.00	-	0.00
T21	7,957	7,957	**8.32**	108.5	0.00	89.02	-	-	0.00	0.00	-	0.00
T22	8,782	8,783	**7.16**	108.5	0.00	89.87	-	-	0.00	0.00	-	0.00
T23	8,889	8,890	**7.02**	108.5	0.00	89.98	-	-	0.00	0.00	-	0.00

To be continued on next page...

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Calculated:
2/16/2015 4:05 PM/2.9.285

DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T24	9,012	9,013	**6.86**	108.5	0.00	90.10	-	-	0.00	0.00	-	0.00
T25	8,997	8,998	**6.88**	108.5	0.00	90.08	-	-	0.00	0.00	-	0.00
T26	9,051	9,052	**6.81**	108.5	0.00	90.14	-	-	0.00	0.00	-	0.00
T27	9,141	9,142	**6.69**	108.5	0.00	90.22	-	-	0.00	0.00	-	0.00
T28	9,339	9,340	**6.44**	108.5	0.00	90.41	-	-	0.00	0.00	-	0.00
T29	10,029	10,030	**5.61**	108.5	0.00	91.03	-	-	0.00	0.00	-	0.00
T30	10,010	10,011	**5.63**	108.5	0.00	91.01	-	-	0.00	0.00	-	0.00
T31	10,204	10,204	**5.41**	108.5	0.00	91.18	-	-	0.00	0.00	-	0.00
T32	10,369	10,369	**5.22**	108.5	0.00	91.31	-	-	0.00	0.00	-	0.00
T33	10,619	10,620	**4.95**	108.5	0.00	91.52	-	-	0.00	0.00	-	0.00
T34	10,216	10,216	**5.40**	108.5	0.00	91.19	-	-	0.00	0.00	-	0.00
T35	10,885	10,886	**4.66**	108.5	0.00	91.74	-	-	0.00	0.00	-	0.00
T36	10,949	10,950	**4.59**	108.5	0.00	91.79	-	-	0.00	0.00	-	0.00
T37	11,010	11,010	**4.53**	108.5	0.00	91.84	-	-	0.00	0.00	-	0.00
T38	11,189	11,190	**4.34**	108.5	0.00	91.98	-	-	0.00	0.00	-	0.00
T39	11,608	11,608	**3.92**	108.5	0.00	92.30	-	-	0.00	0.00	-	0.00
T40	11,784	11,784	**3.74**	108.5	0.00	92.43	-	-	0.00	0.00	-	0.00
T41	12,488	12,488	**3.07**	108.5	0.00	92.93	-	-	0.00	0.00	-	0.00
T42	11,808	11,809	**3.72**	108.5	0.00	92.44	-	-	0.00	0.00	-	0.00
T43	11,795	11,795	**3.73**	108.5	0.00	92.43	-	-	0.00	0.00	-	0.00
T44	12,736	12,736	**2.84**	108.5	0.00	93.10	-	-	0.00	0.00	-	0.00
T45	13,147	13,148	**2.48**	108.5	0.00	93.38	-	-	0.00	0.00	-	0.00
T46	12,000	12,001	**3.53**	108.5	0.00	92.58	-	-	0.00	0.00	-	0.00
T47	11,891	11,892	**3.64**	108.5	0.00	92.50	-	-	0.00	0.00	-	0.00
T48 Alt	13,035	13,035	**2.58**	108.5	0.00	93.30	-	-	0.00	0.00	-	0.00
T49 Alt	13,404	13,404	**2.25**	108.5	0.00	93.54	-	-	0.00	0.00	-	0.00
T50 Alt	8,792	8,792	**7.15**	108.5	0.00	89.88	-	-	0.00	0.00	-	0.00
T51 Alt	8,252	8,252	**7.89**	108.5	0.00	89.33	-	-	0.00	0.00	-	0.00
T52 Alt	3,579	3,581	**17.89**	108.5	0.00	82.08	-	-	0.00	0.00	-	0.00
T53 Alt	2,556	2,558	**21.85**	108.5	0.00	79.16	-	-	0.00	0.00	-	0.00
T54 Alt	4,283	4,284	**15.73**	108.5	0.00	83.64	-	-	0.00	0.00	-	0.00
T55 Alt	5,401	5,402	**12.94**	108.5	0.00	85.65	-	-	0.00	0.00	-	0.00
T56 Alt	11,367	11,367	**4.16**	108.5	0.00	92.11	-	-	0.00	0.00	-	0.00
T57 Alt	5,775	5,776	**12.13**	108.5	0.00	86.23	-	-	0.00	0.00	-	0.00
T58 Alt	7,886	7,886	**8.42**	108.5	0.00	88.94	-	-	0.00	0.00	-	0.00
T59 Alt	8,302	8,303	**7.82**	108.5	0.00	89.38	-	-	0.00	0.00	-	0.00

Sum 32.04

- Data undefined due to calculation with octave data

Noise sensitive area: H03 Noise sensitive point: User defined (4)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	1,039	1,042	**32.64**	108.5	0.00	71.36	-	-	0.00	0.00	-	0.00
T02	1,171	1,173	**31.28**	108.5	0.00	72.39	-	-	0.00	0.00	-	0.00
T03	1,616	1,618	**27.51**	108.5	0.00	75.18	-	-	0.00	0.00	-	0.00
T04	2,336	2,337	**22.99**	108.5	0.00	78.37	-	-	0.00	0.00	-	0.00
T05	2,628	2,629	**21.53**	108.5	0.00	79.39	-	-	0.00	0.00	-	0.00
T06	3,168	3,169	**19.34**	108.5	0.00	81.02	-	-	0.00	0.00	-	0.00
T07	3,962	3,963	**16.67**	108.5	0.00	82.96	-	-	0.00	0.00	-	0.00
T08	4,059	4,060	**16.38**	108.5	0.00	83.17	-	-	0.00	0.00	-	0.00
T09	4,762	4,763	**14.45**	108.5	0.00	84.56	-	-	0.00	0.00	-	0.00
T10	5,183	5,184	**13.43**	108.5	0.00	85.29	-	-	0.00	0.00	-	0.00
T11	3,623	3,624	**17.75**	108.5	0.00	82.18	-	-	0.00	0.00	-	0.00

To be continued on next page...

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

Description:
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Calculated:
2/16/2015 4:05 PM/2.9.285

DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T12	3,736	3,737	**17.38**	108.5	0.00	82.45	-	-	0.00	0.00	-	0.00
T13	4,720	4,720	**14.56**	108.5	0.00	84.48	-	-	0.00	0.00	-	0.00
T14	4,814	4,815	**14.32**	108.5	0.00	84.65	-	-	0.00	0.00	-	0.00
T15	5,257	5,258	**13.26**	108.5	0.00	85.42	-	-	0.00	0.00	-	0.00
T16	6,278	6,279	**11.13**	108.5	0.00	86.96	-	-	0.00	0.00	-	0.00
T17	6,245	6,245	**11.20**	108.5	0.00	86.91	-	-	0.00	0.00	-	0.00
T18	6,314	6,315	**11.06**	108.5	0.00	87.01	-	-	0.00	0.00	-	0.00
T19	6,090	6,090	**11.50**	108.5	0.00	86.69	-	-	0.00	0.00	-	0.00
T20	6,535	6,535	**10.65**	108.5	0.00	87.31	-	-	0.00	0.00	-	0.00
T21	6,464	6,465	**10.78**	108.5	0.00	87.21	-	-	0.00	0.00	-	0.00
T22	7,228	7,229	**9.45**	108.5	0.00	88.18	-	-	0.00	0.00	-	0.00
T23	7,357	7,358	**9.24**	108.5	0.00	88.33	-	-	0.00	0.00	-	0.00
T24	7,503	7,504	**9.01**	108.5	0.00	88.51	-	-	0.00	0.00	-	0.00
T25	7,425	7,426	**9.14**	108.5	0.00	88.41	-	-	0.00	0.00	-	0.00
T26	7,476	7,477	**9.05**	108.5	0.00	88.47	-	-	0.00	0.00	-	0.00
T27	7,566	7,567	**8.91**	108.5	0.00	88.58	-	-	0.00	0.00	-	0.00
T28	7,769	7,769	**8.60**	108.5	0.00	88.81	-	-	0.00	0.00	-	0.00
T29	8,469	8,470	**7.58**	108.5	0.00	89.56	-	-	0.00	0.00	-	0.00
T30	8,464	8,465	**7.59**	108.5	0.00	89.55	-	-	0.00	0.00	-	0.00
T31	8,672	8,673	**7.31**	108.5	0.00	89.76	-	-	0.00	0.00	-	0.00
T32	8,882	8,883	**7.03**	108.5	0.00	89.97	-	-	0.00	0.00	-	0.00
T33	9,155	9,155	**6.67**	108.5	0.00	90.23	-	-	0.00	0.00	-	0.00
T34	8,643	8,644	**7.35**	108.5	0.00	89.73	-	-	0.00	0.00	-	0.00
T35	9,313	9,314	**6.47**	108.5	0.00	90.38	-	-	0.00	0.00	-	0.00
T36	9,394	9,395	**6.37**	108.5	0.00	90.46	-	-	0.00	0.00	-	0.00
T37	9,476	9,477	**6.27**	108.5	0.00	90.53	-	-	0.00	0.00	-	0.00
T38	9,676	9,677	**6.03**	108.5	0.00	90.71	-	-	0.00	0.00	-	0.00
T39	10,036	10,036	**5.60**	108.5	0.00	91.03	-	-	0.00	0.00	-	0.00
T40	10,223	10,223	**5.39**	108.5	0.00	91.19	-	-	0.00	0.00	-	0.00
T41	10,926	10,927	**4.62**	108.5	0.00	91.77	-	-	0.00	0.00	-	0.00
T42	10,270	10,270	**5.34**	108.5	0.00	91.23	-	-	0.00	0.00	-	0.00
T43	10,282	10,282	**5.32**	108.5	0.00	91.24	-	-	0.00	0.00	-	0.00
T44	11,232	11,232	**4.30**	108.5	0.00	92.01	-	-	0.00	0.00	-	0.00
T45	11,650	11,651	**3.87**	108.5	0.00	92.33	-	-	0.00	0.00	-	0.00
T46	10,523	10,524	**5.05**	108.5	0.00	91.44	-	-	0.00	0.00	-	0.00
T47	10,460	10,460	**5.12**	108.5	0.00	91.39	-	-	0.00	0.00	-	0.00
T48 Alt	11,565	11,565	**3.96**	108.5	0.00	92.26	-	-	0.00	0.00	-	0.00
T49 Alt	11,943	11,944	**3.59**	108.5	0.00	92.54	-	-	0.00	0.00	-	0.00
T50 Alt	7,326	7,327	**9.29**	108.5	0.00	88.30	-	-	0.00	0.00	-	0.00
T51 Alt	6,781	6,782	**10.21**	108.5	0.00	87.63	-	-	0.00	0.00	-	0.00
T52 Alt	2,004	2,006	**24.90**	108.5	0.00	77.05	-	-	0.00	0.00	-	0.00
T53 Alt	986	989	**33.24**	108.5	0.00	70.90	-	-	0.00	0.00	-	0.00
T54 Alt	2,708	2,709	**21.18**	108.5	0.00	79.66	-	-	0.00	0.00	-	0.00
T55 Alt	3,867	3,867	**16.97**	108.5	0.00	82.75	-	-	0.00	0.00	-	0.00
T56 Alt	9,890	9,890	**5.77**	108.5	0.00	90.90	-	-	0.00	0.00	-	0.00
T57 Alt	4,367	4,368	**15.50**	108.5	0.00	83.80	-	-	0.00	0.00	-	0.00
T58 Alt	6,507	6,507	**10.70**	108.5	0.00	87.27	-	-	0.00	0.00	-	0.00
T59 Alt	6,917	6,918	**9.98**	108.5	0.00	87.80	-	-	0.00	0.00	-	0.00

Sum 38.69

- Data undefined due to calculation with octave data

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
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Finley, ND 58230

Description:
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2/16/2015 4:05 PM/2.9.285

DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

Noise sensitive area: H04 Noise sensitive point: User defined (5)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	854	858	**34.83**	108.5	0.00	69.67	-	-	0.00	0.00	-	0.00
T02	1,061	1,064	**32.41**	108.5	0.00	71.54	-	-	0.00	0.00	-	0.00
T03	1,536	1,538	**28.11**	108.5	0.00	74.74	-	-	0.00	0.00	-	0.00
T04	2,275	2,276	**23.32**	108.5	0.00	78.14	-	-	0.00	0.00	-	0.00
T05	2,658	2,659	**21.40**	108.5	0.00	79.50	-	-	0.00	0.00	-	0.00
T06	3,194	3,195	**19.25**	108.5	0.00	81.09	-	-	0.00	0.00	-	0.00
T07	3,972	3,973	**16.64**	108.5	0.00	82.98	-	-	0.00	0.00	-	0.00
T08	4,014	4,015	**16.51**	108.5	0.00	83.07	-	-	0.00	0.00	-	0.00
T09	4,737	4,738	**14.52**	108.5	0.00	84.51	-	-	0.00	0.00	-	0.00
T10	5,152	5,153	**13.50**	108.5	0.00	85.24	-	-	0.00	0.00	-	0.00
T11	3,739	3,740	**17.37**	108.5	0.00	82.46	-	-	0.00	0.00	-	0.00
T12	3,832	3,833	**17.07**	108.5	0.00	82.67	-	-	0.00	0.00	-	0.00
T13	4,798	4,799	**14.36**	108.5	0.00	84.62	-	-	0.00	0.00	-	0.00
T14	4,873	4,873	**14.18**	108.5	0.00	84.76	-	-	0.00	0.00	-	0.00
T15	5,363	5,364	**13.02**	108.5	0.00	85.59	-	-	0.00	0.00	-	0.00
T16	6,394	6,394	**10.91**	108.5	0.00	87.12	-	-	0.00	0.00	-	0.00
T17	6,345	6,345	**11.01**	108.5	0.00	87.05	-	-	0.00	0.00	-	0.00
T18	6,400	6,400	**10.90**	108.5	0.00	87.12	-	-	0.00	0.00	-	0.00
T19	6,154	6,155	**11.37**	108.5	0.00	86.78	-	-	0.00	0.00	-	0.00
T20	6,588	6,588	**10.56**	108.5	0.00	87.38	-	-	0.00	0.00	-	0.00
T21	6,501	6,501	**10.71**	108.5	0.00	87.26	-	-	0.00	0.00	-	0.00
T22	7,297	7,298	**9.34**	108.5	0.00	88.26	-	-	0.00	0.00	-	0.00
T23	7,413	7,413	**9.16**	108.5	0.00	88.40	-	-	0.00	0.00	-	0.00
T24	7,547	7,548	**8.94**	108.5	0.00	88.56	-	-	0.00	0.00	-	0.00
T25	7,538	7,539	**8.96**	108.5	0.00	88.55	-	-	0.00	0.00	-	0.00
T26	7,579	7,580	**8.89**	108.5	0.00	88.59	-	-	0.00	0.00	-	0.00
T27	7,660	7,661	**8.77**	108.5	0.00	88.69	-	-	0.00	0.00	-	0.00
T28	7,854	7,855	**8.47**	108.5	0.00	88.90	-	-	0.00	0.00	-	0.00
T29	8,544	8,544	**7.48**	108.5	0.00	89.63	-	-	0.00	0.00	-	0.00
T30	8,528	8,529	**7.50**	108.5	0.00	89.62	-	-	0.00	0.00	-	0.00
T31	8,728	8,728	**7.23**	108.5	0.00	89.82	-	-	0.00	0.00	-	0.00
T32	8,918	8,918	**6.98**	108.5	0.00	90.01	-	-	0.00	0.00	-	0.00
T33	9,182	9,182	**6.64**	108.5	0.00	90.26	-	-	0.00	0.00	-	0.00
T34	8,733	8,733	**7.23**	108.5	0.00	89.82	-	-	0.00	0.00	-	0.00
T35	9,402	9,402	**6.36**	108.5	0.00	90.46	-	-	0.00	0.00	-	0.00
T36	9,465	9,465	**6.29**	108.5	0.00	90.52	-	-	0.00	0.00	-	0.00
T37	9,533	9,534	**6.20**	108.5	0.00	90.59	-	-	0.00	0.00	-	0.00
T38	9,723	9,723	**5.97**	108.5	0.00	90.76	-	-	0.00	0.00	-	0.00
T39	10,124	10,124	**5.50**	108.5	0.00	91.11	-	-	0.00	0.00	-	0.00
T40	10,298	10,298	**5.30**	108.5	0.00	91.26	-	-	0.00	0.00	-	0.00
T41	11,002	11,003	**4.54**	108.5	0.00	91.83	-	-	0.00	0.00	-	0.00
T42	10,329	10,330	**5.27**	108.5	0.00	91.28	-	-	0.00	0.00	-	0.00
T43	10,328	10,329	**5.27**	108.5	0.00	91.28	-	-	0.00	0.00	-	0.00
T44	11,275	11,275	**4.25**	108.5	0.00	92.04	-	-	0.00	0.00	-	0.00
T45	11,690	11,691	**3.83**	108.5	0.00	92.36	-	-	0.00	0.00	-	0.00
T46	10,555	10,556	**5.02**	108.5	0.00	91.47	-	-	0.00	0.00	-	0.00
T47	10,477	10,477	**5.10**	108.5	0.00	91.40	-	-	0.00	0.00	-	0.00
T48 Alt	11,595	11,595	**3.93**	108.5	0.00	92.29	-	-	0.00	0.00	-	0.00
T49 Alt	11,970	11,970	**3.56**	108.5	0.00	92.56	-	-	0.00	0.00	-	0.00
T50 Alt	7,353	7,353	**9.25**	108.5	0.00	88.33	-	-	0.00	0.00	-	0.00
T51 Alt	6,809	6,810	**10.16**	108.5	0.00	87.66	-	-	0.00	0.00	-	0.00
T52 Alt	2,104	2,105	**24.30**	108.5	0.00	77.46	-	-	0.00	0.00	-	0.00
T53 Alt	1,077	1,080	**32.24**	108.5	0.00	71.67	-	-	0.00	0.00	-	0.00
T54 Alt	2,807	2,808	**20.77**	108.5	0.00	79.97	-	-	0.00	0.00	-	0.00
T55 Alt	3,922	3,923	**16.80**	108.5	0.00	82.87	-	-	0.00	0.00	-	0.00

To be continued on next page...

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

Description:
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Calculated:
2/16/2015 4:05 PM/2.9.285

DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T56 Alt	9,922	9,922	**5.74**	108.5	0.00	90.93	-	-	0.00	0.00	-	0.00
T57 Alt	4,371	4,371	**15.49**	108.5	0.00	83.81	-	-	0.00	0.00	-	0.00
T58 Alt	6,505	6,506	**10.71**	108.5	0.00	87.27	-	-	0.00	0.00	-	0.00
T59 Alt	6,918	6,918	**9.97**	108.5	0.00	87.80	-	-	0.00	0.00	-	0.00
Sum	39.34											

- Data undefined due to calculation with octave data

Noise sensitive area: H05 Noise sensitive point: User defined (6)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	2,336	2,339	**22.98**	108.5	0.00	78.38	-	-	0.00	0.00	-	0.00
T02	2,045	2,047	**24.64**	108.5	0.00	77.22	-	-	0.00	0.00	-	0.00
T03	2,181	2,183	**23.84**	108.5	0.00	77.78	-	-	0.00	0.00	-	0.00
T04	2,602	2,604	**21.64**	108.5	0.00	79.31	-	-	0.00	0.00	-	0.00
T05	2,158	2,160	**23.98**	108.5	0.00	77.69	-	-	0.00	0.00	-	0.00
T06	2,647	2,649	**21.44**	108.5	0.00	79.46	-	-	0.00	0.00	-	0.00
T07	3,489	3,490	**18.20**	108.5	0.00	81.86	-	-	0.00	0.00	-	0.00
T08	3,990	3,991	**16.59**	108.5	0.00	83.02	-	-	0.00	0.00	-	0.00
T09	4,502	4,504	**15.13**	108.5	0.00	84.07	-	-	0.00	0.00	-	0.00
T10	4,942	4,943	**14.01**	108.5	0.00	84.88	-	-	0.00	0.00	-	0.00
T11	2,400	2,402	**22.65**	108.5	0.00	78.61	-	-	0.00	0.00	-	0.00
T12	2,644	2,646	**21.46**	108.5	0.00	79.45	-	-	0.00	0.00	-	0.00
T13	3,702	3,703	**17.49**	108.5	0.00	82.37	-	-	0.00	0.00	-	0.00
T14	3,934	3,936	**16.76**	108.5	0.00	82.90	-	-	0.00	0.00	-	0.00
T15	4,048	4,049	**16.41**	108.5	0.00	83.15	-	-	0.00	0.00	-	0.00
T16	5,002	5,003	**13.86**	108.5	0.00	84.99	-	-	0.00	0.00	-	0.00
T17	5,056	5,057	**13.73**	108.5	0.00	85.08	-	-	0.00	0.00	-	0.00
T18	5,212	5,213	**13.37**	108.5	0.00	85.34	-	-	0.00	0.00	-	0.00
T19	5,125	5,126	**13.57**	108.5	0.00	85.20	-	-	0.00	0.00	-	0.00
T20	5,638	5,639	**12.42**	108.5	0.00	86.02	-	-	0.00	0.00	-	0.00
T21	5,684	5,685	**12.32**	108.5	0.00	86.09	-	-	0.00	0.00	-	0.00
T22	6,212	6,213	**11.26**	108.5	0.00	86.87	-	-	0.00	0.00	-	0.00
T23	6,428	6,430	**10.85**	108.5	0.00	87.16	-	-	0.00	0.00	-	0.00
T24	6,651	6,653	**10.44**	108.5	0.00	87.46	-	-	0.00	0.00	-	0.00
T25	6,152	6,154	**11.37**	108.5	0.00	86.78	-	-	0.00	0.00	-	0.00
T26	6,256	6,258	**11.17**	108.5	0.00	86.93	-	-	0.00	0.00	-	0.00
T27	6,395	6,397	**10.91**	108.5	0.00	87.12	-	-	0.00	0.00	-	0.00
T28	6,645	6,646	**10.45**	108.5	0.00	87.45	-	-	0.00	0.00	-	0.00
T29	7,408	7,409	**9.16**	108.5	0.00	88.40	-	-	0.00	0.00	-	0.00
T30	7,466	7,467	**9.07**	108.5	0.00	88.46	-	-	0.00	0.00	-	0.00
T31	7,727	7,728	**8.66**	108.5	0.00	88.76	-	-	0.00	0.00	-	0.00
T32	8,070	8,071	**8.15**	108.5	0.00	89.14	-	-	0.00	0.00	-	0.00
T33	8,394	8,394	**7.69**	108.5	0.00	89.48	-	-	0.00	0.00	-	0.00
T34	7,491	7,491	**9.03**	108.5	0.00	88.49	-	-	0.00	0.00	-	0.00
T35	8,162	8,163	**8.02**	108.5	0.00	89.24	-	-	0.00	0.00	-	0.00
T36	8,348	8,349	**7.75**	108.5	0.00	89.43	-	-	0.00	0.00	-	0.00
T37	8,516	8,517	**7.52**	108.5	0.00	89.61	-	-	0.00	0.00	-	0.00
T38	8,781	8,781	**7.16**	108.5	0.00	89.87	-	-	0.00	0.00	-	0.00
T39	8,880	8,881	**7.03**	108.5	0.00	89.97	-	-	0.00	0.00	-	0.00
T40	9,144	9,145	**6.69**	108.5	0.00	90.22	-	-	0.00	0.00	-	0.00
T41	9,839	9,839	**5.83**	108.5	0.00	90.86	-	-	0.00	0.00	-	0.00
T42	9,282	9,283	**6.51**	108.5	0.00	90.35	-	-	0.00	0.00	-	0.00
T43	9,379	9,379	**6.39**	108.5	0.00	90.44	-	-	0.00	0.00	-	0.00

To be continued on next page...

Project:
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DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T44	10,345	10,345	**5.25**	108.5	0.00	91.29	-	-	0.00	0.00	-	0.00
T45	10,781	10,781	**4.77**	108.5	0.00	91.65	-	-	0.00	0.00	-	0.00
T46	9,715	9,715	**5.98**	108.5	0.00	90.75	-	-	0.00	0.00	-	0.00
T47	9,758	9,758	**5.93**	108.5	0.00	90.79	-	-	0.00	0.00	-	0.00
T48 Alt	10,764	10,764	**4.79**	108.5	0.00	91.64	-	-	0.00	0.00	-	0.00
T49 Alt	11,162	11,162	**4.37**	108.5	0.00	91.96	-	-	0.00	0.00	-	0.00
T50 Alt	6,596	6,597	**10.54**	108.5	0.00	87.39	-	-	0.00	0.00	-	0.00
T51 Alt	6,052	6,053	**11.57**	108.5	0.00	86.64	-	-	0.00	0.00	-	0.00
T52 Alt	1,131	1,135	**31.67**	108.5	0.00	72.10	-	-	0.00	0.00	-	0.00
T53 Alt	940	945	**33.75**	108.5	0.00	70.51	-	-	0.00	0.00	-	0.00
T54 Alt	1,681	1,683	**27.03**	108.5	0.00	75.52	-	-	0.00	0.00	-	0.00
T55 Alt	3,060	3,061	**19.75**	108.5	0.00	80.72	-	-	0.00	0.00	-	0.00
T56 Alt	9,090	9,091	**6.76**	108.5	0.00	90.17	-	-	0.00	0.00	-	0.00
T57 Alt	3,909	3,910	**16.83**	108.5	0.00	82.84	-	-	0.00	0.00	-	0.00
T58 Alt	5,998	5,998	**11.68**	108.5	0.00	86.56	-	-	0.00	0.00	-	0.00
T59 Alt	6,382	6,383	**10.93**	108.5	0.00	87.10	-	-	0.00	0.00	-	0.00

Sum 38.31

- Data undefined due to calculation with octave data

Noise sensitive area: H06 Noise sensitive point: User defined (7)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	3,759	3,760	**17.30**	108.5	0.00	82.50	-	-	0.00	0.00	-	0.00
T02	3,517	3,518	**18.10**	108.5	0.00	81.93	-	-	0.00	0.00	-	0.00
T03	3,639	3,640	**17.69**	108.5	0.00	82.22	-	-	0.00	0.00	-	0.00
T04	3,980	3,981	**16.62**	108.5	0.00	83.00	-	-	0.00	0.00	-	0.00
T05	3,255	3,256	**19.02**	108.5	0.00	81.25	-	-	0.00	0.00	-	0.00
T06	3,628	3,629	**17.73**	108.5	0.00	82.20	-	-	0.00	0.00	-	0.00
T07	4,404	4,405	**15.40**	108.5	0.00	83.88	-	-	0.00	0.00	-	0.00
T08	5,138	5,139	**13.54**	108.5	0.00	85.22	-	-	0.00	0.00	-	0.00
T09	5,500	5,501	**12.72**	108.5	0.00	85.81	-	-	0.00	0.00	-	0.00
T10	5,929	5,930	**11.82**	108.5	0.00	86.46	-	-	0.00	0.00	-	0.00
T11	2,580	2,582	**21.74**	108.5	0.00	79.24	-	-	0.00	0.00	-	0.00
T12	3,004	3,005	**19.97**	108.5	0.00	80.56	-	-	0.00	0.00	-	0.00
T13	4,009	4,010	**16.53**	108.5	0.00	83.06	-	-	0.00	0.00	-	0.00
T14	4,401	4,402	**15.41**	108.5	0.00	83.87	-	-	0.00	0.00	-	0.00
T15	3,992	3,993	**16.58**	108.5	0.00	83.03	-	-	0.00	0.00	-	0.00
T16	4,729	4,730	**14.54**	108.5	0.00	84.50	-	-	0.00	0.00	-	0.00
T17	4,959	4,960	**13.96**	108.5	0.00	84.91	-	-	0.00	0.00	-	0.00
T18	5,257	5,257	**13.26**	108.5	0.00	85.42	-	-	0.00	0.00	-	0.00
T19	5,384	5,385	**12.97**	108.5	0.00	85.62	-	-	0.00	0.00	-	0.00
T20	5,956	5,957	**11.76**	108.5	0.00	86.50	-	-	0.00	0.00	-	0.00
T21	6,141	6,142	**11.39**	108.5	0.00	86.77	-	-	0.00	0.00	-	0.00
T22	6,337	6,338	**11.02**	108.5	0.00	87.04	-	-	0.00	0.00	-	0.00
T23	6,667	6,668	**10.41**	108.5	0.00	87.48	-	-	0.00	0.00	-	0.00
T24	6,979	6,980	**9.87**	108.5	0.00	87.88	-	-	0.00	0.00	-	0.00
T25	5,827	5,828	**12.02**	108.5	0.00	86.31	-	-	0.00	0.00	-	0.00
T26	6,037	6,038	**11.60**	108.5	0.00	86.62	-	-	0.00	0.00	-	0.00
T27	6,262	6,263	**11.16**	108.5	0.00	86.94	-	-	0.00	0.00	-	0.00
T28	6,583	6,584	**10.56**	108.5	0.00	87.37	-	-	0.00	0.00	-	0.00
T29	7,419	7,420	**9.14**	108.5	0.00	88.41	-	-	0.00	0.00	-	0.00
T30	7,569	7,570	**8.91**	108.5	0.00	88.58	-	-	0.00	0.00	-	0.00
T31	7,896	7,897	**8.41**	108.5	0.00	88.95	-	-	0.00	0.00	-	0.00

To be continued on next page...

Project:
20131290 Rolette Power Development

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DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

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WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T32	8,399	8,399	**7.68**	108.5	0.00	89.49	-	-	0.00	0.00	-	0.00
T33	8,774	8,775	**7.17**	108.5	0.00	89.86	-	-	0.00	0.00	-	0.00
T34	7,350	7,351	**9.26**	108.5	0.00	88.33	-	-	0.00	0.00	-	0.00
T35	8,006	8,006	**8.25**	108.5	0.00	89.07	-	-	0.00	0.00	-	0.00
T36	8,356	8,356	**7.74**	108.5	0.00	89.44	-	-	0.00	0.00	-	0.00
T37	8,642	8,643	**7.35**	108.5	0.00	89.73	-	-	0.00	0.00	-	0.00
T38	8,986	8,987	**6.89**	108.5	0.00	90.07	-	-	0.00	0.00	-	0.00
T39	8,699	8,699	**7.27**	108.5	0.00	89.79	-	-	0.00	0.00	-	0.00
T40	9,082	9,083	**6.77**	108.5	0.00	90.16	-	-	0.00	0.00	-	0.00
T41	9,749	9,750	**5.94**	108.5	0.00	90.78	-	-	0.00	0.00	-	0.00
T42	9,354	9,354	**6.42**	108.5	0.00	90.42	-	-	0.00	0.00	-	0.00
T43	9,562	9,563	**6.17**	108.5	0.00	90.61	-	-	0.00	0.00	-	0.00
T44	10,531	10,531	**5.04**	108.5	0.00	91.45	-	-	0.00	0.00	-	0.00
T45	10,981	10,982	**4.56**	108.5	0.00	91.81	-	-	0.00	0.00	-	0.00
T46	10,009	10,010	**5.63**	108.5	0.00	91.01	-	-	0.00	0.00	-	0.00
T47	10,175	10,175	**5.44**	108.5	0.00	91.15	-	-	0.00	0.00	-	0.00
T48 Alt	11,049	11,049	**4.49**	108.5	0.00	91.87	-	-	0.00	0.00	-	0.00
T49 Alt	11,464	11,465	**4.06**	108.5	0.00	92.19	-	-	0.00	0.00	-	0.00
T50 Alt	7,069	7,069	**9.72**	108.5	0.00	87.99	-	-	0.00	0.00	-	0.00
T51 Alt	6,550	6,550	**10.63**	108.5	0.00	87.33	-	-	0.00	0.00	-	0.00
T52 Alt	2,229	2,231	**23.57**	108.5	0.00	77.97	-	-	0.00	0.00	-	0.00
T53 Alt	2,412	2,413	**22.59**	108.5	0.00	78.65	-	-	0.00	0.00	-	0.00
T54 Alt	2,399	2,400	**22.65**	108.5	0.00	78.61	-	-	0.00	0.00	-	0.00
T55 Alt	3,718	3,719	**17.44**	108.5	0.00	82.41	-	-	0.00	0.00	-	0.00
T56 Alt	9,408	9,408	**6.36**	108.5	0.00	90.47	-	-	0.00	0.00	-	0.00
T57 Alt	4,799	4,800	**14.36**	108.5	0.00	84.62	-	-	0.00	0.00	-	0.00
T58 Alt	6,719	6,719	**10.32**	108.5	0.00	87.55	-	-	0.00	0.00	-	0.00
T59 Alt	7,063	7,063	**9.73**	108.5	0.00	87.98	-	-	0.00	0.00	-	0.00
Sum	32.71											

- Data undefined due to calculation with octave data

Noise sensitive area: H07 Noise sensitive point: User defined (8)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	10,426	10,426	**5.16**	108.5	0.00	91.36	-	-	0.00	0.00	-	0.00
T02	9,785	9,785	**5.90**	108.5	0.00	90.81	-	-	0.00	0.00	-	0.00
T03	9,440	9,441	**6.32**	108.5	0.00	90.50	-	-	0.00	0.00	-	0.00
T04	9,009	9,009	**6.86**	108.5	0.00	90.09	-	-	0.00	0.00	-	0.00
T05	7,859	7,859	**8.47**	108.5	0.00	88.91	-	-	0.00	0.00	-	0.00
T06	7,499	7,500	**9.02**	108.5	0.00	88.50	-	-	0.00	0.00	-	0.00
T07	7,221	7,222	**9.47**	108.5	0.00	88.17	-	-	0.00	0.00	-	0.00
T08	8,211	8,211	**7.95**	108.5	0.00	89.29	-	-	0.00	0.00	-	0.00
T09	7,595	7,596	**8.87**	108.5	0.00	88.61	-	-	0.00	0.00	-	0.00
T10	7,625	7,625	**8.82**	108.5	0.00	88.65	-	-	0.00	0.00	-	0.00
T11	6,365	6,365	**10.97**	108.5	0.00	87.08	-	-	0.00	0.00	-	0.00
T12	6,335	6,336	**11.02**	108.5	0.00	87.04	-	-	0.00	0.00	-	0.00
T13	5,580	5,581	**12.54**	108.5	0.00	85.93	-	-	0.00	0.00	-	0.00
T14	5,809	5,810	**12.06**	108.5	0.00	86.28	-	-	0.00	0.00	-	0.00
T15	4,785	4,786	**14.40**	108.5	0.00	84.60	-	-	0.00	0.00	-	0.00
T16	3,719	3,720	**17.43**	108.5	0.00	82.41	-	-	0.00	0.00	-	0.00
T17	3,900	3,901	**16.86**	108.5	0.00	82.82	-	-	0.00	0.00	-	0.00
T18	4,086	4,086	**16.30**	108.5	0.00	83.23	-	-	0.00	0.00	-	0.00
T19	4,726	4,727	**14.55**	108.5	0.00	84.49	-	-	0.00	0.00	-	0.00

To be continued on next page...

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

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Calculated:
2/16/2015 4:05 PM/2.9.285

DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T20	4,750	4,751	**14.48**	108.5	0.00	84.54	-	-	0.00	0.00	-	0.00
T21	5,289	5,290	**13.19**	108.5	0.00	85.47	-	-	0.00	0.00	-	0.00
T22	3,842	3,843	**17.04**	108.5	0.00	82.69	-	-	0.00	0.00	-	0.00
T23	4,250	4,251	**15.83**	108.5	0.00	83.57	-	-	0.00	0.00	-	0.00
T24	4,629	4,630	**14.80**	108.5	0.00	84.31	-	-	0.00	0.00	-	0.00
T25	2,604	2,607	**21.63**	108.5	0.00	79.32	-	-	0.00	0.00	-	0.00
T26	2,714	2,716	**21.15**	108.5	0.00	79.68	-	-	0.00	0.00	-	0.00
T27	2,848	2,850	**20.59**	108.5	0.00	80.10	-	-	0.00	0.00	-	0.00
T28	2,955	2,957	**20.16**	108.5	0.00	80.42	-	-	0.00	0.00	-	0.00
T29	3,039	3,040	**19.83**	108.5	0.00	80.66	-	-	0.00	0.00	-	0.00
T30	3,496	3,498	**18.17**	108.5	0.00	81.88	-	-	0.00	0.00	-	0.00
T31	3,846	3,847	**17.03**	108.5	0.00	82.70	-	-	0.00	0.00	-	0.00
T32	4,789	4,790	**14.39**	108.5	0.00	84.61	-	-	0.00	0.00	-	0.00
T33	5,183	5,184	**13.43**	108.5	0.00	85.29	-	-	0.00	0.00	-	0.00
T34	2,292	2,294	**23.22**	108.5	0.00	78.21	-	-	0.00	0.00	-	0.00
T35	2,097	2,098	**24.34**	108.5	0.00	77.44	-	-	0.00	0.00	-	0.00
T36	3,031	3,032	**19.86**	108.5	0.00	80.64	-	-	0.00	0.00	-	0.00
T37	3,747	3,747	**17.34**	108.5	0.00	82.47	-	-	0.00	0.00	-	0.00
T38	4,293	4,294	**15.70**	108.5	0.00	83.66	-	-	0.00	0.00	-	0.00
T39	2,055	2,057	**24.59**	108.5	0.00	77.26	-	-	0.00	0.00	-	0.00
T40	2,852	2,854	**20.58**	108.5	0.00	80.11	-	-	0.00	0.00	-	0.00
T41	3,036	3,037	**19.85**	108.5	0.00	80.65	-	-	0.00	0.00	-	0.00
T42	3,694	3,695	**17.51**	108.5	0.00	82.35	-	-	0.00	0.00	-	0.00
T43	4,405	4,406	**15.39**	108.5	0.00	83.88	-	-	0.00	0.00	-	0.00
T44	4,944	4,944	**14.00**	108.5	0.00	84.88	-	-	0.00	0.00	-	0.00
T45	5,307	5,308	**13.15**	108.5	0.00	85.50	-	-	0.00	0.00	-	0.00
T46	5,242	5,243	**13.30**	108.5	0.00	85.39	-	-	0.00	0.00	-	0.00
T47	6,014	6,014	**11.65**	108.5	0.00	86.58	-	-	0.00	0.00	-	0.00
T48 Alt	5,803	5,803	**12.07**	108.5	0.00	86.27	-	-	0.00	0.00	-	0.00
T49 Alt	6,175	6,175	**11.33**	108.5	0.00	86.81	-	-	0.00	0.00	-	0.00
T50 Alt	5,327	5,327	**13.10**	108.5	0.00	85.53	-	-	0.00	0.00	-	0.00
T51 Alt	5,434	5,434	**12.86**	108.5	0.00	85.70	-	-	0.00	0.00	-	0.00
T52 Alt	8,014	8,014	**8.23**	108.5	0.00	89.08	-	-	0.00	0.00	-	0.00
T53 Alt	9,033	9,034	**6.83**	108.5	0.00	90.12	-	-	0.00	0.00	-	0.00
T54 Alt	7,322	7,323	**9.30**	108.5	0.00	88.29	-	-	0.00	0.00	-	0.00
T55 Alt	6,607	6,607	**10.52**	108.5	0.00	87.40	-	-	0.00	0.00	-	0.00
T56 Alt	5,081	5,082	**13.67**	108.5	0.00	85.12	-	-	0.00	0.00	-	0.00
T57 Alt	7,113	7,113	**9.64**	108.5	0.00	88.04	-	-	0.00	0.00	-	0.00
T58 Alt	6,490	6,490	**10.74**	108.5	0.00	87.25	-	-	0.00	0.00	-	0.00
T59 Alt	6,348	6,348	**11.00**	108.5	0.00	87.05	-	-	0.00	0.00	-	0.00

Sum 34.39

- Data undefined due to calculation with octave data

Noise sensitive area: H08 Noise sensitive point: User defined (9)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	11,443	11,444	**4.08**	108.5	0.00	92.17	-	-	0.00	0.00	-	0.00
T02	10,803	10,803	**4.75**	108.5	0.00	91.67	-	-	0.00	0.00	-	0.00
T03	10,457	10,457	**5.13**	108.5	0.00	91.39	-	-	0.00	0.00	-	0.00
T04	10,020	10,020	**5.62**	108.5	0.00	91.02	-	-	0.00	0.00	-	0.00
T05	8,874	8,875	**7.04**	108.5	0.00	89.96	-	-	0.00	0.00	-	0.00
T06	8,510	8,511	**7.53**	108.5	0.00	89.60	-	-	0.00	0.00	-	0.00
T07	8,215	8,215	**7.94**	108.5	0.00	89.29	-	-	0.00	0.00	-	0.00

To be continued on next page...

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DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T08	9,188	9,188	**6.63**	108.5	0.00	90.26	-	-	0.00	0.00	-	0.00
T09	8,551	8,552	**7.47**	108.5	0.00	89.64	-	-	0.00	0.00	-	0.00
T10	8,560	8,561	**7.46**	108.5	0.00	89.65	-	-	0.00	0.00	-	0.00
T11	7,380	7,380	**9.21**	108.5	0.00	88.36	-	-	0.00	0.00	-	0.00
T12	7,353	7,353	**9.25**	108.5	0.00	88.33	-	-	0.00	0.00	-	0.00
T13	6,592	6,592	**10.55**	108.5	0.00	87.38	-	-	0.00	0.00	-	0.00
T14	6,808	6,808	**10.17**	108.5	0.00	87.66	-	-	0.00	0.00	-	0.00
T15	5,803	5,803	**12.07**	108.5	0.00	86.27	-	-	0.00	0.00	-	0.00
T16	4,736	4,737	**14.52**	108.5	0.00	84.51	-	-	0.00	0.00	-	0.00
T17	4,912	4,912	**14.08**	108.5	0.00	84.83	-	-	0.00	0.00	-	0.00
T18	5,078	5,078	**13.68**	108.5	0.00	85.11	-	-	0.00	0.00	-	0.00
T19	5,694	5,694	**12.30**	108.5	0.00	86.11	-	-	0.00	0.00	-	0.00
T20	5,676	5,677	**12.34**	108.5	0.00	86.08	-	-	0.00	0.00	-	0.00
T21	6,194	6,195	**11.29**	108.5	0.00	86.84	-	-	0.00	0.00	-	0.00
T22	4,751	4,753	**14.48**	108.5	0.00	84.54	-	-	0.00	0.00	-	0.00
T23	5,113	5,114	**13.60**	108.5	0.00	85.17	-	-	0.00	0.00	-	0.00
T24	5,453	5,454	**12.82**	108.5	0.00	85.73	-	-	0.00	0.00	-	0.00
T25	3,621	3,622	**17.75**	108.5	0.00	82.18	-	-	0.00	0.00	-	0.00
T26	3,712	3,713	**17.45**	108.5	0.00	82.40	-	-	0.00	0.00	-	0.00
T27	3,814	3,816	**17.13**	108.5	0.00	82.63	-	-	0.00	0.00	-	0.00
T28	3,873	3,875	**16.94**	108.5	0.00	82.77	-	-	0.00	0.00	-	0.00
T29	3,814	3,815	**17.13**	108.5	0.00	82.63	-	-	0.00	0.00	-	0.00
T30	4,236	4,238	**15.86**	108.5	0.00	83.54	-	-	0.00	0.00	-	0.00
T31	4,529	4,530	**15.06**	108.5	0.00	84.12	-	-	0.00	0.00	-	0.00
T32	5,414	5,414	**12.91**	108.5	0.00	85.67	-	-	0.00	0.00	-	0.00
T33	5,765	5,766	**12.15**	108.5	0.00	86.22	-	-	0.00	0.00	-	0.00
T34	3,117	3,119	**19.53**	108.5	0.00	80.88	-	-	0.00	0.00	-	0.00
T35	2,755	2,757	**20.98**	108.5	0.00	79.81	-	-	0.00	0.00	-	0.00
T36	3,594	3,595	**17.84**	108.5	0.00	82.11	-	-	0.00	0.00	-	0.00
T37	4,272	4,273	**15.76**	108.5	0.00	83.61	-	-	0.00	0.00	-	0.00
T38	4,777	4,778	**14.42**	108.5	0.00	84.58	-	-	0.00	0.00	-	0.00
T39	2,452	2,454	**22.38**	108.5	0.00	78.80	-	-	0.00	0.00	-	0.00
T40	3,179	3,181	**19.30**	108.5	0.00	81.05	-	-	0.00	0.00	-	0.00
T41	3,134	3,135	**19.47**	108.5	0.00	80.93	-	-	0.00	0.00	-	0.00
T42	4,032	4,033	**16.46**	108.5	0.00	83.11	-	-	0.00	0.00	-	0.00
T43	4,767	4,767	**14.44**	108.5	0.00	84.57	-	-	0.00	0.00	-	0.00
T44	5,130	5,131	**13.56**	108.5	0.00	85.20	-	-	0.00	0.00	-	0.00
T45	5,434	5,435	**12.86**	108.5	0.00	85.70	-	-	0.00	0.00	-	0.00
T46	5,593	5,593	**12.52**	108.5	0.00	85.95	-	-	0.00	0.00	-	0.00
T47	6,413	6,414	**10.88**	108.5	0.00	87.14	-	-	0.00	0.00	-	0.00
T48 Alt	5,992	5,992	**11.69**	108.5	0.00	86.55	-	-	0.00	0.00	-	0.00
T49 Alt	6,323	6,324	**11.05**	108.5	0.00	87.02	-	-	0.00	0.00	-	0.00
T50 Alt	6,145	6,146	**11.39**	108.5	0.00	86.77	-	-	0.00	0.00	-	0.00
T51 Alt	6,304	6,305	**11.08**	108.5	0.00	86.99	-	-	0.00	0.00	-	0.00
T52 Alt	9,030	9,030	**6.83**	108.5	0.00	90.11	-	-	0.00	0.00	-	0.00
T53 Alt	10,048	10,049	**5.59**	108.5	0.00	91.04	-	-	0.00	0.00	-	0.00
T54 Alt	8,339	8,339	**7.77**	108.5	0.00	89.42	-	-	0.00	0.00	-	0.00
T55 Alt	7,617	7,618	**8.83**	108.5	0.00	88.64	-	-	0.00	0.00	-	0.00
T56 Alt	5,541	5,541	**12.63**	108.5	0.00	85.87	-	-	0.00	0.00	-	0.00
T57 Alt	8,094	8,094	**8.12**	108.5	0.00	89.16	-	-	0.00	0.00	-	0.00
T58 Alt	7,357	7,357	**9.25**	108.5	0.00	88.33	-	-	0.00	0.00	-	0.00
T59 Alt	7,183	7,184	**9.53**	108.5	0.00	88.13	-	-	0.00	0.00	-	0.00

Sum 32.09

- Data undefined due to calculation with octave data

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DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

Noise sensitive area: H09 Noise sensitive point: User defined (10)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	2,972	2,974	**20.09**	108.5	0.00	80.47	-	-	0.00	0.00	-	0.00
T02	3,660	3,661	**17.62**	108.5	0.00	82.27	-	-	0.00	0.00	-	0.00
T03	4,138	4,139	**16.15**	108.5	0.00	83.34	-	-	0.00	0.00	-	0.00
T04	4,835	4,836	**14.27**	108.5	0.00	84.69	-	-	0.00	0.00	-	0.00
T05	5,634	5,635	**12.43**	108.5	0.00	86.02	-	-	0.00	0.00	-	0.00
T06	6,133	6,134	**11.41**	108.5	0.00	86.76	-	-	0.00	0.00	-	0.00
T07	6,805	6,806	**10.17**	108.5	0.00	87.66	-	-	0.00	0.00	-	0.00
T08	6,495	6,496	**10.72**	108.5	0.00	87.25	-	-	0.00	0.00	-	0.00
T09	7,316	7,317	**9.31**	108.5	0.00	88.29	-	-	0.00	0.00	-	0.00
T10	7,671	7,671	**8.75**	108.5	0.00	88.70	-	-	0.00	0.00	-	0.00
T11	6,867	6,868	**10.06**	108.5	0.00	87.74	-	-	0.00	0.00	-	0.00
T12	6,948	6,949	**9.92**	108.5	0.00	87.84	-	-	0.00	0.00	-	0.00
T13	7,880	7,881	**8.43**	108.5	0.00	88.93	-	-	0.00	0.00	-	0.00
T14	7,895	7,896	**8.41**	108.5	0.00	88.95	-	-	0.00	0.00	-	0.00
T15	8,488	8,488	**7.56**	108.5	0.00	89.58	-	-	0.00	0.00	-	0.00
T16	9,522	9,523	**6.21**	108.5	0.00	90.58	-	-	0.00	0.00	-	0.00
T17	9,462	9,462	**6.29**	108.5	0.00	90.52	-	-	0.00	0.00	-	0.00
T18	9,492	9,492	**6.25**	108.5	0.00	90.55	-	-	0.00	0.00	-	0.00
T19	9,188	9,189	**6.63**	108.5	0.00	90.27	-	-	0.00	0.00	-	0.00
T20	9,575	9,576	**6.15**	108.5	0.00	90.62	-	-	0.00	0.00	-	0.00
T21	9,413	9,414	**6.35**	108.5	0.00	90.48	-	-	0.00	0.00	-	0.00
T22	10,341	10,342	**5.25**	108.5	0.00	91.29	-	-	0.00	0.00	-	0.00
T23	10,404	10,405	**5.18**	108.5	0.00	91.34	-	-	0.00	0.00	-	0.00
T24	10,485	10,486	**5.09**	108.5	0.00	91.41	-	-	0.00	0.00	-	0.00
T25	10,665	10,666	**4.90**	108.5	0.00	91.56	-	-	0.00	0.00	-	0.00
T26	10,699	10,700	**4.86**	108.5	0.00	91.59	-	-	0.00	0.00	-	0.00
T27	10,767	10,768	**4.79**	108.5	0.00	91.64	-	-	0.00	0.00	-	0.00
T28	10,944	10,944	**4.60**	108.5	0.00	91.78	-	-	0.00	0.00	-	0.00
T29	11,599	11,600	**3.92**	108.5	0.00	92.29	-	-	0.00	0.00	-	0.00
T30	11,548	11,548	**3.98**	108.5	0.00	92.25	-	-	0.00	0.00	-	0.00
T31	11,711	11,712	**3.81**	108.5	0.00	92.37	-	-	0.00	0.00	-	0.00
T32	11,798	11,798	**3.73**	108.5	0.00	92.44	-	-	0.00	0.00	-	0.00
T33	12,013	12,014	**3.52**	108.5	0.00	92.59	-	-	0.00	0.00	-	0.00
T34	11,829	11,829	**3.70**	108.5	0.00	92.46	-	-	0.00	0.00	-	0.00
T35	12,494	12,495	**3.07**	108.5	0.00	92.93	-	-	0.00	0.00	-	0.00
T36	12,504	12,505	**3.06**	108.5	0.00	92.94	-	-	0.00	0.00	-	0.00
T37	12,517	12,518	**3.04**	108.5	0.00	92.95	-	-	0.00	0.00	-	0.00
T38	12,658	12,658	**2.92**	108.5	0.00	93.05	-	-	0.00	0.00	-	0.00
T39	13,216	13,216	**2.42**	108.5	0.00	93.42	-	-	0.00	0.00	-	0.00
T40	13,351	13,351	**2.30**	108.5	0.00	93.51	-	-	0.00	0.00	-	0.00
T41	14,057	14,057	**1.71**	108.5	0.00	93.96	-	-	0.00	0.00	-	0.00
T42	13,325	13,325	**2.32**	108.5	0.00	93.49	-	-	0.00	0.00	-	0.00
T43	13,261	13,262	**2.38**	108.5	0.00	93.45	-	-	0.00	0.00	-	0.00
T44	14,184	14,184	**1.60**	108.5	0.00	94.04	-	-	0.00	0.00	-	0.00
T45	14,581	14,581	**1.28**	108.5	0.00	94.28	-	-	0.00	0.00	-	0.00
T46	13,406	13,406	**2.25**	108.5	0.00	93.55	-	-	0.00	0.00	-	0.00
T47	13,228	13,229	**2.41**	108.5	0.00	93.43	-	-	0.00	0.00	-	0.00
T48 Alt	14,425	14,425	**1.41**	108.5	0.00	94.18	-	-	0.00	0.00	-	0.00
T49 Alt	14,776	14,776	**1.13**	108.5	0.00	94.39	-	-	0.00	0.00	-	0.00
T50 Alt	10,202	10,202	**5.41**	108.5	0.00	91.17	-	-	0.00	0.00	-	0.00
T51 Alt	9,674	9,674	**6.03**	108.5	0.00	90.71	-	-	0.00	0.00	-	0.00
T52 Alt	5,228	5,229	**13.33**	108.5	0.00	85.37	-	-	0.00	0.00	-	0.00
T53 Alt	4,202	4,203	**15.96**	108.5	0.00	83.47	-	-	0.00	0.00	-	0.00
T54 Alt	5,929	5,930	**11.82**	108.5	0.00	86.46	-	-	0.00	0.00	-	0.00
T55 Alt	6,947	6,948	**9.92**	108.5	0.00	87.84	-	-	0.00	0.00	-	0.00

To be continued on next page...

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
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DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T56 Alt	12,775	12,775	**2.81**	108.5	0.00	93.13	-	-	0.00	0.00	-	0.00
T57 Alt	7,156	7,157	**9.57**	108.5	0.00	88.09	-	-	0.00	0.00	-	0.00
T58 Alt	9,193	9,193	**6.63**	108.5	0.00	90.27	-	-	0.00	0.00	-	0.00
T59 Alt	9,611	9,611	**6.11**	108.5	0.00	90.66	-	-	0.00	0.00	-	0.00
Sum	27.30											

- Data undefined due to calculation with octave data

Noise sensitive area: H10 Noise sensitive point: User defined (11)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	1,514	1,516	**28.28**	108.5	0.00	74.62	-	-	0.00	0.00	-	0.00
T02	2,121	2,123	**24.19**	108.5	0.00	77.54	-	-	0.00	0.00	-	0.00
T03	2,496	2,497	**22.15**	108.5	0.00	78.95	-	-	0.00	0.00	-	0.00
T04	3,091	3,092	**19.64**	108.5	0.00	80.80	-	-	0.00	0.00	-	0.00
T05	4,082	4,082	**16.31**	108.5	0.00	83.22	-	-	0.00	0.00	-	0.00
T06	4,522	4,523	**15.08**	108.5	0.00	84.11	-	-	0.00	0.00	-	0.00
T07	5,093	5,094	**13.64**	108.5	0.00	85.14	-	-	0.00	0.00	-	0.00
T08	4,645	4,646	**14.75**	108.5	0.00	84.34	-	-	0.00	0.00	-	0.00
T09	5,478	5,479	**12.77**	108.5	0.00	85.77	-	-	0.00	0.00	-	0.00
T10	5,809	5,809	**12.06**	108.5	0.00	86.28	-	-	0.00	0.00	-	0.00
T11	5,600	5,600	**12.50**	108.5	0.00	85.96	-	-	0.00	0.00	-	0.00
T12	5,573	5,573	**12.56**	108.5	0.00	85.92	-	-	0.00	0.00	-	0.00
T13	6,387	6,388	**10.93**	108.5	0.00	87.11	-	-	0.00	0.00	-	0.00
T14	6,311	6,312	**11.07**	108.5	0.00	87.00	-	-	0.00	0.00	-	0.00
T15	7,121	7,122	**9.63**	108.5	0.00	88.05	-	-	0.00	0.00	-	0.00
T16	8,193	8,194	**7.97**	108.5	0.00	89.27	-	-	0.00	0.00	-	0.00
T17	8,040	8,040	**8.20**	108.5	0.00	89.11	-	-	0.00	0.00	-	0.00
T18	7,991	7,991	**8.27**	108.5	0.00	89.05	-	-	0.00	0.00	-	0.00
T19	7,594	7,595	**8.87**	108.5	0.00	88.61	-	-	0.00	0.00	-	0.00
T20	7,923	7,924	**8.37**	108.5	0.00	88.98	-	-	0.00	0.00	-	0.00
T21	7,700	7,701	**8.71**	108.5	0.00	88.73	-	-	0.00	0.00	-	0.00
T22	8,746	8,746	**7.21**	108.5	0.00	89.84	-	-	0.00	0.00	-	0.00
T23	8,746	8,747	**7.21**	108.5	0.00	89.84	-	-	0.00	0.00	-	0.00
T24	8,778	8,779	**7.17**	108.5	0.00	89.87	-	-	0.00	0.00	-	0.00
T25	9,305	9,306	**6.48**	108.5	0.00	90.38	-	-	0.00	0.00	-	0.00
T26	9,275	9,276	**6.52**	108.5	0.00	90.35	-	-	0.00	0.00	-	0.00
T27	9,292	9,292	**6.50**	108.5	0.00	90.36	-	-	0.00	0.00	-	0.00
T28	9,420	9,420	**6.34**	108.5	0.00	90.48	-	-	0.00	0.00	-	0.00
T29	10,007	10,008	**5.64**	108.5	0.00	91.01	-	-	0.00	0.00	-	0.00
T30	9,909	9,910	**5.75**	108.5	0.00	90.92	-	-	0.00	0.00	-	0.00
T31	10,033	10,033	**5.61**	108.5	0.00	91.03	-	-	0.00	0.00	-	0.00
T32	10,040	10,040	**5.60**	108.5	0.00	91.03	-	-	0.00	0.00	-	0.00
T33	10,226	10,226	**5.39**	108.5	0.00	91.19	-	-	0.00	0.00	-	0.00
T34	10,313	10,313	**5.29**	108.5	0.00	91.27	-	-	0.00	0.00	-	0.00
T35	10,965	10,965	**4.58**	108.5	0.00	91.80	-	-	0.00	0.00	-	0.00
T36	10,883	10,884	**4.66**	108.5	0.00	91.74	-	-	0.00	0.00	-	0.00
T37	10,834	10,835	**4.71**	108.5	0.00	91.70	-	-	0.00	0.00	-	0.00
T38	10,931	10,932	**4.61**	108.5	0.00	91.77	-	-	0.00	0.00	-	0.00
T39	11,680	11,680	**3.84**	108.5	0.00	92.35	-	-	0.00	0.00	-	0.00
T40	11,743	11,743	**3.78**	108.5	0.00	92.40	-	-	0.00	0.00	-	0.00
T41	12,446	12,447	**3.11**	108.5	0.00	92.90	-	-	0.00	0.00	-	0.00
T42	11,647	11,647	**3.88**	108.5	0.00	92.32	-	-	0.00	0.00	-	0.00
T43	11,530	11,530	**3.99**	108.5	0.00	92.24	-	-	0.00	0.00	-	0.00

To be continued on next page...

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20131290 Rolette Power Development

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DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T44	12,431	12,431	**3.12**	108.5	0.00	92.89	-	-	0.00	0.00	-	0.00
T45	12,813	12,814	**2.77**	108.5	0.00	93.15	-	-	0.00	0.00	-	0.00
T46	11,621	11,621	**3.90**	108.5	0.00	92.30	-	-	0.00	0.00	-	0.00
T47	11,397	11,397	**4.13**	108.5	0.00	92.14	-	-	0.00	0.00	-	0.00
T48 Alt	12,624	12,624	**2.95**	108.5	0.00	93.02	-	-	0.00	0.00	-	0.00
T49 Alt	12,962	12,962	**2.64**	108.5	0.00	93.25	-	-	0.00	0.00	-	0.00
T50 Alt	8,439	8,439	**7.63**	108.5	0.00	89.53	-	-	0.00	0.00	-	0.00
T51 Alt	7,925	7,926	**8.37**	108.5	0.00	88.98	-	-	0.00	0.00	-	0.00
T52 Alt	3,964	3,965	**16.67**	108.5	0.00	82.96	-	-	0.00	0.00	-	0.00
T53 Alt	3,026	3,027	**19.88**	108.5	0.00	80.62	-	-	0.00	0.00	-	0.00
T54 Alt	4,618	4,619	**14.82**	108.5	0.00	84.29	-	-	0.00	0.00	-	0.00
T55 Alt	5,392	5,393	**12.96**	108.5	0.00	85.64	-	-	0.00	0.00	-	0.00
T56 Alt	10,994	10,994	**4.55**	108.5	0.00	91.82	-	-	0.00	0.00	-	0.00
T57 Alt	5,407	5,408	**12.92**	108.5	0.00	85.66	-	-	0.00	0.00	-	0.00
T58 Alt	7,365	7,365	**9.23**	108.5	0.00	88.34	-	-	0.00	0.00	-	0.00
T59 Alt	7,780	7,781	**8.58**	108.5	0.00	88.82	-	-	0.00	0.00	-	0.00

Sum 32.56

- Data undefined due to calculation with octave data

Noise sensitive area: H11 Noise sensitive point: User defined (12)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	1,417	1,420	**29.06**	108.5	0.00	74.04	-	-	0.00	0.00	-	0.00
T02	1,770	1,772	**26.41**	108.5	0.00	75.97	-	-	0.00	0.00	-	0.00
T03	1,976	1,978	**25.06**	108.5	0.00	76.93	-	-	0.00	0.00	-	0.00
T04	2,413	2,414	**22.58**	108.5	0.00	78.66	-	-	0.00	0.00	-	0.00
T05	3,535	3,536	**18.04**	108.5	0.00	81.97	-	-	0.00	0.00	-	0.00
T06	3,911	3,912	**16.83**	108.5	0.00	82.85	-	-	0.00	0.00	-	0.00
T07	4,385	4,385	**15.45**	108.5	0.00	83.84	-	-	0.00	0.00	-	0.00
T08	3,820	3,821	**17.11**	108.5	0.00	82.64	-	-	0.00	0.00	-	0.00
T09	4,656	4,657	**14.73**	108.5	0.00	84.36	-	-	0.00	0.00	-	0.00
T10	4,963	4,963	**13.96**	108.5	0.00	84.92	-	-	0.00	0.00	-	0.00
T11	5,206	5,207	**13.38**	108.5	0.00	85.33	-	-	0.00	0.00	-	0.00
T12	5,106	5,107	**13.61**	108.5	0.00	85.16	-	-	0.00	0.00	-	0.00
T13	5,821	5,822	**12.04**	108.5	0.00	86.30	-	-	0.00	0.00	-	0.00
T14	5,681	5,682	**12.33**	108.5	0.00	86.09	-	-	0.00	0.00	-	0.00
T15	6,627	6,628	**10.48**	108.5	0.00	87.43	-	-	0.00	0.00	-	0.00
T16	7,708	7,709	**8.69**	108.5	0.00	88.74	-	-	0.00	0.00	-	0.00
T17	7,497	7,497	**9.02**	108.5	0.00	88.50	-	-	0.00	0.00	-	0.00
T18	7,396	7,397	**9.18**	108.5	0.00	88.38	-	-	0.00	0.00	-	0.00
T19	6,941	6,942	**9.93**	108.5	0.00	87.83	-	-	0.00	0.00	-	0.00
T20	7,227	7,227	**9.46**	108.5	0.00	88.18	-	-	0.00	0.00	-	0.00
T21	6,961	6,962	**9.90**	108.5	0.00	87.85	-	-	0.00	0.00	-	0.00
T22	8,081	8,082	**8.14**	108.5	0.00	89.15	-	-	0.00	0.00	-	0.00
T23	8,039	8,040	**8.20**	108.5	0.00	89.11	-	-	0.00	0.00	-	0.00
T24	8,037	8,038	**8.20**	108.5	0.00	89.10	-	-	0.00	0.00	-	0.00
T25	8,788	8,789	**7.15**	108.5	0.00	89.88	-	-	0.00	0.00	-	0.00
T26	8,719	8,719	**7.24**	108.5	0.00	89.81	-	-	0.00	0.00	-	0.00
T27	8,702	8,702	**7.27**	108.5	0.00	89.79	-	-	0.00	0.00	-	0.00
T28	8,798	8,798	**7.14**	108.5	0.00	89.89	-	-	0.00	0.00	-	0.00
T29	9,338	9,338	**6.44**	108.5	0.00	90.41	-	-	0.00	0.00	-	0.00
T30	9,209	9,209	**6.60**	108.5	0.00	90.28	-	-	0.00	0.00	-	0.00
T31	9,305	9,306	**6.48**	108.5	0.00	90.38	-	-	0.00	0.00	-	0.00

To be continued on next page...

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DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T32	9,257	9,257	**6.54**	108.5	0.00	90.33	-	-	0.00	0.00	-	0.00
T33	9,422	9,422	**6.34**	108.5	0.00	90.48	-	-	0.00	0.00	-	0.00
T34	9,690	9,690	**6.01**	108.5	0.00	90.73	-	-	0.00	0.00	-	0.00
T35	10,330	10,330	**5.27**	108.5	0.00	91.28	-	-	0.00	0.00	-	0.00
T36	10,190	10,190	**5.43**	108.5	0.00	91.16	-	-	0.00	0.00	-	0.00
T37	10,100	10,101	**5.53**	108.5	0.00	91.09	-	-	0.00	0.00	-	0.00
T38	10,168	10,168	**5.45**	108.5	0.00	91.14	-	-	0.00	0.00	-	0.00
T39	11,037	11,037	**4.50**	108.5	0.00	91.86	-	-	0.00	0.00	-	0.00
T40	11,055	11,055	**4.48**	108.5	0.00	91.87	-	-	0.00	0.00	-	0.00
T41	11,754	11,754	**3.77**	108.5	0.00	92.40	-	-	0.00	0.00	-	0.00
T42	10,913	10,914	**4.63**	108.5	0.00	91.76	-	-	0.00	0.00	-	0.00
T43	10,761	10,761	**4.79**	108.5	0.00	91.64	-	-	0.00	0.00	-	0.00
T44	11,645	11,645	**3.88**	108.5	0.00	92.32	-	-	0.00	0.00	-	0.00
T45	12,017	12,018	**3.52**	108.5	0.00	92.60	-	-	0.00	0.00	-	0.00
T46	10,815	10,815	**4.74**	108.5	0.00	91.68	-	-	0.00	0.00	-	0.00
T47	10,559	10,559	**5.01**	108.5	0.00	91.47	-	-	0.00	0.00	-	0.00
T48 Alt	11,805	11,806	**3.72**	108.5	0.00	92.44	-	-	0.00	0.00	-	0.00
T49 Alt	12,134	12,135	**3.40**	108.5	0.00	92.68	-	-	0.00	0.00	-	0.00
T50 Alt	7,659	7,659	**8.77**	108.5	0.00	88.68	-	-	0.00	0.00	-	0.00
T51 Alt	7,159	7,160	**9.57**	108.5	0.00	88.10	-	-	0.00	0.00	-	0.00
T52 Alt	3,646	3,647	**17.67**	108.5	0.00	82.24	-	-	0.00	0.00	-	0.00
T53 Alt	2,853	2,854	**20.57**	108.5	0.00	80.11	-	-	0.00	0.00	-	0.00
T54 Alt	4,231	4,232	**15.88**	108.5	0.00	83.53	-	-	0.00	0.00	-	0.00
T55 Alt	4,802	4,802	**14.35**	108.5	0.00	84.63	-	-	0.00	0.00	-	0.00
T56 Alt	10,193	10,193	**5.42**	108.5	0.00	91.17	-	-	0.00	0.00	-	0.00
T57 Alt	4,663	4,664	**14.71**	108.5	0.00	84.37	-	-	0.00	0.00	-	0.00
T58 Alt	6,541	6,541	**10.64**	108.5	0.00	87.31	-	-	0.00	0.00	-	0.00
T59 Alt	6,952	6,953	**9.92**	108.5	0.00	87.84	-	-	0.00	0.00	-	0.00
Sum	34.08											

- Data undefined due to calculation with octave data

Noise sensitive area: H12 Noise sensitive point: User defined (13)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	875	879	**34.56**	108.5	0.00	69.88	-	-	0.00	0.00	-	0.00
T02	809	813	**35.42**	108.5	0.00	69.21	-	-	0.00	0.00	-	0.00
T03	913	917	**34.08**	108.5	0.00	70.25	-	-	0.00	0.00	-	0.00
T04	1,406	1,408	**29.16**	108.5	0.00	73.97	-	-	0.00	0.00	-	0.00
T05	2,476	2,477	**22.26**	108.5	0.00	78.88	-	-	0.00	0.00	-	0.00
T06	2,872	2,873	**20.50**	108.5	0.00	80.17	-	-	0.00	0.00	-	0.00
T07	3,408	3,409	**18.48**	108.5	0.00	81.65	-	-	0.00	0.00	-	0.00
T08	2,999	3,000	**19.99**	108.5	0.00	80.54	-	-	0.00	0.00	-	0.00
T09	3,822	3,824	**17.10**	108.5	0.00	82.65	-	-	0.00	0.00	-	0.00
T10	4,175	4,176	**16.04**	108.5	0.00	83.41	-	-	0.00	0.00	-	0.00
T11	4,146	4,147	**16.12**	108.5	0.00	83.36	-	-	0.00	0.00	-	0.00
T12	4,042	4,043	**16.43**	108.5	0.00	83.13	-	-	0.00	0.00	-	0.00
T13	4,771	4,772	**14.43**	108.5	0.00	84.57	-	-	0.00	0.00	-	0.00
T14	4,655	4,656	**14.73**	108.5	0.00	84.36	-	-	0.00	0.00	-	0.00
T15	5,565	5,566	**12.58**	108.5	0.00	85.91	-	-	0.00	0.00	-	0.00
T16	6,646	6,646	**10.45**	108.5	0.00	87.45	-	-	0.00	0.00	-	0.00
T17	6,443	6,444	**10.82**	108.5	0.00	87.18	-	-	0.00	0.00	-	0.00
T18	6,358	6,358	**10.98**	108.5	0.00	87.07	-	-	0.00	0.00	-	0.00
T19	5,929	5,930	**11.82**	108.5	0.00	86.46	-	-	0.00	0.00	-	0.00

To be continued on next page...

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
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Calculated:
2/16/2015 4:05 PM/2.9.285

DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T20	6,243	6,243	**11.20**	108.5	0.00	86.91	-	-	0.00	0.00	-	0.00
T21	6,013	6,014	**11.65**	108.5	0.00	86.58	-	-	0.00	0.00	-	0.00
T22	7,077	7,077	**9.70**	108.5	0.00	88.00	-	-	0.00	0.00	-	0.00
T23	7,064	7,064	**9.73**	108.5	0.00	87.98	-	-	0.00	0.00	-	0.00
T24	7,091	7,092	**9.68**	108.5	0.00	88.02	-	-	0.00	0.00	-	0.00
T25	7,730	7,731	**8.66**	108.5	0.00	88.77	-	-	0.00	0.00	-	0.00
T26	7,669	7,670	**8.75**	108.5	0.00	88.70	-	-	0.00	0.00	-	0.00
T27	7,662	7,663	**8.76**	108.5	0.00	88.69	-	-	0.00	0.00	-	0.00
T28	7,771	7,772	**8.60**	108.5	0.00	88.81	-	-	0.00	0.00	-	0.00
T29	8,337	8,338	**7.77**	108.5	0.00	89.42	-	-	0.00	0.00	-	0.00
T30	8,228	8,229	**7.92**	108.5	0.00	89.31	-	-	0.00	0.00	-	0.00
T31	8,347	8,348	**7.76**	108.5	0.00	89.43	-	-	0.00	0.00	-	0.00
T32	8,356	8,357	**7.74**	108.5	0.00	89.44	-	-	0.00	0.00	-	0.00
T33	8,549	8,550	**7.47**	108.5	0.00	89.64	-	-	0.00	0.00	-	0.00
T34	8,664	8,665	**7.32**	108.5	0.00	89.76	-	-	0.00	0.00	-	0.00
T35	9,310	9,311	**6.48**	108.5	0.00	90.38	-	-	0.00	0.00	-	0.00
T36	9,205	9,205	**6.61**	108.5	0.00	90.28	-	-	0.00	0.00	-	0.00
T37	9,148	9,148	**6.68**	108.5	0.00	90.23	-	-	0.00	0.00	-	0.00
T38	9,245	9,245	**6.56**	108.5	0.00	90.32	-	-	0.00	0.00	-	0.00
T39	10,022	10,022	**5.62**	108.5	0.00	91.02	-	-	0.00	0.00	-	0.00
T40	10,067	10,067	**5.57**	108.5	0.00	91.06	-	-	0.00	0.00	-	0.00
T41	10,769	10,769	**4.78**	108.5	0.00	91.64	-	-	0.00	0.00	-	0.00
T42	9,961	9,961	**5.69**	108.5	0.00	90.97	-	-	0.00	0.00	-	0.00
T43	9,844	9,844	**5.83**	108.5	0.00	90.86	-	-	0.00	0.00	-	0.00
T44	10,747	10,748	**4.81**	108.5	0.00	91.63	-	-	0.00	0.00	-	0.00
T45	11,133	11,133	**4.40**	108.5	0.00	91.93	-	-	0.00	0.00	-	0.00
T46	9,944	9,944	**5.71**	108.5	0.00	90.95	-	-	0.00	0.00	-	0.00
T47	9,740	9,740	**5.95**	108.5	0.00	90.77	-	-	0.00	0.00	-	0.00
T48 Alt	10,953	10,953	**4.59**	108.5	0.00	91.79	-	-	0.00	0.00	-	0.00
T49 Alt	11,297	11,297	**4.23**	108.5	0.00	92.06	-	-	0.00	0.00	-	0.00
T50 Alt	6,755	6,756	**10.26**	108.5	0.00	87.59	-	-	0.00	0.00	-	0.00
T51 Alt	6,240	6,240	**11.20**	108.5	0.00	86.90	-	-	0.00	0.00	-	0.00
T52 Alt	2,614	2,616	**21.59**	108.5	0.00	79.35	-	-	0.00	0.00	-	0.00
T53 Alt	1,926	1,928	**25.38**	108.5	0.00	76.70	-	-	0.00	0.00	-	0.00
T54 Alt	3,176	3,177	**19.32**	108.5	0.00	81.04	-	-	0.00	0.00	-	0.00
T55 Alt	3,758	3,758	**17.31**	108.5	0.00	82.50	-	-	0.00	0.00	-	0.00
T56 Alt	9,316	9,316	**6.47**	108.5	0.00	90.38	-	-	0.00	0.00	-	0.00
T57 Alt	3,721	3,721	**17.43**	108.5	0.00	82.41	-	-	0.00	0.00	-	0.00
T58 Alt	5,704	5,705	**12.28**	108.5	0.00	86.12	-	-	0.00	0.00	-	0.00
T59 Alt	6,121	6,122	**11.43**	108.5	0.00	86.74	-	-	0.00	0.00	-	0.00

Sum 40.57

- Data undefined due to calculation with octave data

Noise sensitive area: H13 Noise sensitive point: User defined (14)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	2,025	2,027	**24.76**	108.5	0.00	77.14	-	-	0.00	0.00	-	0.00
T02	1,602	1,604	**27.61**	108.5	0.00	75.11	-	-	0.00	0.00	-	0.00
T03	1,223	1,226	**30.77**	108.5	0.00	72.77	-	-	0.00	0.00	-	0.00
T04	894	898	**34.32**	108.5	0.00	70.07	-	-	0.00	0.00	-	0.00
T05	2,086	2,088	**24.40**	108.5	0.00	77.39	-	-	0.00	0.00	-	0.00
T06	2,274	2,276	**23.32**	108.5	0.00	78.14	-	-	0.00	0.00	-	0.00
T07	2,550	2,551	**21.88**	108.5	0.00	79.13	-	-	0.00	0.00	-	0.00

To be continued on next page...

