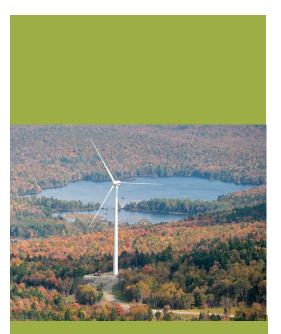


Avoided Emissions from the Antrim Wind Project



Prepared for:

Antrim Wind Energy, LLC

Colin High, Ph.D., RSG Inc. Gurpreet Neeraj, RSG Inc.

December 22, 2011



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CAA	Clean Air Act
CAIR	Clean Air Interstate Rule (EPA)
CSAPR	Cross State Air Pollution Rule (EPA)
СЕМ	Continuous Emission Monitors
CO ₂	Carbon Dioxide
DOE	U.S. Department of Energy
EPA	U.S. Environmental Protection Agency
kWh	Kilowatt-Hour
ISO	Independent System Operator
ISO-NE	New England Independent System Operator
NYISO	New York Independent System Operator
MARO	U.S. Department of Energy Mid-Atlantic Regional Office
MWh	Megawatt-Hour
NAAQS	National Ambient Air Quality Standards
NOx	Nitrogen Oxides
NREL	National Renewable Energy Laboratory
OAQPS	EPA Office of Air Quality Planning and Standards
РЈМ	PJM (Pennsylvania, New Jersey, Maryland) Interconnection
SIP	State Implementation Plan
SO ₂	Sulfur Dioxide



1.0 INTRODUCTION

This report provides an evaluation of the avoided air pollutants and water usage (together termed as "avoided emissions") from the operation of the proposed Antrim wind farm to be located in the sparsely settled Northwest portion of Antrim, NH with an installed capacity of 30 Megawatts (MW).

This report is a prospective evaluation of the avoided emissions from the operation of the project. The evaluation applies a methodology using the Time Matched Marginal (TMM) emissions model developed by Resource Systems Group, Inc (RSG). The methodology is based on generally accepted principles and procedures for estimating emissions reductions from wind and other renewable electric power generation on the electric grid.^{1, 2}

The methodology in this report is consistent with the approach used by other experts in the field. It has been used in previous studies of avoided emissions from wind and other renewable generation in most electric grid regions in the country including the ISO New England, NYISO and the PJM Interconnection power market³. The PJM New Jersey study, including its methodology, was published in June 2006 and was co-authored by technical experts from both the National Renewable Energy Laboratory (NREL) and the Global Environment and Technology Foundation, a prominent non-profit organization in the energy and environmental field. In addition, both the studies of the PJM for Maryland and New Jersey have been reviewed and accepted by the U.S. Environmental Protection Agency, the Department of Energy. ⁴ The Maryland study was accepted by the Environmental Protection Agency to support its first-ever approval of a renewable energy purchase for nitrogen oxide (NOx) emissions reduction credit in a State Implementation Plan (SIP) under the Clean Air Act. ⁵ The methodology in the Maryland report using the RSG TMM Model also was published by NREL as a model for air emissions assessment for other wind energy projects. ⁶ The RSG TMM Model has also been applied extensively for estimating avoided emissions for energy efficiency and renewable energy projects in all 50 states for the DOE Loan Program Office.

2.0 THE ANTRIM WIND FARM

Antrim Wind Energy LLC is proposing to develop a utility scale wind energy generation facility in the sparsely settled northwest portion of Antrim on private property that extends from the east summit of the Tuttle Hill to the north flank of Willard Mountain. To the north of the project area lie the PSNH electrical transmission corridor which contains 34.5KV and 115KV transmission lines, and the Franklin Pierce Highway (State Route 9). The Project will consist of ten wind turbine generators and the total extent of tree clearing for roads and all construction is anticipated to encompass less than 65 acres. This analysis is based on a nameplate capacity of 30 MW for the project consisting of 10 Acciona AW-3000 wind turbines.

⁶ National Renewable Energy Laboratory, Model State Implementation Plan (SIP) Documentation for Wind Energy Purchase in State with Renewable Energy Set-Aside, May 2005, Subcontract Report NREL/SR-500-38075. See http://www.windpoweringamerica.gov/sips.asp



¹ The Greenhouse Gas Protocol, Guidelines for Quantifying GHG reductions from Grid-Connected Electricity Projects, World Resources Institute (WRI), <u>http://www.ghgprotocol.org/files/ghgp/electricity_final.pdf</u>

² Roadmap for Incorporating Energy Efficiency/Renewable Energy Policies and Programs into State Implementation Plans/Tribal Implementation Plans, US EPA, Office of Air Quality Planning and Standards, Research Triangle Park, North Carolina. <u>http://www.epa.gov/airguality/pdfs/eeremanual.pdf</u>

³ Report on the Clean Energy/ Air Quality Integration Initiative Pilot Project of the U.S. DOE Mid-Atlantic Regional Office, June 2006. 70 Fed. Reg. 24988 (May 12, 2005). See also, Metropolitan Washington Council of Governments, "Plan to Improve Air Quality in the Washington, DC-MD-VA Region," February 19, 2004 at http://www.mwcog.org/committee/committee/archives.asp?COMMITTEE_ID=14 (Scroll down to February 19, 2004, pp. 7-77 to 7-81 and Appendix J, pp. J-71 to J-76).

⁴ Op cit..

⁵ 70 Fed. Reg. 24988 (May 12, 2006).

3.0 THE NEW ENGLAND ISO POWER MARKET

Electric power generated from wind energy at the Antrim wind farm will be sold into the New England ISO power market. The power plants used in this analysis are shown in Figure 1. The import and export of power is not considered, because, in a relatively large power market area such as New England ISO, relatively little power is imported or exported. Furthermore, the wind farm when it displaces generation outside the New England ISO power market will typically displace generation on the margin of the same type of variably-dispatched fossil fuel units that are included in this analysis. As a result, there will be very little difference in average avoided emission rates. All displaced generation by wind is expected to occur primarily at the plants listed in Table 1. As there is currently transmission capacity for the project, any potential future transmission constraints are not considered in this analysis. These simplifying assumptions are unlikely to significantly affect the results at this level and for the purposes of the report.

4.0 Avoided Emissions in Power Markets

Wind power has zero direct air emissions and will create reduced air emissions from other electrical generators. Wind creates these reductions because of the way the electric power system works. Wind is a "must run" power source. Once it is installed, wind generation has zero fuel costs and very low operating costs. When wind energy is available, it will displace generation at facilities with higher operating costs and which can be variably dispatched. The emissions from those fossil-fuel generating units are then avoided. Wind almost never displaces nuclear power, hydroelectric power, or other renewable energy sources, because like wind, these units have low incremental operating costs. Additionally, nuclear power and hydroelectric power are normally fully dispatched and are rarely able to respond to unscheduled rapidly changing and unpredictable changes in load.

The electrical generation that is displaced by wind power also varies by time of day and season and with the mix of fossil-fueled generation. In the New England ISO power market area, this mix includes coal, oil, and natural gas. The avoided emissions from all the major pollutants tend to be higher in areas with more coal-fired generation and lower where natural gas is the dominant fuel. Efficiency and the pollution control system performance of fossil-fueled units also are important.

5.0 ANALYTICAL METHODOLOGY

This analysis evaluates avoided emissions that will occur when electric generation from the Antrim Wind Farm is sold into the New England ISO power grid. This avoided emissions analysis is based on projected generation from the Antrim Wind Farm and on EPA emissions data for the fossil-fueled power plants for the year 2007. ¹

The methodology used in this report is the RSG time-matched marginal (TMM) avoided emissions analysis model using an incremental generation-weighted average of the emissions of plants that are variably dispatched to meet changing demand. The analysis matches the projected hour-by-hour generation of the Antrim Wind Farm with the actual hourly generation of fossil-fueled units in the ISO New England power market area shown in Figure 1.

¹ The most recent year for which complete and consistent validated data are available from the EPA is 2007. Changes since 2007 are not expected to have a significant effect on this avoided emissions analysis.





Figure 1: Map of the Location of the Antrim Wind Farm and Fossil Fuel Plants¹ in the Analysis

Note: For clarity not all the power plants used in the analysis can have name labels on this map. For a complete list of all plants in the analysis refer to Table 1 below.



Plant Name	Plant Name
Devon Station	Bucksport Mill
Montville Station	Capital District Energy Center
NRG Norwalk Harbor	Ocean State Power
Middletown	Dartmouth Power Associates
Bridgeport Station	Pawtucket Power Associates
William F Wyman	Pfizer Groton Plant
Mystic Generating Station	Ocean State Power II
New Boston Generating Station	Versailles Mill
Kendall Square Station	Milford Power LP
Canal	Mass Inst Tech Cntrl Utilities/Cogen Plt
Mount Tom	Dighton Power Plant
Somerset Station	Androscoggin Energy Center
Brayton Point	Berkshire Power
Salem Harbor	Bridgeport Energy Project
NAEA Energy Massachusetts LLC	Tiverton Power Plant
Cleary Flood	Maine Independence Station
Merrimack	Millennium Power
Schiller	Rumford Power Associates
Manchester Street	Rhode Island State Energy Partners
New Haven Harbor	Milford Power Project
A L Pierce	Lake Road Generating Plant
Newington	ANP Bellingham Energy Project
General Electric Aircraft Engines	ANP Blackstone Energy Project
Bellingham Cogeneration Facility	Westbrook Energy Center
AES Thames	Fore River Generating Station
Masspower	PPL Wallingford Energy LLC
Pittsfield Generating LP	NAEA Newington Power

Table 1: List of Major Variably Dispatched Fossil-Fueled Plants¹ in the Analysis

Note: The names used in Table 1 are those in the EPA CEM database. Plants can have more than one unit. These plants may also be known by other names.

Two different scenarios are evaluated in this report for two wind profiles based on data collected from the Antrim Wind site and provided by Antrim Wind Energy LLC's meteorologist at VBar (See Appendix A). These two scenarios are:

Scenario A: Avoided emissions from wind generation in the year 2010 based on the actual meteorological data collected on site and using the power curve for the Acciona AW-3000 116.

Scenario B: Avoided emissions from wind generation using the long term average power yield for the project site based on industry standard methods of correlating data to long term trends and using the power curve for the Acconia AW-3000 116.

The year 2010 was an above average year for wind power and was evaluated as Scenario A in this report. For Scenario B, the wind power data was correlated downward using more than 2 years of site specific data and based on industry standard methods to determine the P50 power yield scenario. This analysis results in the power yield which can be assumed to be surpassed 50% of the time or overstated 50% of the time. 1% of the 8760 hours (75 hours) have missing data for both the scenarios and no attempt was made to fill up that data. No wind generation was assumed during these hours. This makes it a



¹ Note: The marginal emission rates are calculated for all fuel types at individual units for every plant.

conservative estimate of the annual wind generation capacity and the projected avoided emissions from the wind farm.

The expected hourly generation for the wind farm is matched by RSG's TMM database model against the hourly generation of the variably dispatched fossil fuel units at plants shown in Figure 1 and Table 1. This information forms the basis for matching and creating the set of generation units in each hour which can be displaced. This analysis identifies the marginal generation units which are dispatched to follow the changing load on the system in the New England ISO power market (ISO-NE). The hourly generation data for the fossil fuel plants have been calculated by using the hourly carbon dioxide (CO_2) emissions from the continuous emissions monitors (CEMs) and the generation average CO_2 emission rates per MWh for each facility as reported to the U.S. Environmental Protection Agency (EPA). ¹ The hourly emission rates for nitrogen oxides (NOx), sulfur dioxide (SO_2) and carbon dioxide (CO_2) are taken from the CEM data

reported to EPA by the owners and operators of the fossil-fueled power plants. The average NOx, SO_2 and CO_2 avoided emission rates are based on a weighted average of the emissions at fossil-fueled units, which are matched at each hour when wind generation occurs. The weighting is based on each generation unit's contribution to the changing load. The variably dispatched fossil fueled generation in New England ISO region is dominated by gas. This can be seen in Figure 2 that shows the annual generation of fossil fueled units in the New England ISO by fuel type.

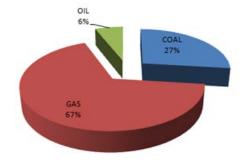


Figure 2: Annual Generation by Fossil-Fuel Type in the New England ISO (2007 Data)

6.0 RESULTS

The annual avoided emissions can be expressed in terms of the average rate in lbs/MWh and as total annual emissions in tons per year for the plant. The average annual avoided emission rate for NOx, SO_2 and CO_2 in lbs/MWh resulting from the wind power generation at the Antrim Wind Farm are shown Table 2. Note that these marginal emission rates do not change between the two scenarios because of the presence of the same fleet of marginal units in the system.

	lbs/MWh					
	CO2	N2O	CH4	NOx	SO2	PM
Gas	901	0.002	0.018	0.2	0.2	0.68
Oil	1954	0.034	0.174	1.8	6.4	0.63
Coal	2285	0.043	0.031	1.5	8.2	0.69
Annual	1159	0.010	0.037	0.5	1.7	0.68

Table 2: Average Annual Avoided Emission Rates from the Antrim Wind Farm (lbs/MWh)

These rates are likely representative of the situation in 2007 to 2011. In future years, the magnitude and pattern of avoided emission rates will be similar but will be affected by future changes in the distribution of fossil-fueled generation in New England ISO and adjoining power market areas.



Comparison of Emission Rates

Table 3: Comparison of eGRID system average emission rates compared with RSG TMM Model emission rates for the New England ISO power market

	CO2	NOx	SO2
	(in lbs/MWh)
eGRID System Average	828	0.84	2.84
RSG TMM Model	1159	0.50	1.70

In Table 3, the RSG TMM Model marginal emission rates for SO2, NOx, and CO2 are compared with eGRID system average emission rates (also known as output emissions rates) for the New England ISO power market. The reason for the differences in avoided emission rates is primarily the result of differences in methodology. The eGrid database simply averages the emission rates of all plants in the system including near zero emissions sources such as nuclear and hydropower. It does not identify the marginal plants nor does it calculate the marginal emission rates. It does not take into consideration the time matching of wind generation. That approach is much less accurate than the model used in this report. However, there is a broad agreement on emission rates.

The total annual avoided emissions from the operation of the Antrim Wind Farm are shown in Table 4 and Table 5 for the scenarios A and B respectively.

	tons						
	MWH	CO2	N20	CH4	NOx	SO2	PM
Gas	96,410	43,420	0.1	0.9	10	9	33
Oil	12,334	12,050	0.2	1.1	11	39	4
Coal	13,090	14,952	0.3	0.2	10	53	4
Annual	121,991	70,682	0.6	2.2	31	102	41

Table 4: Scenario A. (2010 analysis): Total Annual Avoided Emissions from the Antrim Wind Farm (Tons per year)

Table 5: Scenario B. (Long term average)	Total Annual Avoided Emissions from the Antrim Wind Farm (Tons per year)
--	--

	tons						
	MWH	CO2	N20	CH4	NOx	SO2	PM
Gas	81,103	36,532	0.1	0.7	8	8	28
Oil	10,428	10,188	0.2	0.9	9	33	3
Coal	11,063	12,636	0.2	0.2	8	45	4
Annual	102,725	59,573	0.5	1.9	26	87	35

The Antrim Wind Farm will also result in significant avoided emissions of fine particulate matter, mercury, volatile organic compounds, carbon monoxide and other toxic air pollutants. These pollutants can have adverse public health impacts. The avoided emissions of these pollutants cannot be quantified as accurately as NOx, SO₂ and CO₂ because they are not subject to continuous monitoring requirements. However, these additional avoided emissions will in general follow the same pattern as the avoided emissions of CO₂.

The monthly avoided emissions are shown in Figure 3. Figure 3 shows that wind creates the greatest amount of avoided emissions in the fall, winter, and spring. This is because wind power is weakest in the summer months.





Figure 3: Average Monthly Total Avoided Emissions from the Antrim Wind Farm for Scenario A and B.



The avoided water usage was calculated using the avoided generation by fuel and turbine type from the RSG TMM Model for both the scenarios A and B. The water consumption rate for each fuel type and turbine type was obtained from publicly available sources.^{1, 2} The results for avoided water usage in gallons per year are shown below in Table 6 and Table 7 for the two scenarios A and B respectively.

	Fuel	MWh avoided	Water avoided (gal)
=	Gas	96,410	8,811,890
	Oil	12,334	7,400,426
	Coal	13,090	4,581,523

 Table 6: Scenario A. (2010 analysis): Total Annual Avoided Water Use from the Antrim Wind Farm (gallons per year)

20,793,839

Fuel	MWh avoided	Water avoided (gal)
Gas	81,103	7,412,816
Oil	10,428	6,256,851
Coal	11,063	3,871,936
TOTAL	102,594	17,541,603

121,834

7.0 CONCLUSIONS

TOTAL

This report concludes that there are significant avoided air emissions that may be expected to result from electric power generation by the Antrim Wind Farm. The avoided emissions will include NOx, SO₂ and CO₂ which have been quantified. In addition there will be significant avoided emissions of fine particulate matter, mercury, volatile organic compounds, carbon monoxide, and other toxic air pollutants. The avoidance of emissions of all these pollutants has public health benefits and contributes to the mitigation of global warming. The avoided emissions from the wind farm will also reduce the overall cost of lowering the cap on NOx and SO₂ and the cost of limiting greenhouse gas emissions in New England.

The avoided emissions will also have specific environmental benefits. The avoidance of NOx emissions will contribute to reducing the occurrence of high ozone days in New England and Eastern Canada. This coupled with reductions in SO₂ will reduce the impacts of acid precipitation on regional forests and lakes. The avoidance of fine particulate matter, NOx, and SO₂ will contribute to reducing regional haze and respiratory health risks. Lastly, avoided mercury emissions will contribute to efforts to reduce human exposure to environmental mercury, a compound that is both directly dangerous to human health and indirectly hazardous through the consumption of freshwater fish.

Most significantly, the reduction in CO_2 emissions will contribute to the mitigation of the potentially severe impact of global warming on the climate of New England and the world. To put the impacts in perspective, the greenhouse gas avoided emissions benefits of the Antrim Wind Farm for the two scenarios are equivalent to:

² "Power Generation water use in Texas from Years 2000 to 2060" prepared for Texas Water Development Board by representatives of Investor Owned Utilities of Texas, Jan 2003



Table 7: Scenario B. (Long term average): Total Annual Avoided Water Use from the Antrim Wind Farm (gallons per year)

¹ Water and Sustainability (Volume 3): U.S. Water Consumption for Power Production – The Next Half Century, Electric Power Research Institute, Palo Alto, CA: 2002

Scenario A (2010 analysis): taking approximately **12,614** passenger vehicles off the road or the CO2 emissions from the electricity use of **8,021** homes for one year or the carbon sequestered by **13,717** acres of pine or fir forests.¹

Scenario B (Long term average): taking approximately **10,631** passenger vehicles off the road or the CO2 emissions from the electricity use of **6,761** homes for one year or the carbon sequestered by **11,561** acres of pine or fir forests.¹

At the present time the development of commercial wind power, other than energy efficiency and conservation is one of the more cost effective means of reducing carbon dioxide emissions and therefore of mitigating the pending climate crisis^{2, 3}. This important environmental benefit of avoided emissions should be considered in balancing other impacts of the Antrim Wind Farm.

³ "Levelized Cost of Energy Analysis." (2008). Presentation at NARUC, Lazard, June.



¹ EPA Greenhouse Gas Equivalencies Calculator, <u>http://www.epa.gov/cleanenergy/energy-resources/calculator.html</u> ² http://www.nrel.gov/analysis/costs.html

Appendix A



29 December 2011

Colin High, Ph.D. Resource Systems Group, Inc. 55 Railroad Row White River Junction, VT 05001

Dear Dr. High:

V-Bar has provided two "8760" tables to Resource Systems Group, Inc. ("RSG") on behalf of Antrim Wind Energy LLC for the purposes of RSG's emissions avoidance analysis. The 8760 tables provide simulated hourly energy production [in megawatt hours (MWh)] for the proposed wind farm array in Antrim, NH for each of the 8760 hours in a year. The purpose of the two tables is to demonstrate (a) the case for calendar year 2010, for which a full annual on-site wind data set is available; and (b) the expected average case using long-term wind speeds based on on-site wind measurements from November 2009 through August 2011 and correlated to available long-term reference stations.

Prior to performing the analysis, V-Bar meteorologists visited the Antrim Project site to review/verify the meteorological tower configuration and site conditions and also used industry standard quality control measures to "clean" the data set. As a result of this quality control process, we found approximately 1% of the hours of the year had missing or invalid data (e.g., anemometers frozen by ice). V-Bar has made no attempt to fill these missing records. Thus, the predicted annual energy total could vary up to 1% from what is stated in the 8760 tables.

In the year 2010, the wind speeds were approximately 9% above normal, and the energy simulation approximately 19% above normal. This occurs about once per twenty years on average.

V-Bar utilized industry best practices to extrapolate from the wind speed measurement heights to model the hub-height wind speeds and associated shear and turbulence characteristics to produce the energy yield assessment for the year 2010.

To extrapolate from the period of recording to the expected long-term averages, V-Bar relied on two regional long-term reference meteorological stations that demonstrated suitable correlation to winds at the Antrim Project. These extrapolations account for annual variability in wind speeds as well as variations in wind speed distributions to produce the 8760 table for an "average" year. This adjustment process is consistent with wind energy industry practice and has an equal chance of being high or low by several percent using standard uncertainty analysis.

400 E. Capitol Park Ave. Suite 404 Salt Lake City, UT 84103 tel: 801.712.6107 www.v-bar.net ____ Colin High, Ph.D. Page 2

All energy yield calculations reflect the Acciona AW/116 3-MW turbine and use the manufacturer's published power curves. Acciona guarantees these power curves at the level of 100% in accordance with IEC Standard 61400-12-1 1st Edition 2005-12.

The Antrim 8760 tables are, in V-Bar's opinion, accurate to the best of our knowledge given the available on-site data available and inherent uncertainty in the analysis process.

Sincerely,

Richard L. Simon

Richard L. Simon Director

GREGORY S. POULOS, PhD 311 Mesa View Way Golden, Colorado 80403 Tel: 303-882-2579 gspoulos@v-bar.net

Dr. Gregory S. Poulos joined V-Bar, LLC, a renowned wind energy consulting firm in September 2009, became a Director in September 2010, and will be a co-Managing Director effective January 2012. His responsibilities include wind resource project management and development of modeling techniques. He has published several articles on wind energy, and is recognized for his expertise in mesoscale modeling.

Dr. Poulus received a BS degree in Meteorology from Cornell University in 1989, and an MS degree in Atmospheric Science from Colorado State University in 1991. He began work at Los Alamos National Laboratory in 1992 and completed his PhD in Atmospheric Science from Colorado State University 1993-1996. His research in this period concerned atmospheric flows in complex terrain (ASCOT 1991, 1993), including a detailed literature review of katabatic wind study, very high resolution mesoscale modeling and large-eddies simulations of near-surface winds and atmospheric observations using towers, sodar, lidar and profiling atmospheric radar.

Dr. Poulos joined Colorado Research Associates in 1996 where, among other numerical and observational work, he led the CASES-99 tall tower and remote sensing field experiment studying the winds and turbulence over the plains of Kansas. This field study has resulted in more than100 scientific publications and more than 10 doctoral and masters theses. In 1999 he co-founded the operational numerical weather prediction company Foresight Weather, LLC.

Dr. Poulos joined the National Center for Atmospheric Research, Atmospheric Technology Division in 1996, where he directed the Research Technology Facility whose purpose was to develop and deploy advanced tower, lidar, sodar, radar and balloon-borne observational equipment for scientific research worldwide. He joined Clipper Windpower in July 2007 as Senior Meteorologist to start their meteorological group. Finally he has an affiliate faculty position with the University of Utah Meteorology Department.

Eron Jones

1812 E. Lafayette Pl. #304, Milwaukee, WI 53202

ewjones@v-bar.net, eronjones@gmail.com, Tel: 414-412-4811

EDUCATION

University of Wisconsin-Milwaukee, Milwaukee, WI M.S. in Mathematics	2007
Thesis: "On the Topology of the El Niño and La Niña Climate Networks"	
University of Wisconsin, Madison, WI	
B.S. in Atmospheric and Oceanic Science	2004
Areas of Concentration: Mesoscale and Synoptic-Scale Modeling	
Treasurer for Junior Chapter of the American Meteorological Society	
Volunteer for Ambassadors of Science at local elementary schools	
WORK HISTORY	

V-Bar, LLC

Associate

Perform wind energy resource analyses and prepare technical reports for landowners and small to large wind energy developers, or for finance purposes.

Experienced with site selection, meteorological tower siting and configuration, remote sensing equipment, manufacturer suitability requirements, and wind turbine planning/siting.

Familiar with raw wind data quality control techniques.

University of Wisconsin Graduate Teaching Assistant

Responsible for planning curriculum and lecturing for the laboratory portion of Introduction to Atmospheric Science and entire class period of Intermediate Collegiate Algebra.

U-Haul Field Relief Manager

Served as senior general manager to seven retail stores in western Wisconsin, responsible for seven general managers and roughly 40 employees.

Oversaw scheduling of personnel and rental fleet inventory, adherence to profit and loss goals, maintenance scheduling, and enforcement of company policies.

PROFESSIONAL QUALIFICATIONS

Familiarity with C++, MATLAB, and FORTRAN computer programming languages.

Experience with GIS applications and mapping tools.

LANGUAGES

- English native language
- Spanish speak, read, and write with basic competence.

MEMBERSHIPS

American Wind Energy Association

2005-2007

2007-Present

2004-2005

Richard L. Simon, MS 400 E. Capitol Park Avenue, Suite 404 Salt Lake City, UT 84103 Tel: 801-712-6107 rlsimon@v-bar.net

<u>GENERAL</u>

Mr. Simon is a consulting meteorologist with 35 years professional experience. He has a wide background, with emphases in wind energy, air pollution, climatology, managing field programs, basic and applied research, and expert testimony for litigation.

EDUCATION

BA in Geography, University of California at Berkeley, 1973

MS in Meteorology, San Jose State University, 1976. Dissertation topic: the summertime stratus over the eastern Pacific Ocean. GPA: 4.0/4.0

PRINCIPAL EMPLOYMENT

1977-1980: Co-founder and co-owner, Global Weather Consultants, Inc., Palo Alto, California (president 1978-1980). The company specialized in air pollution, wind energy, and customized weather forecasting for the media and agriculture.

1980-1982: Meteorologist, Pacific Gas and Electric Company, San Francisco, California. Areas of responsibility included wind energy (field measurements, computer programming, data analysis), geothermal (pollutant dispersion studies), and nuclear (emergency response planning for Diablo Canyon Power Plant).

1982-1983: Senior Meteorologist, American Energy Projects, Palo Alto, California. This was one of the original private developers of wind energy projects. I was responsible for property acquisition, siting of wind turbines, and evaluation of turbine performance.

1983-2002: Sole proprietor of meteorological consultancy to the public and private sector, with primary emphasis on wind energy development across the world.

2003-present: Director, V-Bar, LLC. This is a consulting firm specializing in renewable energy, primarily wind. The firm has offices across the United States, and our client base includes private developers, governmental agencies, public utility districts, investor-owned utilities, municipalities, financial companies, and landowners. Mr. Simon has personally sited more than 15,000 MW of operating wind turbines around the world.

Natural Community Assessment for Antrim Wind Energy Project Town of Antrim Hillsborough County, New Hampshire

Prepared for:

Antrim Wind Energy, LLC 155 Fleet Street Portsmouth, NH 03801-4050

Prepared by:



TRC ENVIRONMENTAL CORPORATION

10 Maxwell Drive, Suite 200 Clifton Park, New York 12065

January 2012

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ATTACHMENTS

Attachment 1 Natural Community Map



1.0 INTRODUCTION

On behalf of Antrim Wind Energy, LLC, TRC has prepared Natural Community Assessment ("NCA") for a proposed wind energy project site ("Site"), located in the Town of Antrim, Hillsborough County, New Hampshire. This NCA was done in accordance with the "Natural Communities of New Hampshire, Second Edition" (Sperduto and Nichols 2011). The survey protocol and data forms were developed in consultation with the New Hampshire Natural Heritage Bureau (NHNHB).

2.0 **PROJECT OVERVIEW**

Antrim Wind Energy LLC (AWE) is proposing to construct the Antrim Wind Energy Project (Project) on Tuttle Hill and Willard Mountain in the Town of Antrim, Hillsborough Country, New Hampshire. The proposed Project is sited entirely on privately owned land that is leased by AWE. The proposed Antrim Wind Energy Project involves the construction of 10 wind turbines, a collection and interconnection substation, approximately 4 miles of new access road, and an operations and maintenance building. There will be no new transmission lines, other than collector system lines, constructed as part of this Project. It is expected that the total direct impact for the access roads, the turbine pads, staging areas, and work pads will be approximately 57 acres.

The proposed project is sited on the ridges of Tuttle Hill and Willard Mountain which are oriented east-northeast to west-southwest. The ridges are approximately parallel to NH Route 9, which is about ³/₄ of a mile to the north. Between the ridgeline and Route 9 is an existing transmission corridor containing both a 115kV transmission line and a 34.5kV distribution circuit; the proposed Project will interconnect with this existing transmission.

According to available historical information, the area was first developed with mills and farms along the North Branch River, which is located approximate a mile north of the ridges. The project area was once cleared for sheep farming, and numerous stonewalls were observed throughout and adjacent to the project site. After the decline of sheep farming in the area, the site has re-vegetated into a forested condition. Periodic timber harvesting has occurred throughout the entire area.



3.0 METHODS

A two-part approach was utilized to assess the natural communities in the vicinity of the proposed project. First, a desktop review of the readily available data for the project area was performed. Existing data reviewed included aerial photography, soils mapping, cover type, wetland and stream mapping, aspect and elevation, bedrock geology, ownership and land management and a review of data that was available from the NH Natural Heritage Bureau.

The second part of the natural community assessment included a field survey using a modified random point sampling protocol and data form developed in consultation with NHNHB. Approximately 460 acres was surveyed and data was collected at 155 points. For documentation purposes a "Natural Community Reporting Form" was filled out along with digital photographs and a GPS point at each sampling location.

4.0 **RESULTS**

The site has a variety of cover types that are typical of the lower hills and slopes of the monadnocks of the Hillsboro Inland Hill and Plains subsection of southwestern New Hampshire. The cover types are in various stages of succession, ranging from managed scrub-shrub in an existing electric transmission line corridor and recently cleared forest to mature stands of hardwood and softwood northern hardwood forest. All of these areas have been described and classified to natural communities, with the disturbed early successional forest areas defined by what community type they will develop as they grow and progress toward mature stands. The classification of the site's natural communities was done in accordance with the "Natural Communities of New Hampshire, Second Edition" (Sperduto and Nichols 2011). Areas such as managed ROW, recent clear cuts, and maintained roads have also been included as cover types.

None of the natural communities identified on the site are considered rare or unusual. The condition of these communities, as described above, has been influenced to varying degrees by past human activities. None of the surveyed communities in this area would qualify as being "exemplary".

The following table summarized the natural communities and cover types found in the survey area. Descriptions of the natural community are included below. The mapping of the natural communities in relation to the project layout is included in Attachment 1.

Natural Communities	Approximate Acres	Approximate % cover of assessment area
Hemlock - Beech - Oak - Pine Forest	155.3	33.61%
Hemlock - Oak - Northern Hardwood Forest	24.9	5.39%
Hemlock - Spruce - Northern Hardwood Forest	93.7	20.28%
Northern Hardwood - Spruce - Fir Forest	34.54	7.48%
Red Oak - Pine Rocky Ridge	33.7	7.29%
Red Maple – Cinnamon Fern Swamp	0.6	0.13%
Red Maple – Sensitive Fern Swamp	1.0	0.22%
Red Maple – Sphagnum Basin Swamp	3.2	0.69%
Rich Red Oak Rocky Woods	1.0	0.22%
Semi-Rich Oak - Sugar Maple Forest	35.8	7.75%
Sugar Maple - Beech - Yellow Birch Forest	57.1	12.36%
Temperate Acidic Cliff	0.9	0.19%
Existing Roads	4.6	1.00%
Clearcut / Cleared Field	9.3	2.01%
R.O.W. Clearing	6.4	1.39%

Table 1.Cover Types and Natural Communities in
Project area.

The descriptions of the natural communities observed during the survey are below; these descriptions are from "Natural Communities of New Hampshire Second Edition" (Sperduto and Nichols 2011).

Hemlock - Beech - Oak - Pine Forest:

This is a very common, broadly defined community found on glacial till and terrace soils of low to mid elevations in central and southern New Hampshire (with extensions into the White Mountains where it is uncommon). It is latitudinally, elevationally, and floristically transitional between northern hardwood forests and Appalachian oak - hickory forests. As with most upland forests of the region, single-tree wind throw is the primary natural disturbance, with occasional larger blow down patches from hurricanes. Both soil and disturbance related variation is apparent in species composition.

Soils are moderately to extremely well drained, dry-mesic to mesic loamy sands and sandy loams of varying degrees of stoniness and seasonal water availability. Source bedrock tends to be igneous or siliceous metamorphic rock producing acidic soils with low nutrient availability.

CHARACTERISTIC VEGETATION: *Tsuga canadensis* (hemlock), *Fagus grandifolia* (American beech), *Quercus rubra* (red oak), and *Pinus strobus* (white pine) are the primary mid

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to late successional tree species, and each is present in fully intergrading degrees of prominence. Since most examples in the state are early to mid successional, hemlock and beech may be present primarily in the understory or otherwise increase in prominence over time. At the extreme ends of the canopy-gradient, either hemlock or beech dominates to the exclusion of nearly all other tree species. Other abundant or frequent early to mid-successional tree species include Betula papyrifera (paper birch), Acer rubrum (red maple), and A. pensylvanicum (striped maple). Other occasional species that may be present in low abundance include Prunus serotina (black cherry), Betula lenta (black birch), Acer saccharum (sugar maple), Fraxinus americana (white ash), B. alleghaniensis (yellow birch), and B. populifolia (gray birch). Picea rubens (red spruce) and Abies balsamea (balsam fir) are uncommon or absent. The understory woody and herbaceous plant association is distinct from northern hardwood and spruce - fir forest types. Good differential species that are found primarily in this community include Hamamelis virginiana (witch hazel) and Gaultheria procumbens (wintergreen). Species that are less frequent or abundant than in northern hardwoods include Oxalis acetosella (northern wood sorrel), Huperzia lucidula (shining clubmoss), Lonicera canadensis (Canadian honeysuckle), Dryopteris campyloptera (mountain wood fern), Clintonia borealis (bluebead lily), and Streptopus spp. (twisted stalks). Other characteristic species, many of which also occur in northern hardwood forests, include Aralia nudicaulis (wild sarsaparilla), Uvularia sessilifolia (sessile-leaved bellwort), Dryopteris intermedia (intermediate wood fern), Epifagus virginiana (beech-drops), Mitchella repens (partridge-berry), Trientalis borealis (starflower), Monotropa uniflora (Indian pipes), and Maianthemum canadense (Canada mayflower). The globally rare *Isotria medeoloides* (small whorled pogonia)* is most often found in this forest type.

Hemlock - oak - northern hardwood forest:

This is a common mixed coniferous - deciduous forest of middle elevations (800–1,500 ft. elevation) in central New Hampshire. It also occurs as more isolated patches on mesic sites in southern parts of the state, and in valley-bottom settings in the mountains (locally to 2,000 ft. elevation). The canopy is characterized by a mix of classic northern hardwood species such *Acer saccharum* (sugar maple), *Betula alleghaniensis* (yellow birch), and *Fagus grandifolia* (American beech), along with *Tsuga canadensis* (hemlock). *Quercus rubra* (red oak) and *Pinus strobus* (white pine) are also typically present, but diminish in abundance in examples in the mountains or at higher elevations.

This community is found primarily on moderately well to well drained soils (occasionally somewhat poorly drained) of coarser parent materials, particularly compact till and firm ablation tills and sometimes on outwash, kame-terraces, and shallow-to-bedrock soils. Soils are generally acidic and moderately nutrient poor.

CHARACTERISTIC VEGETATION: Hemlock and beech are the primary late-successional tree species. Red oak and yellow birch are often present as associates. Hemlock and/or beech may only be present in the understory in successional examples. Other trees are less constant and more variable in prominence including sugar maple, white pine, *Fraxinus americana* (white ash), *Acer rubrum* (red maple), *Picea rubens* (red spruce), and *Abies balsamea* (balsam fir). The most consistent plants in the shrub layer are *Acer pensylvanicum* (striped maple) and

The most consistent plants in the shrub layer are *Acer pensylvanicum* (striped maple) and *Viburnum lantanoides* (hobblebush) but they are typically somewhat sparse. Herbs that are more

abundant or frequent than in typical northern hardwoods include *Medeola virginiana* (Indian cucumber-root), *Mitchella repens* (partridge-berry), and *Coptis trifolia* (goldthread).

Hemlock - spruce - northern hardwood forest:

This forest community is characterized by a canopy of *Tsuga canadensis* (hemlock) and *Picea rubens* (red spruce), with a variable component of northern hardwoods including *Acer saccharum* (sugar maple), *Betula alleghaniensis* (yellow birch), and *Fagus grandifolia* (American beech). It is found at moderate elevations between spruce-fir and transition hardwood-conifer forests, ranging from less than 1,000 ft. up to 2,000 ft. It also occurs on river and kame terrace sites where former and current stream channels cut through terraces of different elevations, moisture levels, and sediment textures.

Soils are typically mesic, moderately well to well drained, and generally more nutrient poor than northern hardwoods. They range from wet to dry compact tills or sandy sediments and outwash. This community less frequently occurs on rocky outcrop substrates. Corresponding soil series include Adams, Colton, Au Gres, Salmon, Nicholville, Pillsbury, and Cabot.

CHARACTERISTIC VEGETATION: Hemlock and red spruce are dominant. Birches, particularly yellow birch more than *Betula papyrifera* (paper birch) and *Betula populifolia* (gray birch), are frequent and sometimes abundant. The dominant trees are typically found reproducing in the understory. *Abies balsamea* (balsam fir) may be present but is usually not prominent other than on the terrace flat variant described below. Yellow birch is frequent in both the overstory and understory while beech is occasional but not prominent.

The woody understory frequently contains *Viburnum lantanoides* (hobblebush) and *Acer pensylvanicum* (striped maple). Herbaceous plant composition is often different from one example to the next. However, northern plants such as *Oxalis acetosella* (northern wood sorrel), *Huperzia lucidula* (shining clubmoss), *Clintonia borealis* (bluebead lily), *Streptopus roseus* (rosey twisted stalk), and *Dryopteris campyloptera* (mountain wood fern) tend to be more abundant than in hemlock - hardwood forests without spruce. Other species common in nutrient poor soils and occurring here are *Aralia nudicaulis* (wild sarsaparilla), *Trillium undulatum* (painted trillium), *Dryopteris intermedia* (intermediate wood fern), *Lycopodium* spp. (clubmosses), *Trientalis borealis* (starflower), *Viburnum nudum* (witherod), and various mosses.

Northern hardwood - spruce - fir forest:

Northern hardwood spruce-fir forests are a transitional forest type found at intermediate elevation positions between sugar maple-beech-yellow birch forests and spruce-fir forests. They occur in cool, mesic, and typically rocky till or talus settings in the mountains with shallow rooting-depths. These forests generally have lower productivity, increased moisture availability, and a higher percent cover of herbaceous species compared to lower elevation forests. Soils are poor to very nutrient poor.

CHARACTERISTIC VEGETATION: Acer saccharum (sugar maple) and Fagus grandifolia (American beech) are generally dominant, with abundant *Betula alleghaniensis* (yellow birch)



and modest amounts of *Picea rubens* (red spruce) and/or *Abies balsamea* (balsam fir). Spruce and fir are generally in lower abundance than hardwoods, but they become dominant with increased elevation, where yellow birch or sometimes *Betula papyrifera* (paper birch) become the primary hardwoods. Sugar maple and beech disappear above 2,500 ft. elevation, leaving only the birches, spruce, and fir. *Sorbus americana* (American mountain ash), *Lonicera canadensis* (Canadian honeysuckle), *Acer spicatum* (mountain maple), and *Viburnum lantanoides* (hobblebush) often occur in the shrub layer. Understory plants are similar to those in the sugar maple-beech-yellow birch forest, but they may achieve higher average cover in this community, particularly *Dryopteris intermedia* (intermediate wood fern) and *D. campyloptera* (mountain wood fern). Common characteristic herbaceous species include *Oxalis acetosella* (northern wood sorrel) and *Clintonia borealis* (bluebead lily). Characteristic species more frequent or abundant in this type than in lower elevation hardwood forests include mountain ashes and Canadian honeysuckle.

Red maple - sensitive fern swamp:

This is a common type of weakly minerotrophic red maple swamp characterized by a diverse assemblage of herbaceous species, relatively little *Sphagnum* moss, and saturated or seasonally saturated to seasonally flooded soils. The swamps range from small to large (10–100 acres) and typically occupy headwater basins that give rise to drainages or occur along drainages where seepage or non-channelized upland runoff contributes to the water budget. The community lacks seasonal over-bank flooding (as is typical of seasonally flooded red maple swamps) and is more minerotrophic than red maple-*Sphagnum* basin swamps. *Onoclea sensibilis* (sensitive fern) is a good indicator of minerotrophic conditions in this type. Subsurface groundwater discharge is likely in at least some of these swamps.

CHARACTERISTIC VEGETATION: Tree cover ranges from 25% to more than 65% and consists of Acer rubrum (red maple), with lesser quantities of Ulmus americana (American elm) and other hardwoods, and few or no conifers. A diverse shrub layer is typical; *Ilex verticillata* (winterberry) is abundant and Vaccinium corymbosum (highbush blueberry) is usually present but less abundant than in nutrient-poor swamps. Viburnum dentatum (northern arrowwood), Alnus incana (speckled alder), and Spiraea alba (meadowsweet) are occasional. Toxicodendron vernix (poison sumac), Toxicodendron radicans (poison ivy), Sambucus canadensis (common elderberry), Lindera benzoin (northern spicebush), Viburnum lentago (nannyberry), and Cornus amomum (silky dogwood) may be present. Sensitive fern and Carex stricta (tussock sedge) are usually abundant or co-dominant herbs. Other species include Impatiens capensis (spotted touch-me-not), Iris versicolor (northern blue flag), Lysimachia terrestris (swamp candles), Carex crinita (drooping sedge), Osmunda regalis (royal fern), Calamagrostis canadensis (bluejoint), Thalictrum pubescens (tall meadow-rue), and Viola spp. (violets). Osmunda cinnamomea (cinnamon fern) is often present but not dominant throughout. Carex bromoides (brome sedge) is abundant in some examples. Mosses are often abundant and diverse, but Sphagnum moss typically comprises less than 5% cover, or is absent. Hummock-hollow topography ranges from absent to moderately well developed. Upland species found on large hummocks of more acidic basin swamps appear to be less abundant in these swamps [e.g., Aralia nudicaulis (wild sarsaparilla), Mitchella repens (partridge-berry), and Quercus rubra (red oak)]. Also, while this community is somewhat minerotrophic, plant species indicative of mineral-rich groundwater seepage are absent or sparse.

Red maple - red oak - cinnamon fern forest:

This community occurs in settings with somewhat poorly drained mineral soils, in transition zones between wetland and upland communities. It is dominated by hardwood trees, particularly red maple, oaks, and birches, with a relatively minor component of pine and hemlock. *Osmunda cinnamomea* (cinnamon fern) and tall wetland shrubs such as *Vaccinium corymbosum* (highbush blueberry) are present in moderate abundance (\sim 1–15%). Other wetland plants are sparse. Coastal or southern examples may contain Appalachian oaks, hickories, and possibly black huckleberry, species that are absent from examples in central parts of the state.

Soils consist of sand, sandy loams, and silt loams, and typically have a dark brown or black Ahorizon over B-horizon materials with mottling within ~30 cm of the surface. This community is typically somewhat poorly drained, and therefore intermediate and transitional to more well drained upland forests and poorly or very poorly drained swamps. Soils series include Pipestone sand, Boxford silt loam, and possibly Raynham silt loam and Eldridge fine sandy loam.

CHARACTERISTIC VEGETATION: This community is differentiated from various mesic upland forests (e.g., mesic Appalachian oak-hickory forest and hemlock-beech-oak-pine forest) of central and southern NH by the presence of a few wetland species in low to moderate abundance, including cinnamon fern and highbush blueberry. *Acer rubrum* (red maple) and *Quercus rubra* (red oak) are usually present and often dominant, mixing with various combinations of *Betula alleghaniensis* (yellow birch), *B. lenta* (black birch), *Fraxinus americana* (white ash), *Quercus alba* (white oak), *Q. velutina* (black oak), *Carya ovata* (shagbark hickory), *Fagus grandifolia* (American beech), *Pinus strobus* (white pine), and *Tsuga canadensis* (hemlock). *Gaylussacia baccata* (black huckleberry) can be abundant. Ferns such as *Thelypteris noveboracensis* (New York fern) are more abundant than in mesic Appalachian oak-hickory forests.

This community is similar in drainage class to the hemlock-cinnamon fern forest but lacks the prominence of hemlock. It is also similar to the red maple-elm-lady fern silt forest, but either lacks or has a lower abundance of *Athyrium filix-femina* (northern lady fern), *Onoclea sensibilis* (sensitive fern), and *Ulmus americana* (American elm).

Red maple - Sphagnum basin swamp:

This is a common type of red maple swamp that occurs in perched basins of till landscapes or other low, flat areas with small watersheds (typically only 1/4 to 1 square mile or less). While they are influenced by seasonal subsurface and ephemeral runoff from surrounding uplands, there are typically no perennial streams running into or through the basins and there is minimal influence of groundwater. The canopy is dominated by *Acer rubrum* (red maple), although other tree species are commonly present. The tall shrub and herb layers are moderately light to dense, and peat mosses (*Sphagnum* spp.) have moderately patchy to dense cover. Hummock and hollow topography is well developed.



Soils are acidic, nutrient-poor, very poorly drained Histosols (deep peat or muck >40 cm) or poorly to very poorly drained histic epipedons (O horizons are generally <20 cm). Although soils are generally saturated and have limited lateral movement of water, there is seasonal fluctuation resulting both from upland runoff in the spring and from evapotranspiration over the course of the growing season.

CHARACTERISTIC VEGETATION: The tree canopy is dominated by red maple. Other tree species that may be sub-dominant to occasional include *Betula alleghaniensis* (yellow birch), *Tsuga canadensis* (hemlock), *Pinus strobus* (white pine), and *Picea rubens* (red spruce). Swamps dominated by red spruce are considered red spruce swamps. Overstory hemlock and white pine cover increases in somewhat more well-drained swamps. *Nyssa sylvatica* (black gum) may also be present, but only in low cover (a greater abundance of black gum would indicate the black gum-red maple basin swamp community).

The shrub layer usually contains *Vaccinium corymbosum* (highbush blueberry) and *Ilex verticillata* (winterberry) as primary dominants, with lesser amounts of *Nemopanthus mucronatus* (mountain holly), *Viburnum dentatum* (northern arrowwood), *Ilex laevigata* (smooth winterberry), *Spiraea alba* (meadowsweet), *Chamaedaphne calyculata* (leatherleaf), and the short shrubs *Kalmia angustifolia* (sheep laurel) and *Rubus hispidus* (bristly dewberry). *Osmunda cinnamomea* (cinnamon fern) is typically common in the herbaceous layer, with lesser quantities of other herbs. *Carex trisperma* var. *trisperma* (three-seeded sedge), *Thelypteris palustris* (marsh fern), *Lycopus uniflorus* (common water horehound), *Carex folliculate* (follicled sedge), and *C. canescens* (silvery sedge) are frequently present in low abundance. Upland herbs may occupy hummocks; these species include *Aralia nudicaulis* (wild sarsaparilla), *Coptis trifolia* (goldthread), and *Gaultheria procumbens* (wintergreen). *Sphagnum* mosses are usually dominant or abundant in hollows and on lower sides of hummocks and include *Sphagnum fallax*, *S. girgensohnii*, and *S. papillosum*, among others. Wetter hollows in somewhat open swamps may have a greater abundance of species such as silvery sedge and *Calla palustris* (wild calla).

Red oak - pine rocky ridge:

This is the most common rocky ridge community type between 1,000 and 2,000 ft. elevation in southern and central New Hampshire, though it also occurs as high as 2,200 ft. elevation on warm, south-facing slopes of the Saco River valley in the White Mountains. It is characterized by a scattered, moderately short or stunted tree canopy of *Quercus rubra* (red oak) (25–60% cover and 15–40 ft. tall), a significant short shrub layer (25–70% cover), and a usually sparse to moderately dense herb layer (<1–70% cover). Rock exposures generally cover 25–50% of the ground surface. These communities are fire-prone, and many have fire histories. Fire may be important for regenerating oak on these sites over the long-term and plays an important role in maintaining the structure, composition, and physical features of this community (e.g., shallow rocky soils with frequent outcrops). The open woodland structures and ridgeline positions often create good views at these sites, and they are therefore popular hiking destinations.

Ecologically, this community is very similar to the Appalachian oak - pine rocky ridge and shares many of the same species. However, it is distinguished by the absence of definitively southern and Appalachian species generally found below 1,000–1,300 ft., by the occasional

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presence of a few northern or higher elevation species, and by the prominence of red oak. Red oak is a broadly adapted temperate species, most abundant on dry sites where trees of mesic sites cannot survive. In New Hampshire, it grows well on mid elevation ridges and mountains, while most other oaks become scarce above 1,000 ft. This community also overlaps elevationally with red pine rocky ridges, with which it may sometimes intergrade.

CHARACTERISTIC VEGETATION: Several tree species are more abundant and frequent in this community than in Appalachian oak-pine rocky ridges. These include occasional to abundant *Pinus resinosa* (red pine), occasional *Prunus pensylvanica* (pin cherry), and infrequent *Picea rubens* (red spruce). *Pinus strobus* (white pine) is common. Frequent characteristic shrubs include *Vaccinium angustifolium* (lowbush blueberry) (nearly constant), *V. myrtilloides* (velvet-leaf blueberry), *Gaylussacia baccata* (black huckleberry), *Juniperus communis* (ground juniper), *Diervilla lonicera* (bush honeysuckle), *Gaultheria procumbens* (wintergreen), and *Comptonia peregrina* (sweet fern). *Arctostaphylos uva-ursi* (bearberry) is infrequent on lower elevation examples. Characteristic and frequent herbaceous species include the lawn forming *Carex lucorum* (distant sedge) as well as *Deschampsia flexuosa* (common hairgrass) (nearly constant), *Pteridium aquilinum* (bracken), *Schizachyrium scoparium* (little bluestem), *Corydalis sempervirens* (pale corydalis), *Danthonia spicata* (poverty oat-grass), *Maianthemum canadense* (Canada mayflower), *Solidago bicolor* (silverrod), *Melampyrum lineare* (cow-wheat), and *Carex foenea* (bronzy sedge). Lichens and mosses are abundant on rocks.

Higher elevation examples (1,400–1,900 ft.) have more red spruce, *Sibbaldiopsis tridentata* (three-toothed cinquefoil), and *Sorbus* spp. (mountain ashes), whereas lower elevation examples have southern species such as distant sedge, ground juniper, and *Aureolaria pedicularia* var. *intercedens* (fern-leaved false foxglove). Lower elevation examples may also contain species such as *Corydalis sempervirens* (pale corydalis) and *Arctostaphylos uva-ursi* (bearberry). Appalachian trees and shrubs notably absent from or sparse in this community include *Pinus rigida* (pitch pine), oaks other than red oak, hickories, *Juniperus virginiana* (eastern red cedar), *Gaylussacia frondosa* (dangleberry), and *Sassafras albidum* (sassafras).

Rich red oak rocky woods:

This community occurs on enriched colluvial talus and till slopes in central and southern New Hampshire, and extends into the lower elevation slopes of major valleys in the White Mountains. It has a woodland to thin woods forest structure and is characterized by a variable and diverse mix of woody, fern, graminoid, and other herbaceous species, including numerous rich site species. This community shares some rich site species with rich mesic forests, but has a more open canopy, a sparser herb layer, and a species composition that reflects rockier and drier conditions. It supports certain species preferential to talus or dry-rich rocky habitats, including numerous vines (lianas), and disturbance or open-site tolerant species that occupy gaps.

Substrates consist of rocky, colluvial till or till and talus from cliffs above and have a dry to drymesic moisture regime with inclusions of wetter and drier microhabitats. Source bedrock types yield elevated levels of calcium and/or other base-cations, creating moderately enriched soil conditions. Bedrock types include some syenites, diorites, and Ammonoosuc Volcanic Formation. Some examples occur on otherwise acidic soils from rocky till and talus enriched by minor base-cation bearing inclusions such as dikes or matrix bedrock that has been hydrothermally altered to produce base-rich weathering products (Bailey 2001). Accumulated organic and mineral sediments that have settled at cliff-bases and on rocky slopes also contributes to enrichment.

CHARACTERISTIC VEGETATION: Tree canopy dominants usually include Acer saccharum (sugar maple) and Quercus rubra (red oak), with lesser amounts of Tilia americana (basswood), Fraxinus americana (white ash), Ostrya virginiana (ironwood), Betula lenta (black birch), Acer rubrum (red maple), and occasionally Betula alleghaniensis (yellow birch) and B. papyrifera (paper birch). Softwoods are sparse or absent. Understory shrub and herbaceous species that prefer enriched conditions and differentiate this community from till or talus forests on acidic soil include Cornus rugosa (round-leaved dogwood), Saxifraga virginiensis (early saxifrage), Geranium robertianum (herb Robert), Juglans cinerea (butternut), Asplenium platyneuron (ebony spleenwort), Aralia racemosa (spikenard), Oryzopsis racemosa (blackseed rice-grass), Clematis virginiana (virgin's bower), Toxicodendron radicans (poison ivy), Corylus cornuta (beaked hazel-nut), Asarum canadense (wild ginger), Rubus odoratus (purple-flowering raspberry), Carex rosea/radiata (rosey sedge), C. platyphylla (flat-leaved sedge), and C. sprengelii (long-beaked sedge). Potential rare species of rich sites include Arabis canadensis (sickle-pod)*, A. laevigata (smooth rock- cress)*, Geranium carolinianum (Carolina cranesbill)*, Cardamine concatenata (cutleaf toothwort)*, Adlumia fungosa (climbing fumitory)*, and Carex aestivalis (summer sedge)*. Milium effusum (millet- grass) is a possible uncommon species that may be found at rich sites.

Species characteristic of both acidic and enriched soils include *Dryopteris marginalis* (marginal wood fern), *Polypodium virginianum* (rock polypody), *Parthenocissus quinquefolia* (Virginia creeper), *P. vitacea* (grape-woodbine), *Polygonum cilinode* (fringed bindweed), *Celastrus scandens* (American bittersweet), *Solidago caesia* (blue-stemmed goldenrod), *Smilacina racemosa* (false Solomon's seal), *Ribes* spp. (gooseberries and wild currants), *Deschampsia flexuosa* (common hairgrass), and *Fragaria vesca* (wild strawberry). Examples in the White Mountain region may have the northern plants *Arabis drummondii* (Drummond's rock-cress), *Clematis occidentalis* (purple clematis), and *Polystichum braunii* (Braun's holly fern).

Semi-rich oak - sugar maple forest:

This community occurs at low elevations in central and southern New Hampshire, mostly below 1,500 ft. It forms on sites that are somewhat drier than semi-rich mesic sugar maple forests, and can contain significant amounts of Appalachian species such as *Carya* spp. (hickories), *Ostrya virginiana* (ironwood), *Fraxinus americana* (white ash), and other southern or drier site species. Oaks, sugar maple, and white ash dominate with a moderate to well developed woody understory and a scattered to moderately abundant herb layer. It is distinguished from more nutrient-poor forest types by having species indicative of weakly enriched conditions, and from rich mesic forests by the absence of strong enrichment indicators (see below). It also lacks many of the rare and uncommon species diagnostic of rich rocky wood communities such as *Carex platyphylla* (flat-leaved sedge), *C. retroflexa* (reflexed sedge)*, *Saxifraga virginiensis* (early saxifrage), *Ranunculus fascicularis* (early buttercup)*, *Aster patens* (skydrop aster)*, certain *Arabis* spp. (rock-cresses)*, *Aureolaria virginica* (downy false-foxglove)*, *Lespedeza virginica* (slender

bush-clover)*, *Pycnanthemum incanum* (hoary mountain mint)*, *Paronychia canadensis* (smooth-forked chickweed)*, *Anemonella thalictroides* (rue anemone)*, *Asclepias quadrifolia* (four-leaved milkweed)*, *Asplenium platyneuron* (ebony spleenwort), and *Woodsia obtusa* (blunt-lobed woodsia)*.

Soils are well to moderately well drained fine sandy loams, loams, or silt loams with a very shallow hemic O horizon (1-2 cm+), shallow very dark gray to brown A horizons (2-10 cm), and brown to yellowish brown upper B-horizons. Moisture availability ranges from dry-mesic to mesic and may be at least seasonally drier than most rich mesic forests. Bedrock includes types that are mafic or have intermediate base-cation content such as diorites and gabbros, and the Elliot, Berwick and Kittery Formations. Some sites have silty soils associated with riverine or marine deposits. Settings range from flat to moderately sloped terrain or colluvial positions at slope bases.

CHARACTERISTIC VEGETATION: This community is characterized by a moderately diverse tree canopy dominated by a combination of *Acer saccharum* (sugar maple), *Quercus rubra* (red oak), and white ash. *Pinus strobus* (white pine) is frequent. *Tilia americana* (basswood), *Betula lenta* (black birch), and *Prunus serotina* (black cherry) occur in some examples, and are occasionally abundant. *Tsuga canadensis* (hemlock) is occasional but never dominant (<15%), and *Fagus grandifolia* (American beech) is infrequent and not abundant. Ironwood is often abundant or dominant in the understory, and *Carpinus caroliniana* (musclewood) is occasionally abundant. Among these trees sugar maple, ash, basswood, ironwood, and musclewood are usually indicative of at least somewhat enriched conditions.

Tall shrubs include an abundance of *Viburnum acerifolium* (maple-leaved viburnum) and lesser amounts and constancy of *Hamamelis virginiana* (witch hazel), *Viburnum dentatum* (northern arrowwood), *Corylus cornuta* (beaked hazel-nut), and in disturbed examples, *Berberis* spp. (barberries).

Any combination of three or more of the following semi-rich differential species will distinguish this community from more acidic forests: *Polystichum acrostichoides* (Christmas fern), *Anemone americana* (blunt-lobed hepatica), *Polygonatum pubescens* (hairy Solomon's seal), *Carex blanda, C. laxiflora, and C. laxiculmis* (wide-leaved sedges), *Actaea rubra* (red baneberry), *Desmodium glutinosum* (cluster-leaved tick- trefoil), *Phegopteris hexagonoptera* (broad beech fern), *Viola rotundifolia* (round-leaved violet), *Tiarella cordifolia* (foamflower), and *Toxicodendron radicans* (poison ivy). Most sites have only a few of these differential species. The following species may be found in more mesic microhabitats: *Arisaema triphyllum* (Jack-in-the-pulpit), *Onoclea sensibilis* (sensitive fern), *Osmunda claytoniana* (interrupted fern), *Circaea alpina* (small enchanter's nightshade), *Viola* spp. (violets), and *Geum canadense* (white avens).

Other characteristic species that may be present (and are not restricted to enriched conditions) include *Mitchella repens* (partridge-berry) (often abundant), *Dryopteris carthusiana* (spinulose wood fern), *Trientalis borealis* (starflower), *Athyrium filix-femina* (lady fern), *Uvularia sessilifolia* (sessile-leaved bellwort), *Solidago caesia* (blue-stemmed goldenrod), *Maianthemum canadense* (Canada mayflower), *Aralia nudicaulis* (wild sarsaparilla), and *Monotropa uniflora* (Indian pipes).



Sugar maple - beech - yellow birch forest:

This is the most common hardwood forest type in northern New Hampshire. It is dominated by *Acer saccharum* (sugar maple), *Fagus grandifolia* (American beech), and *Betula alleghaniensis* (yellow birch). It is transitional to high-elevation spruce-fir forests at higher elevations and lowland spruce-fir forests, hemlock-spruce-northern hardwood forests, or hemlock-beech-oak-pine forests at lower elevations. Small windthrow gaps of one to many trees are the primary disturbance in these forests. Yellow birch is successful in establishing itself in these gaps, and although it is not as shade tolerant as beech and sugar maple, it is long-lived and consequently an important late-successional dominant (approximately 200–380 years).

Rapid and high-density growth of *Prunus pensylvanica* (pin cherry) can occur from buried seeds in clearcut and other large-gap disturbance patches. Pin cherry is an important nutrient-sink on these sites, effectively retaining nutrients and organic matter within the system.

Soils are moderately well drained fine sandy loams. Soils form from till derived from granitic igneous rocks and metamorphic rocks such as schist and gneiss, yielding soils with relatively low mineral nutrient content. Soils tend to be drier than in rich mesic forests and high-elevation spruce - fir forests, but more mesic than at sites with increased beech cover.

CHARACTERISTIC VEGETATION: Sugar maple and beech are the primary mid- and late successional dominants, with yellow birch next in importance. Other seral hardwood species are common or occasional and include *Betula papyrifera* (paper birch), *Acer pensylvanicum* (striped maple), *A. spicatum* (mountain maple), and *Fraxinus americana* (white ash). *Viburnum lantanoides* (hobblebush) is frequent and often abundant in the shrub layer. *Lonicera canadensis* (Canadian honeysuckle) may be present but is infrequent and more likely to be encountered in more enriched and/or moist forests. *Dryopteri intermedia* (intermediate wood fern) is frequent and often abundant in the herbaceous layer, particularly at higher elevations. *Dryopteris campyloptera* (mountain wood fern), largely absent from lower elevation forests, is frequent but usually less abundant than intermediate wood fern. *Huperzia lucidula* (shining clubmoss) is frequent and generally more abundant than in lower elevation forests.

Other characteristic species with high constancy include *Clintonia borealis* (bluebead lily), *Maianthemum canadense* (Canada mayflower), *Oxalis acetosella* (northern wood sorrel), *Trientalis borealis* (starflower), *Aster acuminatus* (whorled aster), and *Uvularia sessilifolia* (sessile-leaved bellwort). Occasional (low constancy) species include *Aralia nudicaulis* (wild sarsaparilla), *Trillium erectum* (wakerobin), *T. undulatum* (painted trillium), *Streptopus roseus* (rosey twisted stalk), *Cinna latifolia* (drooping woodreed), *Thelypteris noveboracensis* (New York fern), *Solidago macrophylla* (large-leaved goldenrod), and *Medeola virginiana* (Indian cucumber-root).

Temperate acidic cliff:

This is the most common type of cliff in New Hampshire. They are found throughout the state below 2,200 ft. elevation. Montane, subalpine, and circumneutral indicator species are absent.



Wet seepage areas sometimes support abundant mosses and liverworts, and vascular plants typical of fens and swamps.

CHARACTERISTIC VEGETATION: Characteristic vegetation includes *Deschampsia flexuosa* (common hairgrass), *Dryopteris marginalis* (marginal wood fern), *Aureolaria pedicularia* var. *intercedens* (fern- leaved false-foxglove)*, *Dryopteris intermedia* (intermediate wood fern), *Asplenium trichomanes* ssp. *trichomanes* (maidenhair spleenwort)*, *Polypodium virginianum* (rock polypody), *Dennstaedtia punctilobula* (hay-scented fern), *Cystopteris tenuis* (Mackay's brittle fern), *Solidago nemoralis* (northern gray goldenrod), *Solidago juncea* (early goldenrod), *Solidago bicolor* (silverrod), *Corydalis sempervirens* (pale corydalis), *Danthonia spicata* (poverty oat-grass), *Danthonia compressa* (tufted oat-grass), *Agrostis* spp. (bent-grasses), *Achillea millefolium* (common yarrow), *Aquilegia canadensis* (wild columbine), *Aster* spp. (asters), *Poa compressa* (Canada bluegrass), *Panicum* spp. (panic-grasses), and *Elytrigia repens* (quack-grass).

Shrubs that may be present in low cover include *Diervilla lonicera* (bush honeysuckle), *Vaccinium angustifolium* (lowbush blueberry), *Spiraea alba* (meadowsweet), *Kalmia angustifolia* (sheep laurel), *Acer pensylvanicum* (striped maple), *Acer spicatum* (mountain maple), *Rubus* spp. (brambles), and *Amelanchier* spp. (shadbushes).

Scattered saplings or stunted older trees can occur on benches or other areas where soil accumulates. These include *Betula papyrifera* (paper birch), *Quercus rubra* (red oak), *Pinus strobus* (white pine), *Populus tremuloides* (quaking aspen), *Populus grandidentata* (big-toothed aspen), *Juniperus virginiana* (eastern red cedar), *Acer saccharum* (sugar maple), and *Picea rubens* (red spruce

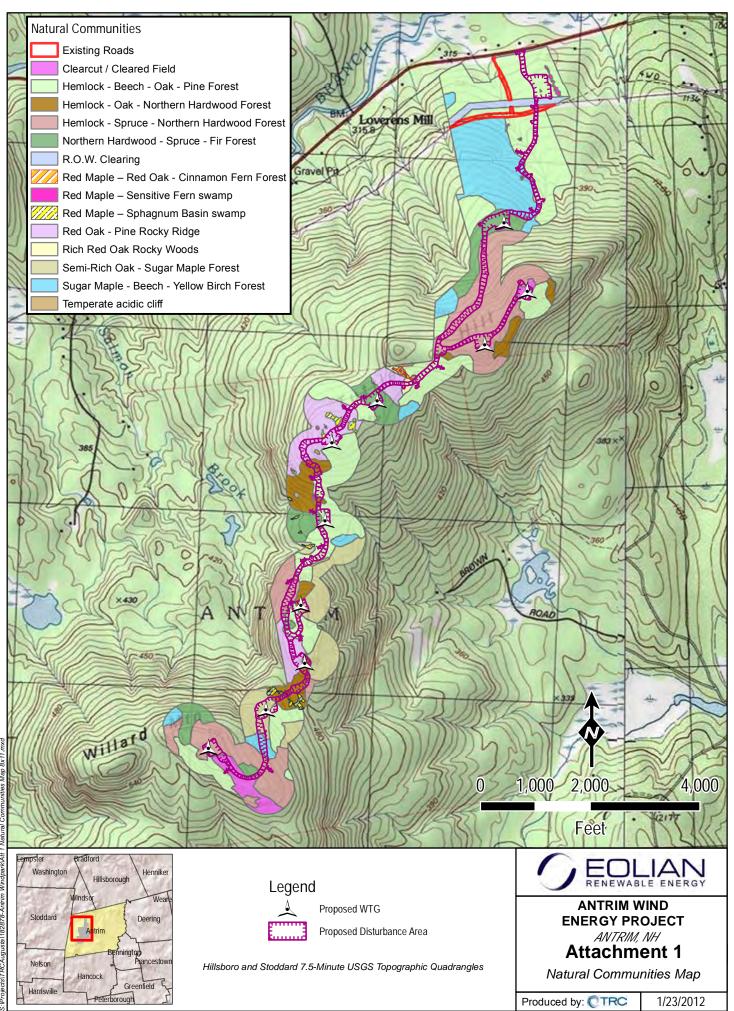
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ATTACHMENT 1

NATURAL COMMUNITY MAP





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13 December 2011

Joshua Brown, Project Manager TRC Solutions 10 Maxwell Drive Clifton Park, NY 12065

Subject: Antrim Wind RTE

Dear Josh,

This is a summary of my investigations regarding rare, threatened or endangered plant species at the proposed Antrim Wind project in Antrim, New Hampshire on 6, 7 and 8 September. With the assistance of your staff, I performed an extensive search of the project area, to include all of the previously identified natural communities.

Although my search was for any uncommon species occurrence, emphasis was placed on the species listed in the memo from Melissa Coppola of the New Hampshire Natural Heritage Bureau to you dated 3 August 2011. This included sickle-pod (*Boechera canadensis*), smooth rock-cress (*B. laevigata*), Carolina cranesbill (*Geranium carolinianum*) and climbing fumitory (*Adlumia fungosa*) in the Rich red oak rocky woods community, small whorled pogonia (*Isotria medeoloides*) in the Hemlock-beech-oak-pine forest, Douglas' knotweed (*Polygonum douglasii*) and Smooth sandwort (*Minuartia glabra*) in the Red oak-pine rocky ridge community, and green adder's mouth (*Malaxis unifolia*) in the Red spruce swamp community. In my experience, several of these plants can be found in associations other than those listed, so my searches were not limited to specific communities.

Additionally, I looked for rare species included on lists for Antrim and adjacent towns that might occur in project area habitats, for example three-birds orchid (*Triphora trianthophora*) and barren strawberry (*Geum fragarioides*), both known historically from Hillsborough.

SURVEY METHODOLOGY The searches were conducted with a "wander" methodology, which is a visual inspection of habitats with closer inspection of any potential microhabitats that might support individuals or populations of rare species. This type of so-called "Lévy-walk" search has been found to "optimize the intermittent search strategy in the critical situation of rare targets" (Lomholt et al. 2008), and is a standard method used in rare plant searches, especially when Joshua Brown 13 December 2011 Page 2

extensive areas are involved. We have found that closer inspection of favorable habitat is more likely to yield results than, for example, parallel or grid transects which could easily bypass small habitat patches. This said, beech woods on the lower slopes at the northern end of the project area were searched using parallel transects to maximize coverage, with close inspections of favorable habitats as they appeared. As described below, that section of the project area contains habitat suitable for *Isotria medeoloides*, but none were found. As can be seen using GPS tracking, all previously identified natural communities (as well as many wetlands) were surveyed in this investigation (see Attachment 1). Vegetation in each community generally conformed to the species listed in the community descriptions issued by the New Hampshire Division of Forests and Lands. Although late in the season, most vegetation, including many spring-flowering species, was still identifiable.

The most common forest trees were northern hardwoods, particularly beech, sugar and red maple, yellow birch and paper birch. Common conifers included hemlock, white pine, balsam fir and red spruce. In appropriate communities, the spruce and hemlock form pure stands. Woody understory species included saplings of overstory species, as well as witch hazel, hazel nut, viburnums, stripped maple and mountain maple, and in more open areas, meadowsweet, brambles and low sweet blueberry are common.

FEDERALLY LISTED SPECIES Three New Hampshire plant species are included on the federal list of threatened or endangered species: Jesup's milk-vetch (*Astragalus robbinsii* var *jesupi*), northeastern bulrush (*Scirpus ancistrochaetus*), and small whorled pogonia (*Isotria medeoloides*). The milk-vetch is restricted to the banks of the Connecticut River in Plainfield and Claremont, but the other two could be found in Antrim. The bulrush has been reported from Acworth and Langdon, about 20 miles to the northwest of the project site, and small whorled pogonia has been reported from Weare (±15 miles to the east) and Warner (±17 miles to the north). Northeastern bulrush is typically found in drained beaver ponds and similar wetlands in the northern part of its range, and potential habitats in the project area were investigated. Although bulrushes were present, they were all common species such as green bulrush (*Scirpus atrovirens*) and wool-grass (*S. cyperinus*).

The small-whorled pogonia is a species of second growth deciduous woodlands with open understory and deep leaf litter, sometimes near intermittent streams with "braided" channels. Habitats where the small-whorled pogonia is found are variable enough that no critical habitat rules have been published for the species. Where found, this species is evident from early June until the first heavy frost, and capsule-bearing plants can be identified well into the fall, so I am confident that, if present, it would have been observed. As noted above, the most favorable habitat appeared to be in beech-dominated forests at the northern end of the study area, and a thorough search was conducted using parallel transects to maximize coverage. Joshua Brown 13 December 2011 Page 3

SPECIES OF STATE CONCERN According to the New Hampshire Natural Heritage Bureau (NHNHB) Sickle-pod (*Boechera canadensis*) and smooth rock-cress (*B. laevigata*) are species of rich rocky woods and thickets. Such habitats are limited at the Antrim site, but where they were encountered, searches for these species were conducted. No rock cress species were found. Carolina cranesbill (*Geranium carolinianum*) is reportedly found in the Rich red oak rocky woods community, but according to some sources it is also a species of cultivated soil, dry waste places, fields and roadsides. In any event, this species was not observed in the study area.

Climbing fumitory (*Adlumia fungosa*), a regarded as a species of the Rich red oak rocky woods community, is a very apparent species where it occurs. I have found it in other rocky woods communities and along roadsides, so did not restrict my searches to specific communities. Nevertheless, this species was not seen at Antrim.

NHNHB regards Douglas' knotweed (*Polygonum douglasii*) as a species of the Red oak-pine rocky ridge community; but can also be found in dry sandy or gravelly soil. Few areas that might support this species occur on the study area, and no Douglas' knotweeds were found. Neither did I find smooth sandwort (*Minuartia glabra*), another species of the Red oak-pine rocky ridge community.

Finally, NHNHB regards green adder's mouth (*Malaxis unifolia*) as a species of the Red spruce swamp community. From my experience, the species is found in a far broader range of habitats, including mossy woods roads, mixed upland forests, etc. I therefore for this species in many habitats, but found none.

CONCLUSIONS Although a number of natural communities that might support rare or uncommon species are found at the Antrim Wind study area, the species observed were generally common, and no species of concern were found. The investigation covered all identified natural communities, as well as intervening habitats such as powerline corridors, roadsides, clearings and cut-over areas. Special emphasis was placed on species reported from identified natural communities by the New Hampshire Natural Heritage Bureau and New Hampshire species protected under the federal Endangered Species Act.

Sincerely,

Errol Briggs

Joshua Brown 13 December 2011 Page 4

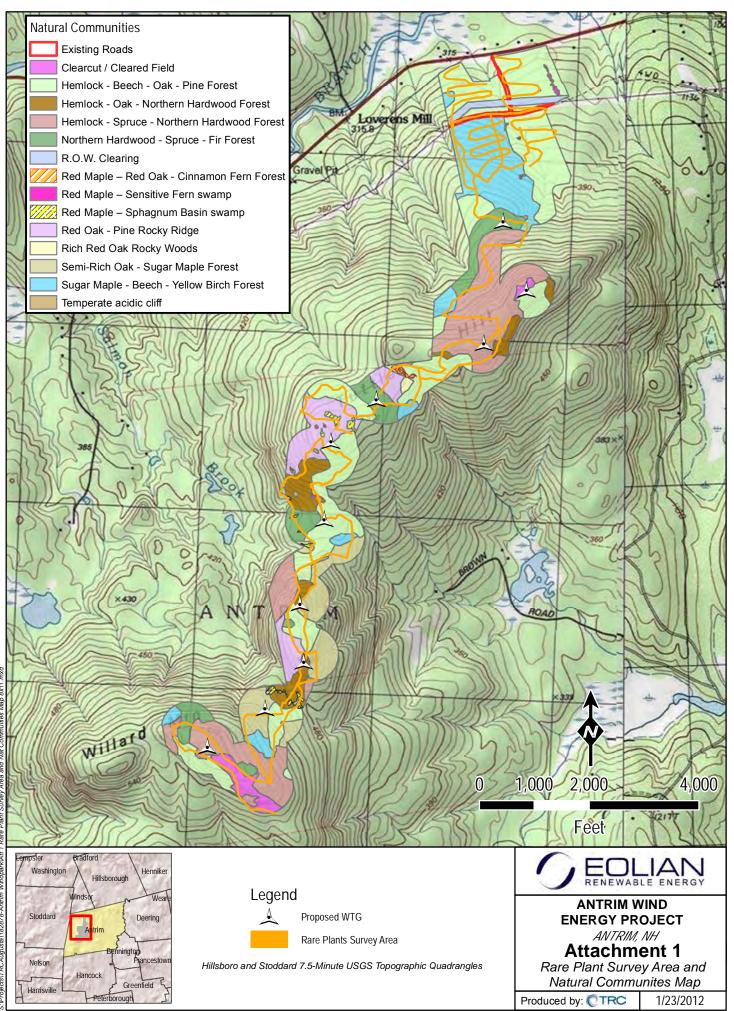
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WETLAND DELINEATION REPORT

For Antrim Wind Energy Project Town of Antrim Hillsborough County, New Hampshire

Prepared for:

Antrim Wind Energy, LLC 155 Fleet Street Portsmouth, NH 03801



Prepared by:

TRC ENVIRONMENTAL CORPORATION 10 Maxwell Drive, Suite 200 Clifton Park, New York 12065

January 2012

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1.0 INTRODUCTION

Antrim Wind Energy LLC (AWE) is proposing to construct the Antrim Wind Energy Project (Project) on Tuttle Hill and Willard Mountain in the Town of Antrim, Hillsborough Country, New Hampshire. The proposed Project is sited entirely on privately owned land that is leased by AWE. The proposed Antrim Wind Energy Project involves the construction of 10 wind turbines, an electrical collection system and interconnection substation, approximately 4 miles of new access road, and an operations and maintenance building. There will be no new electrical transmission lines, other than collector system lines, constructed as part of this Project. The total direct impact for the access roads, the turbine pads, and electrical collector system will be approximately 57 acres.

The proposed project is sited on the ridges of Tuttle Hill and Willard Mountain which are oriented east-northeast to west-southwest. The ridges are approximately parallel to NH Route 9, which is about ³/₄ of a mile to the north. Between the ridgeline and Route 9 is an existing transmission corridor containing both an 115kV transmission line and a 34.5kV distribution circuit; the proposed Project will interconnect with the existing 115kV line. See Attachment A, Figure 1, for a map of the Project area and Project elements.

TRC Environmental Corporation (TRC) was retained by AWE to identify and delineate jurisdictional wetlands and waterways within the project area to support the design, or layout, of the proposed facilities. TRC has prepared this wetland delineation report on behalf of AWE to support the submittal of a Joint Application for a Permit (a U.S. Army Corps of Engineers (ACOE) and New Hampshire State wetlands permit).

2.0 CURRENT AND HISTORIC LAND USES

2.1 Current Land Use

Most of the Town of Antrim is undeveloped, and a large proportion of the town's landscape is heavily wooded. Much of Antrim's forested areas are located in the Rural and Rural Conservation Zoning Districts of town; these two districts constitute over 70% of Antrim's total area. These woodlands are viewed by the town as a renewable resource and are logged on a regular basis. In addition to abundant woodland, there are also numerous conservation areas, hiking trails and water features (Town of Antrim 2011).

2.2 Historic Land Use

Historically, the area of the proposed Project was cleared for sheep farming; numerous stone walls still remain as a result of this historic activity. After the decline of sheep farming, the site was allowed to regenerate into a forested condition. Subsequently, timber harvesting has occurred in many areas on Tuttle Hill and Willard Mountain. Currently, the land in and around the area of proposed development consists of undeveloped forest land in various stages of maturity, ranging from recent clear cuts and early successional stands as a result of timber harvesting, to mature forested areas.

3.0 WETLAND DELINEATION METHODOLOGY

3.1 Siting Alternatives

The layout of wind turbines is a function of several siting factors that balance the location of each wind turbine and environmental compatibility. These factors include:

- maximizing wind speed;
- minimizing tree clearing, wetland impacts, and the acquisition of land (the Project proposes to lease the land needed for the Project facilities);
- maintaining the current use of the land;
- connecting the turbines with an efficient and practical network of unpaved access roads for construction and maintenance of the turbines;
- co-locating electric cables with the access road corridor that connect the turbines to electric substation; and
- co-locating the electric transmission line that would connect the Project to the electric grid within existing infrastructure right-of-way.

These siting factors inherently create the need for a Project survey area that was sufficiently large enough to provide for an adequate area to identify cultural and natural resources and allow for the opportunity to evaluate siting alternatives that avoid and minimize impacts to any identified resources. After reviewing available topographic, soils mapping, and potential turbine locations for the Project area, TRC developed a survey area, which is depicted on Figure 1, found in Attachment A. With a survey corridor of 500 feet in width with a 250 foot radius around potential turbine locations, the survey area was approximately 462 acres.

To determine the potential for wetland impacts from construction of the Antrim Wind Energy Project, TRC assessed the survey area for the presence of federal and jurisdictional wetlands. A New Hampshire Certified Wetland Scientist from TRC conducted wetland delineations in August, September, and November 2011 (refer to Attachment B for professional resume and qualifications). TRC also investigated hydrologic connectivity (drainage ditches, natural swales, intermittent and perennial streams outside the study corridor when necessary to verify "normal conditions" or "nexus" hydrologic determinations. The delineations were performed in accordance with the U.S. Army Corps of Engineers (USACE) wetland delineation criteria and methodology which is described in Section 3.2. The USACE data sheets have been compiled for this Wetland Delineation Report and presented in Attachment C.

This report presents the delineation methodology, wetland identification, and the results of the field wetland delineation, including descriptions of on-site hydrology, soils and vegetation (see Section 4.0). Mapping is provided in Attachment A, with Figure 2 presenting the wetland mapping.

3.2 Wetland Delineation Method

TRC wetland delineation crews surveyed proposed corridors using the Federal Routine Determination Method presented in the USACE Wetlands Delineation Manual (USACOE 1987), including clarifications and interpretations provided in the March 6, 1992 guidance memorandum (Williams 1992), USACOE and Environmental Protection Agency guidance on jurisdictional forms (USACOE 2007), and the Regional Supplements to Corps Delineation Manual (USACOE 2009).

The 1987 USACE manual and guidance memorandums emphasize a three-parameter approach to wetland boundary determination in the field. This approach involves the identification of: (i) evidence of wetland hydrology; (ii) presence of hydric soils; and (iii) predominance of hydrophytic vegetation as defined by the National Plant List Panel (Reed 1988). Positive indicators of all three parameters are normally present in wetlands and serve to distinguish between both upland and transitional plant communities. Identified wetlands were classified according to Cowardin et al. (1979).

After a wetland area was initially identified, an appropriate transect and plot location was established, generally perpendicular to the wetland/upland boundary, in order to document conditions within each plant community and firmly establish the wetland boundary using wetland indicators. USACE Wetland Determination data forms were completed for each representative wetland transect. These data forms are provided in Attachment C to this report. The wetland boundary was marked with sequentially numbered (alpha-numeric) pink flagging labeled with "Wetland Delineation". Once wetland flags were in place, the location of each flag was pinpointed using a hand-held Global Positioning Satellite (GPS) unit. These data were downloaded into a GIS system and then plotted on the project base map (a USGS geo-referenced map), which is provided in Attachment A, Figure 2. The results of the delineations are summarized in Section 4.0.

4.0 WETLAND DELINEATION RESULTS

A total of thirty-three (33) wetland areas were identified in the Project survey area. This report describes and maps those wetlands within and in relative proximity to the proposed roads, turbines, collector system, the proposed transmission right-of-way corridor, and other facility sites associated with the Project (see Figure 2 in Attachment A). The 33 wetlands are represented in Table 4.1 due to their occurrence in the proposed corridor and in close proximity to the proposed project corridors or facility sites. Of the 33 wetlands, twenty-four (24) are deciduous broad-leaf forested wetlands, three (3) are conifer dominated forested wetland, two (2) are mixed forested and scrub-shrub wetland, and four (4) are scrub-shrub wetlands. Three (3) of the delineated wetlands within the Project corridor consist of two or more wetland types, including three (3) streams with associated palustrine wetlands (2 intermittent and 1 perennial stream). The wetland associated with the perennial water-way consists of a mixed palustrine system. Table 4-1 provides a summary of the wetlands identified along the Project corridor, including their classification in accordance with Cowardin et al (1979).

Narrative descriptions of wetland hydrology, soils and vegetation observed within the Project study area are presented in the following sections. Tables 4-1, 4-2 and 4-3 summarize the wetlands delineated in this report, streams identified, and the soil series information we assembled for the Project area respectively.

4.1 Vegetation

Within the Project area, vegetative communities consist of forested upland and wetland communities. Forest stands include mostly mixed coniferous and deciduous forest, with a small portion of the Project area sustained as a managed transmission line ROW and another portion recently timber harvested on Willard Mountain.

The wetland communities crossed by the Project include and scrub-shrub wetlands typically found in the transmission line ROW and isolated forested wetlands. The scrub-shrub wetlands typically contain sapling red maple (*Acer rubrum*), maleberry (*Lyonia lingustrina*), red osier dogwood (*Cornus stolonifera*), arrowwood (*Viburnum dentatum*), meadowsweet (*Spiraea latifolia*), and steeplebush (*Spiraea tomentosa*). The forested wetlands typically contain red maple, yellow birch (*Betula alleghaniensis*), and green ash (*Fraxinus pennsylvanica*).

Upland tree species found throughout the Project area include red oak (*Quercus rubra*), American beech (*Fagus grandifolia*), sugar maple (*Acer saccharum*), white pine (*Pinus strobus*), red spruce (*Picea rubens*), balsam fir (*Abies balsama*), quaking aspen (*Populus tremuloides*), paper birch (*Betula papyrifera*), eastern hemlock (*Tsuga canadensis*) and others. Upland herbaceous species include wild sarsassparilla (*Aralia nudicaulis*), New York fern (*Thelypteris noveboracensis*), Solomon's-seal (*Polygonatum pubescens*), star flower (*Trientalis borealis*), hayscented fern (*Dennstaedtia punctilobula*) and Canada mayflower (*Maianthemum canadense*).

4.2 Hydrology

Streams within the Project area include an unnamed perennial and intermittent streams draining both to the north (Route 9) toward the North Branch River and to the southeast draining into Gregg Lake. Because the Project area is along a ridgeline and moderately well drained, we observed very few perennial streams. Observations in the field generally suggest that rainfall and snow melt in the spring quickly run off the ridge to lower elevations, without collecting volumes that fill natural depressions or create natural ponds. Small forest wetland areas occur along skidder trails, confined pockets in the regional bedrock, saddle areas along the ridgeline, and in other areas of poorly drained soils that support wetland vegetation.

4.3 Soils

TRC reviewed the published soil survey of the Project area and conducted soil profile characterizations in the study corridor to confirm the presence of hydric soil indictors. Within the Project survey area, a total of 7 different soil types have been mapped by the Natural Resource Conservation Service (formerly the Soil Conservation Service) (USDA & NRCS 2009). Table 4-3 summarizes the soil series in the project area and indicates that most of the Project area soils are mapped with a slope of 3-35 percent. The soil type mapping has also been overlain on the Project location map (see Figure 3 in Attachment A). The mapped soil types range from excessively drained to well drained soils. Field surveys have resulted in delineating additional soil types that are poorly drained to very poorly drained soils and are hydric or wetland soils. Hydric soils are defined as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part of the soil.

The wetlands flagged in the Project corridors generally exhibited the soil characteristics of a dark surface horizon (A horizon) overlying grayish (10YR 5/1) to grayish brown (10YR 4/1), sandy loam subsoils with common redoximorphic features. As described below, this is typical of the loamy till parent material sediments in which many of the soils in the region are formed. The upland soils within the forested uplands lacked a low chroma matrix and had typical matrix chromas ranging between 3 and 6. In wetlands, the hydric soil showed evidence of a seasonal high water table in the form of low chroma matrix and redoximorphic features, indicating that the soils experience anaerobic conditions from prolonged saturation thereby meeting the definition of a hydric soil in some instances. The upland and more transitional area soils have developed redoximorphic features common to somewhat poorly to moderately well drained soils but did not exhibit the required low chroma matrix and as a result were not classified as hydric soils. In addition, as a result of glacial till environment, the subsoil (B) and substratum (C) horizons of both hydric and non-hydric soils commonly contain layers of loose stony material on steeper slopes with loamy materials, which are not necessarily indicative of an aquic moisture regime or reducing conditions.

Table 4-1 Summary of Wetlands within Project Area							
Figure 2 8.5" x 11" Sheet Number	Wetland ID	Wetland Types and Associations	Associated Wetland Impact	Cowardin Classification			
3	AN1	Isolated forested wetland. Contains VP1	No direct impact	PFO1			
3	AN2	Isolated forested wetland. Bat radar within wetland	0.007 acre/316 sq. ft. Access road.	PFO4			
3	AN3	Isolated forested wetland	No direct impact	PFO1			
3	AN4	Isolated forested wetland. Contains VP2	No direct impact	PFO1			
3	AN5	Isolated forested wetland. Contains VP3	No direct impact	PFO1			
3	3 AN6 Isolated forested N wetland		No direct impact	PFO1			
2	AN7	Isolated forested wetland straddling property line	No direct impact	PFO1			
2, 3	AN8	Forested wetland draining southeast associated with intermittent stream AN9	0.001 acre/34 sq. ft. Access road.	PFO4			
2	AN10	Isolated forested wetland within skidder trail	No direct impact	PFO1			
1,2	AN11	Isolated forested wetland with ephemeral inlet and outlet	No direct impact	PFO1			
1	AN12	Isolated forested wetland within skidder trail	No direct impact	PFO1			
1, 2	AN13	Isolated forested wetland along ATV trail	No direct impact	PFO1			

Table 4-1 Summary of Wetlands within Project Area							
Figure 2 8.5" x 11" Sheet Number	Wetland ID	Wetland Types and Associations	Associated Wetland Impact	Cowardin Classification			
1	AN14	Isolated forested wetland within skidder trail	No direct impact	PFO1			
1	AN15	Isolated forested wetland within skidder trail	No direct impact	PFO1			
1	AN16	Very small isolated wetland along old skidder trail	No direct impact	PFO1			
1	AN18	6 forested wetland areas draining north associated with perennial stream AN17	No direct impact	PFO1/4 & PSS1			
1	Isolated scrub-shrub		No direct impact	PSS1			
1	AN21	Isolated scrub-shrub wetland within transmission ROW	No direct impact	PSS1			
1	AN22	Isolated forested wetland within skidder trail	0.009 acre/379 sq. ft. Access road.	PFO1			
1	AN23	Isolated forested wetland within skidder trail	0.0004 acre/16 sq. ft. Access road.	PFO1			
3	AN24	Isolated forested wetland. Associated with VP 5. ATV trail within wetland.	No direct impact	PFO1			
3	AN25	Isolated forested wetland. Associated with VP 4.	No direct impact	PFO4			
4	Forested wetland		No direct impact	PFO1			
4	Forested wetland draining to the southeast. 0.019 acre		0.019 acre/ 815 sq. ft. Access Road	PFO1			

Table 4-1 Summary of Wetlands within Project Area						
Figure 2Wetland8.5" x 11"IDSheet NumberID		Wetland Types and Associations	Associated Wetland Impact	Cowardin Classification		
1	AN30	Isolated forested wetland with ephemeral inlet and outlet	0.02 acre/869 sq. ft. Substation	PFO1		
1	AN31	Isolated scrub-shrub wetland within transmission ROW	0.019 acre/848 sq. ft. Transmission tap structure and guys	PSS1		
1 AN32 wetland		Isolated scrub-shrub wetland within transmission ROW Isolated forested	0.036 acre/1,450 sq. ft. Access Road	PSS1		
1			No direct impact	PFO1		
1	Isolated forested an scrub-shrub wetland1AN35Iocated in ROW and to the North of the ROW		No direct impact	PFO1/PSS1		
3	3 AN36 Isolated forestee soils		No direct impact	PFO1		
3	3 AN37 Isolated forest ATV trail		No direct impact	PFO1		
3	AN38	Isolated forested wetland with potential vernal pool	No direct impact	PFO1		
4	AN41	Isolated forested wetland.	0.083 acre/3,620 sq. ft. Turbine 9.	PFO1		
TOTAL IMPACT			0.192 acre/8,349 sq. ft.			

4.4 Wetland Descriptions

The following narratives briefly characterize the delineated wetlands summarized in Table 4-1. Refer to Figure 2 for the location of these wetlands within the project study area and landscape in Attachment A.

<u>Wetland AN1</u> is a deciduous mixed forest wetland dominated by red maple (*Acer rubrum*), and black spruce (*Picea mariana*). It is located within a pocket of ledge along the ridgeline of Tuttle Hill. This wetland also contains Vernal Pool 1.

<u>Wetland AN2</u> is a deciduous mixed forest wetland dominated by yellow birch (*Betula alleghaniensis*) and black spruce. It is located within a pocket of ledge along the ridgeline of Tuttle Hill.

<u>Wetlands AN3, AN4 and AN5</u> are deciduous forested wetlands dominated by red maple. They are located within pockets of ledge along the ridgeline of Tuttle Hill. Wetland AN4 contains Vernal Pool 2, and wetland AN5 contains Vernal Pool 3.

<u>Wetland AN6</u> is a deciduous forest wetland dominated by red maple. It is located within a pocket of ledge along the ridgeline between Tuttle Hill and Willard Mountain.

<u>Wetland AN7</u> is a very small deciduous forest wetland dominated by red maple. It is located along a stone wall within a pocket of ledge along the ridgeline between Tuttle Hill and Willard Mountain.

<u>Wetland AN8</u> is a deciduous forest wetland dominated by red maple and yellow birch. It is located within a swale draining from Wetland AN7 towards the southeast. An intermittent stream segment (Stream AN9) is located within this wetland. The stream flows between very large boulders; eventually the hydrology disappears as the slope increases along the southeast boundary of the wetland.

<u>Wetlands AN10, AN11 and AN12</u> are deciduous forest wetlands dominated by yellow birch and green ash (*Fraxinus pennsylvanica*). They are located in hillside seeps created by skidder activity.

<u>Wetland AN13</u> is a deciduous forest wetland dominated by red maple. It is located within a hillside seep created by skidder activity. An ATV access trail traverses the northwestern portion of this wetland.

<u>Wetlands AN14 and AN15</u> are deciduous forest wetlands dominated by yellow birch and green ash. They are located in hillside seeps created by skidder activity.

<u>Wetland AN16</u> is a very small deciduous forest wetland dominated by red maple. It is located within an old skidder trail to the north of the transmission ROW.

<u>Wetland AN18</u> is a wetland complex associated with perennial stream AN17. Six components of this wetland complex were individually identified as wetlands AN18a, b, c, d, e and f. Component AN18a is an area of scrub shrub within the existing transmission corridor; it is dominated by red osier dogwood (*Cornus stolonifera*), green ash, and black willow (*Salix nigra*). Wetlands AN18 b, c, d, e and f are deciduous mixed forested wetlands dominated by green ash, yellow birch, and red maple. Each of these wetlands has been impacted by logging activity.

<u>Wetlands AN20 and AN21</u> are deciduous scrub shrub wetlands dominated by red maple, meadowsweet (*Spiraea latifolia*), and steeplebush (*Spiraea tomentosa*). They are located within the existing transmission corridor.

<u>Wetlands AN22 and AN23</u> are deciduous forest wetlands dominated by red maple, yellow birch and green ash. They are located in hillside seeps created by skidder activity.

<u>Wetland AN24</u> is a deciduous forest wetland dominated by red maple and yellow birch. It is located within a depression on the ridgeline between Tuttle Hill and Willard Mountain. An ATV

trail traverses the through the middle of this wetland, from north to south. This wetland also contains Vernal Pool 5.

<u>Wetland AN25</u> is an evergreen mixed forest wetland dominated by eastern hemlock (*Tsuga canadensis*) and yellow birch. It is located within a depression on the ridgeline between Tuttle Hill and Willard Mountain. This wetland contains Vernal Pool 4.

<u>Wetland AN26</u> is a deciduous forest wetland dominated by red maple and yellow birch. It is located within a depression on the ridgeline between Tuttle Hill and Willard Mountain. This wetland drains to the northwest.

<u>Wetland AN27</u> is a deciduous mixed forest wetland dominated by red maple, yellow birch, and black spruce. It is located within the saddle area at the northern base of Willard Mountain. The wetland drains to the southeast and feeds Intermittent Stream AN28 which drains to the southeast.

<u>Wetland AN30</u> is a very small deciduous forest wetland dominated by red maple. It receives ephemeral flow from wetland AN31 which is located upslope (and within the existing transmission corridor). This wetland has an ephemeral drainage that flows towards intermittent stream AN29 to the north.

<u>Wetlands AN31 and AN32</u> are deciduous scrub shrub wetlands dominated by red maple, meadowsweet and maleberry (*Lyonia lingustrina*). They are located within the existing transmission corridor. Wetland AN31 ephemerally drains to the north into Wetland AN30.

<u>Wetland AN33</u> is a very small deciduous forest wetland dominated by red maple. It is located within a hillside seep created by skidder activity.

<u>Wetland AN35</u> is primarily a forested wetland dominated by red maple, but includes an area of scrub shrub. The scrub shrub component is located within the existing transmission corridor, on the southern portion of the wetland, and is dominated by winterberry (*Ilex verticillata*).

<u>Wetland AN36</u> is an isolated forested wetland dominated by red maple. This wetland contains organic soils. It is located in a saddle area and is near an ATV trail.

<u>Wetland AN37</u> is a small isolated deciduous forest wetland dominated by red maple. It has an ephemeral drainage that flows west across an ATV trail that is adjacent to the wetland.

<u>Wetland AN38</u> is an isolated deciduous forest wetland dominated by red maple, with a thick understory of winterberry shrubs. It has an ephemeral drainage that flows northwest through a steep boulder area. This wetland contains an area which has been identified as a potential vernal pool.

<u>Wetland AN41</u> is an isolated deciduous forest wetland dominated by red maple with a sparse understory of red maple and yellow birch saplings and a dense herbaceous layer dominated by cinnamon fern. This wetland is located at the base of a long bouldery slope.

4.5 Waterbody Descriptions

The following narratives briefly characterize the identified perennial and intermittent watercourses summarized in Table 4-2. Refer to Figure 2 in Attachment A for the location of these watercourses within the project study area.

Table 4-2 Summary of Streams within Project Area							
Figure 2 8.5" x 11" Sheet Number	Stream ID	Associated Impact	Associated Wetland(s)				
2	AN9	Intermittent	No direct impact	AN8			
1	AN17	Perennial	74 linear feet, 4 foot wide channel	AN18a,b,c,d,e,f			
1	AN19	Intermittent	No direct impact	Tributary to AN17			
4	AN28	Intermittent	No direct impact	AN27			
1	AN28a	Intermittent	No direct impact				
1	AN29	Intermittent	156 linear feet, 1 foot wide channel				
1	AN34	Intermittent	No direct impact	Flows into AN17			
2	AN40	Intermittent	No direct impact				

<u>Stream AN9</u> is an intermittent stream with a sandy substrate. The average width of the stream is 2 feet and the bank height is less than one foot. There was approximately 1 inch of flowing water in the stream at the time of the wetland delineation survey (in late summer, 2011). The stream channel commences within wetland AN8 and disperses within the same wetland due to slopes and a bouldery landscape, which allows for subsurface flow.

<u>Stream AN17</u> is perennial stream with a gravel/cobble substrate. The average width of the stream is 4 feet and the bank height averages approximately one foot. There was approximately 5 inches of flowing water at the time of the delineation. The stream flows into the survey area from the south and then out to the north, flowing towards Route 9. Intermittent Streams AN19 and AN34 flow into this stream.

<u>Stream AN19</u> is an intermittent stream with a sandy substrate. The average width of the stream is approximately 1 foot and the bank height is less than one foot. There was approximately 1 inch of flowing water at the time of the delineation. The stream channel commences in a forested setting, within a seep on a slope, and flows into Stream AN17.

<u>Stream AN28</u> is an intermittent stream with a gravel/sand substrate. The average width of the stream is approximately 3 feet and the bank height is less than one a foot. There were approximately 4 inches of flowing water at the time of the delineation. The stream channel commences within wetland AN27 and flows to the southeast.

<u>Stream AN28a</u> is an intermittent stream with a gravel/cobble substrate. The average width of the stream is approximately 2 feet and the bank height averages approximately one foot. There were approximately 2 inches of flowing water at the time of the delineation. The stream channel commences within an upland area with steep slopes and disperses within the upland as it flows

down slope. This dispersal is due to slopes and a bouldery landscape, which allows for subsurface flow.

<u>Stream AN29</u> is an intermittent stream with a gravel/cobble substrate. The average width of the stream is approximately one foot, and the bank height is less than one foot. There was no flowing water in the streambed at the time of the delineation. The stream channel commences within an upland area with steep slopes and disperses within the upland as it flows down slope. This dispersal is due to slopes and a bouldery landscape, which allows for subsurface flow.

<u>Stream AN34</u> is an intermittent stream with a gravel/cobble substrate. The average width of the stream is approximately 3 feet and the bank height is less than one foot. There were approximately 4 inches of flowing water at the time of the delineation. The stream channel commences in a forested setting within a seep on a slope and flows into Stream AN17.

<u>Stream AN40</u> is an intermittent stream with a gravel/cobble substrate. The average width of the stream is 2 feet and the bank height averaged around a foot. There were approximately 2 inches of flowing water at the time of the delineation. The stream channel commences within an upland area with steep slopes and disperses within the upland downslope due to slopes and a bouldery landscape, which allows for subsurface flow.

4.6 Natural Resource Conservation Service Soil Series Descriptions

The following are the abbreviated descriptions of each of the relevant soil types taken from the USDA (Natural Resource Conservation Service) Official Soil Series Descriptions Online Soils Database and the Soil Survey Geographic Database (SSURGO) for Hillsborough County, New Hampshire, Western Part (USDA & NRCS 2009). Additional information regarding relevant soil characteristics are also summarized in Table 4-3. Soils mapping of the Project area is in Attachment A, Figure 3.

Table 4-3 Soil Description Summary						
Soil Names	Symbol	% Slopes	Hydric (y/n)	Parent Material	Drainage Class	
Lyman-Tunbridge-Rock outcrop complex	161C	3-15	N	Lyman: Loamy Till Underlain by Schist Bedrock; Tunbridge: Loamy Till Underlain by Granite	Lyman: Somewhat Excessively Drained; Tunbridge: Well Drained	
Lyman-Tunbridge-Rock outcrop complex	161D	15-35	N	Lyman: Loamy Till Underlain by Schist Bedrock; Tunbridge: Loamy Till Underlain by Granite	Lyman: Somewhat Excessively Drained; Tunbridge: Well Drained	
Tunbridge-Lyman- Monadnock complex, stony	160B	3-8	N	Tunbridge: Loamy Till Underlain by Granite; Lyman: Loamy Till Underlain by Schist Bedrock; Monadnock: Loam Underlain by Sandy Till	Tunbridge: Well Drained; Lyman: Somewhat Excessively Drained; Monadnock: Well Drained	
Tunbridge-Lyman- Monadnock complex, stony	160C	8-15	N	Tunbridge: Loamy Till Underlain by Granite; Lyman: Loamy Till Underlain by Schist Bedrock; Monadnock: Loam Underlain by Sandy Till	Tunbridge: Well Drained; Lyman: Somewhat Excessively Drained; Monadnock: Well Drained	
Marlow stony loam	77C	8-15	N	Loamy Till	Well Drained	
Marlow stony loam	77D	15-35	N	Loamy Till	Well Drained	
Rock outcrop	399			Granite	Excessively Drained	

Tunbridge-Lyman-Monadnock complex, stony

Tunbridge Series: These very moderately deep, well drained soils formed in loamy till of Wisconsin age derived mainly from micaceous schist, gneiss, and phyllite. They are on mountain side slopes, mountain tops, mountain ridges, hill tops, and hill slopes. Slope ranges from 0 to 75 percent. The A horizon is typically very friable dark brown sandy loam, with weak fine granular structure. The B horizon is typically reddish brown to yellowish brown silt loams. It is friable with subangular blocky structure. Bedrock is usually encountered at 28 inches.

Lyman Series: These shallow, somewhat excessively drained soils formed thin mantle of till and frost fractured rock fragments derived principally from gray, greenish gray, or nearly black mica schist rocks with lesser amounts of phyllite, granite, and gneiss. They are found on rocky hills, mountains and high plateaus. Slopes range from 3 to 35 percent. Ap horizons are typically black and 6 inches or more thick. Texture is sandy loam, fine sandy loam, very fine sandy loam, loam or silt loam in the fine-earth fraction. The E horizon generally is a reddish gray fine sandy loam, with very weak fine granular structure. The B horizon generally is a dark red to brown loam, with very weak fine granular structure. Bedrock is usually encountered at a depth of 18 inches.

Monadnock Series: These very deep, well drained soils formed in a loamy mantle underlain by acid, sandy till of Wisconsin age derived mainly from schist, granite, gneiss, and quartzite. They are on upland hills, plains, and mountain sideslopes. Slope ranges from 0-60 percent. The A horizon is typically very friable brown fine sandy loam. The E horizon generally is a light brownish gray sandy loam with a weak fine granular structure. The B horizon generally is reddish to yellowish brown, 5 to 23 inches deep, very friable with a weak fine granular structure. The C horizon consists of gravelly loamy sand extending to a depth of 65 inches.

Lyman-Tunbridge-Rock outcrop complex

Lyman Series: These shallow, somewhat excessively drained soils formed thin mantle of till and frost fractured rock fragments derived principally from gray, greenish gray, or nearly black mica schist rocks with lesser amounts of phyllite, granite, and gneiss. They are found on rocky hills, mountains and high plateaus. Slopes range from 3 to 35 percent. Ap horizons are typically black and 6 inches or more thick. Texture is sandy loam, fine sandy loam, very fine sandy loam, loam or silt loam in the fine-earth fraction. The E horizon generally is a reddish gray fine sandy loam, with very weak fine granular structure. The B horizon generally is a dark red to brown loam, with very weak fine granular structure. Bedrock is usually encountered at a depth of 18 inches.

Tunbridge Series: These very moderately deep, well drained soils formed in loamy till of Wisconsin age derived mainly from micaceous schist, gneiss, and phyllite. They are on mountain side slopes, mountain tops, mountain ridges, hill tops, and hill slopes. Slope ranges from 0 to 75 percent. The A horizon is typically very friable dark brown sandy loam, with weak fine granular structure. The B horizon is typically reddish brown to yellowish brown silt loams. It is friable with subangular blocky structure. Bedrock is usually encountered at 28 inches.

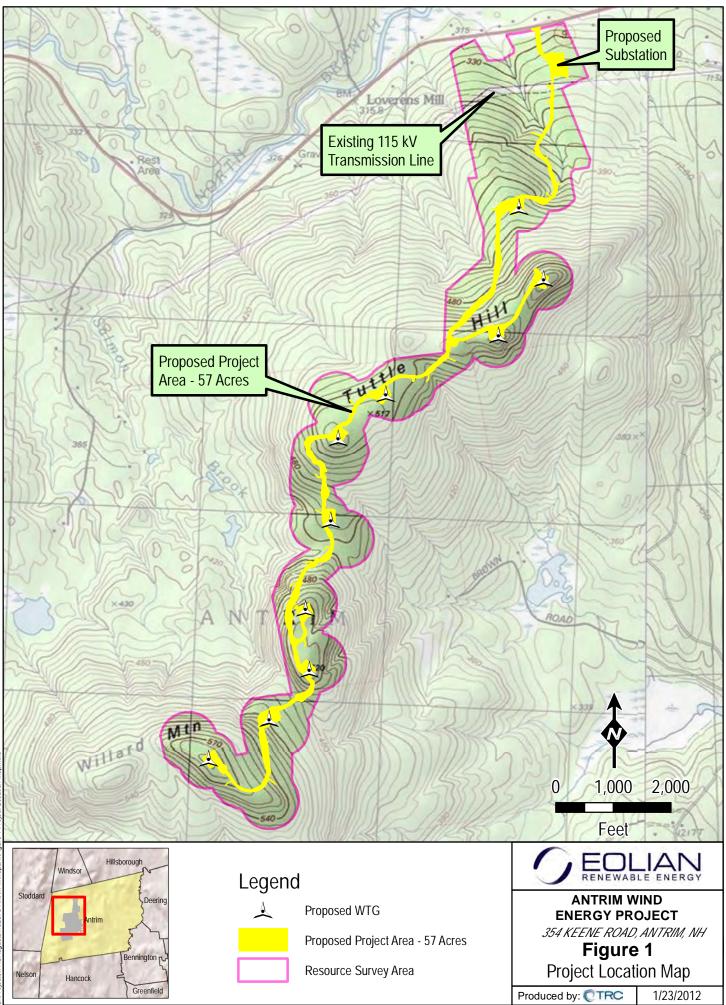
Marlow Series

These well drained soils formed in dense, loamy till derived mainly from mica schist, granite, and phyllite. They are found on drumlins and glaciated uplands. They are moderately deep to a densic contact and very deep to bedrock. Slope ranges from 0 to 60 percent. Typically, the A horizon is a friable very dark gray fine sandy loam with a moderate fine granular structure. Generally, the E horizon is gray fine sandy loam, with very friable consistence. The B horizon consists of a yellowish red to olive fine sandy loam with a weak fine granular structure. The C horizon is an olive gray fine sandy loam with moderate medium platy structure and is very firm.

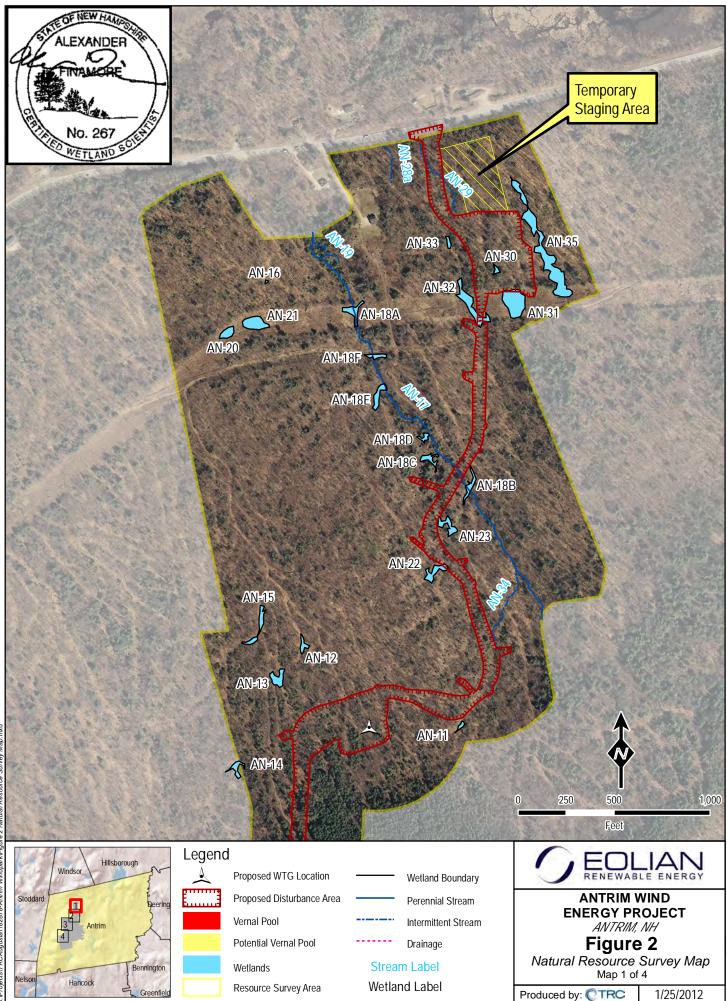
5.0 **REFERENCES**

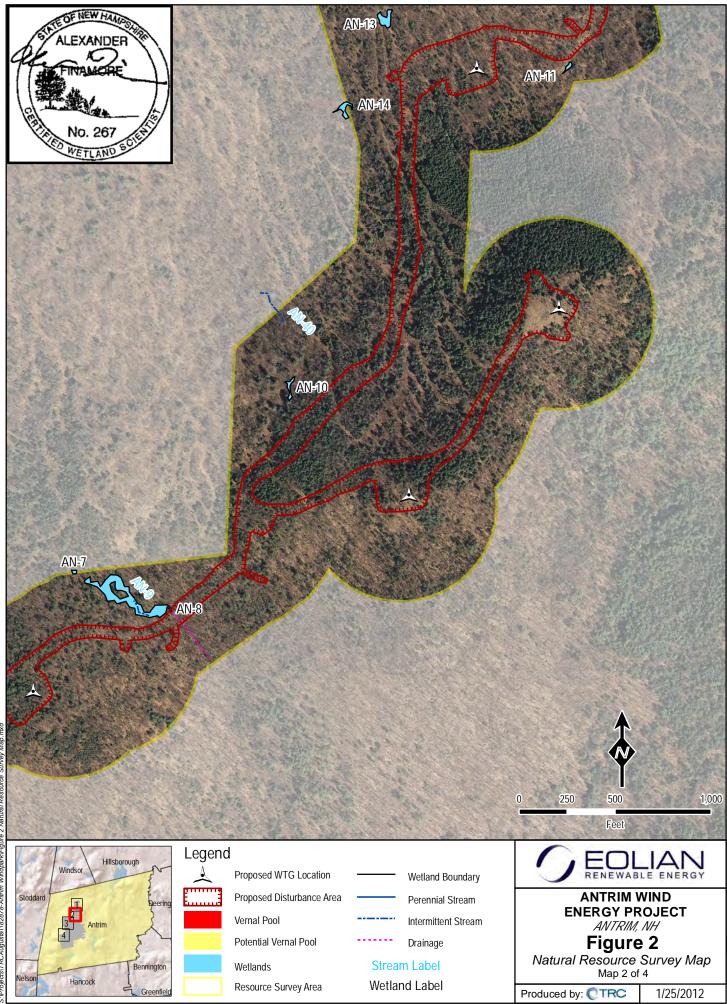
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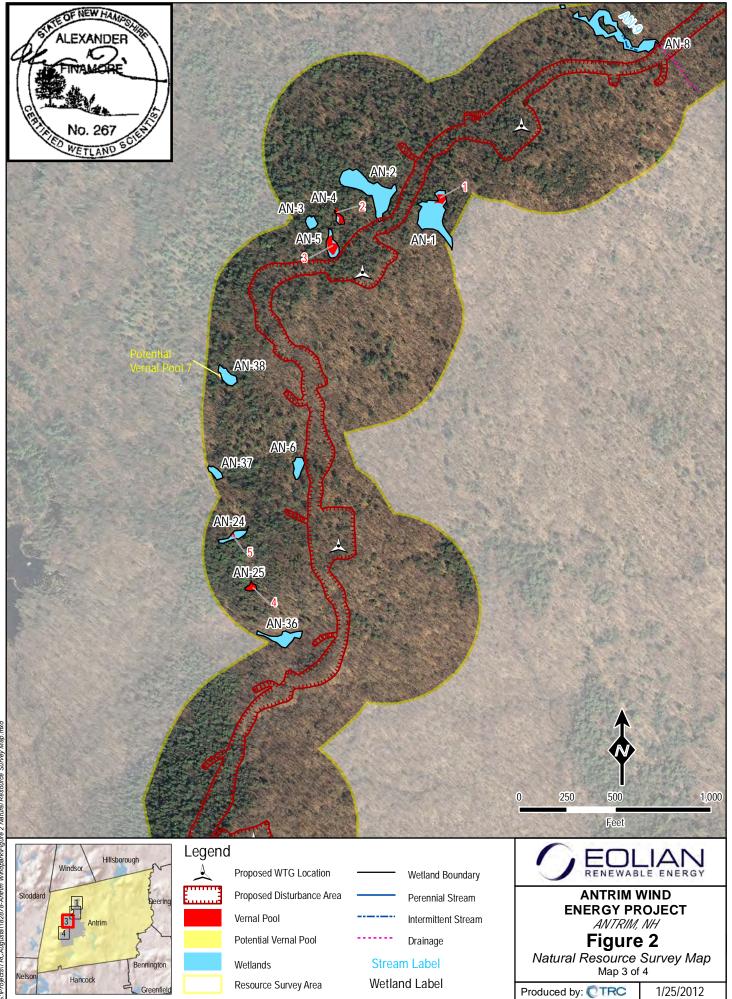
ATTACHMENT A PROJECT MAPPING

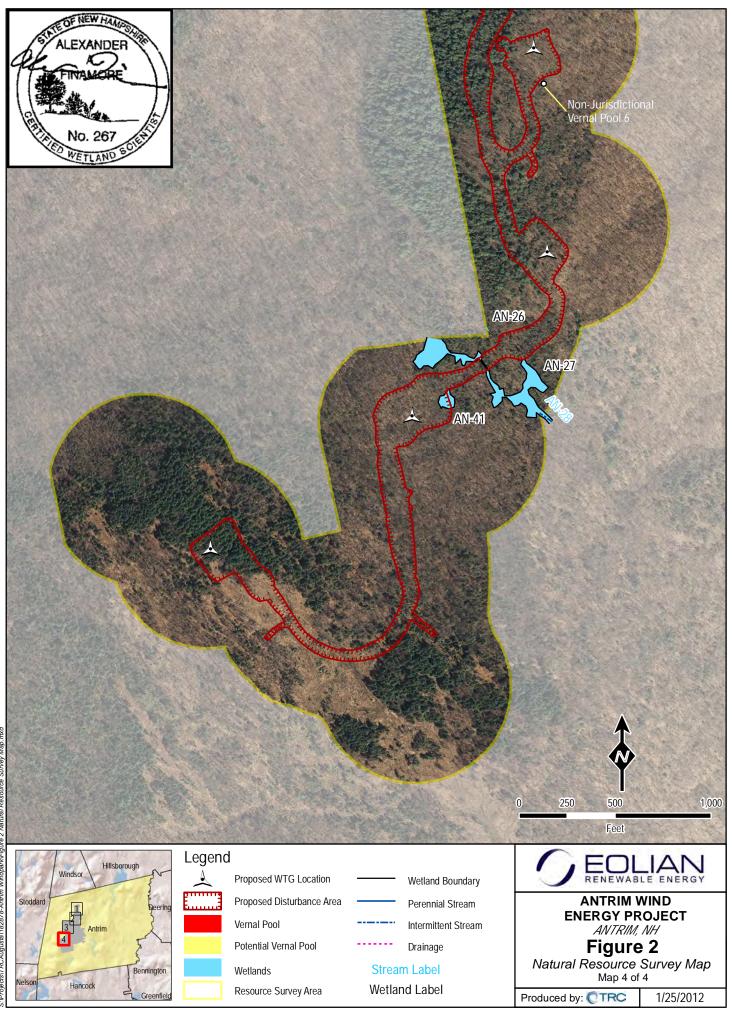


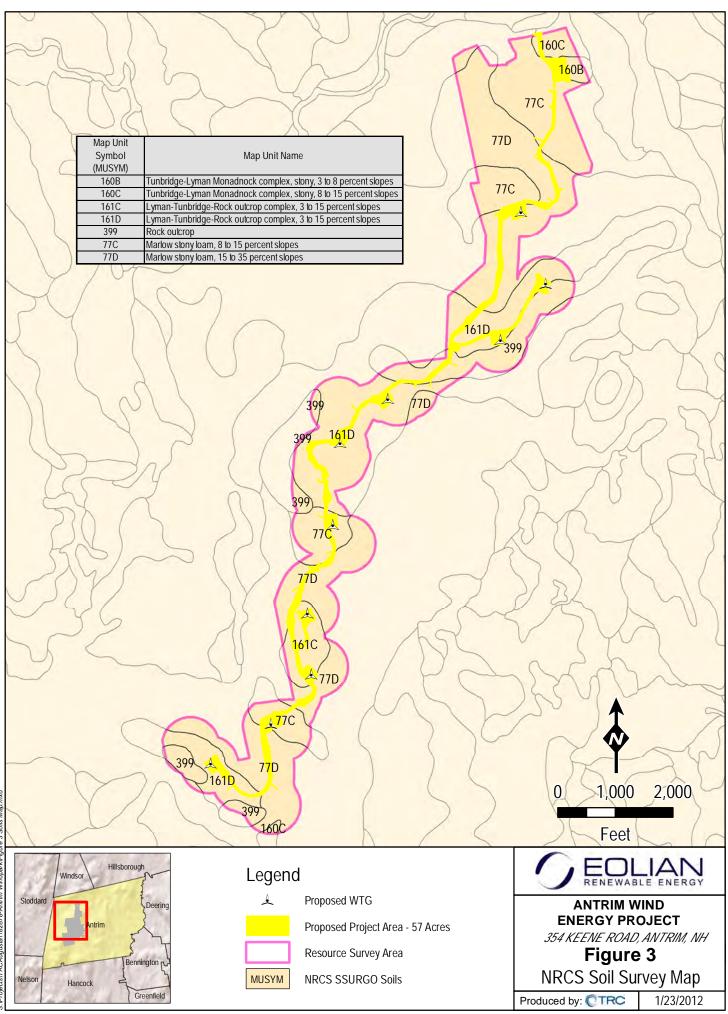
\Projects\TRCAugusta\182878-Antrim Windpark\Figure 1 Project Location Map











Projects\TRCAugusta\182878-Antrim Windpark\Figure 3 Soils Map

ATTACHMENT B PROFESSIONAL RESUME



ALEXANDER A. FINAMORE

EDUCATION

B.S., Environmental Science and Management, University of Rhode Island, 2004

AREAS OF EXPERTISE

Mr. Finamore has over 7 years experience encompassing

- Federal, State, and Local Environmental Permitting
- Wetland Delineations and Reports
- Subsurface Wastewater Disposal Design
- Vernal Pool Identification and Assessment
- Land Survey
- Preliminary Environmental Site Assessments (PESS)

REPRESENTATIVE EXPERIENCE

Mr. Finamore has completed or managed numerous wetland delineations and vernal pool surveys throughout the northeastern U.S., ranging from single house lots to large linear projects. Mr. Finamore has also completed or managed the permitting process and/or the preparation of technical documents in accordance to State and Federal site location, wetlands, and subsurface wastewater disposal system regulations.