Project:
20131290 Rolette Power Development

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DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T08	1,885	1,887	**25.65**	108.5	0.00	76.51	-	-	0.00	0.00	-	0.00
T09	2,721	2,723	**21.12**	108.5	0.00	79.70	-	-	0.00	0.00	-	0.00
T10	3,034	3,035	**19.85**	108.5	0.00	80.64	-	-	0.00	0.00	-	0.00
T11	3,906	3,907	**16.84**	108.5	0.00	82.84	-	-	0.00	0.00	-	0.00
T12	3,669	3,669	**17.60**	108.5	0.00	82.29	-	-	0.00	0.00	-	0.00
T13	4,166	4,166	**16.07**	108.5	0.00	83.40	-	-	0.00	0.00	-	0.00
T14	3,928	3,929	**16.77**	108.5	0.00	82.89	-	-	0.00	0.00	-	0.00
T15	5,070	5,070	**13.70**	108.5	0.00	85.10	-	-	0.00	0.00	-	0.00
T16	6,137	6,137	**11.40**	108.5	0.00	86.76	-	-	0.00	0.00	-	0.00
T17	5,837	5,838	**12.00**	108.5	0.00	86.33	-	-	0.00	0.00	-	0.00
T18	5,663	5,663	**12.37**	108.5	0.00	86.06	-	-	0.00	0.00	-	0.00
T19	5,134	5,135	**13.55**	108.5	0.00	85.21	-	-	0.00	0.00	-	0.00
T20	5,366	5,367	**13.01**	108.5	0.00	85.59	-	-	0.00	0.00	-	0.00
T21	5,063	5,064	**13.71**	108.5	0.00	85.09	-	-	0.00	0.00	-	0.00
T22	6,250	6,251	**11.18**	108.5	0.00	86.92	-	-	0.00	0.00	-	0.00
T23	6,164	6,165	**11.35**	108.5	0.00	86.80	-	-	0.00	0.00	-	0.00
T24	6,133	6,134	**11.41**	108.5	0.00	86.76	-	-	0.00	0.00	-	0.00
T25	7,148	7,149	**9.59**	108.5	0.00	88.08	-	-	0.00	0.00	-	0.00
T26	7,021	7,022	**9.80**	108.5	0.00	87.93	-	-	0.00	0.00	-	0.00
T27	6,958	6,958	**9.91**	108.5	0.00	87.85	-	-	0.00	0.00	-	0.00
T28	7,011	7,012	**9.81**	108.5	0.00	87.92	-	-	0.00	0.00	-	0.00
T29	7,493	7,494	**9.03**	108.5	0.00	88.49	-	-	0.00	0.00	-	0.00
T30	7,335	7,336	**9.28**	108.5	0.00	88.31	-	-	0.00	0.00	-	0.00
T31	7,408	7,409	**9.16**	108.5	0.00	88.39	-	-	0.00	0.00	-	0.00
T32	7,328	7,329	**9.29**	108.5	0.00	88.30	-	-	0.00	0.00	-	0.00
T33	7,488	7,488	**9.04**	108.5	0.00	88.49	-	-	0.00	0.00	-	0.00
T34	7,896	7,897	**8.41**	108.5	0.00	88.95	-	-	0.00	0.00	-	0.00
T35	8,518	8,518	**7.52**	108.5	0.00	89.61	-	-	0.00	0.00	-	0.00
T36	8,319	8,319	**7.80**	108.5	0.00	89.40	-	-	0.00	0.00	-	0.00
T37	8,196	8,197	**7.97**	108.5	0.00	89.27	-	-	0.00	0.00	-	0.00
T38	8,246	8,247	**7.90**	108.5	0.00	89.33	-	-	0.00	0.00	-	0.00
T39	9,213	9,214	**6.60**	108.5	0.00	90.29	-	-	0.00	0.00	-	0.00
T40	9,186	9,186	**6.63**	108.5	0.00	90.26	-	-	0.00	0.00	-	0.00
T41	9,880	9,880	**5.79**	108.5	0.00	90.90	-	-	0.00	0.00	-	0.00
T42	9,009	9,010	**6.86**	108.5	0.00	90.09	-	-	0.00	0.00	-	0.00
T43	8,837	8,837	**7.09**	108.5	0.00	89.93	-	-	0.00	0.00	-	0.00
T44	9,714	9,715	**5.98**	108.5	0.00	90.75	-	-	0.00	0.00	-	0.00
T45	10,084	10,085	**5.55**	108.5	0.00	91.07	-	-	0.00	0.00	-	0.00
T46	8,880	8,881	**7.03**	108.5	0.00	89.97	-	-	0.00	0.00	-	0.00
T47	8,628	8,629	**7.37**	108.5	0.00	89.72	-	-	0.00	0.00	-	0.00
T48 Alt	9,871	9,871	**5.80**	108.5	0.00	90.89	-	-	0.00	0.00	-	0.00
T49 Alt	10,201	10,201	**5.41**	108.5	0.00	91.17	-	-	0.00	0.00	-	0.00
T50 Alt	5,732	5,733	**12.22**	108.5	0.00	86.17	-	-	0.00	0.00	-	0.00
T51 Alt	5,241	5,241	**13.30**	108.5	0.00	85.39	-	-	0.00	0.00	-	0.00
T52 Alt	2,706	2,707	**21.19**	108.5	0.00	79.65	-	-	0.00	0.00	-	0.00
T53 Alt	2,459	2,461	**22.34**	108.5	0.00	78.82	-	-	0.00	0.00	-	0.00
T54 Alt	3,042	3,043	**19.82**	108.5	0.00	80.66	-	-	0.00	0.00	-	0.00
T55 Alt	3,145	3,146	**19.43**	108.5	0.00	80.96	-	-	0.00	0.00	-	0.00
T56 Alt	8,259	8,259	**7.88**	108.5	0.00	89.34	-	-	0.00	0.00	-	0.00
T57 Alt	2,777	2,778	**20.89**	108.5	0.00	79.88	-	-	0.00	0.00	-	0.00
T58 Alt	4,606	4,607	**14.86**	108.5	0.00	84.27	-	-	0.00	0.00	-	0.00
T59 Alt	5,018	5,019	**13.82**	108.5	0.00	85.01	-	-	0.00	0.00	-	0.00

Sum 38.60

- Data undefined due to calculation with octave data

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DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

Noise sensitive area: H14 Noise sensitive point: User defined (15)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	5,232	5,233	**13.32**	108.5	0.00	85.37	-	-	0.00	0.00	-	0.00
T02	4,544	4,545	**15.02**	108.5	0.00	84.15	-	-	0.00	0.00	-	0.00
T03	4,077	4,078	**16.33**	108.5	0.00	83.21	-	-	0.00	0.00	-	0.00
T04	3,451	3,452	**18.33**	108.5	0.00	81.76	-	-	0.00	0.00	-	0.00
T05	2,600	2,602	**21.65**	108.5	0.00	79.31	-	-	0.00	0.00	-	0.00
T06	2,076	2,078	**24.46**	108.5	0.00	77.35	-	-	0.00	0.00	-	0.00
T07	1,460	1,463	**28.71**	108.5	0.00	74.30	-	-	0.00	0.00	-	0.00
T08	2,340	2,342	**22.97**	108.5	0.00	78.39	-	-	0.00	0.00	-	0.00
T09	1,760	1,763	**26.48**	108.5	0.00	75.92	-	-	0.00	0.00	-	0.00
T10	1,906	1,908	**25.51**	108.5	0.00	76.61	-	-	0.00	0.00	-	0.00
T11	2,449	2,451	**22.39**	108.5	0.00	78.79	-	-	0.00	0.00	-	0.00
T12	1,998	1,999	**24.94**	108.5	0.00	77.02	-	-	0.00	0.00	-	0.00
T13	1,147	1,150	**31.52**	108.5	0.00	72.21	-	-	0.00	0.00	-	0.00
T14	623	628	**38.25**	108.5	0.00	66.97	-	-	0.00	0.00	-	0.00
T15	1,953	1,955	**25.21**	108.5	0.00	76.82	-	-	0.00	0.00	-	0.00
T16	2,697	2,699	**21.23**	108.5	0.00	79.62	-	-	0.00	0.00	-	0.00
T17	2,182	2,184	**23.84**	108.5	0.00	77.79	-	-	0.00	0.00	-	0.00
T18	1,818	1,820	**26.08**	108.5	0.00	76.20	-	-	0.00	0.00	-	0.00
T19	1,158	1,162	**31.40**	108.5	0.00	72.30	-	-	0.00	0.00	-	0.00
T20	1,386	1,390	**29.32**	108.5	0.00	73.86	-	-	0.00	0.00	-	0.00
T21	1,252	1,256	**30.50**	108.5	0.00	72.98	-	-	0.00	0.00	-	0.00
T22	2,249	2,252	**23.45**	108.5	0.00	78.05	-	-	0.00	0.00	-	0.00
T23	2,209	2,212	**23.68**	108.5	0.00	77.90	-	-	0.00	0.00	-	0.00
T24	2,293	2,296	**23.22**	108.5	0.00	78.22	-	-	0.00	0.00	-	0.00
T25	3,420	3,422	**18.43**	108.5	0.00	81.69	-	-	0.00	0.00	-	0.00
T26	3,178	3,180	**19.30**	108.5	0.00	81.05	-	-	0.00	0.00	-	0.00
T27	3,034	3,036	**19.85**	108.5	0.00	80.65	-	-	0.00	0.00	-	0.00
T28	3,032	3,034	**19.86**	108.5	0.00	80.64	-	-	0.00	0.00	-	0.00
T29	3,496	3,499	**18.17**	108.5	0.00	81.88	-	-	0.00	0.00	-	0.00
T30	3,372	3,374	**18.60**	108.5	0.00	81.56	-	-	0.00	0.00	-	0.00
T31	3,508	3,510	**18.13**	108.5	0.00	81.91	-	-	0.00	0.00	-	0.00
T32	3,669	3,670	**17.59**	108.5	0.00	82.29	-	-	0.00	0.00	-	0.00
T33	3,961	3,962	**16.67**	108.5	0.00	82.96	-	-	0.00	0.00	-	0.00
T34	3,906	3,907	**16.84**	108.5	0.00	82.84	-	-	0.00	0.00	-	0.00
T35	4,519	4,520	**15.09**	108.5	0.00	84.10	-	-	0.00	0.00	-	0.00
T36	4,349	4,350	**15.55**	108.5	0.00	83.77	-	-	0.00	0.00	-	0.00
T37	4,314	4,315	**15.64**	108.5	0.00	83.70	-	-	0.00	0.00	-	0.00
T38	4,470	4,471	**15.22**	108.5	0.00	84.01	-	-	0.00	0.00	-	0.00
T39	5,212	5,213	**13.36**	108.5	0.00	85.34	-	-	0.00	0.00	-	0.00
T40	5,212	5,213	**13.36**	108.5	0.00	85.34	-	-	0.00	0.00	-	0.00
T41	5,913	5,914	**11.85**	108.5	0.00	86.44	-	-	0.00	0.00	-	0.00
T42	5,123	5,124	**13.57**	108.5	0.00	85.19	-	-	0.00	0.00	-	0.00
T43	5,076	5,077	**13.68**	108.5	0.00	85.11	-	-	0.00	0.00	-	0.00
T44	6,019	6,019	**11.64**	108.5	0.00	86.59	-	-	0.00	0.00	-	0.00
T45	6,435	6,435	**10.84**	108.5	0.00	87.17	-	-	0.00	0.00	-	0.00
T46	5,313	5,314	**13.13**	108.5	0.00	85.51	-	-	0.00	0.00	-	0.00
T47	5,312	5,313	**13.14**	108.5	0.00	85.51	-	-	0.00	0.00	-	0.00
T48 Alt	6,359	6,359	**10.98**	108.5	0.00	87.07	-	-	0.00	0.00	-	0.00
T49 Alt	6,745	6,746	**10.27**	108.5	0.00	87.58	-	-	0.00	0.00	-	0.00
T50 Alt	2,149	2,152	**24.03**	108.5	0.00	77.65	-	-	0.00	0.00	-	0.00
T51 Alt	1,605	1,608	**27.59**	108.5	0.00	75.12	-	-	0.00	0.00	-	0.00
T52 Alt	3,360	3,361	**18.65**	108.5	0.00	81.53	-	-	0.00	0.00	-	0.00
T53 Alt	4,258	4,259	**15.80**	108.5	0.00	83.59	-	-	0.00	0.00	-	0.00
T54 Alt	2,775	2,776	**20.90**	108.5	0.00	79.87	-	-	0.00	0.00	-	0.00
T55 Alt	1,390	1,393	**29.29**	108.5	0.00	73.88	-	-	0.00	0.00	-	0.00

To be continued on next page...

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

Description:
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Calculated:
2/16/2015 4:05 PM/2.9.285

DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T56 Alt	4,681	4,682	**14.66**	108.5	0.00	84.41	-	-	0.00	0.00	-	0.00
T57 Alt	1,254	1,256	**30.49**	108.5	0.00	72.98	-	-	0.00	0.00	-	0.00
T58 Alt	1,790	1,792	**26.27**	108.5	0.00	76.07	-	-	0.00	0.00	-	0.00
T59 Alt	2,087	2,089	**24.39**	108.5	0.00	77.40	-	-	0.00	0.00	-	0.00
Sum	43.19											

- Data undefined due to calculation with octave data

Noise sensitive area: H15 Noise sensitive point: User defined (16)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	5,509	5,510	**12.70**	108.5	0.00	85.82	-	-	0.00	0.00	-	0.00
T02	4,851	4,851	**14.23**	108.5	0.00	84.72	-	-	0.00	0.00	-	0.00
T03	4,337	4,338	**15.58**	108.5	0.00	83.75	-	-	0.00	0.00	-	0.00
T04	3,600	3,601	**17.82**	108.5	0.00	82.13	-	-	0.00	0.00	-	0.00
T05	3,197	3,198	**19.24**	108.5	0.00	81.10	-	-	0.00	0.00	-	0.00
T06	2,670	2,671	**21.35**	108.5	0.00	79.53	-	-	0.00	0.00	-	0.00
T07	1,827	1,828	**26.03**	108.5	0.00	76.24	-	-	0.00	0.00	-	0.00
T08	1,961	1,963	**25.16**	108.5	0.00	76.86	-	-	0.00	0.00	-	0.00
T09	1,125	1,129	**31.73**	108.5	0.00	72.05	-	-	0.00	0.00	-	0.00
T10	900	904	**34.25**	108.5	0.00	70.13	-	-	0.00	0.00	-	0.00
T11	3,688	3,689	**17.53**	108.5	0.00	82.34	-	-	0.00	0.00	-	0.00
T12	3,212	3,213	**19.18**	108.5	0.00	81.14	-	-	0.00	0.00	-	0.00
T13	2,543	2,544	**21.92**	108.5	0.00	79.11	-	-	0.00	0.00	-	0.00
T14	1,995	1,996	**24.95**	108.5	0.00	77.00	-	-	0.00	0.00	-	0.00
T15	3,371	3,372	**18.61**	108.5	0.00	81.56	-	-	0.00	0.00	-	0.00
T16	4,029	4,030	**16.47**	108.5	0.00	83.11	-	-	0.00	0.00	-	0.00
T17	3,462	3,463	**18.29**	108.5	0.00	81.79	-	-	0.00	0.00	-	0.00
T18	3,001	3,002	**19.98**	108.5	0.00	80.55	-	-	0.00	0.00	-	0.00
T19	2,237	2,239	**23.53**	108.5	0.00	78.00	-	-	0.00	0.00	-	0.00
T20	2,071	2,073	**24.49**	108.5	0.00	77.33	-	-	0.00	0.00	-	0.00
T21	1,542	1,545	**28.06**	108.5	0.00	74.78	-	-	0.00	0.00	-	0.00
T22	2,983	2,986	**20.05**	108.5	0.00	80.50	-	-	0.00	0.00	-	0.00
T23	2,667	2,670	**21.35**	108.5	0.00	79.53	-	-	0.00	0.00	-	0.00
T24	2,470	2,472	**22.28**	108.5	0.00	78.86	-	-	0.00	0.00	-	0.00
T25	4,574	4,576	**14.94**	108.5	0.00	84.21	-	-	0.00	0.00	-	0.00
T26	4,245	4,247	**15.84**	108.5	0.00	83.56	-	-	0.00	0.00	-	0.00
T27	4,002	4,004	**16.55**	108.5	0.00	83.05	-	-	0.00	0.00	-	0.00
T28	3,866	3,868	**16.96**	108.5	0.00	82.75	-	-	0.00	0.00	-	0.00
T29	4,051	4,053	**16.40**	108.5	0.00	83.16	-	-	0.00	0.00	-	0.00
T30	3,768	3,770	**17.27**	108.5	0.00	82.53	-	-	0.00	0.00	-	0.00
T31	3,731	3,733	**17.39**	108.5	0.00	82.44	-	-	0.00	0.00	-	0.00
T32	3,506	3,507	**18.14**	108.5	0.00	81.90	-	-	0.00	0.00	-	0.00
T33	3,643	3,644	**17.68**	108.5	0.00	82.23	-	-	0.00	0.00	-	0.00
T34	4,642	4,643	**14.76**	108.5	0.00	84.34	-	-	0.00	0.00	-	0.00
T35	5,156	5,157	**13.49**	108.5	0.00	85.25	-	-	0.00	0.00	-	0.00
T36	4,729	4,730	**14.54**	108.5	0.00	84.50	-	-	0.00	0.00	-	0.00
T37	4,475	4,476	**15.20**	108.5	0.00	84.02	-	-	0.00	0.00	-	0.00
T38	4,450	4,452	**15.27**	108.5	0.00	83.97	-	-	0.00	0.00	-	0.00
T39	5,778	5,779	**12.13**	108.5	0.00	86.24	-	-	0.00	0.00	-	0.00
T40	5,582	5,583	**12.54**	108.5	0.00	85.94	-	-	0.00	0.00	-	0.00
T41	6,244	6,245	**11.20**	108.5	0.00	86.91	-	-	0.00	0.00	-	0.00
T42	5,273	5,274	**13.22**	108.5	0.00	85.44	-	-	0.00	0.00	-	0.00
T43	5,026	5,027	**13.80**	108.5	0.00	85.03	-	-	0.00	0.00	-	0.00

To be continued on next page...

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

Description:
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Calculated:
2/16/2015 4:05 PM/2.9.285

DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T44	5,879	5,880	**11.92**	108.5	0.00	86.39	-	-	0.00	0.00	-	0.00
T45	6,241	6,242	**11.20**	108.5	0.00	86.91	-	-	0.00	0.00	-	0.00
T46	5,035	5,036	**13.78**	108.5	0.00	85.04	-	-	0.00	0.00	-	0.00
T47	4,808	4,809	**14.34**	108.5	0.00	84.64	-	-	0.00	0.00	-	0.00
T48 Alt	6,028	6,029	**11.62**	108.5	0.00	86.60	-	-	0.00	0.00	-	0.00
T49 Alt	6,365	6,366	**10.97**	108.5	0.00	87.08	-	-	0.00	0.00	-	0.00
T50 Alt	1,939	1,941	**25.30**	108.5	0.00	76.76	-	-	0.00	0.00	-	0.00
T51 Alt	1,529	1,531	**28.17**	108.5	0.00	74.70	-	-	0.00	0.00	-	0.00
T52 Alt	4,174	4,174	**16.05**	108.5	0.00	83.41	-	-	0.00	0.00	-	0.00
T53 Alt	4,886	4,887	**14.14**	108.5	0.00	84.78	-	-	0.00	0.00	-	0.00
T54 Alt	3,742	3,743	**17.36**	108.5	0.00	82.46	-	-	0.00	0.00	-	0.00
T55 Alt	2,399	2,401	**22.65**	108.5	0.00	78.61	-	-	0.00	0.00	-	0.00
T56 Alt	4,415	4,416	**15.37**	108.5	0.00	83.90	-	-	0.00	0.00	-	0.00
T57 Alt	1,406	1,408	**29.16**	108.5	0.00	73.97	-	-	0.00	0.00	-	0.00
T58 Alt	773	777	**35.93**	108.5	0.00	68.81	-	-	0.00	0.00	-	0.00
T59 Alt	1,191	1,194	**31.09**	108.5	0.00	72.54	-	-	0.00	0.00	-	0.00
Sum	41.99											

- Data undefined due to calculation with octave data

Noise sensitive area: H16 Noise sensitive point: User defined (17)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	7,877	7,877	**8.44**	108.5	0.00	88.93	-	-	0.00	0.00	-	0.00
T02	7,194	7,195	**9.51**	108.5	0.00	88.14	-	-	0.00	0.00	-	0.00
T03	6,702	6,703	**10.35**	108.5	0.00	87.53	-	-	0.00	0.00	-	0.00
T04	6,011	6,011	**11.65**	108.5	0.00	86.58	-	-	0.00	0.00	-	0.00
T05	5,312	5,312	**13.14**	108.5	0.00	85.51	-	-	0.00	0.00	-	0.00
T06	4,775	4,776	**14.42**	108.5	0.00	84.58	-	-	0.00	0.00	-	0.00
T07	4,037	4,037	**16.45**	108.5	0.00	83.12	-	-	0.00	0.00	-	0.00
T08	4,503	4,504	**15.13**	108.5	0.00	84.07	-	-	0.00	0.00	-	0.00
T09	3,677	3,678	**17.57**	108.5	0.00	82.31	-	-	0.00	0.00	-	0.00
T10	3,463	3,464	**18.29**	108.5	0.00	81.79	-	-	0.00	0.00	-	0.00
T11	4,989	4,990	**13.89**	108.5	0.00	84.96	-	-	0.00	0.00	-	0.00
T12	4,599	4,600	**14.87**	108.5	0.00	84.25	-	-	0.00	0.00	-	0.00
T13	3,559	3,560	**17.96**	108.5	0.00	82.03	-	-	0.00	0.00	-	0.00
T14	3,233	3,234	**19.10**	108.5	0.00	81.19	-	-	0.00	0.00	-	0.00
T15	3,778	3,779	**17.24**	108.5	0.00	82.55	-	-	0.00	0.00	-	0.00
T16	3,724	3,725	**17.42**	108.5	0.00	82.42	-	-	0.00	0.00	-	0.00
T17	3,146	3,147	**19.43**	108.5	0.00	80.96	-	-	0.00	0.00	-	0.00
T18	2,629	2,631	**21.52**	108.5	0.00	79.40	-	-	0.00	0.00	-	0.00
T19	2,212	2,214	**23.67**	108.5	0.00	77.90	-	-	0.00	0.00	-	0.00
T20	1,623	1,625	**27.46**	108.5	0.00	75.22	-	-	0.00	0.00	-	0.00
T21	1,483	1,486	**28.53**	108.5	0.00	74.44	-	-	0.00	0.00	-	0.00
T22	1,698	1,701	**26.91**	108.5	0.00	75.61	-	-	0.00	0.00	-	0.00
T23	1,138	1,143	**31.59**	108.5	0.00	72.16	-	-	0.00	0.00	-	0.00
T24	664	671	**37.54**	108.5	0.00	67.54	-	-	0.00	0.00	-	0.00
T25	3,557	3,559	**17.96**	108.5	0.00	82.03	-	-	0.00	0.00	-	0.00
T26	3,094	3,095	**19.62**	108.5	0.00	80.81	-	-	0.00	0.00	-	0.00
T27	2,699	2,701	**21.22**	108.5	0.00	79.63	-	-	0.00	0.00	-	0.00
T28	2,336	2,338	**22.98**	108.5	0.00	78.38	-	-	0.00	0.00	-	0.00
T29	1,979	1,982	**25.04**	108.5	0.00	76.94	-	-	0.00	0.00	-	0.00
T30	1,537	1,541	**28.09**	108.5	0.00	74.75	-	-	0.00	0.00	-	0.00
T31	1,301	1,305	**30.05**	108.5	0.00	73.31	-	-	0.00	0.00	-	0.00

To be continued on next page...

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

Description:
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Calculated:
2/16/2015 4:05 PM/2.9.285

DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T32	960	963	**33.53**	108.5	0.00	70.68	-	-	0.00	0.00	-	0.00
T33	1,230	1,232	**30.72**	108.5	0.00	72.81	-	-	0.00	0.00	-	0.00
T34	2,732	2,733	**21.08**	108.5	0.00	79.73	-	-	0.00	0.00	-	0.00
T35	3,022	3,023	**19.90**	108.5	0.00	80.61	-	-	0.00	0.00	-	0.00
T36	2,340	2,341	**22.97**	108.5	0.00	78.39	-	-	0.00	0.00	-	0.00
T37	1,942	1,944	**25.28**	108.5	0.00	76.77	-	-	0.00	0.00	-	0.00
T38	1,879	1,881	**25.68**	108.5	0.00	76.49	-	-	0.00	0.00	-	0.00
T39	3,500	3,501	**18.16**	108.5	0.00	81.88	-	-	0.00	0.00	-	0.00
T40	3,133	3,134	**19.48**	108.5	0.00	80.92	-	-	0.00	0.00	-	0.00
T41	3,749	3,750	**17.34**	108.5	0.00	82.48	-	-	0.00	0.00	-	0.00
T42	2,719	2,720	**21.14**	108.5	0.00	79.69	-	-	0.00	0.00	-	0.00
T43	2,462	2,463	**22.33**	108.5	0.00	78.83	-	-	0.00	0.00	-	0.00
T44	3,351	3,351	**18.68**	108.5	0.00	81.50	-	-	0.00	0.00	-	0.00
T45	3,743	3,743	**17.36**	108.5	0.00	82.46	-	-	0.00	0.00	-	0.00
T46	2,586	2,587	**21.71**	108.5	0.00	79.26	-	-	0.00	0.00	-	0.00
T47	2,612	2,613	**21.60**	108.5	0.00	79.34	-	-	0.00	0.00	-	0.00
T48 Alt	3,627	3,628	**17.73**	108.5	0.00	82.19	-	-	0.00	0.00	-	0.00
T49 Alt	4,011	4,012	**16.52**	108.5	0.00	83.07	-	-	0.00	0.00	-	0.00
T50 Alt	643	648	**37.91**	108.5	0.00	67.23	-	-	0.00	0.00	-	0.00
T51 Alt	1,166	1,168	**31.34**	108.5	0.00	72.35	-	-	0.00	0.00	-	0.00
T52 Alt	6,091	6,091	**11.49**	108.5	0.00	86.69	-	-	0.00	0.00	-	0.00
T53 Alt	6,988	6,988	**9.85**	108.5	0.00	87.89	-	-	0.00	0.00	-	0.00
T54 Alt	5,484	5,484	**12.75**	108.5	0.00	85.78	-	-	0.00	0.00	-	0.00
T55 Alt	4,121	4,121	**16.20**	108.5	0.00	83.30	-	-	0.00	0.00	-	0.00
T56 Alt	1,952	1,954	**25.22**	108.5	0.00	76.82	-	-	0.00	0.00	-	0.00
T57 Alt	3,683	3,684	**17.55**	108.5	0.00	82.33	-	-	0.00	0.00	-	0.00
T58 Alt	1,896	1,897	**25.58**	108.5	0.00	76.56	-	-	0.00	0.00	-	0.00
T59 Alt	1,572	1,573	**27.84**	108.5	0.00	74.94	-	-	0.00	0.00	-	0.00
Sum	44.31											

- Data undefined due to calculation with octave data

Noise sensitive area: H17 Noise sensitive point: User defined (18)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	11,083	11,084	**4.45**	108.5	0.00	91.89	-	-	0.00	0.00	-	0.00
T02	10,395	10,396	**5.19**	108.5	0.00	91.34	-	-	0.00	0.00	-	0.00
T03	9,934	9,934	**5.72**	108.5	0.00	90.94	-	-	0.00	0.00	-	0.00
T04	9,297	9,298	**6.49**	108.5	0.00	90.37	-	-	0.00	0.00	-	0.00
T05	8,423	8,424	**7.65**	108.5	0.00	89.51	-	-	0.00	0.00	-	0.00
T06	7,920	7,920	**8.37**	108.5	0.00	88.97	-	-	0.00	0.00	-	0.00
T07	7,295	7,295	**9.35**	108.5	0.00	88.26	-	-	0.00	0.00	-	0.00
T08	7,918	7,918	**8.38**	108.5	0.00	88.97	-	-	0.00	0.00	-	0.00
T09	7,110	7,111	**9.65**	108.5	0.00	88.04	-	-	0.00	0.00	-	0.00
T10	6,924	6,925	**9.96**	108.5	0.00	87.81	-	-	0.00	0.00	-	0.00
T11	7,579	7,580	**8.89**	108.5	0.00	88.59	-	-	0.00	0.00	-	0.00
T12	7,318	7,318	**9.31**	108.5	0.00	88.29	-	-	0.00	0.00	-	0.00
T13	6,277	6,278	**11.13**	108.5	0.00	86.96	-	-	0.00	0.00	-	0.00
T14	6,171	6,172	**11.34**	108.5	0.00	86.81	-	-	0.00	0.00	-	0.00
T15	5,992	5,993	**11.69**	108.5	0.00	86.55	-	-	0.00	0.00	-	0.00
T16	5,302	5,303	**13.16**	108.5	0.00	85.49	-	-	0.00	0.00	-	0.00
T17	5,011	5,012	**13.84**	108.5	0.00	85.00	-	-	0.00	0.00	-	0.00
T18	4,758	4,758	**14.47**	108.5	0.00	84.55	-	-	0.00	0.00	-	0.00
T19	4,888	4,889	**14.14**	108.5	0.00	84.78	-	-	0.00	0.00	-	0.00

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DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T20	4,478	4,479	**15.20**	108.5	0.00	84.02	-	-	0.00	0.00	-	0.00
T21	4,699	4,700	**14.61**	108.5	0.00	84.44	-	-	0.00	0.00	-	0.00
T22	3,756	3,757	**17.31**	108.5	0.00	82.50	-	-	0.00	0.00	-	0.00
T23	3,650	3,651	**17.66**	108.5	0.00	82.25	-	-	0.00	0.00	-	0.00
T24	3,626	3,628	**17.73**	108.5	0.00	82.19	-	-	0.00	0.00	-	0.00
T25	4,371	4,373	**15.49**	108.5	0.00	83.81	-	-	0.00	0.00	-	0.00
T26	4,027	4,029	**16.47**	108.5	0.00	83.10	-	-	0.00	0.00	-	0.00
T27	3,735	3,736	**17.38**	108.5	0.00	82.45	-	-	0.00	0.00	-	0.00
T28	3,389	3,391	**18.54**	108.5	0.00	81.61	-	-	0.00	0.00	-	0.00
T29	2,560	2,563	**21.82**	108.5	0.00	79.17	-	-	0.00	0.00	-	0.00
T30	2,513	2,516	**22.06**	108.5	0.00	79.02	-	-	0.00	0.00	-	0.00
T31	2,356	2,359	**22.88**	108.5	0.00	78.45	-	-	0.00	0.00	-	0.00
T32	2,617	2,619	**21.57**	108.5	0.00	79.36	-	-	0.00	0.00	-	0.00
T33	2,712	2,714	**21.16**	108.5	0.00	79.67	-	-	0.00	0.00	-	0.00
T34	2,705	2,706	**21.19**	108.5	0.00	79.65	-	-	0.00	0.00	-	0.00
T35	2,149	2,151	**24.03**	108.5	0.00	77.65	-	-	0.00	0.00	-	0.00
T36	1,618	1,620	**27.49**	108.5	0.00	75.19	-	-	0.00	0.00	-	0.00
T37	1,563	1,566	**27.90**	108.5	0.00	74.89	-	-	0.00	0.00	-	0.00
T38	1,647	1,650	**27.28**	108.5	0.00	75.35	-	-	0.00	0.00	-	0.00
T39	1,705	1,708	**26.86**	108.5	0.00	75.65	-	-	0.00	0.00	-	0.00
T40	979	982	**33.31**	108.5	0.00	70.85	-	-	0.00	0.00	-	0.00
T41	703	708	**36.96**	108.5	0.00	68.00	-	-	0.00	0.00	-	0.00
T42	754	760	**36.18**	108.5	0.00	68.61	-	-	0.00	0.00	-	0.00
T43	1,235	1,238	**30.66**	108.5	0.00	72.85	-	-	0.00	0.00	-	0.00
T44	1,296	1,298	**30.11**	108.5	0.00	73.27	-	-	0.00	0.00	-	0.00
T45	1,620	1,622	**27.48**	108.5	0.00	75.20	-	-	0.00	0.00	-	0.00
T46	1,914	1,916	**25.46**	108.5	0.00	76.65	-	-	0.00	0.00	-	0.00
T47	2,766	2,767	**20.93**	108.5	0.00	79.84	-	-	0.00	0.00	-	0.00
T48 Alt	2,157	2,158	**23.99**	108.5	0.00	77.68	-	-	0.00	0.00	-	0.00
T49 Alt	2,500	2,501	**22.13**	108.5	0.00	78.96	-	-	0.00	0.00	-	0.00
T50 Alt	4,089	4,090	**16.29**	108.5	0.00	83.23	-	-	0.00	0.00	-	0.00
T51 Alt	4,533	4,534	**15.05**	108.5	0.00	84.13	-	-	0.00	0.00	-	0.00
T52 Alt	9,007	9,007	**6.86**	108.5	0.00	90.09	-	-	0.00	0.00	-	0.00
T53 Alt	9,994	9,995	**5.65**	108.5	0.00	91.00	-	-	0.00	0.00	-	0.00
T54 Alt	8,326	8,326	**7.79**	108.5	0.00	89.41	-	-	0.00	0.00	-	0.00
T55 Alt	7,123	7,123	**9.63**	108.5	0.00	88.05	-	-	0.00	0.00	-	0.00
T56 Alt	2,129	2,130	**24.15**	108.5	0.00	77.57	-	-	0.00	0.00	-	0.00
T57 Alt	6,998	6,998	**9.84**	108.5	0.00	87.90	-	-	0.00	0.00	-	0.00
T58 Alt	5,365	5,366	**13.02**	108.5	0.00	85.59	-	-	0.00	0.00	-	0.00
T59 Alt	5,023	5,024	**13.81**	108.5	0.00	85.02	-	-	0.00	0.00	-	0.00

Sum 42.86

- Data undefined due to calculation with octave data

Noise sensitive area: H18 Noise sensitive point: User defined (19)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	11,651	11,651	**3.87**	108.5	0.00	92.33	-	-	0.00	0.00	-	0.00
T02	10,964	10,964	**4.58**	108.5	0.00	91.80	-	-	0.00	0.00	-	0.00
T03	10,509	10,509	**5.07**	108.5	0.00	91.43	-	-	0.00	0.00	-	0.00
T04	9,884	9,884	**5.78**	108.5	0.00	90.90	-	-	0.00	0.00	-	0.00
T05	8,984	8,984	**6.89**	108.5	0.00	90.07	-	-	0.00	0.00	-	0.00
T06	8,487	8,488	**7.56**	108.5	0.00	89.58	-	-	0.00	0.00	-	0.00
T07	7,883	7,883	**8.43**	108.5	0.00	88.93	-	-	0.00	0.00	-	0.00

To be continued on next page...

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Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T08	8,532	8,532	**7.50**	108.5	0.00	89.62	-	-	0.00	0.00	-	0.00
T09	7,729	7,730	**8.66**	108.5	0.00	88.76	-	-	0.00	0.00	-	0.00
T10	7,551	7,552	**8.94**	108.5	0.00	88.56	-	-	0.00	0.00	-	0.00
T11	8,069	8,070	**8.15**	108.5	0.00	89.14	-	-	0.00	0.00	-	0.00
T12	7,829	7,830	**8.51**	108.5	0.00	88.87	-	-	0.00	0.00	-	0.00
T13	6,802	6,802	**10.18**	108.5	0.00	87.65	-	-	0.00	0.00	-	0.00
T14	6,724	6,725	**10.31**	108.5	0.00	87.55	-	-	0.00	0.00	-	0.00
T15	6,457	6,458	**10.80**	108.5	0.00	87.20	-	-	0.00	0.00	-	0.00
T16	5,703	5,703	**12.28**	108.5	0.00	86.12	-	-	0.00	0.00	-	0.00
T17	5,460	5,461	**12.80**	108.5	0.00	85.75	-	-	0.00	0.00	-	0.00
T18	5,249	5,249	**13.28**	108.5	0.00	85.40	-	-	0.00	0.00	-	0.00
T19	5,434	5,435	**12.86**	108.5	0.00	85.70	-	-	0.00	0.00	-	0.00
T20	5,052	5,053	**13.74**	108.5	0.00	85.07	-	-	0.00	0.00	-	0.00
T21	5,301	5,302	**13.16**	108.5	0.00	85.49	-	-	0.00	0.00	-	0.00
T22	4,288	4,289	**15.72**	108.5	0.00	83.65	-	-	0.00	0.00	-	0.00
T23	4,227	4,228	**15.89**	108.5	0.00	83.52	-	-	0.00	0.00	-	0.00
T24	4,233	4,235	**15.87**	108.5	0.00	83.54	-	-	0.00	0.00	-	0.00
T25	4,705	4,707	**14.60**	108.5	0.00	84.46	-	-	0.00	0.00	-	0.00
T26	4,404	4,405	**15.40**	108.5	0.00	83.88	-	-	0.00	0.00	-	0.00
T27	4,149	4,150	**16.12**	108.5	0.00	83.36	-	-	0.00	0.00	-	0.00
T28	3,837	3,838	**17.06**	108.5	0.00	82.68	-	-	0.00	0.00	-	0.00
T29	3,054	3,057	**19.77**	108.5	0.00	80.70	-	-	0.00	0.00	-	0.00
T30	3,070	3,072	**19.71**	108.5	0.00	80.75	-	-	0.00	0.00	-	0.00
T31	2,956	2,958	**20.16**	108.5	0.00	80.42	-	-	0.00	0.00	-	0.00
T32	3,258	3,259	**19.01**	108.5	0.00	81.26	-	-	0.00	0.00	-	0.00
T33	3,347	3,348	**18.69**	108.5	0.00	81.50	-	-	0.00	0.00	-	0.00
T34	3,073	3,074	**19.70**	108.5	0.00	80.76	-	-	0.00	0.00	-	0.00
T35	2,450	2,452	**22.39**	108.5	0.00	78.79	-	-	0.00	0.00	-	0.00
T36	2,121	2,123	**24.19**	108.5	0.00	77.54	-	-	0.00	0.00	-	0.00
T37	2,180	2,182	**23.85**	108.5	0.00	77.78	-	-	0.00	0.00	-	0.00
T38	2,288	2,289	**23.25**	108.5	0.00	78.19	-	-	0.00	0.00	-	0.00
T39	1,859	1,861	**25.81**	108.5	0.00	76.40	-	-	0.00	0.00	-	0.00
T40	1,328	1,331	**29.82**	108.5	0.00	73.48	-	-	0.00	0.00	-	0.00
T41	697	702	**37.05**	108.5	0.00	67.93	-	-	0.00	0.00	-	0.00
T42	1,384	1,387	**29.34**	108.5	0.00	73.84	-	-	0.00	0.00	-	0.00
T43	1,852	1,854	**25.86**	108.5	0.00	76.36	-	-	0.00	0.00	-	0.00
T44	1,676	1,677	**27.07**	108.5	0.00	75.49	-	-	0.00	0.00	-	0.00
T45	1,870	1,872	**25.74**	108.5	0.00	76.45	-	-	0.00	0.00	-	0.00
T46	2,452	2,454	**22.37**	108.5	0.00	78.80	-	-	0.00	0.00	-	0.00
T47	3,292	3,294	**18.89**	108.5	0.00	81.35	-	-	0.00	0.00	-	0.00
T48 Alt	2,480	2,481	**22.24**	108.5	0.00	78.89	-	-	0.00	0.00	-	0.00
T49 Alt	2,755	2,756	**20.98**	108.5	0.00	79.80	-	-	0.00	0.00	-	0.00
T50 Alt	4,717	4,718	**14.57**	108.5	0.00	84.47	-	-	0.00	0.00	-	0.00
T51 Alt	5,151	5,151	**13.51**	108.5	0.00	85.24	-	-	0.00	0.00	-	0.00
T52 Alt	9,533	9,534	**6.20**	108.5	0.00	90.59	-	-	0.00	0.00	-	0.00
T53 Alt	10,531	10,531	**5.04**	108.5	0.00	91.45	-	-	0.00	0.00	-	0.00
T54 Alt	8,846	8,846	**7.08**	108.5	0.00	89.93	-	-	0.00	0.00	-	0.00
T55 Alt	7,675	7,676	**8.74**	108.5	0.00	88.70	-	-	0.00	0.00	-	0.00
T56 Alt	2,737	2,738	**21.06**	108.5	0.00	79.75	-	-	0.00	0.00	-	0.00
T57 Alt	7,596	7,596	**8.87**	108.5	0.00	88.61	-	-	0.00	0.00	-	0.00
T58 Alt	5,999	5,999	**11.68**	108.5	0.00	86.56	-	-	0.00	0.00	-	0.00
T59 Alt	5,660	5,661	**12.37**	108.5	0.00	86.06	-	-	0.00	0.00	-	0.00

Sum 40.51

- Data undefined due to calculation with octave data

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

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Calculated:
2/16/2015 4:05 PM/2.9.285

DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

Noise sensitive area: H19 Noise sensitive point: User defined (20)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	9,156	9,156	**6.67**	108.5	0.00	90.23	-	-	0.00	0.00	-	0.00
T02	8,486	8,486	**7.56**	108.5	0.00	89.57	-	-	0.00	0.00	-	0.00
T03	7,979	7,979	**8.29**	108.5	0.00	89.04	-	-	0.00	0.00	-	0.00
T04	7,255	7,255	**9.41**	108.5	0.00	88.21	-	-	0.00	0.00	-	0.00
T05	6,686	6,687	**10.38**	108.5	0.00	87.50	-	-	0.00	0.00	-	0.00
T06	6,144	6,144	**11.39**	108.5	0.00	86.77	-	-	0.00	0.00	-	0.00
T07	5,354	5,354	**13.04**	108.5	0.00	85.57	-	-	0.00	0.00	-	0.00
T08	5,618	5,618	**12.46**	108.5	0.00	85.99	-	-	0.00	0.00	-	0.00
T09	4,783	4,784	**14.40**	108.5	0.00	84.60	-	-	0.00	0.00	-	0.00
T10	4,473	4,474	**15.21**	108.5	0.00	84.01	-	-	0.00	0.00	-	0.00
T11	6,503	6,504	**10.71**	108.5	0.00	87.26	-	-	0.00	0.00	-	0.00
T12	6,101	6,101	**11.47**	108.5	0.00	86.71	-	-	0.00	0.00	-	0.00
T13	5,074	5,074	**13.69**	108.5	0.00	85.11	-	-	0.00	0.00	-	0.00
T14	4,717	4,717	**14.57**	108.5	0.00	84.47	-	-	0.00	0.00	-	0.00
T15	5,303	5,304	**13.16**	108.5	0.00	85.49	-	-	0.00	0.00	-	0.00
T16	5,174	5,175	**13.45**	108.5	0.00	85.28	-	-	0.00	0.00	-	0.00
T17	4,622	4,623	**14.81**	108.5	0.00	84.30	-	-	0.00	0.00	-	0.00
T18	4,125	4,126	**16.19**	108.5	0.00	83.31	-	-	0.00	0.00	-	0.00
T19	3,742	3,743	**17.36**	108.5	0.00	82.46	-	-	0.00	0.00	-	0.00
T20	3,152	3,154	**19.40**	108.5	0.00	80.98	-	-	0.00	0.00	-	0.00
T21	2,954	2,956	**20.17**	108.5	0.00	80.41	-	-	0.00	0.00	-	0.00
T22	3,112	3,114	**19.55**	108.5	0.00	80.87	-	-	0.00	0.00	-	0.00
T23	2,596	2,599	**21.66**	108.5	0.00	79.29	-	-	0.00	0.00	-	0.00
T24	2,169	2,172	**23.91**	108.5	0.00	77.74	-	-	0.00	0.00	-	0.00
T25	4,831	4,833	**14.28**	108.5	0.00	84.68	-	-	0.00	0.00	-	0.00
T26	4,360	4,362	**15.52**	108.5	0.00	83.79	-	-	0.00	0.00	-	0.00
T27	3,951	3,953	**16.70**	108.5	0.00	82.94	-	-	0.00	0.00	-	0.00
T28	3,538	3,540	**18.03**	108.5	0.00	81.98	-	-	0.00	0.00	-	0.00
T29	2,885	2,887	**20.44**	108.5	0.00	80.21	-	-	0.00	0.00	-	0.00
T30	2,414	2,417	**22.57**	108.5	0.00	78.67	-	-	0.00	0.00	-	0.00
T31	1,976	1,980	**25.06**	108.5	0.00	76.93	-	-	0.00	0.00	-	0.00
T32	1,000	1,005	**33.06**	108.5	0.00	71.04	-	-	0.00	0.00	-	0.00
T33	556	563	**39.42**	108.5	0.00	66.01	-	-	0.00	0.00	-	0.00
T34	3,617	3,619	**17.76**	108.5	0.00	82.17	-	-	0.00	0.00	-	0.00
T35	3,638	3,640	**17.69**	108.5	0.00	82.22	-	-	0.00	0.00	-	0.00
T36	2,718	2,719	**21.14**	108.5	0.00	79.69	-	-	0.00	0.00	-	0.00
T37	2,029	2,032	**24.74**	108.5	0.00	77.16	-	-	0.00	0.00	-	0.00
T38	1,566	1,569	**27.88**	108.5	0.00	74.91	-	-	0.00	0.00	-	0.00
T39	3,855	3,856	**17.00**	108.5	0.00	82.72	-	-	0.00	0.00	-	0.00
T40	3,217	3,219	**19.16**	108.5	0.00	81.15	-	-	0.00	0.00	-	0.00
T41	3,622	3,623	**17.75**	108.5	0.00	82.18	-	-	0.00	0.00	-	0.00
T42	2,477	2,479	**22.25**	108.5	0.00	78.89	-	-	0.00	0.00	-	0.00
T43	1,862	1,864	**25.79**	108.5	0.00	76.41	-	-	0.00	0.00	-	0.00
T44	2,422	2,424	**22.53**	108.5	0.00	78.69	-	-	0.00	0.00	-	0.00
T45	2,695	2,697	**21.23**	108.5	0.00	79.62	-	-	0.00	0.00	-	0.00
T46	1,480	1,482	**28.55**	108.5	0.00	74.42	-	-	0.00	0.00	-	0.00
T47	1,152	1,156	**31.46**	108.5	0.00	72.26	-	-	0.00	0.00	-	0.00
T48 Alt	2,384	2,386	**22.73**	108.5	0.00	78.55	-	-	0.00	0.00	-	0.00
T49 Alt	2,702	2,704	**21.21**	108.5	0.00	79.64	-	-	0.00	0.00	-	0.00
T50 Alt	2,030	2,032	**24.73**	108.5	0.00	77.16	-	-	0.00	0.00	-	0.00
T51 Alt	2,571	2,573	**21.78**	108.5	0.00	79.21	-	-	0.00	0.00	-	0.00
T52 Alt	7,529	7,529	**8.97**	108.5	0.00	88.53	-	-	0.00	0.00	-	0.00
T53 Alt	8,383	8,384	**7.70**	108.5	0.00	89.47	-	-	0.00	0.00	-	0.00
T54 Alt	6,950	6,950	**9.92**	108.5	0.00	87.84	-	-	0.00	0.00	-	0.00
T55 Alt	5,565	5,565	**12.58**	108.5	0.00	85.91	-	-	0.00	0.00	-	0.00

To be continued on next page...

Project:
20131290 Rolette Power Development

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DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

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WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T56 Alt	984	988	**33.25**	108.5	0.00	70.89	-	-	0.00	0.00	-	0.00
T57 Alt	4,965	4,965	**13.95**	108.5	0.00	84.92	-	-	0.00	0.00	-	0.00
T58 Alt	2,896	2,898	**20.40**	108.5	0.00	80.24	-	-	0.00	0.00	-	0.00
T59 Alt	2,481	2,483	**22.23**	108.5	0.00	78.90	-	-	0.00	0.00	-	0.00
Sum	43.05											

- Data undefined due to calculation with octave data

Noise sensitive area: H20 Noise sensitive point: User defined (21)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	7,922	7,923	**8.37**	108.5	0.00	88.98	-	-	0.00	0.00	-	0.00
T02	7,259	7,259	**9.40**	108.5	0.00	88.22	-	-	0.00	0.00	-	0.00
T03	6,748	6,749	**10.27**	108.5	0.00	87.58	-	-	0.00	0.00	-	0.00
T04	6,015	6,015	**11.64**	108.5	0.00	86.58	-	-	0.00	0.00	-	0.00
T05	5,515	5,516	**12.68**	108.5	0.00	85.83	-	-	0.00	0.00	-	0.00
T06	4,974	4,974	**13.93**	108.5	0.00	84.93	-	-	0.00	0.00	-	0.00
T07	4,159	4,160	**16.09**	108.5	0.00	83.38	-	-	0.00	0.00	-	0.00
T08	4,354	4,355	**15.54**	108.5	0.00	83.78	-	-	0.00	0.00	-	0.00
T09	3,522	3,524	**18.08**	108.5	0.00	81.94	-	-	0.00	0.00	-	0.00
T10	3,202	3,203	**19.22**	108.5	0.00	81.11	-	-	0.00	0.00	-	0.00
T11	5,535	5,536	**12.64**	108.5	0.00	85.86	-	-	0.00	0.00	-	0.00
T12	5,101	5,102	**13.62**	108.5	0.00	85.15	-	-	0.00	0.00	-	0.00
T13	4,132	4,133	**16.17**	108.5	0.00	83.33	-	-	0.00	0.00	-	0.00
T14	3,704	3,704	**17.48**	108.5	0.00	82.37	-	-	0.00	0.00	-	0.00
T15	4,548	4,548	**15.01**	108.5	0.00	84.16	-	-	0.00	0.00	-	0.00
T16	4,661	4,662	**14.71**	108.5	0.00	84.37	-	-	0.00	0.00	-	0.00
T17	4,060	4,061	**16.38**	108.5	0.00	83.17	-	-	0.00	0.00	-	0.00
T18	3,523	3,524	**18.08**	108.5	0.00	81.94	-	-	0.00	0.00	-	0.00
T19	2,960	2,962	**20.14**	108.5	0.00	80.43	-	-	0.00	0.00	-	0.00
T20	2,387	2,389	**22.71**	108.5	0.00	78.57	-	-	0.00	0.00	-	0.00
T21	2,006	2,008	**24.88**	108.5	0.00	77.05	-	-	0.00	0.00	-	0.00
T22	2,715	2,718	**21.14**	108.5	0.00	79.68	-	-	0.00	0.00	-	0.00
T23	2,148	2,151	**24.03**	108.5	0.00	77.65	-	-	0.00	0.00	-	0.00
T24	1,657	1,661	**27.19**	108.5	0.00	75.41	-	-	0.00	0.00	-	0.00
T25	4,605	4,607	**14.86**	108.5	0.00	84.27	-	-	0.00	0.00	-	0.00
T26	4,147	4,149	**16.12**	108.5	0.00	83.36	-	-	0.00	0.00	-	0.00
T27	3,760	3,761	**17.30**	108.5	0.00	82.51	-	-	0.00	0.00	-	0.00
T28	3,408	3,410	**18.47**	108.5	0.00	81.65	-	-	0.00	0.00	-	0.00
T29	3,033	3,036	**19.85**	108.5	0.00	80.64	-	-	0.00	0.00	-	0.00
T30	2,571	2,575	**21.77**	108.5	0.00	79.21	-	-	0.00	0.00	-	0.00
T31	2,259	2,262	**23.40**	108.5	0.00	78.09	-	-	0.00	0.00	-	0.00
T32	1,503	1,506	**28.37**	108.5	0.00	74.56	-	-	0.00	0.00	-	0.00
T33	1,409	1,412	**29.13**	108.5	0.00	73.99	-	-	0.00	0.00	-	0.00
T34	3,793	3,794	**17.19**	108.5	0.00	82.58	-	-	0.00	0.00	-	0.00
T35	4,031	4,032	**16.46**	108.5	0.00	83.11	-	-	0.00	0.00	-	0.00
T36	3,255	3,257	**19.02**	108.5	0.00	81.26	-	-	0.00	0.00	-	0.00
T37	2,715	2,717	**21.15**	108.5	0.00	79.68	-	-	0.00	0.00	-	0.00
T38	2,448	2,450	**22.39**	108.5	0.00	78.78	-	-	0.00	0.00	-	0.00
T39	4,440	4,441	**15.30**	108.5	0.00	83.95	-	-	0.00	0.00	-	0.00
T40	3,962	3,963	**16.67**	108.5	0.00	82.96	-	-	0.00	0.00	-	0.00
T41	4,501	4,502	**15.13**	108.5	0.00	84.07	-	-	0.00	0.00	-	0.00
T42	3,384	3,385	**18.56**	108.5	0.00	81.59	-	-	0.00	0.00	-	0.00
T43	2,922	2,923	**20.30**	108.5	0.00	80.32	-	-	0.00	0.00	-	0.00

To be continued on next page...

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20131290 Rolette Power Development

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DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

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WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T44	3,635	3,636	**17.71**	108.5	0.00	82.21	-	-	0.00	0.00	-	0.00
T45	3,945	3,946	**16.72**	108.5	0.00	82.92	-	-	0.00	0.00	-	0.00
T46	2,722	2,723	**21.12**	108.5	0.00	79.70	-	-	0.00	0.00	-	0.00
T47	2,398	2,400	**22.66**	108.5	0.00	78.60	-	-	0.00	0.00	-	0.00
T48 Alt	3,658	3,659	**17.63**	108.5	0.00	82.27	-	-	0.00	0.00	-	0.00
T49 Alt	3,973	3,974	**16.64**	108.5	0.00	82.98	-	-	0.00	0.00	-	0.00
T50 Alt	1,141	1,145	**31.56**	108.5	0.00	72.18	-	-	0.00	0.00	-	0.00
T51 Alt	1,579	1,582	**27.78**	108.5	0.00	74.98	-	-	0.00	0.00	-	0.00
T52 Alt	6,409	6,410	**10.88**	108.5	0.00	87.14	-	-	0.00	0.00	-	0.00
T53 Alt	7,218	7,218	**9.47**	108.5	0.00	88.17	-	-	0.00	0.00	-	0.00
T54 Alt	5,872	5,872	**11.93**	108.5	0.00	86.38	-	-	0.00	0.00	-	0.00
T55 Alt	4,474	4,474	**15.21**	108.5	0.00	84.01	-	-	0.00	0.00	-	0.00
T56 Alt	2,147	2,149	**24.04**	108.5	0.00	77.64	-	-	0.00	0.00	-	0.00
T57 Alt	3,757	3,758	**17.31**	108.5	0.00	82.50	-	-	0.00	0.00	-	0.00
T58 Alt	1,642	1,644	**27.32**	108.5	0.00	75.32	-	-	0.00	0.00	-	0.00
T59 Alt	1,224	1,227	**30.77**	108.5	0.00	72.78	-	-	0.00	0.00	-	0.00
Sum	39.88											

- Data undefined due to calculation with octave data

Noise sensitive area: H21 Noise sensitive point: User defined (22)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	5,781	5,781	**12.12**	108.5	0.00	86.24	-	-	0.00	0.00	-	0.00
T02	5,148	5,149	**13.51**	108.5	0.00	85.23	-	-	0.00	0.00	-	0.00
T03	4,631	4,631	**14.79**	108.5	0.00	84.31	-	-	0.00	0.00	-	0.00
T04	3,876	3,877	**16.94**	108.5	0.00	82.77	-	-	0.00	0.00	-	0.00
T05	3,653	3,654	**17.65**	108.5	0.00	82.26	-	-	0.00	0.00	-	0.00
T06	3,151	3,152	**19.41**	108.5	0.00	80.97	-	-	0.00	0.00	-	0.00
T07	2,314	2,315	**23.11**	108.5	0.00	78.29	-	-	0.00	0.00	-	0.00
T08	2,139	2,141	**24.09**	108.5	0.00	77.61	-	-	0.00	0.00	-	0.00
T09	1,362	1,365	**29.52**	108.5	0.00	73.70	-	-	0.00	0.00	-	0.00
T10	961	965	**33.51**	108.5	0.00	70.69	-	-	0.00	0.00	-	0.00
T11	4,312	4,313	**15.65**	108.5	0.00	83.70	-	-	0.00	0.00	-	0.00
T12	3,835	3,836	**17.06**	108.5	0.00	82.68	-	-	0.00	0.00	-	0.00
T13	3,202	3,203	**19.22**	108.5	0.00	81.11	-	-	0.00	0.00	-	0.00
T14	2,653	2,654	**21.42**	108.5	0.00	79.48	-	-	0.00	0.00	-	0.00
T15	4,029	4,030	**16.47**	108.5	0.00	83.11	-	-	0.00	0.00	-	0.00
T16	4,659	4,660	**14.72**	108.5	0.00	84.37	-	-	0.00	0.00	-	0.00
T17	4,080	4,081	**16.32**	108.5	0.00	83.21	-	-	0.00	0.00	-	0.00
T18	3,599	3,600	**17.82**	108.5	0.00	82.13	-	-	0.00	0.00	-	0.00
T19	2,833	2,835	**20.66**	108.5	0.00	80.05	-	-	0.00	0.00	-	0.00
T20	2,585	2,587	**21.71**	108.5	0.00	79.26	-	-	0.00	0.00	-	0.00
T21	2,015	2,017	**24.82**	108.5	0.00	77.10	-	-	0.00	0.00	-	0.00
T22	3,455	3,457	**18.31**	108.5	0.00	81.77	-	-	0.00	0.00	-	0.00
T23	3,066	3,068	**19.72**	108.5	0.00	80.74	-	-	0.00	0.00	-	0.00
T24	2,782	2,784	**20.87**	108.5	0.00	79.89	-	-	0.00	0.00	-	0.00
T25	5,143	5,145	**13.52**	108.5	0.00	85.23	-	-	0.00	0.00	-	0.00
T26	4,790	4,791	**14.38**	108.5	0.00	84.61	-	-	0.00	0.00	-	0.00
T27	4,518	4,519	**15.09**	108.5	0.00	84.10	-	-	0.00	0.00	-	0.00
T28	4,341	4,342	**15.57**	108.5	0.00	83.75	-	-	0.00	0.00	-	0.00
T29	4,420	4,422	**15.35**	108.5	0.00	83.91	-	-	0.00	0.00	-	0.00
T30	4,086	4,088	**16.30**	108.5	0.00	83.23	-	-	0.00	0.00	-	0.00
T31	3,981	3,983	**16.61**	108.5	0.00	83.00	-	-	0.00	0.00	-	0.00

To be continued on next page...

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

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DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T32	3,595	3,596	**17.84**	108.5	0.00	82.12	-	-	0.00	0.00	-	0.00
T33	3,649	3,650	**17.66**	108.5	0.00	82.25	-	-	0.00	0.00	-	0.00
T34	5,063	5,064	**13.71**	108.5	0.00	85.09	-	-	0.00	0.00	-	0.00
T35	5,530	5,531	**12.65**	108.5	0.00	85.86	-	-	0.00	0.00	-	0.00
T36	5,010	5,011	**13.84**	108.5	0.00	85.00	-	-	0.00	0.00	-	0.00
T37	4,669	4,670	**14.69**	108.5	0.00	84.39	-	-	0.00	0.00	-	0.00
T38	4,566	4,567	**14.96**	108.5	0.00	84.19	-	-	0.00	0.00	-	0.00
T39	6,112	6,113	**11.45**	108.5	0.00	86.72	-	-	0.00	0.00	-	0.00
T40	5,839	5,840	**12.00**	108.5	0.00	86.33	-	-	0.00	0.00	-	0.00
T41	6,472	6,473	**10.77**	108.5	0.00	87.22	-	-	0.00	0.00	-	0.00
T42	5,442	5,443	**12.85**	108.5	0.00	85.72	-	-	0.00	0.00	-	0.00
T43	5,111	5,111	**13.60**	108.5	0.00	85.17	-	-	0.00	0.00	-	0.00
T44	5,902	5,902	**11.87**	108.5	0.00	86.42	-	-	0.00	0.00	-	0.00
T45	6,232	6,232	**11.22**	108.5	0.00	86.89	-	-	0.00	0.00	-	0.00
T46	5,010	5,011	**13.84**	108.5	0.00	85.00	-	-	0.00	0.00	-	0.00
T47	4,675	4,676	**14.68**	108.5	0.00	84.40	-	-	0.00	0.00	-	0.00
T48 Alt	5,955	5,956	**11.76**	108.5	0.00	86.50	-	-	0.00	0.00	-	0.00
T49 Alt	6,262	6,263	**11.16**	108.5	0.00	86.94	-	-	0.00	0.00	-	0.00
T50 Alt	2,151	2,153	**24.02**	108.5	0.00	77.66	-	-	0.00	0.00	-	0.00
T51 Alt	1,876	1,878	**25.70**	108.5	0.00	76.48	-	-	0.00	0.00	-	0.00
T52 Alt	4,671	4,672	**14.69**	108.5	0.00	84.39	-	-	0.00	0.00	-	0.00
T53 Alt	5,306	5,307	**13.15**	108.5	0.00	85.50	-	-	0.00	0.00	-	0.00
T54 Alt	4,294	4,294	**15.70**	108.5	0.00	83.66	-	-	0.00	0.00	-	0.00
T55 Alt	2,997	2,998	**20.00**	108.5	0.00	80.54	-	-	0.00	0.00	-	0.00
T56 Alt	4,415	4,415	**15.37**	108.5	0.00	83.90	-	-	0.00	0.00	-	0.00
T57 Alt	1,899	1,901	**25.56**	108.5	0.00	76.58	-	-	0.00	0.00	-	0.00
T58 Alt	848	852	**34.91**	108.5	0.00	69.61	-	-	0.00	0.00	-	0.00
T59 Alt	1,168	1,171	**31.31**	108.5	0.00	72.37	-	-	0.00	0.00	-	0.00
Sum	40.62											

- Data undefined due to calculation with octave data

Noise sensitive area: H22 Noise sensitive point: User defined (23)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	4,788	4,789	**14.39**	108.5	0.00	84.60	-	-	0.00	0.00	-	0.00
T02	4,247	4,248	**15.83**	108.5	0.00	83.56	-	-	0.00	0.00	-	0.00
T03	3,752	3,753	**17.32**	108.5	0.00	82.49	-	-	0.00	0.00	-	0.00
T04	3,025	3,026	**19.89**	108.5	0.00	80.62	-	-	0.00	0.00	-	0.00
T05	3,328	3,328	**18.76**	108.5	0.00	81.44	-	-	0.00	0.00	-	0.00
T06	2,981	2,982	**20.06**	108.5	0.00	80.49	-	-	0.00	0.00	-	0.00
T07	2,357	2,358	**22.88**	108.5	0.00	78.45	-	-	0.00	0.00	-	0.00
T08	1,443	1,445	**28.85**	108.5	0.00	74.20	-	-	0.00	0.00	-	0.00
T09	1,336	1,340	**29.74**	108.5	0.00	73.54	-	-	0.00	0.00	-	0.00
T10	1,127	1,130	**31.71**	108.5	0.00	72.07	-	-	0.00	0.00	-	0.00
T11	4,608	4,609	**14.85**	108.5	0.00	84.27	-	-	0.00	0.00	-	0.00
T12	4,162	4,163	**16.08**	108.5	0.00	83.39	-	-	0.00	0.00	-	0.00
T13	3,918	3,919	**16.81**	108.5	0.00	82.86	-	-	0.00	0.00	-	0.00
T14	3,409	3,410	**18.47**	108.5	0.00	81.65	-	-	0.00	0.00	-	0.00
T15	4,880	4,881	**14.16**	108.5	0.00	84.77	-	-	0.00	0.00	-	0.00
T16	5,721	5,722	**12.24**	108.5	0.00	86.15	-	-	0.00	0.00	-	0.00
T17	5,207	5,208	**13.38**	108.5	0.00	85.33	-	-	0.00	0.00	-	0.00
T18	4,804	4,805	**14.35**	108.5	0.00	84.63	-	-	0.00	0.00	-	0.00
T19	4,065	4,066	**16.36**	108.5	0.00	83.18	-	-	0.00	0.00	-	0.00

To be continued on next page...

Project:
20131290 Rolette Power Development

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DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T20	3,975	3,976	**16.63**	108.5	0.00	82.99	-	-	0.00	0.00	-	0.00
T21	3,457	3,458	**18.31**	108.5	0.00	81.78	-	-	0.00	0.00	-	0.00
T22	4,896	4,897	**14.12**	108.5	0.00	84.80	-	-	0.00	0.00	-	0.00
T23	4,578	4,579	**14.93**	108.5	0.00	84.22	-	-	0.00	0.00	-	0.00
T24	4,345	4,347	**15.56**	108.5	0.00	83.76	-	-	0.00	0.00	-	0.00
T25	6,406	6,407	**10.89**	108.5	0.00	87.13	-	-	0.00	0.00	-	0.00
T26	6,111	6,112	**11.45**	108.5	0.00	86.72	-	-	0.00	0.00	-	0.00
T27	5,893	5,894	**11.89**	108.5	0.00	86.41	-	-	0.00	0.00	-	0.00
T28	5,776	5,777	**12.13**	108.5	0.00	86.23	-	-	0.00	0.00	-	0.00
T29	5,957	5,958	**11.76**	108.5	0.00	86.50	-	-	0.00	0.00	-	0.00
T30	5,652	5,654	**12.39**	108.5	0.00	86.05	-	-	0.00	0.00	-	0.00
T31	5,573	5,574	**12.56**	108.5	0.00	85.92	-	-	0.00	0.00	-	0.00
T32	5,196	5,196	**13.40**	108.5	0.00	85.31	-	-	0.00	0.00	-	0.00
T33	5,228	5,229	**13.33**	108.5	0.00	85.37	-	-	0.00	0.00	-	0.00
T34	6,557	6,558	**10.61**	108.5	0.00	87.34	-	-	0.00	0.00	-	0.00
T35	7,065	7,065	**9.73**	108.5	0.00	87.98	-	-	0.00	0.00	-	0.00
T36	6,594	6,595	**10.54**	108.5	0.00	87.38	-	-	0.00	0.00	-	0.00
T37	6,273	6,274	**11.14**	108.5	0.00	86.95	-	-	0.00	0.00	-	0.00
T38	6,168	6,169	**11.34**	108.5	0.00	86.80	-	-	0.00	0.00	-	0.00
T39	7,673	7,674	**8.75**	108.5	0.00	88.70	-	-	0.00	0.00	-	0.00
T40	7,432	7,432	**9.12**	108.5	0.00	88.42	-	-	0.00	0.00	-	0.00
T41	8,073	8,073	**8.15**	108.5	0.00	89.14	-	-	0.00	0.00	-	0.00
T42	7,047	7,048	**9.75**	108.5	0.00	87.96	-	-	0.00	0.00	-	0.00
T43	6,707	6,707	**10.34**	108.5	0.00	87.53	-	-	0.00	0.00	-	0.00
T44	7,475	7,476	**9.06**	108.5	0.00	88.47	-	-	0.00	0.00	-	0.00
T45	7,788	7,789	**8.57**	108.5	0.00	88.83	-	-	0.00	0.00	-	0.00
T46	6,565	6,566	**10.60**	108.5	0.00	87.35	-	-	0.00	0.00	-	0.00
T47	6,161	6,161	**11.36**	108.5	0.00	86.79	-	-	0.00	0.00	-	0.00
T48 Alt	7,474	7,475	**9.06**	108.5	0.00	88.47	-	-	0.00	0.00	-	0.00
T49 Alt	7,756	7,757	**8.62**	108.5	0.00	88.79	-	-	0.00	0.00	-	0.00
T50 Alt	3,744	3,745	**17.35**	108.5	0.00	82.47	-	-	0.00	0.00	-	0.00
T51 Alt	3,413	3,414	**18.46**	108.5	0.00	81.67	-	-	0.00	0.00	-	0.00
T52 Alt	4,376	4,377	**15.47**	108.5	0.00	83.82	-	-	0.00	0.00	-	0.00
T53 Alt	4,720	4,721	**14.56**	108.5	0.00	84.48	-	-	0.00	0.00	-	0.00
T54 Alt	4,236	4,237	**15.87**	108.5	0.00	83.54	-	-	0.00	0.00	-	0.00
T55 Alt	3,286	3,287	**18.91**	108.5	0.00	81.34	-	-	0.00	0.00	-	0.00
T56 Alt	5,986	5,986	**11.70**	108.5	0.00	86.54	-	-	0.00	0.00	-	0.00
T57 Alt	2,106	2,108	**24.28**	108.5	0.00	77.48	-	-	0.00	0.00	-	0.00
T58 Alt	2,441	2,442	**22.43**	108.5	0.00	78.76	-	-	0.00	0.00	-	0.00
T59 Alt	2,772	2,773	**20.91**	108.5	0.00	79.86	-	-	0.00	0.00	-	0.00

Sum 37.41

- Data undefined due to calculation with octave data

Noise sensitive area: H23 Noise sensitive point: User defined (24)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	4,552	4,553	**15.00**	108.5	0.00	84.17	-	-	0.00	0.00	-	0.00
T02	4,007	4,008	**16.53**	108.5	0.00	83.06	-	-	0.00	0.00	-	0.00
T03	3,512	3,513	**18.12**	108.5	0.00	81.91	-	-	0.00	0.00	-	0.00
T04	2,783	2,784	**20.86**	108.5	0.00	79.89	-	-	0.00	0.00	-	0.00
T05	3,104	3,105	**19.58**	108.5	0.00	80.84	-	-	0.00	0.00	-	0.00
T06	2,772	2,773	**20.91**	108.5	0.00	79.86	-	-	0.00	0.00	-	0.00
T07	2,182	2,183	**23.85**	108.5	0.00	77.78	-	-	0.00	0.00	-	0.00

To be continued on next page...

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DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T08	1,220	1,223	**30.80**	108.5	0.00	72.75	-	-	0.00	0.00	-	0.00
T09	1,216	1,220	**30.83**	108.5	0.00	72.73	-	-	0.00	0.00	-	0.00
T10	1,084	1,088	**32.15**	108.5	0.00	71.73	-	-	0.00	0.00	-	0.00
T11	4,427	4,428	**15.33**	108.5	0.00	83.92	-	-	0.00	0.00	-	0.00
T12	3,988	3,989	**16.59**	108.5	0.00	83.02	-	-	0.00	0.00	-	0.00
T13	3,793	3,794	**17.20**	108.5	0.00	82.58	-	-	0.00	0.00	-	0.00
T14	3,297	3,298	**18.87**	108.5	0.00	81.36	-	-	0.00	0.00	-	0.00
T15	4,765	4,766	**14.45**	108.5	0.00	84.56	-	-	0.00	0.00	-	0.00
T16	5,634	5,635	**12.43**	108.5	0.00	86.02	-	-	0.00	0.00	-	0.00
T17	5,134	5,134	**13.55**	108.5	0.00	85.21	-	-	0.00	0.00	-	0.00
T18	4,749	4,749	**14.49**	108.5	0.00	84.53	-	-	0.00	0.00	-	0.00
T19	4,021	4,022	**16.49**	108.5	0.00	83.09	-	-	0.00	0.00	-	0.00
T20	3,966	3,968	**16.66**	108.5	0.00	82.97	-	-	0.00	0.00	-	0.00
T21	3,467	3,468	**18.27**	108.5	0.00	81.80	-	-	0.00	0.00	-	0.00
T22	4,894	4,895	**14.12**	108.5	0.00	84.80	-	-	0.00	0.00	-	0.00
T23	4,600	4,601	**14.87**	108.5	0.00	84.26	-	-	0.00	0.00	-	0.00
T24	4,391	4,393	**15.43**	108.5	0.00	83.85	-	-	0.00	0.00	-	0.00
T25	6,353	6,354	**10.99**	108.5	0.00	87.06	-	-	0.00	0.00	-	0.00
T26	6,072	6,073	**11.53**	108.5	0.00	86.67	-	-	0.00	0.00	-	0.00
T27	5,868	5,869	**11.94**	108.5	0.00	86.37	-	-	0.00	0.00	-	0.00
T28	5,769	5,770	**12.14**	108.5	0.00	86.22	-	-	0.00	0.00	-	0.00
T29	5,985	5,986	**11.70**	108.5	0.00	86.54	-	-	0.00	0.00	-	0.00
T30	5,695	5,697	**12.30**	108.5	0.00	86.11	-	-	0.00	0.00	-	0.00
T31	5,635	5,636	**12.43**	108.5	0.00	86.02	-	-	0.00	0.00	-	0.00
T32	5,295	5,296	**13.17**	108.5	0.00	85.48	-	-	0.00	0.00	-	0.00
T33	5,347	5,348	**13.06**	108.5	0.00	85.56	-	-	0.00	0.00	-	0.00
T34	6,566	6,567	**10.60**	108.5	0.00	87.35	-	-	0.00	0.00	-	0.00
T35	7,089	7,089	**9.68**	108.5	0.00	88.01	-	-	0.00	0.00	-	0.00
T36	6,647	6,648	**10.45**	108.5	0.00	87.45	-	-	0.00	0.00	-	0.00
T37	6,350	6,350	**11.00**	108.5	0.00	87.06	-	-	0.00	0.00	-	0.00
T38	6,265	6,266	**11.16**	108.5	0.00	86.94	-	-	0.00	0.00	-	0.00
T39	7,710	7,710	**8.69**	108.5	0.00	88.74	-	-	0.00	0.00	-	0.00
T40	7,492	7,493	**9.03**	108.5	0.00	88.49	-	-	0.00	0.00	-	0.00
T41	8,142	8,142	**8.05**	108.5	0.00	89.21	-	-	0.00	0.00	-	0.00
T42	7,132	7,132	**9.61**	108.5	0.00	88.06	-	-	0.00	0.00	-	0.00
T43	6,812	6,813	**10.16**	108.5	0.00	87.67	-	-	0.00	0.00	-	0.00
T44	7,598	7,599	**8.86**	108.5	0.00	88.61	-	-	0.00	0.00	-	0.00
T45	7,920	7,920	**8.37**	108.5	0.00	88.97	-	-	0.00	0.00	-	0.00
T46	6,697	6,698	**10.36**	108.5	0.00	87.52	-	-	0.00	0.00	-	0.00
T47	6,315	6,316	**11.06**	108.5	0.00	87.01	-	-	0.00	0.00	-	0.00
T48 Alt	7,620	7,621	**8.83**	108.5	0.00	88.64	-	-	0.00	0.00	-	0.00
T49 Alt	7,910	7,911	**8.39**	108.5	0.00	88.96	-	-	0.00	0.00	-	0.00
T50 Alt	3,812	3,813	**17.14**	108.5	0.00	82.62	-	-	0.00	0.00	-	0.00
T51 Alt	3,453	3,454	**18.32**	108.5	0.00	81.77	-	-	0.00	0.00	-	0.00
T52 Alt	4,149	4,150	**16.12**	108.5	0.00	83.36	-	-	0.00	0.00	-	0.00
T53 Alt	4,481	4,481	**15.19**	108.5	0.00	84.03	-	-	0.00	0.00	-	0.00
T54 Alt	4,026	4,027	**16.48**	108.5	0.00	83.10	-	-	0.00	0.00	-	0.00
T55 Alt	3,119	3,120	**19.53**	108.5	0.00	80.88	-	-	0.00	0.00	-	0.00
T56 Alt	6,110	6,110	**11.46**	108.5	0.00	86.72	-	-	0.00	0.00	-	0.00
T57 Alt	1,960	1,962	**25.17**	108.5	0.00	76.85	-	-	0.00	0.00	-	0.00
T58 Alt	2,517	2,518	**22.05**	108.5	0.00	79.02	-	-	0.00	0.00	-	0.00
T59 Alt	2,868	2,869	**20.51**	108.5	0.00	80.15	-	-	0.00	0.00	-	0.00

Sum 38.18

- Data undefined due to calculation with octave data

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

Description:
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Calculated:
2/16/2015 4:05 PM/2.9.285

DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

Noise sensitive area: H24 Noise sensitive point: User defined (25)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	3,086	3,087	**19.65**	108.5	0.00	80.79	-	-	0.00	0.00	-	0.00
T02	3,156	3,157	**19.39**	108.5	0.00	80.99	-	-	0.00	0.00	-	0.00
T03	3,082	3,083	**19.67**	108.5	0.00	80.78	-	-	0.00	0.00	-	0.00
T04	3,077	3,078	**19.69**	108.5	0.00	80.77	-	-	0.00	0.00	-	0.00
T05	4,291	4,292	**15.71**	108.5	0.00	83.65	-	-	0.00	0.00	-	0.00
T06	4,473	4,474	**15.21**	108.5	0.00	84.01	-	-	0.00	0.00	-	0.00
T07	4,628	4,628	**14.80**	108.5	0.00	84.31	-	-	0.00	0.00	-	0.00
T08	3,698	3,699	**17.50**	108.5	0.00	82.36	-	-	0.00	0.00	-	0.00
T09	4,453	4,454	**15.26**	108.5	0.00	83.97	-	-	0.00	0.00	-	0.00
T10	4,618	4,618	**14.83**	108.5	0.00	84.29	-	-	0.00	0.00	-	0.00
T11	6,108	6,108	**11.46**	108.5	0.00	86.72	-	-	0.00	0.00	-	0.00
T12	5,878	5,879	**11.92**	108.5	0.00	86.39	-	-	0.00	0.00	-	0.00
T13	6,332	6,332	**11.03**	108.5	0.00	87.03	-	-	0.00	0.00	-	0.00
T14	6,042	6,043	**11.59**	108.5	0.00	86.62	-	-	0.00	0.00	-	0.00
T15	7,260	7,260	**9.40**	108.5	0.00	88.22	-	-	0.00	0.00	-	0.00
T16	8,317	8,317	**7.80**	108.5	0.00	89.40	-	-	0.00	0.00	-	0.00
T17	7,984	7,985	**8.28**	108.5	0.00	89.05	-	-	0.00	0.00	-	0.00
T18	7,764	7,765	**8.61**	108.5	0.00	88.80	-	-	0.00	0.00	-	0.00
T19	7,173	7,173	**9.54**	108.5	0.00	88.11	-	-	0.00	0.00	-	0.00
T20	7,318	7,319	**9.31**	108.5	0.00	88.29	-	-	0.00	0.00	-	0.00
T21	6,930	6,930	**9.95**	108.5	0.00	87.81	-	-	0.00	0.00	-	0.00
T22	8,237	8,238	**7.91**	108.5	0.00	89.32	-	-	0.00	0.00	-	0.00
T23	8,070	8,071	**8.15**	108.5	0.00	89.14	-	-	0.00	0.00	-	0.00
T24	7,957	7,958	**8.32**	108.5	0.00	89.02	-	-	0.00	0.00	-	0.00
T25	9,294	9,295	**6.50**	108.5	0.00	90.36	-	-	0.00	0.00	-	0.00
T26	9,135	9,136	**6.70**	108.5	0.00	90.21	-	-	0.00	0.00	-	0.00
T27	9,037	9,037	**6.83**	108.5	0.00	90.12	-	-	0.00	0.00	-	0.00
T28	9,047	9,048	**6.81**	108.5	0.00	90.13	-	-	0.00	0.00	-	0.00
T29	9,441	9,442	**6.31**	108.5	0.00	90.50	-	-	0.00	0.00	-	0.00
T30	9,224	9,225	**6.58**	108.5	0.00	90.30	-	-	0.00	0.00	-	0.00
T31	9,233	9,233	**6.57**	108.5	0.00	90.31	-	-	0.00	0.00	-	0.00
T32	8,993	8,994	**6.88**	108.5	0.00	90.08	-	-	0.00	0.00	-	0.00
T33	9,071	9,071	**6.78**	108.5	0.00	90.15	-	-	0.00	0.00	-	0.00
T34	9,914	9,915	**5.74**	108.5	0.00	90.93	-	-	0.00	0.00	-	0.00
T35	10,507	10,508	**5.07**	108.5	0.00	91.43	-	-	0.00	0.00	-	0.00
T36	10,203	10,204	**5.41**	108.5	0.00	91.18	-	-	0.00	0.00	-	0.00
T37	9,987	9,988	**5.66**	108.5	0.00	90.99	-	-	0.00	0.00	-	0.00
T38	9,953	9,954	**5.70**	108.5	0.00	90.96	-	-	0.00	0.00	-	0.00
T39	11,179	11,180	**4.35**	108.5	0.00	91.97	-	-	0.00	0.00	-	0.00
T40	11,066	11,067	**4.47**	108.5	0.00	91.88	-	-	0.00	0.00	-	0.00
T41	11,742	11,742	**3.78**	108.5	0.00	92.39	-	-	0.00	0.00	-	0.00
T42	10,787	10,788	**4.76**	108.5	0.00	91.66	-	-	0.00	0.00	-	0.00
T43	10,516	10,516	**5.06**	108.5	0.00	91.44	-	-	0.00	0.00	-	0.00
T44	11,324	11,324	**4.20**	108.5	0.00	92.08	-	-	0.00	0.00	-	0.00
T45	11,651	11,652	**3.87**	108.5	0.00	92.33	-	-	0.00	0.00	-	0.00
T46	10,429	10,429	**5.16**	108.5	0.00	91.36	-	-	0.00	0.00	-	0.00
T47	10,040	10,041	**5.60**	108.5	0.00	91.04	-	-	0.00	0.00	-	0.00
T48 Alt	11,352	11,352	**4.17**	108.5	0.00	92.10	-	-	0.00	0.00	-	0.00
T49 Alt	11,636	11,636	**3.89**	108.5	0.00	92.32	-	-	0.00	0.00	-	0.00
T50 Alt	7,453	7,453	**9.09**	108.5	0.00	88.45	-	-	0.00	0.00	-	0.00
T51 Alt	7,023	7,024	**9.80**	108.5	0.00	87.93	-	-	0.00	0.00	-	0.00
T52 Alt	4,790	4,791	**14.38**	108.5	0.00	84.61	-	-	0.00	0.00	-	0.00
T53 Alt	4,260	4,261	**15.80**	108.5	0.00	83.59	-	-	0.00	0.00	-	0.00
T54 Alt	5,214	5,215	**13.36**	108.5	0.00	85.35	-	-	0.00	0.00	-	0.00
T55 Alt	5,325	5,325	**13.11**	108.5	0.00	85.53	-	-	0.00	0.00	-	0.00

To be continued on next page...