Reunion Energy, Grandpa's Knob Wind Farm, Natural Resource Mapping – VT Wetland Scientist, 2011 Mr. Finamore organized and directed field crews, performed wetland delineations along corridor of proposed 20 wind turbines and collector line, performed vernal pool surveys, attended site walk with client and pertinent state and federal regulators.

Eolian Wind, Antrim Wind Farm, Natural Resource Mapping – NH Wetland Scientist, 2011 Mr. Finamore performed wetland delineations along corridor of proposed 10 wind turbines and collector line, performed vernal pool surveys, attended site walk with client and pertinent state and federal regulators

VELCO, Lines 350 & 370, Natural Resource Mapping – VT Wetland Scientist, 2011 Mr. Finamore organized and directed field crews, performed wetland delineations, wetland function and values assessments, stream classifications, and natural community surveys along existing transmission line right-of-ways

National Grid, 015S, Turtle Sweeps – MA Ecologist, 2011 Mr. Finamore performed Turtle Sweeps for Wood Turtle and Eastern Box Turtle for line restoration work due to tornado damage

National Grid, S9, Natural Resource Mapping – MA Wetland Scientist, 2011 Mr. Finamore performed wetland delineations for reconductoring along the S9 line.

National Grid, Y151, Natural Resource Mapping – MA Wetland Scientist, 2011 Mr. Finamore performed wetland delineations for reconductoring along the A126 line.



Spectra Energy, Wetland Permitting – CT, MA, RI Wetland Scientist, 2011 Mr. Finamore performed local and state wetland permitting for installation of launcher and receiver barrels for pipeline segments throughout Algonquin's distribution system

MBCR, Natural Resource Mapping – Walpole, MA Wetland Scientist, 2010 Mr. Finamore delineated watersheds for culvert sizing using GIS and ground truthing.

Central Maine Power, Co., Natural Resource Mapping and State and Federal Permit Application – ME Wetland Scientist, 2009-Present Mr. Finamore performed wetland delineations along proposed transmission line corridors, performed vernal pool surveys, performed routine stormwater inspections, performed invasive species inventories, field located resources and setbacks for pre-construction, prepared GIS maps and data tables for associated NRPA, Site Location of Development, and Army Corps of Engineers permitting, provided survey assistance on structure location and conductor height over major river crossings.

First Wind & 3Phase, Land Survey – Lincoln, ME Survey Technician, 2010 Mr. Finamore performed structure layout for the collector and transmission line servicing 40 wind turbines.

NSTAR, Natural Resource Mapping – RI Wetland Scientist, 2010 Mr. Finamore performed wetland delineations along an existing transmission line.

Town of Morrisville, FERC Pre-application Document – Morrisville, VT Ecologist, 2010 Mr. Finamore collected existing condition information regarding geologic, soil, wetland, wildlife, botanical, and rare, threatened and endangered species pertinent to FERC relicensing from federal, state, and local agencies for four hydroelectric dams.

Bangor Hydro, Natural Resource Mapping and State and Federal Permit Application, Ellsworth – ME Wetland Scientist, 2009-2010 Mr. Finamore performed wetland delineations along proposed transmission line corridors, assessed potential access roads for viability, prepared GIS maps and data tables for associated NRPA, Site Location of Development, and Army Corps of Engineers permitting.

National Grid, A127, Natural Resource Mapping – MA Wetland Scientist, 2009 Mr. Finamore performed wetland delineations for reconductoring along the A126 line.

VELCO, PV-20, Natural Resource Mapping – VT Wetland Scientist, 2009 Mr. Finamore performed wetland delineations, wetland function and values assessments, stream classifications, and natural community surveys along existing transmission line right-of-ways.

L.L. Bean, Inc., Natural Resource Mapping and Permitting – Freeport, ME Wetland Scientist & Survey Technician, 2005-2008 Mr. Finamore performed wetland delineations, vernal pool surveys, topographic mapping, and prepared Natural



Resource Protection Act applications and assisted with Site Location of Development Act applications.

First Wind, Natural Resource Mapping – ME Wetland Scientist, 2006-2007 Mr. Finamore performed wetland delineations and vernal pool surveys for the First Wind Stetson Wind Farm and associated transmission line corridors.

Bangor Hydro Electric Company, Natural Resource Mapping – Bangor, ME Wetland Scientist, 2008 Mr. Finamore performed wetland delineations and vernal pool surveys for the rebuild of Line 64.

Maine Coast Heritage Trust, Natural Resource Inventory – Stonington, ME Wetland Scientist, 2009 Mr. Finamore performed a Natural Resource inventory of 11 properties managed by MCHT. Inventories included gathering of available GIS data, historical aerial photography, and historical accounts of land use, vegetative inventories, soil evaluations, and wildlife observations.

Zyacorp Cinemagic, Natural Resource Mapping, Environmental Permit Applications, Environmental Site Assessment and Topographic Mapping – Westbrook and Saco, ME Environmental Scientist & Survey Technician, 2005-2009 Mr. Finamore performed wetland delineations, vernal pool surveys, topographic mapping on commercial properties. Mr. Finamore prepared environmental permit applications under Maine's Natural Resource Protection Act and a Preliminary Environmental Assessment on the Saco property.

New England College, Environmental Permit Application – Henniker, NH Wetland Scientist, 2009 Mr. Finamore prepared environmental permit applications under New Hampshire's Fill and Dredge in Wetlands statute for the installation of an athletic field.

Bangor Retirement Community, Wetland Mitigation Design and Monitoring – Bangor, ME Wetland Scientist, 2007-2009 Mr. Finamore assisted with the design of a wetland creation area mitigating over an acre of wetland disturbance. Mr. Finamore performed annual monitoring of the mitigation area and submitted reports to the Maine Department of Environmental Protection.

Town of Wells, Salt Marsh Erosion Monitoring – Wells, ME Wetland Scientist, 2004 Mr. Finamore mapped erosional features within a coastal marsh and inventoried vegetation and wildlife

CERTIFICATIONS AND TRAINING

Certified Wetland Scientist, #267, NH Licensed Site Evaluator, #391, ME

AFFILIATIONS

Maine Association of Wetland Scientists – Member (Member since 2005) Maine Association of Site Evaluators – Member (Member since 2005)

ATTACHMENT C U.S. ARMY CORPS OF ENGINEERS WETLAND DETERMINATION DATA FORMS

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

				0	
Project/Site: Antrim Wind Project	City/County:	Antrim		Sampling Date: 1	0-Aug-11
Applicant/Owner: Eolian Renewable Energy, LLC		State: N	4	Sampling Point:	AN1 Wet
Investigator(s): AF JG	Section, T	ownship, Range: S.	Т.	R.	
Landform (hillslope, terrace, etc.): Hillside	Local relief (c	oncave, convex, none):	hummocky	y Slope:	0.0 % / 0.0 °
Subregion (LRR or MLRA):	-	Long.:	-	Dat	um:
Soil Map Unit Name:			WVI classifi	cation: PFO	
	ntly disturbed? problematic? sampling p	Are "Normal Circur (If needed, explair point locations, tra	n any answe	rs in Remarks.)	
Hydrophytic Vegetation Present? Yes ● No ○ Hydric Soil Present? Yes ● No ○ Wetland Hydrology Present? Yes ● No ○		e Sampled Area n a Wetland? Yes	● _{No} 〇		
Remarks: (Explain alternative procedures here or in a separate rep VP-1, Isolated, No overland drainage	port.)				

Hydrology

Wetland Hydrology Indicators:		Secondary Indicators (minimum of 2 required)				
Primary Indicators (minimum of one required;	Surface Soil Cracks (B6)					
Surface Water (A1)	Water-Stained Leaves (B9)	Drainage Patterns (B10)				
✓ High Water Table (A2)	Aquatic Fauna (B13)	Moss Trim Lines (B16)				
Saturation (A3)	Marl Deposits (B15)	Dry Season Water Table (C2)				
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)				
Sediment Deposits (B2)	Oxidized Rhizospheres along Living Roots (C3)	Saturation Visible on Aerial Imagery (C9)				
Drift deposits (B3)	Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)				
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)				
Iron Deposits (B5)	Thin Muck Surface (C7)	Shallow Aquitard (D3)				
Inundation Visible on Aerial Imagery (B7)	Other (Explain in Remarks)	Microtopographic Relief (D4)				
Sparsely Vegetated Concave Surface (B8)		✓ FAC-neutral Test (D5)				
Field Observations:						
Surface Water Present? Yes No	Depth (inches):4					
Water Table Present? Yes No	Depth (inches): <u>3</u>					
Saturation Present? Yes • No ·	Depth (inches): 0 Wetland Hydrology Present? Yes No					
Describe Recorded Data (stream gauge, monito	ring well, aerial photos, previous inspections), if ava	ailable:				
Remarks:						

	into	Dominant Species?		Sampling Point: AN1 Wet
Tree Stratum (Plot size: <u>30'</u>)	Absolute % Cover	Rel.Strat.	Indicator Status	Dominance Test worksheet:
1. Acer rubrum	20	50.0%	FAC	Number of Dominant Species That are OBL, FACW, or FAC: 8 (A)
2. Picea mariana	20	✓ 50.0%	FACW-	()
3.		0.0%		Total Number of Dominant Species Across All Strata: 8 (B)
4.	0	0.0%		Species Across All Strata: 8 (B)
5.	0	0.0%		Percent of dominant Species
6.	0	0.0%		That Are OBL, FACW, or FAC:(A/B)
7	0	0.0%		Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: 15')		= Total Cove	r	Total % Cover of: Multiply by:
	40		540	OBL species 0 x 1 = 0
1. Betula alleghaniensis		25.0%	FAC	FACW species 83 x 2 = 166
2. Picea mariana		37.5%	FACW-	FAC species $30 \times 3 = 90$
3. Vaccinium corymbosum		37.5%	FACW-	FACU species $0 \times 4 = 0$
4	0	0.0%		UPL species $0 \times 5 = 0$
5	0	0.0%		
6	0	0.0%		Column Totals: <u>113</u> (A) <u>256</u> (B)
7	0	0.0%		Prevalence Index = B/A =2.265
Herb Stratum (Plot size: 5')	40	= Total Cove	r	Hydrophytic Vegetation Indicators:
1.Carex intumescens	15	✔ 45.5%	FACW+	Rapid Test for Hydrophytic Vegetation
2.Osmunda cinnamomea	<u>10</u>	30.3%	FACW	✓ Dominance Test is > 50%
3 Contin trifolio		 ✓ 30.3 % ✓ 24.2% 	FACW	\checkmark Prevalence Index is \leq 3.0 ¹
4.	0	0.0%		Morphological Adaptations ¹ (Provide supporting
F		0.0%		data in Remarks or on a separate sheet)
5 <u>.</u> 6.	0	0.0%		Problematic Hydrophytic Vegetation ¹ (Explain)
				¹ Indicators of hydric soil and wetland hydrology must
7 <u>.</u> 8.		0.0%		be present, unless disturbed or problematic.
8 <u>.</u> 9.	0	0.0%		Definitions of Vegetation Strata:
9 10.	0	0.0%		
10 <u>.</u> 11.	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter
12.		0.0%		at breast height (DBH), regardless of height.
12		0.0% = Total Cove	r	Sapling/shrub - Woody plants less than 3 in. DBH and
Woody Vine Stratum (Plot size:)		_		greater than 3.28 ft (1m) tall
1	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
2		0.0%		
3		0.0%		Woody vine - All woody vines greater than 3.28 ft in
4	0	0.0%		height.
	0	= Total Cove	r	
				Hydrophytic Vegetation Present? Yes O No O
Remarks: (Include photo numbers here or on a separate sh	neet.)			

Profile Desc	ription: (Describ	e to the depth	needed to document	the indicator or cor	nfirm the a	absence of indicators.)	
Depth	Mat			dox Features			
(inches)	Color (mois		Color (moist)	% Type ¹	Loc ²	Texture	Remarks
0-10	10YR 2	/1 100%				Muck	
				· ·			
¹ Type: C=Cor	centration. D=De	pletion. RM=Redu	uced Matrix, CS=Covere	ed or Coated Sand Gra	ns ² Loca	ation: PL=Pore Lining. M=Ma	atrix
Hydric Soil						Indicators for Proble	_
Histosol			Polyvalue Belov	v Surface (S8) (LRR R,		_	inatic rigane sons :
Histic Ep			MLRA 149B)				LRR K, L, MLRA 149B)
Black His			Thin Dark Surfa	ace (S9) (LRR R, MLRA	A 149B)	_	x (A16) (LRR K, L, R)
	n Sulfide (A4)		Loamy Mucky N	/lineral (F1) LRR K, L)			r Peat (S3) (LRR K, L, R)
	Layers (A5)		Loamy Gleyed	Matrix (F2)		Dark Surface (S7)	
	Below Dark Surfa	re (A11)	Depleted Matrix	< (F3)			urface (S8) (LRR K, L)
	rk Surface (A12)		Redox Dark Su	rface (F6)		Thin Dark Surface	
			Depleted Dark			_	asses (F12) (LRR K, L, R)
	uck Mineral (S1)		Redox Depress			Piedmont Floodplai	in Soils (F19) (MLRA 149B)
	eyed Matrix (S4)					Mesic Spodic (TA6)) (MLRA 144A, 145, 149B)
Sandy Re						Red Parent Materia	al (TF2)
	Matrix (S6)					Very Shallow Dark	Surface (TF12)
Dark Sur	face (S7) (LRR R, I	VILRA 149B)				Other (Explain in R	emarks)
³ Indicators of	of hydrophytic vege	etation and wetla	nd hydrology must be p	resent, unless disturbe	ed or proble	ematic.	
Restrictive I	ayer (if observe	d):					
Type: L							
Depth (inc						Hydric Soil Present?	Yes 🔍 No 🔾
	10						
Remarks:							

Project/Site: Antrim Wind Project	City/County: Antrim	Sampling Date: 10-Aug-11					
Applicant/Owner: Eolian Renewable E	nergy, LLC	St	ate: NH	Sampling Point:	AN1 Upl	and	
Investigator(s): AF JG		Section, Township, Range	: S. T.	R.			
Landform (hillslope, terrace, etc.):	Hillside	Local relief (concave, convex,	none): none	Slope:	5.0%/	2.9 °	
Subregion (LRR or MLRA):	Lat.:	Lor	ng.:	Dat	um:		
Soil Map Unit Name:		NWI classification:					
Are Vegetation , Soil . Are Vegetation , Soil . Summary of Findings - At	, or Hydrology 🗌 naturally p	problematic? (If needed,	al Circumstances" , explain any answ ns, transects	ers in Remarks.)		etc.	
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes O No O Yes No O Yes No O	Is the Sampled Area within a Wetland?	Yes 🔿 No 🖲				
Remarks: (Explain alternative pro	edures here or in a separate repo	ort.)					

	Secondary Indicators (minimum of 2 required)					
Wetland Hydrology Indicators:						
Primary Indicators (minimum of one required; check all that apply)						
Water-Stained Leaves (B9)	Drainage Patterns (B10)					
Aquatic Fauna (B13)	Moss Trim Lines (B16)					
Marl Deposits (B15)	Dry Season Water Table (C2)					
Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)					
Oxidized Rhizospheres along Living Roots (C3)	Saturation Visible on Aerial Imagery (C9)					
Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)					
Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)					
Thin Muck Surface (C7)	Shallow Aquitard (D3)					
	Microtopographic Relief (D4)					
	FAC-neutral Test (D5)					
Depth (inches):						
Depth (inches):	vdroloav Present? Yes 🔿 No 🖲					
Wetland Hy Depth (inches):	ydrology Present? Yes 🔾 No 🖲					
pring well, aerial photos, previous inspections), if av	/ailable:					
	Water-Stained Leaves (B9) Aquatic Fauna (B13) Marl Deposits (B15) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Living Roots (C3) Presence of Reduced Iron (C4) Recent Iron Reduction in Tilled Soils (C6) Thin Muck Surface (C7) Other (Explain in Remarks) Depth (inches): Depth (inches): Depth (inches):					

	1113	Dominant Species?		Sampling Point: AN1 Upland
Tree Stratum (Plot size: 30')	Absolute % Cover	Rel.Strat.	Indicator Status	Dominance Test worksheet:
				Number of Dominant Species
1. Fagus grandifolia	25		FACU	That are OBL, FACW, or FAC: (A)
2. <u>Picea rubens</u>	33		FACU	Total Number of Dominant
3. Acer rubrum		30.1%	FAC	Species Across All Strata: 7 (B)
4		0.0%		Percent of dominant Species
5		0.0%		That Are OBL, FACW, or FAC:28.6% (A/B)
6	0	0.0%		
7		0.0%		Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: 15')	83	= Total Cove	r	Total % Cover of: Multiply by:
1. Picea rubens	10	✓ 55.6%	FACU	OBL species $0 \times 1 = 0$
2. Fagus grandifolia		16.7%	FACU	FACW species $0 \times 2 = 0$
3. Vaccinium angustifolium		27.8%	FACU-	FAC species $38 \times 3 = 114$
4.		0.0%		FACU species $91 \times 4 = 364$
5		0.0%		UPL species x 5 =
6.		0.0%		Column Totals: 129 (A) 478 (B)
7.		0.0%		Prevalence Index = $B/A = 3.705$
		= Total Cove		
Herb Stratum (Plot size: 5')			•	Hydrophytic Vegetation Indicators:
1.Aralia nudicaulis	5	16.1%	FACU	Rapid Test for Hydrophytic Vegetation
2.Lycopodium obscurum		32.3%	FACU	Dominance Test is > 50%
3. Malanthemum canadense		9.7%	FAC-	Prevalence Index is ≤3.0 ¹
4.trillium spp.		9.7%		Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
5. Trientalis borealis		32.3%	FAC	Problematic Hydrophytic Vegetation ¹ (Explain)
6.	0	0.0%		
7.		0.0%		¹ Indicators of hydric soil and wetland hydrology must
8.		0.0%		be present, unless disturbed or problematic.
9.	0	0.0%		Definitions of Vegetation Strata:
10.	0	0.0%		
11	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
12.	0	0.0%		
	31	= Total Cove	r	Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall
Woody Vine Stratum (Plot size:)				
1	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
2	0	0.0%		
3	0	0.0%		Woody vine - All woody vines greater than 3.28 ft in
4	0	0.0%		height.
	0	= Total Cove	r	
				Hydrophytic
				Vegetation V O N O
				Present? Yes No •
Remarks: (Include photo numbers here or on a separate she	et.)			

Depth	•	ribe to Aatrix	the depth	needed to document the indicator or confirm the Redox Features	absence of indicators.)	
(inches)	Color (m		%	Color (moist) % Type 1 Loc ²	Texture	Remarks
0-6	10YR	3/2	100%		Loam	
6-7	2.5Y	5/3	100%		Fine Loamy Sand	
7-16	10YR	4/3	100%		Fine Sandy Loam	
16+	2.5Y	5/6	100%		Fine Sandy Loam	
				·		
				·		
¹ Type: C=Cor	ncentration. D=	Depletio	n. RM=Red	luced Matrix, CS=Covered or Coated Sand Grains ² Loc	ation: PL=Pore Lining. M=M	atrix
Hydric Soil		,				2
				Polyvalue Below Surface (S8) (LRR R,		entatic rigune sons .
	ipedon (A2)			MLRA 149B)		(LRR K, L, MLRA 149B)
Black His				Thin Dark Surface (S9) (LRR R, MLRA 149B)	_	x (A16) (LRR K, L, R) or Peat (S3) (LRR K, L, R)
Hydroger	n Sulfide (A4)			Loamy Mucky Mineral (F1) LRR K, L)	Dark Surface (S7)	
Stratified	Layers (A5)			Loamy Gleyed Matrix (F2)		urface (S8) (LRR K, L)
	Below Dark Su		11)	Depleted Matrix (F3)	Thin Dark Surface	
Thick Da	rk Surface (A12)		Redox Dark Surface (F6)		Masses (F12) (LRR K, L, R)
Sandy Mu	uck Mineral (S1))		Depleted Dark Surface (F7)		in Soils (F19) (MLRA 149B)
	eyed Matrix (S4	l)		Redox Depressions (F8)	Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Re					Red Parent Materi	al (TF2)
	Matrix (S6)		4 (05)		Very Shallow Dark	Surface (TF12)
	face (S7) (LRR				Other (Explain in F	Remarks)
³ Indicators o	of hydrophytic v	egetatio	n and wetl	and hydrology must be present, unless disturbed or prob	lematic.	
Restrictive L	ayer (if obser	ved):				
Туре:						
Depth (inc	ches):				Hydric Soil Present?	Yes 🔾 No 🖲
Remarks:						



AN1 Wetland



AN1 Wetland



AN1 Upland

				•		
Project/Site: Antrim Wind Project	City/County:	Antrim		Sampling Date: 1	D-Aug-11	
Applicant/Owner: Eolian Renewable Energy, LLC		State:	NH	Sampling Point:	AN2 Wet	
Investigator(s): AF JG	Section, T	ownship, Range: S.	т.	R.		
Landform (hillslope, terrace, etc.): Ridgetop	Local relief (o	oncave, convex, none)	concave	Slope:	0.0%/0.	.0 °
Subregion (LRR or MLRA): Lat.	:	Long.:		Dat	um:	
Soil Map Unit Name:	-		NWI classif	fication: PFO/PSS		
	ntly disturbed? y problematic? sampling p	Are "Normal Circu (If needed, expla point locations, t	in any answ	ers in Remarks.)		
Hydrophytic Vegetation Present? Yes ● No ○ Hydric Soil Present? Yes ● No ○ Wetland Hydrology Present? Yes ● No ○		e Sampled Area in a Wetland? Ye	s 🖲 No C)		
Remarks: (Explain alternative procedures here or in a separate replaced beta Radar location	port.)					

Wetland Hydrology Indicators:		Secondary Indicators (minimum of 2 required)				
Primary Indicators (minimum of one required;	Surface Soil Cracks (B6)					
Surface Water (A1)	✓ Water-Stained Leaves (B9)	Drainage Patterns (B10)				
✓ High Water Table (A2)	Aquatic Fauna (B13)	Moss Trim Lines (B16)				
Saturation (A3)	Marl Deposits (B15)	Dry Season Water Table (C2)				
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)				
Sediment Deposits (B2)	Oxidized Rhizospheres along Living Roots (C3)	Saturation Visible on Aerial Imagery (C9)				
Drift deposits (B3)	Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)				
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)				
Iron Deposits (B5)	Thin Muck Surface (C7)	Shallow Aquitard (D3)				
Inundation Visible on Aerial Imagery (B7)		Microtopographic Relief (D4)				
Sparsely Vegetated Concave Surface (B8)	Uther (Explain in Remarks)	\checkmark FAC-neutral Test (D5)				
Field Observations:						
Surface Water Present? Yes O No •	Depth (inches):					
Water Table Present? Yes No	Depth (inches): 9	·· • • •				
Saturation Present? Yes Solution View No	Depth (inches):0	drology Present? Yes $ullet$ No $igloo$				
Describe Recorded Data (stream gauge, monito	ring well, aerial photos, previous inspections), if ava	ailable:				
Remarks:						

	11113	Dominant Species?		Sampling Point: AN2 Wet
Tree Stratum (Plot size: 30')	Absolute % Cover	Rel.Strat.	Indicator Status	Dominance Test worksheet:
1 Picea mariana	25	55.6%	FACW-	Number of Dominant Species That are OBL, FACW, or FAC: 6 (A)
2. Betula alleghaniensis		✓ 44.4%	FAC	
3.		0.0%		Total Number of Dominant Species Across All Strata: 6 (B)
4.		0.0%		Species Across All Strata:6 (B)
5	0	0.0%		Percent of dominant Species
6.		0.0%		That Are OBL, FACW, or FAC:(A/B)
7	0	0.0%		Prevalence Index worksheet:
1		= Total Cove	-	Total % Cover of: Multiply by:
Sapling/Shrub Stratum (Plot size: 15')	40		1	$\frac{1}{0\text{BL species}} \frac{1}{100} \times 1 = 100$
1. Picea mariana	10	33.3%	FACW-	
2. Spiraea latifolia	10	33.3%	FAC+	
3. Vaccinium corymbosum	10	33.3%	FACW-	
4	0	0.0%		FACU species $\begin{array}{c} 0 \\ \hline \end{array}$ x 4 = $\begin{array}{c} 0 \\ \hline \end{array}$
5.		0.0%		UPL species $0 \times 5 = 0$
6.	0	0.0%		Column Totals: <u>185</u> (A) <u>300</u> (B)
7.		0.0%		Prevalence Index = $B/A = 1.622$
-		= Total Cove	r	
Herb Stratum (Plot size: 5')				Hydrophytic Vegetation Indicators:
1 <u>.</u> Eriophorum virginicum	100	90.9%	OBL	
2.Osmunda cinnamomea	5	4.5%	FACW	✓ Dominance Test is > 50%
3.Rubus hispidoides	5	4.5%	FACW	✓ Prevalence Index is $\leq 3.0^{1}$
4.	0	0.0%		Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
5.	0	0.0%		Problematic Hydrophytic Vegetation ¹ (Explain)
6.	0	0.0%		
7.	0	0.0%		¹ Indicators of hydric soil and wetland hydrology must
8.	0	0.0%		be present, unless disturbed or problematic.
9.	0	0.0%		Definitions of Vegetation Strata:
10.	0	0.0%		
11		0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
12.	0	0.0%		
Woody Vine Stratum (Plot size:)		= Total Cove	r	Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall
	0			
1	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
2	0	0.0%		
3	<u>0</u>	0.0%		Woody vine - All woody vines greater than 3.28 ft in
4		-		height.
	0	= Total Cove	r	
				I hadrom kurtin
				Hydrophytic Vegetation
				Present? Yes No
Remarks: (Include photo numbers here or on a separate sh	eet.)			

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)										
Depth (inches)	ا Color (m	Matrix	_ % -	Re Color (moist)	dox Featu %	res Type 1	Loc ²	Texture	Remarks	
					70	Туре	LOC-		Remarks	
0-8	10YR	2/1	100%			· ·		Muck		
8-15	2.5Y	5/1	100%					Sand		
						·				
								-		
1 T 0 0										
		Depletio	n. KM=Red	uced Matrix, CS=Cover	ed or Coate	a Sand Grai	ns -Loca	ation: PL=Pore Lining. M=N		
Hydric Soil								Indicators for Probl	ematic Hydric Soils :	3
Histosol				Polyvalue Belo MLRA 149B)	w Surface (S8) (LRR R,		2 cm Muck (A10)	(LRR K, L, MLRA 149B)	
Histic Epi	ipedon (A2)			,	(00) (1		4400)		x (A16) (LRR K, L, R)	
Black His	stic (A3)			Thin Dark Surf			A 149B)		or Peat (S3) (LRR K, L, R	2)
Hydroger	n Sulfide (A4)			Loamy Mucky		LRR K, L)		Dark Surface (S7)		-)
Stratified	Layers (A5)			Loamy Gleyed					Surface (S8) (LRR K, L)	
Depleted	l Below Dark Su	irface (A	11)	Depleted Matri				Thin Dark Surface		
Thick Da	rk Surface (A12	2)		Redox Dark Su					Aasses (F12) (LRR K, L, F	2)
Sandy M	uck Mineral (S1)		Depleted Dark		')			ain Soils (F19) (MLRA 14	
Sandy GI	leyed Matrix (S4	1)		Redox Depress	sions (F8)				6) (MLRA 144A, 145, 149	
	edox (S5)							Red Parent Mater		
	Matrix (S6)							Very Shallow Dark		
	face (S7) (LRR	R, MLRA	149B)							
								Other (Explain in	Remarks)	
Indicators c	of hydrophytic v	egetatio	n and wetla	nd hydrology must be	present, uni	ess disturbe	d or probl	ematic.		
Restrictive L	ayer (if obse	rved):								
Type:									\sim	
Depth (ind	ches):							Hydric Soil Present?	Yes 🔍 No 🔾	
Remarks:										
riomanior										

Project/Site: Antrim Wind Project	City/County: Antrim	Sampling Date: 10-Aug-11					
Applicant/Owner: Eolian Renewable Energy, LLC	State: NH	Sampling Point: AN2 upland					
Investigator(s): AF JG	Section, Township, Range: S. T.	R.					
Landform (hillslope, terrace, etc.): Ridgetop	Local relief (concave, convex, none): none	Slope: 3.0 % / 1.7 °					
Subregion (LRR or MLRA):	Long.:	Datum:					
Soil Map Unit Name:	NWI class	NWI classification:					
	ntly disturbed? Are "Normal Circumstances" problematic? (If needed, explain any answ sampling point locations, transects	vers in Remarks.)					
Hydrophytic Vegetation Present? Yes No ● Hydric Soil Present? Yes No ● Wetland Hydrology Present? Yes No ●	Is the Sampled Area within a Wetland? Yes O No	٩					
Remarks: (Explain alternative procedures here or in a separate rep	port.)						

Wetland Hydrology Indicators:		Secondary Indicators (minimum of 2 required)	
Primary Indicators (minimum of one required;	Surface Soil Cracks (B6)		
Surface Water (A1)	Water-Stained Leaves (B9)	Drainage Patterns (B10)	
High Water Table (A2)	Aquatic Fauna (B13)	Moss Trim Lines (B16)	
Saturation (A3)	Marl Deposits (B15)	Dry Season Water Table (C2)	
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)	
Sediment Deposits (B2)	Oxidized Rhizospheres along Living Roots (C3)	Saturation Visible on Aerial Imagery (C9)	
Drift deposits (B3)	Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)	
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)	
Iron Deposits (B5)	Thin Muck Surface (C7)	Shallow Aquitard (D3)	
Inundation Visible on Aerial Imagery (B7)	Other (Explain in Remarks)	Microtopographic Relief (D4)	
Sparsely Vegetated Concave Surface (B8)		FAC-neutral Test (D5)	
Field Observations:			
Surface Water Present? Yes O No 🖲	Depth (inches):		
Water Table Present? Yes O No 🖲	Depth (inches):	Iroloay Present? Yes 🔿 No 🖲	
Saturation Present? Yes O No O	Depth (inches):	Irology Present? Yes 🔾 No 🖲	
Describe Recorded Data (stream gauge, monito	pring well, aerial photos, previous inspections), if ava	ilable:	
Remarks:			

	1113	Dominant Species?		Sampling Point: AN2 upland
Tree Stratum (Plot size: 30')	Absolute % Cover	Rel.Strat.	Indicator Status	Dominance Test worksheet:
		_		Number of Dominant Species
1. Quercus rubra	35	58.3%	FACU-	That are OBL, FACW, or FAC: 2 (A)
2. Pinus strobus		41.7%	FACU	Total Number of Dominant
3	0	0.0%		Species Across All Strata: 7 (B)
4	0	0.0%		
5	0	0.0%		Percent of dominant Species That Are OBL, FACW, or FAC:28.6%(A/B)
6	0	0.0%		
7	0	0.0%		Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: 15')	60	= Total Cove	r	Total % Cover of: Multiply by:
1. Acer rubrum	10	✔ 18.2%	FAC	$\begin{array}{ccc} \text{OBL species} & 0 & \text{x 1} = & 0 \\ \hline \end{array}$
2. Betula papyrifera	- -	9.1%	FACU	FACW species $0 \times 2 = 0$
3. Fagus grandifolia		18.2%	FACU	FAC species $20 \times 3 = 60$
4. Picea rubens	25	45.5%	FACU	FACU speci es 105 x 4 = 420
5. Betula alleghaniensis	E	9.1%	FAC	UPL species x 5 =
6.		0.0%		Column Totals: <u>125</u> (A) <u>480</u> (B)
7.		0.0%		Prevalence Index = $B/A = 3.840$
		= Total Cove	r	
Herb Stratum (Plot size: 5')				Hydrophytic Vegetation Indicators:
1.Vaccinium angustifolium	5	50.0%	FACU-	Rapid Test for Hydrophytic Vegetation
2. Trientalis borealis	5	50.0%	FAC	Dominance Test is > 50%
3.	0	0.0%		Prevalence Index is $\leq 3.0^{1}$
4.	0	0.0%		Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
5.	0	0.0%		Problematic Hydrophytic Vegetation ¹ (Explain)
6.	0	0.0%		
7.	0	0.0%		¹ Indicators of hydric soil and wetland hydrology must
8.	0	0.0%		be present, unless disturbed or problematic.
9.	0	0.0%		Definitions of Vegetation Strata:
10.	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter
11.	0	0.0%		at breast height (DBH), regardless of height.
12.	0	0.0%		
Woody Vine Stratum (Plot size:)	10	= Total Cove	r	Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall
1	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of
2	0	0.0%		size, and woody plants less than 3.28 ft tall.
3	0	0.0%		
Δ	0	0.0%		Woody vine - All woody vines greater than 3.28 ft in height.
- Tr ₂	0	= Total Cove	r	
			•	
				Hydrophytic
				Vegetation Present? Yes O No •
Domarka: (Includo photo pumbaro baro	oot)			1
Remarks: (Include photo numbers here or on a separate sh	eet.)			

Profile Desc Depth	•	cribe to Matrix	the depth	needed to document the indicator or confirm Redox Features	the absence of indicators.)	
(inches)	Color (n	noist)	%	Color (moist) % Type 1 Lo	c ² Texture	Remarks
0-4	10YR	3/2	100%		Loam	
4-12	10YR	4/6	100%		Fine Sandy Loam	
12-16	10YR	5/8	100%		Fine Sandy Loam	
						-
1						
		=Depletio	n. RM=Red	uced Matrix, CS=Covered or Coated Sand Grains		
Hydric Soil					Indicators for Prob	lematic Hydric Soils : ³
				Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	2 cm Muck (A10)	(LRR K, L, MLRA 149B)
Black His	ipedon (A2)			Thin Dark Surface (S9) (LRR R, MLRA 1498	3) Coast Prairie Red	lox (A16) (LRR K, L, R)
_	n Sulfide (A4)			Loamy Mucky Mineral (F1) LRR K, L)	5 cm Mucky Peat	or Peat (S3) (LRR K, L, R)
	Layers (A5)			Loamy Gleyed Matrix (F2)	Dark Surface (S7	
_	Below Dark S	urface (A	11)	Depleted Matrix (F3)		Surface (S8) (LRR K, L)
	rk Surface (A1		,	Redox Dark Surface (F6)		e (S9) (LRR K, L) Magaza (E12) (LRR K, L, R)
	uck Mineral (S			Depleted Dark Surface (F7)		Masses (F12) (LRR K, L, R) lain Soils (F19) (MLRA 149B)
_	leyed Matrix (S			Redox Depressions (F8)		6) (MLRA 144A, 145, 149B)
Sandy R	edox (S5)				Red Parent Mate	
Stripped	Matrix (S6)				Very Shallow Dar	
Dark Sur	face (S7) (LRR	R, MLRA	(149B)		Other (Explain in	
³ Indicators of	of hydrophytic	vegetatio	n and wetla	and hydrology must be present, unless disturbed or p	problematic.	
Restrictive	Layer (if obse	erved):				
Туре:						
Depth (in	ches):				Hydric Soil Present?	Yes 🔾 No 🖲
Remarks:						
Remarks.						



AN2 Wetland



AN2 Wetland



AN2 Wetland



AN2 Upland

			•		
Project/Site: Antrim Wind Project	City/County: Antrim		Sampling Date: 1	IO-Aug-11	
Applicant/Owner: Eolian Renewable Energy, LLC	State:	NH	Sampling Point:	AN3 Wet	
Investigator(s): AF JG	Section, Township, Range: S.	Т.	R.		
Landform (hillslope, terrace, etc.): Ridgetop	Local relief (concave, convex, none)	hummocky	/ Slope:	0.0 % / 0.0	
Subregion (LRR or MLRA):	Long.:		Dat	um:	
Soil Map Unit Name:		NWI classific	cation: PFO		
	tly disturbed? Are "Normal Circ problematic? (If needed, expla sampling point locations, t	ain any answe	rs in Remarks.)		
Hydrophytic Vegetation Present? Yes No Hydric Soil Present? Yes No Wetland Hydrology Present? Yes No	Is the Sampled Area within a Wetland? Ye	es 🖲 No 🔿			
Remarks: (Explain alternative procedures here or in a separate reported in the separate reported	prt.)				

Wetland Hydrology Indicators:		Secondary Indicators (minimum of 2 required)		
Primary Indicators (minimum of one required;	Surface Soil Cracks (B6)			
Surface Water (A1)	✓ Water-Stained Leaves (B9)	Drainage Patterns (B10)		
High Water Table (A2)	Aquatic Fauna (B13)	Moss Trim Lines (B16)		
Saturation (A3)	Dry Season Water Table (C2)			
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)		
Sediment Deposits (B2)	Oxidized Rhizospheres along Living Roots (C3)	Saturation Visible on Aerial Imagery (C9)		
Drift deposits (B3)	Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)		
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)		
Iron Deposits (B5)	Thin Muck Surface (C7)	Shallow Aquitard (D3)		
Inundation Visible on Aerial Imagery (B7)	Other (Explain in Remarks)	Microtopographic Relief (D4)		
Sparsely Vegetated Concave Surface (B8)		✓ FAC-neutral Test (D5)		
Field Observations:				
Surface Water Present? Yes O No 🔍	Depth (inches):			
Water Table Present? Yes O No •	Depth (inches):			
Saturation Present? (includes capillary fringe) Yes • No	Wetland Hy Depth (inches):0	rdrology Present? Yes 🖲 No 🔾		
Describe Recorded Data (stream gauge, monit	oring well, aerial photos, previous inspections), if av	ailable:		
Remarks:				

	1113	Dominant Species?		Sampling Point: AN3 Wet
Tree Stratum (Plot size: <u>30'</u>)	Absolute % Cover	Rel.Strat.	Indicator Status	Dominance Test worksheet:
1. Acer rubrum	20	✓ 100.0%	FAC	Number of Dominant Species That are OBL, FACW, or FAC: 5 (A)
2.	0	0.0%		
3.		0.0%		Total Number of Dominant Species Across All Strata: 5 (B)
4.	0	0.0%		Species Across All Strata: 5 (B)
5		0.0%		Percent of dominant Species
6.		0.0%		That Are OBL, FACW, or FAC:(A/B)
7		0.0%		Prevalence Index worksheet:
		= Total Cove	r	Total % Cover of: Multiply by:
Sapling/Shrub Stratum (Plot size: 15')				OBL speci es 20 x 1 = 20
1. <u>Picea mariana</u>	15	37.5%	FACW-	FACW species $50 \times 2 = 100$
2. Acer rubrum	5	12.5%	FAC	FAC species 25 x 3 = 75
3. Vaccinium corymbosum	20	50.0%	FACW-	
4		0.0%		
5	0	0.0%		$\begin{array}{c} \text{UPL specilies} \qquad \underline{ } \qquad x \ 5 = \underline{ } \\ \hline \end{array} $
6	0	0.0%		Column Totals: 95 (A) 195 (B)
7	0	0.0%		Prevalence Index = $B/A = 2.053$
Herb Stratum (Plot size: 5')	40	= Total Cove	r	Hydrophytic Vegetation Indicators:
				Rapid Test for Hydrophytic Vegetation
1.Osmunda cinnamomea	15	42.9%	FACW	✓ Dominance Test is > 50%
2.Carex stricta	20	57.1%	OBL	✓ Prevalence Index is $\leq 3.0^{1}$
3	0	0.0%		Morphological Adaptations ¹ (Provide supporting
4	0	0.0%		data in Remarks or on a separate sheet)
5	0	0.0%		Problematic Hydrophytic Vegetation ¹ (Explain)
6	0	0.0%		
7	0	0.0%		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
8	0	0.0%		
9	0	0.0%		Definitions of Vegetation Strata:
10	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter
11	0	0.0%		at breast height (DBH), regardless of height.
12	0	0.0%		Sapling/shrub - Woody plants less than 3 in. DBH and
Woody Vine Stratum (Plot size:)	35	= Total Cove	r	greater than 3.28 ft (1m) tall.
1	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of
2	0	0.0%		size, and woody plants less than 3.28 ft tall.
3	0	0.0%		Woody vine - All woody vines greater than 3.28 ft in
4	0	0.0%		height.
	0	= Total Cove	r	
				Hydrophytic
				Vegetation Present? Yes I No
Remarks: (Include photo numbers here or on a separate she	(at)			1
remains. (Include proto numbers here or on a separate sne	el.)			

	Matrix	the depth i	needed to document the indicator or confirm Redox Features	the absence of indicators.)	
(inches)	Color (moist)	%	Color (moist) % Type 1 Lo	c ² Texture Remarks	
0-5	10YR 3/2	100%		Sandy Loam	
5-10	2.5Y 4/2			Loamy Sand	
10+				Tedge	
		n. RM=Redu	iced Matrix, CS=Covered or Coated Sand Grains	² Location: PL=Pore Lining. M=Matrix	
Hydric Soil I				Indicators for Problematic Hydric Soils :	3
Histosol (•		Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	2 cm Muck (A10) (LRR K, L, MLRA 149B)	
	bedon (A2)		Thin Dark Surface (S9) (LRR R, MLRA 1498	3) Coast Prairie Redox (A16) (LRR K, L, R)	
Black Hist			Loamy Mucky Mineral (F1) LRR K, L)	5 cm Mucky Peat or Peat (S3) (LRR K, L,	R)
	Sulfide (A4)		Loamy Gleyed Matrix (F2)	Dark Surface (S7) (LRR K, L)	
	Layers (A5) Below Dark Surface (A	11)	Depleted Matrix (F3)	Polyvalue Below Surface (S8) (LRR K, L)	
	k Surface (A12)	11)	Redox Dark Surface (F6)	Thin Dark Surface (S9) (LRR K, L)	
			Depleted Dark Surface (F7)	Iron-Manganese Masses (F12) (LRR K, L,	
	ck Mineral (S1) eyed Matrix (S4)		Redox Depressions (F8)	Piedmont Floodplain Soils (F19) (MLRA 14	
Sandy Red				Mesic Spodic (TA6) (MLRA 144A, 145, 14	9B)
·	Matrix (S6)			Red Parent Material (TF2)	
	ace (S7) (LRR R, MLRA	(149B)		Very Shallow Dark Surface (TF12)	
				Other (Explain in Remarks)	
		n and wetlar	nd hydrology must be present, unless disturbed or p		
	ayer (if observed):				
Type: lea					
Depth (incl	nes): 10			Hydric Soli Present? Yes S No C	
Remarks:					

Project/Site: Antrim Wind Project	City/County: Antrim	Sampling Date: 10-Aug-11		
Applicant/Owner: Eolian Renewable Energy, LLC	State: NH	Sampling Point: AN3 Upland		
Investigator(s): AF JG	Section, Township, Range: S. T.	R.		
Landform (hillslope, terrace, etc.): Ridgetop	Local relief (concave, convex, none): none	Slope: 3.0 % / 1.7 °		
Subregion (LRR or MLRA):	Long.:	Datum:		
Soil Map Unit Name:	NWI class	ification:		
	problematic? (If needed, explain any answ	present? Yes No Vers in Remarks.)		
Hydrophytic Vegetation Present?YesNoHydric Soil Present?YesNoWetland Hydrology Present?YesNo	Is the Sampled Area within a Wetland? Yes O No (٩		
Remarks: (Explain alternative procedures here or in a separate rep bouldery	ort.)			

Wetland Hydrology Indicators:	Secondary Indicators (minimum of 2 required)		
Primary Indicators (minimum of one required;	Surface Soil Cracks (B6)		
Surface Water (A1)	Water-Stained Leaves (B9)	Drainage Patterns (B10)	
High Water Table (A2)	Aquatic Fauna (B13)	Moss Trim Lines (B16)	
Saturation (A3)	Marl Deposits (B15)	Dry Season Water Table (C2)	
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)	
Sediment Deposits (B2)	Oxidized Rhizospheres along Living Roots (C3)	Saturation Visible on Aerial Imagery (C9)	
Drift deposits (B3)	Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)	
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)	
Iron Deposits (B5)	Thin Muck Surface (C7)	Shallow Aquitard (D3)	
Inundation Visible on Aerial Imagery (B7)	Other (Explain in Remarks)	Microtopographic Relief (D4)	
Sparsely Vegetated Concave Surface (B8)		FAC-neutral Test (D5)	
		_ 、 ,	
Field Observations:			
Surface Water Present? Yes O No 🖲	Depth (inches):		
Water Table Present? Yes O No O	Depth (inches):	drology Present? Yes 🔿 No 🖲	
Saturation Present? (includes capillary fringe) Yes O No O	Wetland Hy Depth (inches):	drology Present? Yes 🔾 No 🖲	
Describe Recorded Data (stream gauge, monitor	pring well, aerial photos, previous inspections), if available	ailable:	
Remarks:			

		Dominant Species?		Sampling Point: AN3 Upland
Tree Stratum (Plot size: 30')	Absolute % Cover	Rel.Strat.	Indicator Status	Dominance Test worksheet:
	66	66.7%	FACU	Number of Dominant Species That are OBL, FACW, or FAC: 0 (A)
O Disus stastus	33	33.3%	FACU	
		0.0%	17100	Total Number of Dominant
3	0	0.0%		Species Across All Strata: 5 (B)
4	0	0.0%		Percent of dominant Species
5	0	0.0%		That Are OBL, FACW, or FAC: 0.0% (A/B)
6	0	0.0%		Developer la devenadada et
7				Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: 15')	99	= Total Cove	-	Total % Cover of: Multiply by:
1. Picea rubens	10	100.0%	FACU	$\begin{array}{c} \text{OBL species} \qquad 0 \qquad \text{x 1} = 0 \\ \hline \end{array}$
2.	0	0.0%		FACW species $0 \times 2 = 0$
3.	0	0.0%		FAC species $0 \times 3 = 0$
4	0	0.0%		FACU species 115 x 4 = 460
5	0	0.0%		UPL species x 5 =
6	0	0.0%		Column Totals: 115 (A) 460 (B)
6	0	0.0%		
7				Prevalence Index = B/A = 4.000
Herb Stratum (Plot size: 5')	10	= Total Cove		Hydrophytic Vegetation Indicators:
1.Quercus rubra	3	✓ 50.0%	FACU-	Rapid Test for Hydrophytic Vegetation
2.Vaccinium angustifolium	3	50.0%	FACU-	Dominance Test is > 50%
3.	0	0.0%		□ Prevalence Index is \leq 3.0 ¹
4.	0	0.0%		Morphological Adaptations ¹ (Provide supporting
5.	0	0.0%		data in Remarks or on a separate sheet)
6.	0	0.0%		Problematic Hydrophytic Vegetation ¹ (Explain)
7	0	0.0%		¹ Indicators of hydric soil and wetland hydrology must
8.	0	0.0%		be present, unless disturbed or problematic.
9.				Definitions of Vegetation Strata:
10.	0			
11.		0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter
12.	0	0.0%		at breast height (DBH), regardless of height.
12	 6	0.0%		Sapling/shrub - Woody plants less than 3 in. DBH and
Woody Vine Stratum (Plot size:)		_		greater than 3.28 ft (1m) tall
1	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
2	0	0.0%		size, and woody plants less than 3.28 it tall.
3	0	0.0%		Woody vine - All woody vines greater than 3.28 ft in
4	0	0.0%		height.
	0	= Total Cove	-	
				Hydrophytic Vegetation
				Present? Yes O No •
Remarks: (Include photo numbers here or on a separate she	et.)			

(inches)		Matrix		Redox Features	- _ .	. .
0-3	Color (m		%	Color (moist) % Type 1 Loc ²	Texture	Remarks
0.5	10YR	3/2	100%		Loam	
3-5	2.5Y	5/1	100%		Sand	
5-12	10YR	4/4	100%		Loamy Sand	
12+						bedrock
					-	
						- <u> </u>
¹ Type: C=Co	ncentration. D=	=Depletio	n. RM=Red	uced Matrix, CS=Covered or Coated Sand Grains ² Loca	ation: PL=Pore Lining. M=N	 Matrix
	Indicators:					3
Histosol				Polyvalue Below Surface (S8) (LRR R,		ienatic riyune sons .
	ipedon (A2)			MLRA 149B)		(LRR K, L, MLRA 149B)
Black Hi	•			Thin Dark Surface (S9) (LRR R, MLRA 149B)		ox (A16) (LRR K, L, R) or Peat (S3) (LRR K, L, R)
Hydroge	n Sulfide (A4)			Loamy Mucky Mineral (F1) LRR K, L)	Dark Surface (S7)	
Stratified	Layers (A5)			Loamy Gleyed Matrix (F2)		Surface (S8) (LRR K, L)
_	Below Dark S		11)	Depleted Matrix (F3)	Thin Dark Surface	
Thick Da	irk Surface (A1	2)		Redox Dark Surface (F6)		Masses (F12) (LRR K, L, R)
	uck Mineral (S			Depleted Dark Surface (F7) Redox Depressions (F8)	Piedmont Floodpl	ain Soils (F19) (MLRA 149B)
	leyed Matrix (S	(4)			Mesic Spodic (TA	6) (MLRA 144A, 145, 149B)
	edox (S5)				Red Parent Mater	ial (TF2)
	Matrix (S6)		1400)		Very Shallow Dar	k Surface (TF12)
	face (S7) (LRR				Other (Explain in	Remarks)
³ Indicators	of hydrophytic	vegetatio	n and wetla	nd hydrology must be present, unless disturbed or probl	ematic.	
	Laver (if obse	erved):				
Restrictive						\circ \circ
Restrictive Type: <u>k</u>	-					Yes 🔾 No 🖲
	-				Hydric Soil Present?	
Type: k	edrock				Hydric Soll Present?	
Type: <u>t</u> Depth (in	edrock				Hydric Soll Present?	
Type: <u>t</u> Depth (in	edrock				Hydric Soli Present?	
Type: <u>t</u> Depth (in	edrock				Hyaric Soli Present?	
Type: <u>t</u> Depth (in	edrock				Hyaric Soli Present?	
Type: <u>t</u> Depth (in	edrock				Hyaric Soli Present?	
Type: <u>t</u> Depth (in	edrock				Hyaric Soli Present?	
Type: <u>t</u> Depth (in	edrock				Hyaric Soli Present?	
Type: <u>t</u> Depth (in	edrock				Hyaric Soli Present?	
Type: <u>t</u> Depth (in	edrock				Hyaric Soli Present?	
Type: <u>t</u> Depth (in	edrock				Hyaric Soli Present?	
Type: <u>t</u> Depth (in	edrock				Hyaric Soli Present?	
Type: <u>t</u> Depth (in	edrock				Hyaric Soli Present?	
Type: <u>t</u> Depth (in	edrock				Hyaric Soli Present?	
Type: <u>t</u> Depth (in	edrock				Hyaric Soli Present?	
Type: <u>t</u> Depth (in	edrock				Hydric Soli Present?	
Type: <u>t</u> Depth (in	edrock				Hydric Soli Present?	
Type: <u>t</u> Depth (in	edrock				Hyaric Soil Present?	
Type: <u>t</u> Depth (in	edrock				Hyaric Soil Present?	



AN3 Wetland



AN3 Upland

Project/Site: Antrim Wind Project		City/County:	Antrim			Sampling Date: 10-Aug-11		
Applicant/Owner: Eolian Renewable Energy, LLC				State: N	Н	Sampling Point:	AN4 W	et
Investigator(s): AF JG		Section, To	ownship, Ran	ige: S.	т.	R.		
Landform (hillslope, terrace, etc.): Ridgetop		Local relief (co	oncave, conv	ex, none):	hummocky	y Slope:	0.0 % /	0.0 °
Subregion (LRR or MLRA):	Lat.:			Long.:		Dat	um:	
Soil Map Unit Name:					NWI classifi	cation: PFO		
	aturally pr	y disturbed? roblematic? ampling p	(If need	led, explai		rs in Remarks.)		etc.
Hydrophytic Vegetation Present?YesNoHydric Soil Present?YesNoWetland Hydrology Present?YesNo			Sampled Are		; • No ()			
Remarks: (Explain alternative procedures here or in a separative VP-2	rate repor	t.)						

Wetland Hydrology Indicators:		Secondary Indicators (minimum of 2 required)		
Primary Indicators (minimum of one required;	check all that apply)	Surface Soil Cracks (B6)		
Surface Water (A1)	✓ Water-Stained Leaves (B9)	Drainage Patterns (B10)		
High Water Table (A2)	Aquatic Fauna (B13)	Moss Trim Lines (B16)		
Saturation (A3)	Marl Deposits (B15)	Dry Season Water Table (C2)		
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)		
Sediment Deposits (B2)	Oxidized Rhizospheres along Living Roots (C3)	Saturation Visible on Aerial Imagery (C9)		
Drift deposits (B3)	Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)		
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)		
Iron Deposits (B5)	Thin Muck Surface (C7)	Shallow Aquitard (D3)		
Inundation Visible on Aerial Imagery (B7)	Other (Explain in Remarks)	Microtopographic Relief (D4)		
Sparsely Vegetated Concave Surface (B8)	,,,,,,, _	✓ FAC-neutral Test (D5)		
Field Observations:				
Surface Water Present? Yes O No 🖲	Depth (inches):			
Water Table Present? Yes O No •	Depth (inches):			
Saturation Present? Yes • No •	Depth (inches):0	drology Present? Yes $ullet$ No $igloodow$		
	oring well, aerial photos, previous inspections), if ava	ailable:		
Remarks:				
sphagum carpet				

VEGETATION - Use scientific names of plants		Dominant Species?		Sampling Point: AN4 Wet			
	Absolute	Rel.Strat.		Dominance Test worksheet:			
Tree Stratum (Plot size: 30')	% Cover		Status	Number of Dominant Species			
1. Acer rubrum	50	100.0%	FAC	That are OBL, FACW, or FAC: (A)			
2	0	0.0%		Total Number of Dominant			
3	0	0.0%		Species Across All Strata: 4 (B)			
4	0	0.0%		Demonstration of demonstration			
5	0	0.0%		Percent of dominant Species That Are OBL, FACW, or FAC:100.0% (A/B)			
6		0.0%					
7	0	0.0%		Prevalence Index worksheet:			
Sapling/Shrub Stratum (Plot size: 15')	50	= Total Cove	r	Total % Cover of: Multiply by:			
1 Acces with mine	15	33.3%	FAC	0BL species x 1 =			
2 Maastatum aammikaaum	20	 ✓ 33.3 % ✓ 66.7 % 	FAC FACW-	FACW species <u>35</u> x 2 = 70			
		0.0%	FACVV-	FAC speciles $65 \times 3 = 195$			
3				FACU species $0 \times 4 = 0$			
4		0.0%		UPL species $0 \times 5 = 0$			
5	0	0.0%		Column Totals: 100 (A) 265 (B)			
6		0.0%					
7		0.0%		Prevalence Index = $B/A = 2.650$			
Herb Stratum (Plot size: 5')	45	= Total Cove	r	Hydrophytic Vegetation Indicators:			
	F	100.0%	FACIAL	Rapid Test for Hydrophytic Vegetation			
1.Osmunda cinnamomea2.			FACW	✓ Dominance Test is > 50%			
2 <u>.</u> 3.	0	0.0%		V Prevalence Index is \leq 3.0 ¹			
	0	0.0%		Morphological Adaptations ¹ (Provide supporting			
4 <u>.</u>	0	0.0%		data in Remarks or on a separate sheet)			
5	0	0.0%		Problematic Hydrophytic Vegetation ¹ (Explain)			
6	0	0.0%		¹ Indicators of hydric soil and watland hydrology must			
7	0	0.0%		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.			
8	0	0.0%		Definitions of Vegetation Strata:			
9	0	0.0%		Demittons of Vegetation Strata.			
10	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter			
11	0	0.0%		at breast height (DBH), regardless of height.			
12	0	0.0%		Sapling/shrub - Woody plants less than 3 in. DBH and			
Woody Vine Stratum (Plot size:)	5	= Total Cove	r	greater than 3.28 ft (1m) tall			
	0						
1	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.			
2	0	0.0%					
3		0.0%		Woody vine - All woody vines greater than 3.28 ft in			
4	0	0.0%		height.			
	0	= Total Cove	r				
				I hadrom kurtin			
				Hydrophytic Vegetation			
				Present? Yes No			
Remarks: (Include photo numbers here or on a separate she	et.)						