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
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2/16/2015 4:05 PM/2.9.285

DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T56 Alt	9,837	9,837	**5.84**	108.5	0.00	90.86	-	-	0.00	0.00	-	0.00
T57 Alt	4,762	4,763	**14.45**	108.5	0.00	84.56	-	-	0.00	0.00	-	0.00
T58 Alt	6,199	6,200	**11.28**	108.5	0.00	86.85	-	-	0.00	0.00	-	0.00
T59 Alt	6,576	6,576	**10.58**	108.5	0.00	87.36	-	-	0.00	0.00	-	0.00
Sum	29.96											

- Data undefined due to calculation with octave data

Noise sensitive area: H25 Noise sensitive point: User defined (26)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	3,291	3,292	**18.89**	108.5	0.00	81.35	-	-	0.00	0.00	-	0.00
T02	3,055	3,056	**19.77**	108.5	0.00	80.70	-	-	0.00	0.00	-	0.00
T03	2,758	2,759	**20.97**	108.5	0.00	79.82	-	-	0.00	0.00	-	0.00
T04	2,410	2,411	**22.60**	108.5	0.00	78.64	-	-	0.00	0.00	-	0.00
T05	3,490	3,490	**18.19**	108.5	0.00	81.86	-	-	0.00	0.00	-	0.00
T06	3,522	3,523	**18.08**	108.5	0.00	81.94	-	-	0.00	0.00	-	0.00
T07	3,479	3,480	**18.23**	108.5	0.00	81.83	-	-	0.00	0.00	-	0.00
T08	2,438	2,439	**22.45**	108.5	0.00	78.74	-	-	0.00	0.00	-	0.00
T09	3,123	3,124	**19.51**	108.5	0.00	80.90	-	-	0.00	0.00	-	0.00
T10	3,244	3,246	**19.06**	108.5	0.00	81.23	-	-	0.00	0.00	-	0.00
T11	5,278	5,279	**13.21**	108.5	0.00	85.45	-	-	0.00	0.00	-	0.00
T12	4,970	4,970	**13.94**	108.5	0.00	84.93	-	-	0.00	0.00	-	0.00
T13	5,246	5,246	**13.29**	108.5	0.00	85.40	-	-	0.00	0.00	-	0.00
T14	4,888	4,889	**14.14**	108.5	0.00	84.78	-	-	0.00	0.00	-	0.00
T15	6,213	6,213	**11.26**	108.5	0.00	86.87	-	-	0.00	0.00	-	0.00
T16	7,232	7,233	**9.45**	108.5	0.00	88.19	-	-	0.00	0.00	-	0.00
T17	6,843	6,844	**10.10**	108.5	0.00	87.71	-	-	0.00	0.00	-	0.00
T18	6,571	6,571	**10.59**	108.5	0.00	87.35	-	-	0.00	0.00	-	0.00
T19	5,932	5,932	**11.81**	108.5	0.00	86.46	-	-	0.00	0.00	-	0.00
T20	6,023	6,024	**11.63**	108.5	0.00	86.60	-	-	0.00	0.00	-	0.00
T21	5,601	5,601	**12.50**	108.5	0.00	85.97	-	-	0.00	0.00	-	0.00
T22	6,952	6,953	**9.92**	108.5	0.00	87.84	-	-	0.00	0.00	-	0.00
T23	6,746	6,747	**10.27**	108.5	0.00	87.58	-	-	0.00	0.00	-	0.00
T24	6,605	6,606	**10.53**	108.5	0.00	87.40	-	-	0.00	0.00	-	0.00
T25	8,141	8,142	**8.05**	108.5	0.00	89.21	-	-	0.00	0.00	-	0.00
T26	7,942	7,943	**8.34**	108.5	0.00	89.00	-	-	0.00	0.00	-	0.00
T27	7,810	7,811	**8.54**	108.5	0.00	88.85	-	-	0.00	0.00	-	0.00
T28	7,787	7,788	**8.57**	108.5	0.00	88.83	-	-	0.00	0.00	-	0.00
T29	8,128	8,129	**8.07**	108.5	0.00	89.20	-	-	0.00	0.00	-	0.00
T30	7,888	7,889	**8.42**	108.5	0.00	88.94	-	-	0.00	0.00	-	0.00
T31	7,874	7,875	**8.44**	108.5	0.00	88.92	-	-	0.00	0.00	-	0.00
T32	7,601	7,601	**8.86**	108.5	0.00	88.62	-	-	0.00	0.00	-	0.00
T33	7,668	7,668	**8.76**	108.5	0.00	88.69	-	-	0.00	0.00	-	0.00
T34	8,637	8,638	**7.35**	108.5	0.00	89.73	-	-	0.00	0.00	-	0.00
T35	9,210	9,210	**6.60**	108.5	0.00	90.29	-	-	0.00	0.00	-	0.00
T36	8,861	8,861	**7.06**	108.5	0.00	89.95	-	-	0.00	0.00	-	0.00
T37	8,617	8,617	**7.38**	108.5	0.00	89.71	-	-	0.00	0.00	-	0.00
T38	8,565	8,565	**7.45**	108.5	0.00	89.65	-	-	0.00	0.00	-	0.00
T39	9,867	9,868	**5.80**	108.5	0.00	90.88	-	-	0.00	0.00	-	0.00
T40	9,719	9,719	**5.98**	108.5	0.00	90.75	-	-	0.00	0.00	-	0.00
T41	10,386	10,387	**5.20**	108.5	0.00	91.33	-	-	0.00	0.00	-	0.00
T42	9,411	9,412	**6.35**	108.5	0.00	90.47	-	-	0.00	0.00	-	0.00
T43	9,122	9,123	**6.72**	108.5	0.00	90.20	-	-	0.00	0.00	-	0.00

To be continued on next page...

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20131290 Rolette Power Development

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DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T44	9,921	9,921	**5.74**	108.5	0.00	90.93	-	-	0.00	0.00	-	0.00
T45	10,245	10,245	**5.36**	108.5	0.00	91.21	-	-	0.00	0.00	-	0.00
T46	9,022	9,022	**6.85**	108.5	0.00	90.11	-	-	0.00	0.00	-	0.00
T47	8,630	8,630	**7.36**	108.5	0.00	89.72	-	-	0.00	0.00	-	0.00
T48 Alt	9,942	9,942	**5.71**	108.5	0.00	90.95	-	-	0.00	0.00	-	0.00
T49 Alt	10,226	10,226	**5.39**	108.5	0.00	91.19	-	-	0.00	0.00	-	0.00
T50 Alt	6,077	6,077	**11.52**	108.5	0.00	86.67	-	-	0.00	0.00	-	0.00
T51 Alt	5,666	5,666	**12.36**	108.5	0.00	86.07	-	-	0.00	0.00	-	0.00
T52 Alt	4,239	4,240	**15.86**	108.5	0.00	83.55	-	-	0.00	0.00	-	0.00
T53 Alt	4,007	4,008	**16.54**	108.5	0.00	83.06	-	-	0.00	0.00	-	0.00
T54 Alt	4,498	4,499	**15.14**	108.5	0.00	84.06	-	-	0.00	0.00	-	0.00
T55 Alt	4,290	4,291	**15.71**	108.5	0.00	83.65	-	-	0.00	0.00	-	0.00
T56 Alt	8,433	8,433	**7.64**	108.5	0.00	89.52	-	-	0.00	0.00	-	0.00
T57 Alt	3,537	3,538	**18.03**	108.5	0.00	81.98	-	-	0.00	0.00	-	0.00
T58 Alt	4,808	4,809	**14.34**	108.5	0.00	84.64	-	-	0.00	0.00	-	0.00
T59 Alt	5,178	5,179	**13.44**	108.5	0.00	85.28	-	-	0.00	0.00	-	0.00

Sum 32.24

- Data undefined due to calculation with octave data

Noise sensitive area: H26 Noise sensitive point: User defined (27)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	4,648	4,649	**14.74**	108.5	0.00	84.35	-	-	0.00	0.00	-	0.00
T02	5,095	5,096	**13.64**	108.5	0.00	85.14	-	-	0.00	0.00	-	0.00
T03	5,282	5,283	**13.20**	108.5	0.00	85.46	-	-	0.00	0.00	-	0.00
T04	5,585	5,586	**12.53**	108.5	0.00	85.94	-	-	0.00	0.00	-	0.00
T05	6,782	6,783	**10.21**	108.5	0.00	87.63	-	-	0.00	0.00	-	0.00
T06	7,087	7,087	**9.69**	108.5	0.00	88.01	-	-	0.00	0.00	-	0.00
T07	7,396	7,396	**9.18**	108.5	0.00	88.38	-	-	0.00	0.00	-	0.00
T08	6,559	6,560	**10.61**	108.5	0.00	87.34	-	-	0.00	0.00	-	0.00
T09	7,342	7,342	**9.27**	108.5	0.00	88.32	-	-	0.00	0.00	-	0.00
T10	7,524	7,525	**8.98**	108.5	0.00	88.53	-	-	0.00	0.00	-	0.00
T11	8,514	8,515	**7.52**	108.5	0.00	89.60	-	-	0.00	0.00	-	0.00
T12	8,381	8,382	**7.71**	108.5	0.00	89.47	-	-	0.00	0.00	-	0.00
T13	9,002	9,002	**6.87**	108.5	0.00	90.09	-	-	0.00	0.00	-	0.00
T14	8,783	8,783	**7.16**	108.5	0.00	89.87	-	-	0.00	0.00	-	0.00
T15	9,867	9,868	**5.80**	108.5	0.00	90.88	-	-	0.00	0.00	-	0.00
T16	10,946	10,946	**4.60**	108.5	0.00	91.79	-	-	0.00	0.00	-	0.00
T17	10,680	10,681	**4.88**	108.5	0.00	91.57	-	-	0.00	0.00	-	0.00
T18	10,517	10,517	**5.06**	108.5	0.00	91.44	-	-	0.00	0.00	-	0.00
T19	9,976	9,977	**5.67**	108.5	0.00	90.98	-	-	0.00	0.00	-	0.00
T20	10,168	10,168	**5.45**	108.5	0.00	91.14	-	-	0.00	0.00	-	0.00
T21	9,806	9,807	**5.87**	108.5	0.00	90.83	-	-	0.00	0.00	-	0.00
T22	11,073	11,074	**4.46**	108.5	0.00	91.89	-	-	0.00	0.00	-	0.00
T23	10,939	10,940	**4.60**	108.5	0.00	91.78	-	-	0.00	0.00	-	0.00
T24	10,847	10,848	**4.70**	108.5	0.00	91.71	-	-	0.00	0.00	-	0.00
T25	11,987	11,988	**3.54**	108.5	0.00	92.58	-	-	0.00	0.00	-	0.00
T26	11,873	11,874	**3.65**	108.5	0.00	92.49	-	-	0.00	0.00	-	0.00
T27	11,811	11,812	**3.72**	108.5	0.00	92.45	-	-	0.00	0.00	-	0.00
T28	11,855	11,856	**3.67**	108.5	0.00	92.48	-	-	0.00	0.00	-	0.00
T29	12,297	12,298	**3.25**	108.5	0.00	92.80	-	-	0.00	0.00	-	0.00
T30	12,101	12,102	**3.43**	108.5	0.00	92.66	-	-	0.00	0.00	-	0.00
T31	12,126	12,126	**3.41**	108.5	0.00	92.67	-	-	0.00	0.00	-	0.00

To be continued on next page...

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
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DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T32	11,904	11,904	**3.63**	108.5	0.00	92.51	-	-	0.00	0.00	-	0.00
T33	11,980	11,981	**3.55**	108.5	0.00	92.57	-	-	0.00	0.00	-	0.00
T34	12,735	12,736	**2.84**	108.5	0.00	93.10	-	-	0.00	0.00	-	0.00
T35	13,346	13,346	**2.30**	108.5	0.00	93.51	-	-	0.00	0.00	-	0.00
T36	13,084	13,084	**2.53**	108.5	0.00	93.33	-	-	0.00	0.00	-	0.00
T37	12,888	12,888	**2.71**	108.5	0.00	93.20	-	-	0.00	0.00	-	0.00
T38	12,862	12,862	**2.73**	108.5	0.00	93.19	-	-	0.00	0.00	-	0.00
T39	14,030	14,031	**1.73**	108.5	0.00	93.94	-	-	0.00	0.00	-	0.00
T40	13,949	13,949	**1.79**	108.5	0.00	93.89	-	-	0.00	0.00	-	0.00
T41	14,630	14,631	**1.24**	108.5	0.00	94.31	-	-	0.00	0.00	-	0.00
T42	13,690	13,691	**2.01**	108.5	0.00	93.73	-	-	0.00	0.00	-	0.00
T43	13,426	13,427	**2.23**	108.5	0.00	93.56	-	-	0.00	0.00	-	0.00
T44	14,233	14,234	**1.56**	108.5	0.00	94.07	-	-	0.00	0.00	-	0.00
T45	14,558	14,558	**1.30**	108.5	0.00	94.26	-	-	0.00	0.00	-	0.00
T46	13,335	13,335	**2.31**	108.5	0.00	93.50	-	-	0.00	0.00	-	0.00
T47	12,930	12,930	**2.67**	108.5	0.00	93.23	-	-	0.00	0.00	-	0.00
T48 Alt	14,249	14,249	**1.55**	108.5	0.00	94.08	-	-	0.00	0.00	-	0.00
T49 Alt	14,525	14,525	**1.33**	108.5	0.00	94.24	-	-	0.00	0.00	-	0.00
T50 Alt	10,357	10,358	**5.24**	108.5	0.00	91.31	-	-	0.00	0.00	-	0.00
T51 Alt	9,919	9,919	**5.74**	108.5	0.00	90.93	-	-	0.00	0.00	-	0.00
T52 Alt	6,973	6,974	**9.88**	108.5	0.00	87.87	-	-	0.00	0.00	-	0.00
T53 Alt	6,153	6,154	**11.37**	108.5	0.00	86.78	-	-	0.00	0.00	-	0.00
T54 Alt	7,547	7,548	**8.94**	108.5	0.00	88.56	-	-	0.00	0.00	-	0.00
T55 Alt	7,975	7,976	**8.29**	108.5	0.00	89.04	-	-	0.00	0.00	-	0.00
T56 Alt	12,746	12,746	**2.84**	108.5	0.00	93.11	-	-	0.00	0.00	-	0.00
T57 Alt	7,584	7,584	**8.89**	108.5	0.00	88.60	-	-	0.00	0.00	-	0.00
T58 Alt	9,109	9,110	**6.73**	108.5	0.00	90.19	-	-	0.00	0.00	-	0.00
T59 Alt	9,487	9,487	**6.26**	108.5	0.00	90.54	-	-	0.00	0.00	-	0.00
Sum	24.94											

- Data undefined due to calculation with octave data

Noise sensitive area: H27 Noise sensitive point: User defined (28)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	4,957	4,957	**13.97**	108.5	0.00	84.91	-	-	0.00	0.00	-	0.00
T02	5,098	5,099	**13.63**	108.5	0.00	85.15	-	-	0.00	0.00	-	0.00
T03	5,040	5,041	**13.77**	108.5	0.00	85.05	-	-	0.00	0.00	-	0.00
T04	4,999	5,000	**13.87**	108.5	0.00	84.98	-	-	0.00	0.00	-	0.00
T05	6,195	6,196	**11.29**	108.5	0.00	86.84	-	-	0.00	0.00	-	0.00
T06	6,322	6,323	**11.05**	108.5	0.00	87.02	-	-	0.00	0.00	-	0.00
T07	6,354	6,354	**10.99**	108.5	0.00	87.06	-	-	0.00	0.00	-	0.00
T08	5,313	5,314	**13.13**	108.5	0.00	85.51	-	-	0.00	0.00	-	0.00
T09	5,956	5,957	**11.76**	108.5	0.00	86.50	-	-	0.00	0.00	-	0.00
T10	6,014	6,014	**11.65**	108.5	0.00	86.58	-	-	0.00	0.00	-	0.00
T11	8,015	8,015	**8.23**	108.5	0.00	89.08	-	-	0.00	0.00	-	0.00
T12	7,755	7,756	**8.62**	108.5	0.00	88.79	-	-	0.00	0.00	-	0.00
T13	8,111	8,112	**8.09**	108.5	0.00	89.18	-	-	0.00	0.00	-	0.00
T14	7,766	7,766	**8.61**	108.5	0.00	88.80	-	-	0.00	0.00	-	0.00
T15	9,069	9,069	**6.78**	108.5	0.00	90.15	-	-	0.00	0.00	-	0.00
T16	10,101	10,101	**5.53**	108.5	0.00	91.09	-	-	0.00	0.00	-	0.00
T17	9,721	9,722	**5.97**	108.5	0.00	90.75	-	-	0.00	0.00	-	0.00
T18	9,448	9,449	**6.31**	108.5	0.00	90.51	-	-	0.00	0.00	-	0.00
T19	8,800	8,800	**7.14**	108.5	0.00	89.89	-	-	0.00	0.00	-	0.00

To be continued on next page...

Project:
20131290 Rolette Power Development

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DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T20	8,862	8,862	**7.05**	108.5	0.00	89.95	-	-	0.00	0.00	-	0.00
T21	8,409	8,409	**7.67**	108.5	0.00	89.50	-	-	0.00	0.00	-	0.00
T22	9,794	9,795	**5.89**	108.5	0.00	90.82	-	-	0.00	0.00	-	0.00
T23	9,553	9,554	**6.18**	108.5	0.00	90.60	-	-	0.00	0.00	-	0.00
T24	9,370	9,370	**6.40**	108.5	0.00	90.43	-	-	0.00	0.00	-	0.00
T25	11,020	11,021	**4.52**	108.5	0.00	91.84	-	-	0.00	0.00	-	0.00
T26	10,819	10,819	**4.73**	108.5	0.00	91.68	-	-	0.00	0.00	-	0.00
T27	10,680	10,680	**4.88**	108.5	0.00	91.57	-	-	0.00	0.00	-	0.00
T28	10,643	10,643	**4.92**	108.5	0.00	91.54	-	-	0.00	0.00	-	0.00
T29	10,940	10,940	**4.60**	108.5	0.00	91.78	-	-	0.00	0.00	-	0.00
T30	10,670	10,671	**4.89**	108.5	0.00	91.56	-	-	0.00	0.00	-	0.00
T31	10,617	10,617	**4.95**	108.5	0.00	91.52	-	-	0.00	0.00	-	0.00
T32	10,239	10,240	**5.37**	108.5	0.00	91.21	-	-	0.00	0.00	-	0.00
T33	10,242	10,243	**5.37**	108.5	0.00	91.21	-	-	0.00	0.00	-	0.00
T34	11,480	11,480	**4.04**	108.5	0.00	92.20	-	-	0.00	0.00	-	0.00
T35	12,035	12,035	**3.50**	108.5	0.00	92.61	-	-	0.00	0.00	-	0.00
T36	11,628	11,628	**3.90**	108.5	0.00	92.31	-	-	0.00	0.00	-	0.00
T37	11,325	11,326	**4.20**	108.5	0.00	92.08	-	-	0.00	0.00	-	0.00
T38	11,214	11,214	**4.32**	108.5	0.00	92.00	-	-	0.00	0.00	-	0.00
T39	12,674	12,675	**2.90**	108.5	0.00	93.06	-	-	0.00	0.00	-	0.00
T40	12,474	12,475	**3.08**	108.5	0.00	92.92	-	-	0.00	0.00	-	0.00
T41	13,122	13,123	**2.50**	108.5	0.00	93.36	-	-	0.00	0.00	-	0.00
T42	12,099	12,099	**3.44**	108.5	0.00	92.66	-	-	0.00	0.00	-	0.00
T43	11,740	11,740	**3.79**	108.5	0.00	92.39	-	-	0.00	0.00	-	0.00
T44	12,468	12,468	**3.09**	108.5	0.00	92.92	-	-	0.00	0.00	-	0.00
T45	12,750	12,750	**2.83**	108.5	0.00	93.11	-	-	0.00	0.00	-	0.00
T46	11,535	11,535	**3.99**	108.5	0.00	92.24	-	-	0.00	0.00	-	0.00
T47	11,035	11,035	**4.50**	108.5	0.00	91.86	-	-	0.00	0.00	-	0.00
T48 Alt	12,377	12,377	**3.17**	108.5	0.00	92.85	-	-	0.00	0.00	-	0.00
T49 Alt	12,613	12,613	**2.96**	108.5	0.00	93.02	-	-	0.00	0.00	-	0.00
T50 Alt	8,792	8,793	**7.15**	108.5	0.00	89.88	-	-	0.00	0.00	-	0.00
T51 Alt	8,429	8,429	**7.64**	108.5	0.00	89.52	-	-	0.00	0.00	-	0.00
T52 Alt	6,744	6,745	**10.28**	108.5	0.00	87.58	-	-	0.00	0.00	-	0.00
T53 Alt	6,210	6,210	**11.26**	108.5	0.00	86.86	-	-	0.00	0.00	-	0.00
T54 Alt	7,147	7,147	**9.59**	108.5	0.00	88.08	-	-	0.00	0.00	-	0.00
T55 Alt	7,135	7,136	**9.61**	108.5	0.00	88.07	-	-	0.00	0.00	-	0.00
T56 Alt	10,984	10,984	**4.56**	108.5	0.00	91.82	-	-	0.00	0.00	-	0.00
T57 Alt	6,414	6,415	**10.87**	108.5	0.00	87.14	-	-	0.00	0.00	-	0.00
T58 Alt	7,492	7,493	**9.03**	108.5	0.00	88.49	-	-	0.00	0.00	-	0.00
T59 Alt	7,822	7,822	**8.52**	108.5	0.00	88.87	-	-	0.00	0.00	-	0.00

Sum 26.08

- Data undefined due to calculation with octave data

Noise sensitive area: H28 Noise sensitive point: User defined (29)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	8,878	8,878	**7.03**	108.5	0.00	89.97	-	-	0.00	0.00	-	0.00
T02	8,258	8,259	**7.88**	108.5	0.00	89.34	-	-	0.00	0.00	-	0.00
T03	7,741	7,741	**8.64**	108.5	0.00	88.78	-	-	0.00	0.00	-	0.00
T04	6,985	6,985	**9.86**	108.5	0.00	87.88	-	-	0.00	0.00	-	0.00
T05	6,736	6,737	**10.29**	108.5	0.00	87.57	-	-	0.00	0.00	-	0.00
T06	6,214	6,214	**11.25**	108.5	0.00	86.87	-	-	0.00	0.00	-	0.00
T07	5,370	5,370	**13.01**	108.5	0.00	85.60	-	-	0.00	0.00	-	0.00

To be continued on next page...

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DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

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WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T08	5,234	5,235	**13.31**	108.5	0.00	85.38	-	-	0.00	0.00	-	0.00
T09	4,481	4,482	**15.19**	108.5	0.00	84.03	-	-	0.00	0.00	-	0.00
T10	4,069	4,070	**16.35**	108.5	0.00	83.19	-	-	0.00	0.00	-	0.00
T11	7,066	7,066	**9.72**	108.5	0.00	87.98	-	-	0.00	0.00	-	0.00
T12	6,608	6,608	**10.52**	108.5	0.00	87.40	-	-	0.00	0.00	-	0.00
T13	5,717	5,717	**12.25**	108.5	0.00	86.14	-	-	0.00	0.00	-	0.00
T14	5,236	5,237	**13.31**	108.5	0.00	85.38	-	-	0.00	0.00	-	0.00
T15	6,234	6,235	**11.22**	108.5	0.00	86.90	-	-	0.00	0.00	-	0.00
T16	6,404	6,405	**10.89**	108.5	0.00	87.13	-	-	0.00	0.00	-	0.00
T17	5,800	5,801	**12.08**	108.5	0.00	86.27	-	-	0.00	0.00	-	0.00
T18	5,260	5,261	**13.25**	108.5	0.00	85.42	-	-	0.00	0.00	-	0.00
T19	4,662	4,663	**14.71**	108.5	0.00	84.37	-	-	0.00	0.00	-	0.00
T20	4,108	4,109	**16.24**	108.5	0.00	83.27	-	-	0.00	0.00	-	0.00
T21	3,666	3,667	**17.60**	108.5	0.00	82.29	-	-	0.00	0.00	-	0.00
T22	4,454	4,455	**15.26**	108.5	0.00	83.98	-	-	0.00	0.00	-	0.00
T23	3,887	3,888	**16.90**	108.5	0.00	82.80	-	-	0.00	0.00	-	0.00
T24	3,395	3,397	**18.52**	108.5	0.00	81.62	-	-	0.00	0.00	-	0.00
T25	6,332	6,333	**11.03**	108.5	0.00	87.03	-	-	0.00	0.00	-	0.00
T26	5,869	5,870	**11.94**	108.5	0.00	86.37	-	-	0.00	0.00	-	0.00
T27	5,474	5,475	**12.77**	108.5	0.00	85.77	-	-	0.00	0.00	-	0.00
T28	5,102	5,103	**13.62**	108.5	0.00	85.16	-	-	0.00	0.00	-	0.00
T29	4,615	4,616	**14.83**	108.5	0.00	84.29	-	-	0.00	0.00	-	0.00
T30	4,136	4,137	**16.15**	108.5	0.00	83.33	-	-	0.00	0.00	-	0.00
T31	3,746	3,748	**17.34**	108.5	0.00	82.48	-	-	0.00	0.00	-	0.00
T32	2,799	2,800	**20.80**	108.5	0.00	79.94	-	-	0.00	0.00	-	0.00
T33	2,440	2,442	**22.44**	108.5	0.00	78.75	-	-	0.00	0.00	-	0.00
T34	5,376	5,377	**12.99**	108.5	0.00	85.61	-	-	0.00	0.00	-	0.00
T35	5,495	5,496	**12.73**	108.5	0.00	85.80	-	-	0.00	0.00	-	0.00
T36	4,608	4,609	**14.85**	108.5	0.00	84.27	-	-	0.00	0.00	-	0.00
T37	3,943	3,944	**16.73**	108.5	0.00	82.92	-	-	0.00	0.00	-	0.00
T38	3,492	3,494	**18.18**	108.5	0.00	81.87	-	-	0.00	0.00	-	0.00
T39	5,767	5,768	**12.15**	108.5	0.00	86.22	-	-	0.00	0.00	-	0.00
T40	5,144	5,145	**13.52**	108.5	0.00	85.23	-	-	0.00	0.00	-	0.00
T41	5,533	5,533	**12.65**	108.5	0.00	85.86	-	-	0.00	0.00	-	0.00
T42	4,393	4,394	**15.43**	108.5	0.00	83.86	-	-	0.00	0.00	-	0.00
T43	3,738	3,739	**17.37**	108.5	0.00	82.46	-	-	0.00	0.00	-	0.00
T44	4,086	4,087	**16.30**	108.5	0.00	83.23	-	-	0.00	0.00	-	0.00
T45	4,226	4,227	**15.89**	108.5	0.00	83.52	-	-	0.00	0.00	-	0.00
T46	3,155	3,156	**19.39**	108.5	0.00	80.98	-	-	0.00	0.00	-	0.00
T47	2,414	2,415	**22.57**	108.5	0.00	78.66	-	-	0.00	0.00	-	0.00
T48 Alt	3,722	3,723	**17.42**	108.5	0.00	82.42	-	-	0.00	0.00	-	0.00
T49 Alt	3,873	3,874	**16.95**	108.5	0.00	82.76	-	-	0.00	0.00	-	0.00
T50 Alt	2,873	2,874	**20.49**	108.5	0.00	80.17	-	-	0.00	0.00	-	0.00
T51 Alt	3,242	3,243	**19.07**	108.5	0.00	81.22	-	-	0.00	0.00	-	0.00
T52 Alt	7,718	7,719	**8.68**	108.5	0.00	88.75	-	-	0.00	0.00	-	0.00
T53 Alt	8,412	8,413	**7.66**	108.5	0.00	89.50	-	-	0.00	0.00	-	0.00
T54 Alt	7,262	7,262	**9.40**	108.5	0.00	88.22	-	-	0.00	0.00	-	0.00
T55 Alt	5,881	5,882	**11.91**	108.5	0.00	86.39	-	-	0.00	0.00	-	0.00
T56 Alt	2,845	2,846	**20.61**	108.5	0.00	80.08	-	-	0.00	0.00	-	0.00
T57 Alt	4,948	4,949	**13.99**	108.5	0.00	84.89	-	-	0.00	0.00	-	0.00
T58 Alt	2,874	2,875	**20.49**	108.5	0.00	80.17	-	-	0.00	0.00	-	0.00
T59 Alt	2,532	2,533	**21.97**	108.5	0.00	79.07	-	-	0.00	0.00	-	0.00

Sum 33.96

- Data undefined due to calculation with octave data

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

Description:
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2/16/2015 4:05 PM/2.9.285

DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

Noise sensitive area: H29 Noise sensitive point: User defined (30)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	11,073	11,073	**4.46**	108.5	0.00	91.89	-	-	0.00	0.00	-	0.00
T02	10,435	10,436	**5.15**	108.5	0.00	91.37	-	-	0.00	0.00	-	0.00
T03	9,918	9,919	**5.74**	108.5	0.00	90.93	-	-	0.00	0.00	-	0.00
T04	9,166	9,167	**6.66**	108.5	0.00	90.24	-	-	0.00	0.00	-	0.00
T05	8,798	8,798	**7.14**	108.5	0.00	89.89	-	-	0.00	0.00	-	0.00
T06	8,261	8,261	**7.88**	108.5	0.00	89.34	-	-	0.00	0.00	-	0.00
T07	7,429	7,429	**9.13**	108.5	0.00	88.42	-	-	0.00	0.00	-	0.00
T08	7,431	7,432	**9.13**	108.5	0.00	88.42	-	-	0.00	0.00	-	0.00
T09	6,643	6,644	**10.46**	108.5	0.00	87.45	-	-	0.00	0.00	-	0.00
T10	6,254	6,254	**11.18**	108.5	0.00	86.92	-	-	0.00	0.00	-	0.00
T11	8,853	8,853	**7.07**	108.5	0.00	89.94	-	-	0.00	0.00	-	0.00
T12	8,426	8,427	**7.65**	108.5	0.00	89.51	-	-	0.00	0.00	-	0.00
T13	7,436	7,436	**9.12**	108.5	0.00	88.43	-	-	0.00	0.00	-	0.00
T14	7,029	7,029	**9.79**	108.5	0.00	87.94	-	-	0.00	0.00	-	0.00
T15	7,741	7,741	**8.64**	108.5	0.00	88.78	-	-	0.00	0.00	-	0.00
T16	7,630	7,631	**8.81**	108.5	0.00	88.65	-	-	0.00	0.00	-	0.00
T17	7,080	7,081	**9.70**	108.5	0.00	88.00	-	-	0.00	0.00	-	0.00
T18	6,581	6,581	**10.57**	108.5	0.00	87.37	-	-	0.00	0.00	-	0.00
T19	6,163	6,163	**11.35**	108.5	0.00	86.80	-	-	0.00	0.00	-	0.00
T20	5,571	5,572	**12.56**	108.5	0.00	85.92	-	-	0.00	0.00	-	0.00
T21	5,295	5,296	**13.17**	108.5	0.00	85.48	-	-	0.00	0.00	-	0.00
T22	5,567	5,568	**12.57**	108.5	0.00	85.91	-	-	0.00	0.00	-	0.00
T23	5,054	5,055	**13.74**	108.5	0.00	85.07	-	-	0.00	0.00	-	0.00
T24	4,618	4,620	**14.82**	108.5	0.00	84.29	-	-	0.00	0.00	-	0.00
T25	7,230	7,231	**9.45**	108.5	0.00	88.18	-	-	0.00	0.00	-	0.00
T26	6,762	6,763	**10.24**	108.5	0.00	87.60	-	-	0.00	0.00	-	0.00
T27	6,355	6,356	**10.99**	108.5	0.00	87.06	-	-	0.00	0.00	-	0.00
T28	5,933	5,934	**11.81**	108.5	0.00	86.47	-	-	0.00	0.00	-	0.00
T29	5,192	5,193	**13.41**	108.5	0.00	85.31	-	-	0.00	0.00	-	0.00
T30	4,752	4,754	**14.48**	108.5	0.00	84.54	-	-	0.00	0.00	-	0.00
T31	4,300	4,302	**15.68**	108.5	0.00	83.67	-	-	0.00	0.00	-	0.00
T32	3,391	3,392	**18.54**	108.5	0.00	81.61	-	-	0.00	0.00	-	0.00
T33	2,930	2,931	**20.27**	108.5	0.00	80.34	-	-	0.00	0.00	-	0.00
T34	5,859	5,860	**11.96**	108.5	0.00	86.36	-	-	0.00	0.00	-	0.00
T35	5,710	5,710	**12.27**	108.5	0.00	86.13	-	-	0.00	0.00	-	0.00
T36	4,757	4,757	**14.47**	108.5	0.00	84.55	-	-	0.00	0.00	-	0.00
T37	4,045	4,046	**16.42**	108.5	0.00	83.14	-	-	0.00	0.00	-	0.00
T38	3,480	3,481	**18.23**	108.5	0.00	81.83	-	-	0.00	0.00	-	0.00
T39	5,697	5,698	**12.29**	108.5	0.00	86.11	-	-	0.00	0.00	-	0.00
T40	4,923	4,924	**14.05**	108.5	0.00	84.85	-	-	0.00	0.00	-	0.00
T41	5,025	5,026	**13.80**	108.5	0.00	85.02	-	-	0.00	0.00	-	0.00
T42	4,067	4,068	**16.36**	108.5	0.00	83.19	-	-	0.00	0.00	-	0.00
T43	3,337	3,338	**18.73**	108.5	0.00	81.47	-	-	0.00	0.00	-	0.00
T44	3,095	3,096	**19.62**	108.5	0.00	80.82	-	-	0.00	0.00	-	0.00
T45	2,981	2,982	**20.06**	108.5	0.00	80.49	-	-	0.00	0.00	-	0.00
T46	2,503	2,504	**22.12**	108.5	0.00	78.97	-	-	0.00	0.00	-	0.00
T47	1,727	1,729	**26.71**	108.5	0.00	75.76	-	-	0.00	0.00	-	0.00
T48 Alt	2,349	2,351	**22.92**	108.5	0.00	78.42	-	-	0.00	0.00	-	0.00
T49 Alt	2,253	2,255	**23.44**	108.5	0.00	78.06	-	-	0.00	0.00	-	0.00
T50 Alt	4,375	4,376	**15.48**	108.5	0.00	83.82	-	-	0.00	0.00	-	0.00
T51 Alt	4,881	4,881	**14.16**	108.5	0.00	84.77	-	-	0.00	0.00	-	0.00
T52 Alt	9,725	9,725	**5.97**	108.5	0.00	90.76	-	-	0.00	0.00	-	0.00
T53 Alt	10,497	10,497	**5.08**	108.5	0.00	91.42	-	-	0.00	0.00	-	0.00
T54 Alt	9,201	9,201	**6.62**	108.5	0.00	90.28	-	-	0.00	0.00	-	0.00
T55 Alt	7,802	7,803	**8.55**	108.5	0.00	88.84	-	-	0.00	0.00	-	0.00

To be continued on next page...

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

Description:
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Calculated:
2/16/2015 4:05 PM/2.9.285

DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T56 Alt	2,697	2,698	**21.23**	108.5	0.00	79.62	-	-	0.00	0.00	-	0.00
T57 Alt	7,014	7,014	**9.81**	108.5	0.00	87.92	-	-	0.00	0.00	-	0.00
T58 Alt	4,873	4,873	**14.18**	108.5	0.00	84.76	-	-	0.00	0.00	-	0.00
T59 Alt	4,472	4,473	**15.21**	108.5	0.00	84.01	-	-	0.00	0.00	-	0.00
Sum	33.88											

- Data undefined due to calculation with octave data

Noise sensitive area: H30 Noise sensitive point: User defined (31)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	11,760	11,760	**3.77**	108.5	0.00	92.41	-	-	0.00	0.00	-	0.00
T02	11,128	11,128	**4.40**	108.5	0.00	91.93	-	-	0.00	0.00	-	0.00
T03	10,611	10,611	**4.96**	108.5	0.00	91.52	-	-	0.00	0.00	-	0.00
T04	9,857	9,857	**5.81**	108.5	0.00	90.87	-	-	0.00	0.00	-	0.00
T05	9,516	9,516	**6.22**	108.5	0.00	90.57	-	-	0.00	0.00	-	0.00
T06	8,980	8,980	**6.90**	108.5	0.00	90.07	-	-	0.00	0.00	-	0.00
T07	8,145	8,145	**8.04**	108.5	0.00	89.22	-	-	0.00	0.00	-	0.00
T08	8,114	8,115	**8.09**	108.5	0.00	89.19	-	-	0.00	0.00	-	0.00
T09	7,337	7,337	**9.28**	108.5	0.00	88.31	-	-	0.00	0.00	-	0.00
T10	6,940	6,941	**9.94**	108.5	0.00	87.83	-	-	0.00	0.00	-	0.00
T11	9,590	9,590	**6.13**	108.5	0.00	90.64	-	-	0.00	0.00	-	0.00
T12	9,163	9,163	**6.66**	108.5	0.00	90.24	-	-	0.00	0.00	-	0.00
T13	8,174	8,174	**8.00**	108.5	0.00	89.25	-	-	0.00	0.00	-	0.00
T14	7,765	7,765	**8.61**	108.5	0.00	88.80	-	-	0.00	0.00	-	0.00
T15	8,474	8,475	**7.58**	108.5	0.00	89.56	-	-	0.00	0.00	-	0.00
T16	8,347	8,347	**7.76**	108.5	0.00	89.43	-	-	0.00	0.00	-	0.00
T17	7,803	7,803	**8.55**	108.5	0.00	88.85	-	-	0.00	0.00	-	0.00
T18	7,307	7,308	**9.32**	108.5	0.00	88.28	-	-	0.00	0.00	-	0.00
T19	6,898	6,899	**10.01**	108.5	0.00	87.78	-	-	0.00	0.00	-	0.00
T20	6,306	6,307	**11.08**	108.5	0.00	87.00	-	-	0.00	0.00	-	0.00
T21	6,033	6,033	**11.61**	108.5	0.00	86.61	-	-	0.00	0.00	-	0.00
T22	6,284	6,285	**11.12**	108.5	0.00	86.97	-	-	0.00	0.00	-	0.00
T23	5,778	5,779	**12.12**	108.5	0.00	86.24	-	-	0.00	0.00	-	0.00
T24	5,348	5,349	**13.05**	108.5	0.00	85.57	-	-	0.00	0.00	-	0.00
T25	7,916	7,916	**8.38**	108.5	0.00	88.97	-	-	0.00	0.00	-	0.00
T26	7,451	7,452	**9.09**	108.5	0.00	88.45	-	-	0.00	0.00	-	0.00
T27	7,045	7,046	**9.76**	108.5	0.00	87.96	-	-	0.00	0.00	-	0.00
T28	6,621	6,622	**10.50**	108.5	0.00	87.42	-	-	0.00	0.00	-	0.00
T29	5,858	5,859	**11.96**	108.5	0.00	86.36	-	-	0.00	0.00	-	0.00
T30	5,430	5,431	**12.87**	108.5	0.00	85.70	-	-	0.00	0.00	-	0.00
T31	4,979	4,980	**13.92**	108.5	0.00	84.94	-	-	0.00	0.00	-	0.00
T32	4,094	4,094	**16.28**	108.5	0.00	83.24	-	-	0.00	0.00	-	0.00
T33	3,636	3,637	**17.70**	108.5	0.00	82.21	-	-	0.00	0.00	-	0.00
T34	6,502	6,503	**10.71**	108.5	0.00	87.26	-	-	0.00	0.00	-	0.00
T35	6,310	6,311	**11.07**	108.5	0.00	87.00	-	-	0.00	0.00	-	0.00
T36	5,365	5,366	**13.02**	108.5	0.00	85.59	-	-	0.00	0.00	-	0.00
T37	4,665	4,665	**14.70**	108.5	0.00	84.38	-	-	0.00	0.00	-	0.00
T38	4,101	4,102	**16.26**	108.5	0.00	83.26	-	-	0.00	0.00	-	0.00
T39	6,242	6,243	**11.20**	108.5	0.00	86.91	-	-	0.00	0.00	-	0.00
T40	5,454	5,454	**12.82**	108.5	0.00	85.73	-	-	0.00	0.00	-	0.00
T41	5,482	5,482	**12.76**	108.5	0.00	85.78	-	-	0.00	0.00	-	0.00
T42	4,601	4,602	**14.87**	108.5	0.00	84.26	-	-	0.00	0.00	-	0.00
T43	3,888	3,889	**16.90**	108.5	0.00	82.80	-	-	0.00	0.00	-	0.00

To be continued on next page...

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

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2/16/2015 4:05 PM/2.9.285

DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T44	3,497	3,498	**18.17**	108.5	0.00	81.88	-	-	0.00	0.00	-	0.00
T45	3,297	3,298	**18.87**	108.5	0.00	81.37	-	-	0.00	0.00	-	0.00
T46	3,053	3,054	**19.78**	108.5	0.00	80.70	-	-	0.00	0.00	-	0.00
T47	2,356	2,358	**22.88**	108.5	0.00	78.45	-	-	0.00	0.00	-	0.00
T48 Alt	2,673	2,675	**21.33**	108.5	0.00	79.55	-	-	0.00	0.00	-	0.00
T49 Alt	2,464	2,465	**22.32**	108.5	0.00	78.84	-	-	0.00	0.00	-	0.00
T50 Alt	5,112	5,113	**13.60**	108.5	0.00	85.17	-	-	0.00	0.00	-	0.00
T51 Alt	5,618	5,618	**12.46**	108.5	0.00	85.99	-	-	0.00	0.00	-	0.00
T52 Alt	10,450	10,450	**5.13**	108.5	0.00	91.38	-	-	0.00	0.00	-	0.00
T53 Alt	11,212	11,212	**4.32**	108.5	0.00	91.99	-	-	0.00	0.00	-	0.00
T54 Alt	9,932	9,932	**5.72**	108.5	0.00	90.94	-	-	0.00	0.00	-	0.00
T55 Alt	8,533	8,534	**7.50**	108.5	0.00	89.62	-	-	0.00	0.00	-	0.00
T56 Alt	3,336	3,337	**18.73**	108.5	0.00	81.47	-	-	0.00	0.00	-	0.00
T57 Alt	7,728	7,729	**8.66**	108.5	0.00	88.76	-	-	0.00	0.00	-	0.00
T58 Alt	5,590	5,591	**12.52**	108.5	0.00	85.95	-	-	0.00	0.00	-	0.00
T59 Alt	5,194	5,195	**13.41**	108.5	0.00	85.31	-	-	0.00	0.00	-	0.00
Sum	31.90											

- Data undefined due to calculation with octave data

Noise sensitive area: H31 Noise sensitive point: User defined (32)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	13,173	13,174	**2.45**	108.5	0.00	93.39	-	-	0.00	0.00	-	0.00
T02	12,517	12,517	**3.04**	108.5	0.00	92.95	-	-	0.00	0.00	-	0.00
T03	12,004	12,004	**3.53**	108.5	0.00	92.59	-	-	0.00	0.00	-	0.00
T04	11,262	11,263	**4.27**	108.5	0.00	92.03	-	-	0.00	0.00	-	0.00
T05	10,774	10,774	**4.78**	108.5	0.00	91.65	-	-	0.00	0.00	-	0.00
T06	10,231	10,232	**5.38**	108.5	0.00	91.20	-	-	0.00	0.00	-	0.00
T07	9,425	9,425	**6.33**	108.5	0.00	90.49	-	-	0.00	0.00	-	0.00
T08	9,560	9,560	**6.17**	108.5	0.00	90.61	-	-	0.00	0.00	-	0.00
T09	8,746	8,746	**7.21**	108.5	0.00	89.84	-	-	0.00	0.00	-	0.00
T10	8,383	8,384	**7.70**	108.5	0.00	89.47	-	-	0.00	0.00	-	0.00
T11	10,577	10,577	**4.99**	108.5	0.00	91.49	-	-	0.00	0.00	-	0.00
T12	10,190	10,190	**5.43**	108.5	0.00	91.16	-	-	0.00	0.00	-	0.00
T13	9,148	9,148	**6.68**	108.5	0.00	90.23	-	-	0.00	0.00	-	0.00
T14	8,815	8,815	**7.12**	108.5	0.00	89.90	-	-	0.00	0.00	-	0.00
T15	9,266	9,266	**6.53**	108.5	0.00	90.34	-	-	0.00	0.00	-	0.00
T16	8,927	8,928	**6.97**	108.5	0.00	90.01	-	-	0.00	0.00	-	0.00
T17	8,455	8,456	**7.60**	108.5	0.00	89.54	-	-	0.00	0.00	-	0.00
T18	8,021	8,021	**8.22**	108.5	0.00	89.08	-	-	0.00	0.00	-	0.00
T19	7,769	7,769	**8.60**	108.5	0.00	88.81	-	-	0.00	0.00	-	0.00
T20	7,193	7,194	**9.51**	108.5	0.00	88.14	-	-	0.00	0.00	-	0.00
T21	7,053	7,053	**9.75**	108.5	0.00	87.97	-	-	0.00	0.00	-	0.00
T22	6,934	6,935	**9.95**	108.5	0.00	87.82	-	-	0.00	0.00	-	0.00
T23	6,516	6,517	**10.69**	108.5	0.00	87.28	-	-	0.00	0.00	-	0.00
T24	6,172	6,173	**11.33**	108.5	0.00	86.81	-	-	0.00	0.00	-	0.00
T25	8,275	8,276	**7.86**	108.5	0.00	89.36	-	-	0.00	0.00	-	0.00
T26	7,842	7,843	**8.49**	108.5	0.00	88.89	-	-	0.00	0.00	-	0.00
T27	7,460	7,461	**9.08**	108.5	0.00	88.46	-	-	0.00	0.00	-	0.00
T28	7,040	7,041	**9.77**	108.5	0.00	87.95	-	-	0.00	0.00	-	0.00
T29	6,186	6,187	**11.31**	108.5	0.00	86.83	-	-	0.00	0.00	-	0.00
T30	5,848	5,849	**11.98**	108.5	0.00	86.34	-	-	0.00	0.00	-	0.00
T31	5,431	5,432	**12.87**	108.5	0.00	85.70	-	-	0.00	0.00	-	0.00

To be continued on next page...

Project:
20131290 Rolette Power Development

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DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T32	4,762	4,763	**14.45**	108.5	0.00	84.56	-	-	0.00	0.00	-	0.00
T33	4,375	4,376	**15.48**	108.5	0.00	83.82	-	-	0.00	0.00	-	0.00
T34	6,683	6,684	**10.38**	108.5	0.00	87.50	-	-	0.00	0.00	-	0.00
T35	6,314	6,315	**11.06**	108.5	0.00	87.01	-	-	0.00	0.00	-	0.00
T36	5,460	5,461	**12.80**	108.5	0.00	85.75	-	-	0.00	0.00	-	0.00
T37	4,867	4,868	**14.19**	108.5	0.00	84.75	-	-	0.00	0.00	-	0.00
T38	4,368	4,368	**15.50**	108.5	0.00	83.81	-	-	0.00	0.00	-	0.00
T39	6,034	6,035	**11.60**	108.5	0.00	86.61	-	-	0.00	0.00	-	0.00
T40	5,247	5,248	**13.28**	108.5	0.00	85.40	-	-	0.00	0.00	-	0.00
T41	5,031	5,032	**13.79**	108.5	0.00	85.03	-	-	0.00	0.00	-	0.00
T42	4,488	4,489	**15.17**	108.5	0.00	84.04	-	-	0.00	0.00	-	0.00
T43	3,923	3,924	**16.79**	108.5	0.00	82.87	-	-	0.00	0.00	-	0.00
T44	3,139	3,140	**19.45**	108.5	0.00	80.94	-	-	0.00	0.00	-	0.00
T45	2,745	2,746	**21.02**	108.5	0.00	79.78	-	-	0.00	0.00	-	0.00
T46	3,239	3,240	**19.08**	108.5	0.00	81.21	-	-	0.00	0.00	-	0.00
T47	2,979	2,980	**20.07**	108.5	0.00	80.48	-	-	0.00	0.00	-	0.00
T48 Alt	2,327	2,328	**23.04**	108.5	0.00	78.34	-	-	0.00	0.00	-	0.00
T49 Alt	1,912	1,913	**25.48**	108.5	0.00	76.64	-	-	0.00	0.00	-	0.00
T50 Alt	6,134	6,134	**11.41**	108.5	0.00	86.76	-	-	0.00	0.00	-	0.00
T51 Alt	6,676	6,677	**10.40**	108.5	0.00	87.49	-	-	0.00	0.00	-	0.00
T52 Alt	11,633	11,633	**3.89**	108.5	0.00	92.31	-	-	0.00	0.00	-	0.00
T53 Alt	12,475	12,475	**3.08**	108.5	0.00	92.92	-	-	0.00	0.00	-	0.00
T54 Alt	11,054	11,054	**4.48**	108.5	0.00	91.87	-	-	0.00	0.00	-	0.00
T55 Alt	9,670	9,670	**6.04**	108.5	0.00	90.71	-	-	0.00	0.00	-	0.00
T56 Alt	3,781	3,781	**17.24**	108.5	0.00	82.55	-	-	0.00	0.00	-	0.00
T57 Alt	9,024	9,024	**6.84**	108.5	0.00	90.11	-	-	0.00	0.00	-	0.00
T58 Alt	6,898	6,898	**10.01**	108.5	0.00	87.77	-	-	0.00	0.00	-	0.00
T59 Alt	6,482	6,482	**10.75**	108.5	0.00	87.23	-	-	0.00	0.00	-	0.00
Sum	32.01											

- Data undefined due to calculation with octave data

Noise sensitive area: H32 Noise sensitive point: User defined (33)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	11,986	11,986	**3.55**	108.5	0.00	92.57	-	-	0.00	0.00	-	0.00
T02	11,361	11,362	**4.16**	108.5	0.00	92.11	-	-	0.00	0.00	-	0.00
T03	10,844	10,844	**4.70**	108.5	0.00	91.70	-	-	0.00	0.00	-	0.00
T04	10,088	10,089	**5.54**	108.5	0.00	91.08	-	-	0.00	0.00	-	0.00
T05	9,779	9,779	**5.90**	108.5	0.00	90.81	-	-	0.00	0.00	-	0.00
T06	9,246	9,247	**6.56**	108.5	0.00	90.32	-	-	0.00	0.00	-	0.00
T07	8,408	8,408	**7.67**	108.5	0.00	89.49	-	-	0.00	0.00	-	0.00
T08	8,341	8,341	**7.77**	108.5	0.00	89.42	-	-	0.00	0.00	-	0.00
T09	7,574	7,575	**8.90**	108.5	0.00	88.59	-	-	0.00	0.00	-	0.00
T10	7,171	7,171	**9.55**	108.5	0.00	88.11	-	-	0.00	0.00	-	0.00
T11	9,896	9,896	**5.77**	108.5	0.00	90.91	-	-	0.00	0.00	-	0.00
T12	9,464	9,464	**6.29**	108.5	0.00	90.52	-	-	0.00	0.00	-	0.00
T13	8,484	8,484	**7.56**	108.5	0.00	89.57	-	-	0.00	0.00	-	0.00
T14	8,067	8,067	**8.16**	108.5	0.00	89.13	-	-	0.00	0.00	-	0.00
T15	8,804	8,805	**7.13**	108.5	0.00	89.89	-	-	0.00	0.00	-	0.00
T16	8,693	8,694	**7.28**	108.5	0.00	89.78	-	-	0.00	0.00	-	0.00
T17	8,145	8,146	**8.04**	108.5	0.00	89.22	-	-	0.00	0.00	-	0.00
T18	7,646	7,647	**8.79**	108.5	0.00	88.67	-	-	0.00	0.00	-	0.00
T19	7,224	7,225	**9.46**	108.5	0.00	88.18	-	-	0.00	0.00	-	0.00

To be continued on next page...

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DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T20	6,632	6,633	**10.48**	108.5	0.00	87.43	-	-	0.00	0.00	-	0.00
T21	6,344	6,345	**11.01**	108.5	0.00	87.05	-	-	0.00	0.00	-	0.00
T22	6,630	6,631	**10.48**	108.5	0.00	87.43	-	-	0.00	0.00	-	0.00
T23	6,119	6,120	**11.44**	108.5	0.00	86.74	-	-	0.00	0.00	-	0.00
T24	5,684	5,685	**12.32**	108.5	0.00	86.09	-	-	0.00	0.00	-	0.00
T25	8,274	8,275	**7.86**	108.5	0.00	89.35	-	-	0.00	0.00	-	0.00
T26	7,808	7,809	**8.54**	108.5	0.00	88.85	-	-	0.00	0.00	-	0.00
T27	7,402	7,403	**9.17**	108.5	0.00	88.39	-	-	0.00	0.00	-	0.00
T28	6,978	6,979	**9.87**	108.5	0.00	87.88	-	-	0.00	0.00	-	0.00
T29	6,219	6,220	**11.24**	108.5	0.00	86.88	-	-	0.00	0.00	-	0.00
T30	5,789	5,790	**12.10**	108.5	0.00	86.25	-	-	0.00	0.00	-	0.00
T31	5,338	5,339	**13.08**	108.5	0.00	85.55	-	-	0.00	0.00	-	0.00
T32	4,446	4,447	**15.28**	108.5	0.00	83.96	-	-	0.00	0.00	-	0.00
T33	3,987	3,988	**16.60**	108.5	0.00	83.01	-	-	0.00	0.00	-	0.00
T34	6,866	6,867	**10.06**	108.5	0.00	87.74	-	-	0.00	0.00	-	0.00
T35	6,675	6,675	**10.40**	108.5	0.00	87.49	-	-	0.00	0.00	-	0.00
T36	5,729	5,730	**12.23**	108.5	0.00	86.16	-	-	0.00	0.00	-	0.00
T37	5,029	5,030	**13.80**	108.5	0.00	85.03	-	-	0.00	0.00	-	0.00
T38	4,465	4,466	**15.23**	108.5	0.00	84.00	-	-	0.00	0.00	-	0.00
T39	6,603	6,603	**10.53**	108.5	0.00	87.40	-	-	0.00	0.00	-	0.00
T40	5,813	5,814	**12.05**	108.5	0.00	86.29	-	-	0.00	0.00	-	0.00
T41	5,831	5,832	**12.02**	108.5	0.00	86.32	-	-	0.00	0.00	-	0.00
T42	4,962	4,963	**13.96**	108.5	0.00	84.91	-	-	0.00	0.00	-	0.00
T43	4,250	4,251	**15.83**	108.5	0.00	83.57	-	-	0.00	0.00	-	0.00
T44	3,841	3,842	**17.04**	108.5	0.00	82.69	-	-	0.00	0.00	-	0.00
T45	3,625	3,626	**17.74**	108.5	0.00	82.19	-	-	0.00	0.00	-	0.00
T46	3,416	3,417	**18.45**	108.5	0.00	81.67	-	-	0.00	0.00	-	0.00
T47	2,719	2,721	**21.13**	108.5	0.00	79.69	-	-	0.00	0.00	-	0.00
T48 Alt	3,007	3,009	**19.96**	108.5	0.00	80.57	-	-	0.00	0.00	-	0.00
T49 Alt	2,775	2,776	**20.90**	108.5	0.00	79.87	-	-	0.00	0.00	-	0.00
T50 Alt	5,428	5,429	**12.88**	108.5	0.00	85.69	-	-	0.00	0.00	-	0.00
T51 Alt	5,926	5,927	**11.82**	108.5	0.00	86.46	-	-	0.00	0.00	-	0.00
T52 Alt	10,725	10,726	**4.83**	108.5	0.00	91.61	-	-	0.00	0.00	-	0.00
T53 Alt	11,472	11,472	**4.05**	108.5	0.00	92.19	-	-	0.00	0.00	-	0.00
T54 Alt	10,218	10,218	**5.39**	108.5	0.00	91.19	-	-	0.00	0.00	-	0.00
T55 Alt	8,820	8,821	**7.11**	108.5	0.00	89.91	-	-	0.00	0.00	-	0.00
T56 Alt	3,699	3,700	**17.50**	108.5	0.00	82.36	-	-	0.00	0.00	-	0.00
T57 Alt	7,990	7,990	**8.27**	108.5	0.00	89.05	-	-	0.00	0.00	-	0.00
T58 Alt	5,858	5,859	**11.96**	108.5	0.00	86.36	-	-	0.00	0.00	-	0.00
T59 Alt	5,468	5,469	**12.79**	108.5	0.00	85.76	-	-	0.00	0.00	-	0.00

Sum 30.82

- Data undefined due to calculation with octave data

Noise sensitive area: H33 Noise sensitive point: User defined (34)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	9,117	9,118	**6.72**	108.5	0.00	90.20	-	-	0.00	0.00	-	0.00
T02	8,554	8,554	**7.47**	108.5	0.00	89.64	-	-	0.00	0.00	-	0.00
T03	8,047	8,047	**8.19**	108.5	0.00	89.11	-	-	0.00	0.00	-	0.00
T04	7,298	7,299	**9.34**	108.5	0.00	88.26	-	-	0.00	0.00	-	0.00
T05	7,285	7,285	**9.36**	108.5	0.00	88.25	-	-	0.00	0.00	-	0.00
T06	6,801	6,801	**10.18**	108.5	0.00	87.65	-	-	0.00	0.00	-	0.00
T07	5,972	5,972	**11.73**	108.5	0.00	86.52	-	-	0.00	0.00	-	0.00

To be continued on next page...

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

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Calculated:
2/16/2015 4:05 PM/2.9.285

DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T08	5,568	5,569	**12.57**	108.5	0.00	85.92	-	-	0.00	0.00	-	0.00
T09	4,942	4,943	**14.01**	108.5	0.00	84.88	-	-	0.00	0.00	-	0.00
T10	4,503	4,504	**15.13**	108.5	0.00	84.07	-	-	0.00	0.00	-	0.00
T11	7,917	7,917	**8.38**	108.5	0.00	88.97	-	-	0.00	0.00	-	0.00
T12	7,443	7,444	**9.11**	108.5	0.00	88.44	-	-	0.00	0.00	-	0.00
T13	6,664	6,664	**10.42**	108.5	0.00	87.47	-	-	0.00	0.00	-	0.00
T14	6,142	6,142	**11.39**	108.5	0.00	86.77	-	-	0.00	0.00	-	0.00
T15	7,306	7,307	**9.33**	108.5	0.00	88.27	-	-	0.00	0.00	-	0.00
T16	7,609	7,610	**8.85**	108.5	0.00	88.63	-	-	0.00	0.00	-	0.00
T17	6,997	6,998	**9.84**	108.5	0.00	87.90	-	-	0.00	0.00	-	0.00
T18	6,455	6,456	**10.80**	108.5	0.00	87.20	-	-	0.00	0.00	-	0.00
T19	5,791	5,792	**12.10**	108.5	0.00	86.26	-	-	0.00	0.00	-	0.00
T20	5,280	5,281	**13.21**	108.5	0.00	85.45	-	-	0.00	0.00	-	0.00
T21	4,772	4,773	**14.43**	108.5	0.00	84.58	-	-	0.00	0.00	-	0.00
T22	5,751	5,752	**12.18**	108.5	0.00	86.20	-	-	0.00	0.00	-	0.00
T23	5,187	5,188	**13.42**	108.5	0.00	85.30	-	-	0.00	0.00	-	0.00
T24	4,699	4,700	**14.61**	108.5	0.00	84.44	-	-	0.00	0.00	-	0.00
T25	7,648	7,649	**8.78**	108.5	0.00	88.67	-	-	0.00	0.00	-	0.00
T26	7,194	7,195	**9.51**	108.5	0.00	88.14	-	-	0.00	0.00	-	0.00
T27	6,809	6,810	**10.16**	108.5	0.00	87.66	-	-	0.00	0.00	-	0.00
T28	6,456	6,457	**10.80**	108.5	0.00	87.20	-	-	0.00	0.00	-	0.00
T29	6,020	6,021	**11.63**	108.5	0.00	86.59	-	-	0.00	0.00	-	0.00
T30	5,543	5,544	**12.62**	108.5	0.00	85.88	-	-	0.00	0.00	-	0.00
T31	5,166	5,167	**13.47**	108.5	0.00	85.26	-	-	0.00	0.00	-	0.00
T32	4,228	4,229	**15.89**	108.5	0.00	83.53	-	-	0.00	0.00	-	0.00
T33	3,873	3,874	**16.95**	108.5	0.00	82.76	-	-	0.00	0.00	-	0.00
T34	6,783	6,784	**10.21**	108.5	0.00	87.63	-	-	0.00	0.00	-	0.00
T35	6,923	6,924	**9.97**	108.5	0.00	87.81	-	-	0.00	0.00	-	0.00
T36	6,041	6,042	**11.59**	108.5	0.00	86.62	-	-	0.00	0.00	-	0.00
T37	5,375	5,376	**12.99**	108.5	0.00	85.61	-	-	0.00	0.00	-	0.00
T38	4,916	4,917	**14.07**	108.5	0.00	84.83	-	-	0.00	0.00	-	0.00
T39	7,200	7,200	**9.50**	108.5	0.00	88.15	-	-	0.00	0.00	-	0.00
T40	6,569	6,570	**10.59**	108.5	0.00	87.35	-	-	0.00	0.00	-	0.00
T41	6,936	6,937	**9.94**	108.5	0.00	87.82	-	-	0.00	0.00	-	0.00
T42	5,803	5,804	**12.07**	108.5	0.00	86.27	-	-	0.00	0.00	-	0.00
T43	5,129	5,129	**13.56**	108.5	0.00	85.20	-	-	0.00	0.00	-	0.00
T44	5,377	5,378	**12.99**	108.5	0.00	85.61	-	-	0.00	0.00	-	0.00
T45	5,453	5,454	**12.82**	108.5	0.00	85.73	-	-	0.00	0.00	-	0.00
T46	4,483	4,484	**15.18**	108.5	0.00	84.03	-	-	0.00	0.00	-	0.00
T47	3,678	3,679	**17.56**	108.5	0.00	82.32	-	-	0.00	0.00	-	0.00
T48 Alt	4,891	4,891	**14.13**	108.5	0.00	84.79	-	-	0.00	0.00	-	0.00
T49 Alt	4,957	4,957	**13.97**	108.5	0.00	84.90	-	-	0.00	0.00	-	0.00
T50 Alt	4,102	4,103	**16.25**	108.5	0.00	83.26	-	-	0.00	0.00	-	0.00
T51 Alt	4,371	4,372	**15.49**	108.5	0.00	83.81	-	-	0.00	0.00	-	0.00
T52 Alt	8,320	8,320	**7.79**	108.5	0.00	89.40	-	-	0.00	0.00	-	0.00
T53 Alt	8,885	8,885	**7.02**	108.5	0.00	89.97	-	-	0.00	0.00	-	0.00
T54 Alt	7,957	7,957	**8.32**	108.5	0.00	89.01	-	-	0.00	0.00	-	0.00
T55 Alt	6,638	6,639	**10.47**	108.5	0.00	87.44	-	-	0.00	0.00	-	0.00
T56 Alt	4,241	4,242	**15.85**	108.5	0.00	83.55	-	-	0.00	0.00	-	0.00
T57 Alt	5,560	5,561	**12.59**	108.5	0.00	85.90	-	-	0.00	0.00	-	0.00
T58 Alt	3,733	3,734	**17.39**	108.5	0.00	82.44	-	-	0.00	0.00	-	0.00
T59 Alt	3,496	3,497	**18.17**	108.5	0.00	81.87	-	-	0.00	0.00	-	0.00

Sum 30.57

- Data undefined due to calculation with octave data

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
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DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

Noise sensitive area: H34 Noise sensitive point: User defined (35)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	7,213	7,213	**9.48**	108.5	0.00	88.16	-	-	0.00	0.00	-	0.00
T02	6,778	6,778	**10.22**	108.5	0.00	87.62	-	-	0.00	0.00	-	0.00
T03	6,325	6,326	**11.04**	108.5	0.00	87.02	-	-	0.00	0.00	-	0.00
T04	5,657	5,657	**12.38**	108.5	0.00	86.05	-	-	0.00	0.00	-	0.00
T05	6,094	6,095	**11.49**	108.5	0.00	86.70	-	-	0.00	0.00	-	0.00
T06	5,746	5,747	**12.19**	108.5	0.00	86.19	-	-	0.00	0.00	-	0.00
T07	5,074	5,074	**13.69**	108.5	0.00	85.11	-	-	0.00	0.00	-	0.00
T08	4,210	4,211	**15.94**	108.5	0.00	83.49	-	-	0.00	0.00	-	0.00
T09	3,978	3,979	**16.62**	108.5	0.00	83.00	-	-	0.00	0.00	-	0.00
T10	3,613	3,614	**17.78**	108.5	0.00	82.16	-	-	0.00	0.00	-	0.00
T11	7,314	7,314	**9.31**	108.5	0.00	88.28	-	-	0.00	0.00	-	0.00
T12	6,852	6,852	**10.09**	108.5	0.00	87.72	-	-	0.00	0.00	-	0.00
T13	6,428	6,429	**10.85**	108.5	0.00	87.16	-	-	0.00	0.00	-	0.00
T14	5,883	5,884	**11.91**	108.5	0.00	86.39	-	-	0.00	0.00	-	0.00
T15	7,317	7,318	**9.31**	108.5	0.00	88.29	-	-	0.00	0.00	-	0.00
T16	7,981	7,982	**8.28**	108.5	0.00	89.04	-	-	0.00	0.00	-	0.00
T17	7,399	7,400	**9.18**	108.5	0.00	88.38	-	-	0.00	0.00	-	0.00
T18	6,909	6,909	**9.99**	108.5	0.00	87.79	-	-	0.00	0.00	-	0.00
T19	6,144	6,145	**11.39**	108.5	0.00	86.77	-	-	0.00	0.00	-	0.00
T20	5,835	5,836	**12.01**	108.5	0.00	86.32	-	-	0.00	0.00	-	0.00
T21	5,250	5,251	**13.28**	108.5	0.00	85.41	-	-	0.00	0.00	-	0.00
T22	6,621	6,622	**10.50**	108.5	0.00	87.42	-	-	0.00	0.00	-	0.00
T23	6,143	6,144	**11.39**	108.5	0.00	86.77	-	-	0.00	0.00	-	0.00
T24	5,742	5,744	**12.20**	108.5	0.00	86.18	-	-	0.00	0.00	-	0.00
T25	8,415	8,416	**7.66**	108.5	0.00	89.50	-	-	0.00	0.00	-	0.00
T26	8,032	8,033	**8.21**	108.5	0.00	89.10	-	-	0.00	0.00	-	0.00
T27	7,722	7,723	**8.67**	108.5	0.00	88.76	-	-	0.00	0.00	-	0.00
T28	7,482	7,483	**9.04**	108.5	0.00	88.48	-	-	0.00	0.00	-	0.00
T29	7,359	7,360	**9.24**	108.5	0.00	88.34	-	-	0.00	0.00	-	0.00
T30	6,939	6,940	**9.94**	108.5	0.00	87.83	-	-	0.00	0.00	-	0.00
T31	6,691	6,692	**10.37**	108.5	0.00	87.51	-	-	0.00	0.00	-	0.00
T32	5,957	5,958	**11.76**	108.5	0.00	86.50	-	-	0.00	0.00	-	0.00
T33	5,768	5,768	**12.15**	108.5	0.00	86.22	-	-	0.00	0.00	-	0.00
T34	8,083	8,083	**8.13**	108.5	0.00	89.15	-	-	0.00	0.00	-	0.00
T35	8,428	8,428	**7.64**	108.5	0.00	89.51	-	-	0.00	0.00	-	0.00
T36	7,710	7,711	**8.69**	108.5	0.00	88.74	-	-	0.00	0.00	-	0.00
T37	7,175	7,176	**9.54**	108.5	0.00	88.12	-	-	0.00	0.00	-	0.00
T38	6,861	6,862	**10.07**	108.5	0.00	87.73	-	-	0.00	0.00	-	0.00
T39	8,890	8,890	**7.02**	108.5	0.00	89.98	-	-	0.00	0.00	-	0.00
T40	8,424	8,425	**7.65**	108.5	0.00	89.51	-	-	0.00	0.00	-	0.00
T41	8,940	8,940	**6.95**	108.5	0.00	90.03	-	-	0.00	0.00	-	0.00
T42	7,803	7,804	**8.55**	108.5	0.00	88.85	-	-	0.00	0.00	-	0.00
T43	7,247	7,248	**9.42**	108.5	0.00	88.20	-	-	0.00	0.00	-	0.00
T44	7,743	7,743	**8.64**	108.5	0.00	88.78	-	-	0.00	0.00	-	0.00
T45	7,919	7,919	**8.38**	108.5	0.00	88.97	-	-	0.00	0.00	-	0.00
T46	6,793	6,793	**10.19**	108.5	0.00	87.64	-	-	0.00	0.00	-	0.00
T47	6,109	6,110	**11.46**	108.5	0.00	86.72	-	-	0.00	0.00	-	0.00
T48 Alt	7,430	7,430	**9.13**	108.5	0.00	88.42	-	-	0.00	0.00	-	0.00
T49 Alt	7,576	7,577	**8.90**	108.5	0.00	88.59	-	-	0.00	0.00	-	0.00
T50 Alt	5,044	5,045	**13.76**	108.5	0.00	85.06	-	-	0.00	0.00	-	0.00
T51 Alt	4,998	4,998	**13.87**	108.5	0.00	84.98	-	-	0.00	0.00	-	0.00
T52 Alt	7,138	7,138	**9.60**	108.5	0.00	88.07	-	-	0.00	0.00	-	0.00
T53 Alt	7,406	7,406	**9.17**	108.5	0.00	88.39	-	-	0.00	0.00	-	0.00
T54 Alt	7,002	7,002	**9.83**	108.5	0.00	87.90	-	-	0.00	0.00	-	0.00
T55 Alt	5,969	5,969	**11.74**	108.5	0.00	86.52	-	-	0.00	0.00	-	0.00

To be continued on next page...

Project:
20131290 Rolette Power Development

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Warren Enyart and Merle Boucher
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DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T56 Alt	6,374	6,374	**10.95**	108.5	0.00	87.09	-	-	0.00	0.00	-	0.00
T57 Alt	4,761	4,762	**14.46**	108.5	0.00	84.56	-	-	0.00	0.00	-	0.00
T58 Alt	3,974	3,975	**16.64**	108.5	0.00	82.99	-	-	0.00	0.00	-	0.00
T59 Alt	4,038	4,039	**16.44**	108.5	0.00	83.13	-	-	0.00	0.00	-	0.00
Sum	29.32											

- Data undefined due to calculation with octave data

Noise sensitive area: H35 Noise sensitive point: User defined (36)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	6,696	6,697	**10.36**	108.5	0.00	87.52	-	-	0.00	0.00	-	0.00
T02	6,415	6,416	**10.87**	108.5	0.00	87.15	-	-	0.00	0.00	-	0.00
T03	6,051	6,052	**11.57**	108.5	0.00	86.64	-	-	0.00	0.00	-	0.00
T04	5,523	5,524	**12.67**	108.5	0.00	85.84	-	-	0.00	0.00	-	0.00
T05	6,290	6,290	**11.11**	108.5	0.00	86.97	-	-	0.00	0.00	-	0.00
T06	6,081	6,081	**11.51**	108.5	0.00	86.68	-	-	0.00	0.00	-	0.00
T07	5,602	5,602	**12.50**	108.5	0.00	85.97	-	-	0.00	0.00	-	0.00
T08	4,535	4,536	**15.04**	108.5	0.00	84.13	-	-	0.00	0.00	-	0.00
T09	4,642	4,643	**14.76**	108.5	0.00	84.34	-	-	0.00	0.00	-	0.00
T10	4,404	4,405	**15.40**	108.5	0.00	83.88	-	-	0.00	0.00	-	0.00
T11	7,819	7,819	**8.52**	108.5	0.00	88.86	-	-	0.00	0.00	-	0.00
T12	7,399	7,399	**9.18**	108.5	0.00	88.38	-	-	0.00	0.00	-	0.00
T13	7,224	7,225	**9.46**	108.5	0.00	88.18	-	-	0.00	0.00	-	0.00
T14	6,714	6,715	**10.33**	108.5	0.00	87.54	-	-	0.00	0.00	-	0.00
T15	8,186	8,186	**7.98**	108.5	0.00	89.26	-	-	0.00	0.00	-	0.00
T16	9,002	9,002	**6.87**	108.5	0.00	90.09	-	-	0.00	0.00	-	0.00
T17	8,465	8,465	**7.59**	108.5	0.00	89.55	-	-	0.00	0.00	-	0.00
T18	8,027	8,028	**8.21**	108.5	0.00	89.09	-	-	0.00	0.00	-	0.00
T19	7,268	7,268	**9.39**	108.5	0.00	88.23	-	-	0.00	0.00	-	0.00
T20	7,072	7,073	**9.71**	108.5	0.00	87.99	-	-	0.00	0.00	-	0.00
T21	6,504	6,504	**10.71**	108.5	0.00	87.26	-	-	0.00	0.00	-	0.00
T22	7,940	7,940	**8.34**	108.5	0.00	89.00	-	-	0.00	0.00	-	0.00
T23	7,522	7,523	**8.98**	108.5	0.00	88.53	-	-	0.00	0.00	-	0.00
T24	7,179	7,180	**9.53**	108.5	0.00	88.12	-	-	0.00	0.00	-	0.00
T25	9,607	9,608	**6.11**	108.5	0.00	90.65	-	-	0.00	0.00	-	0.00
T26	9,271	9,272	**6.53**	108.5	0.00	90.34	-	-	0.00	0.00	-	0.00
T27	9,006	9,007	**6.86**	108.5	0.00	90.09	-	-	0.00	0.00	-	0.00
T28	8,824	8,825	**7.10**	108.5	0.00	89.91	-	-	0.00	0.00	-	0.00
T29	8,827	8,828	**7.10**	108.5	0.00	89.92	-	-	0.00	0.00	-	0.00
T30	8,443	8,443	**7.62**	108.5	0.00	89.53	-	-	0.00	0.00	-	0.00
T31	8,246	8,247	**7.90**	108.5	0.00	89.33	-	-	0.00	0.00	-	0.00
T32	7,600	7,601	**8.86**	108.5	0.00	88.62	-	-	0.00	0.00	-	0.00
T33	7,459	7,460	**9.08**	108.5	0.00	88.45	-	-	0.00	0.00	-	0.00
T34	9,512	9,512	**6.23**	108.5	0.00	90.57	-	-	0.00	0.00	-	0.00
T35	9,925	9,925	**5.73**	108.5	0.00	90.93	-	-	0.00	0.00	-	0.00
T36	9,283	9,283	**6.51**	108.5	0.00	90.35	-	-	0.00	0.00	-	0.00
T37	8,803	8,804	**7.13**	108.5	0.00	89.89	-	-	0.00	0.00	-	0.00
T38	8,538	8,538	**7.49**	108.5	0.00	89.63	-	-	0.00	0.00	-	0.00
T39	10,444	10,444	**5.14**	108.5	0.00	91.38	-	-	0.00	0.00	-	0.00
T40	10,043	10,044	**5.59**	108.5	0.00	91.04	-	-	0.00	0.00	-	0.00
T41	10,598	10,599	**4.97**	108.5	0.00	91.50	-	-	0.00	0.00	-	0.00
T42	9,478	9,478	**6.27**	108.5	0.00	90.53	-	-	0.00	0.00	-	0.00
T43	8,963	8,964	**6.92**	108.5	0.00	90.05	-	-	0.00	0.00	-	0.00

To be continued on next page...

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
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2/16/2015 4:05 PM/2.9.285

DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T44	9,513	9,513	**6.23**	108.5	0.00	90.57	-	-	0.00	0.00	-	0.00
T45	9,709	9,710	**5.99**	108.5	0.00	90.74	-	-	0.00	0.00	-	0.00
T46	8,559	8,560	**7.46**	108.5	0.00	89.65	-	-	0.00	0.00	-	0.00
T47	7,906	7,906	**8.39**	108.5	0.00	88.96	-	-	0.00	0.00	-	0.00
T48 Alt	9,237	9,237	**6.57**	108.5	0.00	90.31	-	-	0.00	0.00	-	0.00
T49 Alt	9,395	9,395	**6.37**	108.5	0.00	90.46	-	-	0.00	0.00	-	0.00
T50 Alt	6,494	6,494	**10.73**	108.5	0.00	87.25	-	-	0.00	0.00	-	0.00
T51 Alt	6,335	6,335	**11.02**	108.5	0.00	87.04	-	-	0.00	0.00	-	0.00
T52 Alt	7,249	7,250	**9.42**	108.5	0.00	88.21	-	-	0.00	0.00	-	0.00
T53 Alt	7,261	7,262	**9.40**	108.5	0.00	88.22	-	-	0.00	0.00	-	0.00
T54 Alt	7,292	7,292	**9.35**	108.5	0.00	88.26	-	-	0.00	0.00	-	0.00
T55 Alt	6,543	6,544	**10.64**	108.5	0.00	87.32	-	-	0.00	0.00	-	0.00
T56 Alt	8,107	8,108	**8.10**	108.5	0.00	89.18	-	-	0.00	0.00	-	0.00
T57 Alt	5,399	5,400	**12.94**	108.5	0.00	85.65	-	-	0.00	0.00	-	0.00
T58 Alt	5,279	5,280	**13.21**	108.5	0.00	85.45	-	-	0.00	0.00	-	0.00
T59 Alt	5,449	5,449	**12.83**	108.5	0.00	85.73	-	-	0.00	0.00	-	0.00
Sum	27.49											

- Data undefined due to calculation with octave data

Noise sensitive area: H36 Noise sensitive point: User defined (37)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	6,595	6,596	**10.54**	108.5	0.00	87.39	-	-	0.00	0.00	-	0.00
T02	6,358	6,358	**10.98**	108.5	0.00	87.07	-	-	0.00	0.00	-	0.00
T03	6,021	6,022	**11.63**	108.5	0.00	86.59	-	-	0.00	0.00	-	0.00
T04	5,537	5,538	**12.64**	108.5	0.00	85.87	-	-	0.00	0.00	-	0.00
T05	6,374	6,375	**10.95**	108.5	0.00	87.09	-	-	0.00	0.00	-	0.00
T06	6,201	6,202	**11.28**	108.5	0.00	86.85	-	-	0.00	0.00	-	0.00
T07	5,774	5,774	**12.13**	108.5	0.00	86.23	-	-	0.00	0.00	-	0.00
T08	4,681	4,682	**14.66**	108.5	0.00	84.41	-	-	0.00	0.00	-	0.00
T09	4,861	4,862	**14.21**	108.5	0.00	84.74	-	-	0.00	0.00	-	0.00
T10	4,655	4,656	**14.73**	108.5	0.00	84.36	-	-	0.00	0.00	-	0.00
T11	7,962	7,962	**8.31**	108.5	0.00	89.02	-	-	0.00	0.00	-	0.00
T12	7,555	7,555	**8.93**	108.5	0.00	88.56	-	-	0.00	0.00	-	0.00
T13	7,439	7,439	**9.11**	108.5	0.00	88.43	-	-	0.00	0.00	-	0.00
T14	6,941	6,942	**9.93**	108.5	0.00	87.83	-	-	0.00	0.00	-	0.00
T15	8,411	8,411	**7.67**	108.5	0.00	89.50	-	-	0.00	0.00	-	0.00
T16	9,257	9,258	**6.54**	108.5	0.00	90.33	-	-	0.00	0.00	-	0.00
T17	8,733	8,733	**7.23**	108.5	0.00	89.82	-	-	0.00	0.00	-	0.00
T18	8,310	8,310	**7.81**	108.5	0.00	89.39	-	-	0.00	0.00	-	0.00
T19	7,555	7,556	**8.93**	108.5	0.00	88.57	-	-	0.00	0.00	-	0.00
T20	7,386	7,386	**9.20**	108.5	0.00	88.37	-	-	0.00	0.00	-	0.00
T21	6,825	6,825	**10.14**	108.5	0.00	87.68	-	-	0.00	0.00	-	0.00
T22	8,267	8,268	**7.87**	108.5	0.00	89.35	-	-	0.00	0.00	-	0.00
T23	7,865	7,866	**8.46**	108.5	0.00	88.91	-	-	0.00	0.00	-	0.00
T24	7,535	7,536	**8.96**	108.5	0.00	88.54	-	-	0.00	0.00	-	0.00
T25	9,900	9,900	**5.76**	108.5	0.00	90.91	-	-	0.00	0.00	-	0.00
T26	9,575	9,576	**6.15**	108.5	0.00	90.62	-	-	0.00	0.00	-	0.00
T27	9,322	9,323	**6.46**	108.5	0.00	90.39	-	-	0.00	0.00	-	0.00
T28	9,153	9,154	**6.68**	108.5	0.00	90.23	-	-	0.00	0.00	-	0.00
T29	9,185	9,186	**6.63**	108.5	0.00	90.26	-	-	0.00	0.00	-	0.00
T30	8,810	8,810	**7.12**	108.5	0.00	89.90	-	-	0.00	0.00	-	0.00
T31	8,626	8,626	**7.37**	108.5	0.00	89.72	-	-	0.00	0.00	-	0.00

To be continued on next page...