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Depth	inplion: (De	Matrix	the depth		dox Featu		iiiiiii ine a	absence of indicators.)	
(inches)	Color (%	Color (moist)	%	Type 1	Loc ²	Texture	Remarks
0-6	10YR	3/2	100%					Loam	
6-10	2.5Y	4/1	100%					Fine Sandy Loam	
10+									Bedrock
Type: C=Cor	ncentration. D	D=Depletio	n. RM=Redu	iced Matrix, CS=Cover	ed or Coat	ed Sand Gra	ins ² Loca	ition: PL=Pore Lining. M=	Matrix
Hydric Soil								Indicators for Prot	plematic Hydric Soils : ³
Histosol	• •			Polyvalue Belo MLRA 149B)	w Surface	(S8) (LRR R) (LRR K, L, MLRA 149B)
	ipedon (A2)			Thin Dark Surf	ace (S9) (LRR R, MLR	A 149B)		dox (A16) (LRR K, L, R)
Black His	n Sulfide (A4))		Loamy Mucky					t or Peat (S3) (LRR K, L, R)
	Layers (A5)	/		Loamy Gleyed	Matrix (F2))		Dark Surface (S	
	Below Dark	Surface (A	11)	Depleted Matri					Surface (S8) (LRR K, L) ce (S9) (LRR K, L)
Thick Da	rk Surface (A	.12)		Redox Dark Su					Masses (F12) (LRR K, L, R)
Sandy M	uck Mineral (S1)		Depleted Dark		7)			blain Soils (F19) (MLRA 149B)
	eyed Matrix ((S4)		Redox Depress	sions (F8)				A6) (MLRA 144A, 145, 149B)
Sandy Re								Red Parent Mate	erial (TF2)
	Matrix (S6) face (S7) (LR		1400)						rk Surface (TF12)
								Other (Explain in	n Remarks)
			n and wetlar	nd hydrology must be p	present, ur	iess disturb	ed or proble		
Restrictive I	•	served):							
Type: <u>b</u>								Hydric Soil Present?	Yes $lacksquare$ No $igodom$
Depth (in	cnes):_10							,	
Remarks:									

Project/Site: Antrim Wind Project	City/County: Antrim				Sampling Date: 10-Aug-11			
Applicant/Owner: Eolian Renewable E		St	tate:	NH	Sampling Point:	AN4 Up	and	
Investigator(s): AF JG		Section, To	wnship, Range	: S.	т.	R.		
Landform (hillslope, terrace, etc.):	Ridgetop	Local relief (co	ncave, convex,	none)	: convex	Slope:	0.0%/	0.0 °
Subregion (LRR or MLRA):	Lat.:		Lo	ng.:		Dat	um:	
Soil Map Unit Name:		NWI classification:						
Are climatic/hydrologic conditions o Are Vegetation , Soil Are Vegetation , Soil Summary of Findings - At	, or Hydrology Significant , or Hydrology naturally p	tly disturbed? problematic?	(If needed	al Circu , expla	,	ers in Remarks.)		etc.
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes No Yes No Yes No No		Sampled Area a Wetland?	Ye	es 🔿 No 🖲)		
Remarks: (Explain alternative prod	edures here or in a separate repo	ort.)						

	Secondary Indicators (minimum of 2 required)		
Wetland Hydrology Indicators:			
Primary Indicators (minimum of one required; check all that apply)			
Water-Stained Leaves (B9)	Drainage Patterns (B10)		
Aquatic Fauna (B13)	Moss Trim Lines (B16)		
Marl Deposits (B15)	Dry Season Water Table (C2)		
Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)		
Oxidized Rhizospheres along Living Roots (C3)	Saturation Visible on Aerial Imagery (C9)		
Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)		
Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)		
Thin Muck Surface (C7)	Shallow Aquitard (D3)		
	Microtopographic Relief (D4)		
	FAC-neutral Test (D5)		
Depth (inches):			
Depth (inches):	rdrology Present? Yes 🔿 No 🖲		
Wetland Hy Depth (inches):	rdrology Present? Yes 🔾 No 🖲		
pring well, aerial photos, previous inspections), if av	ailable:		
	Water-Stained Leaves (B9) Aquatic Fauna (B13) Marl Deposits (B15) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Living Roots (C3) Presence of Reduced Iron (C4) Recent Iron Reduction in Tilled Soils (C6) Thin Muck Surface (C7) Other (Explain in Remarks) Depth (inches): Depth (inches): Depth (inches):		

DominantSpecies?			Sampling Point: AN4 Upland	
Tree Stratum (Plot size: 30')	Absolute % Cover	Rel.Strat.	Indicator Status	Dominance Test worksheet:
				Number of Dominant Species
1. Quercus rubra	30	_	FACU-	That are OBL, FACW, or FAC: (A)
2. Pinus strobus			FACU	Total Number of Dominant
3. Picea rubens		✓ 31.3%	FACU	Species Across All Strata: 7 (B)
4	0	0.0%		Demont of deminant Species
5	0	0.0%		Percent of dominant Species That Are OBL, FACW, or FAC: <u>14.3%</u> (A/B)
6	0	0.0%		
7	0	0.0%		Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: 15')	80	= Total Cove	r	Total % Cover of: Multiply by:
1. Betula papyrifera	5	10.0%	FACU	$\begin{array}{c} \text{OBL species} \qquad 0 \qquad \text{x 1} = 0 \\ \hline \end{array}$
2. Picea rubens	45	30.0%	FACU	FACW species $0 \times 2 = 0$
3. Vaccinium angustifolium		50.0%	FACU-	FAC speci es $5 \times 3 = 15$
4. Fagus grandifolia	-	10.0%	FACU	FACU speci es 135 x 4 = 540
5.		0.0%		UPL species $0 \times 5 = 0$
6.	0	0.0%		Column Totals: 140 (A) 555 (B)
7.	0	0.0%		Prevalence Index = $B/A = 3.964$
		= Total Cove	r	
Herb Stratum (Plot size: 5')				Hydrophytic Vegetation Indicators:
1.Lycopodium obscurum	5	50.0%	FACU	Rapid Test for Hydrophytic Vegetation
2. Abies balsamea	5	50.0%	FAC	Dominance Test is > 50%
3.	0	0.0%		Prevalence Index is $\leq 3.0^{1}$
4.	0	0.0%		Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
5.	0	0.0%		Problematic Hydrophytic Vegetation ¹ (Explain)
6.	0	0.0%		
7.	0	0.0%		¹ Indicators of hydric soil and wetland hydrology must
8.	0	0.0%		be present, unless disturbed or problematic.
9.	0	0.0%		Definitions of Vegetation Strata:
10.	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter
11.	0	0.0%		at breast height (DBH), regardless of height.
12.	0	0.0%		
Woody Vine Stratum (Plot size:)	10	= Total Cove	r	Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall
1	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of
	0	0.0%		size, and woody plants less than 3.28 ft tall.
3	0	0.0%		
л	0	0.0%		Woody vine - All woody vines greater than 3.28 ft in height.
т.,	-	= Total Cove	r	line grad
			1	
				Hydrophytic
				Vegetation Present? Yes O No •
				1
Remarks: (Include photo numbers here or on a separate she	eet.)			

Clock (mote) % Code (mote) % Type Loc ² Texture Remarks 0-3 1078 92 1006 Imm Imm<	Depth (inchos)		Matrix	-	Redox Features	- - .	. .
3.4 2.5Y 5/1 100% Fine Sand 4.12 10YR 4/6 100% Sandy Loam 12+					Color (moist) % Type Loc ²		Remarks
4-12 10YR 4/6 10% Sandy Loam 12+							
12+ Ledge 12+			5/1				
12+	4-12	10YR	4/6	100%		Sandy Loam	Ledge
Hydric Soil Indicators: Indicators for Problematic Hydric Soils : ³ Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B) Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) LRR K, L) Stratified Layers (A5) Loamy Gleyed Matrix (F2) Depleted Below Dark Surface (A11) Depleted Matrix (F3) Thick Dark Surface (A12) Redox Dark Surface (F6) Sandy Muck Mineral (S1) Depleted Dark Surface (F7) Sandy Gleyed Matrix (S4) Redox Depressions (F8) Sandy Redox (S5) Redox Depressions (F8) Stratifice Layer (if observed): Very Shallow Dark Surface (T12) Type: Ledge Depth (inches): 12	12+						
Hydric Soil Indicators: Indicators for Problematic Hydric Soils : ³ Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B) Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) LRR K, L) Stratified Layers (A5) Loamy Gleyed Matrix (F2) Depleted Below Dark Surface (A11) Depleted Matrix (F3) Thick Dark Surface (A12) Redox Dark Surface (F6) Sandy Muck Mineral (S1) Depleted Dark Surface (F7) Sandy Gleyed Matrix (S4) Redox Depressions (F8) Sandy Redox (S5) Redox Depressions (F8) Stratifice Layer (if observed): Very Shallow Dark Surface (T12) Type: Ledge Depth (inches): 12							
Hydric Soil Indicators: Indicators for Problematic Hydric Soils : ³ Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B) Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) LRR K, L) Stratified Layers (A5) Loamy Gleyed Matrix (F2) Depleted Below Dark Surface (A11) Depleted Matrix (F3) Thick Dark Surface (A12) Redox Dark Surface (F6) Sandy Muck Mineral (S1) Depleted Dark Surface (F7) Sandy Gleyed Matrix (S4) Redox Depressions (F8) Sandy Redox (S5) Redox Depressions (F8) Stratifice Layer (if observed): Very Shallow Dark Surface (T12) Type: Ledge Depth (inches): 12							
Hydric Soil Indicators: Indicators for Problematic Hydric Soils : ³ Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B) Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) LRR K, L) Stratified Layers (A5) Loamy Gleyed Matrix (F2) Depleted Below Dark Surface (A11) Depleted Matrix (F3) Thick Dark Surface (A12) Redox Dark Surface (F6) Sandy Muck Mineral (S1) Depleted Dark Surface (F7) Sandy Gleyed Matrix (S4) Redox Depressions (F8) Sandy Redox (S5) Redox Depressions (F8) Stratifice Layer (if observed): Very Shallow Dark Surface (T12) Type: Ledge Depth (inches): 12							
Hydric Soil Indicators: Indicators for Problematic Hydric Soils : ³ Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B) Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) LRR K, L) Stratified Layers (A5) Loamy Gleyed Matrix (F2) Depleted Below Dark Surface (A11) Depleted Matrix (F3) Thick Dark Surface (A12) Redox Dark Surface (F6) Sandy Muck Mineral (S1) Depleted Dark Surface (F7) Sandy Gleyed Matrix (S4) Redox Depressions (F8) Sandy Redox (S5) Redox Depressions (F8) Stratifice Layer (if observed): Very Shallow Dark Surface (T12) Type: Ledge Depth (inches): 12							
Hydric Soil Indicators: Indicators for Problematic Hydric Soils : ³ Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B) Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) LRR K, L) Stratified Layers (A5) Loamy Gleyed Matrix (F2) Depleted Below Dark Surface (A11) Depleted Matrix (F3) Thick Dark Surface (A12) Redox Dark Surface (F6) Sandy Muck Mineral (S1) Depleted Dark Surface (F7) Sandy Gleyed Matrix (S4) Redox Depressions (F8) Sandy Redox (S5) Redox Depressions (F8) Stratifice Layer (if observed): Very Shallow Dark Surface (T12) Type: Ledge Depth (inches): 12							
Hydric Soil Indicators: Indicators for Problematic Hydric Soils : ³ Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B) Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) LRR K, L) Stratified Layers (A5) Loamy Gleyed Matrix (F2) Depleted Below Dark Surface (A11) Depleted Matrix (F3) Thick Dark Surface (A12) Redox Dark Surface (F6) Sandy Muck Mineral (S1) Depleted Dark Surface (F7) Sandy Gleyed Matrix (S4) Redox Depressions (F8) Sandy Redox (S5) Redox Depressions (F8) Stratifice Layer (if observed): Very Shallow Dark Surface (T12) Type: Ledge Depth (inches): 12							
Hydric Soil Indicators: Indicators for Problematic Hydric Soils : ³ Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B) Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) LRR K, L) Stratified Layers (A5) Loamy Gleyed Matrix (F2) Depleted Below Dark Surface (A11) Depleted Matrix (F3) Thick Dark Surface (A12) Redox Dark Surface (F6) Sandy Muck Mineral (S1) Depleted Dark Surface (F7) Sandy Gleyed Matrix (S4) Redox Depressions (F8) Sandy Redox (S5) Redox Depressions (F8) Stratifice Layer (if observed): Very Shallow Dark Surface (T12) Type: Ledge Depth (inches): 12							
Hydric Soil Indicators: Indicators for Problematic Hydric Soils : ³ Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B) Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) LRR K, L) Stratified Layers (A5) Loamy Gleyed Matrix (F2) Depleted Below Dark Surface (A11) Depleted Matrix (F3) Thick Dark Surface (A12) Redox Dark Surface (F6) Sandy Muck Mineral (S1) Depleted Dark Surface (F7) Sandy Gleyed Matrix (S4) Redox Depressions (F8) Sandy Redox (S5) Redox Depressions (F8) Stratifice Layer (if observed): Very Shallow Dark Surface (T12) Type: Ledge Depth (inches): 12							
Hydric Soil Indicators: Indicators for Problematic Hydric Soils : ³ Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B) Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) LRR K, L) Stratified Layers (A5) Loamy Gleyed Matrix (F2) Depleted Below Dark Surface (A11) Depleted Matrix (F3) Thick Dark Surface (A12) Redox Dark Surface (F6) Sandy Muck Mineral (S1) Depleted Dark Surface (F7) Sandy Gleyed Matrix (S4) Redox Depressions (F8) Sandy Redox (S5) Redox Depressions (F8) Stratifice Layer (if observed): Very Shallow Dark Surface (T12) Type: Ledge Depth (inches): 12							
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) Histosol (A2) MLRA 149B) Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B) Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) LRR K, L) Stratified Layers (A5) Loamy Gleyed Matrix (F2) Depleted Below Dark Surface (A11) Depleted Matrix (F3) Thick Dark Surface (A12) Redox Dark Surface (F6) Sandy Muck Mineral (S1) Depleted Dark Surface (F7) Sandy Gleyed Matrix (S4) Redox Depressions (F8) Sandy Redox (S5) Mexi A 149B) Stripped Matrix (S6) Very Shallow Dark Surface (TF12) Other (Explain in Remarks) Other (Explain in Remarks) Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Present? Yes No	¹ Type: C=Cor	ncentration. D	=Depletio	on. RM=Red	uced Matrix, CS=Covered or Coated Sand Grains ² Lo	cation: PL=Pore Lining. M=	Matrix
Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, MLRA 149B) Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R) Black Histic (A3) Loamy Mucky Mineral (F1) LRR K, L) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) Stratified Layers (A5) Loamy Gleyed Matrix (F2) Polyvalue Below Surface (S9) (LRR K, L) Depleted Below Dark Surface (A11) Depleted Matrix (F3) Thin Dark Surface (S9) (LRR K, L) Thick Dark Surface (A12) Redox Dark Surface (F6) Iron-Manganese Masses (F12) (LRR K, L, R) Sandy Muck Mineral (S1) Depleted Dark Surface (F7) Piedmont Floodplain Soils (F19) (MLRA 149B) Sandy Redox (S5) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144A, 145, 149B) Sandy Redox (S5) Red Parent Material (TF2) Very Shallow Dark Surface (TF12) Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks) Other (Explain in Remarks) ³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Yes No •	_			_		Indicators for Prob	elematic Hydric Soils : ³
Image: Mixex (A2) Image: Mixex (A3) Image: Mixex (A40) Image: Coast Prairie Redox (A16) (LRR K, L, R) Black Histic (A3) Image: Coast Prairie Redox (A16) (LRR K, L, R) Image: Coast Prairie Redox (A16) (LRR K, L, R) Hydrogen Sulfide (A4) Image: Coast Prairie Redox (A16) (LRR K, L, R) Image: Coast Prairie Redox (A16) (LRR K, L, R) Stratified Layers (A5) Image: Coast Prairie Redox (A16) (LRR K, L, R) Image: Coast Prairie Redox (A16) (LRR K, L, R) Depleted Below Dark Surface (A11) Image: Coast Prairie Redox (A16) (LRR K, L, R) Image: Coast Prairie Redox (A16) (LRR K, L, R) Thick Dark Surface (A12) Image: Coast Prairie Redox Surface (S7) (LRR K, L) Image: Coast Prairie Redox (A16) (LRR K, L, R) Sandy Muck Mineral (S1) Image: Depleted Dark Surface (F7) Polyvalue Below Sulf (F1) (LRR K, L, R) Sandy Redox (S5) Image: Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144A, 145, 149B) Sandy Redox (S5) Image: Red Parent Material (TF2) Very Shallow Dark Surface (TF12) Dark Surface (S7) (LRR R, MLRA 149B) Image: Coast Prairie Redox					Polyvalue Below Surface (S8) (LRR R, MI RA 149R)	2 cm Muck (A10) (LRR K, L, MLRA 149B)
Black Histle (A3) Loamy Mucky Mineral (F1) LRR K, L) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L) Stratified Layers (A5) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L) Depleted Below Dark Surface (A11) Depleted Matrix (F3) Dopleted Matrix (F3) Thick Dark Surface (A12) Redox Dark Surface (F6) Iron-Manganese Masses (F12) (LRR K, L, R) Sandy Muck Mineral (S1) Depleted Dark Surface (F7) Piedmont Floodplain Soils (F19) (MLRA 149B) Sandy Redox (S5) Stripped Matrix (S6) Wesic Spodic (TA6) (MLRA 144A, 145, 149B) 3Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Other (Explain in Remarks) 3Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Hydric Soil Present? Yes No •						Coast Prairie Red	dox (A16) (LRR K, L, R)
Induction Image: Summe (M) Image: Depleted Selow Dark Surface (M) Image: Depleted Matrix (F2) Image: Depleted Matrix (F3) Image: Deple						🗌 5 cm Mucky Pea	t or Peat (S3) (LRR K, L, R)
Depleted Below Dark Surface (A11) Depleted Matrix (F3) Polyvalue Below Surface (S8) (LRR K, L) Thick Dark Surface (A12) Redox Dark Surface (F6) Thin Dark Surface (S9) (LRR K, L) Sandy Muck Mineral (S1) Depleted Dark Surface (F7) Piedmont Floodplain Soils (F19) (MLRA 149B) Sandy Gleyed Matrix (S4) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144A, 145, 149B) Sandy Redox (S5) Red Parent Material (TF2) Very Shallow Dark Surface (TF12) Other (Explain in Remarks) Other (Explain in Remarks) Other (Explain in Remarks) ³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Hydric Soil Present? Yes No (•)							
Image: Thick Dark Surface (A12) Redox Dark Surface (F6) Information Dark Surface (S9) Information Constrained (S9)			Surface (A	.11)	Depleted Matrix (F3)		
Sandy Muck Mineral (S1) Depleted Dark Surface (F7) Intri-Marganese Masses (F12) (LRR K, E, K) Sandy Gleyed Matrix (S4) Redox Depressions (F8) Piedmont Floodplain Soils (F19) (MLRA 149B) Sandy Redox (S5) Red Parent Material (TF2) Stripped Matrix (S6) Very Shallow Dark Surface (TF12) Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks) ³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Restrictive Layer (if observed): Type: Ledge Depth (inches): 12	_			,	Redox Dark Surface (F6)		
Redox Depressions (F8) Headmin Hoodplant Solis (F9) (MLKA 1476) Sandy Gleyed Matrix (S4) Mesic Spodic (TA6) (MLRA 144A, 145, 149B) Sandy Redox (S5) Red Parent Material (TF2) Stripped Matrix (S6) Very Shallow Dark Surface (TF12) Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks) ³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Restrictive Layer (if observed): Type: Ledge Depth (inches): 12	_				Depleted Dark Surface (F7)		
Sandy Redox (S5) Red Parent Material (TF2) Stripped Matrix (S6) Very Shallow Dark Surface (TF12) Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks) ³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Restrictive Layer (if observed): Type: Ledge Depth (inches): 12 No •					Redox Depressions (F8)		
□ Stripped Matrix (S6) □ Very Shallow Dark Surface (TF12) □ Dark Surface (S7) (LRR R, MLRA 149B) □ Other (Explain in Remarks) ³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Other (Explain in Remarks) Restrictive Layer (if observed): Type: Ledge Hydric Soil Present? Yes No ●	Sandy Re	edox (S5)					
Image: Dark Surface (S7) (LRR R, MLRA 149B) Image: Other (Explain in Remarks) Image: Image	Stripped	Matrix (S6)					
Restrictive Layer (if observed): Type: Ledge Depth (inches): 12 Hydric Soil Present? Yes O No O	Dark Sur	face (S7) (LRI	r r, mlra	A 149B)			
Type: Ledge Depth (inches): 12 Hydric Soil Present? Yes O No O	³ Indicators of	of hydrophytic	vegetatio	n and wetla	and hydrology must be present, unless disturbed or pro	plematic.	
Type: Ledge Depth (inches): 12 Hydric Soil Present? Yes O No O	Restrictive I	aver (if obs	erved):				
Depth (inches): 12 Hydric Soil Present? Yes O No •							
Remarks:						Hydric Soil Present?	Yes 🔾 No 🖲
	Remarks:						
	Romanior						



AN4 Wetland



AN4 Upland

				•	
Project/Site: Antrim Wind Project	City/County:	Antrim		Sampling Date: 1	0-Aug-11
Applicant/Owner: Eolian Renewable Energy, LLC		State:	ЛН	Sampling Point:	AN5 Wet
Investigator(s): AF JG	Section, T	ownship, Range: S.	Т.	R.	
Landform (hillslope, terrace, etc.): Ridgetop	Local relief (c	oncave, convex, none)	hummock	y Slope:	0.0 % / 0.0
Subregion (LRR or MLRA):		Long.:		Dat	um:
Soil Map Unit Name:	-		NWI classifi	cation: PFO	
	tly disturbed? problematic? sampling p	Are "Normal Circu (If needed, expla point locations, t	in any answe	ers in Remarks.)	
Hydrophytic Vegetation Present? Yes No Hydric Soil Present? Yes No Wetland Hydrology Present? Yes No		e Sampled Area n a Wetland? Ye	s 🖲 No 🔾		
Remarks: (Explain alternative procedures here or in a separate reportion is a separate report of the separate repo	ort.)				

Wetland Hydrology Indicators:		Secondary Indicators (minimum of 2 required)		
Primary Indicators (minimum of one required;	Surface Soil Cracks (B6)			
Surface Water (A1)	Drainage Patterns (B10)			
High Water Table (A2)	Water-Stained Leaves (B9) Aquatic Fauna (B13)	Moss Trim Lines (B16)		
Saturation (A3)	Marl Deposits (B15)	Dry Season Water Table (C2)		
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)		
Sediment Deposits (B2)	 Oxidized Rhizospheres along Living Roots (C3) 	Saturation Visible on Aerial Imagery (C9)		
Drift deposits (B3)	Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)		
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)		
Iron Deposits (B5)	Thin Muck Surface (C7)	Shallow Aquitard (D3)		
Inundation Visible on Aerial Imagery (B7)	Other (Explain in Remarks)	Microtopographic Relief (D4)		
Sparsely Vegetated Concave Surface (B8)		FAC-neutral Test (D5)		
		_ 、 /		
Field Observations:				
Surface Water Present? Yes O No O	Depth (inches):			
Water Table Present? Yes O No •	Depth (inches):	·· • • •		
Saturation Present? (includes capillary fringe) Yes • No	Wetland Hyd	drology Present? Yes $ullet$ No $igloodow$		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:				
Remarks:				
Sphagum carpet				

Dominant Species?				Sampling Point: AN5 Wet			
Tree Stratum (Plot size: <u>30'</u>)	Absolute % Cover	Rel.Strat.	Indicator Status	Dominance Test worksheet:			
1. Acer rubrum	15	100.0%	FAC	Number of Dominant Species That are OBL, FACW, or FAC: 4 (A)			
2.	0	0.0%					
3.		0.0%		Total Number of Dominant Species Across All Strata: 4 (B)			
4	0	0.0%		Species Across All Strata: 4 (B)			
5	0	0.0%		Percent of dominant Species			
6		0.0%		That Are OBL, FACW, or FAC:100.0% (A/B)			
7		0.0%		Prevalence Index worksheet:			
Sapling/Shrub Stratum (Plot size: 15')		= Total Cover		Total % Cover of: Multiply by:			
		62.5%	54014	OBL species 0 x 1 = 0			
1. Vaccinium corymbosum			FACW-	FACW species 96 x 2 = 192			
2. Picea mariana	10	12.5%	FACW-	FAC species 25 x 3 = 75			
3. Spiraea latifolia		25.0%	FAC+	FACU species 0 x 4 = 0			
4	0	0.0%	·	UPL species $0 \times 5 = 0$			
5	0	0.0%	. <u> </u>				
6	0	0.0%	·	Column Totals: 121 (A) 267 (B)			
7	0	0.0%		Prevalence Index = $B/A = 2.207$			
Herb Stratum (Plot size: 5')	40	= Total Cover	-	Hydrophytic Vegetation Indicators:			
		✓ 100.0%	FACIAL	Rapid Test for Hydrophytic Vegetation			
1.Scirpus cyperinus 2.	66		FACW+	✓ Dominance Test is > 50%			
2 <u>.</u> 3.	0		·	✓ Prevalence Index is \leq 3.0 ¹			
3 <u>.</u> 4.	0		·	Morphological Adaptations ¹ (Provide supporting			
4 <u>.</u> 5.	0	0.0%		data in Remarks or on a separate sheet)			
	0	0.0%		Problematic Hydrophytic Vegetation ¹ (Explain)			
6	0	0.0%	·				
7	0	0.0%		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.			
8	0	0.0%		Definitions of Vegetation Strata:			
9	0	0.0%		Demittions of Vegetation Strata.			
10	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter			
11	0	0.0%		at breast height (DBH), regardless of height.			
12	0 66	= Total Cover		Sapling/shrub - Woody plants less than 3 in. DBH and			
Woody Vine Stratum (Plot size:)	00			greater than 3.28 ft (1m) tall			
1	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of			
2	0	0.0%		size, and woody plants less than 3.28 ft tall.			
3	0	0.0%	·	Woody vine - All woody vines greater than 3.28 ft in			
4	0	0.0%		height.			
	0	= Total Cover	-				
				Hydrophytic			
				Vegetation			
				Present? Yes VO V			
				1			
Remarks: (Include photo numbers here or on a separate she	et.)						

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)					
Depth Matrix (inches) Color (moist) %	Redox Features Color (moist) % Type 1 Loc ²	- Texture Remarks			
0-27 <u>10YR</u> 2/1		Peaty Muck bedrock			
		·			
1 Turney C. Concentration D. Depletion BM D	aduced Matrix, CS, Covered or Costed Sand Crains, 21 ac	ation: DL Doro Lining M Matrix			
	educed Matrix, CS=Covered or Coated Sand Grains ² Loca	2			
Hydric Soil Indicators:		Indicators for Problematic Hydric Soils : 3			
Histosol (A1)	Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	2 cm Muck (A10) (LRR K, L, MLRA 149B)			
Histic Epipedon (A2)	Thin Dark Surface (S9) (LRR R, MLRA 149B)	Coast Prairie Redox (A16) (LRR K, L, R)			
Black Histic (A3)	Loamy Mucky Mineral (F1) LRR K, L)	5 cm Mucky Peat or Peat (S3) (LRR K, L, R)			
Hydrogen Sulfide (A4)	Loamy Gleyed Matrix (F2)	Dark Surface (S7) (LRR K, L)			
Stratified Layers (A5)	Depleted Matrix (F3)	Polyvalue Below Surface (S8) (LRR K, L)			
Depleted Below Dark Surface (A11)	Redox Dark Surface (F6)	Thin Dark Surface (S9) (LRR K, L)			
Thick Dark Surface (A12)	Depleted Dark Surface (F7)	Iron-Manganese Masses (F12) (LRR K, L, R)			
Sandy Muck Mineral (S1)	Redox Depressions (F8)	Piedmont Floodplain Soils (F19) (MLRA 149B)			
Sandy Gleyed Matrix (S4)		Mesic Spodic (TA6) (MLRA 144A, 145, 149B)			
Sandy Redox (S5)		Red Parent Material (TF2)			
Stripped Matrix (S6)		Very Shallow Dark Surface (TF12)			
Dark Surface (S7) (LRR R, MLRA 149B)		Other (Explain in Remarks)			
³ Indicators of hydrophytic vegetation and we	tland hydrology must be present, unless disturbed or probl	lematic.			
Restrictive Layer (if observed):					
Type: Bedrock		Hydric Soil Present? Yes $ullet$ No $igodow$			
Depth (inches): 27					
Remarks:					

		0		
Project/Site: Antrim Wind Project	City/County: Antrim	Sampling Date: 10-Aug-11		
Applicant/Owner: Eolian Renewable Energy, LLC	State: NH	Sampling Point: AN5 Upland		
Investigator(s): AF JG	Section, Township, Range: S. T.	R.		
Landform (hillslope, terrace, etc.): Ridgetop	Local relief (concave, convex, none): hummock	xy Slope: 5.0 % / 2.9°		
Subregion (LRR or MLRA): Lat.:	Long.:	Datum:		
Soil Map Unit Name:	NWI classif	ication:		
	tly disturbed? Are "Normal Circumstances" problematic? (If needed, explain any answe	present? Yes No		
Hydrophytic Vegetation Present?YesNoHydric Soil Present?YesNoWetland Hydrology Present?YesNo	Is the Sampled Area within a Wetland? Yes O No •)		
Remarks: (Explain alternative procedures here or in a separate repo	ort.)			

	Secondary Indicators (minimum of 2 required)		
Wetland Hydrology Indicators:			
Primary Indicators (minimum of one required; check all that apply)			
Water-Stained Leaves (B9)	Drainage Patterns (B10)		
Aquatic Fauna (B13)	Moss Trim Lines (B16)		
Marl Deposits (B15)	Dry Season Water Table (C2)		
Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)		
Oxidized Rhizospheres along Living Roots (C3)	Saturation Visible on Aerial Imagery (C9)		
Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)		
Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)		
Thin Muck Surface (C7)	Shallow Aquitard (D3)		
	Microtopographic Relief (D4)		
	FAC-neutral Test (D5)		
Depth (inches):			
Depth (inches):	roloav Present? Yes 🔿 No 🖲		
Wetland Hy Depth (inches):	drology Present? Yes 🔾 NO 🖲		
pring well, aerial photos, previous inspections), if available	ailable:		
	Water-Stained Leaves (B9) Aquatic Fauna (B13) Marl Deposits (B15) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Living Roots (C3) Presence of Reduced Iron (C4) Recent Iron Reduction in Tilled Soils (C6) Thin Muck Surface (C7) Other (Explain in Remarks) Depth (inches): Depth (inches): Wetland Hy		

	int5	Dominant Species?		Sampling Point: AN5 Upland
Tree Stratum (Plot size: 30')	Absolute % Cover	Rel.Strat.	Indicator Status	Dominance Test worksheet:
	33	39.8%	FACU	Number of Dominant Species That are OBL, FACW, or FAC: 1 (A)
	50	 ✓ 39.8 % ✓ 60.2% 	FACU	That are OBL, FACW, or FAC: (A)
			FACU	Total Number of Dominant
3	0	0.0%		Species Across All Strata: 6 (B)
4	0	0.0%		Percent of dominant Species
5	0	0.0%		That Are OBL, FACW, or FAC:(A/B)
6		0.0%		
7	0	0.0%		Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: 15')	83	= Total Cove	r	Total % Cover of: Multiply by: 0BL species 0 x 1 = 0
1. Vaccinium corymbosum	5	100.0%	FACW-	· · · · · · · · · · · · · · · · · · ·
2.		0.0%		
3.	0	0.0%		FAC species $0 \times 3 = 0$
4.	0	0.0%		FACU species $94 x 4 = 376$
···	0	0.0%		UPL species $0 \times 5 = 0$
5	0	0.0%		Column Totals: 99 (A) 386 (B)
6	0	0.0%		
7	5	= Total Cove	r	Prevalence Index = B/A = <u>3.899</u>
Herb Stratum (Plot size: 5')				Hydrophytic Vegetation Indicators:
1.Gaultheria procumbens	3	27.3%	FACU	Rapid Test for Hydrophytic Vegetation
2.Vaccinium angustifolium	5	✔ 45.5%	FACU-	Dominance Test is > 50%
3.Quercus rubra	3	27.3%	FACU-	Prevalence Index is $\leq 3.0^{1}$
4.	0	0.0%		Morphological Adaptations ¹ (Provide supporting
5.		0.0%		data in Remarks or on a separate sheet)
6.	0	0.0%		Problematic Hydrophytic Vegetation ¹ (Explain)
7		0.0%		¹ Indicators of hydric soil and wetland hydrology must
8.				be present, unless disturbed or problematic.
9.	0			Definitions of Vegetation Strata:
	0			
10	0	0.0%	·	Tree - Woody plants, 3 in. (7.6 cm) or more in diameter
11	0	0.0%		at breast height (DBH), regardless of height.
12	0	0.0%		Sapling/shrub - Woody plants less than 3 in. DBH and
Woody Vine Stratum (Plot size:)	11	= Total Cove	r	greater than 3.28 ft (1m) tall
	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of
2	0	0.0%		size, and woody plants less than 3.28 ft tall.
3	0	0.0%		Woody vine - All woody vines greater than 3.28 ft in
4.	0	0.0%		height.
	0	= Total Cove	r	
				Hydrophytic
				Vegetation Present? Yes O No •
Demonto (Include abote and Include a				1
Remarks: (Include photo numbers here or on a separate she	eet.)			

Depth (inches)	Matri		Redox Features			- ·
	Color (moist)	%	Color (moist) % Type 1	Loc ²	Texture	Remarks
0-4	10YR 3/3				Loam	
4-10	2.5Y 5/1				Fine Loamy Sand	
10-16	10YR 4/4				Fine Sandy Loam	
						·
1		tion DM Dod		21		
	-	euon. KM=Redu	uced Matrix, CS=Covered or Coated Sand Grains	s ∠roca		
Hydric Soil	Indicators:		Polyvalue Below Surface (S8) (LRR R,			ematic Hydric Soils : ³
	ipedon (A2)		MLRA 149B)			(LRR K, L, MLRA 149B)
Black His			Thin Dark Surface (S9) (LRR R, MLRA 1	149B)		ox (A16) (LRR K, L, R)
	n Sulfide (A4)		Loamy Mucky Mineral (F1) LRR K, L)			or Peat (S3) (LRR K, L, R)
	Layers (A5)		Loamy Gleyed Matrix (F2)		Dark Surface (S7)	Gurface (S8) (LRR K, L)
	Below Dark Surface	(A11)	Depleted Matrix (F3)		Thin Dark Surface	
Thick Da	rk Surface (A12)		Redox Dark Surface (F6)			Masses (F12) (LRR K, L, R)
_	uck Mineral (S1)		Depleted Dark Surface (F7) Redox Depressions (F8)			ain Soils (F19) (MLRA 149B)
	leyed Matrix (S4)				Mesic Spodic (TA	5) (MLRA 144A, 145, 149B)
	edox (S5)				Red Parent Mater	ial (TF2)
	Matrix (S6) face (S7) (LRR R, ML	DA 140P)			Very Shallow Dark	
					Other (Explain in	Remarks)
³ Indicators of	of hydrophytic vegeta	tion and wetla	nd hydrology must be present, unless disturbed	or probl	ematic.	
	Layer (if observed)	:				
Туре:					Hydric Soil Present?	Yes 🔿 No 🖲
Depth (in	ches):				Tigune son rresent.	
Remarks:						



AN5 Upland



AN5 Wetland

Project/Site: Antrim Wind Project	City/County:	Antrim			Sampling Date: 1	D-Aug-11
Applicant/Owner: Eolian Renewable Energy, LLC			State: NH	ł	Sampling Point:	AN6 Wet
Investigator(s): AF JG	Section, T	ownship, Rang	e: S.	т.	R.	
Landform (hillslope, terrace, etc.): Hillside	Local relief (concave, conve	(, none):	flat	Slope:	0.0 % / 0.0 °
Subregion (LRR or MLRA):		Lo	ong.:	-	Dat	um:
Soil Map Unit Name:	p.		ŗ	WI classif	ication: PFO	
	ntly disturbed? problematic? sampling p	(If neede	d, explain	5	ers in Remarks.)	
Hydrophytic Vegetation Present? Yes ● No ○ Hydric Soil Present? Yes ● No ○ Wetland Hydrology Present? Yes ● No ○		e Sampled Area in a Wetland?	' Yes	• No C)	
Remarks: (Explain alternative procedures here or in a separate rep Isolated	ort.)					

Wetland Hydrology Indicators:		Secondary Indicators (minimum of 2 required)
Primary Indicators (minimum of one required;	Surface Soil Cracks (B6)	
Surface Water (A1)	Drainage Patterns (B10)	
High Water Table (A2)	Water-Stained Leaves (B9) Aquatic Fauna (B13)	Moss Trim Lines (B16)
Saturation (A3)	Marl Deposits (B15)	Dry Season Water Table (C2)
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)
Sediment Deposits (B2)	Oxidized Rhizospheres along Living Roots (C3)	Saturation Visible on Aerial Imagery (C9)
Drift deposits (B3)	Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)
Iron Deposits (B5)	Thin Muck Surface (C7)	Shallow Aquitard (D3)
Inundation Visible on Aerial Imagery (B7)	Other (Explain in Remarks)	Microtopographic Relief (D4)
Sparsely Vegetated Concave Surface (B8)		✓ FAC-neutral Test (D5)
Field Observations:		
Surface Water Present? Yes O No 🖲	Depth (inches):	
Water Table Present? Yes O No 🖲	Depth (inches):	Irology Present? Yes $ullet$ No $igodown$
Saturation Present? Yes Solution View No	Wetland Hyd Depth (inches): 0	irology Present? Yes 🖲 No 🔾
Describe Recorded Data (stream gauge, monito	pring well, aerial photos, previous inspections), if ava	ilable:
Remarks:		
sphagum carpet		
<u> </u>		

	11.5	Dominant Species?		Sampling Point: AN6 Wet
Tree Stratum (Plot size: 30')	Absolute % Cover	Rel.Strat.	Indicator Status	Dominance Test worksheet:
1. Acer rubrum	25	✓ 50.0%	FAC	Number of Dominant Species That are OBL, FACW, or FAC: 6 (A)
O Detaile elle elevelenete	25	✓ 50.0%	FAC	
-		0.0%		Total Number of Dominant
		0.0%		Species Across All Strata: <u>6</u> (B)
4	0	0.0%		Percent of dominant Species
5		0.0%		That Are OBL, FACW, or FAC: 100.0% (A/B)
6		0.0%		
7				Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: <u>15</u>)	50	= Total Cove	r	Total % Cover of: Multiply by:
1. Vaccinium corymbosum	20	36.4%	FACW-	OBL species $15 \times 1 = 15$
2. Acer rubrum		18.2%	FAC	FACW species 111 x 2 = 222
		45.5%	FACW-	FAC species $80 \times 3 = 240$
4		0.0%		FACU species $0 \times 4 = 0$
F		0.0%		UPL species $0 \times 5 = 0$
6		0.0%		Column Totals: 206 (A) 477 (B)
7				
<i>I</i>		0.0%		Prevalence Index = B/A = 2.316
Herb Stratum (Plot size: 5')	55	= Total Cove	r	Hydrophytic Vegetation Indicators:
1. Iris versicolor	15	14.9%	OBL	Rapid Test for Hydrophytic Vegetation
2.Coptis trifolia	33	32.7%	FACW	✓ Dominance Test is > 50%
3 Correge considerale		19.8%	FAC-	✓ Prevalence Index is ≤3.0 1
a-	-			Morphological Adaptations ¹ (Provide supporting
4.Osmunda cinnamomea5.			FACW	data in Remarks or on a separate sheet)
	0	0.0%		Problematic Hydrophytic Vegetation ¹ (Explain)
6	0	0.0%		
7	0	0.0%		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
8	0	0.0%		Definitions of Vegetation Strata:
9	0	0.0%		Demitions of Vegetation Strata.
10	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter
11	0	0.0%		at breast height (DBH), regardless of height.
12	0	0.0%		Sapling/shrub - Woody plants less than 3 in. DBH and
Woody Vine Stratum (Plot size:)	101	= Total Cove	r	greater than 3.28 ft (1m) tall
1	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of
2	0	0.0%		size, and woody plants less than 3.28 ft tall.
3	0	0.0%		Woody vine - All woody vines greater than 3.28 ft in
4	0	0.0%		height.
	0	= Total Cove	r	ů –
	0	- 10101 0010	•	
				Hydrophytic
				Vegetation V A N
				Present? Yes $ullet$ No $igcup$
				<u> </u>
Remarks: (Include photo numbers here or on a separate she	et.)			

Profile Desc Depth	ription: (Des		the depth				nfirm the	absence of indicators.)	
(inches)	Color (r	Matrix noist)	- % -	Color (moist)	dox Featu %	Type 1	Loc ²	Texture	Remarks
0-4	10YR	3/2	100%	. ,				Loam	
4-8	2.5Y	4/1	100%					Sandy Loam	
8-9	2.5Y	6/1	100%					Loamy Sand	Bedrock
9+									
									_
								-	
		-							
¹ Type: C=Co	ncentration. D	=Depletio	on. RM=Red	uced Matrix, CS=Cover	ed or Coate	ed Sand Grai	ns ² Loca	ation: PL=Pore Lining. M=	Matrix
Hydric Soil	Indicators:							Indicators for Prob	lematic Hydric Soils : ³
Histosol				Polyvalue Belo MLRA 149B)	w Surface	(S8) (LRR R,		_	(LRR K, L, MLRA 149B)
	ipedon (A2)			MLRA 1498)	aaa (CO) (I		1400)		lox (A16) (LRR K, L, R)
Black His				Loamy Mucky			A 149D)	5 cm Mucky Peat	or Peat (S3) (LRR K, L, R)
	n Sulfide (A4)							Dark Surface (S7	/) (LRR K, L)
	Layers (A5)			Depleted Matri				Polyvalue Below	Surface (S8) (LRR K, L)
	Below Dark S		11)	Redox Dark Su				Thin Dark Surfac	e (S9) (LRR K, L)
	rk Surface (A1			Depleted Dark		7)			Masses (F12) (LRR K, L, R)
	uck Mineral (S			Redox Depress		,			lain Soils (F19) (MLRA 149B)
	leyed Matrix (S	54)							.6) (MLRA 144A, 145, 149B)
	edox (S5) Matrix (S6)							Red Parent Mater	
	face (S7) (LRF		149B)					Very Shallow Dar	
								Other (Explain in	Remarks)
³ Indicators of	of hydrophytic	vegetatio	n and wetla	nd hydrology must be p	present, un	less disturbe	ed or probl	ematic.	
	Layer (if obs	erved):							
Type: b	edrock								Yes \bullet No \bigcirc
Depth (in	ches): 9							Hydric Soil Present?	Yes $oldsymbol{igstar}$ No $igcap$
Remarks:									

		0		
Project/Site: Antrim Wind Project	City/County: Antrim	Sampling Date: 10-Aug-11		
Applicant/Owner: Eolian Renewable Energy, LLC	State: NH	Sampling Point: AN6 Upland		
Investigator(s): AF JG	Section, Township, Range: S. T.	R.		
Landform (hillslope, terrace, etc.): Hillside	Local relief (concave, convex, none): none	Slope: 8.0 % / 4.6°		
Subregion (LRR or MLRA):	Long.:	Datum:		
Soil Map Unit Name:	NWI classi	fication:		
	htly disturbed? Are "Normal Circumstances" problematic? (If needed, explain any answ	present? Yes No		
Hydrophytic Vegetation Present?YesNoHydric Soil Present?YesNoWetland Hydrology Present?YesNo	Is the Sampled Area within a Wetland? Yes O No (
Remarks: (Explain alternative procedures here or in a separate rep	ort.)			

	Secondary Indicators (minimum of 2 required)				
Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply)					
Primary Indicators (minimum of one required; check all that apply) Surface Water (A1) Water-Stained Leaves (B9)					
Water-Stained Leaves (B9)	Drainage Patterns (B10)				
Aquatic Fauna (B13)	Moss Trim Lines (B16)				
Marl Deposits (B15)	Dry Season Water Table (C2)				
Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)				
Oxidized Rhizospheres along Living Roots (C3)	Saturation Visible on Aerial Imagery (C9)				
Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)				
Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)				
Thin Muck Surface (C7)	Shallow Aquitard (D3)				
	Microtopographic Relief (D4)				
	FAC-neutral Test (D5)				
Depth (inches):					
Depth (inches):	vdroloav Present? Yes 🔿 No 🖲				
Wetland Hy Depth (inches):	ydrology Present? Yes 🔾 No 🖲				
pring well, aerial photos, previous inspections), if av	/ailable:				
	Water-Stained Leaves (B9) Aquatic Fauna (B13) Marl Deposits (B15) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Living Roots (C3) Presence of Reduced Iron (C4) Recent Iron Reduction in Tilled Soils (C6) Thin Muck Surface (C7) Other (Explain in Remarks) Depth (inches): Depth (inches): Depth (inches):				

	int5	Dominant Species?		Sampling Point: AN6 Upland
Tree Stratum (Plot size: 30')	Absolute % Cover	Rel.Strat.	Indicator Status	Dominance Test worksheet:
1. Quercus rubra	45	56.3%	FACU-	Number of Dominant Species That are OBL, FACW, or FAC: 2 (A)
	25	31.3%	FAC	
0 -	10	12.5%	FACU	Total Number of Dominant
		0.0%	TACO	Species Across All Strata: 7 (B)
4	0	0.0%		Percent of dominant Species
5	0	0.0%		That Are OBL, FACW, or FAC:(A/B)
6	0	0.0%		
7				Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: 15')	80	= Total Cove	r	Total % Cover of: Multiply by:
1. Fagus grandifolia	8	61.5%	FACU	OBL species $0 \times 1 = 0$
2. Picea rubens		38.5%	FACU	FACW species $0 \times 2 = 0$
		0.0%		FAC species $30 \times 3 = 90$
3	0	0.0%		FACU speciles $73 \times 4 = 292$
4	0	0.0%		UPL species $5 \times 5 = 25$
5	0	0.0%		Column Totals: 108 (A) 407 (B)
6				
7		0.0%		Prevalence Index = $B/A = 3.769$
Herb Stratum (Plot size: <u>5</u> ')	13	= Total Cove	r	Hydrophytic Vegetation Indicators:
1 Televitelle hannelle	5	33.3%	FAC	Rapid Test for Hydrophytic Vegetation
2.Medeola virginiana	5	 ✓ 33.3 % ✓ 33.3 % 	UPL	Dominance Test is > 50%
				□ Prevalence Index is \leq 3.0 ¹
3.Vaccinium angustifolium			FACU-	Morphological Adaptations ¹ (Provide supporting
4.Aralia nudicaulis	2		FACU	data in Remarks or on a separate sheet)
5		0.0%		Problematic Hydrophytic Vegetation ¹ (Explain)
6	0	0.0%		1
7	0	0.0%		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
8	0	0.0%		
9	0	0.0%		Definitions of Vegetation Strata:
10	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter
11	0	0.0%		at breast height (DBH), regardless of height.
12	0	0.0%		Sapling/shrub - Woody plants less than 3 in. DBH and
Woody Vine Stratum (Plot size:)	15	= Total Cove	r	greater than 3.28 ft (1m) tall.
<u> </u>	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of
2	0	0.0%		size, and woody plants less than 3.28 ft tall.
3	0	0.0%		We advise All use advised prostor than 2.00 ft in
Δ	0	0.0%	-	Woody vine - All woody vines greater than 3.28 ft in height.
т		= Total Cove	- <u> </u>	
			1	
				Hydrophytic
				Vegetation
				Present? Yes No •
Remarks: (Include photo numbers here or on a separate she	eet.)			

Profile Desc Depth	•	cribe to Matrix	the depth	needed to document the indicator or confirm th Redox Features	e absence of indicators.)	
(inches)	Color (r		%	Color (moist) % Type 1 Loc ²	Texture	Remarks
0-4	10YR	3/2	100%		Loam	
4-6	2.5Y	5/1	100%		Sandy Loam	
6-15	10YR	4/6	100%		Sandy Loam	
0.10		1/0	10070			
¹ Type: C=Cor	ncentration. D	=Depletio	n. RM=Red	uced Matrix, CS=Covered or Coated Sand Grains ² Lu	cation: PL=Pore Lining. M=I	 Matrix
	Indicators:					lematic Hydric Soils : ³
Histosol				Polyvalue Below Surface (S8) (LRR R,		
	oipedon (A2)			MLRA 149B)		(LRR K, L, MLRA 149B)
Black His				Thin Dark Surface (S9) (LRR R, MLRA 149B)		ox (A16) (LRR K, L, R)
_	n Sulfide (A4)			Loamy Mucky Mineral (F1) LRR K, L)		or Peat (S3) (LRR K, L, R)
	d Layers (A5)			Loamy Gleyed Matrix (F2)	Dark Surface (S7	
Depleted	d Below Dark S	urface (A	11)	Depleted Matrix (F3)	Thin Dark Surface	Surface (S8) (LRR K, L)
Thick Da	ark Surface (A1	2)		Redox Dark Surface (F6)		Masses (F12) (LRR K, L, R)
Sandy M	luck Mineral (S	1)		Depleted Dark Surface (F7)		ain Soils (F19) (MLRA 149B)
_	leyed Matrix (S			Redox Depressions (F8)		6) (MLRA 144A, 145, 149B)
_	edox (S5)				Red Parent Mater	
Stripped	Matrix (S6)				Very Shallow Dar	
Dark Sur	rface (S7) (LRF	R, MLRA	149B)		Other (Explain in	
³ Indicators (of hydronhytic	venetatio	n and wetla	nd hydrology must be present, unless disturbed or pro		(Condino)
				ind hydrology must be present, diffess distarbed of pre-		
	Layer (if obse	erved):				
Туре:					Hydric Soil Present?	Yes 🔿 No 🖲
Depth (in	ches):				Hydric Son Fresent:	res 🗧 NO 😌
Remarks:						



AN6 Wetland



AN6 Upland

				•	
Project/Site: Antrim Wind Project	City/County: Antrim		S	Sampling Date: 11-Aug-11	
Applicant/Owner: Eolian Renewable Energy, LLC		State: NH		Sampling Point:	AN7 Wet
Investigator(s): AF JG	Section, Township,	Range: S.	т.	R.	
Landform (hillslope, terrace, etc.): Ridgetop	Local relief (concave, c	convex, none):	hummocky	Slope:	0.0 % / 0.0
Subregion (LRR or MLRA):		Long.:		Dat	um:
Soil Map Unit Name:		N	WI classifica	ation: PFO	
	problematic? (If ı	"Normal Circum needed, explain ocations, tra	any answers	s in Remarks.)	
Hydrophytic Vegetation Present? Yes No Hydric Soil Present? Yes No Wetland Hydrology Present? Yes No	Is the Sample within a Wetla		● No ○		
Remarks: (Explain alternative procedures here or in a separate report isolated, extends past rock wall, ledge pocket	prt.)				

Wetland Hydrology Indicators:		Secondary Indicators (minimum of 2 required)		
Primary Indicators (minimum of one required;	Surface Soil Cracks (B6)			
Surface Water (A1)	Drainage Patterns (B10)			
High Water Table (A2)	✓ Water-Stained Leaves (B9) Aquatic Fauna (B13)	Moss Trim Lines (B16)		
Saturation (A3)	Marl Deposits (B15)	Dry Season Water Table (C2)		
Water Marks (B1)				
	Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)		
Sediment Deposits (B2)	Oxidized Rhizospheres along Living Roots (C3)	Saturation Visible on Aerial Imagery (C9)		
Drift deposits (B3)	Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)		
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)		
Iron Deposits (B5)	Thin Muck Surface (C7)	Shallow Aquitard (D3)		
Inundation Visible on Aerial Imagery (B7)	Other (Explain in Remarks)	Microtopographic Relief (D4)		
Sparsely Vegetated Concave Surface (B8)		✓ FAC-neutral Test (D5)		
Field Observations:				
Surface Water Present? Yes O No •	Depth (inches):			
Water Table Present? Yes O No O	Depth (inches):	drology Present? Yes \odot No \bigcirc		
Saturation Present? (includes capillary fringe) Yes O No •	Wetland Hyd Depth (inches):	drology Present? Yes 🔍 No 🔾		
Describe Recorded Data (stream gauge, monit	oring well, aerial photos, previous inspections), if ava	ailable:		
Remarks:				

		Dominant Species?		Sampling Point: AN7 Wet
Tree Stratum (Plot size: 30')	Absolute % Cover	Rel.Strat.	Indicator Status	Dominance Test worksheet:
1. Acer rubrum	25	✓ 100.0%	FAC	Number of Dominant Species That are OBL, FACW, or FAC: 3 (A)
2.		0.0%		
3.		0.0%		Total Number of Dominant Species Across All Strata: 4 (B)
4	0	0.0%		Species Across All Strata: (B)
5		0.0%		Percent of dominant Species
6.		0.0%		That Are OBL, FACW, or FAC: 75.0% (A/B)
7.		0.0%		Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: 15')		= Total Cove	r	Total % Cover of: Multiply by:
A	50	33.1%	FACW-	OBL species $0 \times 1 = 0$
	- <u></u>	16.6%	FAC	FACW speci es 116 x 2 = 232
	10	6.6%	FAC+	FAC species $60 \times 3 = 180$
		 ✓ 43.7% 	TAC+	FACU species $0 \times 4 = 0$
4	0	0.0%		UPL species $0 \times 5 = 0$
5	0	0.0%		Column Totals: 176 (A) 412 (B)
6				
7		0.0%		Prevalence Index = B/A = 2.341
Herb Stratum (Plot size: 5')	151	= Total Cove	r	Hydrophytic Vegetation Indicators:
1.Osmunda cinnamomea	66	✓ 100.0%	FACW	Rapid Test for Hydrophytic Vegetation
2.	0	0.0%		✓ Dominance Test is > 50%
3.		0.0%		✓ Prevalence Index is \leq 3.0 ¹
4.		0.0%		Morphological Adaptations ¹ (Provide supporting
5.	0	0.0%		data in Remarks or on a separate sheet)
6.	0	0.0%		Problematic Hydrophytic Vegetation ¹ (Explain)
7.	0	0.0%		¹ Indicators of hydric soil and wetland hydrology must
8.	0	0.0%		be present, unless disturbed or problematic.
9.	0	0.0%		Definitions of Vegetation Strata:
10.	0	0.0%		_
11.	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
12.	0	0.0%		a bleast height (bbh), regardless of height.
		= Total Cove	r	Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall
Woody Vine Stratum (Plot size:) 1)	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of
0	0			size, and woody plants less than 3.28 ft tall.
3	0	0.0%		
٥ ۸	0	0.0%		Woody vine - All woody vines greater than 3.28 ft in height.
4		-		
	0	= Total Cove	ſ	
				Hydrophytic Vegetation Present? Yes No O
Remarks: (Include photo numbers here or on a separate sh	eet.)			Present? Tes C No C

Profile Desc Depth	ription: (De		the depth				nfirm the	absence of indicators.)	
(inches)	Color (Matrix moist)	%	Color (moist)	dox Featu	Type 1	Loc ²	Texture	Remarks
0-6	10YR	3/2	100%					Loam	
6-7	2.5Y	5/1	100%					Fine Loamy Sand	
7-9	2.5Y	4/2	100%					Very Fine Sandy Loam	
9+									bedrock
								-	
Type: C=Co)=Depletic	n RM=Redu	uced Matrix, CS=Cover	ed or Coat	ed Sand Gra	uins ² Loca	ation: PL=Pore Lining. M=	– Matrix
Hydric Soil		/-Dopio	11. NW-Noac						
Histosol				Polyvalue Belov	w Surface	(S8) (LRR R			blematic Hydric Soils : ³
	ipedon (A2)			MLRA 149B)) (LRR K, L, MLRA 149B) dox (A16) (LRR K, L, R)
Black His				Thin Dark Surfa			A 149B)		t or Peat (S3) (LRR K, L, R)
Hydroge	n Sulfide (A4)	1		Loamy Mucky I				Dark Surface (S7	
	Layers (A5)			Loamy Gleyed)			Surface (S8) (LRR K, L)
	Below Dark		.11)	Depleted Matri					e (S9) (LRR K, L)
	rk Surface (A			Redox Dark Su		-71			Masses (F12) (LRR K, L, R)
	uck Mineral (Redox Depress		/)		Piedmont Floodp	olain Soils (F19) (MLRA 149B)
·	leyed Matrix (S4)			3013 (10)				A6) (MLRA 144A, 145, 149B)
	edox (S5) Matrix (S6)							Red Parent Mate	
	face (S7) (LR	R R. MLRA	4 149B)						rk Surface (TF12)
				nd hydrology must be p	nresent ur	aloss disturb	ed or probl	Other (Explain in	Remarks)
Restrictive I			Thund Hotel.		51050117 -	1000 0.000 2	<u>ou or proc.</u>		
Type: _b	•	Civeuy.							
Depth (in								Hydric Soil Present?	Yes $ullet$ No $igcap$
Remarks:	·								
Kernurks.									

Project/Site: Antrim Wind Project		City/County:	Antrim			Sampling Date: 1	1-Aug-11	
Applicant/Owner: Eolian Renewable E	nergy, LLC		Sta	ate: N	Н	Sampling Point:	AN7 Upl	and
Investigator(s): AF JG		Section, To	wnship, Range:	S.	Т.	R.		
Landform (hillslope, terrace, etc.):	Ridgetop	Local relief (co	oncave, convex,	none):	concave	Slope:	12.5 % /	7.1 °
Subregion (LRR or MLRA):	Lat.:		Lon	ng.:	-	Dat	tum:	
Soil Map Unit Name:		<u>1</u>			NWI classif	ication:		
Are climatic/hydrologic conditions of Are Vegetation , Soil Are Vegetation , Soil Summary of Findings - At	, or Hydrology Significant	tly disturbed? problematic?	•	al Circu explai	n any answe	ers in Remarks.)		etc.
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes O No O Yes No O Yes No O		Sampled Area a Wetland?	Yes	s 🔿 No 🖲)		
Remarks: (Explain alternative pro	cedures here or in a separate repo	ort.)						