Project:
20131290 Rolette Power Development

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DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T32	8,001	8,001	**8.25**	108.5	0.00	89.06	-	-	0.00	0.00	-	0.00
T33	7,872	7,872	**8.45**	108.5	0.00	88.92	-	-	0.00	0.00	-	0.00
T34	9,859	9,859	**5.81**	108.5	0.00	90.88	-	-	0.00	0.00	-	0.00
T35	10,287	10,287	**5.32**	108.5	0.00	91.25	-	-	0.00	0.00	-	0.00
T36	9,664	9,664	**6.04**	108.5	0.00	90.70	-	-	0.00	0.00	-	0.00
T37	9,198	9,199	**6.62**	108.5	0.00	90.27	-	-	0.00	0.00	-	0.00
T38	8,945	8,945	**6.95**	108.5	0.00	90.03	-	-	0.00	0.00	-	0.00
T39	10,819	10,819	**4.73**	108.5	0.00	91.68	-	-	0.00	0.00	-	0.00
T40	10,434	10,435	**5.15**	108.5	0.00	91.37	-	-	0.00	0.00	-	0.00
T41	10,998	10,999	**4.54**	108.5	0.00	91.83	-	-	0.00	0.00	-	0.00
T42	9,883	9,883	**5.78**	108.5	0.00	90.90	-	-	0.00	0.00	-	0.00
T43	9,379	9,380	**6.39**	108.5	0.00	90.44	-	-	0.00	0.00	-	0.00
T44	9,943	9,943	**5.71**	108.5	0.00	90.95	-	-	0.00	0.00	-	0.00
T45	10,145	10,145	**5.48**	108.5	0.00	91.13	-	-	0.00	0.00	-	0.00
T46	8,989	8,989	**6.89**	108.5	0.00	90.07	-	-	0.00	0.00	-	0.00
T47	8,344	8,345	**7.76**	108.5	0.00	89.43	-	-	0.00	0.00	-	0.00
T48 Alt	9,677	9,677	**6.03**	108.5	0.00	90.72	-	-	0.00	0.00	-	0.00
T49 Alt	9,840	9,840	**5.83**	108.5	0.00	90.86	-	-	0.00	0.00	-	0.00
T50 Alt	6,856	6,856	**10.08**	108.5	0.00	87.72	-	-	0.00	0.00	-	0.00
T51 Alt	6,674	6,675	**10.40**	108.5	0.00	87.49	-	-	0.00	0.00	-	0.00
T52 Alt	7,302	7,303	**9.33**	108.5	0.00	88.27	-	-	0.00	0.00	-	0.00
T53 Alt	7,250	7,251	**9.42**	108.5	0.00	88.21	-	-	0.00	0.00	-	0.00
T54 Alt	7,388	7,388	**9.20**	108.5	0.00	88.37	-	-	0.00	0.00	-	0.00
T55 Alt	6,714	6,715	**10.33**	108.5	0.00	87.54	-	-	0.00	0.00	-	0.00
T56 Alt	8,529	8,529	**7.50**	108.5	0.00	89.62	-	-	0.00	0.00	-	0.00
T57 Alt	5,599	5,600	**12.50**	108.5	0.00	85.96	-	-	0.00	0.00	-	0.00
T58 Alt	5,620	5,620	**12.46**	108.5	0.00	86.00	-	-	0.00	0.00	-	0.00
T59 Alt	5,810	5,810	**12.06**	108.5	0.00	86.28	-	-	0.00	0.00	-	0.00
Sum	27.08											

- Data undefined due to calculation with octave data

Noise sensitive area: H37 Noise sensitive point: User defined (38)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	7,780	7,780	**8.58**	108.5	0.00	88.82	-	-	0.00	0.00	-	0.00
T02	7,948	7,949	**8.33**	108.5	0.00	89.01	-	-	0.00	0.00	-	0.00
T03	7,889	7,890	**8.42**	108.5	0.00	88.94	-	-	0.00	0.00	-	0.00
T04	7,812	7,812	**8.54**	108.5	0.00	88.86	-	-	0.00	0.00	-	0.00
T05	8,984	8,985	**6.89**	108.5	0.00	90.07	-	-	0.00	0.00	-	0.00
T06	9,063	9,063	**6.79**	108.5	0.00	90.15	-	-	0.00	0.00	-	0.00
T07	8,989	8,990	**6.89**	108.5	0.00	90.07	-	-	0.00	0.00	-	0.00
T08	7,892	7,893	**8.42**	108.5	0.00	88.94	-	-	0.00	0.00	-	0.00
T09	8,419	8,419	**7.66**	108.5	0.00	89.51	-	-	0.00	0.00	-	0.00
T10	8,382	8,383	**7.71**	108.5	0.00	89.47	-	-	0.00	0.00	-	0.00
T11	10,797	10,798	**4.75**	108.5	0.00	91.67	-	-	0.00	0.00	-	0.00
T12	10,509	10,509	**5.07**	108.5	0.00	91.43	-	-	0.00	0.00	-	0.00
T13	10,765	10,766	**4.79**	108.5	0.00	91.64	-	-	0.00	0.00	-	0.00
T14	10,371	10,372	**5.22**	108.5	0.00	91.32	-	-	0.00	0.00	-	0.00
T15	11,742	11,743	**3.78**	108.5	0.00	92.40	-	-	0.00	0.00	-	0.00
T16	12,739	12,740	**2.84**	108.5	0.00	93.10	-	-	0.00	0.00	-	0.00
T17	12,312	12,313	**3.24**	108.5	0.00	92.81	-	-	0.00	0.00	-	0.00
T18	11,987	11,988	**3.54**	108.5	0.00	92.57	-	-	0.00	0.00	-	0.00
T19	11,291	11,292	**4.24**	108.5	0.00	92.06	-	-	0.00	0.00	-	0.00

To be continued on next page...

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DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T20	11,267	11,267	**4.26**	108.5	0.00	92.04	-	-	0.00	0.00	-	0.00
T21	10,760	10,761	**4.79**	108.5	0.00	91.64	-	-	0.00	0.00	-	0.00
T22	12,194	12,194	**3.35**	108.5	0.00	92.72	-	-	0.00	0.00	-	0.00
T23	11,880	11,880	**3.65**	108.5	0.00	92.50	-	-	0.00	0.00	-	0.00
T24	11,625	11,626	**3.90**	108.5	0.00	92.31	-	-	0.00	0.00	-	0.00
T25	13,586	13,586	**2.10**	108.5	0.00	93.66	-	-	0.00	0.00	-	0.00
T26	13,340	13,341	**2.31**	108.5	0.00	93.50	-	-	0.00	0.00	-	0.00
T27	13,158	13,159	**2.47**	108.5	0.00	93.38	-	-	0.00	0.00	-	0.00
T28	13,069	13,069	**2.55**	108.5	0.00	93.33	-	-	0.00	0.00	-	0.00
T29	13,254	13,255	**2.38**	108.5	0.00	93.45	-	-	0.00	0.00	-	0.00
T30	12,931	12,931	**2.67**	108.5	0.00	93.23	-	-	0.00	0.00	-	0.00
T31	12,810	12,810	**2.78**	108.5	0.00	93.15	-	-	0.00	0.00	-	0.00
T32	12,288	12,288	**3.26**	108.5	0.00	92.79	-	-	0.00	0.00	-	0.00
T33	12,207	12,208	**3.33**	108.5	0.00	92.73	-	-	0.00	0.00	-	0.00
T34	13,861	13,861	**1.87**	108.5	0.00	93.84	-	-	0.00	0.00	-	0.00
T35	14,364	14,364	**1.46**	108.5	0.00	94.15	-	-	0.00	0.00	-	0.00
T36	13,846	13,846	**1.88**	108.5	0.00	93.83	-	-	0.00	0.00	-	0.00
T37	13,450	13,451	**2.21**	108.5	0.00	93.57	-	-	0.00	0.00	-	0.00
T38	13,252	13,253	**2.39**	108.5	0.00	93.45	-	-	0.00	0.00	-	0.00
T39	14,956	14,957	**0.99**	108.5	0.00	94.50	-	-	0.00	0.00	-	0.00
T40	14,658	14,658	**1.22**	108.5	0.00	94.32	-	-	0.00	0.00	-	0.00
T41	15,263	15,263	**0.75**	108.5	0.00	94.67	-	-	0.00	0.00	-	0.00
T42	14,177	14,178	**1.61**	108.5	0.00	94.03	-	-	0.00	0.00	-	0.00
T43	13,723	13,723	**1.98**	108.5	0.00	93.75	-	-	0.00	0.00	-	0.00
T44	14,338	14,338	**1.48**	108.5	0.00	94.13	-	-	0.00	0.00	-	0.00
T45	14,559	14,559	**1.30**	108.5	0.00	94.26	-	-	0.00	0.00	-	0.00
T46	13,385	13,386	**2.27**	108.5	0.00	93.53	-	-	0.00	0.00	-	0.00
T47	12,768	12,768	**2.82**	108.5	0.00	93.12	-	-	0.00	0.00	-	0.00
T48 Alt	14,106	14,106	**1.66**	108.5	0.00	93.99	-	-	0.00	0.00	-	0.00
T49 Alt	14,277	14,277	**1.53**	108.5	0.00	94.09	-	-	0.00	0.00	-	0.00
T50 Alt	10,988	10,988	**4.55**	108.5	0.00	91.82	-	-	0.00	0.00	-	0.00
T51 Alt	10,706	10,706	**4.85**	108.5	0.00	91.59	-	-	0.00	0.00	-	0.00
T52 Alt	9,583	9,583	**6.14**	108.5	0.00	90.63	-	-	0.00	0.00	-	0.00
T53 Alt	9,061	9,061	**6.79**	108.5	0.00	90.14	-	-	0.00	0.00	-	0.00
T54 Alt	9,959	9,960	**5.69**	108.5	0.00	90.96	-	-	0.00	0.00	-	0.00
T55 Alt	9,831	9,831	**5.84**	108.5	0.00	90.85	-	-	0.00	0.00	-	0.00
T56 Alt	12,897	12,898	**2.70**	108.5	0.00	93.21	-	-	0.00	0.00	-	0.00
T57 Alt	8,985	8,986	**6.89**	108.5	0.00	90.07	-	-	0.00	0.00	-	0.00
T58 Alt	9,692	9,692	**6.01**	108.5	0.00	90.73	-	-	0.00	0.00	-	0.00
T59 Alt	9,959	9,960	**5.69**	108.5	0.00	90.96	-	-	0.00	0.00	-	0.00

Sum 22.43

- Data undefined due to calculation with octave data

Noise sensitive area: H38 Noise sensitive point: User defined (39)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	9,051	9,051	**6.81**	108.5	0.00	90.13	-	-	0.00	0.00	-	0.00
T02	8,902	8,902	**7.00**	108.5	0.00	89.99	-	-	0.00	0.00	-	0.00
T03	8,612	8,613	**7.39**	108.5	0.00	89.70	-	-	0.00	0.00	-	0.00
T04	8,185	8,185	**7.99**	108.5	0.00	89.26	-	-	0.00	0.00	-	0.00
T05	9,068	9,068	**6.79**	108.5	0.00	90.15	-	-	0.00	0.00	-	0.00
T06	8,904	8,904	**7.00**	108.5	0.00	89.99	-	-	0.00	0.00	-	0.00
T07	8,466	8,466	**7.59**	108.5	0.00	89.55	-	-	0.00	0.00	-	0.00

To be continued on next page...

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

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Calculated:
2/16/2015 4:05 PM/2.9.285

DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T08	7,381	7,381	**9.21**	108.5	0.00	88.36	-	-	0.00	0.00	-	0.00
T09	7,518	7,519	**8.99**	108.5	0.00	88.52	-	-	0.00	0.00	-	0.00
T10	7,276	7,276	**9.38**	108.5	0.00	88.24	-	-	0.00	0.00	-	0.00
T11	10,663	10,664	**4.90**	108.5	0.00	91.56	-	-	0.00	0.00	-	0.00
T12	10,253	10,254	**5.35**	108.5	0.00	91.22	-	-	0.00	0.00	-	0.00
T13	10,101	10,101	**5.53**	108.5	0.00	91.09	-	-	0.00	0.00	-	0.00
T14	9,590	9,590	**6.13**	108.5	0.00	90.64	-	-	0.00	0.00	-	0.00
T15	11,062	11,062	**4.47**	108.5	0.00	91.88	-	-	0.00	0.00	-	0.00
T16	11,865	11,866	**3.66**	108.5	0.00	92.49	-	-	0.00	0.00	-	0.00
T17	11,320	11,320	**4.21**	108.5	0.00	92.08	-	-	0.00	0.00	-	0.00
T18	10,869	10,869	**4.68**	108.5	0.00	91.72	-	-	0.00	0.00	-	0.00
T19	10,105	10,106	**5.52**	108.5	0.00	91.09	-	-	0.00	0.00	-	0.00
T20	9,873	9,873	**5.79**	108.5	0.00	90.89	-	-	0.00	0.00	-	0.00
T21	9,295	9,295	**6.50**	108.5	0.00	90.37	-	-	0.00	0.00	-	0.00
T22	10,709	10,710	**4.85**	108.5	0.00	91.60	-	-	0.00	0.00	-	0.00
T23	10,258	10,259	**5.35**	108.5	0.00	91.22	-	-	0.00	0.00	-	0.00
T24	9,878	9,879	**5.79**	108.5	0.00	90.89	-	-	0.00	0.00	-	0.00
T25	12,433	12,434	**3.12**	108.5	0.00	92.89	-	-	0.00	0.00	-	0.00
T26	12,079	12,080	**3.46**	108.5	0.00	92.64	-	-	0.00	0.00	-	0.00
T27	11,796	11,796	**3.73**	108.5	0.00	92.43	-	-	0.00	0.00	-	0.00
T28	11,585	11,586	**3.94**	108.5	0.00	92.28	-	-	0.00	0.00	-	0.00
T29	11,508	11,509	**4.02**	108.5	0.00	92.22	-	-	0.00	0.00	-	0.00
T30	11,095	11,095	**4.44**	108.5	0.00	91.90	-	-	0.00	0.00	-	0.00
T31	10,850	10,851	**4.70**	108.5	0.00	91.71	-	-	0.00	0.00	-	0.00
T32	10,104	10,105	**5.52**	108.5	0.00	91.09	-	-	0.00	0.00	-	0.00
T33	9,891	9,891	**5.77**	108.5	0.00	90.91	-	-	0.00	0.00	-	0.00
T34	12,222	12,222	**3.32**	108.5	0.00	92.74	-	-	0.00	0.00	-	0.00
T35	12,584	12,584	**2.98**	108.5	0.00	93.00	-	-	0.00	0.00	-	0.00
T36	11,869	11,869	**3.66**	108.5	0.00	92.49	-	-	0.00	0.00	-	0.00
T37	11,324	11,324	**4.20**	108.5	0.00	92.08	-	-	0.00	0.00	-	0.00
T38	10,988	10,988	**4.55**	108.5	0.00	91.82	-	-	0.00	0.00	-	0.00
T39	13,049	13,049	**2.56**	108.5	0.00	93.31	-	-	0.00	0.00	-	0.00
T40	12,573	12,573	**2.99**	108.5	0.00	92.99	-	-	0.00	0.00	-	0.00
T41	13,070	13,071	**2.55**	108.5	0.00	93.33	-	-	0.00	0.00	-	0.00
T42	11,928	11,928	**3.60**	108.5	0.00	92.53	-	-	0.00	0.00	-	0.00
T43	11,340	11,341	**4.19**	108.5	0.00	92.09	-	-	0.00	0.00	-	0.00
T44	11,750	11,751	**3.78**	108.5	0.00	92.40	-	-	0.00	0.00	-	0.00
T45	11,872	11,873	**3.66**	108.5	0.00	92.49	-	-	0.00	0.00	-	0.00
T46	10,816	10,817	**4.73**	108.5	0.00	91.68	-	-	0.00	0.00	-	0.00
T47	10,068	10,068	**5.57**	108.5	0.00	91.06	-	-	0.00	0.00	-	0.00
T48 Alt	11,330	11,330	**4.20**	108.5	0.00	92.08	-	-	0.00	0.00	-	0.00
T49 Alt	11,408	11,408	**4.12**	108.5	0.00	92.14	-	-	0.00	0.00	-	0.00
T50 Alt	9,182	9,182	**6.64**	108.5	0.00	90.26	-	-	0.00	0.00	-	0.00
T51 Alt	9,088	9,088	**6.76**	108.5	0.00	90.17	-	-	0.00	0.00	-	0.00
T52 Alt	9,976	9,977	**5.67**	108.5	0.00	90.98	-	-	0.00	0.00	-	0.00
T53 Alt	9,858	9,858	**5.81**	108.5	0.00	90.88	-	-	0.00	0.00	-	0.00
T54 Alt	10,085	10,085	**5.55**	108.5	0.00	91.07	-	-	0.00	0.00	-	0.00
T55 Alt	9,407	9,407	**6.36**	108.5	0.00	90.47	-	-	0.00	0.00	-	0.00
T56 Alt	10,453	10,453	**5.13**	108.5	0.00	91.39	-	-	0.00	0.00	-	0.00
T57 Alt	8,273	8,274	**7.86**	108.5	0.00	89.35	-	-	0.00	0.00	-	0.00
T58 Alt	8,039	8,039	**8.20**	108.5	0.00	89.10	-	-	0.00	0.00	-	0.00
T59 Alt	8,156	8,156	**8.03**	108.5	0.00	89.23	-	-	0.00	0.00	-	0.00

Sum 23.42

- Data undefined due to calculation with octave data

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

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2/16/2015 4:05 PM/2.9.285

DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

Noise sensitive area: H39 Noise sensitive point: User defined (40)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	8,790	8,791	**7.15**	108.5	0.00	89.88	-	-	0.00	0.00	-	0.00
T02	8,739	8,739	**7.22**	108.5	0.00	89.83	-	-	0.00	0.00	-	0.00
T03	8,516	8,516	**7.52**	108.5	0.00	89.60	-	-	0.00	0.00	-	0.00
T04	8,189	8,190	**7.98**	108.5	0.00	89.27	-	-	0.00	0.00	-	0.00
T05	9,188	9,188	**6.63**	108.5	0.00	90.26	-	-	0.00	0.00	-	0.00
T06	9,098	9,098	**6.75**	108.5	0.00	90.18	-	-	0.00	0.00	-	0.00
T07	8,768	8,768	**7.18**	108.5	0.00	89.86	-	-	0.00	0.00	-	0.00
T08	7,649	7,650	**8.78**	108.5	0.00	88.67	-	-	0.00	0.00	-	0.00
T09	7,920	7,920	**8.37**	108.5	0.00	88.97	-	-	0.00	0.00	-	0.00
T10	7,738	7,739	**8.65**	108.5	0.00	88.77	-	-	0.00	0.00	-	0.00
T11	10,883	10,883	**4.66**	108.5	0.00	91.73	-	-	0.00	0.00	-	0.00
T12	10,505	10,505	**5.07**	108.5	0.00	91.43	-	-	0.00	0.00	-	0.00
T13	10,480	10,480	**5.10**	108.5	0.00	91.41	-	-	0.00	0.00	-	0.00
T14	9,998	9,998	**5.65**	108.5	0.00	91.00	-	-	0.00	0.00	-	0.00
T15	11,460	11,461	**4.06**	108.5	0.00	92.18	-	-	0.00	0.00	-	0.00
T16	12,335	12,335	**3.21**	108.5	0.00	92.82	-	-	0.00	0.00	-	0.00
T17	11,820	11,820	**3.71**	108.5	0.00	92.45	-	-	0.00	0.00	-	0.00
T18	11,403	11,403	**4.12**	108.5	0.00	92.14	-	-	0.00	0.00	-	0.00
T19	10,650	10,651	**4.91**	108.5	0.00	91.55	-	-	0.00	0.00	-	0.00
T20	10,480	10,481	**5.10**	108.5	0.00	91.41	-	-	0.00	0.00	-	0.00
T21	9,916	9,917	**5.74**	108.5	0.00	90.93	-	-	0.00	0.00	-	0.00
T22	11,356	11,357	**4.17**	108.5	0.00	92.10	-	-	0.00	0.00	-	0.00
T23	10,942	10,943	**4.60**	108.5	0.00	91.78	-	-	0.00	0.00	-	0.00
T24	10,597	10,597	**4.97**	108.5	0.00	91.50	-	-	0.00	0.00	-	0.00
T25	12,995	12,995	**2.61**	108.5	0.00	93.28	-	-	0.00	0.00	-	0.00
T26	12,671	12,672	**2.90**	108.5	0.00	93.06	-	-	0.00	0.00	-	0.00
T27	12,416	12,417	**3.14**	108.5	0.00	92.88	-	-	0.00	0.00	-	0.00
T28	12,241	12,242	**3.30**	108.5	0.00	92.76	-	-	0.00	0.00	-	0.00
T29	12,244	12,245	**3.30**	108.5	0.00	92.76	-	-	0.00	0.00	-	0.00
T30	11,854	11,855	**3.67**	108.5	0.00	92.48	-	-	0.00	0.00	-	0.00
T31	11,645	11,645	**3.88**	108.5	0.00	92.32	-	-	0.00	0.00	-	0.00
T32	10,960	10,960	**4.58**	108.5	0.00	91.80	-	-	0.00	0.00	-	0.00
T33	10,785	10,785	**4.77**	108.5	0.00	91.66	-	-	0.00	0.00	-	0.00
T34	12,931	12,932	**2.67**	108.5	0.00	93.23	-	-	0.00	0.00	-	0.00
T35	13,339	13,339	**2.31**	108.5	0.00	93.50	-	-	0.00	0.00	-	0.00
T36	12,677	12,678	**2.90**	108.5	0.00	93.06	-	-	0.00	0.00	-	0.00
T37	12,173	12,174	**3.37**	108.5	0.00	92.71	-	-	0.00	0.00	-	0.00
T38	11,876	11,876	**3.65**	108.5	0.00	92.49	-	-	0.00	0.00	-	0.00
T39	13,846	13,846	**1.88**	108.5	0.00	93.83	-	-	0.00	0.00	-	0.00
T40	13,419	13,420	**2.24**	108.5	0.00	93.55	-	-	0.00	0.00	-	0.00
T41	13,951	13,952	**1.79**	108.5	0.00	93.89	-	-	0.00	0.00	-	0.00
T42	12,818	12,819	**2.77**	108.5	0.00	93.16	-	-	0.00	0.00	-	0.00
T43	12,266	12,266	**3.28**	108.5	0.00	92.77	-	-	0.00	0.00	-	0.00
T44	12,738	12,738	**2.84**	108.5	0.00	93.10	-	-	0.00	0.00	-	0.00
T45	12,888	12,889	**2.71**	108.5	0.00	93.20	-	-	0.00	0.00	-	0.00
T46	11,792	11,793	**3.73**	108.5	0.00	92.43	-	-	0.00	0.00	-	0.00
T47	11,076	11,077	**4.46**	108.5	0.00	91.89	-	-	0.00	0.00	-	0.00
T48 Alt	12,368	12,369	**3.18**	108.5	0.00	92.85	-	-	0.00	0.00	-	0.00
T49 Alt	12,472	12,473	**3.09**	108.5	0.00	92.92	-	-	0.00	0.00	-	0.00
T50 Alt	9,910	9,910	**5.75**	108.5	0.00	90.92	-	-	0.00	0.00	-	0.00
T51 Alt	9,754	9,755	**5.93**	108.5	0.00	90.78	-	-	0.00	0.00	-	0.00
T52 Alt	10,015	10,016	**5.63**	108.5	0.00	91.01	-	-	0.00	0.00	-	0.00
T53 Alt	9,766	9,766	**5.92**	108.5	0.00	90.79	-	-	0.00	0.00	-	0.00
T54 Alt	10,211	10,212	**5.40**	108.5	0.00	91.18	-	-	0.00	0.00	-	0.00
T55 Alt	9,697	9,697	**6.00**	108.5	0.00	90.73	-	-	0.00	0.00	-	0.00

To be continued on next page...

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20131290 Rolette Power Development

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Finley, ND 58230

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EAPC Wind Energy
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US-GRAND FORKS, ND 58201
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wind@eapc.net
Calculated:
2/16/2015 4:05 PM/2.9.285

DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T56 Alt	11,390	11,390	**4.14**	108.5	0.00	92.13	-	-	0.00	0.00	-	0.00
T57 Alt	8,632	8,633	**7.36**	108.5	0.00	89.72	-	-	0.00	0.00	-	0.00
T58 Alt	8,699	8,699	**7.27**	108.5	0.00	89.79	-	-	0.00	0.00	-	0.00
T59 Alt	8,866	8,867	**7.05**	108.5	0.00	89.96	-	-	0.00	0.00	-	0.00
Sum	22.87											

- Data undefined due to calculation with octave data

Noise sensitive area: H40 Noise sensitive point: User defined (41)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	9,792	9,792	**5.89**	108.5	0.00	90.82	-	-	0.00	0.00	-	0.00
T02	9,711	9,711	**5.99**	108.5	0.00	90.75	-	-	0.00	0.00	-	0.00
T03	9,464	9,465	**6.29**	108.5	0.00	90.52	-	-	0.00	0.00	-	0.00
T04	9,098	9,099	**6.75**	108.5	0.00	90.18	-	-	0.00	0.00	-	0.00
T05	10,049	10,050	**5.59**	108.5	0.00	91.04	-	-	0.00	0.00	-	0.00
T06	9,923	9,924	**5.73**	108.5	0.00	90.93	-	-	0.00	0.00	-	0.00
T07	9,536	9,536	**6.20**	108.5	0.00	90.59	-	-	0.00	0.00	-	0.00
T08	8,432	8,433	**7.64**	108.5	0.00	89.52	-	-	0.00	0.00	-	0.00
T09	8,628	8,628	**7.37**	108.5	0.00	89.72	-	-	0.00	0.00	-	0.00
T10	8,408	8,408	**7.67**	108.5	0.00	89.49	-	-	0.00	0.00	-	0.00
T11	11,699	11,700	**3.83**	108.5	0.00	92.36	-	-	0.00	0.00	-	0.00
T12	11,304	11,304	**4.22**	108.5	0.00	92.06	-	-	0.00	0.00	-	0.00
T13	11,207	11,207	**4.32**	108.5	0.00	91.99	-	-	0.00	0.00	-	0.00
T14	10,707	10,707	**4.85**	108.5	0.00	91.59	-	-	0.00	0.00	-	0.00
T15	12,177	12,178	**3.36**	108.5	0.00	92.71	-	-	0.00	0.00	-	0.00
T16	13,008	13,008	**2.60**	108.5	0.00	93.28	-	-	0.00	0.00	-	0.00
T17	12,472	12,472	**3.09**	108.5	0.00	92.92	-	-	0.00	0.00	-	0.00
T18	12,031	12,032	**3.50**	108.5	0.00	92.61	-	-	0.00	0.00	-	0.00
T19	11,270	11,270	**4.26**	108.5	0.00	92.04	-	-	0.00	0.00	-	0.00
T20	11,055	11,055	**4.48**	108.5	0.00	91.87	-	-	0.00	0.00	-	0.00
T21	10,480	10,480	**5.10**	108.5	0.00	91.41	-	-	0.00	0.00	-	0.00
T22	11,902	11,902	**3.63**	108.5	0.00	92.51	-	-	0.00	0.00	-	0.00
T23	11,458	11,458	**4.07**	108.5	0.00	92.18	-	-	0.00	0.00	-	0.00
T24	11,084	11,084	**4.45**	108.5	0.00	91.89	-	-	0.00	0.00	-	0.00
T25	13,605	13,606	**2.08**	108.5	0.00	93.67	-	-	0.00	0.00	-	0.00
T26	13,259	13,260	**2.38**	108.5	0.00	93.45	-	-	0.00	0.00	-	0.00
T27	12,983	12,983	**2.62**	108.5	0.00	93.27	-	-	0.00	0.00	-	0.00
T28	12,780	12,781	**2.80**	108.5	0.00	93.13	-	-	0.00	0.00	-	0.00
T29	12,718	12,718	**2.86**	108.5	0.00	93.09	-	-	0.00	0.00	-	0.00
T30	12,307	12,307	**3.24**	108.5	0.00	92.80	-	-	0.00	0.00	-	0.00
T31	12,066	12,067	**3.47**	108.5	0.00	92.63	-	-	0.00	0.00	-	0.00
T32	11,323	11,324	**4.20**	108.5	0.00	92.08	-	-	0.00	0.00	-	0.00
T33	11,110	11,110	**4.42**	108.5	0.00	91.91	-	-	0.00	0.00	-	0.00
T34	13,427	13,428	**2.23**	108.5	0.00	93.56	-	-	0.00	0.00	-	0.00
T35	13,796	13,796	**1.92**	108.5	0.00	93.80	-	-	0.00	0.00	-	0.00
T36	13,086	13,086	**2.53**	108.5	0.00	93.34	-	-	0.00	0.00	-	0.00
T37	12,543	12,543	**3.02**	108.5	0.00	92.97	-	-	0.00	0.00	-	0.00
T38	12,207	12,207	**3.33**	108.5	0.00	92.73	-	-	0.00	0.00	-	0.00
T39	14,266	14,266	**1.53**	108.5	0.00	94.09	-	-	0.00	0.00	-	0.00
T40	13,792	13,792	**1.92**	108.5	0.00	93.79	-	-	0.00	0.00	-	0.00
T41	14,289	14,289	**1.52**	108.5	0.00	94.10	-	-	0.00	0.00	-	0.00
T42	13,147	13,147	**2.48**	108.5	0.00	93.38	-	-	0.00	0.00	-	0.00
T43	12,557	12,557	**3.01**	108.5	0.00	92.98	-	-	0.00	0.00	-	0.00

To be continued on next page...

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

Description:
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Calculated:
2/16/2015 4:05 PM/2.9.285

DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T44	12,958	12,958	**2.64**	108.5	0.00	93.25	-	-	0.00	0.00	-	0.00
T45	13,073	13,074	**2.54**	108.5	0.00	93.33	-	-	0.00	0.00	-	0.00
T46	12,027	12,027	**3.51**	108.5	0.00	92.60	-	-	0.00	0.00	-	0.00
T47	11,272	11,272	**4.26**	108.5	0.00	92.04	-	-	0.00	0.00	-	0.00
T48 Alt	12,525	12,526	**3.04**	108.5	0.00	92.96	-	-	0.00	0.00	-	0.00
T49 Alt	12,594	12,594	**2.97**	108.5	0.00	93.00	-	-	0.00	0.00	-	0.00
T50 Alt	10,388	10,389	**5.20**	108.5	0.00	91.33	-	-	0.00	0.00	-	0.00
T51 Alt	10,283	10,283	**5.32**	108.5	0.00	91.24	-	-	0.00	0.00	-	0.00
T52 Alt	10,915	10,915	**4.63**	108.5	0.00	91.76	-	-	0.00	0.00	-	0.00
T53 Alt	10,716	10,716	**4.84**	108.5	0.00	91.60	-	-	0.00	0.00	-	0.00
T54 Alt	11,072	11,072	**4.46**	108.5	0.00	91.88	-	-	0.00	0.00	-	0.00
T55 Alt	10,474	10,474	**5.11**	108.5	0.00	91.40	-	-	0.00	0.00	-	0.00
T56 Alt	11,669	11,669	**3.86**	108.5	0.00	92.34	-	-	0.00	0.00	-	0.00
T57 Alt	9,368	9,368	**6.41**	108.5	0.00	90.43	-	-	0.00	0.00	-	0.00
T58 Alt	9,231	9,231	**6.58**	108.5	0.00	90.31	-	-	0.00	0.00	-	0.00
T59 Alt	9,358	9,358	**6.42**	108.5	0.00	90.42	-	-	0.00	0.00	-	0.00

Sum 22.15

- Data undefined due to calculation with octave data

Noise sensitive area: H41 Noise sensitive point: User defined (42)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	9,978	9,979	**5.67**	108.5	0.00	90.98	-	-	0.00	0.00	-	0.00
T02	9,736	9,736	**5.96**	108.5	0.00	90.77	-	-	0.00	0.00	-	0.00
T03	9,386	9,386	**6.38**	108.5	0.00	90.45	-	-	0.00	0.00	-	0.00
T04	8,863	8,863	**7.05**	108.5	0.00	89.95	-	-	0.00	0.00	-	0.00
T05	9,594	9,595	**6.13**	108.5	0.00	90.64	-	-	0.00	0.00	-	0.00
T06	9,348	9,348	**6.43**	108.5	0.00	90.41	-	-	0.00	0.00	-	0.00
T07	8,791	8,791	**7.15**	108.5	0.00	89.88	-	-	0.00	0.00	-	0.00
T08	7,783	7,784	**8.58**	108.5	0.00	88.82	-	-	0.00	0.00	-	0.00
T09	7,750	7,750	**8.63**	108.5	0.00	88.79	-	-	0.00	0.00	-	0.00
T10	7,435	7,436	**9.12**	108.5	0.00	88.43	-	-	0.00	0.00	-	0.00
T11	11,039	11,039	**4.50**	108.5	0.00	91.86	-	-	0.00	0.00	-	0.00
T12	10,597	10,598	**4.97**	108.5	0.00	91.50	-	-	0.00	0.00	-	0.00
T13	10,287	10,287	**5.32**	108.5	0.00	91.25	-	-	0.00	0.00	-	0.00
T14	9,750	9,750	**5.94**	108.5	0.00	90.78	-	-	0.00	0.00	-	0.00
T15	11,204	11,205	**4.33**	108.5	0.00	91.99	-	-	0.00	0.00	-	0.00
T16	11,900	11,901	**3.63**	108.5	0.00	92.51	-	-	0.00	0.00	-	0.00
T17	11,321	11,322	**4.21**	108.5	0.00	92.08	-	-	0.00	0.00	-	0.00
T18	10,832	10,833	**4.72**	108.5	0.00	91.69	-	-	0.00	0.00	-	0.00
T19	10,068	10,068	**5.57**	108.5	0.00	91.06	-	-	0.00	0.00	-	0.00
T20	9,752	9,752	**5.94**	108.5	0.00	90.78	-	-	0.00	0.00	-	0.00
T21	9,167	9,168	**6.66**	108.5	0.00	90.25	-	-	0.00	0.00	-	0.00
T22	10,514	10,515	**5.06**	108.5	0.00	91.44	-	-	0.00	0.00	-	0.00
T23	10,016	10,017	**5.63**	108.5	0.00	91.01	-	-	0.00	0.00	-	0.00
T24	9,592	9,593	**6.13**	108.5	0.00	90.64	-	-	0.00	0.00	-	0.00
T25	12,332	12,333	**3.22**	108.5	0.00	92.82	-	-	0.00	0.00	-	0.00
T26	11,941	11,941	**3.59**	108.5	0.00	92.54	-	-	0.00	0.00	-	0.00
T27	11,620	11,621	**3.90**	108.5	0.00	92.30	-	-	0.00	0.00	-	0.00
T28	11,361	11,362	**4.16**	108.5	0.00	92.11	-	-	0.00	0.00	-	0.00
T29	11,166	11,166	**4.37**	108.5	0.00	91.96	-	-	0.00	0.00	-	0.00
T30	10,722	10,723	**4.83**	108.5	0.00	91.61	-	-	0.00	0.00	-	0.00
T31	10,426	10,427	**5.16**	108.5	0.00	91.36	-	-	0.00	0.00	-	0.00

To be continued on next page...

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

Description:
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DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T32	9,594	9,595	**6.13**	108.5	0.00	90.64	-	-	0.00	0.00	-	0.00
T33	9,320	9,320	**6.47**	108.5	0.00	90.39	-	-	0.00	0.00	-	0.00
T34	11,909	11,910	**3.62**	108.5	0.00	92.52	-	-	0.00	0.00	-	0.00
T35	12,196	12,196	**3.34**	108.5	0.00	92.72	-	-	0.00	0.00	-	0.00
T36	11,406	11,406	**4.12**	108.5	0.00	92.14	-	-	0.00	0.00	-	0.00
T37	10,804	10,804	**4.75**	108.5	0.00	91.67	-	-	0.00	0.00	-	0.00
T38	10,408	10,409	**5.18**	108.5	0.00	91.35	-	-	0.00	0.00	-	0.00
T39	12,591	12,591	**2.98**	108.5	0.00	93.00	-	-	0.00	0.00	-	0.00
T40	12,041	12,041	**3.49**	108.5	0.00	92.61	-	-	0.00	0.00	-	0.00
T41	12,475	12,475	**3.08**	108.5	0.00	92.92	-	-	0.00	0.00	-	0.00
T42	11,331	11,331	**4.20**	108.5	0.00	92.09	-	-	0.00	0.00	-	0.00
T43	10,691	10,691	**4.87**	108.5	0.00	91.58	-	-	0.00	0.00	-	0.00
T44	10,985	10,986	**4.55**	108.5	0.00	91.82	-	-	0.00	0.00	-	0.00
T45	11,053	11,054	**4.48**	108.5	0.00	91.87	-	-	0.00	0.00	-	0.00
T46	10,084	10,085	**5.55**	108.5	0.00	91.07	-	-	0.00	0.00	-	0.00
T47	9,286	9,287	**6.51**	108.5	0.00	90.36	-	-	0.00	0.00	-	0.00
T48 Alt	10,476	10,476	**5.11**	108.5	0.00	91.40	-	-	0.00	0.00	-	0.00
T49 Alt	10,502	10,502	**5.08**	108.5	0.00	91.43	-	-	0.00	0.00	-	0.00
T50 Alt	8,897	8,898	**7.01**	108.5	0.00	89.99	-	-	0.00	0.00	-	0.00
T51 Alt	8,898	8,899	**7.01**	108.5	0.00	89.99	-	-	0.00	0.00	-	0.00
T52 Alt	10,574	10,575	**5.00**	108.5	0.00	91.49	-	-	0.00	0.00	-	0.00
T53 Alt	10,601	10,601	**4.97**	108.5	0.00	91.51	-	-	0.00	0.00	-	0.00
T54 Alt	10,581	10,581	**4.99**	108.5	0.00	91.49	-	-	0.00	0.00	-	0.00
T55 Alt	9,722	9,722	**5.97**	108.5	0.00	90.76	-	-	0.00	0.00	-	0.00
T56 Alt	9,797	9,797	**5.88**	108.5	0.00	90.82	-	-	0.00	0.00	-	0.00
T57 Alt	8,533	8,534	**7.50**	108.5	0.00	89.62	-	-	0.00	0.00	-	0.00
T58 Alt	7,890	7,891	**8.42**	108.5	0.00	88.94	-	-	0.00	0.00	-	0.00
T59 Alt	7,926	7,926	**8.36**	108.5	0.00	88.98	-	-	0.00	0.00	-	0.00
Sum	23.42											

- Data undefined due to calculation with octave data

Noise sensitive area: H42 Noise sensitive point: User defined (43)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	9,165	9,165	**6.66**	108.5	0.00	90.24	-	-	0.00	0.00	-	0.00
T02	8,853	8,853	**7.07**	108.5	0.00	89.94	-	-	0.00	0.00	-	0.00
T03	8,463	8,463	**7.59**	108.5	0.00	89.55	-	-	0.00	0.00	-	0.00
T04	7,883	7,883	**8.43**	108.5	0.00	88.93	-	-	0.00	0.00	-	0.00
T05	8,513	8,514	**7.52**	108.5	0.00	89.60	-	-	0.00	0.00	-	0.00
T06	8,226	8,226	**7.93**	108.5	0.00	89.30	-	-	0.00	0.00	-	0.00
T07	7,618	7,618	**8.83**	108.5	0.00	88.64	-	-	0.00	0.00	-	0.00
T08	6,661	6,661	**10.43**	108.5	0.00	87.47	-	-	0.00	0.00	-	0.00
T09	6,548	6,549	**10.63**	108.5	0.00	87.32	-	-	0.00	0.00	-	0.00
T10	6,209	6,210	**11.26**	108.5	0.00	86.86	-	-	0.00	0.00	-	0.00
T11	9,870	9,870	**5.80**	108.5	0.00	90.89	-	-	0.00	0.00	-	0.00
T12	9,418	9,418	**6.34**	108.5	0.00	90.48	-	-	0.00	0.00	-	0.00
T13	9,047	9,047	**6.81**	108.5	0.00	90.13	-	-	0.00	0.00	-	0.00
T14	8,504	8,504	**7.54**	108.5	0.00	89.59	-	-	0.00	0.00	-	0.00
T15	9,945	9,945	**5.71**	108.5	0.00	90.95	-	-	0.00	0.00	-	0.00
T16	10,608	10,609	**4.96**	108.5	0.00	91.51	-	-	0.00	0.00	-	0.00
T17	10,023	10,023	**5.62**	108.5	0.00	91.02	-	-	0.00	0.00	-	0.00
T18	9,526	9,526	**6.21**	108.5	0.00	90.58	-	-	0.00	0.00	-	0.00
T19	8,764	8,765	**7.18**	108.5	0.00	89.85	-	-	0.00	0.00	-	0.00

To be continued on next page...

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

Description:
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Calculated:
2/16/2015 4:05 PM/2.9.285

DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T20	8,432	8,432	**7.64**	108.5	0.00	89.52	-	-	0.00	0.00	-	0.00
T21	7,848	7,848	**8.48**	108.5	0.00	88.90	-	-	0.00	0.00	-	0.00
T22	9,181	9,182	**6.64**	108.5	0.00	90.26	-	-	0.00	0.00	-	0.00
T23	8,678	8,679	**7.30**	108.5	0.00	89.77	-	-	0.00	0.00	-	0.00
T24	8,250	8,251	**7.89**	108.5	0.00	89.33	-	-	0.00	0.00	-	0.00
T25	11,010	11,011	**4.53**	108.5	0.00	91.84	-	-	0.00	0.00	-	0.00
T26	10,613	10,614	**4.95**	108.5	0.00	91.52	-	-	0.00	0.00	-	0.00
T27	10,288	10,289	**5.31**	108.5	0.00	91.25	-	-	0.00	0.00	-	0.00
T28	10,024	10,024	**5.62**	108.5	0.00	91.02	-	-	0.00	0.00	-	0.00
T29	9,820	9,821	**5.86**	108.5	0.00	90.84	-	-	0.00	0.00	-	0.00
T30	9,376	9,377	**6.40**	108.5	0.00	90.44	-	-	0.00	0.00	-	0.00
T31	9,080	9,080	**6.77**	108.5	0.00	90.16	-	-	0.00	0.00	-	0.00
T32	8,251	8,252	**7.89**	108.5	0.00	89.33	-	-	0.00	0.00	-	0.00
T33	7,982	7,983	**8.28**	108.5	0.00	89.04	-	-	0.00	0.00	-	0.00
T34	10,564	10,565	**5.01**	108.5	0.00	91.48	-	-	0.00	0.00	-	0.00
T35	10,850	10,850	**4.70**	108.5	0.00	91.71	-	-	0.00	0.00	-	0.00
T36	10,061	10,062	**5.57**	108.5	0.00	91.05	-	-	0.00	0.00	-	0.00
T37	9,462	9,463	**6.29**	108.5	0.00	90.52	-	-	0.00	0.00	-	0.00
T38	9,073	9,074	**6.78**	108.5	0.00	90.16	-	-	0.00	0.00	-	0.00
T39	11,246	11,247	**4.28**	108.5	0.00	92.02	-	-	0.00	0.00	-	0.00
T40	10,702	10,702	**4.86**	108.5	0.00	91.59	-	-	0.00	0.00	-	0.00
T41	11,144	11,145	**4.39**	108.5	0.00	91.94	-	-	0.00	0.00	-	0.00
T42	9,999	10,000	**5.65**	108.5	0.00	91.00	-	-	0.00	0.00	-	0.00
T43	9,367	9,368	**6.41**	108.5	0.00	90.43	-	-	0.00	0.00	-	0.00
T44	9,690	9,690	**6.01**	108.5	0.00	90.73	-	-	0.00	0.00	-	0.00
T45	9,775	9,775	**5.91**	108.5	0.00	90.80	-	-	0.00	0.00	-	0.00
T46	8,778	8,779	**7.17**	108.5	0.00	89.87	-	-	0.00	0.00	-	0.00
T47	7,992	7,993	**8.27**	108.5	0.00	89.05	-	-	0.00	0.00	-	0.00
T48 Alt	9,209	9,209	**6.61**	108.5	0.00	90.28	-	-	0.00	0.00	-	0.00
T49 Alt	9,256	9,256	**6.55**	108.5	0.00	90.33	-	-	0.00	0.00	-	0.00
T50 Alt	7,557	7,557	**8.93**	108.5	0.00	88.57	-	-	0.00	0.00	-	0.00
T51 Alt	7,569	7,570	**8.91**	108.5	0.00	88.58	-	-	0.00	0.00	-	0.00
T52 Alt	9,524	9,524	**6.21**	108.5	0.00	90.58	-	-	0.00	0.00	-	0.00
T53 Alt	9,641	9,642	**6.07**	108.5	0.00	90.68	-	-	0.00	0.00	-	0.00
T54 Alt	9,474	9,474	**6.27**	108.5	0.00	90.53	-	-	0.00	0.00	-	0.00
T55 Alt	8,536	8,537	**7.49**	108.5	0.00	89.63	-	-	0.00	0.00	-	0.00
T56 Alt	8,473	8,474	**7.58**	108.5	0.00	89.56	-	-	0.00	0.00	-	0.00
T57 Alt	7,335	7,335	**9.28**	108.5	0.00	88.31	-	-	0.00	0.00	-	0.00
T58 Alt	6,572	6,572	**10.59**	108.5	0.00	87.35	-	-	0.00	0.00	-	0.00
T59 Alt	6,594	6,594	**10.55**	108.5	0.00	87.38	-	-	0.00	0.00	-	0.00

Sum 25.04

- Data undefined due to calculation with octave data

Noise sensitive area: H43 Noise sensitive point: User defined (44)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	10,926	10,926	**4.62**	108.5	0.00	91.77	-	-	0.00	0.00	-	0.00
T02	10,558	10,559	**5.01**	108.5	0.00	91.47	-	-	0.00	0.00	-	0.00
T03	10,135	10,135	**5.49**	108.5	0.00	91.12	-	-	0.00	0.00	-	0.00
T04	9,501	9,501	**6.24**	108.5	0.00	90.56	-	-	0.00	0.00	-	0.00
T05	9,985	9,986	**5.66**	108.5	0.00	90.99	-	-	0.00	0.00	-	0.00
T06	9,633	9,633	**6.08**	108.5	0.00	90.68	-	-	0.00	0.00	-	0.00
T07	8,938	8,938	**6.95**	108.5	0.00	90.02	-	-	0.00	0.00	-	0.00

To be continued on next page...

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
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DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T08	8,101	8,101	**8.11**	108.5	0.00	89.17	-	-	0.00	0.00	-	0.00
T09	7,830	7,831	**8.51**	108.5	0.00	88.88	-	-	0.00	0.00	-	0.00
T10	7,439	7,440	**9.11**	108.5	0.00	88.43	-	-	0.00	0.00	-	0.00
T11	11,157	11,157	**4.37**	108.5	0.00	91.95	-	-	0.00	0.00	-	0.00
T12	10,687	10,688	**4.87**	108.5	0.00	91.58	-	-	0.00	0.00	-	0.00
T13	10,164	10,164	**5.46**	108.5	0.00	91.14	-	-	0.00	0.00	-	0.00
T14	9,614	9,614	**6.10**	108.5	0.00	90.66	-	-	0.00	0.00	-	0.00
T15	10,984	10,984	**4.56**	108.5	0.00	91.82	-	-	0.00	0.00	-	0.00
T16	11,503	11,503	**4.02**	108.5	0.00	92.22	-	-	0.00	0.00	-	0.00
T17	10,896	10,896	**4.65**	108.5	0.00	91.75	-	-	0.00	0.00	-	0.00
T18	10,369	10,369	**5.22**	108.5	0.00	91.32	-	-	0.00	0.00	-	0.00
T19	9,635	9,636	**6.08**	108.5	0.00	90.68	-	-	0.00	0.00	-	0.00
T20	9,213	9,213	**6.60**	108.5	0.00	90.29	-	-	0.00	0.00	-	0.00
T21	8,647	8,648	**7.34**	108.5	0.00	89.74	-	-	0.00	0.00	-	0.00
T22	9,837	9,838	**5.84**	108.5	0.00	90.86	-	-	0.00	0.00	-	0.00
T23	9,292	9,293	**6.50**	108.5	0.00	90.36	-	-	0.00	0.00	-	0.00
T24	8,823	8,823	**7.11**	108.5	0.00	89.91	-	-	0.00	0.00	-	0.00
T25	11,728	11,729	**3.80**	108.5	0.00	92.39	-	-	0.00	0.00	-	0.00
T26	11,295	11,296	**4.23**	108.5	0.00	92.06	-	-	0.00	0.00	-	0.00
T27	10,933	10,933	**4.61**	108.5	0.00	91.77	-	-	0.00	0.00	-	0.00
T28	10,613	10,614	**4.95**	108.5	0.00	91.52	-	-	0.00	0.00	-	0.00
T29	10,255	10,256	**5.35**	108.5	0.00	91.22	-	-	0.00	0.00	-	0.00
T30	9,784	9,785	**5.90**	108.5	0.00	90.81	-	-	0.00	0.00	-	0.00
T31	9,425	9,425	**6.33**	108.5	0.00	90.49	-	-	0.00	0.00	-	0.00
T32	8,502	8,503	**7.54**	108.5	0.00	89.59	-	-	0.00	0.00	-	0.00
T33	8,152	8,152	**8.03**	108.5	0.00	89.23	-	-	0.00	0.00	-	0.00
T34	11,018	11,019	**4.52**	108.5	0.00	91.84	-	-	0.00	0.00	-	0.00
T35	11,192	11,193	**4.34**	108.5	0.00	91.98	-	-	0.00	0.00	-	0.00
T36	10,319	10,319	**5.28**	108.5	0.00	91.27	-	-	0.00	0.00	-	0.00
T37	9,654	9,654	**6.06**	108.5	0.00	90.69	-	-	0.00	0.00	-	0.00
T38	9,188	9,188	**6.63**	108.5	0.00	90.26	-	-	0.00	0.00	-	0.00
T39	11,479	11,479	**4.05**	108.5	0.00	92.20	-	-	0.00	0.00	-	0.00
T40	10,840	10,840	**4.71**	108.5	0.00	91.70	-	-	0.00	0.00	-	0.00
T41	11,178	11,178	**4.35**	108.5	0.00	91.97	-	-	0.00	0.00	-	0.00
T42	10,058	10,058	**5.58**	108.5	0.00	91.05	-	-	0.00	0.00	-	0.00
T43	9,363	9,364	**6.41**	108.5	0.00	90.43	-	-	0.00	0.00	-	0.00
T44	9,491	9,491	**6.25**	108.5	0.00	90.55	-	-	0.00	0.00	-	0.00
T45	9,484	9,484	**6.26**	108.5	0.00	90.54	-	-	0.00	0.00	-	0.00
T46	8,660	8,660	**7.32**	108.5	0.00	89.75	-	-	0.00	0.00	-	0.00
T47	7,819	7,819	**8.53**	108.5	0.00	88.86	-	-	0.00	0.00	-	0.00
T48 Alt	8,871	8,872	**7.04**	108.5	0.00	89.96	-	-	0.00	0.00	-	0.00
T49 Alt	8,827	8,827	**7.10**	108.5	0.00	89.92	-	-	0.00	0.00	-	0.00
T50 Alt	8,165	8,165	**8.02**	108.5	0.00	89.24	-	-	0.00	0.00	-	0.00
T51 Alt	8,304	8,304	**7.82**	108.5	0.00	89.39	-	-	0.00	0.00	-	0.00
T52 Alt	11,028	11,028	**4.51**	108.5	0.00	91.85	-	-	0.00	0.00	-	0.00
T53 Alt	11,261	11,261	**4.27**	108.5	0.00	92.03	-	-	0.00	0.00	-	0.00
T54 Alt	10,888	10,888	**4.66**	108.5	0.00	91.74	-	-	0.00	0.00	-	0.00
T55 Alt	9,808	9,808	**5.87**	108.5	0.00	90.83	-	-	0.00	0.00	-	0.00
T56 Alt	8,489	8,489	**7.56**	108.5	0.00	89.58	-	-	0.00	0.00	-	0.00
T57 Alt	8,603	8,603	**7.40**	108.5	0.00	89.69	-	-	0.00	0.00	-	0.00
T58 Alt	7,419	7,419	**9.15**	108.5	0.00	88.41	-	-	0.00	0.00	-	0.00
T59 Alt	7,333	7,334	**9.28**	108.5	0.00	88.31	-	-	0.00	0.00	-	0.00

Sum 24.03

- Data undefined due to calculation with octave data

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DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

Noise sensitive area: H44 Noise sensitive point: User defined (45)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	11,003	11,004	**4.54**	108.5	0.00	91.83	-	-	0.00	0.00	-	0.00
T02	10,769	10,770	**4.78**	108.5	0.00	91.64	-	-	0.00	0.00	-	0.00
T03	10,422	10,422	**5.16**	108.5	0.00	91.36	-	-	0.00	0.00	-	0.00
T04	9,901	9,901	**5.76**	108.5	0.00	90.91	-	-	0.00	0.00	-	0.00
T05	10,627	10,627	**4.94**	108.5	0.00	91.53	-	-	0.00	0.00	-	0.00
T06	10,374	10,374	**5.22**	108.5	0.00	91.32	-	-	0.00	0.00	-	0.00
T07	9,805	9,805	**5.87**	108.5	0.00	90.83	-	-	0.00	0.00	-	0.00
T08	8,808	8,809	**7.13**	108.5	0.00	89.90	-	-	0.00	0.00	-	0.00
T09	8,753	8,754	**7.20**	108.5	0.00	89.84	-	-	0.00	0.00	-	0.00
T10	8,428	8,429	**7.64**	108.5	0.00	89.52	-	-	0.00	0.00	-	0.00
T11	12,055	12,055	**3.48**	108.5	0.00	92.62	-	-	0.00	0.00	-	0.00
T12	11,610	11,610	**3.91**	108.5	0.00	92.30	-	-	0.00	0.00	-	0.00
T13	11,274	11,274	**4.25**	108.5	0.00	92.04	-	-	0.00	0.00	-	0.00
T14	10,734	10,734	**4.82**	108.5	0.00	91.62	-	-	0.00	0.00	-	0.00
T15	12,180	12,181	**3.36**	108.5	0.00	92.71	-	-	0.00	0.00	-	0.00
T16	12,849	12,850	**2.74**	108.5	0.00	93.18	-	-	0.00	0.00	-	0.00
T17	12,264	12,264	**3.28**	108.5	0.00	92.77	-	-	0.00	0.00	-	0.00
T18	11,766	11,766	**3.76**	108.5	0.00	92.41	-	-	0.00	0.00	-	0.00
T19	11,005	11,005	**4.53**	108.5	0.00	91.83	-	-	0.00	0.00	-	0.00
T20	10,666	10,666	**4.90**	108.5	0.00	91.56	-	-	0.00	0.00	-	0.00
T21	10,083	10,083	**5.55**	108.5	0.00	91.07	-	-	0.00	0.00	-	0.00
T22	11,402	11,402	**4.12**	108.5	0.00	92.14	-	-	0.00	0.00	-	0.00
T23	10,890	10,891	**4.65**	108.5	0.00	91.74	-	-	0.00	0.00	-	0.00
T24	10,453	10,453	**5.13**	108.5	0.00	91.39	-	-	0.00	0.00	-	0.00
T25	13,242	13,242	**2.39**	108.5	0.00	93.44	-	-	0.00	0.00	-	0.00
T26	12,840	12,841	**2.75**	108.5	0.00	93.17	-	-	0.00	0.00	-	0.00
T27	12,509	12,509	**3.05**	108.5	0.00	92.94	-	-	0.00	0.00	-	0.00
T28	12,235	12,235	**3.31**	108.5	0.00	92.75	-	-	0.00	0.00	-	0.00
T29	11,996	11,997	**3.54**	108.5	0.00	92.58	-	-	0.00	0.00	-	0.00
T30	11,543	11,544	**3.98**	108.5	0.00	92.25	-	-	0.00	0.00	-	0.00
T31	11,227	11,228	**4.30**	108.5	0.00	92.01	-	-	0.00	0.00	-	0.00
T32	10,363	10,364	**5.23**	108.5	0.00	91.31	-	-	0.00	0.00	-	0.00
T33	10,063	10,063	**5.57**	108.5	0.00	91.05	-	-	0.00	0.00	-	0.00
T34	12,748	12,748	**2.83**	108.5	0.00	93.11	-	-	0.00	0.00	-	0.00
T35	13,003	13,004	**2.60**	108.5	0.00	93.28	-	-	0.00	0.00	-	0.00
T36	12,185	12,185	**3.36**	108.5	0.00	92.72	-	-	0.00	0.00	-	0.00
T37	11,560	11,560	**3.96**	108.5	0.00	92.26	-	-	0.00	0.00	-	0.00
T38	11,139	11,139	**4.39**	108.5	0.00	91.94	-	-	0.00	0.00	-	0.00
T39	13,366	13,366	**2.29**	108.5	0.00	93.52	-	-	0.00	0.00	-	0.00
T40	12,784	12,785	**2.80**	108.5	0.00	93.13	-	-	0.00	0.00	-	0.00
T41	13,185	13,185	**2.44**	108.5	0.00	93.40	-	-	0.00	0.00	-	0.00
T42	12,046	12,047	**3.49**	108.5	0.00	92.62	-	-	0.00	0.00	-	0.00
T43	11,384	11,384	**4.14**	108.5	0.00	92.13	-	-	0.00	0.00	-	0.00
T44	11,611	11,611	**3.91**	108.5	0.00	92.30	-	-	0.00	0.00	-	0.00
T45	11,645	11,645	**3.88**	108.5	0.00	92.32	-	-	0.00	0.00	-	0.00
T46	10,736	10,736	**4.82**	108.5	0.00	91.62	-	-	0.00	0.00	-	0.00
T47	9,916	9,917	**5.74**	108.5	0.00	90.93	-	-	0.00	0.00	-	0.00
T48 Alt	11,049	11,049	**4.49**	108.5	0.00	91.87	-	-	0.00	0.00	-	0.00
T49 Alt	11,040	11,040	**4.50**	108.5	0.00	91.86	-	-	0.00	0.00	-	0.00
T50 Alt	9,763	9,764	**5.92**	108.5	0.00	90.79	-	-	0.00	0.00	-	0.00
T51 Alt	9,796	9,796	**5.88**	108.5	0.00	90.82	-	-	0.00	0.00	-	0.00
T52 Alt	11,610	11,610	**3.91**	108.5	0.00	92.30	-	-	0.00	0.00	-	0.00
T53 Alt	11,638	11,639	**3.89**	108.5	0.00	92.32	-	-	0.00	0.00	-	0.00
T54 Alt	11,610	11,610	**3.91**	108.5	0.00	92.30	-	-	0.00	0.00	-	0.00
T55 Alt	10,732	10,733	**4.82**	108.5	0.00	91.61	-	-	0.00	0.00	-	0.00

To be continued on next page...

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
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2/16/2015 4:05 PM/2.9.285

DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T56 Alt	10,493	10,493	**5.09**	108.5	0.00	91.42	-	-	0.00	0.00	-	0.00
T57 Alt	9,538	9,539	**6.20**	108.5	0.00	90.59	-	-	0.00	0.00	-	0.00
T58 Alt	8,808	8,808	**7.13**	108.5	0.00	89.90	-	-	0.00	0.00	-	0.00
T59 Alt	8,818	8,818	**7.11**	108.5	0.00	89.91	-	-	0.00	0.00	-	0.00
Sum	22.39											

- Data undefined due to calculation with octave data

Noise sensitive area: H45 Noise sensitive point: User defined (46)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	11,151	11,152	**4.38**	108.5	0.00	91.95	-	-	0.00	0.00	-	0.00
T02	10,719	10,720	**4.84**	108.5	0.00	91.60	-	-	0.00	0.00	-	0.00
T03	10,263	10,263	**5.34**	108.5	0.00	91.23	-	-	0.00	0.00	-	0.00
T04	9,582	9,582	**6.14**	108.5	0.00	90.63	-	-	0.00	0.00	-	0.00
T05	9,917	9,917	**5.74**	108.5	0.00	90.93	-	-	0.00	0.00	-	0.00
T06	9,515	9,515	**6.22**	108.5	0.00	90.57	-	-	0.00	0.00	-	0.00
T07	8,761	8,761	**7.19**	108.5	0.00	89.85	-	-	0.00	0.00	-	0.00
T08	8,045	8,045	**8.19**	108.5	0.00	89.11	-	-	0.00	0.00	-	0.00
T09	7,653	7,653	**8.78**	108.5	0.00	88.68	-	-	0.00	0.00	-	0.00
T10	7,234	7,234	**9.44**	108.5	0.00	88.19	-	-	0.00	0.00	-	0.00
T11	10,914	10,915	**4.63**	108.5	0.00	91.76	-	-	0.00	0.00	-	0.00
T12	10,438	10,438	**5.15**	108.5	0.00	91.37	-	-	0.00	0.00	-	0.00
T13	9,808	9,808	**5.87**	108.5	0.00	90.83	-	-	0.00	0.00	-	0.00
T14	9,263	9,263	**6.54**	108.5	0.00	90.34	-	-	0.00	0.00	-	0.00
T15	10,559	10,560	**5.01**	108.5	0.00	91.47	-	-	0.00	0.00	-	0.00
T16	10,976	10,976	**4.56**	108.5	0.00	91.81	-	-	0.00	0.00	-	0.00
T17	10,363	10,363	**5.23**	108.5	0.00	91.31	-	-	0.00	0.00	-	0.00
T18	9,825	9,825	**5.85**	108.5	0.00	90.85	-	-	0.00	0.00	-	0.00
T19	9,122	9,122	**6.72**	108.5	0.00	90.20	-	-	0.00	0.00	-	0.00
T20	8,651	8,652	**7.34**	108.5	0.00	89.74	-	-	0.00	0.00	-	0.00
T21	8,110	8,111	**8.09**	108.5	0.00	89.18	-	-	0.00	0.00	-	0.00
T22	9,189	9,189	**6.63**	108.5	0.00	90.27	-	-	0.00	0.00	-	0.00
T23	8,629	8,629	**7.37**	108.5	0.00	89.72	-	-	0.00	0.00	-	0.00
T24	8,145	8,146	**8.04**	108.5	0.00	89.22	-	-	0.00	0.00	-	0.00
T25	11,089	11,089	**4.45**	108.5	0.00	91.90	-	-	0.00	0.00	-	0.00
T26	10,640	10,640	**4.92**	108.5	0.00	91.54	-	-	0.00	0.00	-	0.00
T27	10,260	10,260	**5.35**	108.5	0.00	91.22	-	-	0.00	0.00	-	0.00
T28	9,914	9,914	**5.75**	108.5	0.00	90.93	-	-	0.00	0.00	-	0.00
T29	9,477	9,477	**6.27**	108.5	0.00	90.53	-	-	0.00	0.00	-	0.00
T30	8,998	8,999	**6.87**	108.5	0.00	90.08	-	-	0.00	0.00	-	0.00
T31	8,612	8,613	**7.39**	108.5	0.00	89.70	-	-	0.00	0.00	-	0.00
T32	7,659	7,659	**8.77**	108.5	0.00	88.68	-	-	0.00	0.00	-	0.00
T33	7,275	7,276	**9.38**	108.5	0.00	88.24	-	-	0.00	0.00	-	0.00
T34	10,239	10,239	**5.37**	108.5	0.00	91.21	-	-	0.00	0.00	-	0.00
T35	10,354	10,354	**5.24**	108.5	0.00	91.30	-	-	0.00	0.00	-	0.00
T36	9,449	9,450	**6.30**	108.5	0.00	90.51	-	-	0.00	0.00	-	0.00
T37	8,761	8,761	**7.19**	108.5	0.00	89.85	-	-	0.00	0.00	-	0.00
T38	8,266	8,267	**7.87**	108.5	0.00	89.35	-	-	0.00	0.00	-	0.00
T39	10,583	10,584	**4.99**	108.5	0.00	91.49	-	-	0.00	0.00	-	0.00
T40	9,908	9,908	**5.75**	108.5	0.00	90.92	-	-	0.00	0.00	-	0.00
T41	10,196	10,197	**5.42**	108.5	0.00	91.17	-	-	0.00	0.00	-	0.00
T42	9,099	9,100	**6.74**	108.5	0.00	90.18	-	-	0.00	0.00	-	0.00
T43	8,386	8,387	**7.70**	108.5	0.00	89.47	-	-	0.00	0.00	-	0.00

To be continued on next page...

Project:
20131290 Rolette Power Development

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DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T44	8,433	8,434	**7.64**	108.5	0.00	89.52	-	-	0.00	0.00	-	0.00
T45	8,393	8,393	**7.69**	108.5	0.00	89.48	-	-	0.00	0.00	-	0.00
T46	7,645	7,645	**8.79**	108.5	0.00	88.67	-	-	0.00	0.00	-	0.00
T47	6,794	6,795	**10.19**	108.5	0.00	87.64	-	-	0.00	0.00	-	0.00
T48 Alt	7,770	7,771	**8.60**	108.5	0.00	88.81	-	-	0.00	0.00	-	0.00
T49 Alt	7,696	7,696	**8.71**	108.5	0.00	88.73	-	-	0.00	0.00	-	0.00
T50 Alt	7,524	7,524	**8.98**	108.5	0.00	88.53	-	-	0.00	0.00	-	0.00
T51 Alt	7,735	7,735	**8.65**	108.5	0.00	88.77	-	-	0.00	0.00	-	0.00
T52 Alt	10,973	10,973	**4.57**	108.5	0.00	91.81	-	-	0.00	0.00	-	0.00
T53 Alt	11,318	11,318	**4.21**	108.5	0.00	92.08	-	-	0.00	0.00	-	0.00
T54 Alt	10,755	10,755	**4.80**	108.5	0.00	91.63	-	-	0.00	0.00	-	0.00
T55 Alt	9,575	9,575	**6.15**	108.5	0.00	90.62	-	-	0.00	0.00	-	0.00
T56 Alt	7,534	7,534	**8.96**	108.5	0.00	88.54	-	-	0.00	0.00	-	0.00
T57 Alt	8,393	8,393	**7.69**	108.5	0.00	89.48	-	-	0.00	0.00	-	0.00
T58 Alt	6,947	6,947	**9.93**	108.5	0.00	87.84	-	-	0.00	0.00	-	0.00
T59 Alt	6,796	6,796	**10.19**	108.5	0.00	87.65	-	-	0.00	0.00	-	0.00

Sum 24.82

- Data undefined due to calculation with octave data

Noise sensitive area: H46 Noise sensitive point: User defined (47)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	12,500	12,501	**3.06**	108.5	0.00	92.94	-	-	0.00	0.00	-	0.00
T02	11,989	11,990	**3.54**	108.5	0.00	92.58	-	-	0.00	0.00	-	0.00
T03	11,498	11,499	**4.03**	108.5	0.00	92.21	-	-	0.00	0.00	-	0.00
T04	10,769	10,769	**4.78**	108.5	0.00	91.64	-	-	0.00	0.00	-	0.00
T05	10,873	10,873	**4.67**	108.5	0.00	91.73	-	-	0.00	0.00	-	0.00
T06	10,406	10,406	**5.18**	108.5	0.00	91.35	-	-	0.00	0.00	-	0.00
T07	9,587	9,588	**6.14**	108.5	0.00	90.63	-	-	0.00	0.00	-	0.00
T08	9,090	9,090	**6.76**	108.5	0.00	90.17	-	-	0.00	0.00	-	0.00
T09	8,530	8,530	**7.50**	108.5	0.00	89.62	-	-	0.00	0.00	-	0.00
T10	8,091	8,091	**8.12**	108.5	0.00	89.16	-	-	0.00	0.00	-	0.00
T11	11,556	11,556	**3.97**	108.5	0.00	92.26	-	-	0.00	0.00	-	0.00
T12	11,083	11,083	**4.45**	108.5	0.00	91.89	-	-	0.00	0.00	-	0.00
T13	10,288	10,288	**5.31**	108.5	0.00	91.25	-	-	0.00	0.00	-	0.00
T14	9,773	9,773	**5.91**	108.5	0.00	90.80	-	-	0.00	0.00	-	0.00
T15	10,887	10,887	**4.66**	108.5	0.00	91.74	-	-	0.00	0.00	-	0.00
T16	11,090	11,090	**4.44**	108.5	0.00	91.90	-	-	0.00	0.00	-	0.00
T17	10,486	10,486	**5.09**	108.5	0.00	91.41	-	-	0.00	0.00	-	0.00
T18	9,946	9,946	**5.71**	108.5	0.00	90.95	-	-	0.00	0.00	-	0.00
T19	9,334	9,334	**6.45**	108.5	0.00	90.40	-	-	0.00	0.00	-	0.00
T20	8,789	8,789	**7.15**	108.5	0.00	89.88	-	-	0.00	0.00	-	0.00
T21	8,324	8,325	**7.79**	108.5	0.00	89.41	-	-	0.00	0.00	-	0.00
T22	9,118	9,119	**6.72**	108.5	0.00	90.20	-	-	0.00	0.00	-	0.00
T23	8,553	8,554	**7.47**	108.5	0.00	89.64	-	-	0.00	0.00	-	0.00
T24	8,064	8,064	**8.16**	108.5	0.00	89.13	-	-	0.00	0.00	-	0.00
T25	10,968	10,969	**4.57**	108.5	0.00	91.80	-	-	0.00	0.00	-	0.00
T26	10,499	10,500	**5.08**	108.5	0.00	91.42	-	-	0.00	0.00	-	0.00
T27	10,096	10,096	**5.53**	108.5	0.00	91.08	-	-	0.00	0.00	-	0.00
T28	9,703	9,703	**6.00**	108.5	0.00	90.74	-	-	0.00	0.00	-	0.00
T29	9,101	9,102	**6.74**	108.5	0.00	90.18	-	-	0.00	0.00	-	0.00
T30	8,627	8,628	**7.37**	108.5	0.00	89.72	-	-	0.00	0.00	-	0.00
T31	8,194	8,195	**7.97**	108.5	0.00	89.27	-	-	0.00	0.00	-	0.00

To be continued on next page...

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DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T32	7,216	7,216	**9.47**	108.5	0.00	88.17	-	-	0.00	0.00	-	0.00
T33	6,771	6,772	**10.23**	108.5	0.00	87.61	-	-	0.00	0.00	-	0.00
T34	9,834	9,834	**5.84**	108.5	0.00	90.85	-	-	0.00	0.00	-	0.00
T35	9,802	9,802	**5.88**	108.5	0.00	90.83	-	-	0.00	0.00	-	0.00
T36	8,852	8,852	**7.07**	108.5	0.00	89.94	-	-	0.00	0.00	-	0.00
T37	8,133	8,134	**8.06**	108.5	0.00	89.21	-	-	0.00	0.00	-	0.00
T38	7,584	7,585	**8.88**	108.5	0.00	88.60	-	-	0.00	0.00	-	0.00
T39	9,882	9,882	**5.78**	108.5	0.00	90.90	-	-	0.00	0.00	-	0.00
T40	9,130	9,131	**6.71**	108.5	0.00	90.21	-	-	0.00	0.00	-	0.00
T41	9,273	9,274	**6.52**	108.5	0.00	90.35	-	-	0.00	0.00	-	0.00
T42	8,279	8,279	**7.85**	108.5	0.00	89.36	-	-	0.00	0.00	-	0.00
T43	7,544	7,544	**8.95**	108.5	0.00	88.55	-	-	0.00	0.00	-	0.00
T44	7,342	7,343	**9.27**	108.5	0.00	88.32	-	-	0.00	0.00	-	0.00
T45	7,191	7,191	**9.52**	108.5	0.00	88.14	-	-	0.00	0.00	-	0.00
T46	6,724	6,725	**10.31**	108.5	0.00	87.55	-	-	0.00	0.00	-	0.00
T47	5,897	5,897	**11.88**	108.5	0.00	86.41	-	-	0.00	0.00	-	0.00
T48 Alt	6,560	6,560	**10.61**	108.5	0.00	87.34	-	-	0.00	0.00	-	0.00
T49 Alt	6,377	6,378	**10.94**	108.5	0.00	87.09	-	-	0.00	0.00	-	0.00
T50 Alt	7,559	7,559	**8.92**	108.5	0.00	88.57	-	-	0.00	0.00	-	0.00
T51 Alt	7,907	7,907	**8.39**	108.5	0.00	88.96	-	-	0.00	0.00	-	0.00
T52 Alt	11,919	11,919	**3.61**	108.5	0.00	92.53	-	-	0.00	0.00	-	0.00
T53 Alt	12,425	12,425	**3.13**	108.5	0.00	92.89	-	-	0.00	0.00	-	0.00
T54 Alt	11,583	11,583	**3.94**	108.5	0.00	92.28	-	-	0.00	0.00	-	0.00
T55 Alt	10,276	10,277	**5.33**	108.5	0.00	91.24	-	-	0.00	0.00	-	0.00
T56 Alt	6,798	6,798	**10.18**	108.5	0.00	87.65	-	-	0.00	0.00	-	0.00
T57 Alt	9,182	9,182	**6.64**	108.5	0.00	90.26	-	-	0.00	0.00	-	0.00
T58 Alt	7,361	7,361	**9.24**	108.5	0.00	88.34	-	-	0.00	0.00	-	0.00
T59 Alt	7,097	7,097	**9.67**	108.5	0.00	88.02	-	-	0.00	0.00	-	0.00
Sum	25.09											

- Data undefined due to calculation with octave data

Noise sensitive area: H47 Noise sensitive point: User defined (48)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	12,705	12,706	**2.87**	108.5	0.00	93.08	-	-	0.00	0.00	-	0.00
T02	12,203	12,203	**3.34**	108.5	0.00	92.73	-	-	0.00	0.00	-	0.00
T03	11,715	11,715	**3.81**	108.5	0.00	92.38	-	-	0.00	0.00	-	0.00
T04	10,990	10,990	**4.55**	108.5	0.00	91.82	-	-	0.00	0.00	-	0.00
T05	11,116	11,116	**4.42**	108.5	0.00	91.92	-	-	0.00	0.00	-	0.00
T06	10,654	10,654	**4.91**	108.5	0.00	91.55	-	-	0.00	0.00	-	0.00
T07	9,839	9,840	**5.83**	108.5	0.00	90.86	-	-	0.00	0.00	-	0.00
T08	9,321	9,322	**6.46**	108.5	0.00	90.39	-	-	0.00	0.00	-	0.00
T09	8,775	8,776	**7.17**	108.5	0.00	89.87	-	-	0.00	0.00	-	0.00
T10	8,336	8,337	**7.77**	108.5	0.00	89.42	-	-	0.00	0.00	-	0.00
T11	11,824	11,825	**3.70**	108.5	0.00	92.46	-	-	0.00	0.00	-	0.00
T12	11,351	11,351	**4.18**	108.5	0.00	92.10	-	-	0.00	0.00	-	0.00
T13	10,565	10,565	**5.01**	108.5	0.00	91.48	-	-	0.00	0.00	-	0.00
T14	10,048	10,048	**5.59**	108.5	0.00	91.04	-	-	0.00	0.00	-	0.00
T15	11,173	11,173	**4.36**	108.5	0.00	91.96	-	-	0.00	0.00	-	0.00
T16	11,385	11,386	**4.14**	108.5	0.00	92.13	-	-	0.00	0.00	-	0.00
T17	10,781	10,781	**4.77**	108.5	0.00	91.65	-	-	0.00	0.00	-	0.00
T18	10,240	10,240	**5.37**	108.5	0.00	91.21	-	-	0.00	0.00	-	0.00
T19	9,623	9,624	**6.09**	108.5	0.00	90.67	-	-	0.00	0.00	-	0.00

To be continued on next page...

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

Description:
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2/16/2015 4:05 PM/2.9.285

DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T20	9,081	9,081	**6.77**	108.5	0.00	90.16	-	-	0.00	0.00	-	0.00
T21	8,612	8,613	**7.39**	108.5	0.00	89.70	-	-	0.00	0.00	-	0.00
T22	9,418	9,419	**6.34**	108.5	0.00	90.48	-	-	0.00	0.00	-	0.00
T23	8,853	8,853	**7.07**	108.5	0.00	89.94	-	-	0.00	0.00	-	0.00
T24	8,363	8,364	**7.73**	108.5	0.00	89.45	-	-	0.00	0.00	-	0.00
T25	11,271	11,271	**4.26**	108.5	0.00	92.04	-	-	0.00	0.00	-	0.00
T26	10,802	10,803	**4.75**	108.5	0.00	91.67	-	-	0.00	0.00	-	0.00
T27	10,399	10,399	**5.19**	108.5	0.00	91.34	-	-	0.00	0.00	-	0.00
T28	10,007	10,007	**5.64**	108.5	0.00	91.01	-	-	0.00	0.00	-	0.00
T29	9,408	9,409	**6.36**	108.5	0.00	90.47	-	-	0.00	0.00	-	0.00
T30	8,933	8,934	**6.96**	108.5	0.00	90.02	-	-	0.00	0.00	-	0.00
T31	8,500	8,501	**7.54**	108.5	0.00	89.59	-	-	0.00	0.00	-	0.00
T32	7,522	7,522	**8.98**	108.5	0.00	88.53	-	-	0.00	0.00	-	0.00
T33	7,078	7,079	**9.70**	108.5	0.00	88.00	-	-	0.00	0.00	-	0.00
T34	10,141	10,141	**5.48**	108.5	0.00	91.12	-	-	0.00	0.00	-	0.00
T35	10,109	10,110	**5.52**	108.5	0.00	91.09	-	-	0.00	0.00	-	0.00
T36	9,159	9,160	**6.67**	108.5	0.00	90.24	-	-	0.00	0.00	-	0.00
T37	8,441	8,441	**7.62**	108.5	0.00	89.53	-	-	0.00	0.00	-	0.00
T38	7,892	7,892	**8.42**	108.5	0.00	88.94	-	-	0.00	0.00	-	0.00
T39	10,188	10,189	**5.43**	108.5	0.00	91.16	-	-	0.00	0.00	-	0.00
T40	9,436	9,437	**6.32**	108.5	0.00	90.50	-	-	0.00	0.00	-	0.00
T41	9,576	9,576	**6.15**	108.5	0.00	90.62	-	-	0.00	0.00	-	0.00
T42	8,584	8,585	**7.43**	108.5	0.00	89.67	-	-	0.00	0.00	-	0.00
T43	7,849	7,849	**8.48**	108.5	0.00	88.90	-	-	0.00	0.00	-	0.00
T44	7,641	7,641	**8.80**	108.5	0.00	88.66	-	-	0.00	0.00	-	0.00
T45	7,485	7,485	**9.04**	108.5	0.00	88.48	-	-	0.00	0.00	-	0.00
T46	7,029	7,029	**9.79**	108.5	0.00	87.94	-	-	0.00	0.00	-	0.00
T47	6,202	6,203	**11.28**	108.5	0.00	86.85	-	-	0.00	0.00	-	0.00
T48 Alt	6,854	6,855	**10.08**	108.5	0.00	87.72	-	-	0.00	0.00	-	0.00
T49 Alt	6,666	6,667	**10.42**	108.5	0.00	87.48	-	-	0.00	0.00	-	0.00
T50 Alt	7,853	7,854	**8.47**	108.5	0.00	88.90	-	-	0.00	0.00	-	0.00
T51 Alt	8,196	8,196	**7.97**	108.5	0.00	89.27	-	-	0.00	0.00	-	0.00
T52 Alt	12,165	12,165	**3.37**	108.5	0.00	92.70	-	-	0.00	0.00	-	0.00
T53 Alt	12,656	12,656	**2.92**	108.5	0.00	93.05	-	-	0.00	0.00	-	0.00
T54 Alt	11,838	11,838	**3.69**	108.5	0.00	92.47	-	-	0.00	0.00	-	0.00
T55 Alt	10,539	10,539	**5.04**	108.5	0.00	91.46	-	-	0.00	0.00	-	0.00
T56 Alt	7,105	7,106	**9.66**	108.5	0.00	88.03	-	-	0.00	0.00	-	0.00
T57 Alt	9,436	9,436	**6.32**	108.5	0.00	90.50	-	-	0.00	0.00	-	0.00
T58 Alt	7,636	7,637	**8.80**	108.5	0.00	88.66	-	-	0.00	0.00	-	0.00
T59 Alt	7,378	7,378	**9.21**	108.5	0.00	88.36	-	-	0.00	0.00	-	0.00

Sum 24.68

- Data undefined due to calculation with octave data

Noise sensitive area: H48 Noise sensitive point: User defined (49)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	11,120	11,121	**4.41**	108.5	0.00	91.92	-	-	0.00	0.00	-	0.00
T02	11,040	11,041	**4.50**	108.5	0.00	91.86	-	-	0.00	0.00	-	0.00
T03	10,791	10,792	**4.76**	108.5	0.00	91.66	-	-	0.00	0.00	-	0.00
T04	10,416	10,417	**5.17**	108.5	0.00	91.35	-	-	0.00	0.00	-	0.00
T05	11,350	11,350	**4.18**	108.5	0.00	92.10	-	-	0.00	0.00	-	0.00
T06	11,208	11,209	**4.32**	108.5	0.00	91.99	-	-	0.00	0.00	-	0.00
T07	10,793	10,793	**4.76**	108.5	0.00	91.66	-	-	0.00	0.00	-	0.00

To be continued on next page...

Project:
20131290 Rolette Power Development

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Warren Enyart and Merle Boucher
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DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T08	9,700	9,700	**6.00**	108.5	0.00	90.74	-	-	0.00	0.00	-	0.00
T09	9,854	9,855	**5.82**	108.5	0.00	90.87	-	-	0.00	0.00	-	0.00
T10	9,612	9,613	**6.11**	108.5	0.00	90.66	-	-	0.00	0.00	-	0.00
T11	12,977	12,977	**2.63**	108.5	0.00	93.26	-	-	0.00	0.00	-	0.00
T12	12,574	12,574	**2.99**	108.5	0.00	92.99	-	-	0.00	0.00	-	0.00
T13	12,437	12,437	**3.12**	108.5	0.00	92.89	-	-	0.00	0.00	-	0.00
T14	11,926	11,927	**3.60**	108.5	0.00	92.53	-	-	0.00	0.00	-	0.00
T15	13,399	13,399	**2.26**	108.5	0.00	93.54	-	-	0.00	0.00	-	0.00
T16	14,199	14,199	**1.59**	108.5	0.00	94.05	-	-	0.00	0.00	-	0.00
T17	13,650	13,650	**2.04**	108.5	0.00	93.70	-	-	0.00	0.00	-	0.00
T18	13,194	13,195	**2.44**	108.5	0.00	93.41	-	-	0.00	0.00	-	0.00
T19	12,430	12,430	**3.13**	108.5	0.00	92.89	-	-	0.00	0.00	-	0.00
T20	12,183	12,183	**3.36**	108.5	0.00	92.72	-	-	0.00	0.00	-	0.00
T21	11,602	11,603	**3.92**	108.5	0.00	92.29	-	-	0.00	0.00	-	0.00
T22	13,004	13,005	**2.60**	108.5	0.00	93.28	-	-	0.00	0.00	-	0.00
T23	12,540	12,540	**3.02**	108.5	0.00	92.97	-	-	0.00	0.00	-	0.00
T24	12,145	12,146	**3.39**	108.5	0.00	92.69	-	-	0.00	0.00	-	0.00
T25	14,751	14,751	**1.15**	108.5	0.00	94.38	-	-	0.00	0.00	-	0.00
T26	14,390	14,390	**1.43**	108.5	0.00	94.16	-	-	0.00	0.00	-	0.00
T27	14,097	14,098	**1.67**	108.5	0.00	93.98	-	-	0.00	0.00	-	0.00
T28	13,874	13,875	**1.86**	108.5	0.00	93.84	-	-	0.00	0.00	-	0.00
T29	13,760	13,761	**1.95**	108.5	0.00	93.77	-	-	0.00	0.00	-	0.00
T30	13,334	13,335	**2.31**	108.5	0.00	93.50	-	-	0.00	0.00	-	0.00
T31	13,068	13,069	**2.55**	108.5	0.00	93.32	-	-	0.00	0.00	-	0.00
T32	12,280	12,281	**3.27**	108.5	0.00	92.78	-	-	0.00	0.00	-	0.00
T33	12,034	12,034	**3.50**	108.5	0.00	92.61	-	-	0.00	0.00	-	0.00
T34	14,486	14,486	**1.36**	108.5	0.00	94.22	-	-	0.00	0.00	-	0.00
T35	14,821	14,821	**1.09**	108.5	0.00	94.42	-	-	0.00	0.00	-	0.00
T36	14,072	14,072	**1.69**	108.5	0.00	93.97	-	-	0.00	0.00	-	0.00
T37	13,498	13,498	**2.17**	108.5	0.00	93.61	-	-	0.00	0.00	-	0.00
T38	13,129	13,130	**2.49**	108.5	0.00	93.37	-	-	0.00	0.00	-	0.00
T39	15,257	15,257	**0.76**	108.5	0.00	94.67	-	-	0.00	0.00	-	0.00
T40	14,744	14,744	**1.15**	108.5	0.00	94.37	-	-	0.00	0.00	-	0.00
T41	15,207	15,207	**0.80**	108.5	0.00	94.64	-	-	0.00	0.00	-	0.00
T42	14,061	14,062	**1.70**	108.5	0.00	93.96	-	-	0.00	0.00	-	0.00
T43	13,441	13,441	**2.22**	108.5	0.00	93.57	-	-	0.00	0.00	-	0.00
T44	13,772	13,773	**1.94**	108.5	0.00	93.78	-	-	0.00	0.00	-	0.00
T45	13,852	13,853	**1.87**	108.5	0.00	93.83	-	-	0.00	0.00	-	0.00
T46	12,861	12,861	**2.73**	108.5	0.00	93.19	-	-	0.00	0.00	-	0.00
T47	12,074	12,075	**3.46**	108.5	0.00	92.64	-	-	0.00	0.00	-	0.00
T48 Alt	13,280	13,280	**2.36**	108.5	0.00	93.46	-	-	0.00	0.00	-	0.00
T49 Alt	13,312	13,312	**2.33**	108.5	0.00	93.49	-	-	0.00	0.00	-	0.00
T50 Alt	11,447	11,448	**4.08**	108.5	0.00	92.17	-	-	0.00	0.00	-	0.00
T51 Alt	11,380	11,380	**4.15**	108.5	0.00	92.12	-	-	0.00	0.00	-	0.00
T52 Alt	12,228	12,228	**3.31**	108.5	0.00	92.75	-	-	0.00	0.00	-	0.00
T53 Alt	12,042	12,043	**3.49**	108.5	0.00	92.61	-	-	0.00	0.00	-	0.00
T54 Alt	12,371	12,371	**3.18**	108.5	0.00	92.85	-	-	0.00	0.00	-	0.00
T55 Alt	11,733	11,734	**3.79**	108.5	0.00	92.39	-	-	0.00	0.00	-	0.00
T56 Alt	12,547	12,548	**3.02**	108.5	0.00	92.97	-	-	0.00	0.00	-	0.00
T57 Alt	10,607	10,607	**4.96**	108.5	0.00	91.51	-	-	0.00	0.00	-	0.00
T58 Alt	10,338	10,338	**5.26**	108.5	0.00	91.29	-	-	0.00	0.00	-	0.00
T59 Alt	10,434	10,434	**5.15**	108.5	0.00	91.37	-	-	0.00	0.00	-	0.00

Sum 20.98

- Data undefined due to calculation with octave data

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DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

Noise sensitive area: H49 Noise sensitive point: User defined (50)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	13,613	13,613	**2.08**	108.5	0.00	93.68	-	-	0.00	0.00	-	0.00
T02	13,074	13,074	**2.54**	108.5	0.00	93.33	-	-	0.00	0.00	-	0.00
T03	12,573	12,574	**2.99**	108.5	0.00	92.99	-	-	0.00	0.00	-	0.00
T04	11,832	11,832	**3.70**	108.5	0.00	92.46	-	-	0.00	0.00	-	0.00
T05	11,839	11,839	**3.69**	108.5	0.00	92.47	-	-	0.00	0.00	-	0.00
T06	11,350	11,350	**4.18**	108.5	0.00	92.10	-	-	0.00	0.00	-	0.00
T07	10,516	10,516	**5.06**	108.5	0.00	91.44	-	-	0.00	0.00	-	0.00
T08	10,116	10,117	**5.51**	108.5	0.00	91.10	-	-	0.00	0.00	-	0.00
T09	9,498	9,498	**6.24**	108.5	0.00	90.55	-	-	0.00	0.00	-	0.00
T10	9,059	9,060	**6.80**	108.5	0.00	90.14	-	-	0.00	0.00	-	0.00
T11	12,372	12,373	**3.18**	108.5	0.00	92.85	-	-	0.00	0.00	-	0.00
T12	11,907	11,907	**3.62**	108.5	0.00	92.52	-	-	0.00	0.00	-	0.00
T13	11,046	11,046	**4.49**	108.5	0.00	91.86	-	-	0.00	0.00	-	0.00
T14	10,555	10,555	**5.02**	108.5	0.00	91.47	-	-	0.00	0.00	-	0.00
T15	11,559	11,559	**3.97**	108.5	0.00	92.26	-	-	0.00	0.00	-	0.00
T16	11,648	11,648	**3.88**	108.5	0.00	92.33	-	-	0.00	0.00	-	0.00
T17	11,060	11,060	**4.48**	108.5	0.00	91.88	-	-	0.00	0.00	-	0.00
T18	10,529	10,529	**5.05**	108.5	0.00	91.45	-	-	0.00	0.00	-	0.00
T19	9,977	9,977	**5.67**	108.5	0.00	90.98	-	-	0.00	0.00	-	0.00
T20	9,407	9,408	**6.36**	108.5	0.00	90.47	-	-	0.00	0.00	-	0.00
T21	8,995	8,995	**6.88**	108.5	0.00	90.08	-	-	0.00	0.00	-	0.00
T22	9,617	9,618	**6.10**	108.5	0.00	90.66	-	-	0.00	0.00	-	0.00
T23	9,065	9,065	**6.79**	108.5	0.00	90.15	-	-	0.00	0.00	-	0.00
T24	8,587	8,588	**7.42**	108.5	0.00	89.68	-	-	0.00	0.00	-	0.00
T25	11,399	11,400	**4.13**	108.5	0.00	92.14	-	-	0.00	0.00	-	0.00
T26	10,928	10,928	**4.61**	108.5	0.00	91.77	-	-	0.00	0.00	-	0.00
T27	10,519	10,520	**5.06**	108.5	0.00	91.44	-	-	0.00	0.00	-	0.00
T28	10,108	10,109	**5.52**	108.5	0.00	91.09	-	-	0.00	0.00	-	0.00
T29	9,427	9,427	**6.33**	108.5	0.00	90.49	-	-	0.00	0.00	-	0.00
T30	8,968	8,969	**6.91**	108.5	0.00	90.05	-	-	0.00	0.00	-	0.00
T31	8,520	8,521	**7.51**	108.5	0.00	89.61	-	-	0.00	0.00	-	0.00
T32	7,564	7,564	**8.92**	108.5	0.00	88.58	-	-	0.00	0.00	-	0.00
T33	7,103	7,103	**9.66**	108.5	0.00	88.03	-	-	0.00	0.00	-	0.00
T34	10,123	10,123	**5.50**	108.5	0.00	91.11	-	-	0.00	0.00	-	0.00
T35	10,001	10,002	**5.64**	108.5	0.00	91.00	-	-	0.00	0.00	-	0.00
T36	9,047	9,047	**6.81**	108.5	0.00	90.13	-	-	0.00	0.00	-	0.00
T37	8,332	8,333	**7.78**	108.5	0.00	89.42	-	-	0.00	0.00	-	0.00
T38	7,768	7,769	**8.60**	108.5	0.00	88.81	-	-	0.00	0.00	-	0.00
T39	9,983	9,983	**5.66**	108.5	0.00	90.99	-	-	0.00	0.00	-	0.00
T40	9,201	9,201	**6.62**	108.5	0.00	90.28	-	-	0.00	0.00	-	0.00
T41	9,241	9,241	**6.56**	108.5	0.00	90.31	-	-	0.00	0.00	-	0.00
T42	8,346	8,346	**7.76**	108.5	0.00	89.43	-	-	0.00	0.00	-	0.00
T43	7,622	7,622	**8.83**	108.5	0.00	88.64	-	-	0.00	0.00	-	0.00
T44	7,252	7,252	**9.42**	108.5	0.00	88.21	-	-	0.00	0.00	-	0.00
T45	7,023	7,023	**9.80**	108.5	0.00	87.93	-	-	0.00	0.00	-	0.00
T46	6,785	6,785	**10.21**	108.5	0.00	87.63	-	-	0.00	0.00	-	0.00
T47	6,019	6,020	**11.63**	108.5	0.00	86.59	-	-	0.00	0.00	-	0.00
T48 Alt	6,413	6,413	**10.88**	108.5	0.00	87.14	-	-	0.00	0.00	-	0.00
T49 Alt	6,153	6,154	**11.37**	108.5	0.00	86.78	-	-	0.00	0.00	-	0.00
T50 Alt	8,161	8,161	**8.02**	108.5	0.00	89.24	-	-	0.00	0.00	-	0.00
T51 Alt	8,568	8,568	**7.45**	108.5	0.00	89.66	-	-	0.00	0.00	-	0.00
T52 Alt	12,870	12,870	**2.72**	108.5	0.00	93.19	-	-	0.00	0.00	-	0.00
T53 Alt	13,439	13,440	**2.22**	108.5	0.00	93.57	-	-	0.00	0.00	-	0.00
T54 Alt	12,485	12,485	**3.07**	108.5	0.00	92.93	-	-	0.00	0.00	-	0.00
T55 Alt	11,138	11,139	**4.39**	108.5	0.00	91.94	-	-	0.00	0.00	-	0.00

To be continued on next page...

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

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DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T56 Alt	6,981	6,981	**9.87**	108.5	0.00	87.88	-	-	0.00	0.00	-	0.00
T57 Alt	10,100	10,101	**5.53**	108.5	0.00	91.09	-	-	0.00	0.00	-	0.00
T58 Alt	8,157	8,157	**8.03**	108.5	0.00	89.23	-	-	0.00	0.00	-	0.00
T59 Alt	7,848	7,848	**8.48**	108.5	0.00	88.90	-	-	0.00	0.00	-	0.00
Sum	24.61											

- Data undefined due to calculation with octave data

Noise sensitive area: H50 Noise sensitive point: User defined (51)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	13,560	13,561	**2.12**	108.5	0.00	93.65	-	-	0.00	0.00	-	0.00
T02	13,023	13,023	**2.59**	108.5	0.00	93.29	-	-	0.00	0.00	-	0.00
T03	12,522	12,523	**3.04**	108.5	0.00	92.95	-	-	0.00	0.00	-	0.00
T04	11,781	11,781	**3.75**	108.5	0.00	92.42	-	-	0.00	0.00	-	0.00
T05	11,792	11,792	**3.73**	108.5	0.00	92.43	-	-	0.00	0.00	-	0.00
T06	11,304	11,304	**4.22**	108.5	0.00	92.06	-	-	0.00	0.00	-	0.00
T07	10,470	10,470	**5.11**	108.5	0.00	91.40	-	-	0.00	0.00	-	0.00
T08	10,067	10,067	**5.57**	108.5	0.00	91.06	-	-	0.00	0.00	-	0.00
T09	9,451	9,451	**6.30**	108.5	0.00	90.51	-	-	0.00	0.00	-	0.00
T10	9,012	9,012	**6.86**	108.5	0.00	90.10	-	-	0.00	0.00	-	0.00
T11	12,331	12,332	**3.22**	108.5	0.00	92.82	-	-	0.00	0.00	-	0.00
T12	11,866	11,866	**3.66**	108.5	0.00	92.49	-	-	0.00	0.00	-	0.00
T13	11,007	11,008	**4.53**	108.5	0.00	91.83	-	-	0.00	0.00	-	0.00
T14	10,515	10,515	**5.06**	108.5	0.00	91.44	-	-	0.00	0.00	-	0.00
T15	11,524	11,524	**4.00**	108.5	0.00	92.23	-	-	0.00	0.00	-	0.00
T16	11,617	11,618	**3.91**	108.5	0.00	92.30	-	-	0.00	0.00	-	0.00
T17	11,028	11,029	**4.51**	108.5	0.00	91.85	-	-	0.00	0.00	-	0.00
T18	10,497	10,497	**5.08**	108.5	0.00	91.42	-	-	0.00	0.00	-	0.00
T19	9,943	9,943	**5.71**	108.5	0.00	90.95	-	-	0.00	0.00	-	0.00
T20	9,373	9,374	**6.40**	108.5	0.00	90.44	-	-	0.00	0.00	-	0.00
T21	8,959	8,959	**6.93**	108.5	0.00	90.05	-	-	0.00	0.00	-	0.00
T22	9,589	9,589	**6.13**	108.5	0.00	90.64	-	-	0.00	0.00	-	0.00
T23	9,035	9,036	**6.83**	108.5	0.00	90.12	-	-	0.00	0.00	-	0.00
T24	8,557	8,558	**7.46**	108.5	0.00	89.65	-	-	0.00	0.00	-	0.00
T25	11,374	11,375	**4.15**	108.5	0.00	92.12	-	-	0.00	0.00	-	0.00
T26	10,903	10,903	**4.64**	108.5	0.00	91.75	-	-	0.00	0.00	-	0.00
T27	10,494	10,494	**5.08**	108.5	0.00	91.42	-	-	0.00	0.00	-	0.00
T28	10,084	10,084	**5.55**	108.5	0.00	91.07	-	-	0.00	0.00	-	0.00
T29	9,405	9,406	**6.36**	108.5	0.00	90.47	-	-	0.00	0.00	-	0.00
T30	8,946	8,946	**6.94**	108.5	0.00	90.03	-	-	0.00	0.00	-	0.00
T31	8,498	8,499	**7.54**	108.5	0.00	89.59	-	-	0.00	0.00	-	0.00
T32	7,540	7,541	**8.95**	108.5	0.00	88.55	-	-	0.00	0.00	-	0.00
T33	7,080	7,080	**9.70**	108.5	0.00	88.00	-	-	0.00	0.00	-	0.00
T34	10,103	10,103	**5.53**	108.5	0.00	91.09	-	-	0.00	0.00	-	0.00
T35	9,985	9,986	**5.66**	108.5	0.00	90.99	-	-	0.00	0.00	-	0.00
T36	9,031	9,032	**6.83**	108.5	0.00	90.12	-	-	0.00	0.00	-	0.00
T37	8,316	8,316	**7.80**	108.5	0.00	89.40	-	-	0.00	0.00	-	0.00
T38	7,752	7,753	**8.63**	108.5	0.00	88.79	-	-	0.00	0.00	-	0.00
T39	9,972	9,972	**5.68**	108.5	0.00	90.98	-	-	0.00	0.00	-	0.00
T40	9,191	9,191	**6.63**	108.5	0.00	90.27	-	-	0.00	0.00	-	0.00
T41	9,235	9,236	**6.57**	108.5	0.00	90.31	-	-	0.00	0.00	-	0.00
T42	8,335	8,335	**7.77**	108.5	0.00	89.42	-	-	0.00	0.00	-	0.00
T43	7,610	7,611	**8.84**	108.5	0.00	88.63	-	-	0.00	0.00	-	0.00

To be continued on next page...

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
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DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T44	7,248	7,248	**9.42**	108.5	0.00	88.20	-	-	0.00	0.00	-	0.00
T45	7,022	7,022	**9.80**	108.5	0.00	87.93	-	-	0.00	0.00	-	0.00
T46	6,773	6,774	**10.23**	108.5	0.00	87.62	-	-	0.00	0.00	-	0.00
T47	6,004	6,005	**11.66**	108.5	0.00	86.57	-	-	0.00	0.00	-	0.00
T48 Alt	6,410	6,411	**10.88**	108.5	0.00	87.14	-	-	0.00	0.00	-	0.00
T49 Alt	6,154	6,155	**11.37**	108.5	0.00	86.78	-	-	0.00	0.00	-	0.00
T50 Alt	8,128	8,128	**8.07**	108.5	0.00	89.20	-	-	0.00	0.00	-	0.00
T51 Alt	8,532	8,533	**7.50**	108.5	0.00	89.62	-	-	0.00	0.00	-	0.00
T52 Alt	12,824	12,824	**2.77**	108.5	0.00	93.16	-	-	0.00	0.00	-	0.00
T53 Alt	13,391	13,391	**2.27**	108.5	0.00	93.54	-	-	0.00	0.00	-	0.00
T54 Alt	12,440	12,440	**3.12**	108.5	0.00	92.90	-	-	0.00	0.00	-	0.00
T55 Alt	11,095	11,096	**4.44**	108.5	0.00	91.90	-	-	0.00	0.00	-	0.00
T56 Alt	6,964	6,965	**9.90**	108.5	0.00	87.86	-	-	0.00	0.00	-	0.00
T57 Alt	10,055	10,055	**5.58**	108.5	0.00	91.05	-	-	0.00	0.00	-	0.00
T58 Alt	8,115	8,116	**8.09**	108.5	0.00	89.19	-	-	0.00	0.00	-	0.00
T59 Alt	7,808	7,809	**8.54**	108.5	0.00	88.85	-	-	0.00	0.00	-	0.00
Sum	24.64											

- Data undefined due to calculation with octave data

Noise sensitive area: H51 Noise sensitive point: User defined (52)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	13,501	13,501	**2.17**	108.5	0.00	93.61	-	-	0.00	0.00	-	0.00
T02	12,965	12,966	**2.64**	108.5	0.00	93.26	-	-	0.00	0.00	-	0.00
T03	12,466	12,466	**3.09**	108.5	0.00	92.91	-	-	0.00	0.00	-	0.00
T04	11,725	11,725	**3.80**	108.5	0.00	92.38	-	-	0.00	0.00	-	0.00
T05	11,743	11,743	**3.78**	108.5	0.00	92.40	-	-	0.00	0.00	-	0.00
T06	11,256	11,256	**4.27**	108.5	0.00	92.03	-	-	0.00	0.00	-	0.00
T07	10,423	10,423	**5.16**	108.5	0.00	91.36	-	-	0.00	0.00	-	0.00
T08	10,013	10,013	**5.63**	108.5	0.00	91.01	-	-	0.00	0.00	-	0.00
T09	9,401	9,401	**6.36**	108.5	0.00	90.46	-	-	0.00	0.00	-	0.00
T10	8,962	8,962	**6.92**	108.5	0.00	90.05	-	-	0.00	0.00	-	0.00
T11	12,293	12,293	**3.25**	108.5	0.00	92.79	-	-	0.00	0.00	-	0.00
T12	11,826	11,827	**3.70**	108.5	0.00	92.46	-	-	0.00	0.00	-	0.00
T13	10,972	10,972	**4.57**	108.5	0.00	91.81	-	-	0.00	0.00	-	0.00
T14	10,478	10,478	**5.10**	108.5	0.00	91.41	-	-	0.00	0.00	-	0.00
T15	11,494	11,495	**4.03**	108.5	0.00	92.21	-	-	0.00	0.00	-	0.00
T16	11,595	11,596	**3.93**	108.5	0.00	92.29	-	-	0.00	0.00	-	0.00
T17	11,005	11,006	**4.53**	108.5	0.00	91.83	-	-	0.00	0.00	-	0.00
T18	10,473	10,473	**5.11**	108.5	0.00	91.40	-	-	0.00	0.00	-	0.00
T19	9,914	9,915	**5.74**	108.5	0.00	90.93	-	-	0.00	0.00	-	0.00
T20	9,347	9,347	**6.43**	108.5	0.00	90.41	-	-	0.00	0.00	-	0.00
T21	8,928	8,929	**6.97**	108.5	0.00	90.02	-	-	0.00	0.00	-	0.00
T22	9,570	9,570	**6.16**	108.5	0.00	90.62	-	-	0.00	0.00	-	0.00
T23	9,015	9,016	**6.85**	108.5	0.00	90.10	-	-	0.00	0.00	-	0.00
T24	8,536	8,537	**7.49**	108.5	0.00	89.63	-	-	0.00	0.00	-	0.00
T25	11,360	11,361	**4.17**	108.5	0.00	92.11	-	-	0.00	0.00	-	0.00
T26	10,889	10,889	**4.66**	108.5	0.00	91.74	-	-	0.00	0.00	-	0.00
T27	10,480	10,481	**5.10**	108.5	0.00	91.41	-	-	0.00	0.00	-	0.00
T28	10,071	10,072	**5.56**	108.5	0.00	91.06	-	-	0.00	0.00	-	0.00
T29	9,397	9,398	**6.37**	108.5	0.00	90.46	-	-	0.00	0.00	-	0.00
T30	8,936	8,937	**6.96**	108.5	0.00	90.02	-	-	0.00	0.00	-	0.00
T31	8,490	8,490	**7.56**	108.5	0.00	89.58	-	-	0.00	0.00	-	0.00

To be continued on next page...

Project:
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DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T32	7,530	7,530	**8.97**	108.5	0.00	88.54	-	-	0.00	0.00	-	0.00
T33	7,070	7,070	**9.72**	108.5	0.00	87.99	-	-	0.00	0.00	-	0.00
T34	10,098	10,098	**5.53**	108.5	0.00	91.08	-	-	0.00	0.00	-	0.00
T35	9,986	9,986	**5.66**	108.5	0.00	90.99	-	-	0.00	0.00	-	0.00
T36	9,031	9,031	**6.83**	108.5	0.00	90.12	-	-	0.00	0.00	-	0.00
T37	8,315	8,315	**7.80**	108.5	0.00	89.40	-	-	0.00	0.00	-	0.00
T38	7,752	7,752	**8.63**	108.5	0.00	88.79	-	-	0.00	0.00	-	0.00
T39	9,978	9,978	**5.67**	108.5	0.00	90.98	-	-	0.00	0.00	-	0.00
T40	9,198	9,199	**6.62**	108.5	0.00	90.27	-	-	0.00	0.00	-	0.00
T41	9,249	9,250	**6.55**	108.5	0.00	90.32	-	-	0.00	0.00	-	0.00
T42	8,342	8,343	**7.76**	108.5	0.00	89.43	-	-	0.00	0.00	-	0.00
T43	7,616	7,617	**8.83**	108.5	0.00	88.64	-	-	0.00	0.00	-	0.00
T44	7,264	7,264	**9.40**	108.5	0.00	88.22	-	-	0.00	0.00	-	0.00
T45	7,043	7,043	**9.76**	108.5	0.00	87.96	-	-	0.00	0.00	-	0.00
T46	6,780	6,780	**10.21**	108.5	0.00	87.62	-	-	0.00	0.00	-	0.00
T47	6,006	6,007	**11.66**	108.5	0.00	86.57	-	-	0.00	0.00	-	0.00
T48 Alt	6,429	6,430	**10.85**	108.5	0.00	87.16	-	-	0.00	0.00	-	0.00
T49 Alt	6,178	6,178	**11.32**	108.5	0.00	86.82	-	-	0.00	0.00	-	0.00
T50 Alt	8,101	8,102	**8.11**	108.5	0.00	89.17	-	-	0.00	0.00	-	0.00
T51 Alt	8,502	8,503	**7.54**	108.5	0.00	89.59	-	-	0.00	0.00	-	0.00
T52 Alt	12,776	12,776	**2.81**	108.5	0.00	93.13	-	-	0.00	0.00	-	0.00
T53 Alt	13,339	13,339	**2.31**	108.5	0.00	93.50	-	-	0.00	0.00	-	0.00
T54 Alt	12,396	12,396	**3.16**	108.5	0.00	92.87	-	-	0.00	0.00	-	0.00
T55 Alt	11,053	11,054	**4.48**	108.5	0.00	91.87	-	-	0.00	0.00	-	0.00
T56 Alt	6,963	6,964	**9.90**	108.5	0.00	87.86	-	-	0.00	0.00	-	0.00
T57 Alt	10,009	10,009	**5.63**	108.5	0.00	91.01	-	-	0.00	0.00	-	0.00
T58 Alt	8,077	8,077	**8.14**	108.5	0.00	89.14	-	-	0.00	0.00	-	0.00
T59 Alt	7,772	7,772	**8.60**	108.5	0.00	88.81	-	-	0.00	0.00	-	0.00
Sum	24.65											

- Data undefined due to calculation with octave data

Noise sensitive area: H52 Noise sensitive point: User defined (53)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	13,432	13,433	**2.23**	108.5	0.00	93.56	-	-	0.00	0.00	-	0.00
T02	12,898	12,899	**2.70**	108.5	0.00	93.21	-	-	0.00	0.00	-	0.00
T03	12,399	12,400	**3.15**	108.5	0.00	92.87	-	-	0.00	0.00	-	0.00
T04	11,659	11,660	**3.87**	108.5	0.00	92.33	-	-	0.00	0.00	-	0.00
T05	11,683	11,683	**3.84**	108.5	0.00	92.35	-	-	0.00	0.00	-	0.00
T06	11,197	11,197	**4.33**	108.5	0.00	91.98	-	-	0.00	0.00	-	0.00
T07	10,365	10,365	**5.23**	108.5	0.00	91.31	-	-	0.00	0.00	-	0.00
T08	9,949	9,949	**5.70**	108.5	0.00	90.96	-	-	0.00	0.00	-	0.00
T09	9,340	9,341	**6.44**	108.5	0.00	90.41	-	-	0.00	0.00	-	0.00
T10	8,901	8,901	**7.00**	108.5	0.00	89.99	-	-	0.00	0.00	-	0.00
T11	12,242	12,242	**3.30**	108.5	0.00	92.76	-	-	0.00	0.00	-	0.00
T12	11,775	11,775	**3.75**	108.5	0.00	92.42	-	-	0.00	0.00	-	0.00
T13	10,924	10,925	**4.62**	108.5	0.00	91.77	-	-	0.00	0.00	-	0.00
T14	10,429	10,429	**5.16**	108.5	0.00	91.36	-	-	0.00	0.00	-	0.00
T15	11,452	11,452	**4.07**	108.5	0.00	92.18	-	-	0.00	0.00	-	0.00
T16	11,560	11,560	**3.96**	108.5	0.00	92.26	-	-	0.00	0.00	-	0.00
T17	10,969	10,969	**4.57**	108.5	0.00	91.80	-	-	0.00	0.00	-	0.00
T18	10,436	10,436	**5.15**	108.5	0.00	91.37	-	-	0.00	0.00	-	0.00
T19	9,873	9,874	**5.79**	108.5	0.00	90.89	-	-	0.00	0.00	-	0.00

To be continued on next page...

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

Description:
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Calculated:
2/16/2015 4:05 PM/2.9.285

DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T20	9,307	9,307	**6.48**	108.5	0.00	90.38	-	-	0.00	0.00	-	0.00
T21	8,885	8,886	**7.02**	108.5	0.00	89.97	-	-	0.00	0.00	-	0.00
T22	9,537	9,538	**6.20**	108.5	0.00	90.59	-	-	0.00	0.00	-	0.00
T23	8,982	8,982	**6.90**	108.5	0.00	90.07	-	-	0.00	0.00	-	0.00
T24	8,502	8,502	**7.54**	108.5	0.00	89.59	-	-	0.00	0.00	-	0.00
T25	11,332	11,333	**4.19**	108.5	0.00	92.09	-	-	0.00	0.00	-	0.00
T26	10,861	10,861	**4.69**	108.5	0.00	91.72	-	-	0.00	0.00	-	0.00
T27	10,453	10,453	**5.13**	108.5	0.00	91.38	-	-	0.00	0.00	-	0.00
T28	10,044	10,045	**5.59**	108.5	0.00	91.04	-	-	0.00	0.00	-	0.00
T29	9,375	9,376	**6.40**	108.5	0.00	90.44	-	-	0.00	0.00	-	0.00
T30	8,913	8,914	**6.99**	108.5	0.00	90.00	-	-	0.00	0.00	-	0.00
T31	8,467	8,468	**7.59**	108.5	0.00	89.56	-	-	0.00	0.00	-	0.00
T32	7,505	7,506	**9.01**	108.5	0.00	88.51	-	-	0.00	0.00	-	0.00
T33	7,046	7,046	**9.76**	108.5	0.00	87.96	-	-	0.00	0.00	-	0.00
T34	10,078	10,078	**5.55**	108.5	0.00	91.07	-	-	0.00	0.00	-	0.00
T35	9,971	9,972	**5.68**	108.5	0.00	90.98	-	-	0.00	0.00	-	0.00
T36	9,017	9,017	**6.85**	108.5	0.00	90.10	-	-	0.00	0.00	-	0.00
T37	8,300	8,300	**7.82**	108.5	0.00	89.38	-	-	0.00	0.00	-	0.00
T38	7,738	7,738	**8.65**	108.5	0.00	88.77	-	-	0.00	0.00	-	0.00
T39	9,970	9,970	**5.68**	108.5	0.00	90.97	-	-	0.00	0.00	-	0.00
T40	9,192	9,192	**6.63**	108.5	0.00	90.27	-	-	0.00	0.00	-	0.00
T41	9,249	9,250	**6.55**	108.5	0.00	90.32	-	-	0.00	0.00	-	0.00
T42	8,335	8,336	**7.77**	108.5	0.00	89.42	-	-	0.00	0.00	-	0.00
T43	7,608	7,609	**8.85**	108.5	0.00	88.63	-	-	0.00	0.00	-	0.00
T44	7,266	7,266	**9.39**	108.5	0.00	88.23	-	-	0.00	0.00	-	0.00
T45	7,050	7,050	**9.75**	108.5	0.00	87.96	-	-	0.00	0.00	-	0.00
T46	6,772	6,773	**10.23**	108.5	0.00	87.62	-	-	0.00	0.00	-	0.00
T47	5,994	5,995	**11.69**	108.5	0.00	86.56	-	-	0.00	0.00	-	0.00
T48 Alt	6,434	6,435	**10.84**	108.5	0.00	87.17	-	-	0.00	0.00	-	0.00
T49 Alt	6,187	6,188	**11.31**	108.5	0.00	86.83	-	-	0.00	0.00	-	0.00
T50 Alt	8,062	8,062	**8.16**	108.5	0.00	89.13	-	-	0.00	0.00	-	0.00
T51 Alt	8,460	8,460	**7.60**	108.5	0.00	89.55	-	-	0.00	0.00	-	0.00
T52 Alt	12,717	12,717	**2.86**	108.5	0.00	93.09	-	-	0.00	0.00	-	0.00
T53 Alt	13,276	13,276	**2.37**	108.5	0.00	93.46	-	-	0.00	0.00	-	0.00
T54 Alt	12,340	12,340	**3.21**	108.5	0.00	92.83	-	-	0.00	0.00	-	0.00
T55 Alt	10,999	11,000	**4.54**	108.5	0.00	91.83	-	-	0.00	0.00	-	0.00
T56 Alt	6,948	6,949	**9.92**	108.5	0.00	87.84	-	-	0.00	0.00	-	0.00
T57 Alt	9,951	9,951	**5.70**	108.5	0.00	90.96	-	-	0.00	0.00	-	0.00
T58 Alt	8,026	8,026	**8.22**	108.5	0.00	89.09	-	-	0.00	0.00	-	0.00
T59 Alt	7,724	7,724	**8.67**	108.5	0.00	88.76	-	-	0.00	0.00	-	0.00

Sum 24.68

- Data undefined due to calculation with octave data

Noise sensitive area: H53 Noise sensitive point: User defined (54)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	13,403	13,403	**2.26**	108.5	0.00	93.54	-	-	0.00	0.00	-	0.00
T02	12,872	12,873	**2.72**	108.5	0.00	93.19	-	-	0.00	0.00	-	0.00
T03	12,374	12,375	**3.18**	108.5	0.00	92.85	-	-	0.00	0.00	-	0.00
T04	11,636	11,636	**3.89**	108.5	0.00	92.32	-	-	0.00	0.00	-	0.00
T05	11,671	11,671	**3.85**	108.5	0.00	92.34	-	-	0.00	0.00	-	0.00
T06	11,187	11,187	**4.34**	108.5	0.00	91.97	-	-	0.00	0.00	-	0.00
T07	10,356	10,357	**5.24**	108.5	0.00	91.30	-	-	0.00	0.00	-	0.00

To be continued on next page...

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

Description:
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2/16/2015 4:05 PM/2.9.285

DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T08	9,930	9,930	**5.73**	108.5	0.00	90.94	-	-	0.00	0.00	-	0.00
T09	9,327	9,327	**6.46**	108.5	0.00	90.40	-	-	0.00	0.00	-	0.00
T10	8,888	8,888	**7.02**	108.5	0.00	89.98	-	-	0.00	0.00	-	0.00
T11	12,245	12,245	**3.30**	108.5	0.00	92.76	-	-	0.00	0.00	-	0.00
T12	11,777	11,777	**3.75**	108.5	0.00	92.42	-	-	0.00	0.00	-	0.00
T13	10,933	10,933	**4.61**	108.5	0.00	91.77	-	-	0.00	0.00	-	0.00
T14	10,435	10,435	**5.15**	108.5	0.00	91.37	-	-	0.00	0.00	-	0.00
T15	11,468	11,468	**4.06**	108.5	0.00	92.19	-	-	0.00	0.00	-	0.00
T16	11,586	11,586	**3.94**	108.5	0.00	92.28	-	-	0.00	0.00	-	0.00
T17	10,993	10,993	**4.55**	108.5	0.00	91.82	-	-	0.00	0.00	-	0.00
T18	10,459	10,460	**5.12**	108.5	0.00	91.39	-	-	0.00	0.00	-	0.00
T19	9,891	9,892	**5.77**	108.5	0.00	90.91	-	-	0.00	0.00	-	0.00
T20	9,327	9,327	**6.46**	108.5	0.00	90.40	-	-	0.00	0.00	-	0.00
T21	8,901	8,901	**7.00**	108.5	0.00	89.99	-	-	0.00	0.00	-	0.00
T22	9,567	9,568	**6.16**	108.5	0.00	90.62	-	-	0.00	0.00	-	0.00
T23	9,011	9,011	**6.86**	108.5	0.00	90.10	-	-	0.00	0.00	-	0.00
T24	8,529	8,530	**7.50**	108.5	0.00	89.62	-	-	0.00	0.00	-	0.00
T25	11,368	11,369	**4.16**	108.5	0.00	92.11	-	-	0.00	0.00	-	0.00
T26	10,897	10,898	**4.65**	108.5	0.00	91.75	-	-	0.00	0.00	-	0.00
T27	10,489	10,489	**5.09**	108.5	0.00	91.42	-	-	0.00	0.00	-	0.00
T28	10,082	10,082	**5.55**	108.5	0.00	91.07	-	-	0.00	0.00	-	0.00
T29	9,418	9,419	**6.34**	108.5	0.00	90.48	-	-	0.00	0.00	-	0.00
T30	8,955	8,956	**6.93**	108.5	0.00	90.04	-	-	0.00	0.00	-	0.00
T31	8,510	8,511	**7.53**	108.5	0.00	89.60	-	-	0.00	0.00	-	0.00
T32	7,546	7,546	**8.95**	108.5	0.00	88.55	-	-	0.00	0.00	-	0.00
T33	7,087	7,088	**9.69**	108.5	0.00	88.01	-	-	0.00	0.00	-	0.00
T34	10,124	10,125	**5.50**	108.5	0.00	91.11	-	-	0.00	0.00	-	0.00
T35	10,024	10,024	**5.62**	108.5	0.00	91.02	-	-	0.00	0.00	-	0.00
T36	9,069	9,069	**6.78**	108.5	0.00	90.15	-	-	0.00	0.00	-	0.00
T37	8,352	8,352	**7.75**	108.5	0.00	89.44	-	-	0.00	0.00	-	0.00
T38	7,790	7,790	**8.57**	108.5	0.00	88.83	-	-	0.00	0.00	-	0.00
T39	10,029	10,029	**5.61**	108.5	0.00	91.03	-	-	0.00	0.00	-	0.00
T40	9,252	9,253	**6.55**	108.5	0.00	90.33	-	-	0.00	0.00	-	0.00
T41	9,317	9,317	**6.47**	108.5	0.00	90.39	-	-	0.00	0.00	-	0.00
T42	8,396	8,397	**7.69**	108.5	0.00	89.48	-	-	0.00	0.00	-	0.00
T43	7,668	7,668	**8.76**	108.5	0.00	88.69	-	-	0.00	0.00	-	0.00
T44	7,336	7,336	**9.28**	108.5	0.00	88.31	-	-	0.00	0.00	-	0.00
T45	7,124	7,124	**9.63**	108.5	0.00	88.06	-	-	0.00	0.00	-	0.00
T46	6,832	6,833	**10.12**	108.5	0.00	87.69	-	-	0.00	0.00	-	0.00
T47	6,049	6,050	**11.58**	108.5	0.00	86.63	-	-	0.00	0.00	-	0.00
T48 Alt	6,507	6,507	**10.70**	108.5	0.00	87.27	-	-	0.00	0.00	-	0.00
T49 Alt	6,264	6,265	**11.16**	108.5	0.00	86.94	-	-	0.00	0.00	-	0.00
T50 Alt	8,083	8,083	**8.13**	108.5	0.00	89.15	-	-	0.00	0.00	-	0.00
T51 Alt	8,476	8,476	**7.58**	108.5	0.00	89.56	-	-	0.00	0.00	-	0.00
T52 Alt	12,706	12,707	**2.87**	108.5	0.00	93.08	-	-	0.00	0.00	-	0.00
T53 Alt	13,258	13,258	**2.38**	108.5	0.00	93.45	-	-	0.00	0.00	-	0.00
T54 Alt	12,334	12,334	**3.21**	108.5	0.00	92.82	-	-	0.00	0.00	-	0.00
T55 Alt	10,998	10,998	**4.54**	108.5	0.00	91.83	-	-	0.00	0.00	-	0.00
T56 Alt	7,000	7,001	**9.83**	108.5	0.00	87.90	-	-	0.00	0.00	-	0.00
T57 Alt	9,943	9,944	**5.71**	108.5	0.00	90.95	-	-	0.00	0.00	-	0.00
T58 Alt	8,029	8,030	**8.21**	108.5	0.00	89.09	-	-	0.00	0.00	-	0.00
T59 Alt	7,731	7,732	**8.66**	108.5	0.00	88.77	-	-	0.00	0.00	-	0.00

Sum 24.63

- Data undefined due to calculation with octave data

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

Description:
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Calculated:
2/16/2015 4:05 PM/2.9.285

DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

Noise sensitive area: H54 Noise sensitive point: User defined (55)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	14,289	14,289	**1.52**	108.5	0.00	94.10	-	-	0.00	0.00	-	0.00
T02	13,782	13,782	**1.93**	108.5	0.00	93.79	-	-	0.00	0.00	-	0.00
T03	13,291	13,292	**2.35**	108.5	0.00	93.47	-	-	0.00	0.00	-	0.00
T04	12,563	12,563	**3.00**	108.5	0.00	92.98	-	-	0.00	0.00	-	0.00
T05	12,658	12,658	**2.92**	108.5	0.00	93.05	-	-	0.00	0.00	-	0.00
T06	12,186	12,186	**3.35**	108.5	0.00	92.72	-	-	0.00	0.00	-	0.00
T07	11,363	11,364	**4.16**	108.5	0.00	92.11	-	-	0.00	0.00	-	0.00
T08	10,882	10,882	**4.66**	108.5	0.00	91.73	-	-	0.00	0.00	-	0.00
T09	10,314	10,314	**5.29**	108.5	0.00	91.27	-	-	0.00	0.00	-	0.00
T10	9,874	9,874	**5.79**	108.5	0.00	90.89	-	-	0.00	0.00	-	0.00
T11	13,299	13,299	**2.35**	108.5	0.00	93.48	-	-	0.00	0.00	-	0.00
T12	12,828	12,828	**2.76**	108.5	0.00	93.16	-	-	0.00	0.00	-	0.00
T13	12,005	12,005	**3.53**	108.5	0.00	92.59	-	-	0.00	0.00	-	0.00
T14	11,500	11,500	**4.02**	108.5	0.00	92.21	-	-	0.00	0.00	-	0.00
T15	12,563	12,563	**3.00**	108.5	0.00	92.98	-	-	0.00	0.00	-	0.00
T16	12,702	12,702	**2.88**	108.5	0.00	93.08	-	-	0.00	0.00	-	0.00
T17	12,107	12,107	**3.43**	108.5	0.00	92.66	-	-	0.00	0.00	-	0.00
T18	11,571	11,571	**3.95**	108.5	0.00	92.27	-	-	0.00	0.00	-	0.00
T19	10,992	10,993	**4.55**	108.5	0.00	91.82	-	-	0.00	0.00	-	0.00
T20	10,432	10,433	**5.15**	108.5	0.00	91.37	-	-	0.00	0.00	-	0.00
T21	9,995	9,996	**5.65**	108.5	0.00	91.00	-	-	0.00	0.00	-	0.00
T22	10,690	10,690	**4.87**	108.5	0.00	91.58	-	-	0.00	0.00	-	0.00
T23	10,131	10,132	**5.49**	108.5	0.00	91.11	-	-	0.00	0.00	-	0.00
T24	9,648	9,649	**6.06**	108.5	0.00	90.69	-	-	0.00	0.00	-	0.00
T25	12,497	12,497	**3.06**	108.5	0.00	92.94	-	-	0.00	0.00	-	0.00
T26	12,025	12,026	**3.51**	108.5	0.00	92.60	-	-	0.00	0.00	-	0.00
T27	11,618	11,618	**3.91**	108.5	0.00	92.30	-	-	0.00	0.00	-	0.00
T28	11,211	11,212	**4.32**	108.5	0.00	91.99	-	-	0.00	0.00	-	0.00
T29	10,550	10,550	**5.02**	108.5	0.00	91.47	-	-	0.00	0.00	-	0.00
T30	10,086	10,087	**5.54**	108.5	0.00	91.08	-	-	0.00	0.00	-	0.00
T31	9,641	9,642	**6.07**	108.5	0.00	90.68	-	-	0.00	0.00	-	0.00
T32	8,677	8,677	**7.30**	108.5	0.00	89.77	-	-	0.00	0.00	-	0.00
T33	8,218	8,219	**7.94**	108.5	0.00	89.30	-	-	0.00	0.00	-	0.00
T34	11,255	11,255	**4.27**	108.5	0.00	92.03	-	-	0.00	0.00	-	0.00
T35	11,151	11,151	**4.38**	108.5	0.00	91.95	-	-	0.00	0.00	-	0.00
T36	10,196	10,196	**5.42**	108.5	0.00	91.17	-	-	0.00	0.00	-	0.00
T37	9,479	9,479	**6.27**	108.5	0.00	90.54	-	-	0.00	0.00	-	0.00
T38	8,917	8,917	**6.98**	108.5	0.00	90.00	-	-	0.00	0.00	-	0.00
T39	11,146	11,146	**4.39**	108.5	0.00	91.94	-	-	0.00	0.00	-	0.00
T40	10,366	10,366	**5.23**	108.5	0.00	91.31	-	-	0.00	0.00	-	0.00
T41	10,413	10,413	**5.17**	108.5	0.00	91.35	-	-	0.00	0.00	-	0.00
T42	9,510	9,510	**6.23**	108.5	0.00	90.56	-	-	0.00	0.00	-	0.00
T43	8,784	8,785	**7.16**	108.5	0.00	89.87	-	-	0.00	0.00	-	0.00
T44	8,425	8,425	**7.65**	108.5	0.00	89.51	-	-	0.00	0.00	-	0.00
T45	8,196	8,196	**7.97**	108.5	0.00	89.27	-	-	0.00	0.00	-	0.00
T46	7,948	7,948	**8.33**	108.5	0.00	89.01	-	-	0.00	0.00	-	0.00
T47	7,173	7,173	**9.55**	108.5	0.00	88.11	-	-	0.00	0.00	-	0.00
T48 Alt	7,586	7,586	**8.88**	108.5	0.00	88.60	-	-	0.00	0.00	-	0.00
T49 Alt	7,325	7,325	**9.30**	108.5	0.00	88.30	-	-	0.00	0.00	-	0.00
T50 Alt	9,190	9,190	**6.63**	108.5	0.00	90.27	-	-	0.00	0.00	-	0.00
T51 Alt	9,572	9,572	**6.15**	108.5	0.00	90.62	-	-	0.00	0.00	-	0.00
T52 Alt	13,702	13,702	**2.00**	108.5	0.00	93.74	-	-	0.00	0.00	-	0.00
T53 Alt	14,216	14,217	**1.57**	108.5	0.00	94.06	-	-	0.00	0.00	-	0.00
T54 Alt	13,353	13,354	**2.30**	108.5	0.00	93.51	-	-	0.00	0.00	-	0.00
T55 Alt	12,034	12,034	**3.50**	108.5	0.00	92.61	-	-	0.00	0.00	-	0.00

To be continued on next page...

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
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Finley, ND 58230

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DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

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WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T56 Alt	8,128	8,128	**8.07**	108.5	0.00	89.20	-	-	0.00	0.00	-	0.00
T57 Alt	10,955	10,955	**4.59**	108.5	0.00	91.79	-	-	0.00	0.00	-	0.00
T58 Alt	9,089	9,089	**6.76**	108.5	0.00	90.17	-	-	0.00	0.00	-	0.00
T59 Alt	8,804	8,805	**7.13**	108.5	0.00	89.89	-	-	0.00	0.00	-	0.00
Sum	23.20											

- Data undefined due to calculation with octave data

Noise sensitive area: H55 Noise sensitive point: User defined (56)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	14,468	14,468	**1.37**	108.5	0.00	94.21	-	-	0.00	0.00	-	0.00
T02	13,927	13,928	**1.81**	108.5	0.00	93.88	-	-	0.00	0.00	-	0.00
T03	13,426	13,426	**2.24**	108.5	0.00	93.56	-	-	0.00	0.00	-	0.00
T04	12,683	12,683	**2.89**	108.5	0.00	93.06	-	-	0.00	0.00	-	0.00
T05	12,677	12,677	**2.90**	108.5	0.00	93.06	-	-	0.00	0.00	-	0.00
T06	12,184	12,184	**3.36**	108.5	0.00	92.72	-	-	0.00	0.00	-	0.00
T07	11,348	11,348	**4.18**	108.5	0.00	92.10	-	-	0.00	0.00	-	0.00
T08	10,964	10,965	**4.58**	108.5	0.00	91.80	-	-	0.00	0.00	-	0.00
T09	10,338	10,339	**5.26**	108.5	0.00	91.29	-	-	0.00	0.00	-	0.00
T10	9,900	9,900	**5.76**	108.5	0.00	90.91	-	-	0.00	0.00	-	0.00
T11	13,178	13,178	**2.45**	108.5	0.00	93.40	-	-	0.00	0.00	-	0.00
T12	12,715	12,715	**2.86**	108.5	0.00	93.09	-	-	0.00	0.00	-	0.00
T13	11,838	11,838	**3.69**	108.5	0.00	92.47	-	-	0.00	0.00	-	0.00
T14	11,354	11,354	**4.17**	108.5	0.00	92.10	-	-	0.00	0.00	-	0.00
T15	12,325	12,326	**3.22**	108.5	0.00	92.82	-	-	0.00	0.00	-	0.00
T16	12,377	12,377	**3.17**	108.5	0.00	92.85	-	-	0.00	0.00	-	0.00
T17	11,796	11,796	**3.73**	108.5	0.00	92.43	-	-	0.00	0.00	-	0.00
T18	11,270	11,270	**4.26**	108.5	0.00	92.04	-	-	0.00	0.00	-	0.00
T19	10,739	10,739	**4.82**	108.5	0.00	91.62	-	-	0.00	0.00	-	0.00
T20	10,163	10,163	**5.46**	108.5	0.00	91.14	-	-	0.00	0.00	-	0.00
T21	9,767	9,768	**5.92**	108.5	0.00	90.80	-	-	0.00	0.00	-	0.00
T22	10,333	10,333	**5.26**	108.5	0.00	91.28	-	-	0.00	0.00	-	0.00
T23	9,787	9,787	**5.90**	108.5	0.00	90.81	-	-	0.00	0.00	-	0.00
T24	9,316	9,316	**6.47**	108.5	0.00	90.38	-	-	0.00	0.00	-	0.00
T25	12,083	12,083	**3.45**	108.5	0.00	92.64	-	-	0.00	0.00	-	0.00
T26	11,612	11,613	**3.91**	108.5	0.00	92.30	-	-	0.00	0.00	-	0.00
T27	11,203	11,203	**4.33**	108.5	0.00	91.99	-	-	0.00	0.00	-	0.00
T28	10,787	10,788	**4.76**	108.5	0.00	91.66	-	-	0.00	0.00	-	0.00
T29	10,077	10,078	**5.56**	108.5	0.00	91.07	-	-	0.00	0.00	-	0.00
T30	9,627	9,628	**6.09**	108.5	0.00	90.67	-	-	0.00	0.00	-	0.00
T31	9,177	9,177	**6.65**	108.5	0.00	90.25	-	-	0.00	0.00	-	0.00
T32	8,236	8,236	**7.91**	108.5	0.00	89.31	-	-	0.00	0.00	-	0.00
T33	7,772	7,773	**8.60**	108.5	0.00	88.81	-	-	0.00	0.00	-	0.00
T34	10,754	10,755	**4.80**	108.5	0.00	91.63	-	-	0.00	0.00	-	0.00
T35	10,595	10,595	**4.97**	108.5	0.00	91.50	-	-	0.00	0.00	-	0.00
T36	9,645	9,646	**6.07**	108.5	0.00	90.69	-	-	0.00	0.00	-	0.00
T37	8,937	8,938	**6.96**	108.5	0.00	90.02	-	-	0.00	0.00	-	0.00
T38	8,372	8,373	**7.72**	108.5	0.00	89.46	-	-	0.00	0.00	-	0.00
T39	10,532	10,532	**5.04**	108.5	0.00	91.45	-	-	0.00	0.00	-	0.00
T40	9,741	9,741	**5.95**	108.5	0.00	90.77	-	-	0.00	0.00	-	0.00
T41	9,730	9,730	**5.96**	108.5	0.00	90.76	-	-	0.00	0.00	-	0.00
T42	8,891	8,891	**7.02**	108.5	0.00	89.98	-	-	0.00	0.00	-	0.00
T43	8,180	8,180	**7.99**	108.5	0.00	89.26	-	-	0.00	0.00	-	0.00

To be continued on next page...

Project:
20131290 Rolette Power Development

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Warren Enyart and Merle Boucher
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DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

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WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T44	7,732	7,732	**8.66**	108.5	0.00	88.77	-	-	0.00	0.00	-	0.00
T45	7,466	7,466	**9.07**	108.5	0.00	88.46	-	-	0.00	0.00	-	0.00
T46	7,345	7,345	**9.26**	108.5	0.00	88.32	-	-	0.00	0.00	-	0.00
T47	6,618	6,618	**10.50**	108.5	0.00	87.42	-	-	0.00	0.00	-	0.00
T48 Alt	6,877	6,877	**10.05**	108.5	0.00	87.75	-	-	0.00	0.00	-	0.00
T49 Alt	6,580	6,581	**10.57**	108.5	0.00	87.37	-	-	0.00	0.00	-	0.00
T50 Alt	8,917	8,917	**6.98**	108.5	0.00	90.00	-	-	0.00	0.00	-	0.00
T51 Alt	9,340	9,340	**6.44**	108.5	0.00	90.41	-	-	0.00	0.00	-	0.00
T52 Alt	13,704	13,705	**2.00**	108.5	0.00	93.74	-	-	0.00	0.00	-	0.00
T53 Alt	14,284	14,285	**1.52**	108.5	0.00	94.10	-	-	0.00	0.00	-	0.00
T54 Alt	13,310	13,310	**2.34**	108.5	0.00	93.48	-	-	0.00	0.00	-	0.00
T55 Alt	11,956	11,956	**3.57**	108.5	0.00	92.55	-	-	0.00	0.00	-	0.00
T56 Alt	7,592	7,593	**8.87**	108.5	0.00	88.61	-	-	0.00	0.00	-	0.00
T57 Alt	10,931	10,932	**4.61**	108.5	0.00	91.77	-	-	0.00	0.00	-	0.00
T58 Alt	8,965	8,965	**6.92**	108.5	0.00	90.05	-	-	0.00	0.00	-	0.00
T59 Alt	8,646	8,647	**7.34**	108.5	0.00	89.74	-	-	0.00	0.00	-	0.00
Sum	23.74											

- Data undefined due to calculation with octave data

Noise sensitive area: H56 Noise sensitive point: User defined (57)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	13,700	13,701	**2.00**	108.5	0.00	93.73	-	-	0.00	0.00	-	0.00
T02	13,155	13,155	**2.47**	108.5	0.00	93.38	-	-	0.00	0.00	-	0.00
T03	12,652	12,652	**2.92**	108.5	0.00	93.04	-	-	0.00	0.00	-	0.00
T04	11,907	11,907	**3.62**	108.5	0.00	92.52	-	-	0.00	0.00	-	0.00
T05	11,890	11,890	**3.64**	108.5	0.00	92.50	-	-	0.00	0.00	-	0.00
T06	11,396	11,396	**4.13**	108.5	0.00	92.13	-	-	0.00	0.00	-	0.00
T07	10,559	10,559	**5.01**	108.5	0.00	91.47	-	-	0.00	0.00	-	0.00
T08	10,184	10,184	**5.43**	108.5	0.00	91.16	-	-	0.00	0.00	-	0.00
T09	9,552	9,553	**6.18**	108.5	0.00	90.60	-	-	0.00	0.00	-	0.00
T10	9,114	9,115	**6.73**	108.5	0.00	90.19	-	-	0.00	0.00	-	0.00
T11	12,388	12,388	**3.16**	108.5	0.00	92.86	-	-	0.00	0.00	-	0.00
T12	11,925	11,925	**3.60**	108.5	0.00	92.53	-	-	0.00	0.00	-	0.00
T13	11,051	11,051	**4.49**	108.5	0.00	91.87	-	-	0.00	0.00	-	0.00
T14	10,565	10,565	**5.01**	108.5	0.00	91.48	-	-	0.00	0.00	-	0.00
T15	11,545	11,545	**3.98**	108.5	0.00	92.25	-	-	0.00	0.00	-	0.00
T16	11,611	11,611	**3.91**	108.5	0.00	92.30	-	-	0.00	0.00	-	0.00
T17	11,027	11,027	**4.51**	108.5	0.00	91.85	-	-	0.00	0.00	-	0.00
T18	10,498	10,499	**5.08**	108.5	0.00	91.42	-	-	0.00	0.00	-	0.00
T19	9,959	9,960	**5.69**	108.5	0.00	90.97	-	-	0.00	0.00	-	0.00
T20	9,386	9,386	**6.38**	108.5	0.00	90.45	-	-	0.00	0.00	-	0.00
T21	8,984	8,985	**6.89**	108.5	0.00	90.07	-	-	0.00	0.00	-	0.00
T22	9,572	9,573	**6.15**	108.5	0.00	90.62	-	-	0.00	0.00	-	0.00
T23	9,023	9,024	**6.84**	108.5	0.00	90.11	-	-	0.00	0.00	-	0.00
T24	8,549	8,550	**7.47**	108.5	0.00	89.64	-	-	0.00	0.00	-	0.00
T25	11,339	11,339	**4.19**	108.5	0.00	92.09	-	-	0.00	0.00	-	0.00
T26	10,868	10,868	**4.68**	108.5	0.00	91.72	-	-	0.00	0.00	-	0.00
T27	10,459	10,459	**5.12**	108.5	0.00	91.39	-	-	0.00	0.00	-	0.00
T28	10,045	10,046	**5.59**	108.5	0.00	91.04	-	-	0.00	0.00	-	0.00
T29	9,350	9,351	**6.43**	108.5	0.00	90.42	-	-	0.00	0.00	-	0.00
T30	8,895	8,896	**7.01**	108.5	0.00	89.98	-	-	0.00	0.00	-	0.00
T31	8,446	8,447	**7.62**	108.5	0.00	89.53	-	-	0.00	0.00	-	0.00

To be continued on next page...

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
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DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T32	7,496	7,497	**9.02**	108.5	0.00	88.50	-	-	0.00	0.00	-	0.00
T33	7,034	7,034	**9.78**	108.5	0.00	87.94	-	-	0.00	0.00	-	0.00
T34	10,039	10,039	**5.60**	108.5	0.00	91.03	-	-	0.00	0.00	-	0.00
T35	9,902	9,902	**5.76**	108.5	0.00	90.91	-	-	0.00	0.00	-	0.00
T36	8,949	8,950	**6.94**	108.5	0.00	90.04	-	-	0.00	0.00	-	0.00
T37	8,236	8,237	**7.91**	108.5	0.00	89.32	-	-	0.00	0.00	-	0.00
T38	7,672	7,672	**8.75**	108.5	0.00	88.70	-	-	0.00	0.00	-	0.00
T39	9,868	9,868	**5.80**	108.5	0.00	90.88	-	-	0.00	0.00	-	0.00
T40	9,082	9,082	**6.77**	108.5	0.00	90.16	-	-	0.00	0.00	-	0.00
T41	9,106	9,106	**6.74**	108.5	0.00	90.19	-	-	0.00	0.00	-	0.00
T42	8,228	8,228	**7.92**	108.5	0.00	89.31	-	-	0.00	0.00	-	0.00
T43	7,508	7,509	**9.00**	108.5	0.00	88.51	-	-	0.00	0.00	-	0.00
T44	7,112	7,113	**9.65**	108.5	0.00	88.04	-	-	0.00	0.00	-	0.00
T45	6,873	6,873	**10.05**	108.5	0.00	87.74	-	-	0.00	0.00	-	0.00
T46	6,671	6,672	**10.41**	108.5	0.00	87.48	-	-	0.00	0.00	-	0.00
T47	5,919	5,920	**11.84**	108.5	0.00	86.45	-	-	0.00	0.00	-	0.00
T48 Alt	6,268	6,268	**11.15**	108.5	0.00	86.94	-	-	0.00	0.00	-	0.00
T49 Alt	5,998	5,998	**11.68**	108.5	0.00	86.56	-	-	0.00	0.00	-	0.00
T50 Alt	8,140	8,140	**8.05**	108.5	0.00	89.21	-	-	0.00	0.00	-	0.00
T51 Alt	8,557	8,557	**7.46**	108.5	0.00	89.65	-	-	0.00	0.00	-	0.00
T52 Alt	12,916	12,916	**2.68**	108.5	0.00	93.22	-	-	0.00	0.00	-	0.00
T53 Alt	13,501	13,501	**2.17**	108.5	0.00	93.61	-	-	0.00	0.00	-	0.00
T54 Alt	12,519	12,519	**3.04**	108.5	0.00	92.95	-	-	0.00	0.00	-	0.00
T55 Alt	11,166	11,166	**4.37**	108.5	0.00	91.96	-	-	0.00	0.00	-	0.00
T56 Alt	6,887	6,887	**10.03**	108.5	0.00	87.76	-	-	0.00	0.00	-	0.00
T57 Alt	10,142	10,142	**5.48**	108.5	0.00	91.12	-	-	0.00	0.00	-	0.00
T58 Alt	8,175	8,175	**8.00**	108.5	0.00	89.25	-	-	0.00	0.00	-	0.00
T59 Alt	7,857	7,858	**8.47**	108.5	0.00	88.91	-	-	0.00	0.00	-	0.00
Sum	24.71											

- Data undefined due to calculation with octave data

Noise sensitive area: H57 Noise sensitive point: User defined (58)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	14,029	14,029	**1.73**	108.5	0.00	93.94	-	-	0.00	0.00	-	0.00
T02	13,473	13,473	**2.19**	108.5	0.00	93.59	-	-	0.00	0.00	-	0.00
T03	12,967	12,967	**2.64**	108.5	0.00	93.26	-	-	0.00	0.00	-	0.00
T04	12,219	12,219	**3.32**	108.5	0.00	92.74	-	-	0.00	0.00	-	0.00
T05	12,166	12,166	**3.37**	108.5	0.00	92.70	-	-	0.00	0.00	-	0.00
T06	11,665	11,665	**3.86**	108.5	0.00	92.34	-	-	0.00	0.00	-	0.00
T07	10,825	10,825	**4.73**	108.5	0.00	91.69	-	-	0.00	0.00	-	0.00
T08	10,487	10,487	**5.09**	108.5	0.00	91.41	-	-	0.00	0.00	-	0.00
T09	9,836	9,836	**5.84**	108.5	0.00	90.86	-	-	0.00	0.00	-	0.00
T10	9,400	9,400	**6.37**	108.5	0.00	90.46	-	-	0.00	0.00	-	0.00
T11	12,608	12,608	**2.96**	108.5	0.00	93.01	-	-	0.00	0.00	-	0.00
T12	12,149	12,149	**3.39**	108.5	0.00	92.69	-	-	0.00	0.00	-	0.00
T13	11,254	11,254	**4.27**	108.5	0.00	92.03	-	-	0.00	0.00	-	0.00
T14	10,778	10,778	**4.77**	108.5	0.00	91.65	-	-	0.00	0.00	-	0.00
T15	11,716	11,716	**3.81**	108.5	0.00	92.38	-	-	0.00	0.00	-	0.00
T16	11,741	11,742	**3.78**	108.5	0.00	92.39	-	-	0.00	0.00	-	0.00
T17	11,165	11,165	**4.37**	108.5	0.00	91.96	-	-	0.00	0.00	-	0.00
T18	10,642	10,642	**4.92**	108.5	0.00	91.54	-	-	0.00	0.00	-	0.00
T19	10,127	10,127	**5.50**	108.5	0.00	91.11	-	-	0.00	0.00	-	0.00

To be continued on next page...

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20131290 Rolette Power Development

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DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T20	9,547	9,547	**6.18**	108.5	0.00	90.60	-	-	0.00	0.00	-	0.00
T21	9,166	9,166	**6.66**	108.5	0.00	90.24	-	-	0.00	0.00	-	0.00
T22	9,691	9,692	**6.01**	108.5	0.00	90.73	-	-	0.00	0.00	-	0.00
T23	9,150	9,150	**6.68**	108.5	0.00	90.23	-	-	0.00	0.00	-	0.00
T24	8,683	8,683	**7.29**	108.5	0.00	89.77	-	-	0.00	0.00	-	0.00
T25	11,426	11,426	**4.10**	108.5	0.00	92.16	-	-	0.00	0.00	-	0.00
T26	10,956	10,956	**4.59**	108.5	0.00	91.79	-	-	0.00	0.00	-	0.00
T27	10,547	10,547	**5.03**	108.5	0.00	91.46	-	-	0.00	0.00	-	0.00
T28	10,129	10,130	**5.50**	108.5	0.00	91.11	-	-	0.00	0.00	-	0.00
T29	9,410	9,411	**6.35**	108.5	0.00	90.47	-	-	0.00	0.00	-	0.00
T30	8,964	8,964	**6.92**	108.5	0.00	90.05	-	-	0.00	0.00	-	0.00
T31	8,513	8,513	**7.53**	108.5	0.00	89.60	-	-	0.00	0.00	-	0.00
T32	7,578	7,578	**8.89**	108.5	0.00	88.59	-	-	0.00	0.00	-	0.00
T33	7,114	7,114	**9.64**	108.5	0.00	88.04	-	-	0.00	0.00	-	0.00
T34	10,082	10,082	**5.55**	108.5	0.00	91.07	-	-	0.00	0.00	-	0.00
T35	9,915	9,916	**5.74**	108.5	0.00	90.93	-	-	0.00	0.00	-	0.00
T36	8,967	8,967	**6.92**	108.5	0.00	90.05	-	-	0.00	0.00	-	0.00
T37	8,260	8,261	**7.88**	108.5	0.00	89.34	-	-	0.00	0.00	-	0.00
T38	7,695	7,696	**8.71**	108.5	0.00	88.72	-	-	0.00	0.00	-	0.00
T39	9,847	9,847	**5.82**	108.5	0.00	90.87	-	-	0.00	0.00	-	0.00
T40	9,055	9,056	**6.80**	108.5	0.00	90.14	-	-	0.00	0.00	-	0.00
T41	9,043	9,044	**6.82**	108.5	0.00	90.13	-	-	0.00	0.00	-	0.00
T42	8,206	8,207	**7.96**	108.5	0.00	89.28	-	-	0.00	0.00	-	0.00
T43	7,496	7,497	**9.02**	108.5	0.00	88.50	-	-	0.00	0.00	-	0.00
T44	7,045	7,046	**9.76**	108.5	0.00	87.96	-	-	0.00	0.00	-	0.00
T45	6,781	6,781	**10.21**	108.5	0.00	87.63	-	-	0.00	0.00	-	0.00
T46	6,662	6,662	**10.42**	108.5	0.00	87.47	-	-	0.00	0.00	-	0.00
T47	5,941	5,942	**11.79**	108.5	0.00	86.48	-	-	0.00	0.00	-	0.00
T48 Alt	6,190	6,191	**11.30**	108.5	0.00	86.83	-	-	0.00	0.00	-	0.00
T49 Alt	5,896	5,896	**11.88**	108.5	0.00	86.41	-	-	0.00	0.00	-	0.00
T50 Alt	8,303	8,303	**7.82**	108.5	0.00	89.39	-	-	0.00	0.00	-	0.00
T51 Alt	8,738	8,738	**7.22**	108.5	0.00	89.83	-	-	0.00	0.00	-	0.00
T52 Alt	13,184	13,184	**2.45**	108.5	0.00	93.40	-	-	0.00	0.00	-	0.00
T53 Alt	13,792	13,792	**1.92**	108.5	0.00	93.79	-	-	0.00	0.00	-	0.00
T54 Alt	12,770	12,770	**2.81**	108.5	0.00	93.12	-	-	0.00	0.00	-	0.00
T55 Alt	11,405	11,406	**4.12**	108.5	0.00	92.14	-	-	0.00	0.00	-	0.00
T56 Alt	6,918	6,918	**9.98**	108.5	0.00	87.80	-	-	0.00	0.00	-	0.00
T57 Alt	10,406	10,406	**5.18**	108.5	0.00	91.35	-	-	0.00	0.00	-	0.00
T58 Alt	8,404	8,404	**7.68**	108.5	0.00	89.49	-	-	0.00	0.00	-	0.00
T59 Alt	8,074	8,074	**8.15**	108.5	0.00	89.14	-	-	0.00	0.00	-	0.00

Sum 24.63

- Data undefined due to calculation with octave data

Noise sensitive area: H58 Noise sensitive point: User defined (59)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	13,472	13,472	**2.20**	108.5	0.00	93.59	-	-	0.00	0.00	-	0.00
T02	12,918	12,918	**2.68**	108.5	0.00	93.22	-	-	0.00	0.00	-	0.00
T03	12,413	12,413	**3.14**	108.5	0.00	92.88	-	-	0.00	0.00	-	0.00
T04	11,666	11,666	**3.86**	108.5	0.00	92.34	-	-	0.00	0.00	-	0.00
T05	11,626	11,626	**3.90**	108.5	0.00	92.31	-	-	0.00	0.00	-	0.00
T06	11,128	11,128	**4.40**	108.5	0.00	91.93	-	-	0.00	0.00	-	0.00
T07	10,289	10,289	**5.31**	108.5	0.00	91.25	-	-	0.00	0.00	-	0.00

To be continued on next page...

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DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T08	9,937	9,937	**5.72**	108.5	0.00	90.95	-	-	0.00	0.00	-	0.00
T09	9,293	9,293	**6.50**	108.5	0.00	90.36	-	-	0.00	0.00	-	0.00
T10	8,856	8,856	**7.06**	108.5	0.00	89.94	-	-	0.00	0.00	-	0.00
T11	12,097	12,097	**3.44**	108.5	0.00	92.65	-	-	0.00	0.00	-	0.00
T12	11,635	11,635	**3.89**	108.5	0.00	92.32	-	-	0.00	0.00	-	0.00
T13	10,753	10,753	**4.80**	108.5	0.00	91.63	-	-	0.00	0.00	-	0.00
T14	10,271	10,271	**5.33**	108.5	0.00	91.23	-	-	0.00	0.00	-	0.00
T15	11,236	11,236	**4.29**	108.5	0.00	92.01	-	-	0.00	0.00	-	0.00
T16	11,291	11,291	**4.24**	108.5	0.00	92.05	-	-	0.00	0.00	-	0.00
T17	10,709	10,709	**4.85**	108.5	0.00	91.59	-	-	0.00	0.00	-	0.00
T18	10,182	10,182	**5.44**	108.5	0.00	91.16	-	-	0.00	0.00	-	0.00
T19	9,649	9,650	**6.06**	108.5	0.00	90.69	-	-	0.00	0.00	-	0.00
T20	9,074	9,074	**6.78**	108.5	0.00	90.16	-	-	0.00	0.00	-	0.00
T21	8,678	8,679	**7.30**	108.5	0.00	89.77	-	-	0.00	0.00	-	0.00
T22	9,250	9,250	**6.55**	108.5	0.00	90.32	-	-	0.00	0.00	-	0.00
T23	8,702	8,703	**7.27**	108.5	0.00	89.79	-	-	0.00	0.00	-	0.00
T24	8,230	8,230	**7.92**	108.5	0.00	89.31	-	-	0.00	0.00	-	0.00
T25	11,011	11,011	**4.53**	108.5	0.00	91.84	-	-	0.00	0.00	-	0.00
T26	10,540	10,540	**5.03**	108.5	0.00	91.46	-	-	0.00	0.00	-	0.00
T27	10,131	10,131	**5.49**	108.5	0.00	91.11	-	-	0.00	0.00	-	0.00
T28	9,717	9,717	**5.98**	108.5	0.00	90.75	-	-	0.00	0.00	-	0.00
T29	9,018	9,019	**6.85**	108.5	0.00	90.10	-	-	0.00	0.00	-	0.00
T30	8,564	8,565	**7.45**	108.5	0.00	89.65	-	-	0.00	0.00	-	0.00
T31	8,115	8,116	**8.09**	108.5	0.00	89.19	-	-	0.00	0.00	-	0.00
T32	7,167	7,167	**9.55**	108.5	0.00	88.11	-	-	0.00	0.00	-	0.00
T33	6,704	6,704	**10.35**	108.5	0.00	87.53	-	-	0.00	0.00	-	0.00
T34	9,705	9,706	**5.99**	108.5	0.00	90.74	-	-	0.00	0.00	-	0.00
T35	9,567	9,568	**6.16**	108.5	0.00	90.62	-	-	0.00	0.00	-	0.00
T36	8,614	8,615	**7.39**	108.5	0.00	89.70	-	-	0.00	0.00	-	0.00
T37	7,902	7,902	**8.40**	108.5	0.00	88.96	-	-	0.00	0.00	-	0.00
T38	7,337	7,338	**9.28**	108.5	0.00	88.31	-	-	0.00	0.00	-	0.00
T39	9,533	9,533	**6.20**	108.5	0.00	90.58	-	-	0.00	0.00	-	0.00
T40	8,747	8,748	**7.21**	108.5	0.00	89.84	-	-	0.00	0.00	-	0.00
T41	8,774	8,774	**7.17**	108.5	0.00	89.86	-	-	0.00	0.00	-	0.00
T42	7,893	7,894	**8.41**	108.5	0.00	88.95	-	-	0.00	0.00	-	0.00
T43	7,173	7,174	**9.54**	108.5	0.00	88.11	-	-	0.00	0.00	-	0.00
T44	6,781	6,782	**10.21**	108.5	0.00	87.63	-	-	0.00	0.00	-	0.00
T45	6,545	6,545	**10.63**	108.5	0.00	87.32	-	-	0.00	0.00	-	0.00
T46	6,336	6,337	**11.02**	108.5	0.00	87.04	-	-	0.00	0.00	-	0.00
T47	5,585	5,585	**12.53**	108.5	0.00	85.94	-	-	0.00	0.00	-	0.00
T48 Alt	5,938	5,938	**11.80**	108.5	0.00	86.47	-	-	0.00	0.00	-	0.00
T49 Alt	5,672	5,672	**12.35**	108.5	0.00	86.07	-	-	0.00	0.00	-	0.00
T50 Alt	7,828	7,828	**8.51**	108.5	0.00	88.87	-	-	0.00	0.00	-	0.00
T51 Alt	8,251	8,251	**7.89**	108.5	0.00	89.33	-	-	0.00	0.00	-	0.00
T52 Alt	12,648	12,648	**2.92**	108.5	0.00	93.04	-	-	0.00	0.00	-	0.00
T53 Alt	13,246	13,246	**2.39**	108.5	0.00	93.44	-	-	0.00	0.00	-	0.00
T54 Alt	12,242	12,242	**3.30**	108.5	0.00	92.76	-	-	0.00	0.00	-	0.00
T55 Alt	10,883	10,883	**4.66**	108.5	0.00	91.74	-	-	0.00	0.00	-	0.00
T56 Alt	6,553	6,553	**10.62**	108.5	0.00	87.33	-	-	0.00	0.00	-	0.00
T57 Alt	9,871	9,871	**5.80**	108.5	0.00	90.89	-	-	0.00	0.00	-	0.00
T58 Alt	7,887	7,887	**8.42**	108.5	0.00	88.94	-	-	0.00	0.00	-	0.00
T59 Alt	7,564	7,564	**8.92**	108.5	0.00	88.58	-	-	0.00	0.00	-	0.00

Sum 25.18

- Data undefined due to calculation with octave data

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

Description:
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Calculated:
2/16/2015 4:05 PM/2.9.285

DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

Noise sensitive area: H59 Noise sensitive point: User defined (60)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	13,912	13,913	**1.82**	108.5	0.00	93.87	-	-	0.00	0.00	-	0.00
T02	13,364	13,364	**2.29**	108.5	0.00	93.52	-	-	0.00	0.00	-	0.00
T03	12,861	12,861	**2.73**	108.5	0.00	93.19	-	-	0.00	0.00	-	0.00
T04	12,115	12,115	**3.42**	108.5	0.00	92.67	-	-	0.00	0.00	-	0.00
T05	12,089	12,089	**3.45**	108.5	0.00	92.65	-	-	0.00	0.00	-	0.00
T06	11,593	11,593	**3.93**	108.5	0.00	92.28	-	-	0.00	0.00	-	0.00
T07	10,755	10,755	**4.80**	108.5	0.00	91.63	-	-	0.00	0.00	-	0.00
T08	10,390	10,390	**5.20**	108.5	0.00	91.33	-	-	0.00	0.00	-	0.00
T09	9,753	9,754	**5.94**	108.5	0.00	90.78	-	-	0.00	0.00	-	0.00
T10	9,316	9,316	**6.47**	108.5	0.00	90.38	-	-	0.00	0.00	-	0.00
T11	12,571	12,571	**3.00**	108.5	0.00	92.99	-	-	0.00	0.00	-	0.00
T12	12,109	12,109	**3.43**	108.5	0.00	92.66	-	-	0.00	0.00	-	0.00
T13	11,228	11,228	**4.30**	108.5	0.00	92.01	-	-	0.00	0.00	-	0.00
T14	10,745	10,746	**4.81**	108.5	0.00	91.62	-	-	0.00	0.00	-	0.00
T15	11,712	11,712	**3.81**	108.5	0.00	92.37	-	-	0.00	0.00	-	0.00
T16	11,763	11,764	**3.76**	108.5	0.00	92.41	-	-	0.00	0.00	-	0.00
T17	11,182	11,182	**4.35**	108.5	0.00	91.97	-	-	0.00	0.00	-	0.00
T18	10,655	10,656	**4.91**	108.5	0.00	91.55	-	-	0.00	0.00	-	0.00
T19	10,125	10,125	**5.50**	108.5	0.00	91.11	-	-	0.00	0.00	-	0.00
T20	9,549	9,549	**6.18**	108.5	0.00	90.60	-	-	0.00	0.00	-	0.00
T21	9,154	9,155	**6.67**	108.5	0.00	90.23	-	-	0.00	0.00	-	0.00
T22	9,720	9,721	**5.97**	108.5	0.00	90.75	-	-	0.00	0.00	-	0.00
T23	9,174	9,174	**6.65**	108.5	0.00	90.25	-	-	0.00	0.00	-	0.00
T24	8,702	8,703	**7.27**	108.5	0.00	89.79	-	-	0.00	0.00	-	0.00
T25	11,475	11,475	**4.05**	108.5	0.00	92.20	-	-	0.00	0.00	-	0.00
T26	11,004	11,004	**4.53**	108.5	0.00	91.83	-	-	0.00	0.00	-	0.00
T27	10,595	10,595	**4.97**	108.5	0.00	91.50	-	-	0.00	0.00	-	0.00
T28	10,180	10,180	**5.44**	108.5	0.00	91.16	-	-	0.00	0.00	-	0.00
T29	9,475	9,476	**6.27**	108.5	0.00	90.53	-	-	0.00	0.00	-	0.00
T30	9,023	9,024	**6.84**	108.5	0.00	90.11	-	-	0.00	0.00	-	0.00
T31	8,573	8,574	**7.44**	108.5	0.00	89.66	-	-	0.00	0.00	-	0.00
T32	7,629	7,630	**8.82**	108.5	0.00	88.65	-	-	0.00	0.00	-	0.00
T33	7,166	7,166	**9.56**	108.5	0.00	88.11	-	-	0.00	0.00	-	0.00
T34	10,157	10,157	**5.46**	108.5	0.00	91.14	-	-	0.00	0.00	-	0.00
T35	10,008	10,008	**5.64**	108.5	0.00	91.01	-	-	0.00	0.00	-	0.00
T36	9,057	9,057	**6.80**	108.5	0.00	90.14	-	-	0.00	0.00	-	0.00
T37	8,346	8,347	**7.76**	108.5	0.00	89.43	-	-	0.00	0.00	-	0.00
T38	7,781	7,782	**8.58**	108.5	0.00	88.82	-	-	0.00	0.00	-	0.00
T39	9,959	9,959	**5.69**	108.5	0.00	90.96	-	-	0.00	0.00	-	0.00
T40	9,171	9,171	**6.65**	108.5	0.00	90.25	-	-	0.00	0.00	-	0.00
T41	9,178	9,179	**6.64**	108.5	0.00	90.26	-	-	0.00	0.00	-	0.00
T42	8,318	8,319	**7.80**	108.5	0.00	89.40	-	-	0.00	0.00	-	0.00
T43	7,602	7,603	**8.86**	108.5	0.00	88.62	-	-	0.00	0.00	-	0.00
T44	7,182	7,182	**9.53**	108.5	0.00	88.13	-	-	0.00	0.00	-	0.00
T45	6,930	6,931	**9.95**	108.5	0.00	87.82	-	-	0.00	0.00	-	0.00
T46	6,766	6,767	**10.24**	108.5	0.00	87.61	-	-	0.00	0.00	-	0.00
T47	6,027	6,028	**11.62**	108.5	0.00	86.60	-	-	0.00	0.00	-	0.00
T48 Alt	6,332	6,332	**11.03**	108.5	0.00	87.03	-	-	0.00	0.00	-	0.00
T49 Alt	6,050	6,051	**11.57**	108.5	0.00	86.64	-	-	0.00	0.00	-	0.00
T50 Alt	8,303	8,303	**7.82**	108.5	0.00	89.39	-	-	0.00	0.00	-	0.00
T51 Alt	8,727	8,727	**7.23**	108.5	0.00	89.82	-	-	0.00	0.00	-	0.00
T52 Alt	13,113	13,113	**2.51**	108.5	0.00	93.35	-	-	0.00	0.00	-	0.00
T53 Alt	13,704	13,704	**2.00**	108.5	0.00	93.74	-	-	0.00	0.00	-	0.00
T54 Alt	12,711	12,712	**2.87**	108.5	0.00	93.08	-	-	0.00	0.00	-	0.00
T55 Alt	11,354	11,355	**4.17**	108.5	0.00	92.10	-	-	0.00	0.00	-	0.00

To be continued on next page...