Secondary Indicators (minimum of 2 required)		
Surface Soil Cracks (B6)		
Drainage Patterns (B10)		
Moss Trim Lines (B16)		
Dry Season Water Table (C2)		
Crayfish Burrows (C8)		
Saturation Visible on Aerial Imagery (C9)		
Stunted or Stressed Plants (D1)		
Geomorphic Position (D2)		
Shallow Aquitard (D3)		
Microtopographic Relief (D4)		
FAC-neutral Test (D5)		
loav Present? Yes 🔿 No 🖲		
logy Present? Yes 🔾 No 🖲		
ble:		

	11.5	Dominant Species?		Sampling Point: AN7 Upland
	Absolute	Rel.Strat.	Indicator	Dominance Test worksheet:
Tree Stratum (Plot size: 30')	% Cover		Status	Number of Dominant Species
1. Betula papyrifera	15	20.5%	FACU	That are OBL, FACW, or FAC: 1 (A)
2. Quercus rubra	33	✓ 45.2%	FACU-	Total Number of Dominant
3. Acer rubrum	25	34.2%	FAC	Species Across All Strata:6(B)
4	0	0.0%		
5	0	0.0%		Percent of dominant Species That Are OBL, FACW, or FAC:16.7% (A/B)
6	0	0.0%		
7	0	0.0%		Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: 15')	73	= Total Cove	r	Total % Cover of: Multiply by:
1. Fagus grandifolia	33	76.7%	FACU	OBL species $0 \times 1 = 0$
2. Picea rubens	10	23.3%	FACU	FACW species $0 \times 2 = 0$
3.	0	0.0%		FAC species 25 x 3 = 75
4.	0	0.0%		FACU species x 4 =484
5.	0	0.0%		UPL species $5 \times 5 = 25$
6.	0	0.0%		Column Totals: 151 (A) 584 (B)
7.	0	0.0%		Prevalence Index = $B/A = 3.868$
· ·		= Total Cove		
Herb Stratum (Plot size: 5')	43			Hydrophytic Vegetation Indicators:
1.Vaccinium angustifolium	25	✓ 71.4%	FACU-	Rapid Test for Hydrophytic Vegetation
2.Lycopodium obscurum	5	14.3%	FACU	Dominance Test is > 50%
3.Polygonatum pubescens	5	14.3%	UPL	Prevalence Index is \leq 3.0 ¹
4.	0	0.0%		Morphological Adaptations ¹ (Provide supporting
5.	0	0.0%		data in Remarks or on a separate sheet)
6.	0	0.0%		Problematic Hydrophytic Vegetation ¹ (Explain)
7.	0	0.0%		¹ Indicators of hydric soil and wetland hydrology must
8	0	0.0%		be present, unless disturbed or problematic.
9.	0	0.0%		Definitions of Vegetation Strata:
10.	0	0.0%		
11.	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
12.	0	0.0%		at breast height (bbh), regardiess of height.
		= Total Cove	r	Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall
Woody Vine Stratum (Plot size:)				
1	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
2	0			
3	0	0.0%		Woody vine - All woody vines greater than 3.28 ft in
4	0	0.0%		height.
	0	= Total Cove	r	
				Hydrophytic
				Vegetation
				Present? Yes No •
Remarks: (Include photo numbers here or on a separate she	et.)			

(inches)	Matrix	- ~ -	Redox Features	- T - 1	D I
0.0	Color (moist)	%	Color (moist) % Type 1 Loc ²		Remarks
0-2	10YR 3/2			Loam	
2-4	2.5YR 5/1			Fine Loamy Sand	
4-9	10YR 4/4			Fine Sandy Loam	bodrook
9+					bedrock
				-	
				-	
Type: C=Con	centration. D=Depletio	n. RM=Redu	uced Matrix, CS=Covered or Coated Sand Grains ² Loca	ation: PL=Pore Lining. M=	Matrix
Hydric Soil I		_		Indicators for Prob	lematic Hydric Soils : ³
Histosol (/			Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	2 cm Muck (A10)) (LRR K, L, MLRA 149B)
	pedon (A2)		Thin Dark Surface (S9) (LRR R, MLRA 149B)	Coast Prairie Rec	lox (A16) (LRR K, L, R)
Black Hist			Loamy Mucky Mineral (F1) LRR K, L)	5 cm Mucky Pea	t or Peat (S3) (LRR K, L, R)
	n Sulfide (A4) Layers (A5)		Loamy Gleyed Matrix (F2)	Dark Surface (S	
	Below Dark Surface (A	11)	Depleted Matrix (F3)		Surface (S8) (LRR K, L)
	k Surface (A12)	,	Redox Dark Surface (F6)		e (S9) (LRR K, L)
	uck Mineral (S1)		Depleted Dark Surface (F7)		Masses (F12) (LRR K, L, R)
	eyed Matrix (S4)		Redox Depressions (F8)		lain Soils (F19) (MLRA 149B) \6) (MLRA 144A, 145, 149B)
Sandy Red	dox (S5)			Red Parent Mate	
Stripped N	Matrix (S6)				rk Surface (TF12)
Dark Surf	ace (S7) (LRR R, MLRA	149B)		Other (Explain in	
			nd hydrology must be present, unless disturbed or probl	ematic.	
		n and wetla			
³ Indicators of	f hydrophytic vegetatio	n and wetla			
³ Indicators of Restrictive La	f hydrophytic vegetatio ayer (if observed):	n and wetla			
³ Indicators of Restrictive La Type: <u>be</u>	f hydrophytic vegetatio ayer (if observed): edrock	n and wetla		Hydric Soil Present?	Yes 🔿 No 🖲
³ Indicators of Restrictive La Type: <u>be</u> Depth (incl	f hydrophytic vegetatio ayer (if observed): edrock	n and wetla		Hydric Soil Present?	Yes 🔿 No 🖲
³ Indicators of Restrictive La Type: <u>be</u>	f hydrophytic vegetatio ayer (if observed): edrock	n and wetla		Hydric Soil Present?	Yes 🔿 No 🖲
³ Indicators of Restrictive La Type: <u>be</u> Depth (incl	f hydrophytic vegetatio ayer (if observed): edrock	n and wetla		Hydric Soil Present?	Yes 🔿 No 🖲
³ Indicators of Restrictive La Type: <u>be</u> Depth (incl	f hydrophytic vegetatio ayer (if observed): edrock	n and wetla		Hydric Soil Present?	Yes 🔿 No 🖲
³ Indicators of Restrictive La Type: <u>be</u> Depth (incl	f hydrophytic vegetatio ayer (if observed): edrock	n and wetla		Hydric Soil Present?	Yes 🔿 No 🖲
³ Indicators of Restrictive La Type: <u>be</u> Depth (incl	f hydrophytic vegetatio ayer (if observed): edrock	n and wetla		Hydric Soil Present?	Yes 🔿 No 🖲
³ Indicators of Restrictive La Type: <u>be</u> Depth (incl	f hydrophytic vegetatio ayer (if observed): edrock	n and wetla		Hydric Soil Present?	Yes 🔿 No 🖲
³ Indicators of Restrictive La Type: <u>be</u> Depth (incl	f hydrophytic vegetatio ayer (if observed): edrock	n and wetla		Hydric Soil Present?	Yes 🔿 No 🖲
³ Indicators of Restrictive La Type: <u>be</u> Depth (incl	f hydrophytic vegetatio ayer (if observed): edrock	n and wetla		Hydric Soil Present?	Yes 🔿 No 🖲
³ Indicators of Restrictive La Type: <u>be</u> Depth (incl	f hydrophytic vegetatio ayer (if observed): edrock	n and wetla		Hydric Soil Present?	Yes O No 🖲
³ Indicators of Restrictive La Type: <u>be</u> Depth (incl	f hydrophytic vegetatio ayer (if observed): edrock	n and wetla		Hydric Soil Present?	Yes O No 🖲
³ Indicators of Restrictive La Type: <u>be</u> Depth (incl	f hydrophytic vegetatio ayer (if observed): edrock	n and wetlar		Hydric Soil Present?	Yes O No O
³ Indicators of Restrictive La Type: <u>be</u> Depth (incl	f hydrophytic vegetatio ayer (if observed): edrock	n and wetla		Hydric Soil Present?	Yes O No O
³ Indicators of Restrictive La Type: <u>be</u> Depth (incl	f hydrophytic vegetatio ayer (if observed): edrock	n and wetla		Hydric Soil Present?	Yes O No O
³ Indicators of Restrictive La Type: <u>be</u> Depth (incl	f hydrophytic vegetatio ayer (if observed): edrock	n and wetla		Hydric Soil Present?	Yes O No O
³ Indicators of Restrictive La Type: <u>be</u> Depth (incl	f hydrophytic vegetatio ayer (if observed): edrock	n and wetlar		Hydric Soil Present?	Yes O No O
³ Indicators of Restrictive La Type: <u>be</u> Depth (incl	f hydrophytic vegetatio ayer (if observed): edrock	n and wetla		Hydric Soil Present?	Yes O No O
³ Indicators of Restrictive La Type: <u>be</u> Depth (incl	f hydrophytic vegetatio ayer (if observed): edrock	n and wetla		Hydric Soil Present?	Yes O No O



AN7 Wetland



AN7 Upland

Project/Site: Antrim Wind Project		City/County:	Antrim		Sampling Date: 1	1-Aug-11
Applicant/Owner: Eolian Renewable E	nergy, LLC		St	ate: NH	Sampling Point:	AN8 Wet
Investigator(s): AF JG		Section, T	ownship, Range	: S. T	. R.	
Landform (hillslope, terrace, etc.):	Terrace	Local relief (c	oncave, convex,	none): flat	Slope:	5.0 % / 2.9°
Subregion (LRR or MLRA):	Lat.:		Lor	ng.:	Dat	um:
Soil Map Unit Name:				NWI class	sification: PFO	-
Are Vegetation , Soil Are Vegetation , Soil Summary of Findings - At Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	, or Hydrology 🗌 naturally	Is th	(If needed		wers in Remarks.) s, important fe	
Remarks: (Explain alternative pro Narrow PFO drainage through bou		-	south with uplar	nd species		

Wetland Hydrology Indicators:		Secondary Indicators (minimum of 2 required)		
Primary Indicators (minimum of one required;	check all that apply)	Surface Soil Cracks (B6)		
Surface Water (A1)	✓ Water-Stained Leaves (B9)	✓ Drainage Patterns (B10)		
High Water Table (A2)	Aquatic Fauna (B13)	Moss Trim Lines (B16)		
Saturation (A3)	Marl Deposits (B15)	Dry Season Water Table (C2)		
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)		
Sediment Deposits (B2)	Oxidized Rhizospheres along Living Roots (C3)	Saturation Visible on Aerial Imagery (C9)		
Drift deposits (B3)	Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)		
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)		
Iron Deposits (B5)	Thin Muck Surface (C7)	Shallow Aquitard (D3)		
Inundation Visible on Aerial Imagery (B7)	Other (Explain in Remarks)	Microtopographic Relief (D4)		
Sparsely Vegetated Concave Surface (B8)		✓ FAC-neutral Test (D5)		
		_ 、 /		
Field Observations:				
Surface Water Present? Yes O No 🖲	Depth (inches):			
Water Table Present? Yes O No 🖲	Depth (inches):			
Saturation Present? Yes • No ·	Depth (inches): 0 Wetland Hyd	drology Present? Yes $ullet$ No $igloo$		
Describe Recorded Data (stream gauge, monito	ring well, aerial photos, previous inspections), if ava	ailable:		
Remarks:				

	1113	Dominant Species?		Sampling Point: AN8 Wet
Tree Stratum (Plot size: 30')	Absolute % Cover	-	Indicator Status	Dominance Test worksheet:
1. Betula alleghaniensis	25	50.0%	FAC	Number of Dominant Species That are OBL, FACW, or FAC: 5 (A)
2 Assamtant	25	✓ 50.0%	FAC	
3		0.0%	1110	Total Number of Dominant
		0.0%		Species Across All Strata: 5 (B)
4	0	0.0%		Percent of dominant Species
5				That Are OBL, FACW, or FAC:(A/B)
6	0	0.0%		
7	0	0.0%		Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: 15')	50	= Total Cove	r	Total % Cover of: Multiply by:
1 Maashali waxaa waxaa aa waxaa aa	5	23.8%	FACW-	OBL species x 1 =
	10	✓ 23.6%✓ 47.6%	FAC+	FACW species 91 x 2 = 182
		 47.0% 14.3% 	FACU	FAC species <u>63</u> x 3 = <u>189</u>
4				FACU species3 x 4 =12
4. Betula alleghaniensis		14.3%	FAC	UPL species $0 \times 5 = 0$
5		0.0%		· · · · · · · · · · · · · · · · · · ·
6	0	0.0%		Column Totals: <u>157</u> (A) <u>383</u> (B)
7	0	0.0%		Prevalence Index = $B/A = 2.439$
Herb Stratum (Plot size: 5')	21	= Total Cove	r	Hydrophytic Vegetation Indicators:
				Rapid Test for Hydrophytic Vegetation
1.Impatiens capensis	75	▶ 82.4%	FACW	✓ Dominance Test is > 50%
2.Osmunda cinnamomea	5	5.5%	FACW	\checkmark Prevalence Index is $\leq 3.0^{-1}$
3.Onoclea sensibilis	3	3.3%	FACW	
4. Carex intumescens	3	3.3%	FACW+	Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
5.violet spp.	5	5.5%		Problematic Hydrophytic Vegetation ¹ (Explain)
6.	0	0.0%		
7.	0	0.0%		¹ Indicators of hydric soil and wetland hydrology must
8.	0	0.0%		be present, unless disturbed or problematic.
9.	0	0.0%		Definitions of Vegetation Strata:
10.	0	0.0%		
11		0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
12.		0.0%		at bloast height (BBH), regardless of height.
12.				Sapling/shrub - Woody plants less than 3 in. DBH and
Woody Vine Stratum (Plot size:)	91	= Total Cove	r	greater than 3.28 ft (1m) tall
1	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of
2	0	0.0%		size, and woody plants less than 3.28 ft tall.
3	0	0.0%		Woody vine - All woody vines greater than 3.28 ft in
4	0	0.0%		height.
	0	= Total Cove	r	
				Hydrophytic
				Vegetation Present? Yes • No ·
				present? Tos a no a
				1
Remarks: (Include photo numbers here or on a separate she	eet.)			

Profile Desc	ription: (Des	scribe to	the depth	needed to	document	the indic	ator or co	onfirm the	absence of indicators.)	
Depth (inches)		Matrix				dox Featu				
(inches)	Color (r		%	Color (moist)	%	Type 1	Loc ²	Texture	Remarks
0-8	2.5YR	2/1	100%						Loam	
8-10	2.5Y	5/1	100%						Fine Sand	
10-20	2.5Y	4/2	95%	2.5Y	6/1	5%	D	Μ	Sandy Loam	
			_							
	Centration D	=Denletio	n RM-Red	uced Matrix	CS=Cover	ed or Coate	d Sand Gr	ains 21 oc	ation: PL=Pore Lining. M=N	latrix
Hydric Soil		-Depietio			55-50ven					2
Histosol				Poly	value Relo	w Surface (58) (I PP E	2		enation ryune sons .
	ipedon (A2)			MLR	A 149B)	w Sunace (50) (LIXIX I	、 ,		(LRR K, L, MLRA 149B)
Black His				🗌 Thin	Dark Surf	ace (S9) (L	.RR R, MLF	RA 149B)		ox (A16) (LRR K, L, R)
	n Sulfide (A4)			🗌 Loar	ny Mucky I	Mineral (F1)) LRR K, L)			or Peat (S3) (LRR K, L, R)
	Layers (A5)			Loar	ny Gleyed	Matrix (F2)			Dark Surface (S7)	
	Below Dark S	Surface (A	.11)	Dep	leted Matri	x (F3)				urface (S8) (LRR K, L)
	rk Surface (A1			_	ox Dark Su				Thin Dark Surface	
	uck Mineral (S			Dep	leted Dark	Surface (F7	/)			/lasses (F12) (LRR K, L, R) ain Soils (F19) (MLRA 149B)
	eyed Matrix (S			Red	ox Depress	sions (F8)) (MLRA 144A, 145, 149B)
Sandy Re	edox (S5)								Red Parent Materi	
Stripped	Matrix (S6)								Very Shallow Dark	
Dark Sur	face (S7) (LRF	r R, MLRA	A 149B)						Other (Explain in I	
³ Indicators o	of hydrophytic	vegetatio	on and wetla	and hydrology	/ must be r	present un	ess disturk	ed or prob		,
					······			P		
Restrictive L	ayer (if obs	erved):								
Type:	(haa).								Hydric Soil Present?	Yes 💿 No 🔿
Depth (ind	:nes):								5	
Remarks:										

Project/Site: Antrim Wind Project		City/County: Antrim		Sampling Date: 1	1-Aug-11
Applicant/Owner: Eolian Renewable E	Energy, LLC	S	tate: NH	Sampling Point:	AN8 Upland
Investigator(s): AF JG		Section, Township, Range	»: S. T.	R.	
Landform (hillslope, terrace, etc.):	Terrace	Local relief (concave, convex	, none): none	Slope:	7.0 % / 4.0°
Subregion (LRR or MLRA):	Lat.:	Lo	ng.:	Date	um:
Soil Map Unit Name:			NWI classi	fication:	-
Are climatic/hydrologic conditions of Are Vegetation , Soil Are Vegetation , Soil Summary of Findings - At	, or Hydrology Significant	tly disturbed? Are "Norm problematic? (If needed	(If no, explain ir al Circumstances" I, explain any answ DNS, transects	present? Yes ()	
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes ○ No ● Yes ○ No ● Yes ○ No ●	Is the Sampled Area within a Wetland?	Yes 🔿 No 🖲)	
Remarks: (Explain alternative pro	ocedures here or in a separate repo	ort.)			

	Secondary Indicators (minimum of 2 required)					
Wetland Hydrology Indicators:						
Primary Indicators (minimum of one required; check all that apply)						
Stained Leaves (B9)	Drainage Patterns (B10)					
c Fauna (B13)	Moss Trim Lines (B16)					
eposits (B15)	Dry Season Water Table (C2)					
en Sulfide Odor (C1)	Crayfish Burrows (C8)					
ed Rhizospheres along Living Roots (C3)	Saturation Visible on Aerial Imagery (C9)					
ce of Reduced Iron (C4)	Stunted or Stressed Plants (D1)					
Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)					
uck Surface (C7)	Shallow Aquitard (D3)					
. ,	Microtopographic Relief (D4)					
	FAC-neutral Test (D5)					
n (inches):						
n (inches):	rology Present? Yes \bigcirc No \odot					
n (inches):	rology Present? Yes 🔾 No 🖲					
erial photos, previous inspections), if avail	lable:					
	<pre>itained Leaves (B9) Fauna (B13) posits (B15) en Sulfide Odor (C1) d Rhizospheres along Living Roots (C3) e of Reduced Iron (C4) Iron Reduction in Tilled Soils (C6) ick Surface (C7) Explain in Remarks) (inches): (inches): (inches):</pre> Wetland Hydre					

	11.5	Dominant Species?		Sampling Point: AN8 Upland
	Absolute	Rel.Strat.	Indicator	Dominance Test worksheet:
Tree Stratum (Plot size: 30')	% Cover		Status	Number of Dominant Species
1. Quercus rubra	25	28.4%	FACU-	That are OBL, FACW, or FAC: 1 (A)
2. Pinus strobus	33	✓ 37.5%	FACU	Total Number of Dominant
3. Betula papyrifera	10	11.4%	FACU	Species Across All Strata:6(B)
4. Acer rubrum	20	✓ 22.7%	FAC	
5	0	0.0%		Percent of dominant Species That Are OBL_EACW_or_EAC16.7% (A/B)
6	0	0.0%		That Are OBL, FACW, or FAC: 16.7% (A/B)
7	0	0.0%		Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: 15')	88	= Total Cove	r	Total % Cover of: Multiply by: OBL species 0 x 1 = 0
1. Fagus grandifolia	40	80.0%	FACU	
2. Picea rubens	10	20.0%	FACU	FACW species $0 \times 2 = 0$
3.	0	0.0%		FAC species $20 \times 3 = 60$
4		0.0%		FACU species 119 x 4 = 476
5	0	0.0%		UPL species $\frac{26}{130}$ x 5 = $\frac{130}{130}$
C C	0	0.0%		Column Totals: 165 (A) 666 (B)
7	0	0.0%		$\frac{1}{2}$ Prevalence Index = B/A = 4.036
<i>I</i>	-	= Total Cove		Prevalence Index = $B/A = 4.036$
Herb Stratum (Plot size: 5')	50		1	Hydrophytic Vegetation Indicators:
1.Aralia nudicaulis	1	3.7%	FACU	Rapid Test for Hydrophytic Vegetation
2.Medeola virginiana		3.7%	UPL	Dominance Test is > 50%
3.Polygonatum pubescens		92.6%	UPL	Prevalence Index is \leq 3.0 1
4.	0	0.0%		Morphological Adaptations ¹ (Provide supporting
F				data in Remarks or on a separate sheet)
5 6.				\Box Problematic Hydrophytic Vegetation ¹ (Explain)
	0	0.0%		¹ Indicators of hydric coil and watland hydrology must
7	0	0.0%		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
8	0	0.0%		Definitions of Vegetation Strata:
9	0	0.0%		Demintions of Vegetation Strata.
10	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter
11	0	0.0%		at breast height (DBH), regardless of height.
12	0	0.0%		Sapling/shrub - Woody plants less than 3 in. DBH and
Woody Vine Stratum (Plot size:)	27	= Total Cove	r	greater than 3.28 ft (1m) tall
1	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of
2	0	0.0%		size, and woody plants less than 3.28 ft tall.
3	0	0.0%		Woody vine - All woody vines greater than 3.28 ft in
4	0	0.0%		height.
	0	= Total Cove	r	
				Hydrophytic Vegetation Present? Yes O No O
Pomarks: (Include photo numbers here or on a consiste she	ot)			l
Remarks: (Include photo numbers here or on a separate she	el.)			

Profile Desc	ription: (Desc	ribe to	the depth	needed to document the indicator or confirm the	absence of indicators.)	
Depth (inches)		Matrix		Redox Features		5
	Color (m		%	Color (moist) % Type 1 Loc ²		Remarks
	10YR	3/2	100%		Loam	
4-6	2.5Y	5/1	100%		Loamy Sand	
6-8	10YR	4/4	100%		Very Fine Sandy Loam	
8+						Bedrock
					·	
¹ Type: C=Cor		Depletio	n. RM=Red	uced Matrix, CS=Covered or Coated Sand Grains ² Loc	ation: PL=Pore Lining. M=N	 Natrix
Hydric Soil						
Histosol				Polyvalue Below Surface (S8) (LRR R,		ematic Hydric Soils : ³
	ipedon (A2)			MLRA 149B)		(LRR K, L, MLRA 149B)
Black His				Thin Dark Surface (S9) (LRR R, MLRA 149B)		DX (A16) (LRR K, L, R)
	n Sulfide (A4)			Loamy Mucky Mineral (F1) LRR K, L)	Dark Surface (S7)	or Peat (S3) (LRR K, L, R)
Stratified	Layers (A5)			Loamy Gleyed Matrix (F2)		Surface (S8) (LRR K, L)
Depleted	Below Dark Su	irface (A	.11)	Depleted Matrix (F3)	Thin Dark Surface	
Thick Da	rk Surface (A12	?)		Redox Dark Surface (F6)		Masses (F12) (LRR K, L, R)
Sandy M	uck Mineral (S1)		Depleted Dark Surface (F7)		ain Soils (F19) (MLRA 149B)
Sandy GI	eyed Matrix (S4	1)		Redox Depressions (F8)		6) (MLRA 144A, 145, 149B)
	edox (S5)				Red Parent Mater	
	Matrix (S6)				Very Shallow Dar	< Surface (TF12)
Dark Sur	face (S7) (LRR	r, mlra	A 149B)		Other (Explain in	Remarks)
³ Indicators of	of hydrophytic v	regetatio	on and wetla	nd hydrology must be present, unless disturbed or prob	lematic.	
Restrictive L	ayer (if obse	rved):				
Type: B	edrock					
Depth (ind	ches): 8				Hydric Soil Present?	Yes 🔾 No 🖲
Remarks:						



AN8 Upland



AN8 Wetland



AN8 Wetland

							•	
Project/Site: Antrim Wind Project	Cit	y/County:	Antrim				Sampling Date: 1	1-Aug-11
Applicant/Owner: Eolian Renewable Energy, LLC				State:	NH		Sampling Point:	AN10 Wet
Investigator(s): AF JG		Section, T	wnship, Ra	nge: S.		т.	R.	
Landform (hillslope, terrace, etc.): Hillside	Loc	cal relief (c	oncave, conv	vex, none	e): none	:	Slope:	10.0 % / 5.7 [°]
Subregion (LRR or MLRA):	at.:			Long.:			Dat	tum:
Soil Map Unit Name:	-				NWI cl	assif	ication: PFO	
	ally prob	listurbed? plematic? npling p	(If nee	ded, exp	2	Inswe	ers in Remarks.)	
Hydrophytic Vegetation Present?YesNoHydric Soil Present?YesNoWetland Hydrology Present?YesNo			Sampled An a Wetland		∕es ● N	lo C)	
Remarks: (Explain alternative procedures here or in a separate Small isolated PFO seep into skidder trail	report.)							

Wetland Hydrology Indicators:		Secondary Indicators (minimum of 2 required)							
Primary Indicators (minimum of one required;	check all that apply)	Surface Soil Cracks (B6)							
Surface Water (A1)	Water-Stained Leaves (B9)	✓ Drainage Patterns (B10)							
High Water Table (A2)	Aquatic Fauna (B13)	Moss Trim Lines (B16)							
Saturation (A3)	Marl Deposits (B15)	Dry Season Water Table (C2)							
Water Marks (B1) Hydrogen Sulfide Odor (C1) Crayfish Burrows (C8)									
Sediment Deposits (B2) Oxidized Rhizospheres along Living Roots (C3) Saturation Visible on Aerial Imagery (C9)									
Drift deposits (B3) Presence of Reduced Iron (C4) Stunted or Stressed Plants (D1)									
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C6) Geomorphic Position (D2)									
Image: Index (D) Image: Index (D) Image: Index (D) Image: Index (D) Image: Index (D) Image: Index (D) Image: Index (D) Image: Index (D) Image: Index (D) Image: Index (D) Image: Index (D) Image: Index (D)									
Inundation Visible on Aerial Imagery (B7)	Other (Explain in Remarks)	Microtopographic Relief (D4)							
Sparsely Vegetated Concave Surface (B8)		FAC-neutral Test (D5)							
Field Observations:									
Surface Water Present? Yes No	Depth (inches): <u>1</u>								
Water Table Present? Yes O No O	Depth (inches):	drology Present? Yes $ullet$ No $igodoldsymbol{O}$							
Saturation Present? (includes capillary fringe) Yes • No	Wetland Hy Depth (inches):	drology Present? Yes 🔍 No 🔾							
Describe Recorded Data (stream gauge, monit	oring well, aerial photos, previous inspections), if available	ailable:							
Remarks:									
drainage patterns saturated to surface, 1" flow	ving water near seep								

	ints	Dominant Species?		Sampling Point: AN10 Wet
Tree Stratum (Plot size: 30')	Absolute % Cover	Rel.Strat.	Indicator Status	Dominance Test worksheet:
1. Betula alleghaniensis	15	50.0%	FAC	Number of Dominant Species That are OBL, FACW, or FAC: 5
2. Fraxinus pennsylvanica	45	50.0%	FACW	
3.		0.0%		Total Number of Dominant
4.		0.0%		Species Across All Strata:6 (B)
5.	0	0.0%		Percent of dominant Species
6.		0.0%		That Are OBL, FACW, or FAC: 83.3% (A/B)
7		0.0%		Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: 15')		= Total Cove	r	Total % Cover of: Multiply by:
	50		FAOL	OBL species 5 x 1 = 5
1. Acer pensylvanicum	45	✓ 76.9%✓ 23.1%	FACU	FACW species x 2 =176
2. Betula alleghaniensis			FAC	FAC speciles $30 \times 3 = 90$
3	0	0.0%		FACU speci es 50 x 4 = 200
4	0	0.0%		UPL species $0 \times 5 = 0$
5	0	0.0%		
6		0.0%		Column Totals: <u>173</u> (A) <u>471</u> (B)
7		0.0%		Prevalence Index = $B/A = 2.723$
Herb Stratum (Plot size: 5')	65	= Total Cove	r	Hydrophytic Vegetation Indicators:
1.Osmunda cinnamomea	33	42.3%	FACW	Rapid Test for Hydrophytic Vegetation
2. Impatiens capensis	40	51.3%	FACW	✓ Dominance Test is > 50%
3.Carex lurida	5	6.4%	OBL	✓ Prevalence Index is \leq 3.0 ¹
4.	0	0.0%		Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
5.	0	0.0%		
6.	0	0.0%		Problematic Hydrophytic Vegetation ¹ (Explain)
7.	0	0.0%		¹ Indicators of hydric soil and wetland hydrology must
8.	0	0.0%		be present, unless disturbed or problematic.
9.	0	0.0%		Definitions of Vegetation Strata:
10.	0	0.0%		_
11.	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
12.	0	0.0%		at bleast height (DDH), regardless of height.
		= Total Cove	r	Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall
Woody Vine Stratum (Plot size:) 1	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of
	0	0.0%		size, and woody plants less than 3.28 ft tall.
2 3	0	0.0%		
3 /	0	0.0%		Woody vine - All woody vines greater than 3.28 ft in height.
4		-	-	neight.
	0	= Total Cove	r	
				Hydrophytic Vegetation Present? Yes • No O
Remarks: (Include photo numbers here or on a separate sh	eet.)			

Depth	ription: (De	scribe to Matrix	the depth	needed to d		t the indic dox Featu		onfirm the	absence of indicators.)								
(inches)	Color (moist)	%	Color (I	noist)	%	Type 1	Loc ²	Texture	Remarks							
0-6	10YR	3/2	100%						Sandy Loam	_							
6-10	2.5Y	4/2	90%	10YR	5/8	10%	С	М	Fine Sandy Loam								
10+										boul dery							
1 Turnov C. Con		Doplatia							ation: DL Doro Lining M	—							
		=Depietio	in. Rivi=Reu	uceu Matrix, (_S=Cover	ed of Coale	eu sanu Gra	ains -Loca	ation: PL=Pore Lining. M=	2							
Hydric Soil Histosol				Date	value Del-	w Surface ((CO) (I DD F		_	lematic Hydric Soils : 3							
	(AT) ipedon (A2)				A 149B)	w surrace ((58) (LRR F	ζ,	2 cm Muck (A10)) (LRR K, L, MLRA 149B)							
Black His				🗌 Thin	Dark Surf	face (S9) (I	_RR R, MLF	RA 149B)	_	dox (A16) (LRR K, L, R)							
	n Sulfide (A4)			🗌 Loam	ny Mucky	Mineral (F1) LRR K, L)			t or Peat (S3) (LRR K, L, R)							
	Layers (A5)			Loam	ny Gleyed	Matrix (F2)	1		Dark Surface (S7) (LRR K, L)					Dark Surface (S7) (LRR K, L) Polyvalue Below Surface (S8) (LRR K, L)			
_	Below Dark S	Surface (A	.11)		eted Matr					e (S9) (LRR K, L)							
Thick Da	Thick Dark Surface (A12)								Masses (F12) (LRR K, L, R)								
Sandy M	uck Mineral (S	S1)				Surface (F	7)		Piedmont Floodplain Soils (F19) (MLRA 149B)								
Sandy G	Sandy Gleyed Matrix (S4)							Mesic Spodic (TA6) (MLRA 144A, 145, 149B)									
	edox (S5)								Red Parent Material (TF2)								
	Matrix (S6)								Very Shallow Da	rk Surface (TF12)							
Dark Sur	face (S7) (LR	r r, mlra	A 149B)						Other (Explain in	Remarks)							
³ Indicators of	of hydrophytic	vegetatio	n and wetla	nd hydrology	must be	present, un	less disturk	ed or probl	lematic.								
Restrictive I	Layer (if obs	erved):															
Type: b	ouldery																
Depth (in	ches): 10								Hydric Soil Present?	Yes $lacksquare$ No $igodom$							
Remarks:									1								

Investigator(s): AF JG Section, Township, Range: S. T. R. Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): none Slope: 15.0 % / Subregion (LRR or MLRA): Lat.: Long.: Datum: Soil Map Unit Name: NWI classification: Are climatic/hydrologic conditions on the site typical for this time of year? Yes Image: No Image: Image	/Site: Antrim Wind Project		City/County: Antrim		Sampling Date: 1	11-Aug-11	
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): none Slope: 15.0 % / Subregion (LRR or MLRA): Lat.: Long.: Datum: Soil Map Unit Name: NWI classification:	nt/Owner: Eolian Renewable Ene	gy, LLC		State: NH	Sampling Point:	AN10 Uplai	nd
Subregion (LRR or MLRA): Lat.: Long.: Datum: Soil Map Unit Name: NWI classification: NWI classification: Are climatic/hydrologic conditions on the site typical for this time of year? Yes I No (If no, explain in Remarks.) Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes I No (Yes I needed, explain any answers in Remarks.) Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.) Summary of Findings - Attach site map showing sampling point locations, transects, important features, explain and the statures of	gator(s): AF JG		Section, Township, Ran	ige: S.	T. R.	-	
Soil Map Unit Name: NWI classification: Are climatic/hydrologic conditions on the site typical for this time of year? Yes	m (hillslope, terrace, etc.): H	llside	Local relief (concave, conve	ex, none): none	Slope:	15.0 % /	8.5 °
Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.) Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.) Summary of Findings - Attach site map showing sampling point locations, transects, important features, e	ion (LRR or MLRA):	Lat.:		Long.:	Da	tum:	
Are Vegetation , Soil , or Hydrology and an and any found in the explanation of the second se	p Unit Name:			NWI cla	ssification:		
Hydrophytic Vegetation Present? Yes O No 🔍	yetation, Soil,	or Hydrology Significant	tly disturbed? Are "Noi problematic? (If need	rmal Circumstance led, explain any an	es" present? Yes (c.
Hydric Soil Present? Yes No Is the Sampled Area within a Wetland? Yes No Wetland Hydrology Present? Yes No No Is the Sampled Area within a Wetland? Yes No	ic Soil Present?	Yes 🔾 No 🖲			, •		

Wetland Hydrology Indicators:		Secondary Indicators (minimum of 2 required)			
Primary Indicators (minimum of one required;	check all that apply)	Surface Soil Cracks (B6)			
Surface Water (A1)	Water-Stained Leaves (B9)	Drainage Patterns (B10)			
High Water Table (A2)	Aquatic Fauna (B13)	Moss Trim Lines (B16)			
Saturation (A3)	Dry Season Water Table (C2)				
Water Marks (B1)	Crayfish Burrows (C8)				
Sediment Deposits (B2)	Saturation Visible on Aerial Imagery (C9)				
Drift deposits (B3)	Oxidized Rhizospheres along Living Roots (C3) Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)			
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)			
Iron Deposits (B5)	Shallow Aguitard (D3)				
Inundation Visible on Aerial Imagery (B7)	Thin Muck Surface (C7) Other (Explain in Remarks)	Microtopographic Relief (D4)			
Sparsely Vegetated Concave Surface (B8)		FAC-neutral Test (D5)			
Field Observations:					
Surface Water Present? Yes O No 💿	Depth (inches):				
Water Table Present? Yes O No •	Depth (inches):	drology Present? Yes 🔿 No 🖲			
Saturation Present? (includes capillary fringe) Yes O No O	Wetland Hyd Depth (inches):	drology Present? Yes 🔾 No 🖲			
Describe Recorded Data (stream gauge, monit	oring well, aerial photos, previous inspections), if ava	ailable:			
Remarks:					

	11.5	Dominant Species?		Sampling Point: AN10 Upland
Tree Stratum (Plot size: 30')	Absolute % Cover	Rel.Strat.		Dominance Test worksheet:
			Status	Number of Dominant Species
1. Tsuga canadensis	40	42.1%	FACU	That are OBL, FACW, or FAC: 2 (A)
2. Betula papyrifera	25	26.3%	FACU	Total Number of Dominant
3. Fraxinus pennsylvanica	15	15.8%	FACW	Species Across All Strata: 6 (B)
4. Picea rubens		15.8%	FACU	
5		0.0%		Percent of dominant Species That Are OBL, FACW, or FAC:33.3% (A/B)
6		0.0%		
7	0	0.0%		Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: 15')		= Total Cove	r	Total % Cover of:Multiply by:OBL species0x 1 = 0
1. Acer rubrum	50	76.9%	FAC	
2. Picea rubens	15	23.1%	FACU	FACW species $15 \times 2 = 30$
3.		0.0%		FAC species $\frac{70}{100}$ x 3 = $\frac{210}{100}$
4.		0.0%		FACU species 155 x 4 = 620
5.	0	0.0%		UPL species $0 \times 5 = 0$
e	0	0.0%		Column Totals: 240 (A) 860 (B)
7	0	0.0%		Prevalence Index = B/A = 3.583
<i>I</i>		= Total Cove		Prevalence Index = B/A = <u>3.583</u>
Herb Stratum (Plot size: 5')	65		1	Hydrophytic Vegetation Indicators:
1. Trientalis borealis	20	25.0%	FAC	Rapid Test for Hydrophytic Vegetation
2. Aralia nudicaulis	50	62.5%	FACU	Dominance Test is > 50%
3. Dryopteris intermedia	10	12.5%	FACU	Prevalence Index is \leq 3.0 1
4.	0	0.0%	1400	Morphological Adaptations ¹ (Provide supporting
6		0.0%		data in Remarks or on a separate sheet)
5 <u>.</u> 6.	0	0.0%		Problematic Hydrophytic Vegetation ¹ (Explain)
7.				¹ Indicators of hydric soil and wetland hydrology must
	0	0.0%		be present, unless disturbed or problematic.
8	0	0.0%		Definitions of Vegetation Strata:
9	0	0.0%		Demittons of Vegetation Strata.
10	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter
11	0	0.0%		at breast height (DBH), regardless of height.
12	0	0.0%		Sapling/shrub - Woody plants less than 3 in. DBH and
Woody Vine Stratum (Plot size:)	80	= Total Cove	r	greater than 3.28 ft (1m) tall
1	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of
2	0	0.0%		size, and woody plants less than 3.28 ft tall.
3	0	0.0%		Woody vine - All woody vines greater than 3.28 ft in
4	0	0.0%		height.
	0	= Total Cove	r	
				Hydrophytic Vegetation
				Present? Yes No 💿
Remarks: (Include photo numbers here or on a separate she	et.)			
	,			

(inches) Color (moist) % Color (moist) % Type T Loc2 Texture Re 0.5 10YR 3/2 100%	
5.7 2.5Y 5/1 100% File Loamy Sand 7.13 10/R 4/3 100% Very Fine Loamy Sand 13+ Doull dery 14 Histosol (A1) Doull dery Histosol (A1) Doull dery Hydric Soil Indicators: Indicators for Problematic Hyd Dopletod Below Dark Surface (S9) (LRR R, MLRA 1498) Doark Surface (S1) (LRR K, L) Dopletod Below Dark Surface (A11) Depleted Matrix (F2) <th>marks</th>	marks
7.13 10YR 4/3 100% Very Fine Loamy Sand 13+ Doull dery 14 Doull dery 15 Doull dery 16 Doull dery 17 Doull dery 17 Doull dery 18 Doull dery 19 Doull dery 19 Doull dery 10 Doull dery	
13+ boull dery 15+ boull dery 15+ boull dery </td <td></td>	
13+	
Hydric Soil Indicators: Indicators for Problematic Hyd Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) Indicators for Problematic Hyd Histosol (A2) MLRA 149B) 2 cm Muck (A10) (LRR K, L, M Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LRF Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) LRR K, L) Dark Surface (S7) (LRR K, L) Stratified Layers (A5) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L) Depleted Below Dark Surface (A11) Depleted Matrix (F3) Polyvalue Below Surface (S9) (LR R Thick Dark Surface (A12) Redox Dark Surface (F6) Iron-Manganese Masses (F12) Sandy Gleyed Matrix (S4) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144B) Sandy Redox (S5) Stripped Matrix (S6) Very Shallow Dark Surface (TF Dark Surface (S7) (LRR R, MLRA 149B) Very Shallow Dark Surface (TE 3 ¹ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Yes Other (Explain in Remarks) 3 ¹ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Hydric Soil Present? Yes Other (Soil Present? Yes Other (S	
Hydric Soil Indicators: Indicators for Problematic Hyd Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) Indicators for Problematic Hyd Histosol (A2) MLRA 149B) 2 cm Muck (A10) (LRR K, L, M Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LRF Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) LRR K, L) Dark Surface (S7) (LRR K, L) Stratified Layers (A5) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L) Depleted Below Dark Surface (A11) Depleted Matrix (F3) Polyvalue Below Surface (S9) (LR R Thick Dark Surface (A12) Redox Dark Surface (F6) Iron-Manganese Masses (F12) Sandy Gleyed Matrix (S4) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144B) Sandy Redox (S5) Stripped Matrix (S6) Very Shallow Dark Surface (TF Dark Surface (S7) (LRR R, MLRA 149B) Very Shallow Dark Surface (TE 3 ¹ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Yes Other (Explain in Remarks) 3 ¹ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Hydric Soil Present? Yes Other (Soil Present? Yes Other (S	
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Hydric Soil Indicators: Indicators for Problematic Hyd Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) Indicators for Problematic Hyd Histosol (A2) MLRA 149B) 2 cm Muck (A10) (LRR K, L, M Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LRF Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) LRR K, L) Dark Surface (S7) (LRR K, L) Stratified Layers (A5) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L) Depleted Below Dark Surface (A11) Depleted Matrix (F3) Polyvalue Below Surface (S9) (LRR K) Thick Dark Surface (A12) Redox Dark Surface (F7) Piedmont Floodplain Soils (F19) Sandy Gleyed Matrix (S4) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144B) Sandy Redox (S5) Very Shallow Dark Surface (TF) Very Shallow Dark Surface (TF) Dark Surface (S7) (LRR R, MLRA 149B) Very Shallow Dark Surface (TE) Very Shallow Dark Surface (TF) Bark Surface (S7) (LRR R, MLRA 149B) Hydric Soil Present? Yes ³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Hydric Soil Present? Yes Popth (inches): 13 Deplet (inches): _13 Hydric Soil Present? Yes <td></td>	
Hydric Soil Indicators: Indicators for Problematic Hyd Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) Indicators for Problematic Hyd Histic Epipedon (A2) MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, M Black Histic (A3) Loamy Mucky Mineral (F1) LRR K, L) Coast Prairie Redox (A16) (LRR K, L) Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L) Depleted Below Dark Surface (A11) Depleted Matrix (F3) Dolyvalue Below Surface (S9) (LRR K) Thick Dark Surface (A12) Depleted Dark Surface (F6) Iron-Manganese Masses (F12) Sandy Muck Mineral (S1) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 1449B) Stripped Matrix (S6) Very Shallow Dark Surface (TF) Very Shallow Dark Surface (TF) Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks) ³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Hydric Soil Present? Yes Type: bouldery Depth (inches): 13 Hydric Soil Present? Yes	
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Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, M Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LR Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B) 5 cm Mucky Peat or Peat (S3) Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) LRR K, L) Dark Surface (S7) (LR R, L) Stratified Layers (A5) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LR R, L) Depleted Below Dark Surface (A11) Depleted Matrix (F3) Polyvalue Below Surface (S9) (LR R R) Thick Dark Surface (A12) Redox Dark Surface (F6) Thin Dark Surface (S9) (LR R R) Sandy Muck Mineral (S1) Depleted Dark Surface (F7) Piedmont Floodplain Soils (F19) Sandy Redox (S5) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 1448) Sandy Redox (S5) Very Shallow Dark Surface (TF) Other (Explain in Remarks) ³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Hydric Soil Present? Yes Meptity Logenth (inches): 13 Hydric Soil Present? Yes Peisting for the second for	ic Soils · ³
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Hydrogen Sulfide (A4) Loamy Mucky Miller al (F1) LRR K, L) Dark Surface (S7) (LRR K, L) Stratified Layers (A5) Loamy Gleyed Matrix (F2) Polyvalue Below Surface (S8) (Depleted Below Dark Surface (A11) Depleted Matrix (F3) Thin Dark Surface (S9) (LRR K, L) Thick Dark Surface (A12) Redox Dark Surface (F6) Thin Dark Surface (S9) (LRR K) Sandy Muck Mineral (S1) Depleted Dark Surface (F7) Piedmont Floodplain Soils (F19) Sandy Redox (S5) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144) Stripped Matrix (S6) Very Shallow Dark Surface (TF) Very Shallow Dark Surface (TF) 3Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Wetric Soil Present? Yes O Type: bouldery Depth (inches): 13 Yes O	
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Index Bark Surface (R12) □ Depleted Dark Surface (F7) □ Iron-Manganese Masses (F12) □ Sandy Muck Mineral (S1) □ Redox Depressions (F8) □ Piedmont Floodplain Soils (F19) □ Sandy Redox (S5) □ Redox Depressions (F8) □ Mesic Spodic (TA6) (MLRA 144 □ Sandy Redox (S5) □ Depleted Dark Surface (F7) □ Piedmont Floodplain Soils (F19) □ Sandy Redox (S5) □ Mesic Spodic (TA6) (MLRA 144 □ Red Parent Material (TF2) □ Very Shallow Dark Surface (TF □ Dark Surface (S7) (LRR R, MLRA 149B) □ Other (Explain in Remarks) ³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Restrictive Layer (if observed): Type: bouldery □ Depth (inches): 13 □	
Sandy Muck Milleral (S1) Redox Depressions (F8) Piedmont Floodplain Soils (F19 Sandy Gleyed Matrix (S4) Mesic Spodic (TA6) (MLRA 144 Sandy Redox (S5) Red Parent Material (TF2) Stripped Matrix (S6) Very Shallow Dark Surface (TF Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks) ³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Restrictive Layer (if observed): Type: bouldery Depth (inches): 13 Hydric Soil Present? Yes O	(LRR K, L, R)
Sandy Greed Matrix (S4) Mesic Spodic (TA6) (MLRA 144 Sandy Redox (S5) Red Parent Material (TF2) Stripped Matrix (S6) Very Shallow Dark Surface (TF Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks) ³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Restrictive Layer (if observed): Type: bouldery Depth (inches): 13 Hydric Soil Present? Yes O	(MLRA 149B)
Stripped Matrix (S6) Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. 3 Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Restrictive Layer (if observed): Type: bouldery Depth (inches): 13	A, 145, 149B)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks) ³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Restrictive Layer (if observed): Type: bouldery Depth (inches): 13 Hydric Soil Present?	
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Restrictive Layer (if observed): Type: bouldery Depth (inches): 13 Hydric Soil Present? Yes O	2)
Restrictive Layer (if observed): Type: bouldery Depth (inches): 13	
Type: bouldery Depth (inches): 13 Hydric Soil Present? Yes	
Depth (inches): 13 Hydric Soil Present? Yes O	
Deptil (inches).	No 🖲
Remarks:	



AN10 Upland



AN10 Wetland

		v
Project/Site: Antrim Wind Project	City/County: Antrim	Sampling Date: 12-Aug-11
Applicant/Owner: Eolian Renewable Energy, LLC	State: NH	Sampling Point: AN11 Wet
Investigator(s): AF JG	Section, Township, Range: S. 1	. R.
Landform (hillslope, terrace, etc.): Hillside	Local relief (concave, convex, none): none	Slop e: 7.0 % / 4.0
Subregion (LRR or MLRA): Lat.:	Long.:	Datum:
Soil Map Unit Name:	NWI clas	sification: PSS
Are Vegetation , Soil , or Hydrology naturally Summary of Findings - Attach site map showing	tly disturbed? Are "Normal Circumstances problematic? (If needed, explain any ans sampling point locations, transect	wers in Remarks.)
Hydrophytic Vegetation Present? Yes ● No ○ Hydric Soil Present? Yes ● No ○ Wetland Hydrology Present? Yes ● No ○	Is the Sampled Area within a Wetland? Yes • No	0
Remarks: (Explain alternative procedures here or in a separate report skiddered PSS below moose wallow	ort.)	

Wetland Hydrology Indicators:		Secondary Indicators (minimum of 2 required)			
Primary Indicators (minimum of one required;	check all that apply)	Surface Soil Cracks (B6)			
Surface Water (A1)	Water-Stained Leaves (B9)	✓ Drainage Patterns (B10)			
High Water Table (A2)	Aquatic Fauna (B13)	Moss Trim Lines (B16)			
Saturation (A3)	Marl Deposits (B15)	Dry Season Water Table (C2)			
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)			
Sediment Deposits (B2)	Oxidized Rhizospheres along Living Roots (C3)	Saturation Visible on Aerial Imagery (C9)			
Drift deposits (B3)	Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)			
Algal Mat or Crust (B4)	Geomorphic Position (D2)				
Iron Deposits (B5)	Recent Iron Reduction in Tilled Soils (C6) Thin Muck Surface (C7)	Shallow Aquitard (D3)			
Inundation Visible on Aerial Imagery (B7)	Other (Explain in Remarks)	Microtopographic Relief (D4)			
Sparsely Vegetated Concave Surface (B8)		FAC-neutral Test (D5)			
Field Observations:					
Surface Water Present? Yes O No O	Depth (inches):				
Water Table Present? Yes O No •	Depth (inches):	·· • • •			
Saturation Present? (includes capillary fringe) Yes • No	Wetland Hyd Depth (inches):0	drology Present? Yes $ullet$ No $igodoldsymbol{ imes}$			
Describe Recorded Data (stream gauge, monit	oring well, aerial photos, previous inspections), if ava	ailable:			
Remarks:					

VEGETATION - Use scientific names of pla	nts	Dominant Species?		Sampling Point: AN11 Wet
Tree Stratum (Plot size: 30')	Absolute % Cover		Indicator Status	Dominance Test worksheet:
 1		0.0%		Number of Dominant Species That are OBL, FACW, or FAC: 5 (A)
2.	0	0.0%		
3.	0	0.0%		Total Number of Dominant Species Across All Strata: 5 (B)
4.	0	0.0%		
5	0	0.0%		Percent of dominant Species
6		0.0%		That Are OBL, FACW, or FAC:100.0% (A/B)
7		0.0%		Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: 15')		= Total Cove	r	Total % Cover of: Multiply by:
1. Spiraea tomentosa	15	✓ 75.0%	FACW	OBL species <u>25</u> x 1 = <u>25</u>
2. Betula alleghaniensis		25.0%	FAC	FACW species $63 \times 2 = 126$
3		0.0%		FAC species5 x 3 =15
1		0.0%		FACU species $0 \times 4 = 0$
4 5		0.0%		UPL species x 5 =
6.	0	0.0%		Column Totals: 93 (A) 166 (B)
7.	0	0.0%		·
/·				Prevalence Index = B/A = <u>1.785</u>
Herb Stratum (Plot size: 5')	20	= Total Cove	r	Hydrophytic Vegetation Indicators:
1. Onoclea sensibilis	20	27.4%	FACW	Rapid Test for Hydrophytic Vegetation
		27.4%	FACW+	✓ Dominance Test is > 50%
3 Carox arinita	25	34.2%	OBL	V Prevalence Index is \leq 3.0 ¹
1 0		6.8%	FACW	Morphological Adaptations ¹ (Provide supporting
5 Octomorphic consideration		4.1%	FACW+	data in Remarks or on a separate sheet)
6		0.0%	TAOW	Problematic Hydrophytic Vegetation ¹ (Explain)
7		0.0%		¹ Indicators of hydric soil and wetland hydrology must
8.	0	0.0%		be present, unless disturbed or problematic.
9.	0	0.0%		Definitions of Vegetation Strata:
10		0.0%		
11	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
10		0.0%		at bloast holght (BBH), regardloss of holght.
Voody Vine Stratum (Plot size:)		= Total Cove	r	Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall
	0	0.00/		
1	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
2	0	0.0%		
3	0	0.0%		Woody vine - All woody vines greater than 3.28 ft in
4	· · · · · · · · · · · · · · · · · · ·			height.
	0	= Total Cove	r	
				Hydrophytic
				Vegetation V A N
				Present? Yes Vo V
Remarks: (Include photo numbers here or on a separate she	et.)			

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	ription: (Des	cribe to	the depth	needed to	document	the indic	ator or co	nfirm the	absence of indicators.)		
Depth (inches)	-	Matrix				dox Featu					
	Color (r	•	%	Color (moist)	%	Type 1	Loc ²	Texture	Remarks	
0-6	10YR	3/2	100%						Loam		
6-7	2.5Y	4/1	100%						Fine Sandy Loam		
7-9	2.5Y	4/2	90%	10YR	4/6	10%	С		Fine Sandy Loam		
9+										rocky	
										-	
¹ Type: C=Cor		=Depletio	n RM=Red	uced Matrix	CS=Cover	ed or Coate	d Sand Gra	ins ² l oc	ation: PL=Pore Lining. M=N	 Matrix	
Hydric Soil		- 50.000					014	100	-	2	
Histosol				Polv	value Belo	w Surface (S8) (LRR R,			iciliatic rigune sons :	
	ipedon (A2)				A 149B)				_	(LRR K, L, MLRA 149B)	
Black His				🗌 Thin	Dark Surf	ace (S9) (L	.RR R, MLR	A 149B)		ox (A16) (LRR K, L, R)	
	n Sulfide (A4)			Loar	ny Mucky I	Mineral (F1)	LRR K, L)			or Peat (S3) (LRR K, L, R)	
						Matrix (F2)			Dark Surface (S7)		
Depleted	Below Dark S	iurface (A	.11)		eted Matri				Polyvalue Below Surface (S8) (LRR K, L) Thin Dark Surface (S9) (LRR K, L)		
Thick Da	Thick Dark Surface (A12)			_	ox Dark Su				☐ Iron-Manganese Masses (F12) (LRR K, L, R)		
Sandy M	uck Mineral (S	1)				Surface (F7	')		Piedmont Floodplain Soils (F19) (MLRA 149B)		
Sandy GI	eyed Matrix (S	54)			ox Depress	sions (F8)			Mesic Spodic (TA6) (MLRA 144A, 145, 149B)		
Sandy Re									Red Parent Mater		
	Matrix (S6)								Very Shallow Dar	k Surface (TF12)	
Dark Sur	face (S7) (LRF	R, MLRA	A 149B)						Other (Explain in	Remarks)	
³ Indicators of	of hydrophytic	vegetatio	on and wetla	nd hydrology	must be p	present, unl	ess disturbe	ed or probl	ematic.		
Restrictive L	_ayer (if obse	erved):									
Type: ro											
Depth (inc									Hydric Soil Present?	Yes $ullet$ No $igcap$	
Remarks:											
Remarks.											

Project/Site: Antrim Wind Project	City/County: Antrim		Sampling Date: 12-Aug-11		
Applicant/Owner: Eolian Renewable E	nergy, LLC		State: NH	Sampling Point:	AN11 Up
Investigator(s): AF JG		Section, Township, Rang	ge: S. T.	R.	
Landform (hillslope, terrace, etc.):	Hillside	Local relief (concave, conve	x, none): flat	Slope:	20.0 % / 11.3
Subregion (LRR or MLRA):	Lat.:	L	.ong.:	Da	tum:
Soil Map Unit Name:			NWI classi	ification:	-
Are climatic/hydrologic conditions of Are Vegetation , Soil Are Vegetation , Soil Summary of Findings - At	, or Hydrology Significant , or Hydrology naturally p	tly disturbed? Are "Nori problematic? (If neede	(If no, explain in mal Circumstances" ed, explain any answ ions, transects	present? Yes	
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes O No O Yes No O Yes No O	Is the Sampled Are within a Wetland?	a Yes 🔿 No 🤆	٥	
Remarks: (Explain alternative pro	cedures here or in a separate repo	ort.)			

	Secondary Indicators (minimum of 2 required)					
Wetland Hydrology Indicators:						
ary Indicators (minimum of one required; check all that apply) Surface Soil Cracks (B6) Surface Water (A1) Water-Stained Leaves (B9)						
Water-Stained Leaves (B9)	Drainage Patterns (B10)					
Aquatic Fauna (B13)	Moss Trim Lines (B16)					
Marl Deposits (B15)	Dry Season Water Table (C2)					
Water Marks (B1) Hydrogen Sulfide Odor (C1)						
Oxidized Rhizospheres along Living Roots (C3)	Saturation Visible on Aerial Imagery (C9)					
Drift deposits (B3)						
Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)					
Thin Muck Surface (C7)	Shallow Aquitard (D3)					
	Microtopographic Relief (D4)					
	FAC-neutral Test (D5)					
Depth (inches):						
Depth (inches):	trology Present? Yes 🔿 No 🖲					
Wetland Hyd Depth (inches):	drology Present? Yes 🔾 No 🖲					
ring well, aerial photos, previous inspections), if ava	ilable:					
	Water-Stained Leaves (B9) Aquatic Fauna (B13) Marl Deposits (B15) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Living Roots (C3) Presence of Reduced Iron (C4) Recent Iron Reduction in Tilled Soils (C6) Thin Muck Surface (C7) Other (Explain in Remarks) Depth (inches): Depth (inches): Depth (inches):					

		Dominant Species?		Sampling Point: AN11 Up
Tree Stratum (Plot size: 30')	Absolute	Rel.Strat.	Indicator	Dominance Test worksheet:
	% Cover		Status	Number of Dominant Species
1. Fagus grandifolia		22.2%	FACU	That are OBL, FACW, or FAC: 1 (A)
2. Acer saccharum	60	66.7%	FACU-	Total Number of Dominant
3. Quercus rubra	10	11.1%	FACU-	Species Across All Strata: 7 (B)
4	0	0.0%		Dercent of dominant Species
5	0	0.0%		Percent of dominant Species That Are OBL, FACW, or FAC:14.3% (A/B)
6	0	0.0%		
7	0	0.0%		Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: 15')	90	= Total Cove	r	Total % Cover of: Multiply by:
1. Quercus rubra	20	23.5%	FACU-	OBL species $0 \times 1 = 0$
2. Picea rubens	20	23.5%	FACU	FACW species $0 \times 2 = 0$
3. Betula alleghaniensis	15	17.6%	FAC	FAC species $18 \times 3 = 54$
4. Acer saccharum	10	11.8%	FACU-	FACU speci es 160 x 4 = 640
5. Ostrya virginiana	20	23.5%	FACU-	UPL species x 5 =50
6.	0	0.0%		Column Totals: <u>188</u> (A) <u>744</u> (B)
7.	0	0.0%		Prevalence Index = $B/A = 3.957$
	85	= Total Cove	r	
Herb Stratum (Plot size: 5')				Hydrophytic Vegetation Indicators:
1. Dennstaedtia punctilobula	10	✓ 76.9%	UPL	Dominance Test is $> 50\%$
2.Trientalis borealis	3	23.1%	FAC	Prevalence Index is $\leq 3.0^{1}$
3	0	0.0%		Prevalence index is 23.0 Morphological Adaptations ¹ (Provide supporting
4	0	0.0%		data in Remarks or on a separate sheet)
5	0	0.0%		Problematic Hydrophytic Vegetation ¹ (Explain)
6	0	0.0%		
7	0	0.0%		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
8	0	0.0%		
9	0	0.0%		Definitions of Vegetation Strata:
10	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter
11	0	0.0%		at breast height (DBH), regardless of height.
12	0	0.0%		Sapling/shrub - Woody plants less than 3 in. DBH and
Woody Vine Stratum (Plot size:)	13	= Total Cove	r	greater than 3.28 ft (1m) tall.
1	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of
	0	0.0%		size, and woody plants less than 3.28 ft tall.
3	0	0.0%		
4	0	0.0%		Woody vine - All woody vines greater than 3.28 ft in height.
7		= Total Cove	r	noight.
			•	
				Hydrophytic
				Vegetation Present? Yes O No •
				ricom.
Remarks: (Include photo numbers here or on a separate she	ot)			1
Remarks: (Include proto numbers here of on a separate she	el.)			