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
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2/16/2015 4:05 PM/2.9.285

DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T56 Alt	6,999	6,999	**9.84**	108.5	0.00	87.90	-	-	0.00	0.00	-	0.00
T57 Alt	10,338	10,338	**5.26**	108.5	0.00	91.29	-	-	0.00	0.00	-	0.00
T58 Alt	8,360	8,360	**7.74**	108.5	0.00	89.44	-	-	0.00	0.00	-	0.00
T59 Alt	8,038	8,038	**8.20**	108.5	0.00	89.10	-	-	0.00	0.00	-	0.00
Sum	24.54											

- Data undefined due to calculation with octave data

Noise sensitive area: H60 Noise sensitive point: User defined (61)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	13,983	13,983	**1.77**	108.5	0.00	93.91	-	-	0.00	0.00	-	0.00
T02	13,433	13,433	**2.23**	108.5	0.00	93.56	-	-	0.00	0.00	-	0.00
T03	12,928	12,929	**2.67**	108.5	0.00	93.23	-	-	0.00	0.00	-	0.00
T04	12,182	12,183	**3.36**	108.5	0.00	92.71	-	-	0.00	0.00	-	0.00
T05	12,149	12,149	**3.39**	108.5	0.00	92.69	-	-	0.00	0.00	-	0.00
T06	11,651	11,651	**3.87**	108.5	0.00	92.33	-	-	0.00	0.00	-	0.00
T07	10,813	10,813	**4.74**	108.5	0.00	91.68	-	-	0.00	0.00	-	0.00
T08	10,455	10,455	**5.13**	108.5	0.00	91.39	-	-	0.00	0.00	-	0.00
T09	9,814	9,815	**5.86**	108.5	0.00	90.84	-	-	0.00	0.00	-	0.00
T10	9,377	9,378	**6.39**	108.5	0.00	90.44	-	-	0.00	0.00	-	0.00
T11	12,619	12,619	**2.95**	108.5	0.00	93.02	-	-	0.00	0.00	-	0.00
T12	12,158	12,158	**3.38**	108.5	0.00	92.70	-	-	0.00	0.00	-	0.00
T13	11,273	11,273	**4.26**	108.5	0.00	92.04	-	-	0.00	0.00	-	0.00
T14	10,792	10,793	**4.76**	108.5	0.00	91.66	-	-	0.00	0.00	-	0.00
T15	11,750	11,750	**3.78**	108.5	0.00	92.40	-	-	0.00	0.00	-	0.00
T16	11,793	11,793	**3.73**	108.5	0.00	92.43	-	-	0.00	0.00	-	0.00
T17	11,213	11,214	**4.32**	108.5	0.00	91.99	-	-	0.00	0.00	-	0.00
T18	10,688	10,688	**4.87**	108.5	0.00	91.58	-	-	0.00	0.00	-	0.00
T19	10,162	10,162	**5.46**	108.5	0.00	91.14	-	-	0.00	0.00	-	0.00
T20	9,585	9,585	**6.14**	108.5	0.00	90.63	-	-	0.00	0.00	-	0.00
T21	9,195	9,195	**6.62**	108.5	0.00	90.27	-	-	0.00	0.00	-	0.00
T22	9,748	9,748	**5.94**	108.5	0.00	90.78	-	-	0.00	0.00	-	0.00
T23	9,203	9,203	**6.61**	108.5	0.00	90.28	-	-	0.00	0.00	-	0.00
T24	8,733	8,733	**7.23**	108.5	0.00	89.82	-	-	0.00	0.00	-	0.00
T25	11,496	11,496	**4.03**	108.5	0.00	92.21	-	-	0.00	0.00	-	0.00
T26	11,025	11,026	**4.51**	108.5	0.00	91.85	-	-	0.00	0.00	-	0.00
T27	10,616	10,617	**4.95**	108.5	0.00	91.52	-	-	0.00	0.00	-	0.00
T28	10,200	10,201	**5.41**	108.5	0.00	91.17	-	-	0.00	0.00	-	0.00
T29	9,490	9,491	**6.25**	108.5	0.00	90.55	-	-	0.00	0.00	-	0.00
T30	9,041	9,041	**6.82**	108.5	0.00	90.12	-	-	0.00	0.00	-	0.00
T31	8,590	8,591	**7.42**	108.5	0.00	89.68	-	-	0.00	0.00	-	0.00
T32	7,649	7,649	**8.78**	108.5	0.00	88.67	-	-	0.00	0.00	-	0.00
T33	7,185	7,186	**9.52**	108.5	0.00	88.13	-	-	0.00	0.00	-	0.00
T34	10,169	10,169	**5.45**	108.5	0.00	91.15	-	-	0.00	0.00	-	0.00
T35	10,014	10,014	**5.63**	108.5	0.00	91.01	-	-	0.00	0.00	-	0.00
T36	9,063	9,064	**6.79**	108.5	0.00	90.15	-	-	0.00	0.00	-	0.00
T37	8,354	8,355	**7.75**	108.5	0.00	89.44	-	-	0.00	0.00	-	0.00
T38	7,789	7,789	**8.57**	108.5	0.00	88.83	-	-	0.00	0.00	-	0.00
T39	9,958	9,958	**5.69**	108.5	0.00	90.96	-	-	0.00	0.00	-	0.00
T40	9,168	9,168	**6.66**	108.5	0.00	90.25	-	-	0.00	0.00	-	0.00
T41	9,168	9,169	**6.66**	108.5	0.00	90.25	-	-	0.00	0.00	-	0.00
T42	8,317	8,317	**7.80**	108.5	0.00	89.40	-	-	0.00	0.00	-	0.00
T43	7,603	7,603	**8.86**	108.5	0.00	88.62	-	-	0.00	0.00	-	0.00

To be continued on next page...

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
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DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T44	7,171	7,172	**9.55**	108.5	0.00	88.11	-	-	0.00	0.00	-	0.00
T45	6,914	6,915	**9.98**	108.5	0.00	87.80	-	-	0.00	0.00	-	0.00
T46	6,767	6,768	**10.24**	108.5	0.00	87.61	-	-	0.00	0.00	-	0.00
T47	6,035	6,035	**11.60**	108.5	0.00	86.61	-	-	0.00	0.00	-	0.00
T48 Alt	6,319	6,319	**11.05**	108.5	0.00	87.01	-	-	0.00	0.00	-	0.00
T49 Alt	6,032	6,033	**11.61**	108.5	0.00	86.61	-	-	0.00	0.00	-	0.00
T50 Alt	8,340	8,340	**7.77**	108.5	0.00	89.42	-	-	0.00	0.00	-	0.00
T51 Alt	8,767	8,767	**7.18**	108.5	0.00	89.86	-	-	0.00	0.00	-	0.00
T52 Alt	13,171	13,171	**2.46**	108.5	0.00	93.39	-	-	0.00	0.00	-	0.00
T53 Alt	13,767	13,767	**1.95**	108.5	0.00	93.78	-	-	0.00	0.00	-	0.00
T54 Alt	12,766	12,766	**2.82**	108.5	0.00	93.12	-	-	0.00	0.00	-	0.00
T55 Alt	11,407	11,407	**4.12**	108.5	0.00	92.14	-	-	0.00	0.00	-	0.00
T56 Alt	7,008	7,009	**9.82**	108.5	0.00	87.91	-	-	0.00	0.00	-	0.00
T57 Alt	10,395	10,395	**5.20**	108.5	0.00	91.34	-	-	0.00	0.00	-	0.00
T58 Alt	8,410	8,410	**7.67**	108.5	0.00	89.50	-	-	0.00	0.00	-	0.00
T59 Alt	8,086	8,086	**8.13**	108.5	0.00	89.15	-	-	0.00	0.00	-	0.00
Sum	24.52											

- Data undefined due to calculation with octave data

Noise sensitive area: H61 Noise sensitive point: User defined (62)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	13,888	13,889	**1.84**	108.5	0.00	93.85	-	-	0.00	0.00	-	0.00
T02	13,336	13,337	**2.31**	108.5	0.00	93.50	-	-	0.00	0.00	-	0.00
T03	12,832	12,832	**2.76**	108.5	0.00	93.17	-	-	0.00	0.00	-	0.00
T04	12,085	12,085	**3.45**	108.5	0.00	92.65	-	-	0.00	0.00	-	0.00
T05	12,046	12,046	**3.49**	108.5	0.00	92.62	-	-	0.00	0.00	-	0.00
T06	11,548	11,548	**3.98**	108.5	0.00	92.25	-	-	0.00	0.00	-	0.00
T07	10,709	10,709	**4.85**	108.5	0.00	91.60	-	-	0.00	0.00	-	0.00
T08	10,356	10,357	**5.24**	108.5	0.00	91.30	-	-	0.00	0.00	-	0.00
T09	9,713	9,714	**5.98**	108.5	0.00	90.75	-	-	0.00	0.00	-	0.00
T10	9,276	9,277	**6.52**	108.5	0.00	90.35	-	-	0.00	0.00	-	0.00
T11	12,512	12,512	**3.05**	108.5	0.00	92.95	-	-	0.00	0.00	-	0.00
T12	12,051	12,051	**3.48**	108.5	0.00	92.62	-	-	0.00	0.00	-	0.00
T13	11,164	11,164	**4.37**	108.5	0.00	91.96	-	-	0.00	0.00	-	0.00
T14	10,684	10,685	**4.88**	108.5	0.00	91.58	-	-	0.00	0.00	-	0.00
T15	11,640	11,640	**3.88**	108.5	0.00	92.32	-	-	0.00	0.00	-	0.00
T16	11,682	11,682	**3.84**	108.5	0.00	92.35	-	-	0.00	0.00	-	0.00
T17	11,102	11,102	**4.43**	108.5	0.00	91.91	-	-	0.00	0.00	-	0.00
T18	10,577	10,577	**4.99**	108.5	0.00	91.49	-	-	0.00	0.00	-	0.00
T19	10,052	10,052	**5.58**	108.5	0.00	91.05	-	-	0.00	0.00	-	0.00
T20	9,474	9,475	**6.27**	108.5	0.00	90.53	-	-	0.00	0.00	-	0.00
T21	9,085	9,085	**6.76**	108.5	0.00	90.17	-	-	0.00	0.00	-	0.00
T22	9,636	9,637	**6.08**	108.5	0.00	90.68	-	-	0.00	0.00	-	0.00
T23	9,092	9,092	**6.75**	108.5	0.00	90.17	-	-	0.00	0.00	-	0.00
T24	8,621	8,622	**7.38**	108.5	0.00	89.71	-	-	0.00	0.00	-	0.00
T25	11,384	11,385	**4.14**	108.5	0.00	92.13	-	-	0.00	0.00	-	0.00
T26	10,914	10,914	**4.63**	108.5	0.00	91.76	-	-	0.00	0.00	-	0.00
T27	10,505	10,505	**5.07**	108.5	0.00	91.43	-	-	0.00	0.00	-	0.00
T28	10,089	10,090	**5.54**	108.5	0.00	91.08	-	-	0.00	0.00	-	0.00
T29	9,380	9,380	**6.39**	108.5	0.00	90.44	-	-	0.00	0.00	-	0.00
T30	8,929	8,930	**6.96**	108.5	0.00	90.02	-	-	0.00	0.00	-	0.00
T31	8,479	8,480	**7.57**	108.5	0.00	89.57	-	-	0.00	0.00	-	0.00

To be continued on next page...

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
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DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T32	7,538	7,538	**8.96**	108.5	0.00	88.55	-	-	0.00	0.00	-	0.00
T33	7,074	7,075	**9.71**	108.5	0.00	87.99	-	-	0.00	0.00	-	0.00
T34	10,059	10,059	**5.58**	108.5	0.00	91.05	-	-	0.00	0.00	-	0.00
T35	9,904	9,905	**5.76**	108.5	0.00	90.92	-	-	0.00	0.00	-	0.00
T36	8,954	8,954	**6.93**	108.5	0.00	90.04	-	-	0.00	0.00	-	0.00
T37	8,244	8,245	**7.90**	108.5	0.00	89.32	-	-	0.00	0.00	-	0.00
T38	7,679	7,680	**8.74**	108.5	0.00	88.71	-	-	0.00	0.00	-	0.00
T39	9,850	9,851	**5.82**	108.5	0.00	90.87	-	-	0.00	0.00	-	0.00
T40	9,061	9,061	**6.79**	108.5	0.00	90.14	-	-	0.00	0.00	-	0.00
T41	9,064	9,065	**6.79**	108.5	0.00	90.15	-	-	0.00	0.00	-	0.00
T42	8,209	8,210	**7.95**	108.5	0.00	89.29	-	-	0.00	0.00	-	0.00
T43	7,495	7,496	**9.02**	108.5	0.00	88.50	-	-	0.00	0.00	-	0.00
T44	7,067	7,068	**9.72**	108.5	0.00	87.99	-	-	0.00	0.00	-	0.00
T45	6,813	6,813	**10.16**	108.5	0.00	87.67	-	-	0.00	0.00	-	0.00
T46	6,659	6,660	**10.43**	108.5	0.00	87.47	-	-	0.00	0.00	-	0.00
T47	5,925	5,926	**11.82**	108.5	0.00	86.45	-	-	0.00	0.00	-	0.00
T48 Alt	6,216	6,217	**11.25**	108.5	0.00	86.87	-	-	0.00	0.00	-	0.00
T49 Alt	5,932	5,932	**11.81**	108.5	0.00	86.46	-	-	0.00	0.00	-	0.00
T50 Alt	8,229	8,230	**7.92**	108.5	0.00	89.31	-	-	0.00	0.00	-	0.00
T51 Alt	8,657	8,657	**7.33**	108.5	0.00	89.75	-	-	0.00	0.00	-	0.00
T52 Alt	13,068	13,068	**2.55**	108.5	0.00	93.32	-	-	0.00	0.00	-	0.00
T53 Alt	13,667	13,667	**2.03**	108.5	0.00	93.71	-	-	0.00	0.00	-	0.00
T54 Alt	12,661	12,661	**2.91**	108.5	0.00	93.05	-	-	0.00	0.00	-	0.00
T55 Alt	11,301	11,301	**4.23**	108.5	0.00	92.06	-	-	0.00	0.00	-	0.00
T56 Alt	6,898	6,899	**10.01**	108.5	0.00	87.78	-	-	0.00	0.00	-	0.00
T57 Alt	10,291	10,291	**5.31**	108.5	0.00	91.25	-	-	0.00	0.00	-	0.00
T58 Alt	8,303	8,303	**7.82**	108.5	0.00	89.39	-	-	0.00	0.00	-	0.00
T59 Alt	7,978	7,978	**8.29**	108.5	0.00	89.04	-	-	0.00	0.00	-	0.00
Sum	24.67											

- Data undefined due to calculation with octave data

Noise sensitive area: H62 Noise sensitive point: User defined (63)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	13,957	13,957	**1.79**	108.5	0.00	93.90	-	-	0.00	0.00	-	0.00
T02	13,403	13,403	**2.25**	108.5	0.00	93.54	-	-	0.00	0.00	-	0.00
T03	12,898	12,898	**2.70**	108.5	0.00	93.21	-	-	0.00	0.00	-	0.00
T04	12,151	12,151	**3.39**	108.5	0.00	92.69	-	-	0.00	0.00	-	0.00
T05	12,106	12,106	**3.43**	108.5	0.00	92.66	-	-	0.00	0.00	-	0.00
T06	11,606	11,607	**3.92**	108.5	0.00	92.29	-	-	0.00	0.00	-	0.00
T07	10,767	10,767	**4.79**	108.5	0.00	91.64	-	-	0.00	0.00	-	0.00
T08	10,421	10,421	**5.17**	108.5	0.00	91.36	-	-	0.00	0.00	-	0.00
T09	9,774	9,774	**5.91**	108.5	0.00	90.80	-	-	0.00	0.00	-	0.00
T10	9,337	9,338	**6.44**	108.5	0.00	90.40	-	-	0.00	0.00	-	0.00
T11	12,561	12,562	**3.00**	108.5	0.00	92.98	-	-	0.00	0.00	-	0.00
T12	12,101	12,101	**3.44**	108.5	0.00	92.66	-	-	0.00	0.00	-	0.00
T13	11,211	11,211	**4.32**	108.5	0.00	91.99	-	-	0.00	0.00	-	0.00
T14	10,733	10,733	**4.82**	108.5	0.00	91.61	-	-	0.00	0.00	-	0.00
T15	11,681	11,681	**3.84**	108.5	0.00	92.35	-	-	0.00	0.00	-	0.00
T16	11,716	11,716	**3.81**	108.5	0.00	92.38	-	-	0.00	0.00	-	0.00
T17	11,138	11,138	**4.39**	108.5	0.00	91.94	-	-	0.00	0.00	-	0.00
T18	10,613	10,614	**4.95**	108.5	0.00	91.52	-	-	0.00	0.00	-	0.00
T19	10,092	10,093	**5.54**	108.5	0.00	91.08	-	-	0.00	0.00	-	0.00

To be continued on next page...

Project:
20131290 Rolette Power Development

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DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T20	9,514	9,514	**6.22**	108.5	0.00	90.57	-	-	0.00	0.00	-	0.00
T21	9,128	9,128	**6.71**	108.5	0.00	90.21	-	-	0.00	0.00	-	0.00
T22	9,668	9,669	**6.04**	108.5	0.00	90.71	-	-	0.00	0.00	-	0.00
T23	9,125	9,126	**6.71**	108.5	0.00	90.21	-	-	0.00	0.00	-	0.00
T24	8,656	8,657	**7.33**	108.5	0.00	89.75	-	-	0.00	0.00	-	0.00
T25	11,410	11,411	**4.11**	108.5	0.00	92.15	-	-	0.00	0.00	-	0.00
T26	10,940	10,941	**4.60**	108.5	0.00	91.78	-	-	0.00	0.00	-	0.00
T27	10,531	10,532	**5.04**	108.5	0.00	91.45	-	-	0.00	0.00	-	0.00
T28	10,115	10,115	**5.51**	108.5	0.00	91.10	-	-	0.00	0.00	-	0.00
T29	9,401	9,401	**6.36**	108.5	0.00	90.46	-	-	0.00	0.00	-	0.00
T30	8,952	8,953	**6.94**	108.5	0.00	90.04	-	-	0.00	0.00	-	0.00
T31	8,502	8,502	**7.54**	108.5	0.00	89.59	-	-	0.00	0.00	-	0.00
T32	7,563	7,563	**8.92**	108.5	0.00	88.57	-	-	0.00	0.00	-	0.00
T33	7,099	7,100	**9.67**	108.5	0.00	88.02	-	-	0.00	0.00	-	0.00
T34	10,077	10,077	**5.56**	108.5	0.00	91.07	-	-	0.00	0.00	-	0.00
T35	9,917	9,917	**5.74**	108.5	0.00	90.93	-	-	0.00	0.00	-	0.00
T36	8,967	8,968	**6.92**	108.5	0.00	90.05	-	-	0.00	0.00	-	0.00
T37	8,259	8,259	**7.88**	108.5	0.00	89.34	-	-	0.00	0.00	-	0.00
T38	7,694	7,694	**8.72**	108.5	0.00	88.72	-	-	0.00	0.00	-	0.00
T39	9,857	9,857	**5.81**	108.5	0.00	90.87	-	-	0.00	0.00	-	0.00
T40	9,066	9,067	**6.79**	108.5	0.00	90.15	-	-	0.00	0.00	-	0.00
T41	9,062	9,063	**6.79**	108.5	0.00	90.15	-	-	0.00	0.00	-	0.00
T42	8,216	8,216	**7.94**	108.5	0.00	89.29	-	-	0.00	0.00	-	0.00
T43	7,503	7,504	**9.01**	108.5	0.00	88.51	-	-	0.00	0.00	-	0.00
T44	7,065	7,065	**9.72**	108.5	0.00	87.98	-	-	0.00	0.00	-	0.00
T45	6,806	6,806	**10.17**	108.5	0.00	87.66	-	-	0.00	0.00	-	0.00
T46	6,668	6,668	**10.41**	108.5	0.00	87.48	-	-	0.00	0.00	-	0.00
T47	5,940	5,940	**11.79**	108.5	0.00	86.48	-	-	0.00	0.00	-	0.00
T48 Alt	6,212	6,212	**11.26**	108.5	0.00	86.87	-	-	0.00	0.00	-	0.00
T49 Alt	5,923	5,923	**11.83**	108.5	0.00	86.45	-	-	0.00	0.00	-	0.00
T50 Alt	8,269	8,270	**7.87**	108.5	0.00	89.35	-	-	0.00	0.00	-	0.00
T51 Alt	8,700	8,701	**7.27**	108.5	0.00	89.79	-	-	0.00	0.00	-	0.00
T52 Alt	13,126	13,126	**2.50**	108.5	0.00	93.36	-	-	0.00	0.00	-	0.00
T53 Alt	13,729	13,729	**1.98**	108.5	0.00	93.75	-	-	0.00	0.00	-	0.00
T54 Alt	12,716	12,716	**2.86**	108.5	0.00	93.09	-	-	0.00	0.00	-	0.00
T55 Alt	11,354	11,354	**4.17**	108.5	0.00	92.10	-	-	0.00	0.00	-	0.00
T56 Alt	6,914	6,915	**9.98**	108.5	0.00	87.80	-	-	0.00	0.00	-	0.00
T57 Alt	10,349	10,349	**5.25**	108.5	0.00	91.30	-	-	0.00	0.00	-	0.00
T58 Alt	8,355	8,355	**7.75**	108.5	0.00	89.44	-	-	0.00	0.00	-	0.00
T59 Alt	8,027	8,028	**8.22**	108.5	0.00	89.09	-	-	0.00	0.00	-	0.00

Sum 24.64

- Data undefined due to calculation with octave data

Noise sensitive area: H63 Noise sensitive point: User defined (64)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	13,050	13,050	**2.56**	108.5	0.00	93.31	-	-	0.00	0.00	-	0.00
T02	12,483	12,484	**3.08**	108.5	0.00	92.93	-	-	0.00	0.00	-	0.00
T03	11,975	11,975	**3.56**	108.5	0.00	92.57	-	-	0.00	0.00	-	0.00
T04	11,224	11,224	**4.31**	108.5	0.00	92.00	-	-	0.00	0.00	-	0.00
T05	11,143	11,143	**4.39**	108.5	0.00	91.94	-	-	0.00	0.00	-	0.00
T06	10,638	10,638	**4.93**	108.5	0.00	91.54	-	-	0.00	0.00	-	0.00
T07	9,797	9,797	**5.88**	108.5	0.00	90.82	-	-	0.00	0.00	-	0.00

To be continued on next page...

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DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T08	9,485	9,485	**6.26**	108.5	0.00	90.54	-	-	0.00	0.00	-	0.00
T09	8,819	8,820	**7.11**	108.5	0.00	89.91	-	-	0.00	0.00	-	0.00
T10	8,385	8,385	**7.70**	108.5	0.00	89.47	-	-	0.00	0.00	-	0.00
T11	11,565	11,565	**3.96**	108.5	0.00	92.26	-	-	0.00	0.00	-	0.00
T12	11,106	11,106	**4.43**	108.5	0.00	91.91	-	-	0.00	0.00	-	0.00
T13	10,209	10,209	**5.40**	108.5	0.00	91.18	-	-	0.00	0.00	-	0.00
T14	9,734	9,735	**5.96**	108.5	0.00	90.77	-	-	0.00	0.00	-	0.00
T15	10,673	10,674	**4.89**	108.5	0.00	91.57	-	-	0.00	0.00	-	0.00
T16	10,710	10,710	**4.85**	108.5	0.00	91.60	-	-	0.00	0.00	-	0.00
T17	10,130	10,131	**5.49**	108.5	0.00	91.11	-	-	0.00	0.00	-	0.00
T18	9,606	9,606	**6.11**	108.5	0.00	90.65	-	-	0.00	0.00	-	0.00
T19	9,084	9,085	**6.76**	108.5	0.00	90.17	-	-	0.00	0.00	-	0.00
T20	8,506	8,506	**7.53**	108.5	0.00	89.59	-	-	0.00	0.00	-	0.00
T21	8,122	8,122	**8.08**	108.5	0.00	89.19	-	-	0.00	0.00	-	0.00
T22	8,664	8,665	**7.32**	108.5	0.00	89.76	-	-	0.00	0.00	-	0.00
T23	8,119	8,120	**8.08**	108.5	0.00	89.19	-	-	0.00	0.00	-	0.00
T24	7,650	7,650	**8.78**	108.5	0.00	88.67	-	-	0.00	0.00	-	0.00
T25	10,416	10,417	**5.17**	108.5	0.00	91.35	-	-	0.00	0.00	-	0.00
T26	9,945	9,946	**5.71**	108.5	0.00	90.95	-	-	0.00	0.00	-	0.00
T27	9,536	9,537	**6.20**	108.5	0.00	90.59	-	-	0.00	0.00	-	0.00
T28	9,122	9,122	**6.72**	108.5	0.00	90.20	-	-	0.00	0.00	-	0.00
T29	8,419	8,420	**7.65**	108.5	0.00	89.51	-	-	0.00	0.00	-	0.00
T30	7,966	7,967	**8.30**	108.5	0.00	89.03	-	-	0.00	0.00	-	0.00
T31	7,516	7,517	**8.99**	108.5	0.00	88.52	-	-	0.00	0.00	-	0.00
T32	6,571	6,571	**10.59**	108.5	0.00	87.35	-	-	0.00	0.00	-	0.00
T33	6,108	6,108	**11.46**	108.5	0.00	86.72	-	-	0.00	0.00	-	0.00
T34	9,104	9,105	**6.74**	108.5	0.00	90.19	-	-	0.00	0.00	-	0.00
T35	8,965	8,965	**6.92**	108.5	0.00	90.05	-	-	0.00	0.00	-	0.00
T36	8,012	8,013	**8.24**	108.5	0.00	89.08	-	-	0.00	0.00	-	0.00
T37	7,300	7,300	**9.34**	108.5	0.00	88.27	-	-	0.00	0.00	-	0.00
T38	6,735	6,735	**10.29**	108.5	0.00	87.57	-	-	0.00	0.00	-	0.00
T39	8,933	8,933	**6.96**	108.5	0.00	90.02	-	-	0.00	0.00	-	0.00
T40	8,148	8,149	**8.04**	108.5	0.00	89.22	-	-	0.00	0.00	-	0.00
T41	8,182	8,182	**7.99**	108.5	0.00	89.26	-	-	0.00	0.00	-	0.00
T42	7,294	7,294	**9.35**	108.5	0.00	88.26	-	-	0.00	0.00	-	0.00
T43	6,573	6,573	**10.58**	108.5	0.00	87.36	-	-	0.00	0.00	-	0.00
T44	6,192	6,193	**11.30**	108.5	0.00	86.84	-	-	0.00	0.00	-	0.00
T45	5,965	5,965	**11.74**	108.5	0.00	86.51	-	-	0.00	0.00	-	0.00
T46	5,736	5,736	**12.21**	108.5	0.00	86.17	-	-	0.00	0.00	-	0.00
T47	4,982	4,983	**13.91**	108.5	0.00	84.95	-	-	0.00	0.00	-	0.00
T48 Alt	5,354	5,354	**13.04**	108.5	0.00	85.57	-	-	0.00	0.00	-	0.00
T49 Alt	5,097	5,098	**13.63**	108.5	0.00	85.15	-	-	0.00	0.00	-	0.00
T50 Alt	7,261	7,262	**9.40**	108.5	0.00	88.22	-	-	0.00	0.00	-	0.00
T51 Alt	7,694	7,694	**8.72**	108.5	0.00	88.72	-	-	0.00	0.00	-	0.00
T52 Alt	12,156	12,156	**3.38**	108.5	0.00	92.70	-	-	0.00	0.00	-	0.00
T53 Alt	12,778	12,778	**2.81**	108.5	0.00	93.13	-	-	0.00	0.00	-	0.00
T54 Alt	11,735	11,735	**3.79**	108.5	0.00	92.39	-	-	0.00	0.00	-	0.00
T55 Alt	10,367	10,367	**5.23**	108.5	0.00	91.31	-	-	0.00	0.00	-	0.00
T56 Alt	5,950	5,951	**11.77**	108.5	0.00	86.49	-	-	0.00	0.00	-	0.00
T57 Alt	9,377	9,377	**6.39**	108.5	0.00	90.44	-	-	0.00	0.00	-	0.00
T58 Alt	7,364	7,364	**9.23**	108.5	0.00	88.34	-	-	0.00	0.00	-	0.00
T59 Alt	7,031	7,031	**9.78**	108.5	0.00	87.94	-	-	0.00	0.00	-	0.00

Sum 26.10

- Data undefined due to calculation with octave data

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

Description:
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Calculated:
2/16/2015 4:05 PM/2.9.285

DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

Noise sensitive area: H64 Noise sensitive point: User defined (65)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	11,579	11,579	**3.95**	108.5	0.00	92.27	-	-	0.00	0.00	-	0.00
T02	11,019	11,019	**4.52**	108.5	0.00	91.84	-	-	0.00	0.00	-	0.00
T03	10,512	10,513	**5.06**	108.5	0.00	91.43	-	-	0.00	0.00	-	0.00
T04	9,764	9,764	**5.92**	108.5	0.00	90.79	-	-	0.00	0.00	-	0.00
T05	9,723	9,723	**5.97**	108.5	0.00	90.76	-	-	0.00	0.00	-	0.00
T06	9,228	9,228	**6.58**	108.5	0.00	90.30	-	-	0.00	0.00	-	0.00
T07	8,390	8,391	**7.70**	108.5	0.00	89.48	-	-	0.00	0.00	-	0.00
T08	8,032	8,033	**8.21**	108.5	0.00	89.10	-	-	0.00	0.00	-	0.00
T09	7,388	7,388	**9.19**	108.5	0.00	88.37	-	-	0.00	0.00	-	0.00
T10	6,951	6,951	**9.92**	108.5	0.00	87.84	-	-	0.00	0.00	-	0.00
T11	10,235	10,235	**5.38**	108.5	0.00	91.20	-	-	0.00	0.00	-	0.00
T12	9,769	9,769	**5.92**	108.5	0.00	90.80	-	-	0.00	0.00	-	0.00
T13	8,913	8,913	**6.99**	108.5	0.00	90.00	-	-	0.00	0.00	-	0.00
T14	8,419	8,419	**7.66**	108.5	0.00	89.51	-	-	0.00	0.00	-	0.00
T15	9,445	9,445	**6.31**	108.5	0.00	90.50	-	-	0.00	0.00	-	0.00
T16	9,577	9,577	**6.15**	108.5	0.00	90.62	-	-	0.00	0.00	-	0.00
T17	8,981	8,981	**6.90**	108.5	0.00	90.07	-	-	0.00	0.00	-	0.00
T18	8,445	8,446	**7.62**	108.5	0.00	89.53	-	-	0.00	0.00	-	0.00
T19	7,870	7,870	**8.45**	108.5	0.00	88.92	-	-	0.00	0.00	-	0.00
T20	7,307	7,308	**9.32**	108.5	0.00	88.28	-	-	0.00	0.00	-	0.00
T21	6,877	6,878	**10.04**	108.5	0.00	87.75	-	-	0.00	0.00	-	0.00
T22	7,573	7,573	**8.90**	108.5	0.00	88.59	-	-	0.00	0.00	-	0.00
T23	7,012	7,013	**9.81**	108.5	0.00	87.92	-	-	0.00	0.00	-	0.00
T24	6,527	6,528	**10.67**	108.5	0.00	87.30	-	-	0.00	0.00	-	0.00
T25	9,398	9,399	**6.37**	108.5	0.00	90.46	-	-	0.00	0.00	-	0.00
T26	8,927	8,928	**6.97**	108.5	0.00	90.02	-	-	0.00	0.00	-	0.00
T27	8,521	8,522	**7.51**	108.5	0.00	89.61	-	-	0.00	0.00	-	0.00
T28	8,121	8,122	**8.08**	108.5	0.00	89.19	-	-	0.00	0.00	-	0.00
T29	7,496	7,497	**9.02**	108.5	0.00	88.50	-	-	0.00	0.00	-	0.00
T30	7,025	7,026	**9.79**	108.5	0.00	87.93	-	-	0.00	0.00	-	0.00
T31	6,587	6,588	**10.56**	108.5	0.00	87.38	-	-	0.00	0.00	-	0.00
T32	5,612	5,612	**12.48**	108.5	0.00	85.98	-	-	0.00	0.00	-	0.00
T33	5,162	5,163	**13.48**	108.5	0.00	85.26	-	-	0.00	0.00	-	0.00
T34	8,222	8,223	**7.93**	108.5	0.00	89.30	-	-	0.00	0.00	-	0.00
T35	8,178	8,178	**8.00**	108.5	0.00	89.25	-	-	0.00	0.00	-	0.00
T36	7,227	7,227	**9.46**	108.5	0.00	88.18	-	-	0.00	0.00	-	0.00
T37	6,508	6,509	**10.70**	108.5	0.00	87.27	-	-	0.00	0.00	-	0.00
T38	5,958	5,958	**11.76**	108.5	0.00	86.50	-	-	0.00	0.00	-	0.00
T39	8,254	8,255	**7.89**	108.5	0.00	89.33	-	-	0.00	0.00	-	0.00
T40	7,505	7,505	**9.01**	108.5	0.00	88.51	-	-	0.00	0.00	-	0.00
T41	7,660	7,660	**8.77**	108.5	0.00	88.68	-	-	0.00	0.00	-	0.00
T42	6,654	6,655	**10.44**	108.5	0.00	87.46	-	-	0.00	0.00	-	0.00
T43	5,919	5,919	**11.84**	108.5	0.00	86.45	-	-	0.00	0.00	-	0.00
T44	5,748	5,749	**12.19**	108.5	0.00	86.19	-	-	0.00	0.00	-	0.00
T45	5,623	5,623	**12.45**	108.5	0.00	86.00	-	-	0.00	0.00	-	0.00
T46	5,103	5,104	**13.62**	108.5	0.00	85.16	-	-	0.00	0.00	-	0.00
T47	4,271	4,272	**15.77**	108.5	0.00	83.61	-	-	0.00	0.00	-	0.00
T48 Alt	4,990	4,991	**13.89**	108.5	0.00	84.96	-	-	0.00	0.00	-	0.00
T49 Alt	4,842	4,842	**14.25**	108.5	0.00	84.70	-	-	0.00	0.00	-	0.00
T50 Alt	6,064	6,065	**11.55**	108.5	0.00	86.66	-	-	0.00	0.00	-	0.00
T51 Alt	6,452	6,453	**10.80**	108.5	0.00	87.19	-	-	0.00	0.00	-	0.00
T52 Alt	10,748	10,748	**4.81**	108.5	0.00	91.63	-	-	0.00	0.00	-	0.00
T53 Alt	11,341	11,341	**4.19**	108.5	0.00	92.09	-	-	0.00	0.00	-	0.00
T54 Alt	10,352	10,352	**5.24**	108.5	0.00	91.30	-	-	0.00	0.00	-	0.00
T55 Alt	9,002	9,002	**6.87**	108.5	0.00	90.09	-	-	0.00	0.00	-	0.00

To be continued on next page...

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

Description:
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Calculated:
2/16/2015 4:05 PM/2.9.285

DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T56 Alt	5,171	5,172	**13.46**	108.5	0.00	85.27	-	-	0.00	0.00	-	0.00
T57 Alt	7,974	7,974	**8.29**	108.5	0.00	89.03	-	-	0.00	0.00	-	0.00
T58 Alt	6,019	6,019	**11.64**	108.5	0.00	86.59	-	-	0.00	0.00	-	0.00
T59 Alt	5,713	5,713	**12.26**	108.5	0.00	86.14	-	-	0.00	0.00	-	0.00
Sum	27.61											

- Data undefined due to calculation with octave data

Noise sensitive area: H65 Noise sensitive point: User defined (66)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	11,982	11,983	**3.55**	108.5	0.00	92.57	-	-	0.00	0.00	-	0.00
T02	11,379	11,380	**4.15**	108.5	0.00	92.12	-	-	0.00	0.00	-	0.00
T03	10,864	10,864	**4.68**	108.5	0.00	91.72	-	-	0.00	0.00	-	0.00
T04	10,107	10,107	**5.52**	108.5	0.00	91.09	-	-	0.00	0.00	-	0.00
T05	9,895	9,896	**5.77**	108.5	0.00	90.91	-	-	0.00	0.00	-	0.00
T06	9,373	9,373	**6.40**	108.5	0.00	90.44	-	-	0.00	0.00	-	0.00
T07	8,529	8,529	**7.50**	108.5	0.00	89.62	-	-	0.00	0.00	-	0.00
T08	8,353	8,354	**7.75**	108.5	0.00	89.44	-	-	0.00	0.00	-	0.00
T09	7,625	7,626	**8.82**	108.5	0.00	88.65	-	-	0.00	0.00	-	0.00
T10	7,205	7,206	**9.49**	108.5	0.00	88.15	-	-	0.00	0.00	-	0.00
T11	10,157	10,158	**5.46**	108.5	0.00	91.14	-	-	0.00	0.00	-	0.00
T12	9,711	9,711	**5.99**	108.5	0.00	90.75	-	-	0.00	0.00	-	0.00
T13	8,769	8,770	**7.18**	108.5	0.00	89.86	-	-	0.00	0.00	-	0.00
T14	8,321	8,321	**7.79**	108.5	0.00	89.40	-	-	0.00	0.00	-	0.00
T15	9,168	9,168	**6.66**	108.5	0.00	90.25	-	-	0.00	0.00	-	0.00
T16	9,143	9,143	**6.69**	108.5	0.00	90.22	-	-	0.00	0.00	-	0.00
T17	8,574	8,575	**7.44**	108.5	0.00	89.66	-	-	0.00	0.00	-	0.00
T18	8,059	8,059	**8.17**	108.5	0.00	89.13	-	-	0.00	0.00	-	0.00
T19	7,578	7,578	**8.89**	108.5	0.00	88.59	-	-	0.00	0.00	-	0.00
T20	6,991	6,992	**9.85**	108.5	0.00	87.89	-	-	0.00	0.00	-	0.00
T21	6,648	6,648	**10.45**	108.5	0.00	87.45	-	-	0.00	0.00	-	0.00
T22	7,086	7,087	**9.69**	108.5	0.00	88.01	-	-	0.00	0.00	-	0.00
T23	6,552	6,553	**10.62**	108.5	0.00	87.33	-	-	0.00	0.00	-	0.00
T24	6,093	6,094	**11.49**	108.5	0.00	86.70	-	-	0.00	0.00	-	0.00
T25	8,805	8,805	**7.13**	108.5	0.00	89.89	-	-	0.00	0.00	-	0.00
T26	8,335	8,336	**7.77**	108.5	0.00	89.42	-	-	0.00	0.00	-	0.00
T27	7,926	7,927	**8.36**	108.5	0.00	88.98	-	-	0.00	0.00	-	0.00
T28	7,508	7,509	**9.00**	108.5	0.00	88.51	-	-	0.00	0.00	-	0.00
T29	6,790	6,791	**10.20**	108.5	0.00	87.64	-	-	0.00	0.00	-	0.00
T30	6,342	6,343	**11.01**	108.5	0.00	87.05	-	-	0.00	0.00	-	0.00
T31	5,891	5,892	**11.89**	108.5	0.00	86.41	-	-	0.00	0.00	-	0.00
T32	4,957	4,957	**13.97**	108.5	0.00	84.90	-	-	0.00	0.00	-	0.00
T33	4,493	4,493	**15.16**	108.5	0.00	84.05	-	-	0.00	0.00	-	0.00
T34	7,469	7,469	**9.07**	108.5	0.00	88.47	-	-	0.00	0.00	-	0.00
T35	7,325	7,326	**9.30**	108.5	0.00	88.30	-	-	0.00	0.00	-	0.00
T36	6,373	6,373	**10.95**	108.5	0.00	87.09	-	-	0.00	0.00	-	0.00
T37	5,660	5,661	**12.37**	108.5	0.00	86.06	-	-	0.00	0.00	-	0.00
T38	5,095	5,096	**13.64**	108.5	0.00	85.15	-	-	0.00	0.00	-	0.00
T39	7,301	7,302	**9.33**	108.5	0.00	88.27	-	-	0.00	0.00	-	0.00
T40	6,521	6,521	**10.68**	108.5	0.00	87.29	-	-	0.00	0.00	-	0.00
T41	6,581	6,582	**10.57**	108.5	0.00	87.37	-	-	0.00	0.00	-	0.00
T42	5,665	5,666	**12.36**	108.5	0.00	86.07	-	-	0.00	0.00	-	0.00
T43	4,940	4,941	**14.01**	108.5	0.00	84.88	-	-	0.00	0.00	-	0.00

To be continued on next page...

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

Description:
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Calculated:
2/16/2015 4:05 PM/2.9.285

DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T44	4,606	4,607	**14.86**	108.5	0.00	84.27	-	-	0.00	0.00	-	0.00
T45	4,416	4,416	**15.37**	108.5	0.00	83.90	-	-	0.00	0.00	-	0.00
T46	4,103	4,104	**16.25**	108.5	0.00	83.26	-	-	0.00	0.00	-	0.00
T47	3,343	3,344	**18.71**	108.5	0.00	81.49	-	-	0.00	0.00	-	0.00
T48 Alt	3,790	3,791	**17.21**	108.5	0.00	82.58	-	-	0.00	0.00	-	0.00
T49 Alt	3,580	3,581	**17.89**	108.5	0.00	82.08	-	-	0.00	0.00	-	0.00
T50 Alt	5,757	5,758	**12.17**	108.5	0.00	86.21	-	-	0.00	0.00	-	0.00
T51 Alt	6,222	6,222	**11.24**	108.5	0.00	86.88	-	-	0.00	0.00	-	0.00
T52 Alt	10,876	10,876	**4.67**	108.5	0.00	91.73	-	-	0.00	0.00	-	0.00
T53 Alt	11,569	11,569	**3.96**	108.5	0.00	92.27	-	-	0.00	0.00	-	0.00
T54 Alt	10,406	10,407	**5.18**	108.5	0.00	91.35	-	-	0.00	0.00	-	0.00
T55 Alt	9,018	9,018	**6.85**	108.5	0.00	90.10	-	-	0.00	0.00	-	0.00
T56 Alt	4,311	4,312	**15.65**	108.5	0.00	83.69	-	-	0.00	0.00	-	0.00
T57 Alt	8,108	8,108	**8.10**	108.5	0.00	89.18	-	-	0.00	0.00	-	0.00
T58 Alt	6,017	6,017	**11.64**	108.5	0.00	86.59	-	-	0.00	0.00	-	0.00
T59 Alt	5,651	5,652	**12.39**	108.5	0.00	86.04	-	-	0.00	0.00	-	0.00
Sum	29.20											

- Data undefined due to calculation with octave data

Noise sensitive area: H66 Noise sensitive point: User defined (67)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	13,127	13,128	**2.49**	108.5	0.00	93.36	-	-	0.00	0.00	-	0.00
T02	12,531	12,531	**3.03**	108.5	0.00	92.96	-	-	0.00	0.00	-	0.00
T03	12,016	12,016	**3.52**	108.5	0.00	92.60	-	-	0.00	0.00	-	0.00
T04	11,260	11,260	**4.27**	108.5	0.00	92.03	-	-	0.00	0.00	-	0.00
T05	11,065	11,065	**4.47**	108.5	0.00	91.88	-	-	0.00	0.00	-	0.00
T06	10,543	10,543	**5.03**	108.5	0.00	91.46	-	-	0.00	0.00	-	0.00
T07	9,699	9,699	**6.00**	108.5	0.00	90.73	-	-	0.00	0.00	-	0.00
T08	9,507	9,507	**6.23**	108.5	0.00	90.56	-	-	0.00	0.00	-	0.00
T09	8,788	8,788	**7.15**	108.5	0.00	89.88	-	-	0.00	0.00	-	0.00
T10	8,365	8,365	**7.73**	108.5	0.00	89.45	-	-	0.00	0.00	-	0.00
T11	11,322	11,322	**4.20**	108.5	0.00	92.08	-	-	0.00	0.00	-	0.00
T12	10,878	10,878	**4.67**	108.5	0.00	91.73	-	-	0.00	0.00	-	0.00
T13	9,930	9,930	**5.73**	108.5	0.00	90.94	-	-	0.00	0.00	-	0.00
T14	9,486	9,486	**6.26**	108.5	0.00	90.54	-	-	0.00	0.00	-	0.00
T15	10,307	10,308	**5.29**	108.5	0.00	91.26	-	-	0.00	0.00	-	0.00
T16	10,245	10,245	**5.36**	108.5	0.00	91.21	-	-	0.00	0.00	-	0.00
T17	9,687	9,687	**6.02**	108.5	0.00	90.72	-	-	0.00	0.00	-	0.00
T18	9,178	9,179	**6.64**	108.5	0.00	90.26	-	-	0.00	0.00	-	0.00
T19	8,719	8,720	**7.24**	108.5	0.00	89.81	-	-	0.00	0.00	-	0.00
T20	8,130	8,131	**8.07**	108.5	0.00	89.20	-	-	0.00	0.00	-	0.00
T21	7,802	7,803	**8.55**	108.5	0.00	88.84	-	-	0.00	0.00	-	0.00
T22	8,183	8,184	**7.99**	108.5	0.00	89.26	-	-	0.00	0.00	-	0.00
T23	7,660	7,660	**8.77**	108.5	0.00	88.69	-	-	0.00	0.00	-	0.00
T24	7,211	7,212	**9.48**	108.5	0.00	88.16	-	-	0.00	0.00	-	0.00
T25	9,854	9,855	**5.82**	108.5	0.00	90.87	-	-	0.00	0.00	-	0.00
T26	9,387	9,388	**6.38**	108.5	0.00	90.45	-	-	0.00	0.00	-	0.00
T27	8,980	8,981	**6.90**	108.5	0.00	90.07	-	-	0.00	0.00	-	0.00
T28	8,558	8,558	**7.46**	108.5	0.00	89.65	-	-	0.00	0.00	-	0.00
T29	7,805	7,806	**8.55**	108.5	0.00	88.85	-	-	0.00	0.00	-	0.00
T30	7,373	7,373	**9.22**	108.5	0.00	88.35	-	-	0.00	0.00	-	0.00
T31	6,921	6,922	**9.97**	108.5	0.00	87.80	-	-	0.00	0.00	-	0.00

To be continued on next page...

Project:
20131290 Rolette Power Development

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DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T32	6,017	6,017	**11.64**	108.5	0.00	86.59	-	-	0.00	0.00	-	0.00
T33	5,555	5,555	**12.60**	108.5	0.00	85.89	-	-	0.00	0.00	-	0.00
T34	8,454	8,454	**7.61**	108.5	0.00	89.54	-	-	0.00	0.00	-	0.00
T35	8,255	8,255	**7.89**	108.5	0.00	89.33	-	-	0.00	0.00	-	0.00
T36	7,313	7,313	**9.32**	108.5	0.00	88.28	-	-	0.00	0.00	-	0.00
T37	6,615	6,615	**10.51**	108.5	0.00	87.41	-	-	0.00	0.00	-	0.00
T38	6,052	6,052	**11.57**	108.5	0.00	86.64	-	-	0.00	0.00	-	0.00
T39	8,161	8,161	**8.02**	108.5	0.00	89.24	-	-	0.00	0.00	-	0.00
T40	7,366	7,367	**9.23**	108.5	0.00	88.35	-	-	0.00	0.00	-	0.00
T41	7,340	7,340	**9.27**	108.5	0.00	88.31	-	-	0.00	0.00	-	0.00
T42	6,521	6,522	**10.68**	108.5	0.00	87.29	-	-	0.00	0.00	-	0.00
T43	5,820	5,820	**12.04**	108.5	0.00	86.30	-	-	0.00	0.00	-	0.00
T44	5,341	5,342	**13.07**	108.5	0.00	85.55	-	-	0.00	0.00	-	0.00
T45	5,074	5,075	**13.69**	108.5	0.00	85.11	-	-	0.00	0.00	-	0.00
T46	4,990	4,991	**13.89**	108.5	0.00	84.96	-	-	0.00	0.00	-	0.00
T47	4,307	4,308	**15.67**	108.5	0.00	83.69	-	-	0.00	0.00	-	0.00
T48 Alt	4,485	4,485	**15.18**	108.5	0.00	84.04	-	-	0.00	0.00	-	0.00
T49 Alt	4,190	4,191	**16.00**	108.5	0.00	83.45	-	-	0.00	0.00	-	0.00
T50 Alt	6,904	6,904	**10.00**	108.5	0.00	87.78	-	-	0.00	0.00	-	0.00
T51 Alt	7,377	7,378	**9.21**	108.5	0.00	88.36	-	-	0.00	0.00	-	0.00
T52 Alt	12,047	12,047	**3.49**	108.5	0.00	92.62	-	-	0.00	0.00	-	0.00
T53 Alt	12,735	12,736	**2.85**	108.5	0.00	93.10	-	-	0.00	0.00	-	0.00
T54 Alt	11,578	11,578	**3.95**	108.5	0.00	92.27	-	-	0.00	0.00	-	0.00
T55 Alt	10,189	10,189	**5.43**	108.5	0.00	91.16	-	-	0.00	0.00	-	0.00
T56 Alt	5,287	5,287	**13.19**	108.5	0.00	85.46	-	-	0.00	0.00	-	0.00
T57 Alt	9,278	9,278	**6.52**	108.5	0.00	90.35	-	-	0.00	0.00	-	0.00
T58 Alt	7,188	7,188	**9.52**	108.5	0.00	88.13	-	-	0.00	0.00	-	0.00
T59 Alt	6,822	6,822	**10.14**	108.5	0.00	87.68	-	-	0.00	0.00	-	0.00
Sum	27.24											

- Data undefined due to calculation with octave data

Noise sensitive area: H67 Noise sensitive point: User defined (68)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	13,674	13,675	**2.02**	108.5	0.00	93.72	-	-	0.00	0.00	-	0.00
T02	13,066	13,067	**2.55**	108.5	0.00	93.32	-	-	0.00	0.00	-	0.00
T03	12,550	12,550	**3.01**	108.5	0.00	92.97	-	-	0.00	0.00	-	0.00
T04	11,793	11,793	**3.73**	108.5	0.00	92.43	-	-	0.00	0.00	-	0.00
T05	11,546	11,546	**3.98**	108.5	0.00	92.25	-	-	0.00	0.00	-	0.00
T06	11,018	11,018	**4.52**	108.5	0.00	91.84	-	-	0.00	0.00	-	0.00
T07	10,176	10,176	**5.44**	108.5	0.00	91.15	-	-	0.00	0.00	-	0.00
T08	10,039	10,040	**5.60**	108.5	0.00	91.03	-	-	0.00	0.00	-	0.00
T09	9,300	9,300	**6.49**	108.5	0.00	90.37	-	-	0.00	0.00	-	0.00
T10	8,884	8,884	**7.03**	108.5	0.00	89.97	-	-	0.00	0.00	-	0.00
T11	11,715	11,715	**3.81**	108.5	0.00	92.37	-	-	0.00	0.00	-	0.00
T12	11,280	11,280	**4.25**	108.5	0.00	92.05	-	-	0.00	0.00	-	0.00
T13	10,306	10,306	**5.29**	108.5	0.00	91.26	-	-	0.00	0.00	-	0.00
T14	9,883	9,883	**5.78**	108.5	0.00	90.90	-	-	0.00	0.00	-	0.00
T15	10,629	10,629	**4.94**	108.5	0.00	91.53	-	-	0.00	0.00	-	0.00
T16	10,499	10,499	**5.08**	108.5	0.00	91.42	-	-	0.00	0.00	-	0.00
T17	9,958	9,959	**5.69**	108.5	0.00	90.96	-	-	0.00	0.00	-	0.00
T18	9,464	9,464	**6.29**	108.5	0.00	90.52	-	-	0.00	0.00	-	0.00
T19	9,049	9,050	**6.81**	108.5	0.00	90.13	-	-	0.00	0.00	-	0.00

To be continued on next page...

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DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T20	8,458	8,458	**7.60**	108.5	0.00	89.55	-	-	0.00	0.00	-	0.00
T21	8,168	8,168	**8.01**	108.5	0.00	89.24	-	-	0.00	0.00	-	0.00
T22	8,438	8,438	**7.63**	108.5	0.00	89.53	-	-	0.00	0.00	-	0.00
T23	7,934	7,935	**8.35**	108.5	0.00	88.99	-	-	0.00	0.00	-	0.00
T24	7,505	7,505	**9.01**	108.5	0.00	88.51	-	-	0.00	0.00	-	0.00
T25	10,037	10,038	**5.60**	108.5	0.00	91.03	-	-	0.00	0.00	-	0.00
T26	9,576	9,577	**6.15**	108.5	0.00	90.62	-	-	0.00	0.00	-	0.00
T27	9,173	9,173	**6.65**	108.5	0.00	90.25	-	-	0.00	0.00	-	0.00
T28	8,747	8,748	**7.21**	108.5	0.00	89.84	-	-	0.00	0.00	-	0.00
T29	7,960	7,961	**8.31**	108.5	0.00	89.02	-	-	0.00	0.00	-	0.00
T30	7,548	7,549	**8.94**	108.5	0.00	88.56	-	-	0.00	0.00	-	0.00
T31	7,100	7,100	**9.67**	108.5	0.00	88.03	-	-	0.00	0.00	-	0.00
T32	6,239	6,240	**11.21**	108.5	0.00	86.90	-	-	0.00	0.00	-	0.00
T33	5,785	5,786	**12.11**	108.5	0.00	86.25	-	-	0.00	0.00	-	0.00
T34	8,572	8,573	**7.44**	108.5	0.00	89.66	-	-	0.00	0.00	-	0.00
T35	8,320	8,321	**7.79**	108.5	0.00	89.40	-	-	0.00	0.00	-	0.00
T36	7,396	7,396	**9.18**	108.5	0.00	88.38	-	-	0.00	0.00	-	0.00
T37	6,719	6,720	**10.32**	108.5	0.00	87.55	-	-	0.00	0.00	-	0.00
T38	6,164	6,165	**11.35**	108.5	0.00	86.80	-	-	0.00	0.00	-	0.00
T39	8,165	8,165	**8.02**	108.5	0.00	89.24	-	-	0.00	0.00	-	0.00
T40	7,366	7,366	**9.23**	108.5	0.00	88.35	-	-	0.00	0.00	-	0.00
T41	7,271	7,272	**9.38**	108.5	0.00	88.23	-	-	0.00	0.00	-	0.00
T42	6,539	6,540	**10.64**	108.5	0.00	87.31	-	-	0.00	0.00	-	0.00
T43	5,868	5,869	**11.94**	108.5	0.00	86.37	-	-	0.00	0.00	-	0.00
T44	5,286	5,287	**13.19**	108.5	0.00	85.46	-	-	0.00	0.00	-	0.00
T45	4,971	4,972	**13.94**	108.5	0.00	84.93	-	-	0.00	0.00	-	0.00
T46	5,060	5,060	**13.72**	108.5	0.00	85.08	-	-	0.00	0.00	-	0.00
T47	4,460	4,461	**15.24**	108.5	0.00	83.99	-	-	0.00	0.00	-	0.00
T48 Alt	4,423	4,423	**15.35**	108.5	0.00	83.91	-	-	0.00	0.00	-	0.00
T49 Alt	4,081	4,082	**16.32**	108.5	0.00	83.22	-	-	0.00	0.00	-	0.00
T50 Alt	7,253	7,254	**9.41**	108.5	0.00	88.21	-	-	0.00	0.00	-	0.00
T51 Alt	7,748	7,749	**8.63**	108.5	0.00	88.78	-	-	0.00	0.00	-	0.00
T52 Alt	12,509	12,509	**3.05**	108.5	0.00	92.94	-	-	0.00	0.00	-	0.00
T53 Alt	13,229	13,229	**2.41**	108.5	0.00	93.43	-	-	0.00	0.00	-	0.00
T54 Alt	12,017	12,017	**3.52**	108.5	0.00	92.60	-	-	0.00	0.00	-	0.00
T55 Alt	10,621	10,622	**4.94**	108.5	0.00	91.52	-	-	0.00	0.00	-	0.00
T56 Alt	5,429	5,430	**12.87**	108.5	0.00	85.70	-	-	0.00	0.00	-	0.00
T57 Alt	9,755	9,755	**5.93**	108.5	0.00	90.78	-	-	0.00	0.00	-	0.00
T58 Alt	7,640	7,640	**8.80**	108.5	0.00	88.66	-	-	0.00	0.00	-	0.00
T59 Alt	7,259	7,259	**9.40**	108.5	0.00	88.22	-	-	0.00	0.00	-	0.00

Sum 27.02

- Data undefined due to calculation with octave data

Noise sensitive area: H68 Noise sensitive point: User defined (69)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	12,582	12,583	**2.98**	108.5	0.00	93.00	-	-	0.00	0.00	-	0.00
T02	11,904	11,905	**3.62**	108.5	0.00	92.51	-	-	0.00	0.00	-	0.00
T03	11,485	11,485	**4.04**	108.5	0.00	92.20	-	-	0.00	0.00	-	0.00
T04	10,920	10,921	**4.62**	108.5	0.00	91.76	-	-	0.00	0.00	-	0.00
T05	9,912	9,912	**5.75**	108.5	0.00	90.92	-	-	0.00	0.00	-	0.00
T06	9,456	9,456	**6.30**	108.5	0.00	90.51	-	-	0.00	0.00	-	0.00
T07	8,952	8,953	**6.94**	108.5	0.00	90.04	-	-	0.00	0.00	-	0.00

To be continued on next page...

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

Description:
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Calculated:
2/16/2015 4:05 PM/2.9.285

DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T08	9,730	9,730	**5.96**	108.5	0.00	90.76	-	-	0.00	0.00	-	0.00
T09	8,967	8,968	**6.92**	108.5	0.00	90.05	-	-	0.00	0.00	-	0.00
T10	8,848	8,848	**7.07**	108.5	0.00	89.94	-	-	0.00	0.00	-	0.00
T11	8,744	8,744	**7.21**	108.5	0.00	89.83	-	-	0.00	0.00	-	0.00
T12	8,585	8,585	**7.43**	108.5	0.00	89.68	-	-	0.00	0.00	-	0.00
T13	7,632	7,632	**8.81**	108.5	0.00	88.65	-	-	0.00	0.00	-	0.00
T14	7,667	7,667	**8.76**	108.5	0.00	88.69	-	-	0.00	0.00	-	0.00
T15	7,091	7,092	**9.68**	108.5	0.00	88.02	-	-	0.00	0.00	-	0.00
T16	6,165	6,165	**11.35**	108.5	0.00	86.80	-	-	0.00	0.00	-	0.00
T17	6,087	6,088	**11.50**	108.5	0.00	86.69	-	-	0.00	0.00	-	0.00
T18	6,020	6,020	**11.63**	108.5	0.00	86.59	-	-	0.00	0.00	-	0.00
T19	6,389	6,390	**10.92**	108.5	0.00	87.11	-	-	0.00	0.00	-	0.00
T20	6,127	6,127	**11.42**	108.5	0.00	86.75	-	-	0.00	0.00	-	0.00
T21	6,488	6,489	**10.74**	108.5	0.00	87.24	-	-	0.00	0.00	-	0.00
T22	5,248	5,249	**13.28**	108.5	0.00	85.40	-	-	0.00	0.00	-	0.00
T23	5,350	5,351	**13.05**	108.5	0.00	85.57	-	-	0.00	0.00	-	0.00
T24	5,482	5,483	**12.76**	108.5	0.00	85.78	-	-	0.00	0.00	-	0.00
T25	5,039	5,041	**13.77**	108.5	0.00	85.05	-	-	0.00	0.00	-	0.00
T26	4,882	4,883	**14.15**	108.5	0.00	84.77	-	-	0.00	0.00	-	0.00
T27	4,756	4,757	**14.47**	108.5	0.00	84.55	-	-	0.00	0.00	-	0.00
T28	4,570	4,571	**14.95**	108.5	0.00	84.20	-	-	0.00	0.00	-	0.00
T29	3,998	3,999	**16.56**	108.5	0.00	83.04	-	-	0.00	0.00	-	0.00
T30	4,195	4,196	**15.98**	108.5	0.00	83.46	-	-	0.00	0.00	-	0.00
T31	4,235	4,237	**15.87**	108.5	0.00	83.54	-	-	0.00	0.00	-	0.00
T32	4,771	4,771	**14.43**	108.5	0.00	84.57	-	-	0.00	0.00	-	0.00
T33	4,941	4,941	**14.01**	108.5	0.00	84.88	-	-	0.00	0.00	-	0.00
T34	3,683	3,684	**17.55**	108.5	0.00	82.33	-	-	0.00	0.00	-	0.00
T35	3,019	3,020	**19.91**	108.5	0.00	80.60	-	-	0.00	0.00	-	0.00
T36	3,223	3,224	**19.14**	108.5	0.00	81.17	-	-	0.00	0.00	-	0.00
T37	3,578	3,579	**17.89**	108.5	0.00	82.08	-	-	0.00	0.00	-	0.00
T38	3,846	3,847	**17.03**	108.5	0.00	82.70	-	-	0.00	0.00	-	0.00
T39	2,300	2,301	**23.19**	108.5	0.00	78.24	-	-	0.00	0.00	-	0.00
T40	2,376	2,378	**22.77**	108.5	0.00	78.52	-	-	0.00	0.00	-	0.00
T41	1,772	1,774	**26.40**	108.5	0.00	75.98	-	-	0.00	0.00	-	0.00
T42	2,904	2,905	**20.37**	108.5	0.00	80.26	-	-	0.00	0.00	-	0.00
T43	3,510	3,511	**18.13**	108.5	0.00	81.91	-	-	0.00	0.00	-	0.00
T44	3,380	3,381	**18.58**	108.5	0.00	81.58	-	-	0.00	0.00	-	0.00
T45	3,512	3,512	**18.12**	108.5	0.00	81.91	-	-	0.00	0.00	-	0.00
T46	4,166	4,167	**16.07**	108.5	0.00	83.40	-	-	0.00	0.00	-	0.00
T47	5,009	5,010	**13.84**	108.5	0.00	85.00	-	-	0.00	0.00	-	0.00
T48 Alt	4,141	4,142	**16.14**	108.5	0.00	83.34	-	-	0.00	0.00	-	0.00
T49 Alt	4,360	4,361	**15.52**	108.5	0.00	83.79	-	-	0.00	0.00	-	0.00
T50 Alt	6,065	6,065	**11.54**	108.5	0.00	86.66	-	-	0.00	0.00	-	0.00
T51 Alt	6,423	6,424	**10.86**	108.5	0.00	87.16	-	-	0.00	0.00	-	0.00
T52 Alt	10,317	10,317	**5.28**	108.5	0.00	91.27	-	-	0.00	0.00	-	0.00
T53 Alt	11,339	11,339	**4.19**	108.5	0.00	92.09	-	-	0.00	0.00	-	0.00
T54 Alt	9,614	9,614	**6.10**	108.5	0.00	90.66	-	-	0.00	0.00	-	0.00
T55 Alt	8,593	8,593	**7.42**	108.5	0.00	89.68	-	-	0.00	0.00	-	0.00
T56 Alt	4,404	4,405	**15.40**	108.5	0.00	83.88	-	-	0.00	0.00	-	0.00
T57 Alt	8,718	8,718	**7.25**	108.5	0.00	89.81	-	-	0.00	0.00	-	0.00
T58 Alt	7,369	7,370	**9.22**	108.5	0.00	88.35	-	-	0.00	0.00	-	0.00
T59 Alt	7,073	7,073	**9.71**	108.5	0.00	87.99	-	-	0.00	0.00	-	0.00

Sum 33.49

- Data undefined due to calculation with octave data

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20131290 Rolette Power Development

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2/16/2015 4:05 PM/2.9.285

DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

Noise sensitive area: H69 Noise sensitive point: User defined (70)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	12,549	12,549	**3.02**	108.5	0.00	92.97	-	-	0.00	0.00	-	0.00
T02	11,961	11,961	**3.57**	108.5	0.00	92.56	-	-	0.00	0.00	-	0.00
T03	11,687	11,688	**3.84**	108.5	0.00	92.35	-	-	0.00	0.00	-	0.00
T04	11,365	11,365	**4.16**	108.5	0.00	92.11	-	-	0.00	0.00	-	0.00
T05	10,160	10,160	**5.46**	108.5	0.00	91.14	-	-	0.00	0.00	-	0.00
T06	9,884	9,884	**5.78**	108.5	0.00	90.90	-	-	0.00	0.00	-	0.00
T07	9,749	9,749	**5.94**	108.5	0.00	90.78	-	-	0.00	0.00	-	0.00
T08	10,806	10,807	**4.74**	108.5	0.00	91.67	-	-	0.00	0.00	-	0.00
T09	10,267	10,267	**5.34**	108.5	0.00	91.23	-	-	0.00	0.00	-	0.00
T10	10,345	10,346	**5.25**	108.5	0.00	91.30	-	-	0.00	0.00	-	0.00
T11	8,470	8,470	**7.58**	108.5	0.00	89.56	-	-	0.00	0.00	-	0.00
T12	8,563	8,563	**7.46**	108.5	0.00	89.65	-	-	0.00	0.00	-	0.00
T13	8,008	8,008	**8.24**	108.5	0.00	89.07	-	-	0.00	0.00	-	0.00
T14	8,337	8,338	**7.77**	108.5	0.00	89.42	-	-	0.00	0.00	-	0.00
T15	7,088	7,088	**9.69**	108.5	0.00	88.01	-	-	0.00	0.00	-	0.00
T16	6,022	6,023	**11.63**	108.5	0.00	86.60	-	-	0.00	0.00	-	0.00
T17	6,382	6,383	**10.93**	108.5	0.00	87.10	-	-	0.00	0.00	-	0.00
T18	6,693	6,694	**10.37**	108.5	0.00	87.51	-	-	0.00	0.00	-	0.00
T19	7,405	7,406	**9.17**	108.5	0.00	88.39	-	-	0.00	0.00	-	0.00
T20	7,519	7,520	**8.99**	108.5	0.00	88.52	-	-	0.00	0.00	-	0.00
T21	8,081	8,081	**8.14**	108.5	0.00	89.15	-	-	0.00	0.00	-	0.00
T22	6,645	6,646	**10.45**	108.5	0.00	87.45	-	-	0.00	0.00	-	0.00
T23	7,091	7,091	**9.68**	108.5	0.00	88.01	-	-	0.00	0.00	-	0.00
T24	7,489	7,490	**9.03**	108.5	0.00	88.49	-	-	0.00	0.00	-	0.00
T25	5,095	5,096	**13.64**	108.5	0.00	85.14	-	-	0.00	0.00	-	0.00
T26	5,354	5,355	**13.04**	108.5	0.00	85.58	-	-	0.00	0.00	-	0.00
T27	5,583	5,584	**12.54**	108.5	0.00	85.94	-	-	0.00	0.00	-	0.00
T28	5,764	5,765	**12.15**	108.5	0.00	86.22	-	-	0.00	0.00	-	0.00
T29	5,913	5,914	**11.85**	108.5	0.00	86.44	-	-	0.00	0.00	-	0.00
T30	6,369	6,370	**10.96**	108.5	0.00	87.08	-	-	0.00	0.00	-	0.00
T31	6,709	6,710	**10.34**	108.5	0.00	87.53	-	-	0.00	0.00	-	0.00
T32	7,635	7,636	**8.81**	108.5	0.00	88.66	-	-	0.00	0.00	-	0.00
T33	8,010	8,011	**8.24**	108.5	0.00	89.07	-	-	0.00	0.00	-	0.00
T34	5,164	5,164	**13.48**	108.5	0.00	85.26	-	-	0.00	0.00	-	0.00
T35	4,940	4,941	**14.01**	108.5	0.00	84.88	-	-	0.00	0.00	-	0.00
T36	5,837	5,838	**12.00**	108.5	0.00	86.32	-	-	0.00	0.00	-	0.00
T37	6,534	6,535	**10.65**	108.5	0.00	87.30	-	-	0.00	0.00	-	0.00
T38	7,055	7,055	**9.74**	108.5	0.00	87.97	-	-	0.00	0.00	-	0.00
T39	4,733	4,734	**14.53**	108.5	0.00	84.50	-	-	0.00	0.00	-	0.00
T40	5,476	5,477	**12.77**	108.5	0.00	85.77	-	-	0.00	0.00	-	0.00
T41	5,414	5,415	**12.91**	108.5	0.00	85.67	-	-	0.00	0.00	-	0.00
T42	6,330	6,330	**11.03**	108.5	0.00	87.03	-	-	0.00	0.00	-	0.00
T43	7,064	7,065	**9.73**	108.5	0.00	87.98	-	-	0.00	0.00	-	0.00
T44	7,412	7,413	**9.16**	108.5	0.00	88.40	-	-	0.00	0.00	-	0.00
T45	7,697	7,698	**8.71**	108.5	0.00	88.73	-	-	0.00	0.00	-	0.00
T46	7,891	7,892	**8.42**	108.5	0.00	88.94	-	-	0.00	0.00	-	0.00
T47	8,710	8,710	**7.26**	108.5	0.00	89.80	-	-	0.00	0.00	-	0.00
T48 Alt	8,270	8,270	**7.87**	108.5	0.00	89.35	-	-	0.00	0.00	-	0.00
T49 Alt	8,588	8,588	**7.42**	108.5	0.00	89.68	-	-	0.00	0.00	-	0.00
T50 Alt	8,187	8,187	**7.98**	108.5	0.00	89.26	-	-	0.00	0.00	-	0.00
T51 Alt	8,261	8,262	**7.88**	108.5	0.00	89.34	-	-	0.00	0.00	-	0.00
T52 Alt	10,097	10,097	**5.53**	108.5	0.00	91.08	-	-	0.00	0.00	-	0.00
T53 Alt	11,067	11,068	**4.47**	108.5	0.00	91.88	-	-	0.00	0.00	-	0.00
T54 Alt	9,452	9,452	**6.30**	108.5	0.00	90.51	-	-	0.00	0.00	-	0.00
T55 Alt	9,015	9,015	**6.85**	108.5	0.00	90.10	-	-	0.00	0.00	-	0.00

To be continued on next page...

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DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

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WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T56 Alt	7,827	7,827	**8.51**	108.5	0.00	88.87	-	-	0.00	0.00	-	0.00
T57 Alt	9,705	9,706	**5.99**	108.5	0.00	90.74	-	-	0.00	0.00	-	0.00
T58 Alt	9,314	9,314	**6.47**	108.5	0.00	90.38	-	-	0.00	0.00	-	0.00
T59 Alt	9,196	9,196	**6.62**	108.5	0.00	90.27	-	-	0.00	0.00	-	0.00
Sum	27.35											

- Data undefined due to calculation with octave data

Noise sensitive area: H70 Noise sensitive point: User defined (71)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	11,522	11,522	**4.00**	108.5	0.00	92.23	-	-	0.00	0.00	-	0.00
T02	10,921	10,921	**4.62**	108.5	0.00	91.77	-	-	0.00	0.00	-	0.00
T03	10,633	10,633	**4.93**	108.5	0.00	91.53	-	-	0.00	0.00	-	0.00
T04	10,289	10,290	**5.31**	108.5	0.00	91.25	-	-	0.00	0.00	-	0.00
T05	9,092	9,092	**6.76**	108.5	0.00	90.17	-	-	0.00	0.00	-	0.00
T06	8,801	8,801	**7.14**	108.5	0.00	89.89	-	-	0.00	0.00	-	0.00
T07	8,646	8,646	**7.34**	108.5	0.00	89.74	-	-	0.00	0.00	-	0.00
T08	9,697	9,697	**6.00**	108.5	0.00	90.73	-	-	0.00	0.00	-	0.00
T09	9,151	9,152	**6.68**	108.5	0.00	90.23	-	-	0.00	0.00	-	0.00
T10	9,229	9,229	**6.58**	108.5	0.00	90.30	-	-	0.00	0.00	-	0.00
T11	7,431	7,432	**9.13**	108.5	0.00	88.42	-	-	0.00	0.00	-	0.00
T12	7,502	7,502	**9.01**	108.5	0.00	88.50	-	-	0.00	0.00	-	0.00
T13	6,913	6,914	**9.98**	108.5	0.00	87.79	-	-	0.00	0.00	-	0.00
T14	7,232	7,232	**9.45**	108.5	0.00	88.19	-	-	0.00	0.00	-	0.00
T15	6,007	6,008	**11.66**	108.5	0.00	86.57	-	-	0.00	0.00	-	0.00
T16	4,934	4,935	**14.02**	108.5	0.00	84.87	-	-	0.00	0.00	-	0.00
T17	5,277	5,277	**13.22**	108.5	0.00	85.45	-	-	0.00	0.00	-	0.00
T18	5,579	5,579	**12.55**	108.5	0.00	85.93	-	-	0.00	0.00	-	0.00
T19	6,289	6,289	**11.11**	108.5	0.00	86.97	-	-	0.00	0.00	-	0.00
T20	6,405	6,405	**10.89**	108.5	0.00	87.13	-	-	0.00	0.00	-	0.00
T21	6,968	6,968	**9.89**	108.5	0.00	87.86	-	-	0.00	0.00	-	0.00
T22	5,535	5,536	**12.64**	108.5	0.00	85.86	-	-	0.00	0.00	-	0.00
T23	5,990	5,991	**11.69**	108.5	0.00	86.55	-	-	0.00	0.00	-	0.00
T24	6,397	6,398	**10.91**	108.5	0.00	87.12	-	-	0.00	0.00	-	0.00
T25	3,983	3,985	**16.61**	108.5	0.00	83.01	-	-	0.00	0.00	-	0.00
T26	4,237	4,239	**15.86**	108.5	0.00	83.54	-	-	0.00	0.00	-	0.00
T27	4,468	4,470	**15.22**	108.5	0.00	84.01	-	-	0.00	0.00	-	0.00
T28	4,657	4,658	**14.72**	108.5	0.00	84.36	-	-	0.00	0.00	-	0.00
T29	4,845	4,846	**14.24**	108.5	0.00	84.71	-	-	0.00	0.00	-	0.00
T30	5,310	5,311	**13.14**	108.5	0.00	85.50	-	-	0.00	0.00	-	0.00
T31	5,668	5,669	**12.36**	108.5	0.00	86.07	-	-	0.00	0.00	-	0.00
T32	6,613	6,613	**10.51**	108.5	0.00	87.41	-	-	0.00	0.00	-	0.00
T33	7,004	7,005	**9.83**	108.5	0.00	87.91	-	-	0.00	0.00	-	0.00
T34	4,088	4,089	**16.29**	108.5	0.00	83.23	-	-	0.00	0.00	-	0.00
T35	3,919	3,920	**16.80**	108.5	0.00	82.87	-	-	0.00	0.00	-	0.00
T36	4,844	4,845	**14.25**	108.5	0.00	84.71	-	-	0.00	0.00	-	0.00
T37	5,555	5,555	**12.60**	108.5	0.00	85.89	-	-	0.00	0.00	-	0.00
T38	6,092	6,093	**11.49**	108.5	0.00	86.70	-	-	0.00	0.00	-	0.00
T39	3,798	3,799	**17.18**	108.5	0.00	82.59	-	-	0.00	0.00	-	0.00
T40	4,575	4,576	**14.94**	108.5	0.00	84.21	-	-	0.00	0.00	-	0.00
T41	4,615	4,615	**14.83**	108.5	0.00	84.28	-	-	0.00	0.00	-	0.00
T42	5,431	5,431	**12.87**	108.5	0.00	85.70	-	-	0.00	0.00	-	0.00
T43	6,158	6,158	**11.36**	108.5	0.00	86.79	-	-	0.00	0.00	-	0.00

To be continued on next page...