Profile Desc Depth	ription: (De	scribe to Matrix	the depth		t the indic dox Featu		nfirm the	absence of indicators.)		
(inches)	Color (%	Color (moist)		Type 1	Loc ²	Texture	Remarks	
0-4	10YR	3/2	100%					Loam		
4-5	2.5Y	4/1	100%					Fine Sandy Loam		
5-9	10YR	4/3	100%					Very Fine Sandy Loam		
9-15	10YR	4/6	100%					Very Fine Sandy Loam		
Type: C=Cor	ncentration. D)=Depletio	n. RM=Redu	iced Matrix, CS=Cover	ed or Coat	ed Sand Gra	ins ² Loca	ation: PL=Pore Lining. M=Mat	rix	
Hydric Soil	Indicators:							Indicators for Problem	natic Hydric Soils : ³	
Histosol	. ,			Polyvalue Belov MLRA 149B)	Polyvalue Below Surface (S8) (LRR R,			2 cm Muck (A10) (LRR K, L, MLRA 149B)		
_ ·	ipedon (A2)			Thin Dark Surface (S9) (LRR R, MLRA 149B)			A 149B)	Coast Prairie Redox (A16) (LRR K, L, R)		
Black His	n Sulfide (A4)	1		Loamy Mucky Mineral (F1) LRR K, L)				5 cm Mucky Peat or Peat (S3) (LRR K, L, R)		
	l Layers (A5)			Loamy Gleyed Matrix (F2)				Dark Surface (S7) (LRR K, L)		
Depleted Below Dark Surface (A11)		Depleted Matrix (F3)				Polyvalue Below Surface (S8) (LRR K, L) Thin Dark Surface (S9) (LRR K, L)				
Thick Dark Surface (A12)		Redox Dark Surface (F6) Depleted Dark Surface (F7)				☐ Iron-Manganese Masses (F12) (LRR K, L, R)				
			·	Redox Depressions (F8)				Soils (F19) (MLRA 149B)		
	leyed Matrix (edox (S5)	54)						Mesic Spodic (TA6) (MLRA 144A, 145, 149B)		
	Matrix (S6)							Red Parent Material (TF2)		
	face (S7) (LR	r r, mlra	4 149B)					Very Shallow Dark Surface (TF12) Other (Explain in Remarks)		
³ Indicators of	of hydrophytic	: vegetatio	on and wetla	nd hydrology must be p	present, ur	اess disturb،	ed or probl			
Restrictive I										
Type: B	•								\sim	
Depth (ind	ches): <u>15+</u>							Hydric Soil Present?	Yes 🔾 No 🖲	
Remarks:										



AN11 Upland



AN11 Wetland

Project/Site: Antrim Wind Project	City/County:	Antrim		Sam	Sampling Date: 12-Aug-11				
Applicant/Owner: Eolian Renewable Energy, LLC		Stat	te: NH	Sarr	npling Point:	an12 wetland			
Investigator(s): AF JG	Section, To	ownship, Range:	S.	т.	R.				
Landform (hillslope, terrace, etc.): Hillside	Local relief (co	oncave, convex, n	one): flat		Slope:	5.0 % / 2.9°			
Subregion (LRR or MLRA): Lat.:		Long.: Datum:							
Soil Map Unit Name:	8		NWI cla	assificatio	n: PSS				
	ntly disturbed? problematic? sampling p	•	explain any a	nswers in	Remarks.)				
Hydrophytic Vegetation Present?YesNoHydric Soil Present?YesNoWetland Hydrology Present?YesNo		Sampled Area a Wetland?	Yes 🖲 N	o ()					
Remarks: (Explain alternative procedures here or in a separate report Skiddered PSS	ort.)								

Wetland Hydrology Indicators:		Secondary Indicators (minimum of 2 required)			
Primary Indicators (minimum of one required;	Surface Soil Cracks (B6)				
Surface Water (A1)	Water-Stained Leaves (B9)	Drainage Patterns (B10)			
High Water Table (A2)	Aquatic Fauna (B13)	Moss Trim Lines (B16)			
Saturation (A3)	Marl Deposits (B15)	Dry Season Water Table (C2)			
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)			
Sediment Deposits (B2)	Oxidized Rhizospheres along Living Roots (C3)	Saturation Visible on Aerial Imagery (C9)			
Drift deposits (B3)	Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)			
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)			
Iron Deposits (B5)	Thin Muck Surface (C7)	Shallow Aquitard (D3)			
Inundation Visible on Aerial Imagery (B7)	Other (Explain in Remarks)	Microtopographic Relief (D4)			
Sparsely Vegetated Concave Surface (B8)		✓ FAC-neutral Test (D5)			
Field Observations:					
Surface Water Present? Yes O No 🖲	Depth (inches):				
Water Table Present? Yes O No O	Depth (inches):	·· • • •			
Saturation Present? (includes capillary fringe) Yes • No	Depth (inches):3	drology Present? Yes $ullet$ No $igodot$			
Describe Recorded Data (stream gauge, monited	pring well, aerial photos, previous inspections), if ava	ailable:			
Remarks:					

	11.5	Dominant Species?		Sampling Point: an12 wetland
Tree Stratum (Plot size:)	Absolute % Cover	Rel.Strat.	Indicator Status	Dominance Test worksheet:
<u> </u>	0	0.0%		Number of Dominant Species That are OBL, FACW, or FAC: 5 (A)
2.	0	0.0%		
3.	0	0.0%		Total Number of Dominant Species Across All Strata: 5 (B)
4.	0	0.0%		Species Across All Strata: (B)
5.	0	0.0%		Percent of dominant Species
6		0.0%		That Are OBL, FACW, or FAC:100.0% (A/B)
7		0.0%		Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: 15')		= Total Cove	r	Total % Cover of: Multiply by:
1. Spiraea alba	25	33.3%	FACW+	OBL species $15 \times 1 = 15$
2. Spiraea tomentosa	50	66.7%	FACW	FACW species 125 x 2 = 250
3		0.0%		FAC species $0 \times 3 = 0$
4		0.0%		FACU species $0 \times 4 = 0$
5.		0.0%		UPL species x 5 =
6.	0	0.0%		Column Totals: 140 (A) 265 (B)
7	0	0.0%		Prevalence Index = B/A = 1.893
1	-	= Total Cove		
Herb Stratum (Plot size: 5')	75			Hydrophytic Vegetation Indicators:
1.Carex crinita	15	23.1%	OBL	Rapid Test for Hydrophytic Vegetation
2.Onoclea sensibilis	25	38.5%	FACW	✓ Dominance Test is > 50%
3.Scirpus cyperinus		7.7%	FACW+	✓ Prevalence Index is \leq 3.0 ¹
4. Rubus hispidus	20	30.8%	FACW	Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
5.	0	0.0%		Problematic Hydrophytic Vegetation ¹ (Explain)
6.	0	0.0%		
7.	0	0.0%		¹ Indicators of hydric soil and wetland hydrology must
8.	0	0.0%		be present, unless disturbed or problematic.
9.	0	0.0%		Definitions of Vegetation Strata:
10.	0	0.0%		
11.	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
12.	0	0.0%		
Woody Vine Stratum (Plot size:)	65	= Total Cove	r	Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall
 1	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of
0	0	0.0%		size, and woody plants less than 3.28 ft tall.
3	0	0.0%		Monthanian Allowed and an encoder the encoder (
Δ	0	0.0%		Woody vine - All woody vines greater than 3.28 ft in height.
-T.,	-	= Total Cove		
			I	
				Hydrophytic Vegetation Present? Yes • No O
Remarks: (Include photo numbers here or on a separate she	et.)			

	ription: (Des		the depth	needed to a				onfirm the	e absence of indicators.)	
Depth (inches)	Color (r	Matrix moist)	_ %	Color (dox Featu			Texture	Remarks
0-3	10YR	3/2	100%		moisty		Type .	LUC	Loam	Kennarks
3-12		4/2		10/0	A / /	5%	C			
	2.5Y		95%	10YR	4/6			PL	Fine Sandy Loam	
12-16	2.5Y	4/1	95%	10YR	4/6	5%	С	М	Fine Sandy Loam	
										_
						_			P	
										·
		=Depletic	on. RM=Red	uced Matrix,	CS=Cover	ed or Coate	ed Sand Gr	ains ² Loo	cation: PL=Pore Lining. M=N	
Hydric Soil								_	Indicators for Probl	ematic Hydric Soils : ³
Histosol					value Belo A 149B)	w Surface ((S8) (LRR F	₹,	2 cm Muck (A10)	(LRR K, L, MLRA 149B)
	ipedon (A2)				,	face (S9) (I	LRR R, MLF	RA 149B)	Coast Prairie Red	ox (A16) (LRR K, L, R)
Black His	n Sulfide (A4)					Mineral (F1				or Peat (S3) (LRR K, L, R)
	Layers (A5)			🗌 Loar	ny Gleyed	Matrix (F2)	 		Dark Surface (S7)	
	Below Dark S	Surface (A	.11)	🗌 Depl	eted Matr	ix (F3)				Surface (S8) (LRR K, L)
	rk Surface (A1			_		urface (F6)			Thin Dark Surface	e (S9) (LRR K, L) Masses (F12) (LRR K, L, R)
Sandy M	uck Mineral (S	51)				Surface (F	7)			ain Soils (F19) (MLRA 149B)
Sandy GI	eyed Matrix (S	S4)		Redo	ox Depres	sions (F8)			_	6) (MLRA 144A, 145, 149B)
Sandy Re	edox (S5)								Red Parent Mater	
Stripped	Matrix (S6)								Very Shallow Darl	
Dark Sur	face (S7) (LRF	r r, mlra	A 149B)						Other (Explain in	Remarks)
³ Indicators c	of hydrophytic	vegetatio	on and wetla	nd hydrology	must be	present, un	less distur	oed or prob	plematic.	
Restrictive L	ayer (if obs	erved):								
Туре:	•	-								
Depth (ind	ches):								Hydric Soil Present?	Yes $lacksquare$ No $igodom$
Remarks:										

Project/Site: Antrim Wind Project		City/County: Antrim		Sampling Date: 12-Aug-11		
Applicant/Owner: Eolian Renewable E	nergy, LLC	St	tate: NH	Sampling Point:	an12 upland	
Investigator(s): AF JG		Section, Township, Range	: S. T.	R.		
Landform (hillslope, terrace, etc.):	Hillside	Local relief (concave, convex,	none): flat	Slope:	5.0 %/ 2.9 [°]	
Subregion (LRR or MLRA):	Lat.:	Lo	ng.:	Dat	um:	
Soil Map Unit Name:			NWI classi	fication:		
Are climatic/hydrologic conditions o Are Vegetation , Soil Are Vegetation , Soil Summary of Findings - At	, or Hydrology Significant , or Hydrology naturally p	ily disturbed? Are "Norm problematic? (If needed	(If no, explain ir al Circumstances" I, explain any answ ONS, transects	present? Yes (
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes No Yes No Yes No No	Is the Sampled Area within a Wetland?	Yes 🔿 No 🖲			
Remarks: (Explain alternative proc	edures here or in a separate repo	rt.)				

abaak all that apply)	Secondary Indicators (minimum of 2 required)					
Primary Indicators (minimum of one required; check all that apply)						
Water-Stained Leaves (B9)	Drainage Patterns (B10)					
Aquatic Fauna (B13)	Moss Trim Lines (B16)					
Marl Deposits (B15)	Dry Season Water Table (C2)					
Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)					
Oxidized Rhizospheres along Living Roots (C3)	Saturation Visible on Aerial Imagery (C9)					
Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)					
Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)					
Thin Muck Surface (C7)	Shallow Aquitard (D3)					
Other (Explain in Remarks)	Microtopographic Relief (D4)					
(FAC-neutral Test (D5)					
Depth (inches):						
Depth (inches):	vdrology Present? Yes \bigcirc No \odot					
Wetland Hy Depth (inches):	ydrology Present? Yes \bigcirc No \bigcirc					
pring well, aerial photos, previous inspections), if a	vailable:					
	Water-Stained Leaves (B9) Aquatic Fauna (B13) Marl Deposits (B15) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Living Roots (C3) Presence of Reduced Iron (C4) Recent Iron Reduction in Tilled Soils (C6) Thin Muck Surface (C7) Other (Explain in Remarks) Depth (inches): Depth (inches): Depth (inches):					

	ints	Dominant Species?		Sampling Point: an12 upland
Tree Stratum (Plot size: 30')	Absolute % Cover	Rel.Strat.	Indicator Status	Dominance Test worksheet:
1. Quercus rubra	15	60.0%	FACU-	Number of Dominant Species That are OBL, FACW, or FAC: 1 (A)
2. Tsuga canadensis		40.0%	FACU	
3.		0.0%		Total Number of Dominant
4.	0	0.0%		Species Across All Strata:6 (B)
5.	0	0.0%		Percent of dominant Species
6.	0	0.0%		That Are OBL, FACW, or FAC:(A/B)
7		0.0%		Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: 15')		= Total Cove	r	Total % Cover of: Multiply by:
				OBL species 0 x 1 = 0
1. Acer pensylvanicum		✓ 44.4%	FACU	FACW species $0 \times 2 = 0$
2. Betula alleghaniensis		22.2%	FAC	FAC species $10 \times 3 = 30$
3. Acer saccharum		33.3%	FACU-	FACU species $\frac{88}{352}$ x 4 = $\frac{352}{352}$
4	0	0.0%		00 450
5	0	0.0%		
б	0	0.0%		Column Totals: <u>188</u> (A) <u>832</u> (B)
7	0	0.0%		Prevalence Index = B/A = 4.426
Herb Stratum (Plot size: 5')	45	= Total Cove	r	Hydrophytic Vegetation Indicators:
1. Dennstaedtia punctilobula	90	76.3%	UPL	Rapid Test for Hydrophytic Vegetation
2.Solidago canadensis	10	8.5%	FACU	Dominance Test is > 50%
3.Rubus alumnus	10	8.5%	FACU-	Prevalence Index is \leq 3.0 ¹
4. Dryopteris intermedia	5	4.2%	FACU	Morphological Adaptations ¹ (Provide supporting
5.Aralia nudicaulis	3	2.5%	FACU	data in Remarks or on a separate sheet)
6.	0	0.0%	1400	Problematic Hydrophytic Vegetation ¹ (Explain)
7		0.0%		¹ Indicators of hydric soil and wetland hydrology must
8	0	0.0%		be present, unless disturbed or problematic.
9.	0	0.0%		Definitions of Vegetation Strata:
10.	0	0.0%		
11.	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
12.	0	0.0%		a breast height (DDH), regardless of height.
12		= Total Cove	r	Sapling/shrub - Woody plants less than 3 in. DBH and
Woody Vine Stratum (Plot size:)				greater than 3.28 ft (1m) tall
1	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
2	0	0.0%		
3	0	0.0%		Woody vine - All woody vines greater than 3.28 ft in
4	0	0.0%		height.
	0	= Total Cove	r	
				Hydrophytic Vegetation
				Present? Yes O No 🖲
Remarks: (Include photo numbers here or on a separate sh	eet.)			

Profile Desc Depth	•	cribe to Matrix	the depth	needed to document the indicator or confirm the Redox Features	he absence of indicators.)	
(inches)	Color (n	noist)	%	Color (moist) % Type 1 Loc	² Texture	Remarks
0-4	10YR	3/2	100%		Loam	
4-5	2.5Y	5/1	100%		Fine Sandy Loam	
5-12	10YR	4/3	100%		Fine Sandy Loam	
		1/0	10070			
						-
¹ Type: C=Co	ncentration. D=	=Depletio	n. RM=Red	uced Matrix, CS=Covered or Coated Sand Grains ² L	ocation: PL=Pore Lining. M=I	Matrix
Hydric Soil	Indicators:				Indicators for Prob	lematic Hydric Soils : ³
Histosol	(A1)			Polyvalue Below Surface (S8) (LRR R,		(LRR K, L, MLRA 149B)
🗌 Histic Ep	ipedon (A2)			MLRA 149B)	Casat Drairia Dad	lox (A16) (LRR K, L, R)
Black His	stic (A3)			☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)		or Peat (S3) (LRR K, L, R)
Hydroge	n Sulfide (A4)			Loamy Mucky Mineral (F1) LRR K, L)	Dark Surface (S7	
_	Layers (A5)			Loamy Gleyed Matrix (F2)		Surface (S8) (LRR K, L)
	Below Dark S		11)	Depleted Matrix (F3)		e (S9) (LRR K, L)
Thick Da	rk Surface (A1	2)		Redox Dark Surface (F6)		Masses (F12) (LRR K, L, R)
	uck Mineral (S			Depleted Dark Surface (F7)		lain Soils (F19) (MLRA 149B)
_	leyed Matrix (S	54)		Redox Depressions (F8)		6) (MLRA 144A, 145, 149B)
	edox (S5)				Red Parent Mater	rial (TF2)
	Matrix (S6)				Very Shallow Dar	k Surface (TF12)
Dark Sur	face (S7) (LRR	R, MLRA	(149B)		Other (Explain in	Remarks)
³ Indicators of	of hydrophytic	vegetatio	n and wetla	nd hydrology must be present, unless disturbed or pr	oblematic.	
Restrictive I	Layer (if obse	erved):				
Type:						
Depth (in	ches):				Hydric Soil Present?	Yes 🔾 No 🖲
Remarks:						
Remarks.						



AN12 Upland



AN12 Wetland

					•		
Project/Site: Antrim Wind Project		City/County:	Antrim		Sampling Date: 1	2-Aug-11	
Applicant/Owner: Eolian Renewable E	nergy, LLC		Stat	te: NH	Sampling Point:	an13 wetland	
Investigator(s): AF JG		Section, T	ownship, Range:	S. Т.	R.		
Landform (hillslope, terrace, etc.):	Footslope	Local relief (c	oncave, convex, n	one): flat	Slope:	3.0%/1.	
Subregion (LRR or MLRA):	Lat.:	_	Long	.:	Dat	tum:	
Soil Map Unit Name:				NWI classi	ification: PSS		
Are Vegetation, Soil Summary of Findings - At		problematic? sampling p	•		vers in Remarks.) 5, important f e	eatures, etc.	
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes ● No Yes ● No Yes ● No		e Sampled Area n a Wetland?	Yes 🖲 No 🤇	C		
Remarks: (Explain alternative pro Isolated lay down yard wetland ac		ort.)					

Wetland Hydrology Indicators:		Secondary Indicators (minimum of 2 required)
Primary Indicators (minimum of one required;	check all that apply)	Surface Soil Cracks (B6)
Surface Water (A1)	Water-Stained Leaves (B9)	✓ Drainage Patterns (B10)
High Water Table (A2)	Aquatic Fauna (B13)	Moss Trim Lines (B16)
Saturation (A3)	Marl Deposits (B15)	Dry Season Water Table (C2)
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)
Sediment Deposits (B2)	Oxidized Rhizospheres along Living Roots (C3)	Saturation Visible on Aerial Imagery (C9)
Drift deposits (B3)	Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)
Iron Deposits (B5)	Thin Muck Surface (C7)	Shallow Aquitard (D3)
Inundation Visible on Aerial Imagery (B7)	Other (Explain in Remarks)	Microtopographic Relief (D4)
Sparsely Vegetated Concave Surface (B8)		FAC-neutral Test (D5)
Field Observations:		
Surface Water Present? Yes O No •	Depth (inches):	
Water Table Present? Yes O No •	Depth (inches):	vdrology Present? Yes 💿 No 🔿
Saturation Present? (includes capillary fringe) Yes • No	Wetland Hy Depth (inches):3	ydrology Present? Yes 🔍 No 🔾
Describe Recorded Data (stream gauge, monit	oring well, aerial photos, previous inspections), if av	/ailable:
Remarks:		

		Dominant Species?		Sampling Point: an13 wetland
Tree Stratum (Plot size:)	Absolute % Cover	Rel.Strat.	Indicator Status	Dominance Test worksheet:
	0	0.0%		Number of Dominant Species That are OBL, FACW, or FAC: 3 (A)
2.		0.0%		
		0.0%		Total Number of Dominant
3	0			Species Across All Strata: <u>3</u> (B)
4		0.0%		Percent of dominant Species
5		0.0%		That Are OBL, FACW, or FAC:100.0% (A/B)
6		0.0%		
7	0	0.0%		Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: 15')	0	= Total Cove	r	Total % Cover of: Multiply by: 0BL speci es 53 x 1 = 53
1. Spiraea tomentosa	66	72.5%	FACW	FACW species $107 \times 2 = 214$
2. Acer rubrum	10	11.0%	FAC	
3. Spiraea alba	15	16.5%	FACW+	
4.	0	0.0%		FACU species $0 \times 4 = 0$
5.		0.0%		UPL species $0 \times 5 = 0$
6.	0	0.0%		Column Totals: <u>170</u> (A) <u>297</u> (B)
7.	0	0.0%		Prevalence Index = B/A =1.747
Herb Stratum (Plot size: 5')	91	= Total Cove	r	Hydrophytic Vegetation Indicators:
· · · · · _ · _				Rapid Test for Hydrophytic Vegetation
1.Carex lurida		10.1%	OBL	✓ Dominance Test is > 50%
2.Onoclea sensibilis		6.3%	FACW	✓ Prevalence Index is $\leq 3.0^{1}$
3.Eupatorium perfoliatum	3	3.8%	FACW+	Morphological Adaptations ¹ (Provide supporting
4. Rubus hispidus		19.0%	FACW	data in Remarks or on a separate sheet)
5.Carex crinita	25	⊻ 31.6%	OBL	Problematic Hydrophytic Vegetation ¹ (Explain)
6. Scirpus cyperinus	3	3.8%	FACW+	1
7.Carex trisperma	20	25.3%	OBL	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
8	0	0.0%		
9	0	0.0%		Definitions of Vegetation Strata:
10	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter
11	0	0.0%		at breast height (DBH), regardless of height.
12	0	0.0%		Sapling/shrub - Woody plants less than 3 in. DBH and
Woody Vine Stratum (Plot size:)	79	= Total Cove	r	greater than 3.28 ft (1m) tall.
<u> </u>	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of
2	0	0.0%		size, and woody plants less than 3.28 ft tall.
3	0	0.0%		Woody vine - All woody vines greater than 3.28 ft in
4.	0	0.0%		height.
	0	= Total Cove	r	
				Hydrophytic Vegetation Present? Yes • No O
Remarks: (Include photo numbers here or on a separate sh	eet.)			

	ription: (De	scribe to	the depth	needed to	document	t the indic	ator or co	onfirm the	absence of indicators.)				
Depth (inches)	Calar (Matrix	- %	- Color (dox Featu %			Texture	Dom	narks		
	Color (COIOF	(moist)	70	Туре	Loc ²		Ren	101 KS		
0-5	10YR	3/2	100%		·				Loam				
5-6	2.5Y	4/1	100%						Fine Sandy Loam				
6-16	2.5Y	4/2	90%	10YR	5/8	10%	С	Μ	Fine Sandy Loam				
					·								
					·								
¹ Type: C=Cor	ncentration. D	=Depletic	on. RM=Red	uced Matrix,	CS=Cover	ed or Coate	ed Sand Gra	ains ² Loca	ation: PL=Pore Lining. M=N	latrix			
Hydric Soil									Indicators for Probl	ematic Hydri	c Soils: ³		
Histosol					value Belo A 149B)	w Surface	(S8) (LRR F	R,	2 cm Muck (A10)				
	ipedon (A2)					ace (S9) (I	lrr r, mlf	A 149B)	Coast Prairie Redo	ox (A16) (LRR I	K, L, R)		
Black His) LRR K, L)		5 cm Mucky Peat	or Peat (S3) (L	RR K, L, R)		
	n Sulfide (A4) I Layers (A5)					Matrix (F2)			Dark Surface (S7)				
	Below Dark S	Surface (A	.11)		leted Matri				Polyvalue Below S				
	rk Surface (A		,	Red	ox Dark Su	irface (F6)			☐ Thin Dark Surface (S9) (LRR K, L) ☐ Iron-Manganese Masses (F12) (LRR K, L, R)				
	uck Mineral (S			Dep	leted Dark	Surface (F	7)		 Piedmont Floodplain Soils (F12) (LKK K, L, K) Piedmont Floodplain Soils (F19) (MLRA 149B) 				
	eyed Matrix (Red	ox Depress	sions (F8)			Mesic Spodic (TA6) (MLRA 144A, 145, 149B)				
Sandy Re	edox (S5)								Red Parent Material (TF2)				
Stripped	Matrix (S6)								Very Shallow Dark		2)		
Dark Sur	face (S7) (LR	R R, MLRA	A 149B)						Other (Explain in	Remarks)			
³ Indicators of	of hydrophytic	vegetatio	on and wetla	nd hydrolog	y must be p	present, un	less disturb	bed or probl	lematic.				
Restrictive I	_ayer (if obs	erved):											
Type: b	oulders										\sim		
Depth (ind	ches): 16								Hydric Soil Present?	Yes 🖲	No 🔿		
Remarks:													

Project/Site: Antrim Wind Project		City/County: Antrim		Sampling Date: 1	2-Aug-11
Applicant/Owner: Eolian Renewable E	Energy, LLC		State: NH	Sampling Point:	an13 upland
Investigator(s): AF JG		Section, Township, Rang	e: S. T.	R.	
Landform (hillslope, terrace, etc.):	Footslope	Local relief (concave, convex	, none): flat	Slope:	4.0 % / 2.3°
Subregion (LRR or MLRA):	Lat.:	Le	ong.:	Dat	um:
Soil Map Unit Name:			NWI classi	fication:	-
Are climatic/hydrologic conditions of Are Vegetation , Soil Are Vegetation , Soil Summary of Findings - At	, or Hydrology Significant	tly disturbed? Are "Norn problematic? (If neede	(If no, explain ir nal Circumstances" d, explain any answ ONS, transects	present? Yes	
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes ○ No ● Yes ○ No ● Yes ○ No ●	Is the Sampled Area within a Wetland?	Yes 🔿 No 🤇	D	
Remarks: (Explain alternative pro	ocedures here or in a separate repo	ort.)			

Wetland Hydrology Indicators:		Secondary Indicators (minimum of 2 required)	
Primary Indicators (minimum of one required;	Surface Soil Cracks (B6)		
Surface Water (A1)	Water-Stained Leaves (B9)	Drainage Patterns (B10)	
High Water Table (A2)	Aquatic Fauna (B13)	Moss Trim Lines (B16)	
Saturation (A3)	Marl Deposits (B15)	Dry Season Water Table (C2)	
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)	
Sediment Deposits (B2)	Oxidized Rhizospheres along Living Roots (C3)	Saturation Visible on Aerial Imagery (C9)	
Drift deposits (B3)	Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)	
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)	
Iron Deposits (B5)	Thin Muck Surface (C7)	Shallow Aquitard (D3)	
Inundation Visible on Aerial Imagery (B7)	Other (Explain in Remarks)	Microtopographic Relief (D4)	
Sparsely Vegetated Concave Surface (B8)		FAC-neutral Test (D5)	
Field Observations:			
Surface Water Present? Yes O No 🖲	Depth (inches):		
Water Table Present? Yes O No 🖲	Depth (inches):	Iroloay Present? Yes 🔿 No 🖲	
Saturation Present? Yes O No O	Depth (inches):	Irology Present? Yes 🔾 No 🖲	
Describe Recorded Data (stream gauge, monito	pring well, aerial photos, previous inspections), if ava	ilable:	
Remarks:			

	1113	Dominant Species?		Sampling Point: an13 upland
Tree Stratum (Plot size: 30')	Absolute % Cover	Rel.Strat.	Indicator Status	Dominance Test worksheet:
1 Accession	10	66.7%	FACU-	Number of Dominant Species That are OBL, FACW, or FAC: 1 (A)
	5	33.3%	FACU	
-		0.0%	1700	Total Number of Dominant
				Species Across All Strata: <u>6</u> (B)
4	0	0.0%		Percent of dominant Species
5		0.0%		That Are OBL, FACW, or FAC:(A/B)
6		0.0%		
7	0	0.0%		Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: 15')	15	= Total Cove	r	Total % Cover of: Multiply by: 0BL species 0 x 1 = 0
1. Acer pensylvanicum	33	32.0%	FACU	
2. Prunus serotina	10	9.7%	FACU	
3. Acer saccharum		✔ 48.5%	FACU-	FAC species $0 \times 3 = 0$
4. Populus tremula		9.7%	FACU	FACU species x 4 =772
5.		0.0%		UPL species $5 \times 5 = 25$
6	•	0.0%		Column Totals: 218 (A) 837 (B)
7	0			·
		0.0% = Total Cove		Prevalence Index = B/A = <u>3.839</u>
Herb Stratum (Plot size: 5')	103	- 10101 0010		Hydrophytic Vegetation Indicators:
1.Aralia nudicaulis	75	75.0%	FACU	Rapid Test for Hydrophytic Vegetation
2 Dukus kienidus		20.0%	FACW	Dominance Test is > 50%
2		5.0%	UPL	Prevalence Index is \leq 3.0 1
Λ		0.0%		Morphological Adaptations ¹ (Provide supporting
F				data in Remarks or on a separate sheet)
		0.0%		Problematic Hydrophytic Vegetation ¹ (Explain)
6	0	0.0%		
7	0	0.0%		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
8	0	0.0%		
9	0	0.0%		Definitions of Vegetation Strata:
10	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter
11	0	0.0%		at breast height (DBH), regardless of height.
12	0	0.0%		Conting/shouth Mission plants loss than 2 in DDU and
Woody Vine Stratum (Plot size:)	100	= Total Cove	r	Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall
<u> </u>	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of
0	0	0.0%		size, and woody plants less than 3.28 ft tall.
3	0	0.0%		
J	0	0.0%		Woody vine - All woody vines greater than 3.28 ft in height.
4		-		
	0	= Total Cove	r	
				Hydrophytic
				Vegetation Present? Yes No •
				Present? Yes V NO
				1
Remarks: (Include photo numbers here or on a separate she	et.)			

	ription: (Des		the depth	needed to document the indicator or confirm the	absence of indicators.)	
Depth (inches)	Color (r	Matrix	_ %	Redox Features Color (moist) % Type 1 Loc ²	Texture	Remarks
0-6	10YR	3/2	100%		Loam	Kennarks
6-7						
	2.5Y	5/1	100%		Fine Loamy Sand	
7-17	10YR	4/3	100%		Fine Sandy Loam	
					<u></u>	
¹ Type: C=Cor	ncentration. D	=Depletic	on. RM=Red	uced Matrix, CS=Covered or Coated Sand Grains ² Loc.	ation: PL=Pore Lining. M=N	latrix
Hydric Soil					Indicators for Probl	ematic Hydric Soils : ³
Histosol				Polyvalue Below Surface (S8) (LRR R, MLRA 149B)		(LRR K, L, MLRA 149B)
	ipedon (A2)			Thin Dark Surface (S9) (LRR R, MLRA 149B)	Coast Prairie Rede	ox (A16) (LRR K, L, R)
Black His				Loamy Mucky Mineral (F1) LRR K, L)	5 cm Mucky Peat	or Peat (S3) (LRR K, L, R)
	n Sulfide (A4) Layers (A5)			Loamy Gleyed Matrix (F2)	Dark Surface (S7)	(LRR K, L)
	Below Dark S	Surfaco (A	11)	Depleted Matrix (F3)		urface (S8) (LRR K, L)
	rk Surface (A1			Redox Dark Surface (F6)	Thin Dark Surface	
	uck Mineral (S			Depleted Dark Surface (F7)		Masses (F12) (LRR K, L, R)
	eyed Matrix (S			Redox Depressions (F8)		ain Soils (F19) (MLRA 149B)
Sandy Re					Red Parent Mater	5) (MLRA 144A, 145, 149B) al (TE2)
	Matrix (S6)				Very Shallow Dark	
Dark Sur	face (S7) (LRF	r R, MLRA	A 149B)		Other (Explain in	
³ Indicators of	of hydrophytic	vegetatio	n and wetla	and hydrology must be present, unless disturbed or prob		
Restrictive I						
Type:		erveu).				
Depth (ind	ches).				Hydric Soil Present?	Yes 🔾 No 🖲
Remarks:						
Reindiks.						



AN13 Upland



AN13 Wetland

Project/Site: Antrim Wind Project		City/County:	Antrim				Sampling Date: 1	6-Aug-11	
Applicant/Owner: Eolian Renewable Energy, LLC				State:	NH		Sampling Point:	an14 wet	land
Investigator(s): AF JG		Section, T	ownship, Rar	nge: S.		т.	R.		
Landform (hillslope, terrace, etc.): Hillside		Local relief (c	oncave, conv	ex, non	e): flat		Slope:	10.0 % /	5.7°
Subregion (LRR or MLRA):	Lat .:			Long.:			Dat	um:	
Soil Map Unit Name:					NWI	classif	ication: PSS		
	gnificant aturally p	ly disturbed?	(If need	rmal Cii led, exp	rcumstar olain any	nces" p answe	ers in Remarks.)		etc.
Hydrophytic Vegetation Present?YesNoHydric Soil Present?YesNoWetland Hydrology Present?YesNo			e Sampled Are n a Wetland?		Yes 🖲	No C)		
Remarks: (Explain alternative procedures here or in a separ Isolated PSS within skidder trail	rate repo	rt.)							

Wetland Hydrology Indicators:		Secondary Indicators (minimum of 2 required)	
Primary Indicators (minimum of one required;	Surface Soil Cracks (B6)		
Surface Water (A1)	Drainage Patterns (B10)		
High Water Table (A2)	Water-Stained Leaves (B9) Aquatic Fauna (B13)	Moss Trim Lines (B16)	
Saturation (A3)	Marl Deposits (B15)	Dry Season Water Table (C2)	
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)	
Sediment Deposits (B2)	 Available of the output of the	Saturation Visible on Aerial Imagery (C9)	
Drift deposits (B3)	Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)	
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)	
Iron Deposits (B5)	Thin Muck Surface (C7)	Shallow Aquitard (D3)	
Inundation Visible on Aerial Imagery (B7)		Microtopographic Relief (D4)	
Sparsely Vegetated Concave Surface (B8)	Uther (Explain in Remarks)	✓ FAC-neutral Test (D5)	
()			
Field Observations:			
Surface Water Present? Yes O No O	Depth (inches):		
Water Table Present? Yes O No 🔍	Depth (inches):		
Saturation Present? (includes capillary fringe) Yes	Depth (inches): 0	Irology Present? Yes 🔍 No 🔾	
Describe Recorded Data (stream gauge, monitor	pring well, aerial photos, previous inspections), if ava	ilable:	
Remarks:			
sphagnum 25% cover			
L			

	113	Dominant Species?		Sampling Point: an14 wetland
Tree Stratum (Plot size:)	Absolute % Cover	Rel.Strat.	Indicator Status	Dominance Test worksheet:
	0	0.0%		Number of Dominant Species That are OBL, FACW, or FAC: 4 (A)
1 2.	0	0.0%		That are OBL, FACW, or FAC: (A)
				Total Number of Dominant
3	0	0.0%		Species Across All Strata: 4 (B)
4		0.0%		Demonst of deminant Crossies
5		0.0%		Percent of dominant Species That Are OBL, FACW, or FAC:100.0% (A/B)
6	0	0.0%		
7	0	0.0%		Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: 15')	0	= Total Cove	r	Total % Cover of: Multiply by: OBL species 15 x 1 = 15
1. Spiraea tomentosa	20	57.1%	FACW	
2. Acer rubrum	10	28.6%	FAC	
3. Fraxinus pennsylvanica	5	14.3%	FACW	
4.	-	0.0%		FACU species $0 \times 4 = 0$
5.		0.0%		UPL species $\underbrace{0}{}$ x 5 = $\underbrace{0}{}$
6.	0	0.0%		Column Totals: 121 (A) 245 (B)
7.	0	0.0%		Prevalence Index = B/A = 2.025
-	35	= Total Cove	r	
Herb Stratum (Plot size: 5')				Hydrophytic Vegetation Indicators:
1. Onoclea sensibilis	40	46.5%	FACW	Rapid Test for Hydrophytic Vegetation
2.Osmunda cinnamomea	10	11.6%	FACW	✓ Dominance Test is > 50%
3. Eupatoriadelphus maculatus	8	9.3%	FACW	✓ Prevalence Index is \leq 3.0 ¹
4. Scirpus cyperinus	_	5.8%	FACW+	Morphological Adaptations ¹ (Provide supporting
5.Carex lurida	15	17.4%	OBL	data in Remarks or on a separate sheet)
6.Rubus idaeus	8	9.3%	FAC-	Problematic Hydrophytic Vegetation ¹ (Explain)
7.	0	0.0%		¹ Indicators of hydric soil and wetland hydrology must
8.				be present, unless disturbed or problematic.
8 9.	0			Definitions of Vegetation Strata:
10.	0	0.0%		
	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter
11	0	0.0%		at breast height (DBH), regardless of height.
12	0	0.0%		Sapling/shrub - Woody plants less than 3 in. DBH and
_Woody Vine Stratum _ (Plot size:)	86	= Total Cove	r	greater than 3.28 ft (1m) tall
1	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of
2	0	0.0%		size, and woody plants less than 3.28 ft tall.
3	0	0.0%		Woody vine - All woody vines greater than 3.28 ft in
4	0	0.0%		height.
	0	= Total Cove	r	
				Hydrophytic
				Vegetation
				Present? Yes • No
Remarks: (Include photo numbers here or on a separate she	et.)			

Depth		Matrix	the depth	needed to document the indicator or confirm the Redox Features	absence of indicators.)	
(inches)	Color (n	noist)	%	Color (moist) % Type 1 Loc ²	Texture	Remarks
0-8	10YR	3/2	100%		Sandy Loam	
8-11	2.5Y	5/1	100%		Sandy Loam	
					-	
	ncentration D-	-Donlatio	n PM-Pod	uced Matrix, CS=Covered or Coated Sand Grains ² Loc	ation: DI – Pore Lining M–Ma	triv
	Indicators:	- Depieti0	Kwi-Keu			
Histosol				Polyvalue Below Surface (S8) (LRR R,		matic Hydric Soils : ³
_	vipedon (A2)			MLRA 149B)		RR K, L, MLRA 149B)
Black His				Thin Dark Surface (S9) (LRR R, MLRA 149B)	_	(A16) (LRR K, L, R)
	n Sulfide (A4)			Loamy Mucky Mineral (F1) LRR K, L)		Peat (S3) (LRR K, L, R)
	l Layers (A5)			Loamy Gleyed Matrix (F2)	Dark Surface (S7) (
✓ Depleted	Below Dark S	urface (A	11)	Depleted Matrix (F3)	Thin Dark Surface (rface (S8) (LRR K, L)
Thick Da	irk Surface (A1	2)		Redox Dark Surface (F6)	_	usses (F12) (LRR K, L, R)
Sandy M	uck Mineral (S	1)		Depleted Dark Surface (F7)		n Soils (F19) (MLRA 149B)
Sandy G	leyed Matrix (S	(4)		Redox Depressions (F8)		(MLRA 144A, 145, 149B)
	edox (S5)				Red Parent Material	
	Matrix (S6)				Very Shallow Dark S	Surface (TF12)
Dark Sur	face (S7) (LRR	R, MLRA	149B)		Other (Explain in Re	emarks)
³ Indicators	of hydrophytic	vegetatio	n and wetla	nd hydrology must be present, unless disturbed or prob	ematic.	
Restrictive	Layer (if obse	erved):				
Type: b						
Depth (in	ches): 11				Hydric Soil Present?	Yes $ullet$ No $igodot$
Remarks:						
Komuno.						

Project/Site: Antrim Wind Project		City/County: Antrim		Sampling Date: 1	6-Aug-11
Applicant/Owner: Eolian Renewable E	nergy, LLC	S	itate: NH	Sampling Point:	AN14 Upland
Investigator(s): AF JG		Section, Township, Range	e: S. T.	R.	
Landform (hillslope, terrace, etc.):	Hillside	Local relief (concave, convex	, none): flat	Slope:	10.0 % / 5.7°
Subregion (LRR or MLRA):	Lat.:	Lo	ong.:	Dat	um:
Soil Map Unit Name:			NWI classif	fication:	-
Are climatic/hydrologic conditions of Are Vegetation , Soil Are Vegetation , Soil Summary of Findings - At	, or Hydrology Significant	tly disturbed? Are "Norm problematic? (If needed	(If no, explain ir) ا Circumstances) d, explain any answ DNS, transects	present? Yes	
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes O No O Yes No O Yes No O	Is the Sampled Area within a Wetland?	Yes 🔿 No 🖲)	
Remarks: (Explain alternative pro logged upland	cedures here or in a separate repo	rt.)			

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VEGETATION - Use scientific names of pra	ants	Dominant Species?		Sampling Point: AN14 Upland
Tree Stratum (Plot size: <u>30'</u>)	Absolute % Cover		Indicator Status	Dominance Test worksheet:
1. Picea rubens	20	50.0%	FACU	Number of Dominant Species That are OBL, FACW, or FAC: 1 (A)
2. Populus tremula		✓ 50.0%	FACU	
3.		0.0%		Total Number of Dominant Species Across All Strata: 4 (B)
4.	0	0.0%		Species Across All Strata: (B)
5.	0	0.0%		Percent of dominant Species
6.	0	0.0%		That Are OBL, FACW, or FAC:(A/B)
7	0	0.0%		Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: 15')		= Total Cove	r	Total % Cover of: Multiply by:
				OBL species 0 x 1 = 0
1. Acer pensylvanicum		83.3%	FACU	FACW species $0 \times 2 = 0$
2. Acer saccharum		16.7%	FACU-	FAC species $30 \times 3 = 90$
3	0	0.0%		FACU speci es 93 x 4 = 372
4	0	0.0%		UPL species $0 \times 5 = 0$
5	0	0.0%		
0	0	0.0%		Column Totals: 123 (A) 462 (B)
7				Prevalence Index = B/A =3.756
Herb Stratum (Plot size: 5')	48	= Total Cove	r	Hydrophytic Vegetation Indicators:
1. Thelypteris noveboracensis	25	✓ 71.4%	FAC	Rapid Test for Hydrophytic Vegetation
2.Aralia nudicaulis	5	14.3%	FACU	Dominance Test is > 50%
3. Trientalls borealls	<u>5</u>	14.3%	FAC	□ Prevalence Index is \leq 3.0 ¹
4.	_ <u>_</u> 0	0.0%		Morphological Adaptations ¹ (Provide supporting
5.	0	0.0%		data in Remarks or on a separate sheet)
6.	0	0.0%		Problematic Hydrophytic Vegetation ¹ (Explain)
7.				¹ Indicators of hydric soil and wetland hydrology must
8.				be present, unless disturbed or problematic.
8 9.	0			Definitions of Vegetation Strata:
9 10.	0			
10 11.	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter
12.		0.0%		at breast height (DBH), regardless of height.
12	0	0.0% = Total Cove		Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall
Woody Vine Stratum (Plot size:)		_		
1	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
2				
3		0.0%		Woody vine - All woody vines greater than 3.28 ft in
4	0	0.0%		height.
	0	= Total Cove	r	
				Hydrophytic
				Vegetation Present? Yes O No •
Remarks: (Include photo numbers here or on a separate sh	neet)			
Remarks. (menude proto numbers nere or on a separate sr				

Depth	•	atrix	h needed to document the indicator or confirm the Redox Features	absence of indicators.)	
(inches)	Color (moi	st) %	Color (moist) % Type 1 Loc ²	Texture	Remarks
0-5	10YR	3/2 100%		Sandy Loam	
5-10	2.5Y	5/3 100%		Loamy Sand	
¹ Type: C=Cor	ncentration D=D	enletion RM=Re	duced Matrix, CS=Covered or Coated Sand Grains ² Loca	ation: PI =Pore Lining M=1	 Matrix
Hydric Soil					2
Histosol			Polyvalue Below Surface (S8) (LRR R,		ienatic rigune sons .
	ipedon (A2)		MLRA 149B)		(LRR K, L, MLRA 149B)
Black His			Thin Dark Surface (S9) (LRR R, MLRA 149B)		ox (A16) (LRR K, L, R)
	n Sulfide (A4)		Loamy Mucky Mineral (F1) LRR K, L)	Dark Surface (S7	or Peat (S3) (LRR K, L, R)
Stratified	l Layers (A5)		Loamy Gleyed Matrix (F2)		Surface (S8) (LRR K, L)
Depleted	Below Dark Surf	ace (A11)	Depleted Matrix (F3)		e (S9) (LRR K, L)
Thick Da	rk Surface (A12)		Redox Dark Surface (F6)		Masses (F12) (LRR K, L, R)
Sandy M	uck Mineral (S1)		Depleted Dark Surface (F7)		ain Soils (F19) (MLRA 149B)
	leyed Matrix (S4)		Redox Depressions (F8)		6) (MLRA 144A, 145, 149B)
	edox (S5)			Red Parent Mater	ial (TF2)
	Matrix (S6)			Very Shallow Dar	k Surface (TF12)
Dark Sur	face (S7) (LRR R,	MLRA 149B)		Other (Explain in	Remarks)
³ Indicators of	of hydrophytic veg	getation and wet	land hydrology must be present, unless disturbed or probl	ematic.	
Restrictive I	Layer (if observ	ed):			
Туре:					
Depth (in	ches):			Hydric Soil Present?	Yes 🔾 No 🖲
Remarks:					



AN14 Wetland



AN14 Upland

Project/Site: Antrim Wind Project	City/County:	Antrim		Sampling Date: 1	l6-Aug-11 an15 wetland		
Applicant/Owner: Eolian Renewable Energy, LLC		State:	NH	Sampling Point:			
Investigator(s): AF JG	Section, T	Section, Township, Range: S. T. R.					
Landform (hillslope, terrace, etc.): Hillside	Local relief (c	oncave, convex, nor	e): concave	Slope:	8.0 % / 4.6°		
Subregion (LRR or MLRA): Lat.:		Long.:		Dat	um:		
Soil Map Unit Name:	<u>1</u>		NWI classif	ication: PSS			
	ntly disturbed? problematic? sampling p	•	olain any answ	ers in Remarks.)			
Hydrophytic Vegetation Present? Yes ● No ○ Hydric Soil Present? Yes ● No ○ Wetland Hydrology Present? Yes ● No ○		e Sampled Area n a Wetland?	Yes 🔍 No 🔇)			
Remarks: (Explain alternative procedures here or in a separate report of the separate repor	ort.)						

Wetland Hydrology Indicators:		Secondary Indicators (minimum of 2 required)
Primary Indicators (minimum of one required;	check all that apply)	Surface Soil Cracks (B6)
Surface Water (A1)		Drainage Patterns (B10)
✓ High Water Table (A2)	Water-Stained Leaves (B9)	
	Aquatic Fauna (B13)	Moss Trim Lines (B16)
Saturation (A3)	Marl Deposits (B15)	Dry Season Water Table (C2)
	Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)
Sediment Deposits (B2)	Oxidized Rhizospheres along Living Roots (C3)	Saturation Visible on Aerial Imagery (C9)
Drift deposits (B3)	Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)
L Iron Deposits (B5)	Thin Muck Surface (C7)	Shallow Aquitard (D3)
☐ Inundation Visible on Aerial Imagery (B7)	Other (Explain in Remarks)	Microtopographic Relief (D4)
Sparsely Vegetated Concave Surface (B8)		✓ FAC-neutral Test (D5)
Field Observations:		
Surface Water Present? Yes O No 🔍	Depth (inches):	
Water Table Present? Yes No	Depth (inches): <u>5</u>	Iroloav Present? Yes 🖲 No 🔿
Saturation Present? (includes capillary fringe) Yes No	Wetland Hyd Depth (inches): 0	irology Present? Yes 🔍 No 🔾
Describe Recorded Data (stream gauge, monito	ring well, aerial photos, previous inspections), if ava	ilable:
Remarks:		

	113	Dominant Species?		Sampling Point: an15 wetland
Tree Stratum (Plot size:)	Absolute % Cover	Rel.Strat.	Indicator Status	Dominance Test worksheet:
 1	0	0.0%		Number of Dominant Species That are OBL, FACW, or FAC: 3 (A)
0	0	0.0%		
	0	0.0%		Total Number of Dominant
3	0	0.0%		Species Across All Strata: <u>3</u> (B)
4				Percent of dominant Species
5				That Are OBL, FACW, or FAC:100.0% (A/B)
6		0.0%		
7	0	0.0%		Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: 15')	0	= Total Cove	r	Total % Cover of: Multiply by: 0BL species 28 x 1 = 28
1. Spiraea tomentosa	66	81.5%	FACW	
2. Acer rubrum	10	12.3%	FAC	FACW species $104 \times 2 = 208$
3. Fraxinus pennsylvanica	5	6.2%	FACW	FAC species $10 \times 3 = 30$
4.		0.0%		FACU species $0 \times 4 = 0$
5.		0.0%		UPL species x 5 =
6.	0	0.0%	-	Column Totals: 142 (A) 266 (B)
7.	0	0.0%		Prevalence Index = $B/A = 1.873$
	81	= Total Cove	-	
Herb Stratum (Plot size: 5')				Hydrophytic Vegetation Indicators:
1.Carex Iurida	20	32.8%	OBL	Rapid Test for Hydrophytic Vegetation
2.Eupatoriadelphus dubius	5	8.2%	FACW	✓ Dominance Test is > 50%
3. Scirpus cyperinus	3	4.9%	FACW+	✓ Prevalence Index is $\leq 3.0^{1}$
4. Onoclea sensibilis	25	4 1.0%	FACW	Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
5.Carex crinita	8	13.1%	OBL	Problematic Hydrophytic Vegetation ¹ (Explain)
6.	0	0.0%		
7.	0	0.0%		¹ Indicators of hydric soil and wetland hydrology must
8.	0	0.0%		be present, unless disturbed or problematic.
9.	0	0.0%		Definitions of Vegetation Strata:
10.	0	0.0%		
11	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
12.	0	0.0%		a breast height (DDH), regardless of height.
		= Total Cove		Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall
Woody Vine Stratum (Plot size:)				
1	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
2				
3				Woody vine - All woody vines greater than 3.28 ft in
4	0	0.0%		height.
	0	= Total Cove	r	
				Hydrophytic
				Vegetation Present? Yes I No
				Present? Yes VO
Remarks: (Include photo numbers here or on a separate she	et.)			

	ription: (Des		the depth	needed to				onfirm the	absence of indicators.)	
Depth (inches)	- Color (ı	Matrix moist)	- %	Color (Re (moist)	dox Featu			Texture	Remarks
0-8	10YR	3/2	100%						Loam	
8-12	2.5Y	4/1	90%	10YR	4/6	10%	С	M	Sandy Loam	·
	2.01		,0,0			1070				
										·
1		Dealatia	- DM D							
51		=Depletio	n. RIVI=Rec	iuced Matrix,	CS=Cover	ed of Coate	a Sana Gra	ains ² Loca	ation: PL=Pore Lining. M=N	
Hydric Soil				Del	valuo Polo	w Surface (ר הם ו <i>)</i> (20)		ematic Hydric Soils : ³
	ipedon (A2)				A 149B)	w Suitace (30) (LKK K	,		(LRR K, L, MLRA 149B)
Black His				🗌 Thir	Dark Surf	ace (S9) (L	.RR R, MLR	RA 149B)		ox (A16) (LRR K, L, R)
	n Sulfide (A4)			Loa	my Mucky	Mineral (F1)) LRR K, L)			or Peat (S3) (LRR K, L, R)
Stratified	Layers (A5)					Matrix (F2)			Dark Surface (S7)	Gurface (S8) (LRR K, L)
Depleted	Below Dark S	Surface (A	11)		leted Matri				Thin Dark Surface	
Thick Da	rk Surface (A1	12)		_	ox Dark Su					Masses (F12) (LRR K, L, R)
	uck Mineral (S					Surface (F7	()			ain Soils (F19) (MLRA 149B)
	eyed Matrix (S4)			ox Depress	510115 (F8)			Mesic Spodic (TA	6) (MLRA 144A, 145, 149B)
Sandy Re									Red Parent Mater	ial (TF2)
	Matrix (S6) face (S7) (LRI		1400)						Very Shallow Dar	
									Other (Explain in	Remarks)
°Indicators c	of hydrophytic	vegetatio	n and wetla	and hydrolog	/ must be	present, un	ess disturb	ed or probl	lematic.	
Restrictive L	-	erved):								
Type: R									Hydric Soil Present?	Yes 💿 No 🔾
Depth (inc	ches): 12								Hyunc son Fresent:	res 🙁 No 🗢
Remarks:										

Project/Site: Antrim Wind Project		City/County: Antrim		Sampling Date: 1	6-Aug-11
Applicant/Owner: Eolian Renewable E	Energy, LLC		State: NH	Sampling Point:	an15 upland
Investigator(s): AF JG		Section, Township, Ran	ge: S. T.	R.	
Landform (hillslope, terrace, etc.):	Hillside	Local relief (concave, conve	ex, none): flat	Slope:	8.0 % / 4.6°
Subregion (LRR or MLRA):	Lat.:	1	Long.:	Dat	um:
Soil Map Unit Name:			NWI classi	fication:	
Are climatic/hydrologic conditions of Are Vegetation, Soil Are Vegetation, Soil Summary of Findings - At	, or Hydrology Significant	tly disturbed? Are "Nor problematic? (If need	(If no, explain in rmal Circumstances" ed, explain any answ ions, transects	present? Yes	
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes ○ No ● Yes ○ No ● Yes ○ No ●	Is the Sampled Are within a Wetland?	$^{\rm sa}$ Yes \bigcirc No \bigcirc		
Remarks: (Explain alternative pro	ocedures here or in a separate repo	rt.)			

check all that apply)	Secondary Indicators (minimum of 2 required)
	Surface Soil Cracks (B6)
	Drainage Patterns (B10)
	Moss Trim Lines (B16)
Marl Deposits (B15)	Dry Season Water Table (C2)
Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)
Oxidized Rhizospheres along Living Roots (C3)	Saturation Visible on Aerial Imagery (C9)
Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)
Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)
Thin Muck Surface (C7)	Shallow Aquitard (D3)
Other (Explain in Remarks)	Microtopographic Relief (D4)
• (,	FAC-neutral Test (D5)
Depth (inches):	
Depth (inches):	rdrology Present? Yes 🔿 No 🖲
Wetland Hy Depth (inches):	rdrology Present? YES 🔾 NO 🔍
pring well, aerial photos, previous inspections), if av	ailable:
	Oxidized Rhizospheres along Living Roots (C3) Presence of Reduced Iron (C4) Recent Iron Reduction in Tilled Soils (C6) Thin Muck Surface (C7) Other (Explain in Remarks) Depth (inches): Depth (inches): Wetland Hy

	11.5	Dominant Species?		Sampling Point: an15 upland
Tree Stratum (Plot size: 30')	Absolute	Rel.Strat.	Indicator	Dominance Test worksheet:
	% Cover		Status	Number of Dominant Species
1. Fagus grandifolia	25	41.7%	FACU	That are OBL, FACW, or FAC: 1 (A)
2. Fraxinus americana	25	✓ 41.7%	FACU	Total Number of Dominant
3. Betula alleghaniensis	10	16.7%	FAC	Species Across All Strata: (B)
4	0	0.0%		Dereent of dominant Species
5	0	0.0%		Percent of dominant Species That Are OBL, FACW, or FAC:25.0% (A/B)
6	0	0.0%		
7	0	0.0%		Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: 15')	60	= Total Cove	r	Total % Cover of: Multiply by:
1. Acer pensylvanicum	50	83.3%	FACU	$\begin{array}{c} \text{OBL species} \qquad 0 \qquad \text{x 1} = 0 \\ \hline \end{array}$
2. Fagus grandifolia	5	8.3%	FACU	FACW species $0 \times 2 = 0$
3. Picea rubens		8.3%	FACU	FAC species $15 \times 3 = 45$
4.		0.0%		FACU species <u>112</u> x 4 = <u>448</u>
5	0	0.0%		UPL species $1 \times 5 = 5$
6.	0	0.0%		Column Totals: <u>128</u> (A) <u>498</u> (B)
7.	0	0.0%		Prevalence Index = $B/A = 3.891$
	60	= Total Cove	r	
Herb Stratum (Plot size: 5')			•	Hydrophytic Vegetation Indicators:
1.Fraxinus americana	1	12.5%	FACU	Rapid Test for Hydrophytic Vegetation
2. Acer saccharum	1	12.5%	FACU-	Dominance Test is > 50%
3. Malanthemum canadense	5	62.5%	FAC-	Prevalence Index is ≤3.0 ¹
4.Polygonatum pubescens	1	12.5%	UPL	Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
5.	0	0.0%		Problematic Hydrophytic Vegetation ¹ (Explain)
6.	0	0.0%		
7	0	0.0%		¹ Indicators of hydric soil and wetland hydrology must
8	0	0.0%		be present, unless disturbed or problematic.
9.	0	0.0%		Definitions of Vegetation Strata:
10.	0	0.0%		
11.	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
12.	0	0.0%		······································
		= Total Cove	r	Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall
Woody Vine Stratum (Plot size:)		_		
1	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of
2	0	0.0%		size, and woody plants less than 3.28 ft tall.
3	0	0.0%		Woody vine - All woody vines greater than 3.28 ft in
4	0	0.0%		height.
	0	= Total Cove	r	
				Hydrophytic Vegetation
				Present? Yes O No •
Remarks: (Include photo numbers here or on a separate she	et.)			