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
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2/16/2015 4:05 PM/2.9.285

DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T44	6,598	6,599	**10.54**	108.5	0.00	87.39	-	-	0.00	0.00	-	0.00
T45	6,921	6,921	**9.97**	108.5	0.00	87.80	-	-	0.00	0.00	-	0.00
T46	6,993	6,994	**9.85**	108.5	0.00	87.89	-	-	0.00	0.00	-	0.00
T47	7,789	7,790	**8.57**	108.5	0.00	88.83	-	-	0.00	0.00	-	0.00
T48 Alt	7,462	7,463	**9.08**	108.5	0.00	88.46	-	-	0.00	0.00	-	0.00
T49 Alt	7,807	7,808	**8.54**	108.5	0.00	88.85	-	-	0.00	0.00	-	0.00
T50 Alt	7,094	7,094	**9.68**	108.5	0.00	88.02	-	-	0.00	0.00	-	0.00
T51 Alt	7,155	7,155	**9.57**	108.5	0.00	88.09	-	-	0.00	0.00	-	0.00
T52 Alt	9,071	9,071	**6.78**	108.5	0.00	90.15	-	-	0.00	0.00	-	0.00
T53 Alt	10,055	10,056	**5.58**	108.5	0.00	91.05	-	-	0.00	0.00	-	0.00
T54 Alt	8,413	8,413	**7.66**	108.5	0.00	89.50	-	-	0.00	0.00	-	0.00
T55 Alt	7,926	7,927	**8.36**	108.5	0.00	88.98	-	-	0.00	0.00	-	0.00
T56 Alt	6,876	6,876	**10.05**	108.5	0.00	87.75	-	-	0.00	0.00	-	0.00
T57 Alt	8,595	8,596	**7.41**	108.5	0.00	89.69	-	-	0.00	0.00	-	0.00
T58 Alt	8,206	8,206	**7.96**	108.5	0.00	89.28	-	-	0.00	0.00	-	0.00
T59 Alt	8,096	8,096	**8.12**	108.5	0.00	89.17	-	-	0.00	0.00	-	0.00
Sum	29.47											

- Data undefined due to calculation with octave data

Noise sensitive area: H71 Noise sensitive point: User defined (72)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	4,522	4,523	**15.08**	108.5	0.00	84.11	-	-	0.00	0.00	-	0.00
T02	4,674	4,675	**14.68**	108.5	0.00	84.40	-	-	0.00	0.00	-	0.00
T03	5,035	5,036	**13.78**	108.5	0.00	85.04	-	-	0.00	0.00	-	0.00
T04	5,638	5,638	**12.42**	108.5	0.00	86.02	-	-	0.00	0.00	-	0.00
T05	5,336	5,336	**13.08**	108.5	0.00	85.54	-	-	0.00	0.00	-	0.00
T06	5,813	5,814	**12.05**	108.5	0.00	86.29	-	-	0.00	0.00	-	0.00
T07	6,647	6,648	**10.45**	108.5	0.00	87.45	-	-	0.00	0.00	-	0.00
T08	7,157	7,158	**9.57**	108.5	0.00	88.10	-	-	0.00	0.00	-	0.00
T09	7,680	7,680	**8.74**	108.5	0.00	88.71	-	-	0.00	0.00	-	0.00
T10	8,119	8,120	**8.08**	108.5	0.00	89.19	-	-	0.00	0.00	-	0.00
T11	5,090	5,091	**13.65**	108.5	0.00	85.14	-	-	0.00	0.00	-	0.00
T12	5,484	5,484	**12.75**	108.5	0.00	85.78	-	-	0.00	0.00	-	0.00
T13	6,519	6,519	**10.68**	108.5	0.00	87.28	-	-	0.00	0.00	-	0.00
T14	6,875	6,875	**10.05**	108.5	0.00	87.75	-	-	0.00	0.00	-	0.00
T15	6,530	6,530	**10.66**	108.5	0.00	87.30	-	-	0.00	0.00	-	0.00
T16	7,223	7,224	**9.46**	108.5	0.00	88.18	-	-	0.00	0.00	-	0.00
T17	7,487	7,488	**9.04**	108.5	0.00	88.49	-	-	0.00	0.00	-	0.00
T18	7,795	7,796	**8.56**	108.5	0.00	88.84	-	-	0.00	0.00	-	0.00
T19	7,913	7,913	**8.38**	108.5	0.00	88.97	-	-	0.00	0.00	-	0.00
T20	8,478	8,479	**7.57**	108.5	0.00	89.57	-	-	0.00	0.00	-	0.00
T21	8,632	8,633	**7.36**	108.5	0.00	89.72	-	-	0.00	0.00	-	0.00
T22	8,876	8,877	**7.03**	108.5	0.00	89.97	-	-	0.00	0.00	-	0.00
T23	9,201	9,202	**6.61**	108.5	0.00	90.28	-	-	0.00	0.00	-	0.00
T24	9,503	9,504	**6.24**	108.5	0.00	90.56	-	-	0.00	0.00	-	0.00
T25	8,287	8,288	**7.84**	108.5	0.00	89.37	-	-	0.00	0.00	-	0.00
T26	8,530	8,531	**7.50**	108.5	0.00	89.62	-	-	0.00	0.00	-	0.00
T27	8,774	8,775	**7.17**	108.5	0.00	89.86	-	-	0.00	0.00	-	0.00
T28	9,107	9,108	**6.73**	108.5	0.00	90.19	-	-	0.00	0.00	-	0.00
T29	9,950	9,951	**5.70**	108.5	0.00	90.96	-	-	0.00	0.00	-	0.00
T30	10,108	10,109	**5.52**	108.5	0.00	91.09	-	-	0.00	0.00	-	0.00
T31	10,435	10,436	**5.15**	108.5	0.00	91.37	-	-	0.00	0.00	-	0.00

To be continued on next page...

Project:
20131290 Rolette Power Development

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DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T32	10,926	10,927	**4.62**	108.5	0.00	91.77	-	-	0.00	0.00	-	0.00
T33	11,293	11,294	**4.23**	108.5	0.00	92.06	-	-	0.00	0.00	-	0.00
T34	9,853	9,854	**5.82**	108.5	0.00	90.87	-	-	0.00	0.00	-	0.00
T35	10,501	10,501	**5.08**	108.5	0.00	91.42	-	-	0.00	0.00	-	0.00
T36	10,884	10,885	**4.66**	108.5	0.00	91.74	-	-	0.00	0.00	-	0.00
T37	11,181	11,181	**4.35**	108.5	0.00	91.97	-	-	0.00	0.00	-	0.00
T38	11,525	11,526	**4.00**	108.5	0.00	92.23	-	-	0.00	0.00	-	0.00
T39	11,182	11,182	**4.35**	108.5	0.00	91.97	-	-	0.00	0.00	-	0.00
T40	11,596	11,597	**3.93**	108.5	0.00	92.29	-	-	0.00	0.00	-	0.00
T41	12,254	12,255	**3.29**	108.5	0.00	92.77	-	-	0.00	0.00	-	0.00
T42	11,888	11,888	**3.64**	108.5	0.00	92.50	-	-	0.00	0.00	-	0.00
T43	12,102	12,102	**3.43**	108.5	0.00	92.66	-	-	0.00	0.00	-	0.00
T44	13,070	13,071	**2.55**	108.5	0.00	93.33	-	-	0.00	0.00	-	0.00
T45	13,521	13,521	**2.15**	108.5	0.00	93.62	-	-	0.00	0.00	-	0.00
T46	12,543	12,544	**3.02**	108.5	0.00	92.97	-	-	0.00	0.00	-	0.00
T47	12,689	12,689	**2.89**	108.5	0.00	93.07	-	-	0.00	0.00	-	0.00
T48 Alt	13,584	13,585	**2.10**	108.5	0.00	93.66	-	-	0.00	0.00	-	0.00
T49 Alt	13,999	13,999	**1.75**	108.5	0.00	93.92	-	-	0.00	0.00	-	0.00
T50 Alt	9,560	9,560	**6.17**	108.5	0.00	90.61	-	-	0.00	0.00	-	0.00
T51 Alt	9,031	9,031	**6.83**	108.5	0.00	90.11	-	-	0.00	0.00	-	0.00
T52 Alt	4,293	4,294	**15.70**	108.5	0.00	83.66	-	-	0.00	0.00	-	0.00
T53 Alt	3,879	3,880	**16.93**	108.5	0.00	82.78	-	-	0.00	0.00	-	0.00
T54 Alt	4,714	4,714	**14.58**	108.5	0.00	84.47	-	-	0.00	0.00	-	0.00
T55 Alt	6,105	6,105	**11.47**	108.5	0.00	86.71	-	-	0.00	0.00	-	0.00
T56 Alt	11,938	11,939	**3.59**	108.5	0.00	92.54	-	-	0.00	0.00	-	0.00
T57 Alt	7,064	7,065	**9.73**	108.5	0.00	87.98	-	-	0.00	0.00	-	0.00
T58 Alt	9,104	9,104	**6.74**	108.5	0.00	90.18	-	-	0.00	0.00	-	0.00
T59 Alt	9,471	9,472	**6.28**	108.5	0.00	90.53	-	-	0.00	0.00	-	0.00
Sum	27.31											

- Data undefined due to calculation with octave data

Noise sensitive area: H72 Noise sensitive point: User defined (73)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	3,212	3,214	**19.18**	108.5	0.00	81.14	-	-	0.00	0.00	-	0.00
T02	3,766	3,767	**17.28**	108.5	0.00	82.52	-	-	0.00	0.00	-	0.00
T03	4,062	4,064	**16.37**	108.5	0.00	83.18	-	-	0.00	0.00	-	0.00
T04	4,530	4,531	**15.06**	108.5	0.00	84.12	-	-	0.00	0.00	-	0.00
T05	5,641	5,642	**12.41**	108.5	0.00	86.03	-	-	0.00	0.00	-	0.00
T06	6,028	6,029	**11.62**	108.5	0.00	86.60	-	-	0.00	0.00	-	0.00
T07	6,488	6,489	**10.74**	108.5	0.00	87.24	-	-	0.00	0.00	-	0.00
T08	5,839	5,840	**12.00**	108.5	0.00	86.33	-	-	0.00	0.00	-	0.00
T09	6,668	6,669	**10.41**	108.5	0.00	87.48	-	-	0.00	0.00	-	0.00
T10	6,933	6,934	**9.95**	108.5	0.00	87.82	-	-	0.00	0.00	-	0.00
T11	7,256	7,257	**9.41**	108.5	0.00	88.21	-	-	0.00	0.00	-	0.00
T12	7,191	7,192	**9.51**	108.5	0.00	88.14	-	-	0.00	0.00	-	0.00
T13	7,936	7,936	**8.35**	108.5	0.00	88.99	-	-	0.00	0.00	-	0.00
T14	7,799	7,799	**8.56**	108.5	0.00	88.84	-	-	0.00	0.00	-	0.00
T15	8,726	8,726	**7.24**	108.5	0.00	89.82	-	-	0.00	0.00	-	0.00
T16	9,805	9,805	**5.87**	108.5	0.00	90.83	-	-	0.00	0.00	-	0.00
T17	9,609	9,609	**6.11**	108.5	0.00	90.65	-	-	0.00	0.00	-	0.00
T18	9,514	9,515	**6.22**	108.5	0.00	90.57	-	-	0.00	0.00	-	0.00
T19	9,055	9,055	**6.80**	108.5	0.00	90.14	-	-	0.00	0.00	-	0.00

To be continued on next page...

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DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T20	9,327	9,327	**6.46**	108.5	0.00	90.40	-	-	0.00	0.00	-	0.00
T21	9,040	9,040	**6.82**	108.5	0.00	90.12	-	-	0.00	0.00	-	0.00
T22	10,191	10,192	**5.42**	108.5	0.00	91.17	-	-	0.00	0.00	-	0.00
T23	10,133	10,134	**5.49**	108.5	0.00	91.12	-	-	0.00	0.00	-	0.00
T24	10,111	10,112	**5.52**	108.5	0.00	91.10	-	-	0.00	0.00	-	0.00
T25	10,895	10,896	**4.65**	108.5	0.00	91.75	-	-	0.00	0.00	-	0.00
T26	10,834	10,834	**4.71**	108.5	0.00	91.70	-	-	0.00	0.00	-	0.00
T27	10,819	10,820	**4.73**	108.5	0.00	91.68	-	-	0.00	0.00	-	0.00
T28	10,914	10,915	**4.63**	108.5	0.00	91.76	-	-	0.00	0.00	-	0.00
T29	11,445	11,445	**4.08**	108.5	0.00	92.17	-	-	0.00	0.00	-	0.00
T30	11,304	11,305	**4.22**	108.5	0.00	92.07	-	-	0.00	0.00	-	0.00
T31	11,385	11,386	**4.14**	108.5	0.00	92.13	-	-	0.00	0.00	-	0.00
T32	11,290	11,290	**4.24**	108.5	0.00	92.05	-	-	0.00	0.00	-	0.00
T33	11,427	11,428	**4.10**	108.5	0.00	92.16	-	-	0.00	0.00	-	0.00
T34	11,806	11,807	**3.72**	108.5	0.00	92.44	-	-	0.00	0.00	-	0.00
T35	12,444	12,445	**3.11**	108.5	0.00	92.90	-	-	0.00	0.00	-	0.00
T36	12,287	12,287	**3.26**	108.5	0.00	92.79	-	-	0.00	0.00	-	0.00
T37	12,174	12,175	**3.37**	108.5	0.00	92.71	-	-	0.00	0.00	-	0.00
T38	12,217	12,218	**3.32**	108.5	0.00	92.74	-	-	0.00	0.00	-	0.00
T39	13,149	13,150	**2.48**	108.5	0.00	93.38	-	-	0.00	0.00	-	0.00
T40	13,153	13,153	**2.47**	108.5	0.00	93.38	-	-	0.00	0.00	-	0.00
T41	13,850	13,850	**1.88**	108.5	0.00	93.83	-	-	0.00	0.00	-	0.00
T42	12,987	12,987	**2.62**	108.5	0.00	93.27	-	-	0.00	0.00	-	0.00
T43	12,804	12,804	**2.78**	108.5	0.00	93.15	-	-	0.00	0.00	-	0.00
T44	13,668	13,668	**2.03**	108.5	0.00	93.71	-	-	0.00	0.00	-	0.00
T45	14,026	14,027	**1.73**	108.5	0.00	93.94	-	-	0.00	0.00	-	0.00
T46	12,813	12,814	**2.77**	108.5	0.00	93.15	-	-	0.00	0.00	-	0.00
T47	12,504	12,505	**3.06**	108.5	0.00	92.94	-	-	0.00	0.00	-	0.00
T48 Alt	13,781	13,782	**1.93**	108.5	0.00	93.79	-	-	0.00	0.00	-	0.00
T49 Alt	14,093	14,093	**1.68**	108.5	0.00	93.98	-	-	0.00	0.00	-	0.00
T50 Alt	9,700	9,700	**6.00**	108.5	0.00	90.74	-	-	0.00	0.00	-	0.00
T51 Alt	9,216	9,216	**6.60**	108.5	0.00	90.29	-	-	0.00	0.00	-	0.00
T52 Alt	5,643	5,644	**12.41**	108.5	0.00	86.03	-	-	0.00	0.00	-	0.00
T53 Alt	4,733	4,734	**14.53**	108.5	0.00	84.50	-	-	0.00	0.00	-	0.00
T54 Alt	6,274	6,275	**11.14**	108.5	0.00	86.95	-	-	0.00	0.00	-	0.00
T55 Alt	6,918	6,919	**9.97**	108.5	0.00	87.80	-	-	0.00	0.00	-	0.00
T56 Alt	12,200	12,200	**3.34**	108.5	0.00	92.73	-	-	0.00	0.00	-	0.00
T57 Alt	6,748	6,749	**10.27**	108.5	0.00	87.58	-	-	0.00	0.00	-	0.00
T58 Alt	8,532	8,532	**7.50**	108.5	0.00	89.62	-	-	0.00	0.00	-	0.00
T59 Alt	8,934	8,935	**6.96**	108.5	0.00	90.02	-	-	0.00	0.00	-	0.00

Sum 27.17

- Data undefined due to calculation with octave data

Noise sensitive area: H73 Noise sensitive point: User defined (74)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	6,858	6,859	**10.08**	108.5	0.00	87.72	-	-	0.00	0.00	-	0.00
T02	7,295	7,295	**9.34**	108.5	0.00	88.26	-	-	0.00	0.00	-	0.00
T03	7,458	7,459	**9.08**	108.5	0.00	88.45	-	-	0.00	0.00	-	0.00
T04	7,706	7,707	**8.70**	108.5	0.00	88.74	-	-	0.00	0.00	-	0.00
T05	8,919	8,920	**6.98**	108.5	0.00	90.01	-	-	0.00	0.00	-	0.00
T06	9,188	9,188	**6.63**	108.5	0.00	90.26	-	-	0.00	0.00	-	0.00
T07	9,420	9,421	**6.34**	108.5	0.00	90.48	-	-	0.00	0.00	-	0.00

To be continued on next page...

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

Description:
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2/16/2015 4:05 PM/2.9.285

DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T08	8,497	8,498	**7.55**	108.5	0.00	89.59	-	-	0.00	0.00	-	0.00
T09	9,230	9,231	**6.58**	108.5	0.00	90.30	-	-	0.00	0.00	-	0.00
T10	9,353	9,354	**6.42**	108.5	0.00	90.42	-	-	0.00	0.00	-	0.00
T11	10,681	10,681	**4.88**	108.5	0.00	91.57	-	-	0.00	0.00	-	0.00
T12	10,525	10,525	**5.05**	108.5	0.00	91.44	-	-	0.00	0.00	-	0.00
T13	11,087	11,087	**4.45**	108.5	0.00	91.90	-	-	0.00	0.00	-	0.00
T14	10,829	10,829	**4.72**	108.5	0.00	91.69	-	-	0.00	0.00	-	0.00
T15	11,982	11,982	**3.55**	108.5	0.00	92.57	-	-	0.00	0.00	-	0.00
T16	13,054	13,055	**2.56**	108.5	0.00	93.32	-	-	0.00	0.00	-	0.00
T17	12,756	12,756	**2.83**	108.5	0.00	93.11	-	-	0.00	0.00	-	0.00
T18	12,557	12,558	**3.01**	108.5	0.00	92.98	-	-	0.00	0.00	-	0.00
T19	11,975	11,976	**3.56**	108.5	0.00	92.57	-	-	0.00	0.00	-	0.00
T20	12,115	12,116	**3.42**	108.5	0.00	92.67	-	-	0.00	0.00	-	0.00
T21	11,710	11,711	**3.81**	108.5	0.00	92.37	-	-	0.00	0.00	-	0.00
T22	13,037	13,037	**2.57**	108.5	0.00	93.30	-	-	0.00	0.00	-	0.00
T23	12,855	12,855	**2.74**	108.5	0.00	93.18	-	-	0.00	0.00	-	0.00
T24	12,717	12,717	**2.86**	108.5	0.00	93.09	-	-	0.00	0.00	-	0.00
T25	14,067	14,067	**1.70**	108.5	0.00	93.96	-	-	0.00	0.00	-	0.00
T26	13,925	13,925	**1.81**	108.5	0.00	93.88	-	-	0.00	0.00	-	0.00
T27	13,836	13,837	**1.89**	108.5	0.00	93.82	-	-	0.00	0.00	-	0.00
T28	13,850	13,850	**1.88**	108.5	0.00	93.83	-	-	0.00	0.00	-	0.00
T29	14,232	14,233	**1.56**	108.5	0.00	94.07	-	-	0.00	0.00	-	0.00
T30	14,000	14,000	**1.75**	108.5	0.00	93.92	-	-	0.00	0.00	-	0.00
T31	13,984	13,984	**1.76**	108.5	0.00	93.91	-	-	0.00	0.00	-	0.00
T32	13,670	13,670	**2.03**	108.5	0.00	93.72	-	-	0.00	0.00	-	0.00
T33	13,697	13,698	**2.00**	108.5	0.00	93.73	-	-	0.00	0.00	-	0.00
T34	14,716	14,717	**1.18**	108.5	0.00	94.36	-	-	0.00	0.00	-	0.00
T35	15,305	15,305	**0.72**	108.5	0.00	94.70	-	-	0.00	0.00	-	0.00
T36	14,973	14,974	**0.98**	108.5	0.00	94.51	-	-	0.00	0.00	-	0.00
T37	14,719	14,719	**1.17**	108.5	0.00	94.36	-	-	0.00	0.00	-	0.00
T38	14,641	14,641	**1.23**	108.5	0.00	94.31	-	-	0.00	0.00	-	0.00
T39	15,972	15,972	**0.23**	108.5	0.00	95.07	-	-	0.00	0.00	-	0.00
T40	15,831	15,832	**0.33**	108.5	0.00	94.99	-	-	0.00	0.00	-	0.00
T41	16,497	16,497	**-0.15**	108.5	0.00	95.35	-	-	0.00	0.00	-	0.00
T42	15,507	15,507	**0.57**	108.5	0.00	94.81	-	-	0.00	0.00	-	0.00
T43	15,182	15,182	**0.82**	108.5	0.00	94.63	-	-	0.00	0.00	-	0.00
T44	15,935	15,935	**0.25**	108.5	0.00	95.05	-	-	0.00	0.00	-	0.00
T45	16,228	16,228	**0.04**	108.5	0.00	95.21	-	-	0.00	0.00	-	0.00
T46	15,010	15,010	**0.95**	108.5	0.00	94.53	-	-	0.00	0.00	-	0.00
T47	14,527	14,527	**1.32**	108.5	0.00	94.24	-	-	0.00	0.00	-	0.00
T48 Alt	15,867	15,867	**0.30**	108.5	0.00	95.01	-	-	0.00	0.00	-	0.00
T49 Alt	16,109	16,109	**0.13**	108.5	0.00	95.14	-	-	0.00	0.00	-	0.00
T50 Alt	12,177	12,178	**3.36**	108.5	0.00	92.71	-	-	0.00	0.00	-	0.00
T51 Alt	11,777	11,778	**3.75**	108.5	0.00	92.42	-	-	0.00	0.00	-	0.00
T52 Alt	9,166	9,166	**6.66**	108.5	0.00	90.24	-	-	0.00	0.00	-	0.00
T53 Alt	8,361	8,361	**7.74**	108.5	0.00	89.45	-	-	0.00	0.00	-	0.00
T54 Alt	9,723	9,723	**5.97**	108.5	0.00	90.76	-	-	0.00	0.00	-	0.00
T55 Alt	10,066	10,066	**5.57**	108.5	0.00	91.06	-	-	0.00	0.00	-	0.00
T56 Alt	14,447	14,448	**1.39**	108.5	0.00	94.20	-	-	0.00	0.00	-	0.00
T57 Alt	9,565	9,565	**6.16**	108.5	0.00	90.61	-	-	0.00	0.00	-	0.00
T58 Alt	10,892	10,893	**4.65**	108.5	0.00	91.74	-	-	0.00	0.00	-	0.00
T59 Alt	11,243	11,243	**4.29**	108.5	0.00	92.02	-	-	0.00	0.00	-	0.00

Sum 22.08

- Data undefined due to calculation with octave data

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
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DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

Noise sensitive area: H74 Noise sensitive point: User defined (75)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	9,127	9,127	**6.71**	108.5	0.00	90.21	-	-	0.00	0.00	-	0.00
T02	9,411	9,411	**6.35**	108.5	0.00	90.47	-	-	0.00	0.00	-	0.00
T03	9,436	9,437	**6.32**	108.5	0.00	90.50	-	-	0.00	0.00	-	0.00
T04	9,473	9,474	**6.27**	108.5	0.00	90.53	-	-	0.00	0.00	-	0.00
T05	10,681	10,681	**4.88**	108.5	0.00	91.57	-	-	0.00	0.00	-	0.00
T06	10,820	10,821	**4.73**	108.5	0.00	91.69	-	-	0.00	0.00	-	0.00
T07	10,833	10,834	**4.72**	108.5	0.00	91.70	-	-	0.00	0.00	-	0.00
T08	9,766	9,766	**5.92**	108.5	0.00	90.79	-	-	0.00	0.00	-	0.00
T09	10,348	10,349	**5.25**	108.5	0.00	91.30	-	-	0.00	0.00	-	0.00
T10	10,344	10,345	**5.25**	108.5	0.00	91.29	-	-	0.00	0.00	-	0.00
T11	12,501	12,501	**3.06**	108.5	0.00	92.94	-	-	0.00	0.00	-	0.00
T12	12,251	12,251	**3.29**	108.5	0.00	92.76	-	-	0.00	0.00	-	0.00
T13	12,599	12,600	**2.97**	108.5	0.00	93.01	-	-	0.00	0.00	-	0.00
T14	12,237	12,238	**3.31**	108.5	0.00	92.75	-	-	0.00	0.00	-	0.00
T15	13,562	13,563	**2.12**	108.5	0.00	93.65	-	-	0.00	0.00	-	0.00
T16	14,587	14,587	**1.28**	108.5	0.00	94.28	-	-	0.00	0.00	-	0.00
T17	14,190	14,191	**1.60**	108.5	0.00	94.04	-	-	0.00	0.00	-	0.00
T18	13,893	13,894	**1.84**	108.5	0.00	93.86	-	-	0.00	0.00	-	0.00
T19	13,218	13,219	**2.42**	108.5	0.00	93.42	-	-	0.00	0.00	-	0.00
T20	13,228	13,228	**2.41**	108.5	0.00	93.43	-	-	0.00	0.00	-	0.00
T21	12,737	12,738	**2.84**	108.5	0.00	93.10	-	-	0.00	0.00	-	0.00
T22	14,159	14,159	**1.62**	108.5	0.00	94.02	-	-	0.00	0.00	-	0.00
T23	13,867	13,868	**1.86**	108.5	0.00	93.84	-	-	0.00	0.00	-	0.00
T24	13,631	13,631	**2.06**	108.5	0.00	93.69	-	-	0.00	0.00	-	0.00
T25	15,480	15,481	**0.59**	108.5	0.00	94.80	-	-	0.00	0.00	-	0.00
T26	15,257	15,258	**0.76**	108.5	0.00	94.67	-	-	0.00	0.00	-	0.00
T27	15,095	15,095	**0.88**	108.5	0.00	94.58	-	-	0.00	0.00	-	0.00
T28	15,026	15,027	**0.93**	108.5	0.00	94.54	-	-	0.00	0.00	-	0.00
T29	15,248	15,249	**0.76**	108.5	0.00	94.66	-	-	0.00	0.00	-	0.00
T30	14,938	14,938	**1.00**	108.5	0.00	94.49	-	-	0.00	0.00	-	0.00
T31	14,832	14,832	**1.08**	108.5	0.00	94.42	-	-	0.00	0.00	-	0.00
T32	14,332	14,332	**1.48**	108.5	0.00	94.13	-	-	0.00	0.00	-	0.00
T33	14,261	14,261	**1.54**	108.5	0.00	94.08	-	-	0.00	0.00	-	0.00
T34	15,835	15,836	**0.33**	108.5	0.00	94.99	-	-	0.00	0.00	-	0.00
T35	16,355	16,356	**-0.05**	108.5	0.00	95.27	-	-	0.00	0.00	-	0.00
T36	15,864	15,864	**0.31**	108.5	0.00	95.01	-	-	0.00	0.00	-	0.00
T37	15,486	15,486	**0.59**	108.5	0.00	94.80	-	-	0.00	0.00	-	0.00
T38	15,299	15,300	**0.73**	108.5	0.00	94.69	-	-	0.00	0.00	-	0.00
T39	16,962	16,962	**-0.47**	108.5	0.00	95.59	-	-	0.00	0.00	-	0.00
T40	16,685	16,685	**-0.28**	108.5	0.00	95.45	-	-	0.00	0.00	-	0.00
T41	17,298	17,298	**-0.70**	108.5	0.00	95.76	-	-	0.00	0.00	-	0.00
T42	16,221	16,221	**0.05**	108.5	0.00	95.20	-	-	0.00	0.00	-	0.00
T43	15,777	15,777	**0.37**	108.5	0.00	94.96	-	-	0.00	0.00	-	0.00
T44	16,401	16,401	**-0.08**	108.5	0.00	95.30	-	-	0.00	0.00	-	0.00
T45	16,624	16,625	**-0.24**	108.5	0.00	95.42	-	-	0.00	0.00	-	0.00
T46	15,448	15,449	**0.61**	108.5	0.00	94.78	-	-	0.00	0.00	-	0.00
T47	14,834	14,835	**1.08**	108.5	0.00	94.43	-	-	0.00	0.00	-	0.00
T48 Alt	16,173	16,173	**0.08**	108.5	0.00	95.18	-	-	0.00	0.00	-	0.00
T49 Alt	16,344	16,344	**-0.04**	108.5	0.00	95.27	-	-	0.00	0.00	-	0.00
T50 Alt	13,005	13,005	**2.60**	108.5	0.00	93.28	-	-	0.00	0.00	-	0.00
T51 Alt	12,703	12,704	**2.87**	108.5	0.00	93.08	-	-	0.00	0.00	-	0.00
T52 Alt	11,166	11,167	**4.36**	108.5	0.00	91.96	-	-	0.00	0.00	-	0.00
T53 Alt	10,527	10,527	**5.05**	108.5	0.00	91.45	-	-	0.00	0.00	-	0.00
T54 Alt	11,612	11,613	**3.91**	108.5	0.00	92.30	-	-	0.00	0.00	-	0.00
T55 Alt	11,631	11,631	**3.89**	108.5	0.00	92.31	-	-	0.00	0.00	-	0.00

To be continued on next page...

Project:
20131290 Rolette Power Development

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Warren Enyart and Merle Boucher
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DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T56 Alt	14,956	14,956	**0.99**	108.5	0.00	94.50	-	-	0.00	0.00	-	0.00
T57 Alt	10,867	10,868	**4.68**	108.5	0.00	91.72	-	-	0.00	0.00	-	0.00
T58 Alt	11,704	11,704	**3.82**	108.5	0.00	92.37	-	-	0.00	0.00	-	0.00
T59 Alt	11,984	11,985	**3.55**	108.5	0.00	92.57	-	-	0.00	0.00	-	0.00
Sum	20.52											

- Data undefined due to calculation with octave data

Noise sensitive area: H75 Noise sensitive point: User defined (76)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	6,412	6,413	**10.88**	108.5	0.00	87.14	-	-	0.00	0.00	-	0.00
T02	5,822	5,823	**12.03**	108.5	0.00	86.30	-	-	0.00	0.00	-	0.00
T03	5,309	5,310	**13.14**	108.5	0.00	85.50	-	-	0.00	0.00	-	0.00
T04	4,555	4,556	**14.99**	108.5	0.00	84.17	-	-	0.00	0.00	-	0.00
T05	4,523	4,524	**15.07**	108.5	0.00	84.11	-	-	0.00	0.00	-	0.00
T06	4,052	4,053	**16.40**	108.5	0.00	83.16	-	-	0.00	0.00	-	0.00
T07	3,239	3,240	**19.08**	108.5	0.00	81.21	-	-	0.00	0.00	-	0.00
T08	2,810	2,811	**20.75**	108.5	0.00	79.98	-	-	0.00	0.00	-	0.00
T09	2,179	2,181	**23.86**	108.5	0.00	77.77	-	-	0.00	0.00	-	0.00
T10	1,739	1,741	**26.62**	108.5	0.00	75.82	-	-	0.00	0.00	-	0.00
T11	5,317	5,317	**13.13**	108.5	0.00	85.51	-	-	0.00	0.00	-	0.00
T12	4,840	4,840	**14.26**	108.5	0.00	84.70	-	-	0.00	0.00	-	0.00
T13	4,219	4,220	**15.92**	108.5	0.00	83.51	-	-	0.00	0.00	-	0.00
T14	3,670	3,671	**17.59**	108.5	0.00	82.30	-	-	0.00	0.00	-	0.00
T15	5,029	5,030	**13.80**	108.5	0.00	85.03	-	-	0.00	0.00	-	0.00
T16	5,606	5,607	**12.49**	108.5	0.00	85.97	-	-	0.00	0.00	-	0.00
T17	5,013	5,014	**13.83**	108.5	0.00	85.00	-	-	0.00	0.00	-	0.00
T18	4,509	4,510	**15.11**	108.5	0.00	84.08	-	-	0.00	0.00	-	0.00
T19	3,750	3,751	**17.33**	108.5	0.00	82.48	-	-	0.00	0.00	-	0.00
T20	3,417	3,418	**18.44**	108.5	0.00	81.68	-	-	0.00	0.00	-	0.00
T21	2,833	2,834	**20.66**	108.5	0.00	80.05	-	-	0.00	0.00	-	0.00
T22	4,207	4,209	**15.95**	108.5	0.00	83.48	-	-	0.00	0.00	-	0.00
T23	3,744	3,745	**17.35**	108.5	0.00	82.47	-	-	0.00	0.00	-	0.00
T24	3,369	3,371	**18.61**	108.5	0.00	81.56	-	-	0.00	0.00	-	0.00
T25	5,998	5,999	**11.68**	108.5	0.00	86.56	-	-	0.00	0.00	-	0.00
T26	5,613	5,614	**12.47**	108.5	0.00	85.99	-	-	0.00	0.00	-	0.00
T27	5,305	5,306	**13.15**	108.5	0.00	85.50	-	-	0.00	0.00	-	0.00
T28	5,076	5,077	**13.68**	108.5	0.00	85.11	-	-	0.00	0.00	-	0.00
T29	5,012	5,013	**13.84**	108.5	0.00	85.00	-	-	0.00	0.00	-	0.00
T30	4,619	4,621	**14.82**	108.5	0.00	84.29	-	-	0.00	0.00	-	0.00
T31	4,425	4,426	**15.34**	108.5	0.00	83.92	-	-	0.00	0.00	-	0.00
T32	3,833	3,834	**17.07**	108.5	0.00	82.67	-	-	0.00	0.00	-	0.00
T33	3,762	3,763	**17.30**	108.5	0.00	82.51	-	-	0.00	0.00	-	0.00
T34	5,712	5,713	**12.26**	108.5	0.00	86.14	-	-	0.00	0.00	-	0.00
T35	6,104	6,104	**11.47**	108.5	0.00	86.71	-	-	0.00	0.00	-	0.00
T36	5,463	5,464	**12.80**	108.5	0.00	85.75	-	-	0.00	0.00	-	0.00
T37	5,011	5,012	**13.84**	108.5	0.00	85.00	-	-	0.00	0.00	-	0.00
T38	4,796	4,797	**14.37**	108.5	0.00	84.62	-	-	0.00	0.00	-	0.00
T39	6,620	6,620	**10.50**	108.5	0.00	87.42	-	-	0.00	0.00	-	0.00
T40	6,239	6,240	**11.21**	108.5	0.00	86.90	-	-	0.00	0.00	-	0.00
T41	6,820	6,820	**10.14**	108.5	0.00	87.68	-	-	0.00	0.00	-	0.00
T42	5,723	5,724	**12.24**	108.5	0.00	86.15	-	-	0.00	0.00	-	0.00
T43	5,277	5,277	**13.22**	108.5	0.00	85.45	-	-	0.00	0.00	-	0.00

To be continued on next page...

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
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DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T44	5,953	5,953	**11.77**	108.5	0.00	86.50	-	-	0.00	0.00	-	0.00
T45	6,225	6,226	**11.23**	108.5	0.00	86.88	-	-	0.00	0.00	-	0.00
T46	5,014	5,014	**13.83**	108.5	0.00	85.00	-	-	0.00	0.00	-	0.00
T47	4,521	4,522	**15.08**	108.5	0.00	84.11	-	-	0.00	0.00	-	0.00
T48 Alt	5,857	5,858	**11.96**	108.5	0.00	86.35	-	-	0.00	0.00	-	0.00
T49 Alt	6,110	6,111	**11.46**	108.5	0.00	86.72	-	-	0.00	0.00	-	0.00
T50 Alt	2,677	2,679	**21.31**	108.5	0.00	79.56	-	-	0.00	0.00	-	0.00
T51 Alt	2,582	2,584	**21.73**	108.5	0.00	79.25	-	-	0.00	0.00	-	0.00
T52 Alt	5,566	5,567	**12.57**	108.5	0.00	85.91	-	-	0.00	0.00	-	0.00
T53 Alt	6,116	6,116	**11.44**	108.5	0.00	86.73	-	-	0.00	0.00	-	0.00
T54 Alt	5,242	5,243	**13.30**	108.5	0.00	85.39	-	-	0.00	0.00	-	0.00
T55 Alt	3,988	3,988	**16.60**	108.5	0.00	83.02	-	-	0.00	0.00	-	0.00
T56 Alt	4,479	4,479	**15.19**	108.5	0.00	84.02	-	-	0.00	0.00	-	0.00
T57 Alt	2,842	2,843	**20.62**	108.5	0.00	80.07	-	-	0.00	0.00	-	0.00
T58 Alt	1,556	1,558	**27.96**	108.5	0.00	74.85	-	-	0.00	0.00	-	0.00
T59 Alt	1,641	1,643	**27.32**	108.5	0.00	75.31	-	-	0.00	0.00	-	0.00
Sum	35.98											

- Data undefined due to calculation with octave data

Noise sensitive area: H76 Noise sensitive point: User defined (77)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	3,872	3,873	**16.95**	108.5	0.00	82.76	-	-	0.00	0.00	-	0.00
T02	3,790	3,791	**17.20**	108.5	0.00	82.58	-	-	0.00	0.00	-	0.00
T03	3,587	3,589	**17.86**	108.5	0.00	82.10	-	-	0.00	0.00	-	0.00
T04	3,362	3,363	**18.64**	108.5	0.00	81.53	-	-	0.00	0.00	-	0.00
T05	4,495	4,495	**15.15**	108.5	0.00	84.06	-	-	0.00	0.00	-	0.00
T06	4,554	4,555	**14.99**	108.5	0.00	84.17	-	-	0.00	0.00	-	0.00
T07	4,515	4,516	**15.10**	108.5	0.00	84.09	-	-	0.00	0.00	-	0.00
T08	3,455	3,456	**18.31**	108.5	0.00	81.77	-	-	0.00	0.00	-	0.00
T09	4,094	4,095	**16.28**	108.5	0.00	83.25	-	-	0.00	0.00	-	0.00
T10	4,165	4,166	**16.07**	108.5	0.00	83.39	-	-	0.00	0.00	-	0.00
T11	6,298	6,298	**11.09**	108.5	0.00	86.98	-	-	0.00	0.00	-	0.00
T12	6,000	6,001	**11.67**	108.5	0.00	86.56	-	-	0.00	0.00	-	0.00
T13	6,284	6,284	**11.12**	108.5	0.00	86.97	-	-	0.00	0.00	-	0.00
T14	5,920	5,920	**11.83**	108.5	0.00	86.45	-	-	0.00	0.00	-	0.00
T15	7,252	7,253	**9.41**	108.5	0.00	88.21	-	-	0.00	0.00	-	0.00
T16	8,270	8,270	**7.87**	108.5	0.00	89.35	-	-	0.00	0.00	-	0.00
T17	7,874	7,874	**8.44**	108.5	0.00	88.92	-	-	0.00	0.00	-	0.00
T18	7,590	7,591	**8.88**	108.5	0.00	88.61	-	-	0.00	0.00	-	0.00
T19	6,937	6,937	**9.94**	108.5	0.00	87.82	-	-	0.00	0.00	-	0.00
T20	7,000	7,001	**9.83**	108.5	0.00	87.90	-	-	0.00	0.00	-	0.00
T21	6,553	6,554	**10.62**	108.5	0.00	87.33	-	-	0.00	0.00	-	0.00
T22	7,932	7,933	**8.36**	108.5	0.00	88.99	-	-	0.00	0.00	-	0.00
T23	7,699	7,700	**8.71**	108.5	0.00	88.73	-	-	0.00	0.00	-	0.00
T24	7,528	7,529	**8.97**	108.5	0.00	88.53	-	-	0.00	0.00	-	0.00
T25	9,168	9,169	**6.66**	108.5	0.00	90.25	-	-	0.00	0.00	-	0.00
T26	8,960	8,960	**6.93**	108.5	0.00	90.05	-	-	0.00	0.00	-	0.00
T27	8,817	8,818	**7.11**	108.5	0.00	89.91	-	-	0.00	0.00	-	0.00
T28	8,779	8,780	**7.16**	108.5	0.00	89.87	-	-	0.00	0.00	-	0.00
T29	9,085	9,086	**6.76**	108.5	0.00	90.17	-	-	0.00	0.00	-	0.00
T30	8,824	8,825	**7.10**	108.5	0.00	89.91	-	-	0.00	0.00	-	0.00
T31	8,784	8,785	**7.16**	108.5	0.00	89.87	-	-	0.00	0.00	-	0.00

To be continued on next page...

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
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DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T32	8,448	8,449	**7.61**	108.5	0.00	89.54	-	-	0.00	0.00	-	0.00
T33	8,479	8,480	**7.57**	108.5	0.00	89.57	-	-	0.00	0.00	-	0.00
T34	9,618	9,619	**6.10**	108.5	0.00	90.66	-	-	0.00	0.00	-	0.00
T35	10,177	10,177	**5.44**	108.5	0.00	91.15	-	-	0.00	0.00	-	0.00
T36	9,788	9,788	**5.89**	108.5	0.00	90.81	-	-	0.00	0.00	-	0.00
T37	9,507	9,508	**6.23**	108.5	0.00	90.56	-	-	0.00	0.00	-	0.00
T38	9,420	9,420	**6.34**	108.5	0.00	90.48	-	-	0.00	0.00	-	0.00
T39	10,821	10,822	**4.73**	108.5	0.00	91.69	-	-	0.00	0.00	-	0.00
T40	10,639	10,639	**4.93**	108.5	0.00	91.54	-	-	0.00	0.00	-	0.00
T41	11,295	11,295	**4.23**	108.5	0.00	92.06	-	-	0.00	0.00	-	0.00
T42	10,290	10,291	**5.31**	108.5	0.00	91.25	-	-	0.00	0.00	-	0.00
T43	9,961	9,961	**5.69**	108.5	0.00	90.97	-	-	0.00	0.00	-	0.00
T44	10,722	10,722	**4.84**	108.5	0.00	91.61	-	-	0.00	0.00	-	0.00
T45	11,025	11,025	**4.51**	108.5	0.00	91.85	-	-	0.00	0.00	-	0.00
T46	9,803	9,804	**5.88**	108.5	0.00	90.83	-	-	0.00	0.00	-	0.00
T47	9,354	9,354	**6.42**	108.5	0.00	90.42	-	-	0.00	0.00	-	0.00
T48 Alt	10,685	10,685	**4.88**	108.5	0.00	91.58	-	-	0.00	0.00	-	0.00
T49 Alt	10,945	10,945	**4.60**	108.5	0.00	91.78	-	-	0.00	0.00	-	0.00
T50 Alt	6,967	6,968	**9.89**	108.5	0.00	87.86	-	-	0.00	0.00	-	0.00
T51 Alt	6,587	6,587	**10.56**	108.5	0.00	87.37	-	-	0.00	0.00	-	0.00
T52 Alt	5,180	5,181	**13.44**	108.5	0.00	85.29	-	-	0.00	0.00	-	0.00
T53 Alt	4,831	4,832	**14.28**	108.5	0.00	84.68	-	-	0.00	0.00	-	0.00
T54 Alt	5,490	5,491	**12.74**	108.5	0.00	85.79	-	-	0.00	0.00	-	0.00
T55 Alt	5,330	5,330	**13.10**	108.5	0.00	85.53	-	-	0.00	0.00	-	0.00
T56 Alt	9,233	9,233	**6.57**	108.5	0.00	90.31	-	-	0.00	0.00	-	0.00
T57 Alt	4,558	4,558	**14.98**	108.5	0.00	84.18	-	-	0.00	0.00	-	0.00
T58 Alt	5,676	5,676	**12.34**	108.5	0.00	86.08	-	-	0.00	0.00	-	0.00
T59 Alt	6,022	6,022	**11.63**	108.5	0.00	86.60	-	-	0.00	0.00	-	0.00
Sum	29.55											

- Data undefined due to calculation with octave data

Noise sensitive area: H77 Noise sensitive point: User defined (78)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	10,661	10,661	**4.90**	108.5	0.00	91.56	-	-	0.00	0.00	-	0.00
T02	10,181	10,182	**5.44**	108.5	0.00	91.16	-	-	0.00	0.00	-	0.00
T03	9,704	9,704	**5.99**	108.5	0.00	90.74	-	-	0.00	0.00	-	0.00
T04	8,994	8,994	**6.88**	108.5	0.00	90.08	-	-	0.00	0.00	-	0.00
T05	9,216	9,216	**6.60**	108.5	0.00	90.29	-	-	0.00	0.00	-	0.00
T06	8,782	8,783	**7.16**	108.5	0.00	89.87	-	-	0.00	0.00	-	0.00
T07	7,996	7,997	**8.26**	108.5	0.00	89.06	-	-	0.00	0.00	-	0.00
T08	7,375	7,375	**9.22**	108.5	0.00	88.36	-	-	0.00	0.00	-	0.00
T09	6,902	6,902	**10.00**	108.5	0.00	87.78	-	-	0.00	0.00	-	0.00
T10	6,470	6,471	**10.77**	108.5	0.00	87.22	-	-	0.00	0.00	-	0.00
T11	10,088	10,089	**5.54**	108.5	0.00	91.08	-	-	0.00	0.00	-	0.00
T12	9,611	9,612	**6.11**	108.5	0.00	90.66	-	-	0.00	0.00	-	0.00
T13	8,921	8,921	**6.98**	108.5	0.00	90.01	-	-	0.00	0.00	-	0.00
T14	8,383	8,383	**7.71**	108.5	0.00	89.47	-	-	0.00	0.00	-	0.00
T15	9,629	9,629	**6.08**	108.5	0.00	90.67	-	-	0.00	0.00	-	0.00
T16	9,991	9,991	**5.66**	108.5	0.00	90.99	-	-	0.00	0.00	-	0.00
T17	9,378	9,378	**6.39**	108.5	0.00	90.44	-	-	0.00	0.00	-	0.00
T18	8,837	8,837	**7.09**	108.5	0.00	89.93	-	-	0.00	0.00	-	0.00
T19	8,153	8,153	**8.03**	108.5	0.00	89.23	-	-	0.00	0.00	-	0.00

To be continued on next page...

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Calculated:
2/16/2015 4:05 PM/2.9.285

DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T20	7,661	7,662	**8.77**	108.5	0.00	88.69	-	-	0.00	0.00	-	0.00
T21	7,135	7,136	**9.61**	108.5	0.00	88.07	-	-	0.00	0.00	-	0.00
T22	8,157	8,158	**8.03**	108.5	0.00	89.23	-	-	0.00	0.00	-	0.00
T23	7,593	7,594	**8.87**	108.5	0.00	88.61	-	-	0.00	0.00	-	0.00
T24	7,106	7,107	**9.66**	108.5	0.00	88.03	-	-	0.00	0.00	-	0.00
T25	10,055	10,055	**5.58**	108.5	0.00	91.05	-	-	0.00	0.00	-	0.00
T26	9,601	9,601	**6.12**	108.5	0.00	90.65	-	-	0.00	0.00	-	0.00
T27	9,215	9,216	**6.60**	108.5	0.00	90.29	-	-	0.00	0.00	-	0.00
T28	8,860	8,861	**7.06**	108.5	0.00	89.95	-	-	0.00	0.00	-	0.00
T29	8,399	8,400	**7.68**	108.5	0.00	89.49	-	-	0.00	0.00	-	0.00
T30	7,920	7,920	**8.37**	108.5	0.00	88.97	-	-	0.00	0.00	-	0.00
T31	7,527	7,528	**8.97**	108.5	0.00	88.53	-	-	0.00	0.00	-	0.00
T32	6,568	6,568	**10.59**	108.5	0.00	87.35	-	-	0.00	0.00	-	0.00
T33	6,178	6,179	**11.32**	108.5	0.00	86.82	-	-	0.00	0.00	-	0.00
T34	9,160	9,160	**6.67**	108.5	0.00	90.24	-	-	0.00	0.00	-	0.00
T35	9,260	9,261	**6.54**	108.5	0.00	90.33	-	-	0.00	0.00	-	0.00
T36	8,351	8,351	**7.75**	108.5	0.00	89.44	-	-	0.00	0.00	-	0.00
T37	7,660	7,660	**8.77**	108.5	0.00	88.68	-	-	0.00	0.00	-	0.00
T38	7,162	7,162	**9.56**	108.5	0.00	88.10	-	-	0.00	0.00	-	0.00
T39	9,481	9,481	**6.27**	108.5	0.00	90.54	-	-	0.00	0.00	-	0.00
T40	8,802	8,802	**7.13**	108.5	0.00	89.89	-	-	0.00	0.00	-	0.00
T41	9,090	9,090	**6.76**	108.5	0.00	90.17	-	-	0.00	0.00	-	0.00
T42	7,993	7,993	**8.27**	108.5	0.00	89.05	-	-	0.00	0.00	-	0.00
T43	7,280	7,280	**9.37**	108.5	0.00	88.24	-	-	0.00	0.00	-	0.00
T44	7,336	7,337	**9.28**	108.5	0.00	88.31	-	-	0.00	0.00	-	0.00
T45	7,306	7,306	**9.33**	108.5	0.00	88.27	-	-	0.00	0.00	-	0.00
T46	6,540	6,540	**10.64**	108.5	0.00	87.31	-	-	0.00	0.00	-	0.00
T47	5,690	5,691	**12.31**	108.5	0.00	86.10	-	-	0.00	0.00	-	0.00
T48 Alt	6,688	6,688	**10.38**	108.5	0.00	87.51	-	-	0.00	0.00	-	0.00
T49 Alt	6,628	6,629	**10.48**	108.5	0.00	87.43	-	-	0.00	0.00	-	0.00
T50 Alt	6,503	6,503	**10.71**	108.5	0.00	87.26	-	-	0.00	0.00	-	0.00
T51 Alt	6,747	6,747	**10.27**	108.5	0.00	87.58	-	-	0.00	0.00	-	0.00
T52 Alt	10,272	10,272	**5.33**	108.5	0.00	91.23	-	-	0.00	0.00	-	0.00
T53 Alt	10,695	10,695	**4.87**	108.5	0.00	91.58	-	-	0.00	0.00	-	0.00
T54 Alt	10,001	10,002	**5.64**	108.5	0.00	91.00	-	-	0.00	0.00	-	0.00
T55 Alt	8,765	8,765	**7.18**	108.5	0.00	89.85	-	-	0.00	0.00	-	0.00
T56 Alt	6,427	6,427	**10.85**	108.5	0.00	87.16	-	-	0.00	0.00	-	0.00
T57 Alt	7,610	7,610	**8.84**	108.5	0.00	88.63	-	-	0.00	0.00	-	0.00
T58 Alt	6,018	6,018	**11.64**	108.5	0.00	86.59	-	-	0.00	0.00	-	0.00
T59 Alt	5,833	5,833	**12.01**	108.5	0.00	86.32	-	-	0.00	0.00	-	0.00

Sum 26.28

- Data undefined due to calculation with octave data

Noise sensitive area: H78 Noise sensitive point: User defined (79)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	10,436	10,436	**5.15**	108.5	0.00	91.37	-	-	0.00	0.00	-	0.00
T02	9,774	9,774	**5.91**	108.5	0.00	90.80	-	-	0.00	0.00	-	0.00
T03	9,263	9,263	**6.54**	108.5	0.00	90.34	-	-	0.00	0.00	-	0.00
T04	8,527	8,527	**7.51**	108.5	0.00	89.62	-	-	0.00	0.00	-	0.00
T05	8,016	8,016	**8.23**	108.5	0.00	89.08	-	-	0.00	0.00	-	0.00
T06	7,473	7,474	**9.06**	108.5	0.00	88.47	-	-	0.00	0.00	-	0.00
T07	6,669	6,669	**10.41**	108.5	0.00	87.48	-	-	0.00	0.00	-	0.00

To be continued on next page...

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

Description:
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DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T08	6,846	6,846	**10.10**	108.5	0.00	87.71	-	-	0.00	0.00	-	0.00
T09	6,022	6,022	**11.63**	108.5	0.00	86.60	-	-	0.00	0.00	-	0.00
T10	5,677	5,678	**12.34**	108.5	0.00	86.08	-	-	0.00	0.00	-	0.00
T11	7,866	7,867	**8.45**	108.5	0.00	88.92	-	-	0.00	0.00	-	0.00
T12	7,465	7,465	**9.07**	108.5	0.00	88.46	-	-	0.00	0.00	-	0.00
T13	6,437	6,437	**10.83**	108.5	0.00	87.17	-	-	0.00	0.00	-	0.00
T14	6,079	6,080	**11.52**	108.5	0.00	86.68	-	-	0.00	0.00	-	0.00
T15	6,640	6,640	**10.46**	108.5	0.00	87.44	-	-	0.00	0.00	-	0.00
T16	6,440	6,440	**10.83**	108.5	0.00	87.18	-	-	0.00	0.00	-	0.00
T17	5,913	5,914	**11.85**	108.5	0.00	86.44	-	-	0.00	0.00	-	0.00
T18	5,435	5,436	**12.86**	108.5	0.00	85.71	-	-	0.00	0.00	-	0.00
T19	5,094	5,094	**13.64**	108.5	0.00	85.14	-	-	0.00	0.00	-	0.00
T20	4,507	4,507	**15.12**	108.5	0.00	84.08	-	-	0.00	0.00	-	0.00
T21	4,317	4,318	**15.64**	108.5	0.00	83.71	-	-	0.00	0.00	-	0.00
T22	4,384	4,386	**15.45**	108.5	0.00	83.84	-	-	0.00	0.00	-	0.00
T23	3,903	3,905	**16.85**	108.5	0.00	82.83	-	-	0.00	0.00	-	0.00
T24	3,506	3,508	**18.14**	108.5	0.00	81.90	-	-	0.00	0.00	-	0.00
T25	5,975	5,976	**11.72**	108.5	0.00	86.53	-	-	0.00	0.00	-	0.00
T26	5,511	5,512	**12.69**	108.5	0.00	85.83	-	-	0.00	0.00	-	0.00
T27	5,106	5,107	**13.61**	108.5	0.00	85.16	-	-	0.00	0.00	-	0.00
T28	4,682	4,683	**14.66**	108.5	0.00	84.41	-	-	0.00	0.00	-	0.00
T29	3,916	3,917	**16.81**	108.5	0.00	82.86	-	-	0.00	0.00	-	0.00
T30	3,488	3,490	**18.20**	108.5	0.00	81.86	-	-	0.00	0.00	-	0.00
T31	3,037	3,039	**19.84**	108.5	0.00	80.65	-	-	0.00	0.00	-	0.00
T32	2,175	2,177	**23.88**	108.5	0.00	77.76	-	-	0.00	0.00	-	0.00
T33	1,731	1,732	**26.69**	108.5	0.00	75.77	-	-	0.00	0.00	-	0.00
T34	4,571	4,572	**14.95**	108.5	0.00	84.20	-	-	0.00	0.00	-	0.00
T35	4,418	4,418	**15.36**	108.5	0.00	83.91	-	-	0.00	0.00	-	0.00
T36	3,464	3,465	**18.28**	108.5	0.00	81.79	-	-	0.00	0.00	-	0.00
T37	2,751	2,753	**21.00**	108.5	0.00	79.80	-	-	0.00	0.00	-	0.00
T38	2,187	2,188	**23.81**	108.5	0.00	77.80	-	-	0.00	0.00	-	0.00
T39	4,427	4,427	**15.34**	108.5	0.00	83.92	-	-	0.00	0.00	-	0.00
T40	3,666	3,667	**17.61**	108.5	0.00	82.29	-	-	0.00	0.00	-	0.00
T41	3,832	3,833	**17.07**	108.5	0.00	82.67	-	-	0.00	0.00	-	0.00
T42	2,813	2,814	**20.74**	108.5	0.00	79.99	-	-	0.00	0.00	-	0.00
T43	2,078	2,079	**24.45**	108.5	0.00	77.36	-	-	0.00	0.00	-	0.00
T44	2,032	2,034	**24.73**	108.5	0.00	77.16	-	-	0.00	0.00	-	0.00
T45	2,069	2,071	**24.50**	108.5	0.00	77.32	-	-	0.00	0.00	-	0.00
T46	1,264	1,267	**30.40**	108.5	0.00	73.05	-	-	0.00	0.00	-	0.00
T47	437	445	**41.91**	108.5	0.00	63.96	-	-	0.00	0.00	-	0.00
T48 Alt	1,518	1,520	**28.26**	108.5	0.00	74.64	-	-	0.00	0.00	-	0.00
T49 Alt	1,663	1,665	**27.17**	108.5	0.00	75.43	-	-	0.00	0.00	-	0.00
T50 Alt	3,392	3,393	**18.53**	108.5	0.00	81.61	-	-	0.00	0.00	-	0.00
T51 Alt	3,930	3,931	**16.77**	108.5	0.00	82.89	-	-	0.00	0.00	-	0.00
T52 Alt	8,879	8,879	**7.03**	108.5	0.00	89.97	-	-	0.00	0.00	-	0.00
T53 Alt	9,717	9,717	**5.98**	108.5	0.00	90.75	-	-	0.00	0.00	-	0.00
T54 Alt	8,308	8,308	**7.81**	108.5	0.00	89.39	-	-	0.00	0.00	-	0.00
T55 Alt	6,919	6,919	**9.97**	108.5	0.00	87.80	-	-	0.00	0.00	-	0.00
T56 Alt	1,405	1,407	**29.17**	108.5	0.00	73.96	-	-	0.00	0.00	-	0.00
T57 Alt	6,270	6,271	**11.15**	108.5	0.00	86.95	-	-	0.00	0.00	-	0.00
T58 Alt	4,155	4,155	**16.10**	108.5	0.00	83.37	-	-	0.00	0.00	-	0.00
T59 Alt	3,737	3,738	**17.38**	108.5	0.00	82.45	-	-	0.00	0.00	-	0.00

Sum 43.41

- Data undefined due to calculation with octave data

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
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Description:
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DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

Noise sensitive area: H79 Noise sensitive point: User defined (80)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	11,374	11,374	**4.15**	108.5	0.00	92.12	-	-	0.00	0.00	-	0.00
T02	10,706	10,707	**4.85**	108.5	0.00	91.59	-	-	0.00	0.00	-	0.00
T03	10,198	10,198	**5.42**	108.5	0.00	91.17	-	-	0.00	0.00	-	0.00
T04	9,469	9,469	**6.28**	108.5	0.00	90.53	-	-	0.00	0.00	-	0.00
T05	8,910	8,910	**6.99**	108.5	0.00	90.00	-	-	0.00	0.00	-	0.00
T06	8,368	8,368	**7.73**	108.5	0.00	89.45	-	-	0.00	0.00	-	0.00
T07	7,579	7,579	**8.89**	108.5	0.00	88.59	-	-	0.00	0.00	-	0.00
T08	7,807	7,807	**8.54**	108.5	0.00	88.85	-	-	0.00	0.00	-	0.00
T09	6,978	6,979	**9.87**	108.5	0.00	87.88	-	-	0.00	0.00	-	0.00
T10	6,645	6,645	**10.45**	108.5	0.00	87.45	-	-	0.00	0.00	-	0.00
T11	8,645	8,646	**7.34**	108.5	0.00	89.74	-	-	0.00	0.00	-	0.00
T12	8,264	8,265	**7.87**	108.5	0.00	89.34	-	-	0.00	0.00	-	0.00
T13	7,217	7,218	**9.47**	108.5	0.00	88.17	-	-	0.00	0.00	-	0.00
T14	6,899	6,899	**10.01**	108.5	0.00	87.78	-	-	0.00	0.00	-	0.00
T15	7,326	7,326	**9.29**	108.5	0.00	88.30	-	-	0.00	0.00	-	0.00
T16	7,007	7,008	**9.82**	108.5	0.00	87.91	-	-	0.00	0.00	-	0.00
T17	6,524	6,524	**10.67**	108.5	0.00	87.29	-	-	0.00	0.00	-	0.00
T18	6,083	6,084	**11.51**	108.5	0.00	86.68	-	-	0.00	0.00	-	0.00
T19	5,831	5,832	**12.01**	108.5	0.00	86.32	-	-	0.00	0.00	-	0.00
T20	5,258	5,259	**13.26**	108.5	0.00	85.42	-	-	0.00	0.00	-	0.00
T21	5,141	5,141	**13.53**	108.5	0.00	85.22	-	-	0.00	0.00	-	0.00
T22	4,998	5,000	**13.87**	108.5	0.00	84.98	-	-	0.00	0.00	-	0.00
T23	4,576	4,577	**14.93**	108.5	0.00	84.21	-	-	0.00	0.00	-	0.00
T24	4,235	4,237	**15.87**	108.5	0.00	83.54	-	-	0.00	0.00	-	0.00
T25	6,407	6,408	**10.89**	108.5	0.00	87.13	-	-	0.00	0.00	-	0.00
T26	5,961	5,962	**11.75**	108.5	0.00	86.51	-	-	0.00	0.00	-	0.00
T27	5,570	5,571	**12.56**	108.5	0.00	85.92	-	-	0.00	0.00	-	0.00
T28	5,146	5,147	**13.52**	108.5	0.00	85.23	-	-	0.00	0.00	-	0.00
T29	4,311	4,313	**15.65**	108.5	0.00	83.70	-	-	0.00	0.00	-	0.00
T30	3,944	3,946	**16.72**	108.5	0.00	82.92	-	-	0.00	0.00	-	0.00
T31	3,516	3,517	**18.10**	108.5	0.00	81.92	-	-	0.00	0.00	-	0.00
T32	2,822	2,823	**20.70**	108.5	0.00	80.02	-	-	0.00	0.00	-	0.00
T33	2,442	2,444	**22.43**	108.5	0.00	78.76	-	-	0.00	0.00	-	0.00
T34	4,869	4,870	**14.19**	108.5	0.00	84.75	-	-	0.00	0.00	-	0.00
T35	4,582	4,583	**14.92**	108.5	0.00	84.22	-	-	0.00	0.00	-	0.00
T36	3,670	3,671	**17.59**	108.5	0.00	82.30	-	-	0.00	0.00	-	0.00
T37	3,019	3,020	**19.91**	108.5	0.00	80.60	-	-	0.00	0.00	-	0.00
T38	2,485	2,487	**22.20**	108.5	0.00	78.91	-	-	0.00	0.00	-	0.00
T39	4,432	4,433	**15.32**	108.5	0.00	83.93	-	-	0.00	0.00	-	0.00
T40	3,635	3,636	**17.71**	108.5	0.00	82.21	-	-	0.00	0.00	-	0.00
T41	3,613	3,614	**17.78**	108.5	0.00	82.16	-	-	0.00	0.00	-	0.00
T42	2,799	2,801	**20.79**	108.5	0.00	79.95	-	-	0.00	0.00	-	0.00
T43	2,130	2,132	**24.14**	108.5	0.00	77.58	-	-	0.00	0.00	-	0.00
T44	1,622	1,624	**27.46**	108.5	0.00	75.21	-	-	0.00	0.00	-	0.00
T45	1,444	1,446	**28.85**	108.5	0.00	74.20	-	-	0.00	0.00	-	0.00
T46	1,351	1,354	**29.62**	108.5	0.00	73.63	-	-	0.00	0.00	-	0.00
T47	1,074	1,078	**32.26**	108.5	0.00	71.65	-	-	0.00	0.00	-	0.00
T48 Alt	811	815	**35.40**	108.5	0.00	69.23	-	-	0.00	0.00	-	0.00
T49 Alt	744	748	**36.34**	108.5	0.00	68.48	-	-	0.00	0.00	-	0.00
T50 Alt	4,232	4,232	**15.88**	108.5	0.00	83.53	-	-	0.00	0.00	-	0.00
T51 Alt	4,778	4,778	**14.41**	108.5	0.00	84.59	-	-	0.00	0.00	-	0.00
T52 Alt	9,739	9,740	**5.95**	108.5	0.00	90.77	-	-	0.00	0.00	-	0.00
T53 Alt	10,605	10,606	**4.96**	108.5	0.00	91.51	-	-	0.00	0.00	-	0.00
T54 Alt	9,146	9,146	**6.69**	108.5	0.00	90.22	-	-	0.00	0.00	-	0.00
T55 Alt	7,771	7,771	**8.60**	108.5	0.00	88.81	-	-	0.00	0.00	-	0.00

To be continued on next page...

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
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DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T56 Alt	1,846	1,848	**25.90**	108.5	0.00	76.33	-	-	0.00	0.00	-	0.00
T57 Alt	7,189	7,189	**9.52**	108.5	0.00	88.13	-	-	0.00	0.00	-	0.00
T58 Alt	5,099	5,099	**13.63**	108.5	0.00	85.15	-	-	0.00	0.00	-	0.00
T59 Alt	4,681	4,681	**14.66**	108.5	0.00	84.41	-	-	0.00	0.00	-	0.00
Sum	41.44											

- Data undefined due to calculation with octave data

Noise sensitive area: H80 Noise sensitive point: User defined (81)

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T01	5,073	5,074	**13.69**	108.5	0.00	85.11	-	-	0.00	0.00	-	0.00
T02	4,425	4,426	**15.34**	108.5	0.00	83.92	-	-	0.00	0.00	-	0.00
T03	4,082	4,083	**16.31**	108.5	0.00	83.22	-	-	0.00	0.00	-	0.00
T04	3,702	3,703	**17.49**	108.5	0.00	82.37	-	-	0.00	0.00	-	0.00
T05	2,512	2,513	**22.07**	108.5	0.00	79.01	-	-	0.00	0.00	-	0.00
T06	2,221	2,223	**23.62**	108.5	0.00	77.94	-	-	0.00	0.00	-	0.00
T07	2,249	2,251	**23.46**	108.5	0.00	78.05	-	-	0.00	0.00	-	0.00
T08	3,375	3,376	**18.59**	108.5	0.00	81.57	-	-	0.00	0.00	-	0.00
T09	3,129	3,131	**19.49**	108.5	0.00	80.91	-	-	0.00	0.00	-	0.00
T10	3,416	3,417	**18.45**	108.5	0.00	81.67	-	-	0.00	0.00	-	0.00
T11	1,174	1,178	**31.24**	108.5	0.00	72.42	-	-	0.00	0.00	-	0.00
T12	989	992	**33.20**	108.5	0.00	70.93	-	-	0.00	0.00	-	0.00
T13	571	577	**39.17**	108.5	0.00	66.22	-	-	0.00	0.00	-	0.00
T14	1,120	1,123	**31.78**	108.5	0.00	72.01	-	-	0.00	0.00	-	0.00
T15	583	589	**38.93**	108.5	0.00	66.41	-	-	0.00	0.00	-	0.00
T16	1,664	1,667	**27.15**	108.5	0.00	75.44	-	-	0.00	0.00	-	0.00
T17	1,526	1,529	**28.19**	108.5	0.00	74.69	-	-	0.00	0.00	-	0.00
T18	1,649	1,651	**27.26**	108.5	0.00	75.36	-	-	0.00	0.00	-	0.00
T19	1,722	1,725	**26.74**	108.5	0.00	75.73	-	-	0.00	0.00	-	0.00
T20	2,306	2,308	**23.15**	108.5	0.00	78.26	-	-	0.00	0.00	-	0.00
T21	2,581	2,583	**21.73**	108.5	0.00	79.24	-	-	0.00	0.00	-	0.00
T22	2,689	2,691	**21.26**	108.5	0.00	79.60	-	-	0.00	0.00	-	0.00
T23	2,996	2,998	**20.00**	108.5	0.00	80.54	-	-	0.00	0.00	-	0.00
T24	3,319	3,321	**18.79**	108.5	0.00	81.43	-	-	0.00	0.00	-	0.00
T25	2,761	2,764	**20.95**	108.5	0.00	79.83	-	-	0.00	0.00	-	0.00
T26	2,762	2,765	**20.95**	108.5	0.00	79.83	-	-	0.00	0.00	-	0.00
T27	2,850	2,852	**20.58**	108.5	0.00	80.10	-	-	0.00	0.00	-	0.00
T28	3,080	3,082	**19.67**	108.5	0.00	80.78	-	-	0.00	0.00	-	0.00
T29	3,848	3,850	**17.02**	108.5	0.00	82.71	-	-	0.00	0.00	-	0.00
T30	3,938	3,940	**16.74**	108.5	0.00	82.91	-	-	0.00	0.00	-	0.00
T31	4,240	4,241	**15.85**	108.5	0.00	83.55	-	-	0.00	0.00	-	0.00
T32	4,732	4,733	**14.53**	108.5	0.00	84.50	-	-	0.00	0.00	-	0.00
T33	5,118	5,119	**13.58**	108.5	0.00	85.18	-	-	0.00	0.00	-	0.00
T34	3,937	3,938	**16.75**	108.5	0.00	82.91	-	-	0.00	0.00	-	0.00
T35	4,609	4,610	**14.85**	108.5	0.00	84.27	-	-	0.00	0.00	-	0.00
T36	4,791	4,792	**14.38**	108.5	0.00	84.61	-	-	0.00	0.00	-	0.00
T37	5,005	5,006	**13.85**	108.5	0.00	84.99	-	-	0.00	0.00	-	0.00
T38	5,324	5,325	**13.11**	108.5	0.00	85.53	-	-	0.00	0.00	-	0.00
T39	5,329	5,330	**13.10**	108.5	0.00	85.53	-	-	0.00	0.00	-	0.00
T40	5,579	5,579	**12.55**	108.5	0.00	85.93	-	-	0.00	0.00	-	0.00
T41	6,273	6,273	**11.14**	108.5	0.00	86.95	-	-	0.00	0.00	-	0.00
T42	5,747	5,748	**12.19**	108.5	0.00	86.19	-	-	0.00	0.00	-	0.00
T43	5,907	5,907	**11.86**	108.5	0.00	86.43	-	-	0.00	0.00	-	0.00

To be continued on next page...

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DECIBEL - Detailed results

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

...continued from previous page

WTG No.	Distance [m]	Sound distance [m]	95% rated power Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
T44	6,877	6,877	**10.05**	108.5	0.00	87.75	-	-	0.00	0.00	-	0.00
T45	7,324	7,324	**9.30**	108.5	0.00	88.30	-	-	0.00	0.00	-	0.00
T46	6,338	6,339	**11.02**	108.5	0.00	87.04	-	-	0.00	0.00	-	0.00
T47	6,523	6,523	**10.67**	108.5	0.00	87.29	-	-	0.00	0.00	-	0.00
T48 Alt	7,378	7,378	**9.21**	108.5	0.00	88.36	-	-	0.00	0.00	-	0.00
T49 Alt	7,793	7,794	**8.56**	108.5	0.00	88.83	-	-	0.00	0.00	-	0.00
T50 Alt	3,485	3,486	**18.21**	108.5	0.00	81.85	-	-	0.00	0.00	-	0.00
T51 Alt	3,007	3,009	**19.96**	108.5	0.00	80.57	-	-	0.00	0.00	-	0.00
T52 Alt	2,716	2,717	**21.15**	108.5	0.00	79.68	-	-	0.00	0.00	-	0.00
T53 Alt	3,742	3,743	**17.36**	108.5	0.00	82.46	-	-	0.00	0.00	-	0.00
T54 Alt	2,012	2,014	**24.84**	108.5	0.00	77.08	-	-	0.00	0.00	-	0.00
T55 Alt	1,381	1,383	**29.37**	108.5	0.00	73.82	-	-	0.00	0.00	-	0.00
T56 Alt	5,738	5,738	**12.21**	108.5	0.00	86.18	-	-	0.00	0.00	-	0.00
T57 Alt	2,375	2,377	**22.78**	108.5	0.00	78.52	-	-	0.00	0.00	-	0.00
T58 Alt	3,469	3,470	**18.27**	108.5	0.00	81.81	-	-	0.00	0.00	-	0.00
T59 Alt	3,719	3,720	**17.43**	108.5	0.00	82.41	-	-	0.00	0.00	-	0.00

Sum 44.42

- Data undefined due to calculation with octave data

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DECIBEL - Assumptions for noise calculation

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

Noise calculation model:
ISO 9613-2 General
Wind speed:
95% rated power
Ground attenuation:
General, Ground factor: 0.7
Meteorological coefficient, C0:
0.0 dB
Type of demand in calculation:
1: WTG noise is compared to demand (DK, DE, SE, NL etc.)
Noise values in calculation:
All noise values are mean values (Lwa) (Normal)
Pure tones:
Pure and Impulse tone penalty are added to WTG source noise
Height above ground level, when no value in NSA object:
1.5 m Don't allow override of model height with height from NSA object
Deviation from "official" noise demands. Negative is more restrictive, positive is less restrictive.:
0.0 dB(A)
Octave data required
Air absorption

63 [db/km]	125 [db/km]	250 [db/km]	500 [db/km]	1,000 [db/km]	2,000 [db/km]	4,000 [db/km]	8,000 [db/km]
0.1	0.4	1.0	1.9	3.7	9.7	32.8	117.0

WTG: VESTAS V117-3.3 GridStreame 3300 117.0 !O!
Noise: Revised Sound

Source	Source/Date	Creator	Edited
Manufacturer	1/3/2014	USER	2/16/2015 3:25 PM

						Octave data							
Status	Hub height [m]	Wind speed [m/s]	LwA,ref [dB(A)]	Pure tones		63 [dB]	125 [dB]	250 [dB]	500 [dB]	1000 [dB]	2000 [dB]	4000 [dB]	8000 [dB]
User value	84.0	95% rated power	108.5	No	Generic data	90.1	97.1	100.5	103.1	102.9	100.0	95.2	85.7

NSA: Noise sensitive point: User defined (2)-H01
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (3)-H02
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

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DECIBEL - Assumptions for noise calculation

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

NSA: Noise sensitive point: User defined (4)-H03
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (5)-H04
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (6)-H05
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (7)-H06
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (8)-H07
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (9)-H08
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

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DECIBEL - Assumptions for noise calculation

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

NSA: Noise sensitive point: User defined (10)-H09
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (11)-H10
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (12)-H11
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (13)-H12
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (14)-H13
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (15)-H14
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

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DECIBEL - Assumptions for noise calculation

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

NSA: Noise sensitive point: User defined (16)-H15
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (17)-H16
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (18)-H17
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (19)-H18
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (20)-H19
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (21)-H20
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

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DECIBEL - Assumptions for noise calculation

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

NSA: Noise sensitive point: User defined (22)-H21
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (23)-H22
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (24)-H23
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (25)-H24
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (26)-H25
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (27)-H26
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

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DECIBEL - Assumptions for noise calculation

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

NSA: Noise sensitive point: User defined (28)-H27
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (29)-H28
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (30)-H29
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (31)-H30
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (32)-H31
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (33)-H32
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

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DECIBEL - Assumptions for noise calculation

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

NSA: Noise sensitive point: User defined (34)-H33
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (35)-H34
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (36)-H35
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (37)-H36
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (38)-H37
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (39)-H38
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

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DECIBEL - Assumptions for noise calculation

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

NSA: Noise sensitive point: User defined (40)-H39
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (41)-H40
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (42)-H41
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (43)-H42
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (44)-H43
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (45)-H44
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

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DECIBEL - Assumptions for noise calculation

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

NSA: Noise sensitive point: User defined (46)-H45
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (47)-H46
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (48)-H47
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (49)-H48
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (50)-H49
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (51)-H50
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

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DECIBEL - Assumptions for noise calculation

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

NSA: Noise sensitive point: User defined (52)-H51
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (53)-H52
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (54)-H53
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (55)-H54
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (56)-H55
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (57)-H56
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

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DECIBEL - Assumptions for noise calculation

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

NSA: Noise sensitive point: User defined (58)-H57
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (59)-H58
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (60)-H59
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (61)-H60
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (62)-H61
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (63)-H62
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

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DECIBEL - Assumptions for noise calculation

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

NSA: Noise sensitive point: User defined (64)-H63
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (65)-H64
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (66)-H65
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (67)-H66
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (68)-H67
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (69)-H68
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

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DECIBEL - Assumptions for noise calculation

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

NSA: Noise sensitive point: User defined (70)-H69
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (71)-H70
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (72)-H71
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (73)-H72
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (74)-H73
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (75)-H74
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

Project:
20131290 Rolette Power Development

Rolette Power Development, LLC
Warren Enyart and Merle Boucher
602 Lincoln Ave S
Finley, ND 58230

Description:
EAPC does not warrant, guarantee, or make any such representations regarding the contents of this report. EAPC cannot be held liable for erroneous results caused by errors or omissions in the delivered data, or inaccuracy, limitations, or malfunctioning of models or software used. For any claim whatsoever related to the subject matter of this report, the liability of EAPC for actual damages, regardless of the form of action, shall be limited to the total amount paid to EAPC for the services provided as part of this consultancy service.