(inches)	-	rix	needed to document the indicator or confirm the Redox Features		
0.0	Color (moist		Color (moist) % Type 1 Loc ²		Remarks
0-8	10YR 3/		·	Loam	
8-16	10YR 4/	/3 100%		Fine Sandy Loam	
			·	-	
			·		
Type: C=Cor	centration. D=Dep	letion. RM=Rec	luced Matrix, CS=Covered or Coated Sand Grains ² Loc	ation: PL=Pore Lining. M=N	Natrix
Hydric Soil	-				
Histosol (Polyvalue Below Surface (S8) (LRR R,		ematic Hydric Soils : ³
	ipedon (A2)		MLRA 149B)		(LRR K, L, MLRA 149B)
Black His			Thin Dark Surface (S9) (LRR R, MLRA 149B)		Dx (A16) (LRR K, L, R)
_	n Sulfide (A4)		Loamy Mucky Mineral (F1) LRR K, L)		or Peat (S3) (LRR K, L, R)
	Layers (A5)		Loamy Gleyed Matrix (F2)	Dark Surface (S7)	Gurface (S8) (LRR K, L)
Depleted	Below Dark Surfac	e (A11)	Depleted Matrix (F3)	Thin Dark Surface	
Thick Dar	rk Surface (A12)		Redox Dark Surface (F6)		Masses (F12) (LRR K, L, R)
Sandy Mu	uck Mineral (S1)		Depleted Dark Surface (F7)	_	ain Soils (F19) (MLRA 149B)
🗌 Sandy Gl	eyed Matrix (S4)		Redox Depressions (F8)		5) (MLRA 144A, 145, 149B)
Sandy Re	edox (S5)			Red Parent Mater	
Stripped	Matrix (S6)			Very Shallow Dark	
Dark Surf	face (S7) (LRR R, N	ILRA 149B)		Other (Explain in	
		tation and wetla	and hydrology must be present, unless disturbed or prob	lematic.	
³ Indicators o	of hydrophytic vege				
Restrictive L	ayer (if observed				
Restrictive L Type: _R	.ayer (if observed efusal			Hydric Soil Present?	Yes 🔾 No 🖲
Restrictive L Type: <u>R</u> Depth (inc	.ayer (if observed efusal			Hydric Soil Present?	Yes 🔿 No 🖲
Restrictive L Type: <u>R</u>	.ayer (if observed efusal			Hydric Soil Present?	Yes 🔿 No 🖲
Restrictive L Type: <u>R</u> Depth (inc	.ayer (if observed efusal			Hydric Soil Present?	Yes 🔾 No 🖲
Restrictive L Type: <u>R</u> Depth (inc	.ayer (if observed efusal			Hydric Soil Present?	Yes 🔾 No 🖲
Restrictive L Type: <u>R</u> Depth (inc	.ayer (if observed efusal			Hydric Soil Present?	Yes 🔿 No 🖲
Restrictive L Type: <u>R</u> Depth (inc	.ayer (if observed efusal			Hydric Soil Present?	Yes 🔿 No 💿
Restrictive L Type: <u>R</u> Depth (inc	.ayer (if observed efusal			Hydric Soil Present?	Yes 🔿 No 🖲
Restrictive L Type: <u>R</u> Depth (inc	.ayer (if observed efusal			Hydric Soil Present?	Yes 🔾 No 🖲
Restrictive L Type: <u>R</u> Depth (inc	.ayer (if observed efusal			Hydric Soil Present?	Yes 🔾 No 🖲
Restrictive L Type: <u>R</u> Depth (inc	.ayer (if observed efusal			Hydric Soil Present?	Yes O No O
Restrictive L Type: <u>R</u> Depth (inc	.ayer (if observed efusal			Hydric Soil Present?	Yes O No O
Restrictive L Type: <u>R</u> Depth (inc	.ayer (if observed efusal			Hydric Soil Present?	Yes O No O
Restrictive L Type: <u>R</u> Depth (inc	.ayer (if observed efusal			Hydric Soil Present?	Yes O No O
Restrictive L Type: <u>R</u> Depth (inc	.ayer (if observed efusal			Hydric Soil Present?	Yes O No O
Restrictive L Type: <u>R</u> Depth (inc	.ayer (if observed efusal			Hydric Soil Present?	Yes O No O
Restrictive L Type: <u>R</u> Depth (inc	.ayer (if observed efusal			Hydric Soil Present?	Yes O No O
Restrictive L Type: <u>R</u> Depth (inc	.ayer (if observed efusal			Hydric Soil Present?	Yes O No O
Restrictive L Type: <u>R</u> Depth (inc	.ayer (if observed efusal			Hydric Soil Present?	Yes O No O
Restrictive L Type: <u>R</u> Depth (inc	.ayer (if observed efusal			Hydric Soil Present?	Yes O No O



AN15 Wetland



AN15 Upland

					5		
Project/Site: Antrim Wind Project		City/County:	Antrim		Sampling Date: 16-Aug-11		
Applicant/Owner: Eolian Renewable I	Energy, LLC		State	: NH	Sampling Point:	an16 wetland	
Investigator(s): AF JG		Section, T	Section, Township, Range: S. T. R.				
Landform (hillslope, terrace, etc.):	Terrace	Local relief (c	oncave, convex, no	ne): flat	Slope:	0.0 % / 0.0	
Subregion (LRR or MLRA):	Lat.:		Long.:		Dat	tum:	
Soil Map Unit Name:		P		NWI classi	fication: PEM		
Are Vegetation , Soil Are Vegetation , Soil Summary of Findings - At	, or Hydrology naturally	tly disturbed? problematic? sampling p	(If needed, ex	. ,	vers in Remarks.)		
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes ● No ○ Yes ● No ○ Yes ● No ○		e Sampled Area n a Wetland?	Yes 🖲 No 🤇	C		
Remarks: (Explain alternative provide the provided and the provided th	cedures here or in a separate report etland disturbance. Upslope of a s	•	ture.				

Wetland Hydrology Indicators:		Secondary Indicators (minimum of 2 required)
Primary Indicators (minimum of one required; of	heck all that apply)	Surface Soil Cracks (B6)
Surface Water (A1)	Water-Stained Leaves (B9)	Drainage Patterns (B10)
✓ High Water Table (A2)	Aquatic Fauna (B13)	Moss Trim Lines (B16)
Saturation (A3)	Marl Deposits (B15)	Dry Season Water Table (C2)
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)
Sediment Deposits (B2)	Oxidized Rhizospheres along Living Roots (C3)	Saturation Visible on Aerial Imagery (C9)
Drift deposits (B3)	Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)
Iron Deposits (B5)	Thin Muck Surface (C7)	Shallow Aquitard (D3)
Inundation Visible on Aerial Imagery (B7)	Other (Explain in Remarks)	Microtopographic Relief (D4)
Sparsely Vegetated Concave Surface (B8)		FAC-neutral Test (D5)
Field Observations:		
Surface Water Present? Yes O No 🖲	Depth (inches):	
Water Table Present? Yes No	Depth (inches): 0	
Saturation Present? Yes No	Wetland Hy Depth (inches): 0	/drology Present? Yes 🖲 No 🔾
Describe Recorded Data (stream gauge, monitor	ring well, aerial photos, previous inspections), if av	vailable:
Remarks:		

	113	Dominant Species?		Sampling Point: an16 wetland
Tree Stratum (Plot size:)	Absolute % Cover	Rel.Strat.	Indicator Status	Dominance Test worksheet:
1	0	0.0%		Number of Dominant Species That are OBL, FACW, or FAC: 4 (A)
2	0	0.0%		
2	0	0.0%		Total Number of Dominant
3				Species Across All Strata: (B)
4	0	0.0%		Percent of dominant Species
5		0.0%		That Are OBL, FACW, or FAC:100.0% (A/B)
6		0.0%		
7	0	0.0%		Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: 15')	0	= Total Cove	r	Total % Cover of: Multiply by: OBL species 55 x 1 = 55
1. Spiraea alba	15	✓ 50.0%	FACW+	FACW species $58 \times 2 = 116$
2. Spiraea tomentosa	15	50.0%	FACW	
3	0	0.0%		
4.	0	0.0%		FACU species $0 \times 4 = 0$
5	0	0.0%		UPL species x 5 =
6.	0	0.0%	-	Column Totals: 113 (A) 171 (B)
7.	0	0.0%		Prevalence Index = $B/A = 1.513$
/·		= Total Cove		Prevalence Index = $B/A = 1.513$
Herb Stratum (Plot size: 5')	30		1	Hydrophytic Vegetation Indicators:
1.Carex crinita	50	60.2%	OBL	Rapid Test for Hydrophytic Vegetation
2.Scirpus cyperinus	5	6.0%	FACW+	✓ Dominance Test is > 50%
3. Scirpus atrovirens	5	6.0%	OBL	✓ Prevalence Index is ≤3.0 1
4. Onoclea sensibilis	20		FACW	Morphological Adaptations ¹ (Provide supporting
				data in Remarks or on a separate sheet)
5. Impatiens capensis 6.	3	3.6%	FACW	Problematic Hydrophytic Vegetation ¹ (Explain)
	0	0.0%		
7	0	0.0%		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
8	0	0.0%		· · · · ·
9	0	0.0%		Definitions of Vegetation Strata:
10	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter
11	0	0.0%		at breast height (DBH), regardless of height.
12	0	0.0%		Sopling/obrub Woody plants loss than 2 in DPH and
Woody Vine Stratum (Plot size:)	83	= Total Cove	r	Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall
1	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of
2	0	0.0%		size, and woody plants less than 3.28 ft tall.
3	0	0.0%		Weady vine All weady vince greater than 2.20 ft in
Δ	0	0.0%		Woody vine - All woody vines greater than 3.28 ft in height.
	0	= Total Cove		
				Hydrophytic
				Vegetation Present? Yes • No ·
				Present? 100 - 100 -
				1
Remarks: (Include photo numbers here or on a separate she	et.)			

Profile Desc Depth	ription: (De		the depth	needed to				onfirm the	absence of indicators.)	
(inches)	- Color (i	Matrix moist)	- % -	Color (dox Featu		Loc ²	Texture	Remarks
0-7	10YR	3/2	100%						Loam	noniano
7-16	2.5Y	4/2	95%	10YR	4/6	5%	C	М	Fine Sandy Loam	
7-10	2.31	4/2	7376	IUIK	470	576	U			·
¹ Type: C=Cor	ncentration. D	- Depletio	n. RM=Red	uced Matrix,	CS=Cover	ed or Coate	ed Sand Gra	ains ² Loc	ation: PL=Pore Lining. M=N	 Aatrix
Hydric Soil										ematic Hydric Soils : ³
Histosol				Poly	value Belo	w Surface ((S8) (LRR F	2,		ematic Hydric Solis :
	ipedon (A2)			MLR	A 149B)					(LRR K, L, MLRA 149B) ox (A16) (LRR K, L, R)
Black His	stic (A3)			L Thin	Dark Surf	face (S9) (I	LRR R, MLR	RA 149B)		or Peat (S3) (LRR K, L, R)
Hydroge	n Sulfide (A4)					Mineral (F1			Dark Surface (S7)	
Stratified	Layers (A5)				• •	Matrix (F2))			Surface (S8) (LRR K, L)
Depleted	Below Dark S	Surface (A	.11)		eted Matr				Thin Dark Surface	
Thick Da	rk Surface (A	12)		_		urface (F6)	_,			Masses (F12) (LRR K, L, R)
Sandy M	uck Mineral (S	61)				Surface (F	7)			ain Soils (F19) (MLRA 149B)
	eyed Matrix (S4)			ox Depres	sions (F8)			_	6) (MLRA 144A, 145, 149B)
	edox (S5)								Red Parent Mater	
	Matrix (S6)								Very Shallow Darl	k Surface (TF12)
Dark Sur	face (S7) (LR	r r, mlra	A 149B)						Other (Explain in	Remarks)
³ Indicators of	of hydrophytic	vegetatio	on and wetla	nd hydrology	must be	present, un	less disturb	ed or prob	lematic.	
Restrictive I	_aver (if obs	erved):								
Type:										
Depth (in	ches):								Hydric Soil Present?	Yes 🔍 No 🔾
Remarks:										
Remains.										

Project/Site: Antrim Wind Project	City/County: Antrim	Sampling Date: 16-Aug-11
Applicant/Owner: Eolian Renewable Energy, LLC	State:	Sampling Point: an16 upland
Investigator(s): AF JG	Section, Township, Range: S. T.	R.
Landform (hillslope, terrace, etc.): Hillside	Local relief (concave, convex, none): flat	Slope: 10.0 % / 5.7°
Subregion (LRR or MLRA):	.: Long.:	Datum:
Soil Map Unit Name:	NWI class	ification:
	antly disturbed? Are "Normal Circumstances" y problematic? (If needed, explain any answ	present? Yes No Vers in Remarks.)
Hydrophytic Vegetation Present? Yes No ● Hydric Soil Present? Yes No ● Wetland Hydrology Present? Yes No ●	Is the Sampled Area within a Wetland? Yes O No	9
Remarks: (Explain alternative procedures here or in a separate re	port.)	

Secondary Indicators (minimum of 2 required)						
Secondary Indicators (minimum of 2 required)						
Surface Soil Cracks (B6)						
Drainage Patterns (B10)						
Moss Trim Lines (B16)						
Dry Season Water Table (C2)						
Crayfish Burrows (C8)						
Saturation Visible on Aerial Imagery (C9)						
Stunted or Stressed Plants (D1)						
Geomorphic Position (D2)						
Shallow Aquitard (D3)						
Microtopographic Relief (D4)						
FAC-neutral Test (D5)						
_						
loav Present? Yes 🔿 No 🖲						
Wetland Hydrology Present? Yes 🔾 No 🖲						
(includes capillary fringe) Tes Villo Depth (inclus) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:						
Remarks:						

VEGETATION - Ose scientific hames of pic	ints	Dominant Species?		Sampling Point: an16 upland
Tree Stratum (Plot size: 30')	Absolute % Cover	Rel.Strat.	Indicator Status	Dominance Test worksheet:
	20	66.7%	FACU	Number of Dominant Species That are OBL, FACW, or FAC: 0 (A)
	10	33.3%	FACU	
2. Betula papyrifera 3.		0.0%		Total Number of Dominant
		0.0%		Species Across All Strata: (B)
4	0	0.0%		Percent of dominant Species
5		0.0%		That Are OBL, FACW, or FAC: 0.0% (A/B)
6	0			
7		0.0%		Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: 15')	30	= Total Cove	r	Total % Cover of: Multiply by:
1. Pinus strobus	10	19.6%	FACU	OBL species $0 \times 1 = 0$
2. Fagus grandifolia		64.7%	FACU	FACW species $0 \times 2 = 0$
3. Viburnum lentago		9.8%	FAC	FAC species $5 \times 3 = 15$
A place where		5.9%	FACU	FACU speci es 106 x 4 = 424
E		0.0%		UPL species $\frac{80}{100}$ x 5 = $\frac{400}{100}$
6		0.0%		Column Totals: 191 (A) 839 (B)
7		0.0%		
<i>I</i>		= Total Cove		Prevalence Index = B/A = 4.393
Herb Stratum (Plot size: 5')	51	= Total Cove	r	Hydrophytic Vegetation Indicators:
1.Rubus alumnus	10	9.1%	FACU-	Rapid Test for Hydrophytic Vegetation
2. Dennstaedtia punctilobula	80	72.7%	UPL	Dominance Test is > 50%
3 Acor coochorum	<u> </u>	4.5%	FACU-	Prevalence Index is \leq 3.0 ¹
4.Solidago canadensis	15	13.6%	FACU	Morphological Adaptations ¹ (Provide supporting
5.		0.0%	11100	data in Remarks or on a separate sheet)
6.	0	0.0%		Problematic Hydrophytic Vegetation ¹ (Explain)
7		0.0%		¹ Indicators of hydric soil and wetland hydrology must
8.	0	0.0%		be present, unless disturbed or problematic.
9.	0	0.0%		Definitions of Vegetation Strata:
10.	0	0.0%		
11.	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
12.	0	0.0%		a bleast height (DDH), regardless of height.
		= Total Cove	r	Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall
Woody Vine Stratum (Plot size:)				
1	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
2	0	0.0%		
3	0	0.0%		Woody vine - All woody vines greater than 3.28 ft in
4				height.
	0	= Total Cove	r	
				Hydrophytic
				Vegetation Present? Yes No •
				Present? Yes V No 🛡
				1
Remarks: (Include photo numbers here or on a separate sh	eet.)			

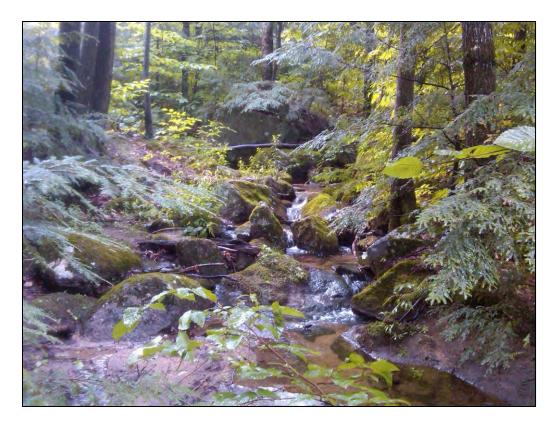
Depth		Matrix		Redox Features		
(inches)	Color (%	Color (moist) % Type 1 Loc		Remarks
0-4	10YR	3/2	100%		Loam	
4-6	10YR	5/8	100%		Fine Sandy Loam	
¹ Type: C=Co	ncentration. D	D=Depletio	n. RM=Red	uced Matrix, CS=Covered or Coated Sand Grains 2	Location: PL=Pore Lining. M=	Matrix
Hydric Soil	Indicators:				Indicators for Prob	elematic Hydric Soils : ³
Histosol				Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	_) (LRR K, L, MLRA 149B)
	pipedon (A2)			MLRA 1498) Thin Dark Surface (S9) (LRR R, MLRA 1498)	Const Drairie Do	dox (A16) (LRR K, L, R)
Black Hi				Loamy Mucky Mineral (F1) LRR K, L)	5 cm Mucky Pea	t or Peat (S3) (LRR K, L, R)
	en Sulfide (A4))		Loamy Gleyed Matrix (F2)	Dark Surface (S	7) (LRR K, L)
	d Layers (A5) d Below Dark :	Surface (A	11)	Depleted Matrix (F3)		Surface (S8) (LRR K, L)
	ark Surface (A		11)	Redox Dark Surface (F6)		e (S9) (LRR K, L)
_	luck Mineral (S			Depleted Dark Surface (F7)		Masses (F12) (LRR K, L, R)
_	leyed Matrix (Redox Depressions (F8)		lain Soils (F19) (MLRA 149B)
_	edox (S5)	(- ')			Red Parent Mate	A6) (MLRA 144A, 145, 149B)
	Matrix (S6)					rk Surface (TF12)
Dark Su	rface (S7) (LR	R R, MLRA	149B)		Other (Explain ir	
³ Indicators	of hydrophytic	c vegetatio	n and wetla	nd hydrology must be present, unless disturbed or p		
	Layer (if obs			, , , , ,		
	stone refusal					
Depth (in					Hydric Soil Present?	Yes 🔾 No 🖲
Remarks:						
Remarks:						



AN16 Wetland



AN16 Wetland



AN17 Stream (associated with AN18 Wetland)

Project/Site: Antrim Wind Project		City/County: Antrim		Sampling Date: 1	6-Aug-11
Applicant/Owner: Eolian Renewable E	nergy, LLC	State	e: NH	Sampling Point:	an18a wetland
Investigator(s): AF JG		Section, Township, Range: S	Б. Т.	R.	
Landform (hillslope, terrace, etc.):	Gulch or Gully	Local relief (concave, convex, no	one): concave	Slope:	12.0 % / 6.8°
Subregion (LRR or MLRA):	Lat.:	Long.	:	Dat	tum:
Soil Map Unit Name:			NWI classif	ication: PSS	
Are Vegetation , Soil Are Vegetation , Soil Summary of Findings - At Hydrophytic Vegetation Present?	, or Hydrology naturally	problematic? (If needed, ex	Circumstances" p xplain any answe s, transects,	ers in Remarks.)	
Hydric Soil Present? Wetland Hydrology Present?	Yes Ves No Yes No Yes Yes Victoria	Is the Sampled Area within a Wetland?	Yes 🖲 No C)	
Remarks: (Explain alternative pro Isolated PSS wetland entirely with		•	hes of water.		

Wetland Hydrology Indicators:		Secondary Indicators (minimum of 2 required)
Primary Indicators (minimum of one required;	check all that apply)	Surface Soil Cracks (B6)
Surface Water (A1)	Water-Stained Leaves (B9)	Drainage Patterns (B10)
✓ High Water Table (A2)	Aquatic Fauna (B13)	Moss Trim Lines (B16)
Saturation (A3)	Marl Deposits (B15)	Dry Season Water Table (C2)
Water Marks (B1)		Crayfish Burrows (C8)
Sediment Deposits (B2)	Hydrogen Sulfide Odor (C1)	
	Oxidized Rhizospheres along Living Roots (C3)	Saturation Visible on Aerial Imagery (C9)
Drift deposits (B3)	Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)
Iron Deposits (B5)	Thin Muck Surface (C7)	Shallow Aquitard (D3)
Inundation Visible on Aerial Imagery (B7)	Other (Explain in Remarks)	Microtopographic Relief (D4)
Sparsely Vegetated Concave Surface (B8)		✓ FAC-neutral Test (D5)
Field Observations:		
Surface Water Present? Yes O No 🖲	Depth (inches):	
Water Table Present? Yes No	Depth (inches): 7	drology Present? Yes 🖲 No 🔿
Saturation Present? (includes capillary fringe) Yes • No	Wetland Hy Depth (inches):0	drology Present? Yes 🔍 No 🔾
Describe Recorded Data (stream gauge, monitor	pring well, aerial photos, previous inspections), if av	ailable:
Remarks:		

		Dominant Species?		Sampling Point: an18a wetland
Tree Stratum (Plot size:)	Absolute % Cover	Rel.Strat.	Indicator Status	Dominance Test worksheet:
 1	0	0.0%		Number of Dominant Species That are OBL, FACW, or FAC: 4 (A)
0	0	0.0%		
		0.0%		Total Number of Dominant
3	0			Species Across All Strata: 4 (B)
4		0.0%		Percent of dominant Species
5		0.0%		That Are OBL, FACW, or FAC:(A/B)
6		0.0%		
7	0	0.0%		Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: 15')	0	= Total Cove	r	Total % Cover of: Multiply by: 0BL species 20 x 1 = 20
1. Salix nigra	10	76.9%	FACW+	·
2. Fraxinus pennsylvanica	0	0.0%	FACW	
3. Cornus stolonifera		23.1%	FACW+	FAC species $0 \times 3 = 0$
4.		0.0%		FACU species $0 \times 4 = 0$
5.		0.0%		UPL species $\begin{array}{c} 0 \\ \hline \end{array}$ x 5 = $\begin{array}{c} 0 \\ \hline \end{array}$
6	0	0.0%		Column Totals: 99 (A) 178 (B)
6	0	0.0%	·	
7		= Total Cove	 r	Prevalence Index = B/A = 1.798
Herb Stratum (Plot size: 5')				Hydrophytic Vegetation Indicators:
1.Eupatoriadelphus dubius	0	0.0%	FACW	Rapid Test for Hydrophytic Vegetation
2. Onoclea sensibilis	33	38.4%	FACW	Dominance Test is > 50%
3.Scirpus cyperinus		9.3%	FACW+	✓ Prevalence Index is $\leq 3.0^{1}$
4. Carex crinita	10	11.6%	OBL	Morphological Adaptations ¹ (Provide supporting
5.0smunda cinnamomea	25	29.1%	FACW	data in Remarks or on a separate sheet)
6		11.6%	OBL	Problematic Hydrophytic Vegetation ¹ (Explain)
0.carex lurida 7.				¹ Indicators of hydric soil and wetland hydrology must
	0	0.0%		be present, unless disturbed or problematic.
8	0	0.0%		Definitions of Vegetation Strata:
9	0	0.0%		Demitions of Vegetation Strata.
10	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter
11	0	0.0%		at breast height (DBH), regardless of height.
12	0	0.0%		Sapling/shrub - Woody plants less than 3 in. DBH and
Woody Vine Stratum (Plot size:)	86	= Total Cove	r	greater than 3.28 ft (1m) tall.
<u> </u>	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of
0	0	0.0%		size, and woody plants less than 3.28 ft tall.
3	0	0.0%		
л	0	0.0%		Woody vine - All woody vines greater than 3.28 ft in height.
-+				hoight.
	0	= Total Cove	r	
				Hydrophytic
				Vegetation Present? Yes • No
				1
Remarks: (Include photo numbers here or on a separate she	et.)			

	ription: (Des	cribe to	the depth	needed to document	the indicator of	or confirm the	absence of indicators.)	
Depth (inches)		Matrix			dox Features			- .
	Color (n	•	%	Color (moist)	<u>%</u> Typ	e ¹ Loc ²	Texture	Remarks
0-10	10YR	3/2	100%				Sandy Loam	
10-20	2.5Y	4/1	100%				gravelly sand	alluvial soils
¹ Type: C=Cor	ncentration. D=	=Depletio	n. RM=Red	uced Matrix, CS=Cover	ed or Coated San	d Grains ² Loca	ation: PL=Pore Lining. M=	=Matrix
Hydric Soil		•						blematic Hydric Soils : ³
Histosol				Polyvalue Belov	v Surface (S8) (L	RR R,		
	ipedon (A2)			MLRA 149B)				D) (LRR K, L, MLRA 149B)
Black His				Thin Dark Surf	ace (S9) (LRR R	MLRA 149B)		dox (A16) (LRR K, L, R)
	n Sulfide (A4)			Loamy Mucky I	Aineral (F1) LRR	K, L)		at or Peat (S3) (LRR K, L, R)
	Layers (A5)			Loamy Gleyed	Matrix (F2)		Dark Surface (S	
	Below Dark S	urfaco (A	11)	Depleted Matri				/ Surface (S8) (LRR K, L)
	rk Surface (A1			Redox Dark Su				ce (S9) (LRR K, L)
				Depleted Dark			Iron-Manganese	e Masses (F12) (LRR K, L, R)
	uck Mineral (S			Redox Depress			Piedmont Flood	plain Soils (F19) (MLRA 149B)
	eyed Matrix (S	54)					Mesic Spodic (T	A6) (MLRA 144A, 145, 149B)
Sandy Re							Red Parent Mate	erial (TF2)
	Matrix (S6)						Very Shallow Da	ark Surface (TF12)
Dark Sur	face (S7) (LRR	R, MLRA	A 149B)				Other (Explain i	n Remarks)
³ Indicators o	of hydrophytic	vegetatio	n and wetla	nd hydrology must be p	resent, unless di	sturbed or probl	ematic.	
Restrictive L	aver (if obse	erved):						
Type:	,							
Depth (inc	ches).						Hydric Soil Present	? Yes 🖲 No 🔾
Remarks:								

Project/Site: Antrim Wind Project		City/County: A	ntrim	Sampling Date: 16-Aug-11		
Applicant/Owner: Eolian Renewable E	nergy, LLC	_	Sta	te: NH	Sampling Point:	an18a upland
Investigator(s): AF JG		Section, Tow	nship, Range:	S. T.	R.	
Landform (hillslope, terrace, etc.):	Hillside	Local relief (concave, convex, none): convex			Slope:	20.0 % / 11.3 °
Subregion (LRR or MLRA):	Lat.:		Long	j.:	Datum:	
Soil Map Unit Name:				NWI classi	fication:	
Are climatic/hydrologic conditions o Are Vegetation , Soil Are Vegetation , Soil Summary of Findings - At	, or Hydrology Significant , or Hydrology naturally p	tly disturbed? problematic?	Are "Normal (If needed, e	(If no, explain ir Circumstances" explain any answ is, transects	present? Yes	
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes ○ No ● Yes ○ No ● Yes ○ No ●		ampled Area Wetland?	Yes 🔿 No 🖲)	
Remarks: (Explain alternative prod Maintained ROW	edures here or in a separate repo	rt.)				

Wetland Hydrology Indicators:	Secondary Indicators (minimum of 2 required)			
Primary Indicators (minimum of one required;	Surface Soil Cracks (B6)			
Surface Water (A1)	Water-Stained Leaves (B9)	Drainage Patterns (B10)		
High Water Table (A2)	Aquatic Fauna (B13)	Moss Trim Lines (B16)		
Saturation (A3)	Marl Deposits (B15)	Dry Season Water Table (C2)		
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)		
Sediment Deposits (B2)	Oxidized Rhizospheres along Living Roots (C3)	Saturation Visible on Aerial Imagery (C9)		
Drift deposits (B3)	Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)		
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)		
Iron Deposits (B5)	Thin Muck Surface (C7)	Shallow Aquitard (D3)		
Inundation Visible on Aerial Imagery (B7)	Other (Explain in Remarks)	Microtopographic Relief (D4)		
Sparsely Vegetated Concave Surface (B8)	<u> </u>	FAC-neutral Test (D5)		
Field Observations:				
Surface Water Present? Yes O No 💿	Depth (inches):			
Water Table Present? Yes O No O	Depth (inches):	drology Present? Yes 🔿 No 🖲		
Saturation Present? (includes capillary fringe) Yes O No O	Wetland Hy Depth (inches):	drology Present? Yes 🔾 No 🖲		
Describe Recorded Data (stream gauge, monit	oring well, aerial photos, previous inspections), if av	ailable:		
Remarks:				

· · ·		Dominant Species?		Sampling Point: an18a upland
Tree Stratum (Plot size:)	Absolute % Cover	Rel.Strat.	Indicator Status	Dominance Test worksheet:
<u> </u>	0	0.0%		Number of Dominant Species That are OBL, FACW, or FAC: 1 (A)
0		0.0%		
		0.0%		Total Number of Dominant
3		0.0%		Species Across All Strata: 2 (B)
4				Percent of dominant Species
5		0.0%		That Are OBL, FACW, or FAC:
6		0.0%		
7	0	0.0%		Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size:)	0	= Total Cove	r	Total % Cover of: Multiply by: OBL species 0 x 1 = 0
1	0	0.0%		FACW speciles $50 \times 2 = 100$
2		0.0%		
3	0	0.0%		
4	0	0.0%		
5.		0.0%		UPL species $50 \times 5 = 250$
6.	0	0.0%		Column Totals: 108 (A) 382 (B)
7	0	0.0%		Prevalence Index = B/A = 3.537
Herb Stratum (Plot size: 5')	0	= Total Cove	r	Hydrophytic Vegetation Indicators:
Herb Stratum (FIOL SIZE. 5		_		Rapid Test for Hydrophytic Vegetation
1.Phalaris arundinacea	50	✔ 46.3%	FACW+	$\Box \text{ Dominance Test is } 50\%$
2. Dennstaedtia punctilobula	50	46.3%	UPL	Prevalence Index is $\leq 3.0^{1}$
3. Solidago canadensis	8	7.4%	FACU	
4	0	0.0%		Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
5.	0	0.0%		Problematic Hydrophytic Vegetation ¹ (Explain)
6.	0	0.0%		
7.	0	0.0%		¹ Indicators of hydric soil and wetland hydrology must
8.	0	0.0%		be present, unless disturbed or problematic.
9.	0	0.0%		Definitions of Vegetation Strata:
10.	0	0.0%		
11.	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
12.	0	0.0%		a broadt height (bbh), rogardiodd o'r height.
Woody Vine Stratum (Plot size:)		= Total Cove	·	Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall
	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of
1	-			size, and woody plants less than 3.28 ft tall.
2	0	0.0%		
3				Woody vine - All woody vines greater than 3.28 ft in
4	0	0.0%		height.
	0	= Total Cove	ſ	
				Hydrophytic
				Vegetation Present? Yes O No •
Remarks: (Include photo numbers here or on a separate sh	eet.)			

(inches)		rix	Red	ox Features			
	Color (moist	t) %	Color (moist)	% Type ¹	Loc ²	Texture	Remarks
10-20	10YR 3.	/2 100%				Sandy Loam	
	10YR 4,	/4 100%				Sandy Loam	
						,	
						,	
						·	
						,	
¹ Type: C=Conce	ntration. D=Dep	oletion. RM=Red	uced Matrix, CS=Covere	d or Coated Sand Grain	s ² Locat	tion: PL=Pore Lining. M=M	atrix
Hydric Soil Ind	dicators:					Indicators for Proble	matic Hydric Soils : ³
Histosol (A1)		Polyvalue Below	Surface (S8) (LRR R,			(LRR K, L, MLRA 149B)
Histic Epipe	don (A2)		MLRA 149B)				x (A16) (LRR K, L, R)
Black Histic	(A3)			ce (S9) (LRR R, MLRA	149B)		or Peat (S3) (LRR K, L, R)
Hydrogen S				ineral (F1) LRR K, L)		Dark Surface (S7)	
Stratified La	•		Loamy Gleyed N				urface (S8) (LRR K, L)
_	elow Dark Surfac	ce (A11)	Depleted Matrix			Thin Dark Surface	
_	Surface (A12)		Redox Dark Sur				asses (F12) (LRR K, L, R)
	Mineral (S1)		Depleted Dark S			Piedmont Floodpla	in Soils (F19) (MLRA 149B)
	ed Matrix (S4)		Redox Depressi	ons (F8)		Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redo						Red Parent Materia	al (TF2)
Stripped Ma						Very Shallow Dark	Surface (TF12)
Dark Surface	e (S7) (LRR R, N	лlra 149B)				Other (Explain in R	emarks)
³ Indicators of h	ydrophytic vege	tation and wetla	and hydrology must be pr	esent, unless disturbed	l or proble	matic.	
Restrictive Lay	er (if observe	d):					
Turner							
iype:	es):					Hydric Soil Present?	Yes 🔿 No 🖲
Type: Depth (inche	,						
Depth (inche							
Depth (inche							
Depth (inche							
Depth (inche							
Depth (inche							
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AN18a Wetland



AN18a Upland

Project/Site: Antrim Wind Project		City/County: Antrim		Sampling Date: 1	17-Aug-11
Applicant/Owner: Eolian Renewable E	nergy, LLC	State	: NH	Sampling Point:	an18b wetland
Investigator(s): AF JG		Section, Township, Range: S.	Т.	R.	
Landform (hillslope, terrace, etc.):	Hillside	Local relief (concave, convex, nor	ne): undulating	g Slope:	0.0 % / 0.0
Subregion (LRR or MLRA):	Lat.:	Long.:		Da	tum:
Soil Map Unit Name:			NWI classifi	ication: PSS	-
Are Vegetation , Soil . Are Vegetation , Soil . Summary of Findings - At	, or Hydrology 🗌 naturally p	ly disturbed? Are "Normal Coroblematic? (If needed, ex	If no, explain in ircumstances" p plain any answe , transects ,	ers in Remarks.)	
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes ● No ○ Yes ● No ○ Yes ● No ○	Is the Sampled Area within a Wetland?	Yes 🖲 No 🔾		
Remarks: (Explain alternative pro Isolated PSS wetland within skidd	cedures here or in a separate repo er trail crossing stream AN17. Cou	•			

Wetland Hydrology Indicators:		Secondary Indicators (minimum of 2 required)		
Primary Indicators (minimum of one required;	check all that apply)	Surface Soil Cracks (B6)		
Surface Water (A1)	✓ Water-Stained Leaves (B9)	✓ Drainage Patterns (B10)		
High Water Table (A2)	Aquatic Fauna (B13)	Moss Trim Lines (B16)		
Saturation (A3)	Marl Deposits (B15)	Dry Season Water Table (C2)		
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)		
Sediment Deposits (B2)	Oxidized Rhizospheres along Living Roots (C3)	Saturation Visible on Aerial Imagery (C9)		
Drift deposits (B3)	Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)		
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)		
Iron Deposits (B5)	Thin Muck Surface (C7)	Shallow Aquitard (D3)		
Inundation Visible on Aerial Imagery (B7)	Other (Explain in Remarks)	Microtopographic Relief (D4)		
Sparsely Vegetated Concave Surface (B8)		FAC-neutral Test (D5)		
Field Observations:				
Surface Water Present? Yes O No 🖲	Depth (inches):			
Water Table Present? Yes O No 🖲	Depth (inches):			
Saturation Present? Yes • No ·	Wetland Hy Depth (inches): 0	/drology Present? Yes 🖲 No 🔾		
Describe Recorded Data (stream gauge, monitor	pring well, aerial photos, previous inspections), if av	ailable:		
Remarks:				

		Dominant Species?		Sampling Point: an18b wetland
Tree Stratum (Plot size:)	Absolute % Cover	Rel.Strat.	Indicator Status	Dominance Test worksheet:
1	0	0.0%		Number of Dominant Species That are OBL, FACW, or FAC: 4 (A)
2.	0	0.0%		
2	0	0.0%		Total Number of Dominant
3	0	0.0%		Species Across All Strata: (B)
4				Percent of dominant Species
5	0	0.0%		That Are OBL, FACW, or FAC:100.0% (A/B)
6	0	0.0%		
7	0	0.0%		Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: 15')	0	= Total Cove	r	Total % Cover of: Multiply by: OBL species 35 x 1 = 35
1. Spiraea tomentosa	33	68.8%	FACW	FACW species $148 \times 2 = 296$
2. Fraxinus pennsylvanica	15	31.3%	FACW	
3	0	0.0%		
4	0	0.0%		FACU species $0 \times 4 = 0$
5.	0	0.0%		UPL species $0 \times 5 = 0$
6.	0	0.0%		Column Totals: 183 (A) 331 (B)
7.	0	0.0%		Prevalence Index = B/A = 1.809
		= Total Cove		
Herb Stratum (Plot size: 5')	40	- 101010000	•	Hydrophytic Vegetation Indicators:
1. Onoclea sensibilis	20	14.8%	FACW	Rapid Test for Hydrophytic Vegetation
2.0smunda cinnamomea	5	3.7%	FACW	Dominance Test is > 50%
3 Canada Arlan anna	 15	11.1%	OBL	\checkmark Prevalence Index is \leq 3.0 ¹
4.Carex lurida				Morphological Adaptations ¹ (Provide supporting
5 Deterrities		14.8%	OBL	data in Remarks or on a separate sheet)
5. Rubus hispidus	50	✓ 37.0%	FACW	Problematic Hydrophytic Vegetation ¹ (Explain)
6. Aster umbellatus		✓ 18.5%	FACW	1
7	0	0.0%		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
8	0	0.0%		
9	0	0.0%		Definitions of Vegetation Strata:
10	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter
11	0	0.0%		at breast height (DBH), regardless of height.
12.	0	0.0%		Configuration to the state land them 2 in DDU and
Woody Vine Stratum (Plot size:)	135	= Total Cove	r	Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall
	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of
0	0	0.0%		size, and woody plants less than 3.28 ft tall.
3	0	0.0%		
3	0	0.0%		Woody vine - All woody vines greater than 3.28 ft in height.
4				noight.
	0	= Total Cove	r	
				Hydrophytic
				Vegetation Present? Yes • No ·
				1
Remarks: (Include photo numbers here or on a separate she	et.)			

Profile Desc Depth	ription: (De		the depth	needed to				nfirm the	absence of indicators.)		
(inches)	- Color (i	Matrix moist)	- %	Color (dox Featu %			Texture	Rem	narks
0-9	10YR	3/2				_			Fine Sandy Loam		
9-13	2.5Y	4/2	85%	10YR	5/8	15%	С	М	Fine Sandy Loam		
	2101		0070		0,0						
		=Depletio	n. RM=Red	duced Matrix,	CS=Cover	ed or Coate	d Sand Gra	ains ² Loc	ation: PL=Pore Lining. M=N	latrix	
Hydric Soil				_					Indicators for Probl	ematic Hydri	c Soils: ³
Histosol					value Belo A 149B)	w Surface (S8) (LRR R		2 cm Muck (A10)	(LRR K, L, MLF	RA 149B)
	ipedon (A2)					ace (S9) (L	RR R. MLR	A 149B)	Coast Prairie Rede	ox (A16) (LRR	K, L, R)
Black His						Mineral (F1)		,	5 cm Mucky Peat	or Peat (S3) (L	RR K, L, R)
	n Sulfide (A4) I Layers (A5)				• •	Matrix (F2)			Dark Surface (S7)		
_	Below Dark S	Surface (A	11)		eted Matri				Polyvalue Below S		
	rk Surface (A		,	Red	ox Dark Su	urface (F6)			Thin Dark Surface		
	uck Mineral (S			Dep	eted Dark	Surface (F7	7)		Iron-Manganese M		
	leyed Matrix (Red	ox Depres	sions (F8)			Piedmont Floodpla		
	edox (S5)								Red Parent Mater		, 145, 1490)
Stripped	Matrix (S6)								Very Shallow Dark		2)
Dark Sur	face (S7) (LR	r r, mlra	149B)						Other (Explain in		-,
³ Indicators of	of hydrophytic	vegetatio	n and wetl	and hydrology	must be	present, un	less disturb	ed or prob			
Restrictive I						•		•			
	tony refuse	civeu).									
Depth (ind									Hydric Soil Present?	Yes 🖲	No 🔿
Remarks:	10										
Remains.											

Project/Site: Antrim Wind Project		City/County:	Antrim			Sampling Date:	17-Aug-11	
Applicant/Owner: Eolian Renewable Ene	ergy, LLC		S	state:	NH	Sampling Point:	an18b uj	pland
Investigator(s): AF JG		Section, To	ownship, Range	e: S.	т.	R.		
Landform (hillslope, terrace, etc.):	lillside	Local relief (c	oncave, convex	, none): undulatin	ng Slope:	3.0%/	1.7 °
Subregion (LRR or MLRA):	Lat.:		Lo	ong.:		Da	tum:	
Soil Map Unit Name:				_	NWI classif	fication:		
• • •	or Hydrology 🗌 naturally p	tly disturbed? problematic? sampling p	(If needed	nal Circ d, expl	•	present? Yes		etc.
	Yes No ● Yes No ● Yes No ● Yes O No ●		e Sampled Area n a Wetland?	Ŷ	es 🔿 No 🖲)		
Remarks: (Explain alternative proce	dures here or in a separate repo	ırt.)						

Wetland Hydrology Indicators:		Secondary Indicators (minimum of 2 required)
Primary Indicators (minimum of one required;	check all that apply)	Surface Soil Cracks (B6)
Surface Water (A1)	Water-Stained Leaves (B9)	Drainage Patterns (B10)
High Water Table (A2)	Aquatic Fauna (B13)	Moss Trim Lines (B16)
Saturation (A3)	Marl Deposits (B15)	Dry Season Water Table (C2)
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)
Sediment Deposits (B2)	 Oxidized Rhizospheres along Living Roots (C3) 	Saturation Visible on Aerial Imagery (C9)
Drift deposits (B3)	Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)
Iron Deposits (B5)	Thin Muck Surface (C7)	Shallow Aguitard (D3)
Inundation Visible on Aerial Imagery (B7)	Other (Explain in Remarks)	Microtopographic Relief (D4)
Sparsely Vegetated Concave Surface (B8)		FAC-neutral Test (D5)
Field Observations:		
Surface Water Present? Yes O No 💿	Depth (inches):	
Water Table Present? Yes O No •	Depth (inches):	drology Present? Yes 🔿 No 🖲
Saturation Present? (includes capillary fringe) Yes O No O	Wetland Hyd Depth (inches):	drology Present? Yes 🔾 No 🖲
Describe Recorded Data (stream gauge, monit	oring well, aerial photos, previous inspections), if ava	ailable:
Remarks:		

	11.5	Dominant Species?		Sampling Point: an18b upland
Tree Stratum (Plot size: 30')	Absolute % Cover	Rel.Strat.	Indicator Status	Dominance Test worksheet:
		41.7%		Number of Dominant Species
1. Fagus grandifolia	25		FACU	That are OBL, FACW, or FAC: (A)
2. Tsuga canadensis	25		FACU	Total Number of Dominant
3. Ables balsamea	10	16.7%	FAC	Species Across All Strata: 6 (B)
4. Quercus rubra	0	0.0%	FACU-	
5	0	0.0%		Percent of dominant Species That Are OBL, FACW, or FAC:33.3% (A/B)
6	0	0.0%		
7	0	0.0%		Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: 15')	60	= Total Cove	r	Total % Cover of:Multiply by:OBL speci es0x 1 =0
1. Betula alleghaniensis	25	45.5%	FAC	
2. Acer saccharum	25	45.5%	FACU-	FACW species $0 \times 2 = 0$
3. Pinus strobus	5	9.1%	FACU	FAC species $95 \times 3 = 285$
4.		0.0%		FACU species x 4 =452
		0.0%		UPL species $5 \times 5 = 25$
5	0	0.0%		Column Totals: 213 (A) 762 (B)
6	0			
1		0.0%		Prevalence Index = B/A = <u>3.577</u>
Herb Stratum (Plot size: 5')		- 10101 0010	•	Hydrophytic Vegetation Indicators:
1.Aralia nudicaulis	33	33.7%	FACU	Rapid Test for Hydrophytic Vegetation
2. Thelypteris noveboracensis	60	61.2%	FAC	Dominance Test is > 50%
3.Polygonatum pubescens	5	5.1%	UPL	Prevalence Index is $\leq 3.0^{1}$
4.	0	0.0%		Morphological Adaptations ¹ (Provide supporting
5.	0	0.0%		data in Remarks or on a separate sheet)
6.				Problematic Hydrophytic Vegetation ¹ (Explain)
	0	0.0%		¹ Indicators of hydric soil and wetland hydrology must
7	0	0.0%		be present, unless disturbed or problematic.
8	0	0.0%		Definitions of Vegetation Strata:
9	0	0.0%		Deminitions of Vegetation Strata.
10	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter
11	0	0.0%		at breast height (DBH), regardless of height.
12	0	0.0%		Sapling/shrub - Woody plants less than 3 in. DBH and
Woody Vine Stratum (Plot size:)	98	= Total Cove	r	greater than 3.28 ft (1m) tall.
1	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of
2	0	0.0%		size, and woody plants less than 3.28 ft tall.
3	0	0.0%		
Λ	0	0.0%		Woody vine - All woody vines greater than 3.28 ft in height.
+				linght.
	0	= Total Cove	r	
				Hydrophytic Vegetation
				Present? Yes \bigcirc No \bigcirc
Domarke: (Include photo numbers here as an a constant	ot)			
Remarks: (Include photo numbers here or on a separate she	el. <i>j</i>			

7-14 10YR 7-14 10YR 10YR 10YR 1 10YR	3/2 100% 4/3 100%	Color (moist) % Type 1 Loc ²	•	
7-14 10YR 7-14 10YR 10YR 10YR 10YR	4/3 100%	Polyvalue Below Surface (S8) (LRR R,	Fine Sandy Loam	
I Type: C=Concentration. D=De Hydric Soil Indicators: Histosol (A1) Histic Epipedon (A2) Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5)		Polyvalue Below Surface (S8) (LRR R,	ation: PL=Pore Lining. M=Matrix	
Hydric Soil Indicators: Histosol (A1) Histic Epipedon (A2) Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5)	pletion. RM=Red	Polyvalue Below Surface (S8) (LRR R,	-	
Hydric Soil Indicators: Histosol (A1) Histic Epipedon (A2) Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5)	pletion. RM=Rec	Polyvalue Below Surface (S8) (LRR R,	-	
Hydric Soil Indicators: Histosol (A1) Histic Epipedon (A2) Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5)	pletion. RM=Red	Polyvalue Below Surface (S8) (LRR R,	-	
Hydric Soil Indicators: Histosol (A1) Histic Epipedon (A2) Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5)	epletion. RM=Red	Polyvalue Below Surface (S8) (LRR R,	-	
Hydric Soil Indicators: Histosol (A1) Histic Epipedon (A2) Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5)	pletion. RM=Rec	Polyvalue Below Surface (S8) (LRR R,	-	
Hydric Soil Indicators: Histosol (A1) Histic Epipedon (A2) Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5)	pletion. RM=Red	Polyvalue Below Surface (S8) (LRR R,	-	
Hydric Soil Indicators: Histosol (A1) Histic Epipedon (A2) Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5)	pletion. RM=Red	Polyvalue Below Surface (S8) (LRR R,	-	
Hydric Soil Indicators: Histosol (A1) Histic Epipedon (A2) Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5)	pletion. RM=Red	Polyvalue Below Surface (S8) (LRR R,	-	
Hydric Soil Indicators: Histosol (A1) Histic Epipedon (A2) Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5)	pletion. RM=Red	Polyvalue Below Surface (S8) (LRR R,	-	
Hydric Soil Indicators: Histosol (A1) Histic Epipedon (A2) Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5)	pletion. RM=Red	Polyvalue Below Surface (S8) (LRR R,	-	
Hydric Soil Indicators: Histosol (A1) Histic Epipedon (A2) Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5)	pletion. RM=Red	Polyvalue Below Surface (S8) (LRR R,	-	
Hydric Soil Indicators: Histosol (A1) Histic Epipedon (A2) Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5)	pletion. RM=Red	Polyvalue Below Surface (S8) (LRR R,	-	
Hydric Soil Indicators: Histosol (A1) Histic Epipedon (A2) Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5)	pletion. RM=Red	Polyvalue Below Surface (S8) (LRR R,	-	
 Histosol (A1) Histic Epipedon (A2) Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5) 			Indicators for Problematic Hydric Soils :	0
 Histosol (A1) Histic Epipedon (A2) Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5) 				3
Histic Epipedon (A2) Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5)		MI DA 140D)	2 cm Muck (A10) (LRR K, L, MLRA 149B)	
 Hydrogen Sulfide (A4) Stratified Layers (A5) 			Coast Prairie Redox (A16) (LRR K, L, MLRA 149B)	
Stratified Layers (A5)		☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)	\Box 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
		Loamy Mucky Mineral (F1) LRR K, L)	\square Dark Surface (S7) (LRR K, L)	.)
Developed Delaws Devels Counter		Loamy Gleyed Matrix (F2)	Polyvalue Below Surface (S8) (LRR K, L)	
Depleted Below Dark Surfa	ace (A11)	Depleted Matrix (F3)	Thin Dark Surface (S9) (LRR K, L)	
Thick Dark Surface (A12)		Redox Dark Surface (F6)	Iron-Manganese Masses (F12) (LRR K, L, F	5)
Sandy Muck Mineral (S1)		Depleted Dark Surface (F7)	 Piedmont Floodplain Soils (F12) (ERCK, E, F 	
Sandy Gleyed Matrix (S4)		Redox Depressions (F8)	Mesic Spodic (TA6) (MLRA 144A, 145, 149	
Sandy Redox (S5)			Red Parent Material (TF2)	2)
Stripped Matrix (S6)			Very Shallow Dark Surface (TF12)	
Dark Surface (S7) (LRR R,	MLRA 149B)		Other (Explain in Remarks)	
³ Indicators of hydrophytic yea	etation and wetla	and hydrology must be present, unless disturbed or probl		
Restrictive Layer (if observe	ed):			
Type: Bouldery			Hydric Soil Present? Yes O No 🖲	
Depth (inches): 14				



AN18b Upland



AN18b Wetland



AN18 Wetland

Project/Site: Antrim Wind Project		City/County: Antrim	5	Sampling Date: 1	7-Aug-11
Applicant/Owner: Eolian Renewable E	Energy, LLC	State: NH		Sampling Point:	AN18c wetland
Investigator(s): AF JG		Section, Township, Range: S.	т.	R.	
Landform (hillslope, terrace, etc.):	Hillside	Local relief (concave, convex, none): unc	ndulating	Slope:	10.0%/ 5.7
Subregion (LRR or MLRA):	Lat.:	Long.:		Da	tum:
Soil Map Unit Name:		NWI	l classific	ation: PSS/PEM	
Are Vegetation Soil Soil Summary of Findings - At	, or Hydrology 🗌 naturally p	Are "Normal Circumstal problematic? (If needed, explain any campling point locations, trans	y answer	s in Remarks.)	
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes ● No ○ Yes ● No ○ Yes ● No ○	Is the Sampled Area within a Wetland? Yes •	No O		
	ocedures here or in a separate repo d adjacent to Stream AN17. Boulde	•			

Wetland Hydrology Indicators:		Secondary Indicators (minimum of 2 required)
Primary Indicators (minimum of one required;	check all that apply)	Surface Soil Cracks (B6)
Surface Water (A1)	Water-Stained Leaves (B9)	✓ Drainage Patterns (B10)
High Water Table (A2)	Aquatic Fauna (B13)	Moss Trim Lines (B16)
Saturation (A3)	Marl Deposits (B15)	Dry Season Water Table (C2)
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)
Sediment Deposits (B2)	Oxidized Rhizospheres along Living Roots (C3)	Saturation Visible on Aerial Imagery (C9)
Drift deposits (B3)	Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)
Iron Deposits (B5)	Thin Muck Surface (C7)	Shallow Aquitard (D3)
Inundation Visible on Aerial Imagery (B7)	Other (Explain in Remarks)	Microtopographic Relief (D4)
Sparsely Vegetated Concave Surface (B8)		FAC-neutral Test (D5)
Field Observations:		
Surface Water Present? Yes O No 🖲	Depth (inches):	
Water Table Present? Yes O No 🖲	Depth (inches):	ydrology Present? Yes 💿 No 🔿
Saturation Present? Yes No	Wetland H	ydrology Present? Yes 🔍 No 🔾
Describe Recorded Data (stream gauge, monito	pring well, aerial photos, previous inspections), if a	/ailable:
Remarks:		

		Dominant Species?		Sampling Point: AN18c wetland
Tree Stratum (Plot size:)	Absolute % Cover	Rel.Strat.	Indicator Status	Dominance Test worksheet:
	0	0.0%		Number of Dominant Species That are OBL, FACW, or FAC: 4 (A)
2.	0	0.0%		That are OBL, FACW, or FAC: (A)
				Total Number of Dominant
3	0	0.0%		Species Across All Strata: 4 (B)
4	0	0.0%		Dereent of dominant Species
5		0.0%		Percent of dominant Species That Are OBL, FACW, or FAC:(A/B)
6		0.0%		
7	0	0.0%		Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: 15')	0	= Total Cove	r	Total % Cover of: Multiply by: OBL speci es 36 x 1 = 36
1. Acer rubrum	5	50.0%	FAC	
2. Fraxinus pennsylvanica	5	50.0%	FACW	FACW species $58 \times 2 = 116$
3.		0.0%		FAC species $5 \times 3 = 15$
4	0	0.0%		FACU species $0 \times 4 = 0$
5.	0	0.0%		UPL species $0 \times 5 = 0$
6.	0	0.0%		Column Totals: 99 (A) 167 (B)
7	0	0.0%		
1	-	= Total Cove		Prevalence Index = B/A = 1.687
Herb Stratum (Plot size: 5')	10		•	Hydrophytic Vegetation Indicators:
1.Carex crinita	25	28.1%	OBL	Rapid Test for Hydrophytic Vegetation
2.Phalaris arundinacea	33	37.1%	FACW+	✓ Dominance Test is > 50%
3.Onoclea sensibilis	15	16.9%	FACW	✓ Prevalence Index is \leq 3.0 ¹
4.Carex lurida	8	9.0%	OBL	Morphological Adaptations ¹ (Provide supporting
5 automa and a stress				data in Remarks or on a separate sheet)
		5.6%	FACW+	\Box Problematic Hydrophytic Vegetation ¹ (Explain)
6.Carex trisperma		3.4%	OBL	
7	0	0.0%		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
8	0	0.0%		
9	0	0.0%		Definitions of Vegetation Strata:
10	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter
11	0	0.0%		at breast height (DBH), regardless of height.
12	0	0.0%		Sapling/shruh, Woody plants loss than 3 in DBH and
Woody Vine Stratum (Plot size:)	89	= Total Cove	r	Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall
<u> </u>	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of
0	0	0.0%		size, and woody plants less than 3.28 ft tall.
3	0	0.0%		
3	0	0.0%		Woody vine - All woody vines greater than 3.28 ft in height.
4				neight.
	0	= Total Cove	r	
				Hydrophytic Vegetation
				Present? Yes • No
Domarka, (Include photo mumbers have a series in the	ot)			1
Remarks: (Include photo numbers here or on a separate she	et.)			

(inches) Color (0-6 10YR 6-14 2.5Y	3/2 4/1	% 100% 90%	Color (m 10YR	4/4	<u>%</u> 10%	Type 1 C	M	Texture Fine Sandy Loam Fine Sandy Loam	Remarl	<s< th=""></s<>
6-14 2.5Y			10YR	4/4	10%		M			
		90%	10YR	4/4			M	Fine Sandy Loam		
					·					
Type: C=Concentration. E										
Type: C=Concentration. E					·					
Type: C=Concentration. E					·					
Type: C=Concentration. E					·					
Type: C=Concentration. E			·							
Type: C=Concentration. E										
Type: C=Concentration. E										
Type: C=Concentration. E										
Type: C=Concentration. E										
Type: C=Concentration. D										
Type: C=Concentration. D										
		PM-Podu	ed Matrix C	S-Covere	d or Coate	d Sand Gr		ation: PI-Pore Lining M-M	atriv	
Undria Sail Indiantara		- Redu		5-000010						3
Hydric Soil Indicators:			- Polyar		v Surface (S0) /I DD D)	Indicators for Proble		
Histic Epipedon (A2)				149B)	v Sunace (30) (LKK P		2 cm Muck (A10)		
Black Histic (A3)			🗌 Thin D	Dark Surfa	ace (S9) (L	rr r, mlf	RA 149B)	Coast Prairie Redo		
Hydrogen Sulfide (A4)			Loamy	y Mucky N	/lineral (F1)	LRR K, L)		5 cm Mucky Peat o		K, L, R)
Stratified Layers (A5)			Loamy	y Gleyed I	Matrix (F2)			Dark Surface (S7)		<
Depleted Below Dark	Surface (A1	1)	Deplet	ted Matrix	(F3)			Polyvalue Below S		ς, L)
Thick Dark Surface (A	12)				rface (F6)			Iron-Manganese M		K I B)
Sandy Muck Mineral (S1)				Surface (F7)		Piedmont Floodpla		
Sandy Gleyed Matrix (S4)		Redox	Depressi	ions (F8)			Mesic Spodic (TA6		
Sandy Redox (S5)								Red Parent Materia		0, 11, 2,
Stripped Matrix (S6)								Very Shallow Dark		
Dark Surface (S7) (LR	r r, mlra ´	49B)						Other (Explain in F		
³ Indicators of hydrophytic	vegetation	and wetlar	d hydrology r	nust be p	resent, unl	ess disturb	ed or proble	ematic.		
Restrictive Layer (if obs	erved):									
Type: Boulders	,									
Depth (inches): 14								Hydric Soil Present?	Yes 🖲 🛛 N	o O
Remarks:										

Project/Site: Antrim Wind Project		City/County: Antrim		Sampling Date: 1	7-Aug-11
Applicant/Owner: Eolian Renewable E	nergy, LLC	Sta	ite: NH	Sampling Point:	AN18c upland
Investigator(s): AF JG		Section, Township, Range:	S. T.	R.	
Landform (hillslope, terrace, etc.):	Hillside	Local relief (concave, convex, r	none): convex	Slope:	5.0%/2.9°
Subregion (LRR or MLRA):	Lat.:	Long	g.:	Dat	tum:
Soil Map Unit Name:			NWI classi	fication:	
Are climatic/hydrologic conditions o Are Vegetation , Soil Are Vegetation , Soil Summary of Findings - At	, or Hydrology Significant , or Hydrology naturally p	IV disturbed? Are "Normal problematic? (If needed, a	(If no, explain ir Circumstances" explain any answ ns, transects	present? Yes (
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes No Yes No Yes No No	Is the Sampled Area within a Wetland?	Yes 🔿 No 🖲		
Remarks: (Explain alternative prod logged upland	edures here or in a separate repo	rt.)			