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Licensed user:
EAPC Wind Energy
3100 DeMers Avenue
US-GRAND FORKS, ND 58201
+1 701 775 3000
wind@eapc.net
Calculated:
2/16/2015 4:05 PM/2.9.285

DECIBEL - Assumptions for noise calculation

Calculation: V117-3.3 84m HH Rev 8 Gen Ground Attenuation**Noise calculation model:** ISO 9613-2 General 8.0 m/s

NSA: Noise sensitive point: User defined (76)-H75
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (77)-H76
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (78)-H77
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (79)-H78
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (80)-H79
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

NSA: Noise sensitive point: User defined (81)-H80
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 50.0 dB(A)
Ambient noise: 0.0 dB(A)
Margin or Allowed additional exposure: 0.0 dB(A)
Sound level always accepted: 0.0 dB(A)
Distance demand: 427

Appendix D. USFWS Species List



County Occurrence of Endangered, Threatened, Proposed and Candidate Species
Designated and Proposed Critical Habitat in North Dakota

January 2015

Species	Adams	Barnes	Benson	Billings	Bottineau	Bowman	Burke	Burleigh	Cass	Cavalier	Dickey	Divide	Dunn	Eddy	Emmons	Foster	Go. Valley	Gr. Forks	Grant	Griggs	Hettinger	Kidder	Lamoure	Logan	McHenry	McIntosh	McKenzie
Interior Least Tern - E								X					X		X												X
Whooping Crane - E	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Black-Footed Ferret - E	X			X		X							X				X		X		X						X
Pallid Sturgeon – E								X					X		X												X
Gray Wolf - E	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Poweshiek Skipperling – E																											
Piping Plover - T			X				X	X				X	X	X	X							X		X	X	X	X
Western Prairie Fringed Orchid - T																											
Dakota Skipper - T		X			X		X						X	X						X					X		X
Rufa Red Knot - T			X				X	X				X	X	X	X							X		X	X	X	X
Northern Long-Eared Bat - P	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sprague's Pipit – C	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X
Greater Sage-Grouse - C						X											X										
Critical Habitat																											
Piping Plover - D			X				X	X				X	X	X	X							X		X	X	X	X
Dakota Skipper - P																									X		X
Poweshiek Skipperling – P																											

E – Endangered **T – Threatened** **P – Proposed** **C – Candidate** **D - Designated**

County Occurrence of Endangered, Threatened, Proposed and Candidate Species and Designated Critical Habitat in North Dakota

January 2015

Species	McLean	Mercer	Morton	Mountrail	Nelson	Oliver	Pembina	Pierce	Ramsey	Ransom	Renville	Richland	Rolette	Sargent	Sheridan	Sioux	Slope	Stark	Steele	Stutsman	Towner	Traill	Walsh	Ward	Wells	Williams
Interior Least Tern - E	X	X	X	X		X										X										X
Whooping Crane - E	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Black-footed Ferret - E		X	X			X										X	X	X								
Pallid Sturgeon - E	X	X	X	X		X										X										X
Gray Wolf - E	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Poweshiek Skipperling – E												X		X												
Piping Plover - T	X	X	X	X		X		X			X				X	X				X				X	X	X
Western Prairie Fringed Orchid - T										X		X														
Dakota Skipper - T	X			X		X		X		X		X		X						X				X	X	
Rufa Red Knot - T	X	X	X	X		X		X			X				X	X				X				X	X	X
Northern Long-Eared Bat - P	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sprague=s Pipit - C	X	X	X	X		X	X	X	X	X	X		X	X	X	X	X	X		X	X		X	X	X	X
Greater Sage-Grouse – C																	X									
Critical Habitat																										
Piping Plover - D	X	X	X	X		X		X			X				X	X				X				X		X
Dakota Skipper - P										X		X	X												X	
Poweshiek Skipperling – P												X		X												

E – Endangered T – Threatened P – Proposed C – Candidate D - Designated

U.S. Fish and Wildlife Service

Trust Resources List

This resource list is to be used for planning purposes only — it is not an official species list.

Endangered Species Act species list information for your project is available online and listed below for the following FWS Field Offices:

North Dakota Ecological Services Field Office
3425 MIRIAM AVENUE
BISMARCK, ND 58501
(701) 250-4481
http://www.fws.gov/northdakotafieldoffice/endspecies/endangered_species.htm

Project Name:

Rolette Wind Power Project

Project Counties:

Rolette, ND

Project Type:

Power Generation

Endangered Species Act Species List (USFWS Endangered Species Program).

There are a total of 4 threatened, endangered, or candidate species on your species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fishes may appear on the species list because a project could cause downstream effects on the species. Critical habitats listed under the **Has Critical Habitat** column may or may not lie within your project area. See the **Critical habitats within your project area** section below for critical habitat that lies within your project area. Please contact the designated FWS office if you have questions.

Species that should be considered in an effects analysis for your project:

Birds	Status		Has Critical Habitat	Contact

U.S. Fish and Wildlife Service

Trust Resources List

Sprague's Pipit (*Anthus spragueii*) Population:	Candidate	species info		North Dakota Ecological Services Field Office
Whooping crane (*Grus americana*) Population: except where EXPN	Endangered	species info	Final designated critical habitat	North Dakota Ecological Services Field Office
Insects				
Dakota Skipper (*Hesperia dacotae*)	Threatened	species info	Proposed critical habitat	North Dakota Ecological Services Field Office
Mammals				
northern long-eared Bat (*Myotis septentrionalis*) Population:	Proposed Endangered	species info		North Dakota Ecological Services Field Office

Critical habitats within your project area: (View all critical habitats within your project area on one map)

The following critical habitats lie fully or partially within your project area.

Insects	Critical Habitat Type
Dakota Skipper (*Hesperia dacotae*)	Proposed critical habitat

FWS National Wildlife Refuges (USFWS National Wildlife Refuges Program).

There are **6** refuges in your refuge list

Rabb Lake National Wildlife Refuge (701) 768-2548 C/O J. CLARK SAYLER NWR 681 SALYER ROAD UPHAM, ND58789	refuge profile
School Section Lake National Wildlife Refuge (701) 768-2548 C/O J. CLARK SAYLER NWR 681 SALYER ROAD UPHAM, ND58789	refuge profile

U.S. Fish and Wildlife Service

Trust Resources List

Lords Lake National Wildlife Refuge (701) 768-2548 C/O J. CLARK SAYLER NWR 681 SALYER ROAD UPHAM, ND58789	refuge profile
Willow Lake National Wildlife Refuge (701) 768-2548 C/O J. CLARK SAYLER NWR 681 SALYER ROAD UPHAM, ND58789	refuge profile
Devils Lake Wetland Management District (701) 662-8611 221 2ND ST. NW SUITE 2 DEVILS LAKE, ND58301	refuge profile
J. Clark Salyer Wetland Management District (701) 768-2548 C/O J. CLARK SAYLER NWR 681 SALYER ROAD UPHAM, ND58789	refuge profile

FWS Migratory Birds (USFWS Migratory Bird Program).

The protection of birds is regulated by the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA). Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. For more information regarding these Acts see: http://www.fws.gov/migratorybirds/RegulationsandPolicies.html.

All project proponents are responsible for complying with the appropriate regulations protecting birds when planning and developing a project. To meet these conservation obligations, proponents should identify potential or existing project-related impacts to migratory birds and their habitat and develop and implement conservation measures that avoid, minimize, or compensate for these impacts. The Service's Birds of Conservation Concern (2008) report identifies species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become listed under the Endangered Species Act as amended (16 U.S.C 1531 et seq.).

For information about Birds of Conservation Concern, go to:
http://www.fws.gov/migratorybirds/CurrentBirdIssues/Management/BCC.html.

U.S. Fish and Wildlife Service

Trust Resources List

To search and view summaries of year-round bird occurrence data within your project area, go to the Avian Knowledge Network Histogram Tool links in the Bird Conservation Tools section at: http://www.fws.gov/migratorybirds/CCMB2.htm.

For information about conservation measures that help avoid or minimize impacts to birds, please visit: http://www.fws.gov/migratorybirds/CCMB2.htm.

Migratory birds of concern that may be affected by your project:
There are **20** birds on your Migratory birds of concern list. The underlying data layers used to generate the migratory bird list of concern will continue to be updated regularly as new and better information is obtained. User feedback is one method of identifying any needed improvements. Therefore, users are encouraged to submit comments about any questions regarding species ranges (e.g., a bird on the USFWS BCC list you know does not occur in the specified location appears on the list, or a BCC species that you know does occur there is not appearing on the list). Comments should be sent to the ECOS Help Desk.

Species Name	Bird of Conservation Concern (BCC)	Species Profile	Seasonal Occurrence in Project Area
American bittern (*Botaurus lentiginosus*)	Yes	species info	Breeding
Baird's sparrow (*Ammodramus bairdii*)	Yes	species info	Breeding
Bald eagle (*Haliaeetus leucocephalus*)	Yes	species info	Wintering
Black tern (*Chlidonias niger*)	Yes	species info	Breeding
Black-billed Cuckoo (*Coccyzus erythropthalmus*)	Yes	species info	Breeding
Common tern (*Sterna hirundo*)	Yes	species info	Breeding
Dickcissel (*Spiza americana*)	Yes	species info	Breeding
Ferruginous hawk (*Buteo regalis*)	Yes	species info	Breeding
Golden eagle (*Aquila chrysaetos*)	Yes	species info	Wintering
Grasshopper Sparrow (*Ammodramus savannarum*)	Yes	species info	Breeding
Hudsonian Godwit (*Limosa haemastica*)	Yes	species info	Migrating

Trust Resources List

Loggerhead Shrike (*Lanius ludovicianus*)	Yes	species info	Breeding
Marbled Godwit (*Limosa fedoa*)	Yes	species info	Breeding
Nelson's Sparrow (*Ammodramus nelsoni*)	Yes	species info	Breeding
Red-headed Woodpecker (*Melanerpes erythrocephalus*)	Yes	species info	Breeding
Short-eared Owl (*Asio flammeus*)	Yes	species info	Year-round
Sprague's Pipit (*Anthus spragueii*)	Yes	species info	Breeding
Swainson's hawk (*Buteo swainsoni*)	Yes	species info	Breeding
Upland Sandpiper (*Bartramia longicauda*)	Yes	species info	Breeding
Yellow Rail (*Coturnicops noveboracensis*)	Yes	species info	Breeding

NWI Wetlands (USFWS National Wetlands Inventory).

The U.S. Fish and Wildlife Service is the principal Federal agency that provides information on the extent and status of wetlands in the U.S., via the National Wetlands Inventory Program (NWI). In addition to impacts to wetlands within your immediate project area, wetlands outside of your project area may need to be considered in any evaluation of project impacts, due to the hydrologic nature of wetlands (for example, project activities may affect local hydrology within, and outside of, your immediate project area). It may be helpful to refer to the USFWS National Wetland Inventory website. The designated FWS office can also assist you. Impacts to wetlands and other aquatic habitats from your project may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal Statutes. Project Proponents should discuss the relationship of these requirements to their project with the Regulatory Program of the appropriate U.S. Army Corps of Engineers District.

Data Limitations, Exclusions and Precautions

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

Trust Resources List

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery and/or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Exclusions - Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Precautions - Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

The following wetland types intersect your project area in one or more locations:

Wetland Types	NWI Classification Code	Total Acres
Freshwater Emergent Wetland	PEMF	140.2348
Freshwater Emergent Wetland	PEMA	117.1918
Freshwater Emergent Wetland	PEMC	419.0871
Freshwater Emergent Wetland	PEMAd	14.4153
Freshwater Emergent Wetland	PEMFd	42.4862
Freshwater Emergent Wetland	PEMCd	88.8428
Freshwater Forested/Shrub Wetland	PFOA	0.911
Freshwater Forested/Shrub Wetland	PSSA	10.2828
Freshwater Forested/Shrub Wetland	PSSAd	0.5159

Trust Resources List

Freshwater Pond	PABF	67.4422
Freshwater Pond	PABFx	1.9578
Lake	L2UBG	97.13
Other	PUSA	0.9369

Appendix E. Scoping Package



ROLETTE SCOPING LIST

CTitle	First	Last	Title	Department	Agency	Address	City	State	Zip
Mr.	Kyle	Wanner	Aviation Planner		ND Aeronautics Commission	PO Box 5020	Bismarck	ND	58502-5020
Mr.	Wayne	Stenehjem	Attorney General		Office of Attorney General	600 E. Blvd Ave. Dept 125.	Bismarck	ND	58505
					ND Department of Agriculture	600 E Boulevard Ave Dept 602	Bismarck	ND	58505-0020
Mr.	L. David	Glatt	Chief	Environmental Health Section Gold Seal Center	ND Department of Health	918 E. Divide Ave., 4th floor	Bismarck	ND	58501-1947
					Department of Human Services	600 E. Blve Ave. Dept 325.	Bismarck	ND	58505-0250
					Department of Labor	600 E. Blvd Ave. Dept 406.	Bismarck	ND	58505-0340
				Department of Vocational Education	Career and Technical Education	600 E. Boulevard Ave Dept 270.	Bismarck	ND	58505-0610
				Economic Development and Finance Commission	North Dakota Dept of Commerce	PO Box 2057	Bismarck	ND	58502-2057
				Energy Development Impact Office	ND State Land Dept	P.O.Box 5523	Bismarck	ND	58506-5523
Mr.	Steve	Dyke	Supervisor	Conservation Section	ND Game & Fish Department	100 Bismarck Expressway	Bismarck	ND	58501-5095
Mr.	Greg	Wiche	Director	Water Resources Division	US Geological Survey	821 E. Interstate Ave.	Bismarck	ND	58501
Governor	Jack	Dalrymple	Governor		Office of the Governor	600 E. Blvd Ave.	Bismarck	ND	58505-0100
					ND State Highway Dept.	PO Box 3077	Grand Forks	ND	58508-3077
K					ND Department of Transportation	608 E. Boulevard Ave.	Bismarck	ND	58505-0700
					ND State Historical Society	612 E Blvd Ave.	Bismarck	ND	58505
Mr.	Scott	Davis	Executive Director		Indian Affairs Commission	600 E. Blvd. Ave. 1st Floor, Judicial Wing, Rm 117	Bismarck	ND	58505-0300
					Job Service ND	PO Box 5507	Bismarck	ND	58506-5507
					ND Department of Trust Lands	1707 North 9th Street	Bismarck	ND	58506-5523
Mr.	Mark	Zimmerman	Director		ND Parks & Recreation Dept.	1600 E. Century Ave., Suite 3	Bismarck	ND	58503-0649
				Division of Community Services	Department of Commerce	1600 E. Century Ave., Suite 2	Bismarck	ND	58503-2057
Mr.	Scott	Hochhalter	State Soil Specialist	NDSU Extension Service	Soil Conservation Committee	2718 Gateway Ave., #104	Bismarck	ND	58503
Mr.	Todd	Sando	State Engineer		ND State Water Commission	900 E. Blvd. Ave.	Bismarck	ND	58505-0850
Mr.	Eric	Schmit, P.E.		Chief Missile Engineering	Minot Air Force Base	320 Peacekeeper Place	Minot AFB	ND	58705
Mr.	James	Larsen		Cable Affairs Office	Minot Air Force Base	330 Bomber Blvd	Minot AFB	ND	58705
Mr.	Jasper	Schneider	Director	Rural Development	US Department of Agriculture	Post Office Box 1737	Bismarck	ND	58502-1737
Mr.	*Jeffrey*	*Towner*	Field Supervisor	North Dakota Field Office	US Fish & Wildlife Service	3425 Miriam Ave	Bismarck	ND	58501
			Manager	J Clark Salyer Wetland Management District	US Fish & Wildlife Service	681 Salyer Road	Upham	ND	58789
Mr.	Dan	Cimarosti	Manager	ND Regulatory Office	US Army Corps of Engineers	1513 S. 12th St.	Bismarck	ND	58504
Mr.	Brad	Thompson	Chief, Planning Branch	Omaha District Attn: CENWO-PM-A	US Army Corps of Engineers	1616 Capital Avenue	Omaha	NE	68102-4901
Ms.	Laurie	Suttmeier	Manager	Bismarck Airports District Office	Federal Aviation Administration	2301 University Drive, Bldg 23B	Bismarck	ND	58504
				ND Transmission Authority	ND Industrial Commission	600 E. Blvd. Ave.	Bismarck	ND	58505-0840
				ND Pipeline Authority	ND Industrial Commission	600 E. Blvd. Ave. Dept 405	Bismarck	ND	58505-0840
Mr.	Robert	Shepherd	Tribal Chairman		Sisseton-Wahpeton Oyate	PO Box 509	Sisseton	SD	57262-0267
Mr.	Roger	Yankton, Sr.	Tribal Chairperson	Ft. Totten Tribal Business Office	Spirit Lake Tribe	PO Box 359	Ft. Totten	ND	58335
Mr.	Tex	Hall	Tribal Chairman		Three Affiliated Tribes	404 Frontage Road	New Town	ND	58763
Mr.	Merle	St. Claire	Tribal Chairman		Turtle Mountain Band of Chippewa Indians	PO Box 900	Belcourt	ND	58316-0900
Mr.	Charles	Murphy	Tribal Chairman		Standing Rock Sioux Tribe	PO Box D	Fort Yates	ND	58538
Ms.	Adrienne	Swallow	Environmental Protection Specialist		Standing Rock Sioux Tribe	PO Box D	Fort Yates	ND	58538
Mr.	Barry	Benson	Environmental Division Director	Natural Resources Department	Three Affiliated Tribes	404 Frontage Road	New Town	ND	58763
Mr.	Silas	Ironheart, Jr.	SLT-EPA Director		Spirit Lake Tribe	P.O. Box 99	Fort Totten	ND	58335
Mr.	Weldon	Loudermilk	Regional Director		Bureau of Indian Affairs	115 4th Ave. SE	Aberdeen	SD	57401
Mr.	Joe	Hall	Chief, Environmental and Resource Management	Dakotas Area Office	Bureau of Reclamation	PO Box 1017	Bismarck	ND	58502-1017
				Office of Economic Analysis	Federal Railroad Administration	1200 New Jersey Avenue SE	Washington	DC	20590
Ms.	Mary	Giltner	Deputy Base Civil Engineer	319 CES/CEVA	Grand Forks Air Force Base	525 Tuskagee Airmen Rd.	Grand Forks AFB	ND	58205-6434
Ms.	Mary	Podoll	State Conservationist		US Department of Agriculture - NRCS	PO Box 1458	Bismarck	ND	58502-1458
Mr.	John	Rogers		Economic Development Administration	US Department of Commerce	PO Box 578	Helena	MT	59624
Mr.	Gerald	Paulson	Director, Transmission Lines and Substations	Western Area Power Admin.	US Department of Energy	PO Box 1173	Bismarck	ND	58502-1173
Senator	Heidi	Heitkamp			US Federal Building, Room 228	220 E. Rosser Ave.	Bismarck	ND	58501
Senator	John	Hoeven			US Federal Building, Room 312	220 E. Rosser Ave.	Bismarck	ND	58501
Congressman	Kevin	Cramer			US Federal Building, Room 328	220 E. Rosser Ave.	Bismarck	ND	58501
Mr.	Mark	Johnson	Executive Director		ND Association of Counties	1661 Capitol Way, PO Box 877	Bismarck	ND	58502-0877
Mr.	Lonnie	Hoffer	Disaster Recovery Chief	Department of Homeland Security	ND Department of Emergency Services	PO Box 5511	Bismarck	ND	58506
Mr.	Larry	Kotchman	State Forester		ND Forest Service	307 1st St. E.	Bottineau	ND	58318-1100
					ND Industrial Commission	600 E. Blvd Ave. Dept. 405	Bismarck	ND	58505-0840
Mr.	Edward	Murphy	State Geologist		ND Geological Survey	600 E. Blvd. Ave.	Bismarck	ND	58505-0840

ROLETTE SCOPING LIST

CTitle	First	Last	Title	Department	Agency	Address	City	State	Zip
Mr.	Scott	Hochhalter	State Soil Specialist	NDSU Extension Service	Soil Conservation Committee	2718 Gateway Ave., #104	Bismarck	ND	58503
Ms.	Grace	Brown	President		Rolette Area Development Association	PO Box 116	Rolette	ND	58366
			Commissioner/mayor	City Hall	City of Rolette	304 Main St	Rolette	ND	58366
			Chairman	Planning/Zoning Board	Rolette County	PO Box 939	Rolla	ND	58367-0939
Mr.	Sherwood	Haakenson	Chairman	Water Resource Board	Rolette County	149 Anderson Street	Willow City	ND	58384-5002
Ms.	Valerie	McCloud	Auditor	Auditors Office	Rolette County	PO Box 939	Rolla	ND	58367-0939
Mr.	Alex	Albert	Commissioner	County Commision	Rolette County	PO Box 515	Rolla	ND	58367-0515
Mr.	Bob	Leonard Sr.	Commissioner	County Commision	Rolette County	4011 108th St NE	St John	ND	58369-9709
Mr.	Eldon	Moors	Commissioner	County Commision	Rolette County	9970 24th Ave NE	Dunseith	ND	58329-9783
Mr.	Joseph	Baker	Commissioner	County Commision	Rolette County	218 Baker St NE	Belcourt	ND	58316-9764
	Merle	Boucher	Commissioner	County Commision	Rolette County	PO Box 7	Rolla	ND	58366-0007
Mr.	Michael	Hanlan	Manager	Emergency management	Rolette County	PO Box 447	Rolla	ND	58367-0477
Ms.	Valerie	McCloud	Highway Engineer/Supervisor	Higway Department	Rolette County	PO Box 939	Rolla	ND	58367-0939
Mr.	Rodney	Trottier	Sheriff	Sheriff's Department	Rolette County	PO Box 447	Rolla	ND	58367-0477
Mr.	Wayne	Martian	Manager		North Central Electric Cooperative	501 11th Street West	Bottineau	ND	58318

128 Soo Line Drive
PO Box 1157
Bismarck, ND 58502-1157
701 355 8400
kljeng.com

May 10, 2013

«AddressBlock»

Re: Rolette Wind Power Project
Rolette Power Development LLC
Rolette County, North Dakota

«GreetingLine»

On behalf of Rolette Power Development LLC., KLJ is preparing an application for requirements of the North Dakota Energy Conversion and Transmission Facility Siting Act for the North Dakota Public Service Commission. The application will include the development of the Rolette Wind Power Project consisting of an approximate 50 megawatt (MW) wind farm in Rolette County. ***Please refer to the enclosed project location map***.

The wind farm would likely consist of approximately 25 (2.1 MW) wind turbines placed on 90 meter towers that would convert wind energy into approximately 50 MW of electric power. Based on demand of the renewable energy generated by the initial project, additional phases could increase generating capacity by an additional 100 MW in the future. A study to determine which regional utilities have a need for the renewable energy produced is being commissioned. The electric power would be interconnected to the grid via one of several points but the specific location has yet to be determined.

Construction is potentially going to begin as early as 2013 with possible commercial operation fourth quarter of 2014. No federal funding is anticipated.

To ensure that social, economic, and environmental effects are considered in the development of this project, we are soliciting your views and comments on the proposed development of this project. We are particularly interested in any property that your department may own, or have an interest in, located within the project area. We would also appreciate being made aware of any proposed development your department may be contemplating in the area of the proposed project. Any information that might help us in our study would be appreciated.

If you have any questions or need further information, please call me at (701) 355-8726. Thank you for your time and cooperation.

Sincerely,

KLJ

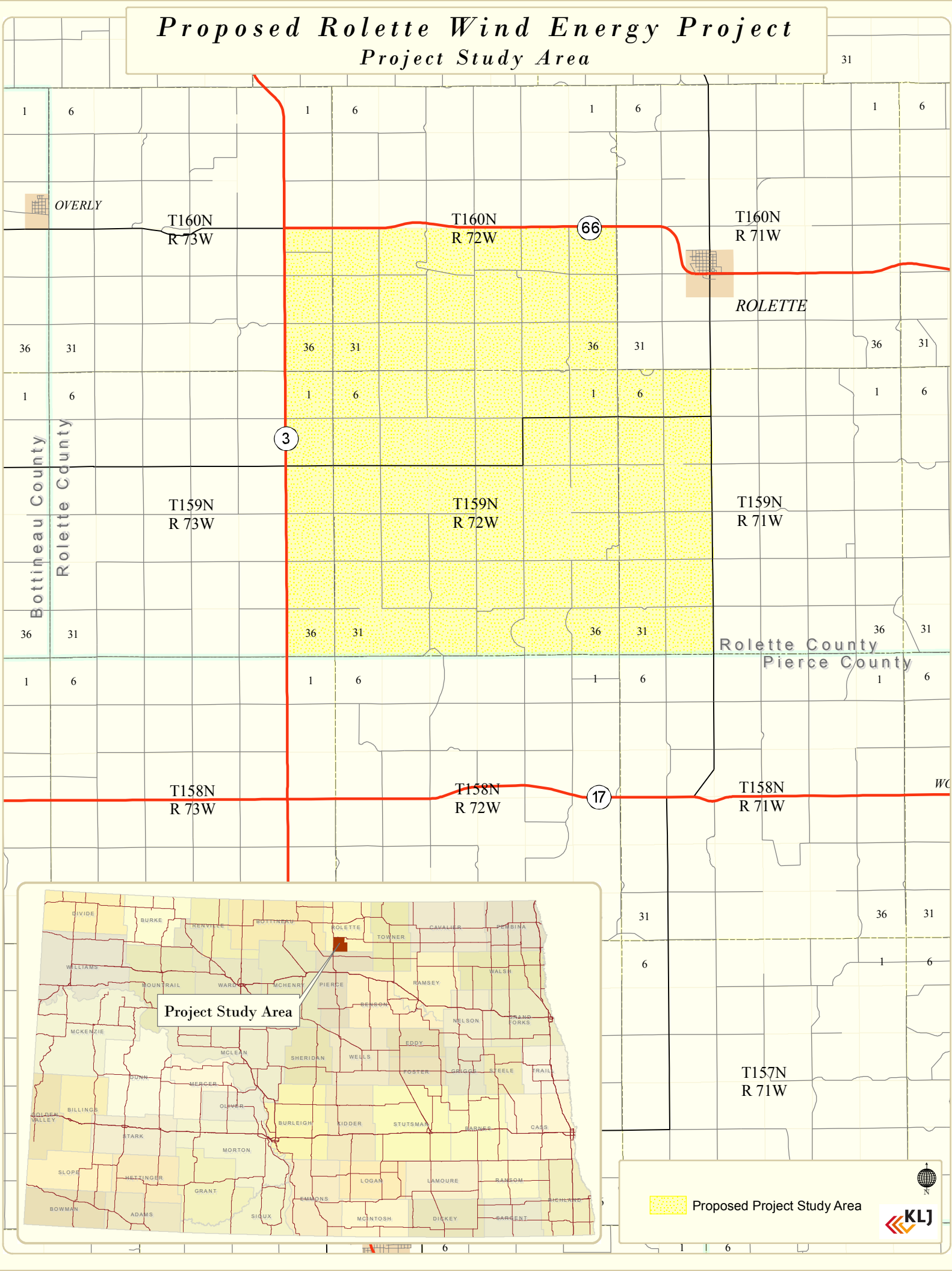


Grady Wolf
Project Manager

Enclosure (Map)

Proposed Rolette Wind Energy Project

Project Study Area



United States Department of Agriculture

NRCS

Natural Resources Conservation Service
PO Box 1458
Bismarck, ND 58502-1458

June 11, 2013

Grady Wolf
Project Manager
Kadrmas, Lee & Jackson
128 Soo Line Drive
Bismarck, ND 58501

RE: Rolette Wind Power Project
Rolette Power Development LLC
Rolette County, North Dakota

Dear Mr. Wolf:

The Natural Resources Conservation Service (NRCS) has reviewed your letter dated May 10, 2013, concerning the development of the Rolette Wind Power Project consisting of an approximate 50 megawatt (MW) wind farm in Rolette County.

NRCS has a major responsibility with the Farmland Protection Policy Act (FPPA) in documenting conversion of farmland (i.e., prime, statewide importance and local importance) to non-agriculture use when federal funds are utilized. If Important Farmland occupies these sites, FPPA may apply. After a final decision has been made on a permanent site, the form AD-1006 will need to be completed. Below are instructions for completing the first step in the FPPA process. Please keep in mind if federal funding is not utilized, FPPA does not apply and no further action is needed.

Farmland

You may use a hard copy of the Farmland Conversion Impact Rating Form AD-1006 or you may utilize a fillible web based form at http://www.nrcs.usda.gov/Programs/fppa/pdf_files/AD1006.PDF to record the following. Complete Parts I and III and return to the Devils Lake NRCS Area Office. We will also need a map of the site(s) with exact locations of structures so we can accurately assess the area (e.g., 1:20,000 or 1:24,000). If applicable, you may email the above information. If farmland (i.e., Prime Farmland, Statewide Importance, Local Importance) is determined to be subject to FPPA, we will then complete Parts II and IV. NRCS will measure the relative value of the site as farmland on a scale of 0 to 100 according to the information sources listed in CFR 658.5(a). If FPPA applies to this site, Form AD-1006 will be returned to you for completion of Part VI, Site Assessment Criteria. When completed, please send a copy of the AD-1006 back to NRCS.

Wetlands

The Wetland Conservation Provisions of the 1985 Food Security Act, as amended, provide that if a USDA participant converts a wetland for the purpose, or to have the effect of making agricultural production possible, loss of USDA benefits could occur. The NRCS has developed the following guidelines to help avoid impacts to wetlands and possible loss of USDA benefits for producers. If these guidelines are followed, the impacts to the wetlands will be considered minimal allowing USDA participants to continue to receive USDA benefits. Following are the requirements:

- Disturbance to the wetland must be temporary.
- No drainage of wetland is allowed (temporary or permanent).
- Mechanized landscaping necessary for installation is kept to a minimum and preconstruction contours are maintained.
- Temporary side cast material must be placed in such a manner not to be dispersed in the wetland.
- All trenches in a wetlands must be backfilled to the original elevation.

NRCS would recommend that impacts to wetlands be avoided.

If you have additional questions pertaining to FPPA, please contact Steve Sieler, Liaison Soil Scientist, NRCS, Bismarck, ND at 701-530-2019.

Sincerely,

WADE D. BOTT
State Soil Scientist

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
1616 CAPITOL AVENUE
OMAHA NE 68102-4901

REPLY TO
ATTENTION OF

May 15, 2013

Planning, Programs, and Project Management Division

Mr. Grady Wolf
Kadmras, Lee & Jackson
128 Soo Line Drive
Bismarck, North Dakota 58502

Dear Mr. Wolf:

The U.S. Army Corps of Engineers, Omaha District (Corps) has reviewed your letter dated May 10, 2013 regarding the environmental report on the proposed development of the Rolette Wind Power Project in Rolette County of North Dakota. The Corps understands this wind farm would consist of approximately 25, 90 meter-wind turbines and generate approximately 50 megawatts of electrical power. Also, the Corps understands that the location at which electrical power would be interconnected to the electrical power grid is not yet known. The Corps offers the following comments:

Your plans should be coordinated with the state water quality office in which the project is located to ensure compliance with federal and state water quality standards and regulations mandated by the Clean Water Act and administered by the U.S. Environmental Protection Agency. Please coordinate with the North Dakota Department of Health concerning state water quality programs.

If you have not already done so, it is recommended you consult with the U.S. Fish and Wildlife Service and the North Dakota Game and Fish Department regarding fish and wildlife resources. In addition, the North Dakota State Historic Preservation Office should be contacted for information and recommendations on potential cultural resources in the project area.

Since the proposed project does not appear to be located within Corps owned or operated lands, we are providing no floodplain or flood risk information. To determine if the proposed project may impact areas designated as a Federal Emergency Management Agency special flood hazard area, please consult the following floodplain management office:

North Dakota State Water Commission
Attention: Jeff Klein
900 East Boulevard Avenue
Bismarck, North Dakota 58505-0850
jjkein@nd.gov
T-701-328-4898
F-701-328-3747

Any proposed placement of dredged or fill material into waters of the United States (including jurisdictional wetlands) requires Department of the Army authorization under Section 404 of the Clean Water Act. You can visit the Omaha District's Regulatory website for permit applications and related information. Please review the information on the provided website (http://www.nwo.usace.army.mil/Missions/RegulatoryProgram.aspx) to determine if this project requires a 404 permit. For a detailed review of permit requirements, preliminary and final project plans should be sent to:

U.S. Army Corps of Engineers
Bismarck Regulatory Office
Attention: CENWO-OD-R-ND/Cimarosti
1513 South 12th Street
Bismarck, North Dakota 58504

If you have any questions, please contact Ms. Amanda Ciurej of my staff at (402) 995-2897.

Sincerely,

Eric Laux
Acting Chief, Environmental Resources and Missouri River Recovery Program Plan Formulation Section

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
NORTH DAKOTA REGULATORY OFFICE
1513 SOUTH 12TH STREET
BISMARCK ND 58504-6640

REPLY TO
ATTENTION OF

May 13, 2013

North Dakota Regulatory Office

Mr. Grady Wolf
Kadrmas Lee and Jackson
128 Soo Line Drive
PO Box 1157
Bismarck, North Dakota 58502-1157

Dear Mr. Wolf:

This is in response to your letter dated May 10, 2013, requesting US Army Corps of Engineers (Corps) comments regarding a proposed project on the behalf of Rolette Power Development LLC for the development of the Rolette Wind Power Project consisting of an approximate 50 megawatt wind farm located in Rolette County, North Dakota.

Please be advised, Corps regulatory offices administer Section 10 of the Rivers and Harbors Act (Section 10) and Section 404 of the Clean Water Act (Section 404). Section 10 regulates work impacting navigable waters. Section 10 waters in North Dakota are the Missouri River (including Lake Sakakawea and Lake Oahe), Yellowstone River, James River south of the railroad track in Jamestown, North Dakota, Bois de Sioux River, Red River of the North, and the Upper Des Lacs Lake. Work over, in, or under navigable waters is considered to have an impact. Section 404 of the Clean Water Act regulates the discharge of dredged or fill material (temporarily or permanently) in waters of the United States. Waters of the United States may include, but are not limited to, rivers, streams, ditches, coulees, lakes, ponds, and their adjacent wetlands. Fill material includes, but is not limited to, rock, sand, soil, clay, plastics, construction debris, wood chips, overburden from mines or other excavation activities and materials used to create any structure or infrastructure in waters of the United States.

Based on the information contained within your letter, decommissioning the existing generation plant would not require a permit. A discharge of fill material into waters of the United States, in conjunction with the power lines or the new substation, would require a permit under Section 404. In order for us to fully evaluate your project(s), please complete and submit the Corps permit application (copy enclosed). Be sure to accurately describe all proposed work and construction methodology. Once the application is complete, please mail it to the letterhead address.

Do not hesitate to contact this office by letter or telephone (701) 255-0015 if we can be of assistance.

Sincerely,

Daniel E. Cimarosti

Daniel E. Cimarosti
State Program Manager
North Dakota Regulatory Office

Enclosure

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United States Department of the Interior

BUREAU OF INDIAN AFFAIRS
Great Plains Regional Office
115 Fourth Avenue S.E., Suite 400
Aberdeen, South Dakota 57401

IN REPLY REFER TO:
DESCRM
MC-208

MAY 23 2013

Grady Wolf
Project Manager
Kadrmas Lee & Jackson
Post Office Box 1157
Bismarck, North Dakota 58502-1157

Dear Mr. Wolf:

We received your letter regarding the proposed Rolette Wind Power Project in Rolette County North Dakota. We have considered the potential for both environmental damage and impacts to archaeological and Native American religious sites on lands held in trust by the Bureau of Indian Affairs, Great Plains Region. You should be aware, however, that Tribes or Tribal members may have lands in fee status near the site of interest. These lands would not necessarily be in our databases, and the Tribes should be contacted directly to ensure all concerns are recognized. The action considered has the following notification date and project location:

- May 10, 2013 Re: Rolette Wind Power Project
  Rolette Power Development LLC
  Rolette County, North Dakota

We have no environmental objections to this action as long as the project complies with all pertinent laws and regulations. Questions regarding environmental opinions and conditions can be addressed to Jeffrey Davis, Environmental Protection Specialist, at (605) 226-7656.

We also find that the listed action will not affect cultural resources on Tribal or individual landholdings for which we are responsible. Methodologies for the treatment of cultural resources now known or yet to be discovered – particularly human remains – must nevertheless utilize the best available science in accordance with provisions of the Native American Graves Protection and Repatriation Act, the Archaeological Resources Protection Act of 1979 (as amended), and all other pertinent legislation and implementing regulations. Archaeological concerns can be addressed to Dr. Carson N. Murdy, Regional Archaeologist, at (605) 226-7656.

Sincerely,

Deputy Regional Director – Indian Services

UNITED STATES DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
J. CLARK SALYER NATIONAL WILDLIFE REFUGE
681 SALYER ROAD
UPHAM, ND 58789-0066
PHONE (701) 768-2548
FAX (701) 768-2834

May 20, 2013

Mr. Grady Wolf, Project Manager
KLJ Engineering
128 Soo Line Drive
Bismarck, ND 58502-1157

Dear Mr. Wolf:

On May 10, 2008, you mailed our office with a request that the U.S. Fish and Wildlife Service (Service) provide you with comments on proposed Rolette Wind Power Project, in Rolette County, North Dakota. Attached is map of lands the Service has an interest, including wetland easements, FHA easements, and fee-title ownership of Waterfowl Production Areas.

The Service Wetland Easement Program has purchased and owns perpetual rights to wetlands on privately owned land which restricts or prohibits the right to drain, burn, level or fill any wetland basin. The map shows privately owned land that is protected by a Service wetland easement. We do not recommend avoiding easement lands all together, our office will work with you to avoid impacts to Service protected wetlands by small location changes to tower sites, roads, crane walks, and other project facilities. Waterfowl Production Areas are publicly owned lands managed by the Service for waterfowl production and siting a turbine would likely not be allowed, other uses may be allowed with a Special Use Permit.

The next step in our process to avoid impacts to Service interests would be for you to provide more a more specific project proposal. We would be able to use your proposed project design to determine where potential impacts would be likely and how best to avoid those impacts.

If you have any questions about this map, please contact me. Thank you for the opportunity to review this project and avoid impacts to Service interests.

Sincerely,

John Takala
Wetland District Manager

Att: Map 1 of 1, Proposed Rolette Wind Energy Project

U.S. Fish & Wildlife Service

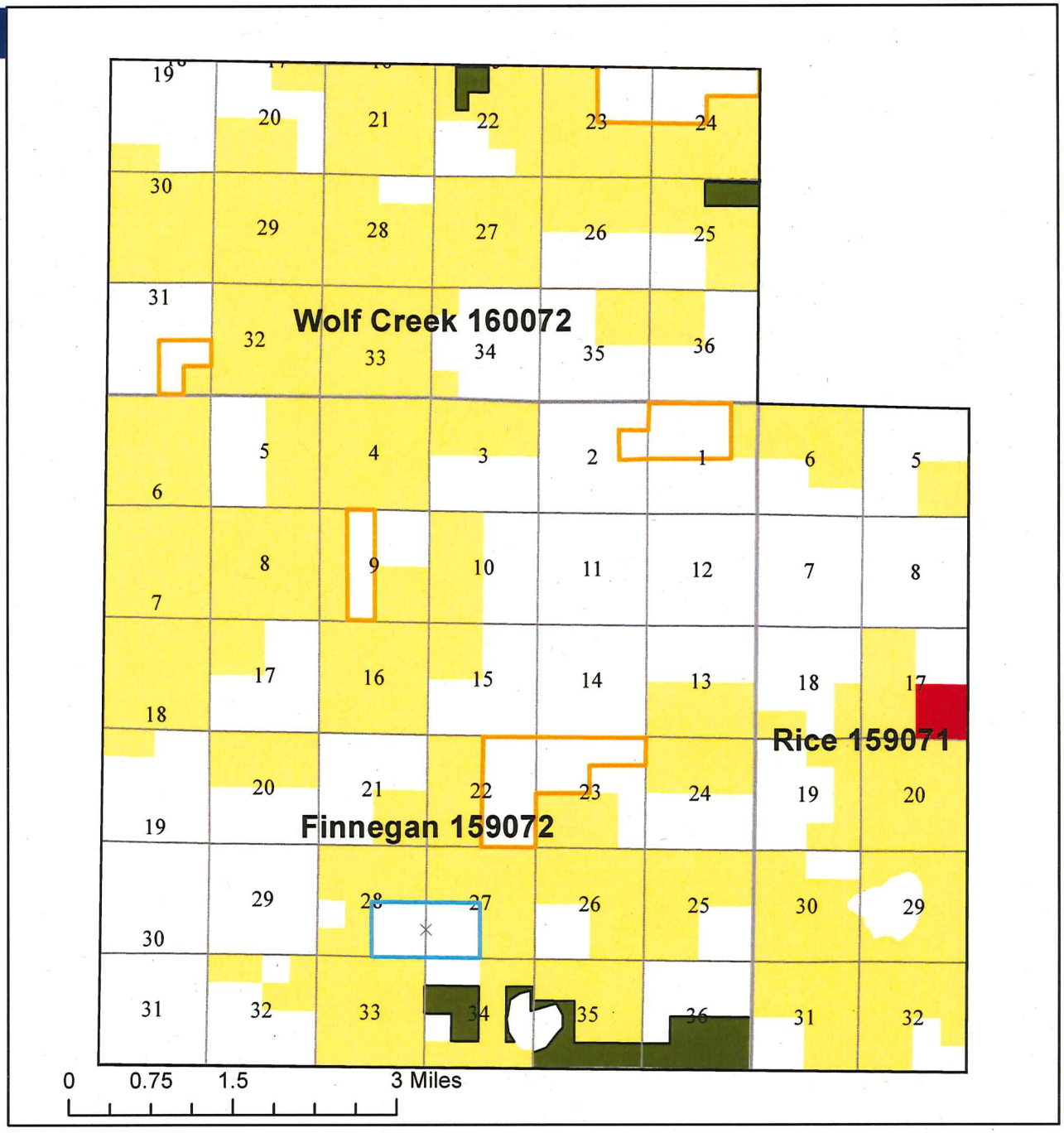
Proposed Rolette Wind Energy Project

Rolette County

Map prepared on May 20, 2013 for KLJ.

Legend

- USFWS Wetland Easements Pending
- Section Boundary
- USFWS Waterfowl Production Area
- J. Clark Salyer NWR
- Wetland Easement
- FHA Easement



DISCLAIMER:

The USFWS makes no claim as to the accuracy or completeness of the displayed information. Shaded areas depicting the location of USFWS WPA fee lands and limited interest easements are for illustrativ purposes only and do not represent legal boundaries. For more detailed information, please contact one of the USFWS Realty Offices located in Bismarck and Minot, North Dakota, Aberdeen and Huron, Sou Dakota, or Great Falls, Montana.

The USFWS easement layer is current through October 2012. Please contact the appropriate Wetland Management District for any newly acquired easements.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
3425 Miriam Avenue
Bismarck, North Dakota 58501

Grady Wolf, Project Manager
Kadrmas, Lee, and Jackson
128 Soo Line Drive
P.O. Box 1157
Bismarck, North Dakota 58502-1157

Dear Mr. Wolf:

This is in response to your May 10, 2013, request for environmental information in relation to the proposed Rolette Wind Power Project in Rolette County, North Dakota. Kadrmas, Lee, and Jackson, Inc. (KLJ) is preparing a facility siting application on behalf of the project developer, Rolette Power Development LLC. (RPD). The proposed 50 megawatt (MW) project includes 25 wind turbines, each with a capacity of 2.1-MW and associated infrastructure. At this time, it is not known where the proposed project would interconnect to the electrical grid. No federal funding is anticipated. We offer the following comments under the authority of and in accordance with the Migratory Bird Treaty Act (MBTA) (16 U.S.C. 703 et seq.), Bald and Golden Eagle Protection Act (BGEPA) (16 U.S.C. 668-668d, 54 Stat. 250), the Endangered Species Act (ESA) (16 U.S.C. 1531 et seq.), and the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57).

The U.S. Fish and Wildlife Service (Service) holds certain resources in trust and manages them for the benefit of the American people. These resources include migratory birds, bald and golden eagles, inter-jurisdictional fisheries, federally-listed threatened and endangered species of plants and animals and their habitats, and units of the National Wildlife Refuge system. When planning an activity, project proponents should give careful consideration to potential impacts to these trust resources and compliance with the laws mentioned above. Additional information is provided below.

Migratory Birds

The MBTA prohibits the taking, killing, possession, and transportation, (among other actions) of migratory birds, their eggs, parts, and nests, except when specifically permitted by regulations. While the MBTA has no provision for allowing incidental take, the Service realizes that some birds may be killed during project construction and operation even if all known reasonable and effective measures to protect birds are used. The Service Office of Law Enforcement carries out its mission to protect migratory birds through investigations and enforcement, as well as by fostering relationships with individuals, companies, and agencies that have taken effective steps

to avoid take of migratory birds and by encouraging others to implement measures to avoid take of migratory birds. It is not possible to absolve individuals, companies, or agencies from liability even if they implement bird mortality avoidance or other similar protective measures. However, the Office of Law Enforcement focuses its resources on investigating and prosecuting individuals, companies, and agencies that take migratory birds without identifying and implementing all reasonable, prudent, and effective measures to avoid that take. Individuals, companies, or agencies are encouraged to work closely with Service biologists to identify available protective measures when developing project plans and/or avian protection plans, and to implement those measures prior to/during construction or similar activities.

Adequate consideration for avian resources early in the site evaluation process can help to minimize impacts and facilitate project review. The most important thing a developer can do is to consult with the Service as early as possible in the development of a wind energy project. Early consultation offers the greatest opportunity for avoiding areas where development is precluded by federal law or where wildlife impacts are likely to be high and difficult or costly to remedy or mitigate at a later stage. By consulting early, project developers can also incorporate appropriate wildlife conservation measures and monitoring into their decisions about project siting, design, and operation.

Although current wind turbine technology and proper siting can help to minimize the incidence of avian deaths due to blade, aerial line, and tower strikes, the potential for direct mortality of some migratory birds will remain. Wind power developers, in concert with the Service, can help to ensure that projects proceed with as little impact to migratory birds as possible. The Service issued final Land-Based Wind Energy Guidelines (Guidelines) on March 23, 2012. The Guidelines provide a structured, scientific process for addressing wildlife conservation concerns at all stages of land-based wind energy development. They also promote effective communication among wind energy developers and federal, state, and local conservation agencies and tribes and represent the best practical approach to date for conserving species of concern that may be impacted by wind energy development. The Service recommends RPD follow the process described in the Guidelines to evaluate the potential risk to species of concern if a wind energy project were to be pursued at the proposed site. Adherence to the Guidelines is voluntary and does not relieve any individual, company, or agency of the responsibility to comply with all applicable wildlife laws and regulations.

The Service also recommends that RPD assess the risk to species of habitat fragmentation concern from development at the proposed site in accordance with the Guidelines. A list of species of habitat fragmentation concern that may occupy the proposed site can be found on the North Dakota Ecological Services Field Office website at: http://www.fws.gov/northdakotafieldoffice/species_of_habitat_fragmentation.htm. (Habitat fragmentation is defined as the separation of a block of habitat for a species into segments, such that the genetic or demographic viability of the populations surviving in the remaining habitat segments is reduced; and risk, in this case, is defined as the probability that this fragmentation will occur as a result of the project.) Site clearing, access roads, transmission lines and turbine tower arrays remove habitat and displace some species of wildlife, and may fragment continuous

habitat areas into smaller, isolated tracts. Habitat fragmentation is of particular concern when species require large expanses of habitat for activities such as breeding and foraging.

Bald and Golden Eagles

Bald and Golden Eagles are federally-protected under both the BGEPA and the MBTA. The BGEPA prohibits anyone without a permit issued by the Secretary of the Interior from taking bald eagles (*Haliaeetus leucocephalus*) or golden eagles (*Aquila chrysaetos*), including their parts, nests, or eggs. The BGEPA provides criminal and civil penalties for persons who take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald or golden eagle, alive or dead, or any part, nest, or egg thereof. The BGEPA defines take as pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb. "Disturb" means to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available: 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior. In addition to immediate impacts, this definition also covers impacts that result from human-induced alterations initiated around a previously used nest site during a time when eagles are not present, if, upon the eagles return, such alterations agitate or bother an eagle to a degree that injures an eagle or substantially interferes with normal breeding, feeding, or sheltering habits and causes, or is likely to cause, a loss of productivity or nest abandonment.

The Service's overall management objective for golden eagle and bald eagle populations is to ensure no declines in breeding populations of either species. Numerous relatively minor disruptions to eagle behaviors from multiple activities, even if spatially or temporally distributed, may lead to disturbance that would not have resulted from fewer or more carefully sited activities. The accumulation of multiple land development projects or siting of multiple infrastructures that may be hazardous to eagles can cumulatively reduce the availability of alternative sites suitable for breeding, feeding, or sheltering, resulting in a greater than additive risk of take to eagles.

According to the Service's data, there is a documented bald eagle nest within the proposed project's study boundary and several other bald eagle nests in proximity to your proposed project area. We recommend using the Service's April 2013, Eagle Conservation Plan Guidance (ECPG) for land-based wind energy to guide your analysis of the project's potential to impact eagles. The guidance is available on our website at: http://www.fws.gov/migratorybirds/BaldAndGoldenEagleManagement.htm.

With a documented eagle nest in the project area the proposed project could be classified by the ECPG as "Category 1 – High risk to eagles, potential to avoid or mitigate impacts is low." The Service recommends that project developers not build projects at sites in category 1 because the project would likely not meet the regulatory requirements to obtain an eagle take permit. We recommend that the RDP substantially redesign the project to at least meet the category 2 criteria.

The unauthorized take of any eagle without prior authorization is a criminal violation. 50 CFR 22.26(a)(2) describes the process for obtaining permits for eagle take that is associated with an activity, but is not the purpose of the activity.

Threatened and Endangered Species

Federally listed species that may occur within the proposed project's area of influence include the endangered whooping crane (*Grus americana*) and candidate species Dakota skipper (*Hesperia dacotae*) and Sprague's pipit (*Anthus spragueii*). No legal requirement exists to protect candidate species; however, it is within the spirit of the ESA to consider these species as having significant value and worth protecting. The Service's Candidate Conservation Program provides a means for conserving these species. Early conservation preserves management options, minimizes the cost of recovery, and reduces the potential for restrictive land use policies in the future. Through Candidate Conservation Agreements and Candidate Conservation Agreements with Assurances the Service can work with interested public and private parties to identify and address threats to candidate species or species at risk.

Because there is no Federal nexus for the proposed project, it is not necessary to make effects determinations for listed species. Private individuals and companies however, are required to ensure that their actions do not result in unauthorized "take" of federally listed animals. Take is broadly defined as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct". Section 10(a)(1)(B) of the ESA allows non-Federal parties planning activities that have no Federal nexus, but which could result in the incidental taking of listed animals, to apply for an incidental take permit. (A Federal nexus exists whenever an activity is conducted, funded, or licensed or permitted by a Federal agency). The application must include a habitat conservation plan (HCP) laying out the proposed actions, determining the effects of those actions on Federally-listed plant and wildlife species and their habitats (and may include proposed or candidate species), and defining measures to minimize and mitigate adverse effects.

The Aransas Wood Buffalo Population (AWBP) of whooping cranes is the only self-sustaining migratory population of whooping cranes remaining in the wild. These birds breed in the wetlands of Wood Buffalo National Park in Alberta and the Northwest Territories of northern Canada, and overwinter on the Texas coast. Whooping cranes in the AWBP annually migrate through North Dakota during their spring and fall migrations.

Endangered whooping cranes have been documented using roosting habitat in the vicinity of the proposed wind resource area. The proposed site is located outside the primary 180 mile-wide migration corridor that includes 95% of all confirmed whooping crane sightings in North Dakota. However, the presence of suitable roosting and feeding habitat for whooping cranes in the wind resource area, and confirmed whooping crane sightings, document the potential for whooping crane presence in the proposed wind resource area. A wind energy project in this wind resource area has the potential to affect whooping cranes during their annual spring and fall migration through North Dakota. Potential effects may be direct (e.g. collision mortality) or indirect (e.g.

avoidance of the site resulting in cranes seeking alternate habitat). The interactions of whooping cranes with wind turbines and wind farms are currently not fully known, although it is expected that these large birds with relatively low maneuverability are susceptible to mortality via collisions with turbines. Currently, collisions with power lines are the greatest known source of mortality for fledged whooping cranes, and have accounted for the death or serious injury of at least 46 whooping cranes since 1956.

Sprague's pipit was added to the candidate species list in 2010. Candidate species such as the Sprague's pipit are not protected under the ESA. However Sprague's pipit as a migratory bird is still protected under the MBTA. Sprague's pipits require large patches of grassland habitat for breeding, with preferred grass height between 4-12 inches (10-30 cm). The species prefers to breed in well-drained, open grasslands and avoids grasslands with excessive shrubs. They can be found in lightly to heavily grazed areas. They avoid intrusive human features on the landscape, so the impact of a development can be much larger than the actual footprint of the feature. If Sprague's pipit habitat is present within your proposed project area, the Service requests that you document any steps taken to avoid and minimize disturbance of this habitat, and that you share this information with our office.

The Dakota skipper is a small to medium-sized hesperiine butterfly associated with high quality prairie ranging from wet-mesic tallgrass prairie to dry-mesic mixed grass prairie. The first type of habitat is relatively flat and moist native bluestem prairie. Three species of wildflowers are usually present: wood lily (*Lilium philadelphicum*), harebell (*Campanula rotundifolia*), and smooth camas (*Zygadenus elegans*). The second habitat type is upland (dry) prairie that is often on ridges and hillsides. Bluestem grasses and needlegrasses dominate these habitats. On this habitat type, three wildflowers are typically present in high quality sites that are suitable for Dakota skipper: pale purple (*Echinacea pallida*) and upright (*E. angustifolia*) coneflowers and blanketflower (*Gaillardia sp.*). Because of the difficulty of surveying for Dakota skippers and a short survey window, we recommend that the project avoid any impacts to potential Dakota skipper habitat.

Fish and Wildlife Service Property Interests

The Service administers Waterfowl Production Areas owned in fee title as well as wetland and grassland easements throughout North Dakota. A review of Service realty records indicates Service property interests are located in the planning area. The Service has an ongoing easement acquisition program and we recommend that for Rolette County contact Frank Durbian, Wildlife Refuge Manager, J. Clark Salyer National Wildlife Refuge, 681 Salyer Road, Upham, ND 58789-0066; Phone: (701)768-2548; Email: frank_durbian@fws.gov for more specific information relative to Service easements and up to date realty records. If Service lands are proposed to be impacted, the Service will be required to conduct an analysis of impacts and examine alternatives, pursuant to NEPA.

The North Dakota Energy Conversion and Transmission Facility Siting Act (49-22), states in part: "it is necessary to ensure that the location, construction, and operation of energy conversion facilities and transmission facilities will produce minimal adverse effects on the environment." Some of the factors that should be considered to determine if the proposed project will have minimal adverse effects include: adverse direct and indirect environmental effects; alternatives to the proposed site; the effect of the proposed site or route on areas which are unique because of biological wealth or because they are habitats for rare and endangered species; and problems raised by federal agencies. Due in part, to the potential to take bald eagles, RPD has not in the Service's opinion, demonstrated compliance with all relevant federal wildlife laws. The Service can provide technical assistance to RPD in addressing these issues as their project planning proceeds. Given the Service requirements and recommendations above, as well as possible unforeseen issues that may arise, we encourage you to build sufficient planning time for coordination with the Service into your project timeline.

Thank you for the opportunity to comment. If you require further information as project planning proceeds, please contact Terry Ellsworth of my staff, at (701) 250-4402, or at the letterhead address.

Sincerely,

Jeffrey K. Towner

Jeffrey K. Towner
Field Supervisor
North Dakota Field Office

cc: Refuge Manager, J. Clark Salyer NWR, Upham, ND
ND Public Service Commission, Bismarck, ND
Director, ND Game & Fish Department, Bismarck, ND
(Attn: G. Link)

May 17, 2013

Grady Wolf
Kadrmas, Lee and Jackson
128 Soo Line Drive
Bismarck, ND 58502

"Letter of Clearance" In Conformance with the North Dakota Federal Program Review System - State Application Identifier No.: ND130517-0152

Dear Mr. Wolf:

SUBJECT: Rolette Wind Power Project

The above referenced notice has been reviewed through the North Dakota Federal Program Review Process. As a result of the review, clearance is given to the project only with respect to this consultation process.

If the proposed project changes in duration, scope, description, budget, location or area of impact, from the project description submitted for review, then it is necessary to submit a copy of the completed application to this office for further review.

We also request the opportunity for complete review of applications for renewal or continuation grants within one year after the date of this letter.

Please use the above SAI number for reference to the above project with this office. Your continued cooperation in the review process is much appreciated.

Sincerely,

Jeff Rotenberger
Energy Program Manager
Division of Community Services

as

NORTH DAKOTA
DEPARTMENT *of* HEALTH

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

May 17, 2013

Mr. Grady Wolf
KLJ
P.O. Box 1157
Bismarck, ND 58502-1157

Re: Rolette Wind Power Project, Rolette County

Dear Mr. Wolf:

This department has reviewed the information concerning the above-referenced project submitted under date of May 10, 2013 with respect to possible environmental impacts.

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

1. All necessary measures must be taken to minimize fugitive dust emissions created during construction activities. Any complaints that may arise are to be dealt with in an efficient and effective manner.

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

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

4. Noise from construction activities may have adverse effects on persons who live near the construction area. Noise levels can be minimized by ensuring that construction equipment is equipped with a recommended muffler in good working order. Noise effects can also be

minimized by ensuring that construction activities are not conducted during early morning or late evening hours.

The department owns no land in or adjacent to the proposed improvements, nor does it have any projects scheduled in the area. In addition, we believe the proposed activities are consistent with the State Implementation Plan for the Control of Air Pollution for the State of North Dakota.

If you have any questions regarding our comments, please feel free to contact this office.

Sincerely,

L. David Glatt, P.E., Chief
Environmental Health Section

LDG:cc
Attach.

NORTH DAKOTA
DEPARTMENT *of* HEALTH

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

Construction and Environmental Disturbance Requirements

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

Soils

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

Surface Waters

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

Fill Material

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

North Dakota Department of Transportation

Grant Levi, P.E.
Director

Jack Dalrymple
Governor

June 28, 2013

Grady Wolf
Project Manager
Kadrmas Lee Jackson
P.O. Box 1077
Devils Lake, ND 58302-1077

DEVELOP WIND POWER PROJECT OF APPROXIMATELY 25 WIND TURBINES, ROLETTE COUNTY, NORTH DAKOTA

We have reviewed your May 10, 2013, letter.

This project should have no adverse effect on the North Dakota Department of Transportation (NDDOT) highways; however, if there are any plans to improve any approaches it will be necessary to contact the district.

Additionally, if because of this project any work needs to be done on highway right of way, appropriate permits and risk management documents will need to be obtained from the Department of Transportation District Engineer Wayde Swenson at 701-665-5100.

Robert Fode

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

57/raf/js
c: Wayde Swenson, Devils Lake District Engineer

"VARIETY IN HUNTING AND FISHING"

NORTH DAKOTA GAME AND FISH DEPARTMENT

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

May 30, 2013

Grady Wolf
Project Manager
KLJ
PO Box 1157
Bismarck, ND 58502-1157

Dear Mr. Wolf:

RE: Rolette Wind Energy Project
Rolette County, North Dakota

The North Dakota Game and Fish Department has reviewed this project for wildlife concerns.

Our primary concern with wind power development is the disturbance of native prairie associated with construction of turbines, access roads, and other associated facilities. We ask that work within native prairie be avoided to the extent possible. This could include micro-siting turbines onto adjacent previously disturbed land, locating access roads on existing section line trails rather than across undisturbed native prairie, etc.

The National Wetland Inventory indicates various wetlands located within the proposed project area. We recommend that any unavoidable wetland impacts be replaced in kind, above-ground appurtenances not be placed in wetland areas, and no alterations be made to existing drainage patterns.

We also recommend that routine monitoring for avian and bat mortality be included as part of the facility maintenance plan for the life of the project. We would appreciate being kept informed as this project progresses, and if possible, we would like the GPS coordinates for each turbine after the site has been established.

Sincerely,

Greg Link
Chief
Conservation & Communication Division

js

North Dakota State Water Commission

900 EAST BOULEVARD AVENUE, DEPT 770 • BISMARCK, NORTH DAKOTA 58505-0850
701-328-2750 • TDD 701-328-2750 • FAX 701-328-3696 • INTERNET: http://swc.nd.gov

May 16, 2013

Grady Wolf
KLJ
PO Box 1157
Bismarck, ND 58502-1157

Dear Mr. Wolf:

This is in response to your request for review of environmental effects associated with the Rolette Wind Power Project located in Rolette County, ND.

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

- There are no floodplains identified and/or mapped where this proposed project is to take place. The area is designated as a Zone X. It is also believed that the project will not affect an identified floodplain as identified by the National Flood Insurance Program (NFIP). The NFIP map used to make this determination is: Rolette County, Panel #38079C0350C, 38079C0375C, 38079C0400C, 38079C0525C, 38079C0550C, and 38079C0575C, Date: 7/6/2010.

- A Drain Permit from the State Engineer may be needed for this project. Please contact Dwight Comfort at 701-328-4960 if you have any questions regarding the permit. The permit application is enclosed.

- The ND State Water Commission (Commission) maintains a network of observation/monitor water wells throughout the state, and many are located in public right-of-ways. The well location information can be obtained from the Commission's website at: http://swc.nd.gov.; then click on "Map and Data Resources"; and then click on "Ground /Surface Water". If water wells may be affected by your project or accidently damaged, please contact the Water Appropriations Division of the Commission at 701-328-2754.

- It is the responsibility of the project sponsor to ensure that local, state and federal agencies are contacted for any required approvals, permits, and easements.

- All waste material associated with the project must be disposed of properly and not placed in identified floodway areas.

- No sole-source aquifers have been designated in ND.

There are no other concerns associated with this project that affect State Water Commission or State Engineer regulatory responsibilities.

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

Sincerely,

Linda Weispfenning
Water Resource Planner

LW:dp/1570
Encl.

JACK DALRYMPLE, GOVERNOR
CHAIRMAN

TODD SANDO, P.E.
SECRETARY AND STATE ENGINEER

STATE HISTORICAL SOCIETY OF NORTH DAKOTA

Jack Dalrymple
Governor of North Dakota

North Dakota State Historical Board

Gereld Gerntholz
Valley City - President

Calvin Grinnell
New Town – Vice President

A. Ruric Todd III
Jamestown- Secretary

Albert I. Berger
Grand Forks

Diane K. Larson
Bismarck

Chester E. Nelson, Jr.
Bismarck

Margaret Puetz
Bismarck

Sara Otte Coleman
Director
Tourism Division

Kelly Schmidt
State Treasurer

Alvin A. Jaeger
Secretary of State

Mark Zimmerman
Director
Parks and Recreation Department

Grant Levi
Acting Director
Department of Transportation

Merlan E. Paaverud, Jr.
Director

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May 14, 2013

Mr. Grady Wolf
Project Manager
KLJ
128 Soo Line Drive
PO Box 1157
Bismarck, ND 58502-1157

ND SHPO REF: 13-0868 PSC PU-13-88 Rolette Power Development LLC Rolette Wind Power Project in Rolette County, North Dakota

Dear Mr. Wolf,

We reviewed your preliminary information on ND SHPO REF: 13-0868 PSC PU-13-88 Rolette Power Development LLC Rolette Wind Power Project in Rolette County, North Dakota. There is potential for unrecorded and recorded cultural resource properties in a variety of physiographic settings in the overall project area. If the project requires permits issued by a federal and/or state agency (e.g., WAPA, RUS, COE, USFWS, BOR) then the respective agencies are to be consulted regarding their recommendations on the project. As a potential federal undertaking, we encourage agency consultation as part of the review process. Consultation should also include tribal nations, North Dakota Indian Affairs, and ND DOT regarding any Scenic Byways.

We recommend a Class I Cultural Resource Inventory (file and records search with project maps) submittal. A Class II (reconnaissance) survey is warranted for standing structures in the visual Area of Potential Effect (APE), with a Class III (pedestrian) survey for those in the APE and over 50 years of age or older. Staff from this office can assist with narrowing the visual APE. Class III (pedestrian) surveys will be warranted for all areas directly impacted by the project, including crane paths, access roads, transmissions lines and turbine pads. We encourage that tribal monitors be invited to survey the APE. As part of the Class III Inventory, NDCRS site updates should be submitted on all sites resurveyed.

Thank you for the opportunity to review this project to date. We look forward to further review of cultural resource surveys and site forms. If you have any questions please contact Paul Picha, Chief Archaeologist (701) 328-3574 or Susan Quinnell, Review and Compliance Coordinator at (701) 328-3576, e-mail squinnell@nd.gov

Sincerely,

Merlan E. Paaverud, Jr.
State Historic Preservation Officer (North Dakota) and
Director, State Historical Society of North Dakota

C: Patrick Fahn, PSC

NORTH CENTRAL ELECTRIC COOPERATIVE, INC.

538 11th St. W, Suite 1 • Bottineau, ND 58318-1913
Telephone: (701) 228-2202 • Fax: (701) 228-2592
Toll Free in Service Area: 800-247-1197
www.nceci.com • Email: nceci@nceci.com

June 4, 2013

Mr. Grady Wolf
KLJ
128 Soo Line Drive
PO Box 1157
Bismarck, ND 58502-1157

RE: Rolette Wind Farm Project

Mr. Wolf,

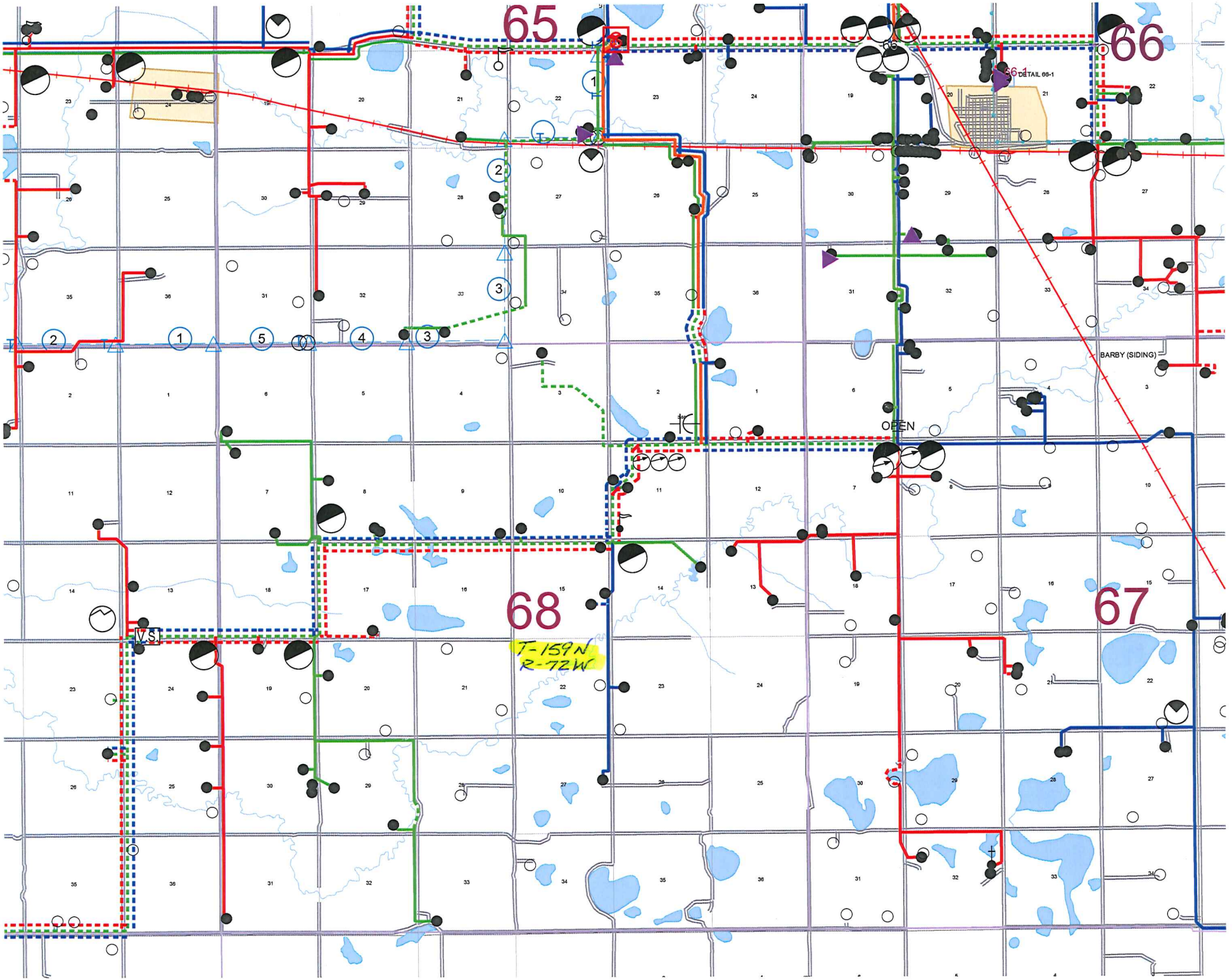
Enclosed please find an area map of facilities in the area you have highlighted for the Rolette Wind Farm Project.

The solid lines are overhead 15 KV distribution lines. The dashed lines are underground 15 KV distribution lines.

If you should have any further questions, please contact us.

Sincerely

Dave Caroline – Line Superintendent


65
66
66-1
DETAIL 66-1
BARBY (SIDING)
OPEN
68
67
T-159N
R-72W

Appendix F. Rolette Power Development, LLC Policies



Rolette Power Development, LLC
Landowners and Local Utilities Relationship Policies

As a locally owned, community-based company, Rolette Power Development, LLC (RPD) has adopted and published formal policies that are geared toward responsible stewardship of the land and natural resources, and respect for those others who also depend upon them. RPS and its associates have applied the following resolutions since the inception of the project:

Landowner and Local Utility Relations
Resolution

Whereas, RPD is a community-based, locally-owned, wind resource development company, whose mission is to develop projects that offer landowners and local investors an opportunity to share in the economic benefits of wind generation, and

Whereas, the business model adapted by RPD provides the opportunity for landowners to voluntarily participate in ownership of a project through their willingness to exercise wind resource options, wind turbine easements, and/or transmission line rights-of-way easements, and

Whereas, RPD has provided additional investment opportunities for landowners in the footprint and other local investors to participate in its ownership, and

Whereas, many of the owners of the wind farm project(s) developed by RPD will be those within the footprint of the project(s), and those who provide easements for transmission line rights-of-way or turbine facilities, and other local investors, and

Whereas, RPD desires to establish and maintain good working relationships with its owners and other landowners affected by the projects, and

Whereas, RPD desires to establish and maintain good working relationships with other utilities currently serving its landowners and local investors, and

Whereas, RPD desires to establish a model that will encourage emulation by other landowners and utilities throughout the state of North Dakota.

Now, therefore, be it resolved that RPD shall adopt and apply the following policies in its development efforts:

1. **Provide the opportunity for landowners affected by project facilities such as: turbine sites, access roads, maintenance buildings, substations, transmission lines, or other project elements, to communicate their concerns directly with project planners, engineers, and contractors before final decisions are made.**

2. **Accommodate the desires of affected landowners whenever such decision is environmentally, technically and economically feasible.**

3. **Provide fair-market remuneration to the affected landowner for any damages, adverse effects, easements, or other negative impacts caused by the project that may be mutually agreed upon by the landowner and RPD.**

4. **Coordinate development plans with other utilities who have existing infrastructure within the vicinity of the project(s) and who serve the area, and consider their recommendations in the project(s) development.**

5. **Provide the opportunity for other utilities who have existing infrastructure within the vicinity of the project(s) and who serve the area, to participate in the benefits of the project(s) that may be developed.**

Transmission Facility Site Selection Policies
Resolution

Whereas, RPD is a community-based, locally-owned, wind resource development company, whose mission is to develop projects that offer landowners and local investors an opportunity to share in the economic benefits of wind generation, and

Whereas, the constituency of RPD is landowner-based and as such, desire to be good stewards of the land and the environment, and

Whereas, RPD desires to avoid, minimize, or mitigate any adverse effects that its project(s) may have on landowners, the environment, or other utilities, and

Whereas, RPD will strictly adhere to the local, regional, state, and federal requirements relative to landowner and environmental concerns resulting from the project(s), and

Whereas, there are often trade-offs among environmental, landowner, economics, and technical considerations, and

Whereas, RPD benefits from the broad experience of its personnel who have successfully sited power plants, wind farms, high voltage transmission lines, and related facilities to the mutual satisfaction of landowners, regulators, other utilities, and facility owners.

Now, therefore, be it resolved that RPD shall adopt and apply the following transmission facility site selection policies in its development efforts:

1. **Identify potential conflicts among landowner, environmental, economic, technical, other utilities, and regulator interests early in the project development; avoid or resolve before final decisions are made.**

2. **Prefer to locate transmission line routes "square-with-the-world" over diagonal routes, when there is evidence of cultivated fields and/or existing field patterns.**

3. **Prefer untilled rangeland to cultivated fields for transmission facility siting.**

4. **Prefer the "quarter-line" (half-mile line) routing of transmission lines over routes adjacent to section lines.**

5. **Take advantage of existing rights-of-way that might accommodate collocation or compatible contiguous alignment.**

6. **Consider viable alternative routing opportunities early in the planning stages.**

7. **Coordinate development plans with other utilities serving the area and having existing infrastructure within the general vicinity of RPD project(s), and consider their recommendations in the project(s) development.**

8. **Consult with landowners, regulators, and designers to select the least objectionable site.**

9. **Accommodate the desires of affected landowners whenever such decision is environmentally, technically and economically feasible.**

10. **Mitigate siting problems that cannot otherwise be avoided or resolved.**

Transmission Facility Right-of-Way Acquisition Policy
Resolution

Whereas, RPD is a community-based, locally-owned, wind resource development company, whose mission is to develop projects that offer landowners and local investors an opportunity to share in the economic benefits of wind generation, and

Whereas, the business model adapted by RPD provides the opportunity for landowners to voluntarily participate in ownership of a project through their willingness to exercise wind resource options, wind turbine easements, and/or transmission line rights-of-way easements, and

Whereas, RPD desires to extend to landowners, upon whose property the transmission line is located, ownership in RPD as payment for the value of the right of way as an option, and

Whereas, RPD desires to establish and maintain good working relationships with its owners and other landowners affected by the project(s), and

Whereas, RPD desires to establish and maintain good working relationships with other utilities currently serving its landowners and local investors, and

Whereas, RPD desires to provide fair-market remuneration to the landowner for rights-of-way for the transmission facilities that can be mutually agreed upon.

Now, therefore, be it resolved that RPD shall adopt and apply the following transmission facility right-of-way acquisition policies:

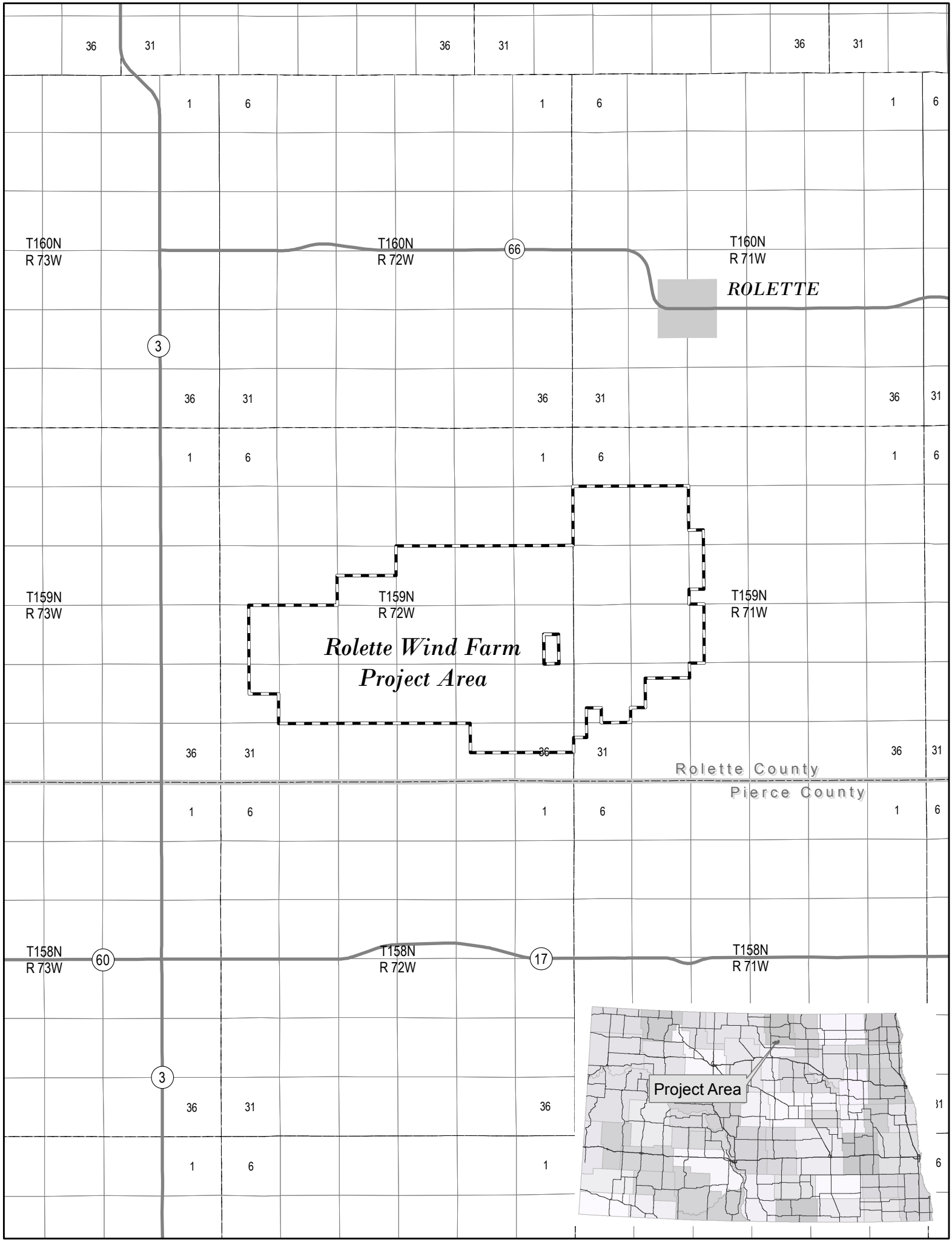
1. **Ascertain the current fair market value of the property within the intended right-of-way using information from comparable sales, landowner statements, other utility practices in the area, and/or professional appraisals.**

2. **Secure a 99-year easement in return for a one-time payment for land within the right-of-way. The amount of the payment should be market rates paid by other utilities for similar transmission line easements in the general area of the project. It is understood that the current market payment is approximately 80% of the mutually agreed upon current fair market value in "dollars per acre" for the land area within the right-of-way on a given landowner's property.**

3. **Identify any particular or unusual issues that the facilities may cause to harm or negatively impact the landowner, and negotiate a mutually acceptable resolution, apart from the long-term easement.**

Appendix G. Black and White Project Area Map




T160N
R 73W
T160N
R 72W
T160N
R 71W
66
ROLETTE
3
T159N
R 73W
T159N
R 72W
T159N
R 71W
Rolette Wind Farm
Project Area
Rolette County
Pierce County
T158N
R 73W
60
T158N
R 72W
17
T158N
R 71W
3
Project Area