Wetland Hydrology Indicators:		Secondary Indicators (minimum of 2 required)
Primary Indicators (minimum of one required;	check all that apply)	_ Surface Soil Cracks (B6)
Surface Water (A1)	Water-Stained Leaves (B9)	Drainage Patterns (B10)
High Water Table (A2)	Aquatic Fauna (B13)	Moss Trim Lines (B16)
Saturation (A3)	Marl Deposits (B15)	Dry Season Water Table (C2)
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)
Sediment Deposits (B2)	Oxidized Rhizospheres along Living Roots (C3)	Saturation Visible on Aerial Imagery (C9)
Drift deposits (B3)	Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)
Iron Deposits (B5)	Thin Muck Surface (C7)	Shallow Aquitard (D3)
Inundation Visible on Aerial Imagery (B7)	Other (Explain in Remarks)	Microtopographic Relief (D4)
Sparsely Vegetated Concave Surface (B8)		FAC-neutral Test (D5)
Field Observations:		
Surface Water Present? Yes O No •	Depth (inches):	
Water Table Present? Yes O No O	Depth (inches):	rdroloay Present? Yes 🔿 No 🖲
Saturation Present? (includes capillary fringe) Yes O No •	Depth (inches):	rdrology Present? Yes 🔾 No 🖲
Describe Recorded Data (stream gauge, monit	oring well, aerial photos, previous inspections), if av	ailable:
Remarks:		

	11.5	Dominant Species?		Sampling Point: AN18c upland
Tree Stratum (Plot size: 30')	Absolute % Cover	Rel.Strat.	Indicator Status	
1. Acer rubrum	15	33.3%	FAC	Number of Dominant Species That are OBL, FACW, or FAC: 2 (A)
O Detaile elle elevelencia	10	 ✓ 33.3 % ✓ 22.2% 	FAC	
2 Disco militaria	10	22.2%	FACU	Total Number of Dominant
1 Turne tout				Species Across All Strata: 8 (B)
4. Tsuga canadensis			FACU	Percent of dominant Species
5	0	0.0%		That Are OBL, FACW, or FAC: 25.0% (A/B)
6		0.0%		
7		0.0%		Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: 15')	45	= Total Cove	r	Total % Cover of: Multiply by:
1. Acer pensylvanicum	20	✔ 44.4%	FACU	OBL species $0 \times 1 = 0$
	10	22.2%	FACU-	FACW species $0 \times 2 = 0$
0 - 114 11		11.1%	FACU	FAC species 25 x 3 = 75
4		22.2%	FACU	FACU speci es $\frac{78}{12}$ x 4 = $\frac{312}{12}$
- · · · ·		0.0%	1700	UPL species $50 \times 5 = 250$
C	•	0.0%		Column Totals: 153 (A) 637 (B)
7	0	0.0%		
<i>I</i>		-		Prevalence Index = B/A = 4.163
Herb Stratum (Plot size: 5')	45	= Total Cove	r	Hydrophytic Vegetation Indicators:
1.Dennstaedtia punctilobula	50	✓ 79.4%	UPL	Rapid Test for Hydrophytic Vegetation
0	8	12.7%	FACU	Dominance Test is > 50%
∠.Solidago canadensis 3.Rubus alumnus	5	7.9%	FACU-	□ Prevalence Index is \leq 3.0 ¹
4.	0	0.0%		Morphological Adaptations ¹ (Provide supporting
5				data in Remarks or on a separate sheet)
5 6.		0.0%		\Box Problematic Hydrophytic Vegetation ¹ (Explain)
	0	0.0%		¹ Indicators of hydric soil and wetland hydrology must
7	0	0.0%		be present, unless disturbed or problematic.
8	0	0.0%		Definitions of Vegetation Strata:
9	0	0.0%		Deminitions of Vegetation Strata.
10	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter
11	0	0.0%		at breast height (DBH), regardless of height.
12	0	0.0%		Sapling/shrub - Woody plants less than 3 in. DBH and
Woody Vine Stratum (Plot size:)	63	= Total Cove	r	greater than 3.28 ft (1m) tall
1	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of
2	0	0.0%		size, and woody plants less than 3.28 ft tall.
3	0	0.0%		Woody vine - All woody vines greater than 3.28 ft in
4.	0	0.0%		height.
	0	= Total Cove	er	
				Hydrophytic
				Vegetation V O V O
				Present? Yes V No V
Remarks: (Include photo numbers here or on a separate she	et.)			

(inches)		Matrix		Redox Features		
	Color (m		%	Color (moist) % Type 1 Loc ²	Texture	Remarks
0-6	10YR	3/2	100%		Fine Sandy Loam	
6-10	2.5Y	5/1	100%		Fine Sandy Loam	
10-14	10YR	4/3	100%		Fine Sandy Loam	
Type: C=Cor	ncentration. D=	Depletio	n. RM=Red	uced Matrix, CS=Covered or Coated Sand Grains ² Loc	ation: PL=Pore Lining. M=N	atrix
Hydric Soil						
Histosol				Polyvalue Below Surface (S8) (LRR R,		ematic Hydric Soils : ³
	ipedon (A2)			MLRA 149B)		(LRR K, L, MLRA 149B) x (A16) (LRR K, L, R)
Black His				L Thin Dark Surface (S9) (LRR R, MLRA 149B)	_	or Peat (S3) (LRR K, L, R)
Hydroger	n Sulfide (A4)			Loamy Mucky Mineral (F1) LRR K, L)	Dark Surface (S7)	
Stratified	Layers (A5)			Loamy Gleyed Matrix (F2)		urface (S8) (LRR K, L)
_	Below Dark Su		11)	Depleted Matrix (F3)	Thin Dark Surface	
Thick Da	rk Surface (A12	2)		Redox Dark Surface (F6)		lasses (F12) (LRR K, L, R)
	uck Mineral (S1			Depleted Dark Surface (F7) Redox Depressions (F8)	Piedmont Floodpla	iin Soils (F19) (MLRA 149B)
	eyed Matrix (S4	4)			Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Re					Red Parent Materi	al (TF2)
	Matrix (S6)		1400)		Very Shallow Dark	Surface (TF12)
Dark Sur	face (S7) (LRR				Other (Explain in I	Remarks)
		regetatio	n and wetla	nd hydrology must be present, unless disturbed or prob	lematic.	
³ Indicators c	of hydrophytic v					
	of hydrophytic v ayer (if obsei	rved):				
	ayer (if obsei	rved):				
Restrictive L	.ayer (if obsei oulders	rved):			Hydric Soil Present?	Yes 🔿 No 🖲
Restrictive L Type: B	.ayer (if obsei oulders	rved):			Hydric Soil Present?	Yes 🔘 No 🖲
Restrictive L Type: <u>B</u> Depth (inc	.ayer (if obsei oulders	rved):			Hydric Soil Present?	Yes 🔿 No 👁
Restrictive L Type: <u>B</u> Depth (inc	.ayer (if obsei oulders	rved):			Hydric Soil Present?	Yes 🔿 No 👁
Restrictive L Type: <u>B</u> Depth (inc	.ayer (if obsei oulders	rved):			Hydric Soil Present?	Yes 🔿 No 🖲
Restrictive L Type: <u>B</u> Depth (inc	.ayer (if obser	rved):			Hydric Soil Present?	Yes 🔿 No 🗩
Restrictive L Type: <u>B</u> Depth (inc	.ayer (if obser	rved):			Hydric Soil Present?	Yes 🔿 No 👁
Restrictive L Type: <u>B</u> Depth (inc	.ayer (if obser	rved):			Hydric Soil Present?	Yes 🔿 No 🖲
Restrictive L Type: <u>B</u> Depth (inc	.ayer (if obser	rved):			Hydric Soil Present?	Yes O No O
Restrictive L Type: <u>B</u> Depth (inc	.ayer (if obser	rved):			Hydric Soil Present?	Yes O No O
Restrictive L Type: <u>B</u> Depth (inc	.ayer (if obser	rved):			Hydric Soil Present?	Yes O No O
Restrictive L Type: <u>B</u> Depth (inc	.ayer (if obser	rved):			Hydric Soil Present?	Yes O No O
Restrictive L Type: <u>B</u> Depth (inc	.ayer (if obser	rved):			Hydric Soil Present?	Yes O No O
Restrictive L Type: <u>B</u> Depth (inc	.ayer (if obser	rved):			Hydric Soil Present?	Yes O No O
Restrictive L Type: <u>B</u> Depth (inc	.ayer (if obser	rved):			Hydric Soil Present?	Yes O No O
Restrictive L Type: <u>B</u> Depth (inc	.ayer (if obser	rved):			Hydric Soil Present?	Yes O No O
Restrictive L Type: <u>B</u> Depth (inc	.ayer (if obser	rved):			Hydric Soil Present?	Yes O No O
Restrictive L Type: <u>B</u> Depth (inc	.ayer (if obser	rved):			Hydric Soil Present?	Yes O No O
Restrictive L Type: <u>B</u> Depth (inc	.ayer (if obser	rved):			Hydric Soil Present?	Yes O No O
Restrictive L Type: <u>B</u> Depth (inc	.ayer (if obser	rved):			Hydric Soil Present?	Yes O No O



AN18c Wetland



AN18c Upland

Project/Site: Antrim Wind Project		City/County:	Antrim			Sampling Date: 2	17-Aug-11	
Applicant/Owner: Eolian Renewable E	nergy, LLC		Si	tate:	NH	Sampling Point:	AN18d w	etland
Investigator(s): AF JG		Section, T	ownship, Range	e: S.	Т.	R.		
Landform (hillslope, terrace, etc.):	Hillside	Local relief (c	oncave, convex,	, none)	: concave	Slope:	5.0 % /	2.9 °
Subregion (LRR or MLRA):	Lat.:		Lo	ng.:	ł.	Da	tum:	
Soil Map Unit Name:					NWI classi	fication:		
Are climatic/hydrologic conditions of Are Vegetation , Soil Are Vegetation , Soil Summary of Findings - At	, or Hydrology Significant	tly disturbed? problematic?	(If needed	al Circu I, expla	umstances" in any answ	vers in Remarks.)		etc.
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes ● No ○ Yes ● No ○ Yes ● No ○		e Sampled Area n a Wetland?	Ye	es 🖲 No 🤇)		
Remarks: (Explain alternative pro Isolated PSS associated with Strea	cedures here or in a separate repo am AN17	ort.)						

Wetland Hydrology Indicators:	Secondary Indicators (minimum of 2 required)			
Primary Indicators (minimum of one required;	Surface Soil Cracks (B6)			
Surface Water (A1)	Water-Stained Leaves (B9)	✓ Drainage Patterns (B10)		
High Water Table (A2)	Aquatic Fauna (B13)	Moss Trim Lines (B16)		
Saturation (A3)	Marl Deposits (B15)	Dry Season Water Table (C2)		
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)		
Sediment Deposits (B2)	Oxidized Rhizospheres along Living Roots (C3)	Saturation Visible on Aerial Imagery (C9)		
Drift deposits (B3)	Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)		
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)		
Iron Deposits (B5)	Shallow Aquitard (D3)			
Inundation Visible on Aerial Imagery (B7)	Thin Muck Surface (C7) Other (Explain in Remarks)	Microtopographic Relief (D4)		
Sparsely Vegetated Concave Surface (B8)		✓ FAC-neutral Test (D5)		
Field Observations:				
Surface Water Present? Yes O No 🖲	Depth (inches):			
Water Table Present? Yes O No 🖲	Depth (inches):			
Saturation Present? (includes capillary fringe) Yes • No	Depth (inches): Wetland Hydrology Present? Yes O No O			
Describe Recorded Data (stream gauge, monito	pring well, aerial photos, previous inspections), if av	vailable:		
Remarks:				

		Dominant Species?		Sampling Point:	AN18d wetland
Tree Stratum (Plot size:)	Absolute % Cover	Rel.Strat.	Indicator Status	Dominance Test worksheet:	
	0	0.0%		Number of Dominant Species	3 (A)
1				That are OBL, FACW, or FAC:	<u> </u>
2	0	0.0%		Total Number of Dominant	
3	0	0.0%		Species Across All Strata:	<u> </u>
4	0	0.0%			
5		0.0%		Percent of dominant Species That Are OBL, FACW, or FAC:	100.0% (A/B)
6	0	0.0%		That Are OBE, TACW, OF TAC.	
7		0.0%		Prevalence Index worksheet:	
Sapling/Shrub Stratum (Plot size: 15')	0	= Total Cove	r		ultiply by:
1. Fraxinus pennsylvanica	15	60.0%	FACW		1 = 0
2. Betula alleghaniensis	10	40.0%	FAC	· · ·	2 = 226
3.		0.0%		· ·	3 = 30
4	0	0.0%		FACU species x	4 =
т Б	0	0.0%		0	5 = 0
5				Column Totals: 123 (A) 256 (B)
6		0.0%			
1	 25	0.0%	 r	Prevalence Index = B/A =	2.081
Herb Stratum (Plot size: 5')				Hydrophytic Vegetation Indicato	
1.Onoclea sensibilis	80	81.6%	FACW	Rapid Test for Hydrophytic	Vegetation
2.Eupatoriadelphus dubius	5	5.1%	FACW	✓ Dominance Test is > 50%	
3 Frankrige managed contract		3.1%	FACW	V Prevalence Index is $\leq 3.0^{1}$	
4.Osmunda cinnamomea				Morphological Adaptations	¹ (Provide supporting
5.			FACW	data in Remarks or on a sep	oarate sheet)
	0	0.0%		Problematic Hydrophytic Ve	egetation ¹ (Explain)
6	0	0.0%		1	
7	0	0.0%		¹ Indicators of hydric soil and w be present, unless disturbed or	etland hydrology must
8	0	0.0%		· · · ·	
9	0	0.0%		Definitions of Vegetation St	rata:
10	0	0.0%		Tree - Woody plants, 3 in. (7.6 c	m) or more in diameter
11.	0	0.0%		at breast height (DBH), regardles	
12.	0	0.0%			
Woody Vine Stratum (Plot size:)	98	= Total Cove	r	Sapling/shrub - Woody plants les greater than 3.28 ft (1m) tall	ss than 3 in. DBH and
	0				hu) planta regardlaga of
1		0.0%		Herb - All herbaceous (non-wood size, and woody plants less than	3.28 ft tall.
2	0				
3	0	0.0%		Woody vine - All woody vines gr	eater than 3.28 ft in
4	0	0.0%		height.	
	0	= Total Cove	r		
				Hydrophytic	
				Vogotation	<u>`</u>
				Present? Yes No)
Remarks: (Include photo numbers here or on a separate she	et.)				

	ription: (Des		the depth	needed to				nfirm the	absence of indicators.)		
Depth (inches)	- Color (I	Matrix	- %	Color	Re moist)	dox Featu		Loc ²	Texture	Remarks	
0-7	10YR	3/2	100%		moisty		Туре		Fine Sandy Loam	Kennarks	
				10//D		100/					
7-11	2.5Y	4/2	90%	10YR	5/8	10%	C	М	Fine Sandy Loam		
									·		
									·		
										·	
¹ Type: C=Cor	ncentration. D	- Depletio	n. RM=Rec	luced Matrix,	CS=Cover	ed or Coate	d Sand Gra	ains ² Loc	ation: PL=Pore Lining. M=N		
Hydric Soil		•								ematic Hydric Soils :	3
Histosol				Poly	value Belo	w Surface (S8) (LRR R	1			
Histic Epi	ipedon (A2)			MLF	A 149B)					(LRR K, L, MLRA 149B)	
Black His				_		face (S9) (L				ox (A16) (LRR K, L, R) or Peat (S3) (LRR K, L, F	ור
Hydroger	n Sulfide (A4)					Mineral (F1)			Dark Surface (S7)		X)
Stratified	Layers (A5)					Matrix (F2)			_	Surface (S8) (LRR K, L)	
Depleted	Below Dark S	Surface (A	11)		leted Matr				Thin Dark Surface		
Thick Da	rk Surface (A1	12)		_		urface (F6)	_			Masses (F12) (LRR K, L,	R)
Sandy M	uck Mineral (S	51)				Surface (F	7)		_	ain Soils (F19) (MLRA 14	
	eyed Matrix (S	S4)			ox Depres	sions (F8)			_	5) (MLRA 144A, 145, 149	
Sandy Re									Red Parent Mater	ial (TF2)	
	Matrix (S6)								Very Shallow Darl	Surface (TF12)	
Dark Sur	face (S7) (LRI	r r, mlra	(149B)						Other (Explain in	Remarks)	
³ Indicators of	of hydrophytic	vegetatio	n and wetla	and hydrolog	must be	present, un	less disturb	ed or prob	lematic.		
Restrictive L	ayer (if obs	erved):									
Type:											
Depth (ind	ches):								Hydric Soil Present?	Yes $ullet$ No $igcap$	
Remarks:											

Project/Site: Antrim Wind Project		City/County: Antrim		Sampling Date: 1	7-Aug-11
Applicant/Owner: Eolian Renewable E	nergy, LLC	Sta	nte: NH	Sampling Point:	an18d upland
Investigator(s): AF JG		Section, Township, Range:	S. T.	R.	
Landform (hillslope, terrace, etc.):	Hillside	Local relief (concave, convex, r	Slope:	8.0 % / 4.6°	
Subregion (LRR or MLRA):	Lat.:	Lon	g.:	Datum:	
Soil Map Unit Name:			NWI classi	fication:	
Are climatic/hydrologic conditions of Are Vegetation , Soil Are Vegetation , Soil Summary of Findings - At	, or Hydrology Significant , or Hydrology naturally p	tly disturbed? Are "Normal problematic? (If needed,	(If no, explain ir I Circumstances" explain any answ ns, transects	present? Yes	
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes O No O Yes No O Yes No O	Is the Sampled Area within a Wetland?	Yes 🔿 No 🤇		
Remarks: (Explain alternative provologged upland	edures here or in a separate repo	ort.)			

Wetland Hydrology Indicators:	Secondary Indicators (minimum of 2 required)			
Primary Indicators (minimum of one required;	check all that apply)	_ Surface Soil Cracks (B6)		
Surface Water (A1)	Water-Stained Leaves (B9)	Drainage Patterns (B10)		
High Water Table (A2)	Aquatic Fauna (B13)	Moss Trim Lines (B16)		
Saturation (A3)	Marl Deposits (B15)	Dry Season Water Table (C2)		
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)		
Sediment Deposits (B2)	Oxidized Rhizospheres along Living Roots (C3)	Saturation Visible on Aerial Imagery (C9)		
Drift deposits (B3)	Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)		
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)		
Iron Deposits (B5)	Thin Muck Surface (C7)	Shallow Aquitard (D3)		
Inundation Visible on Aerial Imagery (B7)	Other (Explain in Remarks)	Microtopographic Relief (D4)		
Sparsely Vegetated Concave Surface (B8)		FAC-neutral Test (D5)		
Field Observations:				
Surface Water Present? Yes O No •	Depth (inches):			
Water Table Present? Yes O No O	Depth (inches):	rdroloay Present? Yes 🔿 No 🖲		
Saturation Present? (includes capillary fringe) Yes O No •	Depth (inches):	rdrology Present? Yes 🔾 No 🖲		
Describe Recorded Data (stream gauge, monit	oring well, aerial photos, previous inspections), if av	ailable:		
Remarks:				

	11.5	Dominant Species?		Sampling Point: an18d upland
Tree Stratum (Plot size: 30')	Absolute % Cover	Rel.Strat.	Indicator Status	Dominance Test worksheet:
				Number of Dominant Species
1. Tsuga canadensis	33	43.4%	FACU	That are OBL, FACW, or FAC: 2 (A)
2. Populus tremula	10	13.2%	FACU	Total Number of Dominant
3. Fraxinus pennsylvanica	33	43.4%	FACW	Species Across All Strata:6(B)
4		0.0%		
5	0	0.0%		Percent of dominant Species That Are OBL EACW or EAC: 33.3% (A/B)
6	0	0.0%		That Are OBL, FACW, or FAC:(A/B)
7	0	0.0%		Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: 15')		= Total Cove	r	Total % Cover of: Multiply by:
1. Acer rubrum	25	33.3%	FAC	OBL species $0 \times 1 = 0$
2. Fagus grandifolia	45	20.0%	FACU	FACW species $33 \times 2 = 66$
		33.3%	FACU	FAC species $30 \times 3 = 90$
4		13.3%	FACU	FACU species x 4 =424
			FACU	UPL species $25 \times 5 = 125$
5		0.0%		Column Totals: 194 (A) 705 (B)
6		0.0%		
7		0.0%		Prevalence Index = B/A = <u>3.634</u>
Herb Stratum (Plot size: 5')	75	= Total Cove	r	Hydrophytic Vegetation Indicators:
1.Solidago canadensis	8	18.6%	FACU	Rapid Test for Hydrophytic Vegetation
2 Dubus shumaus				Dominance Test is > 50%
E-	5		FACU-	□ Prevalence Index is \leq 3.0 ¹
3.Dennstaedtla punctilobula	-	58.1%	UPL	Morphological Adaptations ¹ (Provide supporting
4. Trientalis borealis	5	11.6%	FAC	data in Remarks or on a separate sheet)
5	0	0.0%		Problematic Hydrophytic Vegetation ¹ (Explain)
6	0	0.0%		
7	0	0.0%		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
8	0	0.0%		· · · · ·
9	0	0.0%		Definitions of Vegetation Strata:
10.	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter
11.	0	0.0%		at breast height (DBH), regardless of height.
12.	0	0.0%		
Woody Vine Stratum (Plot size:)	43	= Total Cove	r	Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall
` `	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of
0	0	0.0%		size, and woody plants less than 3.28 ft tall.
3	0	0.0%		
J.	0	0.0%		Woody vine - All woody vines greater than 3.28 ft in height.
4				
	0	= Total Cove	r	
				Hydrophytic
				Vegetation
				Present? Yes V No 🔍
Remarks: (Include photo numbers here or on a separate she	et.)			

(inches) [•]		rix		Re	edox Features			
	Color (mois	t) 9	% (Color (moist)	% Туре	1 Loc ²	Texture	Remarks
	10YR 3	/2 100	%				Loam	
6-10	2.5Y 5	/1 100	%				Fine Loamy Sand	
10-16	10YR 4	/3 100	 %				Fine Sandy Loam	
							·	
							<u> </u>	
		pletion. RM	=Reduced I	Matrix, CS=Cover	red or Coated Sand G	rains ² Loca	tion: PL=Pore Lining. M=Ma	
Hydric Soil In			г	-		_	Indicators for Proble	matic Hydric Soils : ³
Histosol (A			L	Polyvalue Belc MLRA 149B)	ow Surface (S8) (LRR	R,	2 cm Muck (A10) (LRR K, L, MLRA 149B)
Histic Epipe			Γ	-	face (S9) (LRR R, ML	.RA 149B)	Coast Prairie Redo	(A16) (LRR K, L, R)
Black Histic					Mineral (F1) LRR K, I			r Peat (S3) (LRR K, L, R)
Stratified La				Loamy Gleyed			Dark Surface (S7)	
	Below Dark Surfa	ce (A11)		Depleted Matr	rix (F3)			Irface (S8) (LRR K, L)
_	Surface (A12)			Redox Dark Su	urface (F6)		Thin Dark Surface	
	k Mineral (S1)			Depleted Dark	k Surface (F7)			asses (F12) (LRR K, L, R)
_	/ed Matrix (S4)			Redox Depres	ssions (F8)			n Soils (F19) (MLRA 149B)
Sandy Redo							Red Parent Materia) (MLRA 144A, 145, 149B) J. (TE2)
Stripped Ma	atrix (S6)						Very Shallow Dark	
Dark Surfac	ce (S7) (LRR R, I	MLRA 149B)				Other (Explain in R	
	budrophutio uogo	etation and	wetland hv	drology must be	present, unless distu	bed or proble		
³ Indicators of h	nvarobnytić vede				<u> </u>	p		
		-0						
Restrictive Lay	yer (if observe	d):						
Restrictive Lay	yer (if observe ulders	d):					Hydric Soil Present?	Yes 🔾 No 🖲
Restrictive Lay Type: <u>Bou</u> Depth (inche	yer (if observe ulders	d):					Hydric Soil Present?	Yes 🔿 No 🖲
Restrictive Lay Type: <u>Bou</u> Depth (inche Remarks:	yer (if observe ulders	d):					Hydric Soil Present?	Yes 🔍 No 🖲
Restrictive Lay Type: <u>Bou</u> Depth (inche	yer (if observe ulders	d):					Hydric Soil Present?	Yes 🔾 No 🖲
Restrictive Lay Type: <u>Bou</u> Depth (inche Remarks:	yer (if observe ulders	d):					Hydric Soil Present?	Yes 🔾 No 🖲
Restrictive Lay Type: <u>Bou</u> Depth (inche Remarks:	yer (if observe ulders	d):					Hydric Soil Present?	Yes 🔾 No 🖲
Restrictive Lay Type: <u>Bou</u> Depth (inche Remarks:	yer (if observe ulders	d):					Hydric Soil Present?	Yes 🗘 No 🖲
Restrictive Lay Type: <u>Bou</u> Depth (inche Remarks:	yer (if observe ulders	d):					Hydric Soil Present?	Yes 🔾 No 🖲
Restrictive Lay Type: <u>Bou</u> Depth (inche Remarks:	yer (if observe ulders	d):					Hydric Soil Present?	Yes 🔾 No 🖲
Restrictive Lay Type: <u>Bou</u> Depth (inche Remarks:	yer (if observe ulders	d):					Hydric Soil Present?	Yes O No O
Restrictive Lay Type: <u>Bou</u> Depth (inche Remarks:	yer (if observe ulders	d):					Hydric Soil Present?	Yes O No O
Restrictive Lay Type: <u>Bou</u> Depth (inche Remarks:	yer (if observe ulders	d):					Hydric Soil Present?	Yes O No O
Restrictive Lay Type: <u>Bou</u> Depth (inche Remarks:	yer (if observe ulders	d):					Hydric Soil Present?	Yes O No O
Restrictive Lay Type: <u>Bou</u> Depth (inche Remarks:	yer (if observe ulders	d):					Hydric Soil Present?	Yes O No O
Restrictive Lay Type: <u>Bou</u> Depth (inche Remarks:	yer (if observe ulders	d):					Hydric Soil Present?	Yes O No O
Restrictive Lay Type: <u>Bou</u> Depth (inche Remarks:	yer (if observe ulders	d):					Hydric Soil Present?	Yes No 🖲
Restrictive Lay Type: <u>Bou</u> Depth (inche Remarks:	yer (if observe ulders	d):					Hydric Soil Present?	Yes No 🖲
Restrictive Lay Type: <u>Bou</u> Depth (inche Remarks:	yer (if observe ulders	d):					Hydric Soil Present?	Yes O No O
Restrictive Lay Type: <u>Bou</u> Depth (inche Remarks:	yer (if observe ulders	d):					Hydric Soil Present?	Yes No 💿
Restrictive Lay Type: <u>Bou</u> Depth (inche Remarks:	yer (if observe ulders	d):					Hydric Soil Present?	Yes No 💿



AN18d Upland



AN18d Wetland

Project/Site: Antrim Wind Project	City/County	Antrim		Sampling Date: 1	17-Aug-11
Applicant/Owner: Eolian Renewable Energy, LLC		State	: NH	Sampling Point:	AN18e Wetland
Investigator(s): AF JG	Section,	Township, Range: S	. т.	R.	
Landform (hillslope, terrace, etc.): Hillside	Local relief (concave, convex, no	ne): concave	Slope:	10.0 % / 5.7 °
Subregion (LRR or MLRA):	.:	Long.:		Da	tum:
Soil Map Unit Name:	-		NWI classif	ication: PFO	
	antly disturbed? ly problematic? g sampling	(If needed, ex	. ,	ers in Remarks.)	
Hydrophytic Vegetation Present?YesNoHydric Soil Present?YesNoWetland Hydrology Present?YesNo		ne Sampled Area iin a Wetland?	Yes 🖲 No C)	
Remarks: (Explain alternative procedures here or in a separate re Isolated PFO adjacent to Stream AN17.	eport.)				

Wetland Hydrology Indicators:		Secondary Indicators (minimum of 2 required)
Primary Indicators (minimum of one required;	check all that apply)	Surface Soil Cracks (B6)
Surface Water (A1)	✓ Water-Stained Leaves (B9)	✓ Drainage Patterns (B10)
High Water Table (A2)	Aquatic Fauna (B13)	Moss Trim Lines (B16)
Saturation (A3)	Marl Deposits (B15)	Dry Season Water Table (C2)
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)
Sediment Deposits (B2)	Oxidized Rhizospheres along Living Roots (C3)	Saturation Visible on Aerial Imagery (C9)
Drift deposits (B3)	Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)
Iron Deposits (B5)	Shallow Aquitard (D3)	
Inundation Visible on Aerial Imagery (B7)	Thin Muck Surface (C7) Other (Explain in Remarks)	Microtopographic Relief (D4)
Sparsely Vegetated Concave Surface (B8)		✓ FAC-neutral Test (D5)
Field Observations:		
Surface Water Present? Yes O No 🖲	Depth (inches):	
Water Table Present? Yes O No 🖲	Depth (inches):	
Saturation Present? Yes • No ·	Wetland Hyc Depth (inches): 0	irology Present? Yes 🖲 No 🔿
Describe Recorded Data (stream gauge, monito	ring well, aerial photos, previous inspections), if ava	ilable:
Remarks:		

VEGETATION Ose scientific harnes of pla	111.5	Dominant Species?		Sampling Point: AN18e Wetland
Tree Stratum (Plot size: 30')	Absolute % Cover	Rel.Strat.	Indicator Status	Dominance Test worksheet:
				Number of Dominant Species
1. Fraxinus pennsylvanica	15		FACW	That are OBL, FACW, or FAC:6 (A)
2. Acer rubrum	20	40.0%	FAC	Total Number of Dominant
3. Betula alleghaniensis	15	30.0%	FAC	Species Across All Strata: 6 (B)
4		0.0%		
5	0	0.0%		Percent of dominant Species That Are OBL, FACW, or FAC:100.0% (A/B)
6		0.0%		
7	0	0.0%		Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: 15')	50	= Total Cove	r	Total % Cover of: Multiply by:
1. Betula alleghaniensis	50	100.0%	FAC	OBL species $0 \times 1 = 0$
2		0.0%		FACW species <u>136</u> x 2 = <u>272</u>
3.	0	0.0%		FAC species x 3 =255
Λ	0	0.0%		FACU species $0 \times 4 = 0$
4	0	0.0%		UPL species $0 \times 5 = 0$
5	•			Column Totals: 221 (A) 527 (B)
6		0.0%		
7	0 50	0.0% = Total Cove		Prevalence Index = B/A = 2.385
Herb Stratum (Plot size: 5')				Hydrophytic Vegetation Indicators:
1.Osmunda cinnamomea	33	27.3%	FACW	Rapid Test for Hydrophytic Vegetation
2. Onoclea sensibilis	33	27.3%	FACW	✓ Dominance Test is > 50%
3.Eupatoriadelphus dubius	20	16.5%	FACW	✓ Prevalence Index is ≤3.0 1
1 Immediane concercie		16.5%	FACW	Morphological Adaptations ¹ (Provide supporting
E o u vicu		12.4%	FACW	data in Remarks or on a separate sheet)
6.		0.0%	TACW	Problematic Hydrophytic Vegetation ¹ (Explain)
7.	0			¹ Indicators of hydric soil and wetland hydrology must
	0	0.0%		be present, unless disturbed or problematic.
8		0.0%		Definitions of Vegetation Strata:
9	0	0.0%		bennitions of vegetation strata.
10	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter
11	0	0.0%		at breast height (DBH), regardless of height.
12	0	0.0%		Sapling/shrub - Woody plants less than 3 in. DBH and
Woody Vine Stratum (Plot size:)	121	= Total Cove	r	greater than 3.28 ft (1m) tall.
	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of
2.	0	0.0%		size, and woody plants less than 3.28 ft tall.
3	0	0.0%		Weady using All weady using greater than 2.20 ft in
Δ	0	0.0%		Woody vine - All woody vines greater than 3.28 ft in height.
	0	= Total Cove	r	
				Hydrophytic Vegetation
				Present? Yes No
Remarks: (Include photo numbers here or on a separate she	eet.)			

Depth	ription: (De	Matrix	the depth	needed to		t the indic dox Featu		onfirm the	absence of indicators.)	
(inches)	Color (%	Color (~ %		Loc ²	Texture	Remarks
0-8	10YR	2/1	100%						Muck	
8-11	2.5Y	4/1	75%	10YR	4/6	25%	С	М	mucky sand	
11-13	10YR	3/2							Sandy Loam	
										·
										·
										·
					- <u> </u>					
¹ Type: C=Co	ncentration. D	=Depletio	n. RM=Red	uced Matrix,	CS=Cover	ed or Coate	ed Sand Gra	ains ² Loc	ation: PL=Pore Lining. M=N	/atrix
	Indicators:								Indicators for Probl	ematic Hydric Soils : ³
Histosol					value Belo A 149B)	w Surface ((S8) (LRR F	R,	2 cm Muck (A10)	(LRR K, L, MLRA 149B)
_	ipedon (A2)					ace (S9) (I		2A 149R)	Coast Prairie Rede	ox (A16) (LRR K, L, R)
Black His						Mineral (F1			5 cm Mucky Peat	or Peat (S3) (LRR K, L, R)
	n Sulfide (A4) I Layers (A5)					Matrix (F2)			Dark Surface (S7)	(LRR K, L)
	Below Dark S	Surfaco (A	11)		leted Matri					Surface (S8) (LRR K, L)
	rk Surface (A					urface (F6)			Thin Dark Surface	
_	uck Mineral (S			🗌 Dep	leted Dark	Surface (F	7)			Masses (F12) (LRR K, L, R)
_	leyed Matrix (Red	ox Depres	sions (F8)				ain Soils (F19) (MLRA 149B)
_	edox (S5)	51)								5) (MLRA 144A, 145, 149B)
	Matrix (S6)								Red Parent Mater	
_	face (S7) (LRI	r R, MLRA	A 149B)						Other (Explain in	
³ Indicators (of hydrophytic	vegetatio	n and wetla	nd hydrology	/ must he	nresent un	less disturk	ed or prob		Kemarks)
				ind nydrolog	must be	present, un				
	Layer (if obs	erved):								
Type:									Hydric Soil Present?	Yes $oldsymbol{eta}$ No $igodoldsymbol{eta}$
Depth (in	ches):									
Remarks:										

Project/Site: Antrim Wind Project		City/County: Antrim		Sampling Date: 1	7-Aug-11	
Applicant/Owner: Eolian Renewable E	nergy, LLC	Sta	ate: NH	Sampling Point:	AN18e upland	
Investigator(s): AF JG		Section, Township, Range:	S. T.	R.		
Landform (hillslope, terrace, etc.):	Hillside	Local relief (concave, convex, i	none): convex	Slope:	15.0 % / 8.5 [°]	
Subregion (LRR or MLRA):	Lat.:	Lon	g.:	Dat	tum:	
Soil Map Unit Name:		NWI classification:				
Are climatic/hydrologic conditions of Are Vegetation , Soil Are Vegetation , Soil Summary of Findings - At	, or Hydrology Significant , or Hydrology naturally p	tly disturbed? Are "Norma problematic? (If needed,	(If no, explain ir) ا Circumstances" explain any answ ns, transects	present? Yes		
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes No Yes No Yes No No	Is the Sampled Area within a Wetland?	Yes 🔿 No 🖲			
Remarks: (Explain alternative prov Very Bouldery.	edures here or in a separate repo	rt.)				

Wetland Hydrology Indicators:	Secondary Indicators (minimum of 2 required)					
Primary Indicators (minimum of one required;	Surface Soil Cracks (B6)					
Surface Water (A1)	Water-Stained Leaves (B9)	Drainage Patterns (B10)				
High Water Table (A2)	Aquatic Fauna (B13)	Moss Trim Lines (B16)				
Saturation (A3)	Marl Deposits (B15)	Dry Season Water Table (C2)				
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)				
Sediment Deposits (B2)	Oxidized Rhizospheres along Living Roots (C3)	Saturation Visible on Aerial Imagery (C9)				
Drift deposits (B3)	Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)				
Algal Mat or Crust (B4)		Geomorphic Position (D2)				
□ Iron Deposits (B5) □ Thin Muck Surface (C7)		Shallow Aquitard (D3)				
Inundation Visible on Aerial Imagery (B7)	Other (Explain in Remarks)	Microtopographic Relief (D4)				
Sparsely Vegetated Concave Surface (B8)		FAC-neutral Test (D5)				
Field Observations:						
Surface Water Present? Yes O No •	Depth (inches):					
Water Table Present? Yes O No O	Depth (inches):	rdroloay Present? Yes 🔿 No 🖲				
Saturation Present? (includes capillary fringe) Yes No Wetland Hy		rdrology Present? Yes 🔾 No 🖲				
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:						
Remarks:						

VEGETATION OSC Scientific hames of pla		Dominant Species?		Sampling Point: AN18e upland
	Absolute	Rel.Strat.		Dominance Test worksheet:
Tree Stratum (Plot size: <u>30'</u>)	% Cover		Status	Number of Dominant Species
1. Fagus grandifolia	33	43.4%	FACU	That are OBL, FACW, or FAC: 2 (A)
2. Tsuga canadensis	33	43.4%	FACU	Total Number of Dominant
3. Betula papyrifera	10	13.2%	FACU	Species Across All Strata: 7 (B)
4		0.0%		
5	0	0.0%		Percent of dominant Species That Are OBL_EACW_or_EAC·28.6% (A/B)
6	0	0.0%		That Are OBL, FACW, or FAC:(A/B)
7	0	0.0%		Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: 15')	76	= Total Cove	r	Total % Cover of: Multiply by:
1. Fagus grandifolia	40	53.3%	FACU	$\begin{array}{ccc} \text{OBL speciles} & 0 & \text{x 1} = & 0 \\ \hline & 0 & \end{array}$
2. Acer pensylvanicum	20	26.7%	FACU	FACW species $0 \times 2 = 0$
3. Betula alleghaniensis	45	20.0%	FAC	FAC speci es $30 \times 3 = 90$
4.		0.0%		FACU speci es 141 x 4 = 564
5.	0	0.0%		UPL species $0 \times 5 = 0$
C	0	0.0%		Column Totals: 171 (A) 654 (B)
7	0	0.0%		·
-		= Total Cove	r	Prevalence Index = B/A = <u>3.825</u>
Herb Stratum (Plot size: 5')			-	Hydrophytic Vegetation Indicators:
1. Thelypteris noveboracensis	15	75.0%	FAC	Rapid Test for Hydrophytic Vegetation
2.Quercus rubra	5	25.0%	FACU-	Dominance Test is > 50%
3.	0	0.0%		□ Prevalence Index is \leq 3.0 ¹
4.	0	0.0%		Morphological Adaptations ¹ (Provide supporting
5.	0	0.0%		data in Remarks or on a separate sheet)
6.	0	0.0%		Problematic Hydrophytic Vegetation ¹ (Explain)
7.				¹ Indicators of hydric soil and wetland hydrology must
	0	0.0%		be present, unless disturbed or problematic.
8	0	0.0%		Definitions of Vegetation Strata:
9	0	0.0%		
10	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter
11	0	0.0%		at breast height (DBH), regardless of height.
12	0	0.0%		Sapling/shrub - Woody plants less than 3 in. DBH and
Woody Vine Stratum (Plot size:)	20	= Total Cove	r	greater than 3.28 ft (1m) tall.
1	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of
2	0	0.0%		size, and woody plants less than 3.28 ft tall.
3	0	0.0%		Woody vine - All woody vines greater than 3.28 ft in
4	0	0.0%		height.
	0	= Total Cove	r	
				Hydrophytic Vegetation
				Present? Yes No •
Pomarka: (Include photo numbers here or on a concrete she	not)			
Remarks: (Include photo numbers here or on a separate she	et.)			

Depth		Matrix		needed to document the indicator or confirm the Redox Features	-	
(inches)	Color (n		%	Color (moist) % Type 1 Loc ²	Texture	Remarks
0-5	10YR	3/2	100%		Loam	
5-7	2.5Y	4/8	100%		Fine Sand	
7-16	10YR	4/3	100%		Fine Sandy Loam	
					-	
¹ Type: C=Con	centration. D=	=Depletio	n. RM=Redu	uced Matrix, CS=Covered or Coated Sand Grains ² Loc	ation: PL=Pore Lining. M=N	/atrix
Hydric Soil					ī	ematic Hydric Soils : ³
Histosol (Polyvalue Below Surface (S8) (LRR R,		(LRR K, L, MLRA 149B)
Histic Epi	pedon (A2)			MLRA 149B)		ox (A16) (LRR K, L, R)
Black His	tic (A3)			Thin Dark Surface (S9) (LRR R, MLRA 149B)		or Peat (S3) (LRR K, L, R)
	n Sulfide (A4)			Loamy Mucky Mineral (F1) LRR K, L)	Dark Surface (S7)	
	Layers (A5)			Loamy Gleyed Matrix (F2)		Surface (S8) (LRR K, L)
	Below Dark S		11)	Redox Dark Surface (F6)	Thin Dark Surface	e (S9) (LRR K, L)
_	k Surface (A1			Depleted Dark Surface (F7)	Iron-Manganese I	Masses (F12) (LRR K, L, R)
	uck Mineral (S			Redox Depressions (F8)	Piedmont Floodpl	ain Soils (F19) (MLRA 149B)
Sandy Ge	eyed Matrix (S	(4)				6) (MLRA 144A, 145, 149B)
	Matrix (S6)				Red Parent Mater	
	face (S7) (LRR	R. MLRA	149B)		Very Shallow Dar	
					Other (Explain in	Remarks)
			n and wettai	nd hydrology must be present, unless disturbed or prob		
Restrictive L		erved):				
Type: B					Hydric Soil Present?	Yes 🔿 No 🖲
Depth (inc	thes): 16					
Remarks:						
Spodosol						



AN18e Wetland



AN18e Upland

				0	
Project/Site: Antrim Wind Project		City/County: Antrim		Sampling Date:	17-Aug-11
Applicant/Owner: Eolian Renewable E	nergy, LLC		State: NH	Sampling Point:	AN18f wetland
Investigator(s): AF JG		Section, Township, Rang	ge: S. T.	R.	-
Landform (hillslope, terrace, etc.):	Swale	Local relief (concave, conve	ex, none): convex	Slope:	5.0%/2.9
Subregion (LRR or MLRA):	Lat	 : L	_ong.:	Da	tum:
Soil Map Unit Name:			NWI class	ification: PFO	
Are Vegetation , Soil Are Vegetation , Soil Soil Summary of Findings - At	, or Hydrology 🗌 natural	ly problematic? (If neede	mal Circumstances" ed, explain any answ ions, transects	vers in Remarks.)	
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes No Yes No Yes No No 	Is the Sampled Are within a Wetland?	ea Yes 🖲 No 🤇	\supset	
Remarks: (Explain alternative pro Isolated PFO adjacent to Stream A	•	• •	with old road bed.		

Wetland Hydrology Indicators:		Secondary Indicators (minimum of 2 required)
Primary Indicators (minimum of one required;	check all that apply)	Surface Soil Cracks (B6)
Surface Water (A1)	✓ Water-Stained Leaves (B9)	✓ Drainage Patterns (B10)
High Water Table (A2)	Aquatic Fauna (B13)	Moss Trim Lines (B16)
Saturation (A3)	Marl Deposits (B15)	Dry Season Water Table (C2)
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)
Sediment Deposits (B2)	Oxidized Rhizospheres along Living Roots (C3)	Saturation Visible on Aerial Imagery (C9)
Drift deposits (B3)	Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)
Iron Deposits (B5)	Thin Muck Surface (C7)	Shallow Aquitard (D3)
Inundation Visible on Aerial Imagery (B7)	Other (Explain in Remarks)	Microtopographic Relief (D4)
Sparsely Vegetated Concave Surface (B8)		FAC-neutral Test (D5)
Field Observations:		
Surface Water Present? Yes • No O	Depth (inches):4	
Water Table Present? Yes O No O	Depth (inches):	drology Present? Yes 🖲 No 🔾
Saturation Present? (includes capillary fringe) Yes • No	Wetland Hy Depth (inches): 0	drology Present? Yes $ullet$ No $igcup$
	pring well, aerial photos, previous inspections), if ava	ailable:
Remarks:		

	11.5	Dominant Species?		Sampling Point: AN18f wetland
Tree Stratum (Plot size: 30')	Absolute % Cover	Rel.Strat.	Indicator Status	Dominance Test worksheet:
1. Betula alleghaniensis	33	✓ 100.0%	FAC	Number of Dominant Species That are OBL, FACW, or FAC: 5 (A)
2.	0	0.0%		
3.		0.0%		Total Number of Dominant Species Across All Strata: 5 (B)
4	0	0.0%		Species Across All Strata: 5 (B)
5.	0	0.0%		Percent of dominant Species
6	0	0.0%		That Are OBL, FACW, or FAC:(A/B)
7		0.0%		Prevalence Index worksheet:
		= Total Cove		Total % Cover of: Multiply by:
Sapling/Shrub Stratum (Plot size: 15')			1	$\frac{1}{0\text{BL species}} = 0 \text{ x 1} = 0$
1. Betula alleghaniensis	25	55.6%	FAC	FACW species $43 \times 2 = 86$
2. Acer rubrum	10	22.2%	FAC	
3. Fraxinus pennsylvanica	10	22.2%	FACW	
4	0	0.0%		FACU Specilles $x 4 = 0$
5	0	0.0%		UPL species $x = x = x$
6	0	0.0%		Column Totals: <u>111</u> (A) <u>290</u> (B)
7	0	0.0%		Prevalence Index = $B/A = 2.613$
	45	= Total Cove	r	Hydrophytic Vegetation Indicators:
Herb Stratum (Plot size: 5')				Rapid Test for Hydrophytic Vegetation
1. Onoclea sensibilis	33	✓ 100.0%	FACW	✓ Dominance Test is > 50%
2	0	0.0%		✓ Prevalence Index is $\leq 3.0^{-1}$
3	0	0.0%		Morphological Adaptations ¹ (Provide supporting
4	0	0.0%		data in Remarks or on a separate sheet)
5	0	0.0%		Problematic Hydrophytic Vegetation ¹ (Explain)
6	0	0.0%		
7	0	0.0%		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
8	0	0.0%		
9	0	0.0%		Definitions of Vegetation Strata:
10	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter
11	0	0.0%		at breast height (DBH), regardless of height.
12	0	0.0%		Sapling/shrub - Woody plants less than 3 in. DBH and
Woody Vine Stratum (Plot size:)	33	= Total Cove	r	greater than 3.28 ft (1m) tall.
1	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of
2.	0	0.0%		size, and woody plants less than 3.28 ft tall.
3	0	0.0%		Woody vine - All woody vines greater than 3.28 ft in
4	0	0.0%		height.
	0	= Total Cove	r	
				Hydrophytic Vegetation
				Present? Yes No
Remarks: (Include photo numbers here or on a separate she	et.)			

(inches)		Matrix				dox Featu		- 1. 2	- T	-	
	Color (m		%	Color (moist)	%	Туре	Loc ²	Texture	Rem	arks
0-8	10YR	3/2	100%						Sandy Loam		
8-16	2.5Y	5/2	80%	10YR	4/6	20%	C	Μ	Gravelly Sand		
									. <u> </u>		
Evpe: C=Cor		 Depletion	 PM_Pedu			ed or Coate	d Sand Gr		ation: PL=Pore Lining. M=M	atriv	
lydric Soil I		Depletion	I. RW-Read	iceu Matrix,	CJ-COVE						3
Histosol (Dolu	aluo Polo	w Surface (מס (ו מס ר		Indicators for Proble	ematic Hydric	Soils: ³
_	pedon (A2)			MLR	A 149B)	w surrace (30) (LKK P	,	2 cm Muck (A10)		
Black Hist				🗌 Thin	Dark Surf	ace (S9) (L	RR R, MLR	RA 149B)	Coast Prairie Redo		
_	n Sulfide (A4)			🗌 Loar	ny Mucky	Mineral (F1)) LRR K, L)		5 cm Mucky Peat o		R K, L, R)
	Layers (A5)			🗌 Loar	ny Gleyed	Matrix (F2)			Dark Surface (S7)		
	Below Dark Su	Irface (A1	1)	Depl	eted Matri	ix (F3)			Polyvalue Below S		
	k Surface (A12			Redo	ox Dark Su	urface (F6)			Thin Dark Surface		
	uck Mineral (S1)					Surface (F	7)		Piedmont Floodpla		
	eyed Matrix (S4			Redo	ox Depres	sions (F8)			Mesic Spodic (TA6		
Sandy Re	edox (S5)								Red Parent Materia		143, 1470)
Stripped	Matrix (S6)								Very Shallow Dark)
Dark Surf	face (S7) (LRR	R, MLRA	149B)						Other (Explain in F		
³ Indicators o	f hydrophytic v	egetation	n and wetlar	nd hydrology	must be	present, un	less disturb	ed or probl			
	ayer (if obser							·			
Type:	ayer (ir obser	veu).									
Depth (inc	hes).								Hydric Soil Present?	Yes 🖲	No 🔾
Deptil (inc											
Remarks: Iluvial Soils											

Project/Site: Antrim Wind Project		City/County: Antrim		Sampling Date: 1	7-Aug-11
Applicant/Owner: Eolian Renewable E	inergy, LLC		State: NH	Sampling Point:	AN18f Upland
Investigator(s): AF JG		Section, Township, Rang	e: S. T.	R.	
Landform (hillslope, terrace, etc.):	Toeslope	Local relief (concave, conve	, none): convex	Slope:	10.0 % / 5.7 °
Subregion (LRR or MLRA):	Lat.:	Lo	ong.:	Dat	tum:
Soil Map Unit Name:			NWI classi	fication:	
Are climatic/hydrologic conditions of Are Vegetation , Soil Are Vegetation , Soil Summary of Findings - At	, or Hydrology Significant	tly disturbed? Are "Norn problematic? (If neede	(If no, explain ir nal Circumstances" d, explain any answ ONS, transects	present? Yes	
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes ○ No ● Yes ○ No ● Yes ○ No ●	Is the Sampled Area within a Wetland?	Yes 🔿 No 🤆		
Remarks: (Explain alternative pro	ocedures here or in a separate repo	prt.)			

Secondary Indicators (minimum of 2 required)			
Secondary Indicators (minimum of 2 required)			
Surface Soil Cracks (B6)			
Drainage Patterns (B10)			
Moss Trim Lines (B16)			
Dry Season Water Table (C2)			
Crayfish Burrows (C8)			
Saturation Visible on Aerial Imagery (C9)			
Stunted or Stressed Plants (D1)			
Geomorphic Position (D2)			
Shallow Aquitard (D3)			
Microtopographic Relief (D4)			
FAC-neutral Test (D5)			
loav Present? Yes 🔿 No 🖲			
logy Present? Yes 🔾 No 🖲			
ble:			

	1113	Dominant Species?		Sampling Point: AN18f Upland
Tree Stratum (Plot size: 30')	Absolute % Cover	Rel.Strat.	Indicator Status	Dominance Test worksheet:
1. Acer rubrum	40	50.0%	FAC	Number of Dominant Species
		 ✓ 50.0% ✓ 50.0% 	FAC	That are OBL, FACW, or FAC: (A)
2. Fraxinus pennsylvanica		0.0%	FACW	Total Number of Dominant
3	0			Species Across All Strata: 6 (B)
4	0	0.0%		Percent of dominant Species
5	0	0.0%		That Are OBL, FACW, or FAC: 50.0% (A/B)
6	0	0.0%		
7	0	0.0%		Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: 15')	80	= Total Cove	r	Total % Cover of: Multiply by: OBL species 0 x 1 = 0
1. Ostrya virginiana	25	31.3%	FACU-	
2. Pinus strobus	10	12.5%	FACU	FACW species $40 \times 2 = 80$
3. Betula alleghaniensis		12.5%	FAC	FAC species $\frac{70}{100}$ x 3 = $\frac{210}{1000}$
4. Fagus grandifolia	45	18.8%	FACU	FACU species $\frac{70}{5}$ x 4 = $\frac{280}{5}$
5. Acer pensylvanicum	20	25.0%	FACU	UPL species $\frac{5}{25}$ x 5 = $\frac{25}{25}$
6.		0.0%		Column Totals: 185 (A) 595 (B)
7.		0.0%		Prevalence Index = $B/A = 3.216$
		= Total Cove	r	
Herb Stratum (Plot size: 5')				Hydrophytic Vegetation Indicators: Rapid Test for Hydrophytic Vegetation
1.Malanthemum canadense	20	80.0%	FAC-	
2.Polygonatum pubescens	5	20.0%	UPL	Dominance Test is > 50%
3.	0	0.0%		Prevalence Index is $\leq 3.0^{1}$
4.	0	0.0%		Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
5.	0	0.0%		Problematic Hydrophytic Vegetation ¹ (Explain)
6.	0	0.0%		
7.	0	0.0%		¹ Indicators of hydric soil and wetland hydrology must
8.	0	0.0%		be present, unless disturbed or problematic.
9.	0	0.0%		Definitions of Vegetation Strata:
10.	0	0.0%		
11.	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
12.	0	0.0%		
		= Total Cove	r	Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall
Woody Vine Stratum (Plot size:)	0	0.0%		Harb All borbassous (non weady) planta, regardless of
1	0			Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
3	0	0.0%		
3 /		0.0%		Woody vine - All woody vines greater than 3.28 ft in height.
4				neight.
	0	= Total Cove	r	
				Hydrophytic
				Vegetation V O N O
				Present? Yes V NO 🛡
Remarks: (Include photo numbers here or on a separate she	eet.)			

Depth (inches)	• • • •	Matrix		Redox Features	- -	David
	Color (r		%	Color (moist) % Type 1 Loc ²		Remarks
0-8	10YR	3/2	100%		Fine Sandy Loam	
8-14	10YR	3/4	100%		Fine Sandy Loam	
Type: C=Cor	ncentration. D	=Depletio	n. RM=Rec	luced Matrix, CS=Covered or Coated Sand Grains ² Loca	ation: PL=Pore Lining. M=M	latrix
Hydric Soil	Indicators:				Indicators for Drobb	ematic Hydric Soils : ³
Histosol	(A1)			Polyvalue Below Surface (S8) (LRR R,		enatic riguite solis .
	ipedon (A2)			MLRA 149B)		(LRR K, L, MLRA 149B)
Black His				Thin Dark Surface (S9) (LRR R, MLRA 149B)		x (A16) (LRR K, L, R)
	n Sulfide (A4)			Loamy Mucky Mineral (F1) LRR K, L)		or Peat (S3) (LRR K, L, R)
Stratified	Layers (A5)			Loamy Gleyed Matrix (F2)	Dark Surface (S7)	
Depleted	Below Dark S	Surface (A	11)	Depleted Matrix (F3)	Thin Dark Surface	urface (S8) (LRR K, L)
	rk Surface (A1			Redox Dark Surface (F6)		(S9) (LRR K, L) Iasses (F12) (LRR K, L, R)
Sandy M	uck Mineral (S	51)		Depleted Dark Surface (F7)		in Soils (F19) (MLRA 149B)
	eyed Matrix (S			Redox Depressions (F8)) (MLRA 144A, 145, 149B)
	edox (S5)				Red Parent Materia	
	Matrix (S6)				Very Shallow Dark	
	face (S7) (LRF	r r, mlra	149B)		Other (Explain in F	
³ Indicators of	of bydronbytic	vegetatio	n and wat	and hydrology must be present, unless disturbed or probl		(emarks)
				and flydrology must be present, diffess disturbed of probl		
	ayer (if obs	erved):				
Type: B					Hydric Soil Present?	Yes 🔿 No 🖲
Depth (ind	ches): 14				Hyune son Fresent:	res C No C
Remarks:						



AN18f Wetland



AN18f Upland



AN18f Wetland

Project/Site: Antrim Wind Project	City/County:	Antrim			Sampling Date:	16-Aug-11	
Applicant/Owner: Eolian Renewable Energy, LLC		Sta	te: NH		Sampling Point:	an20 wet	tland
Investigator(s): AF JG	Section, T	ownship, Range:	S	т.	R.		
Landform (hillslope, terrace, etc.): Toeslope	Local relief (c	oncave, convex, n	none): co	ncave	Slope:	3.0%/	1.7 °
Subregion (LRR or MLRA): Lat.:		Long	g.:		Da	tum:	
Soil Map Unit Name:			NWI	classifi	ication: PEM		
	ntly disturbed? problematic? sampling p	•	explain an	y answe	ers in Remarks.)		etc.
Hydrophytic Vegetation Present? Yes No Hydric Soil Present? Yes No Wetland Hydrology Present? Yes No		e Sampled Area n a Wetland?	Yes 🖲	No O			
Remarks: (Explain alternative procedures here or in a separate rep Isolated PEM entirely within ROW	ort.)						

Wetland Hydrology Indicators:		Secondary Indicators (minimum of 2 required)
Primary Indicators (minimum of one required;	check all that apply)	Surface Soil Cracks (B6)
Surface Water (A1)	Water-Stained Leaves (B9)	Drainage Patterns (B10)
✓ High Water Table (A2)	Aquatic Fauna (B13)	Moss Trim Lines (B16)
Saturation (A3)	Marl Deposits (B15)	Dry Season Water Table (C2)
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)
Sediment Deposits (B2)	Oxidized Rhizospheres along Living Roots (C3)	Saturation Visible on Aerial Imagery (C9)
Drift deposits (B3)	Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)
Iron Deposits (B5)	Thin Muck Surface (C7)	Shallow Aguitard (D3)
Inundation Visible on Aerial Imagery (B7)	Other (Explain in Remarks)	Microtopographic Relief (D4)
Sparsely Vegetated Concave Surface (B8)		FAC-neutral Test (D5)
Field Observations:		
Surface Water Present? Yes O No •	Depth (inches):	
Water Table Present? Yes No	Depth (inches): 2	drology Present? Yes 🔍 No 🔾
Saturation Present? (includes capillary fringe) Yes • No	Wetland Hy Depth (inches): 0	drology Present? Yes 💿 No 🔿
	oring well, aerial photos, previous inspections), if av	ailable:
Remarks:		

·		Dominant Species?		Sampling Point: an20 wetland
Tree Stratum (Plot size:)	Absolute % Cover	Rel.Strat.	Indicator Status	Dominance Test worksheet:
 1	0	0.0%		Number of Dominant Species That are OBL, FACW, or FAC: 2 (A)
2.		0.0%		
3.		0.0%		Total Number of Dominant Species Across All Strata: 2 (B)
4.	0	0.0%		Species Across All Strata: 2 (B)
5.		0.0%		Percent of dominant Species
6.		0.0%		That Are OBL, FACW, or FAC:100.0% (A/B)
7.		0.0%		Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size:)		= Total Cover	·	Total % Cover of: Multiply by:
	0	0.0%		OBL species 10 x 1 = 10
1 2.	0			FACW species 103 x 2 = 206
		0.0%		FAC species $0 \times 3 = 0$
3		0.0%		FACU species $0 \times 4 = 0$
4		0.0%		UPL species $0 \times 5 = 0$
5	0	0.0%		Column Totals: 113 (A) 216 (B)
6		0.0%		
/		0.0%		Prevalence Index = B/A = 1.912
Herb Stratum (Plot size: 5')	0	= Total Cover	r	Hydrophytic Vegetation Indicators:
1.Onoclea sensibilis	45	39.8%	FACW	Rapid Test for Hydrophytic Vegetation
2. Impatiens capensis	10	8.8%	FACW	✓ Dominance Test is > 50%
3.0smunda cinnamomea	33	29.2%	FACW	✓ Prevalence Index is \leq 3.0 ¹
4.Carex crinita	10	8.8%	OBL	Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
5. Phalaris arundinacea		13.3%	FACW+	Problematic Hydrophytic Vegetation ¹ (Explain)
6.	0	0.0%		
7.	0	0.0%		¹ Indicators of hydric soil and wetland hydrology must
8.	0	0.0%		be present, unless disturbed or problematic.
9.	0	0.0%		Definitions of Vegetation Strata:
10.	0	0.0%		
11.	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
12.	0	0.0%		
		= Total Cover	·	Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall
Woody Vine Stratum (Plot size:)	0			Lieth All both seconds (non-woods) plants, reporting of
1	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
2	00	0.0%		
3	0	0.0%		Woody vine - All woody vines greater than 3.28 ft in
4		-		height.
	0	= Total Cover	ſ	
				Hydrophytic Vegetation
				Present? Yes No
Remarks: (Include photo numbers here or on a separate she	eet.)			

Depth		Matrix				edox Featu	ures		absence of indicators.)	
(inches)	Color (%	Color	(moist)	~ %	Type 1	Loc ²	Texture	Remarks
0-8	10YR	3/2	100%						Loam	
8-11	2.5Y	4/2	95%	10YR	4/6	5%	С	М	Sandy Loam	
							_			
							_			
									· · · · · · · · · · · · · · · · · · ·	
1 Turney C. Co.										
¹ Type: C=Co		-Depietio	ni. Kivi=Ked	uceu Matrix,	US=COVE	eu or coate	eu sand Gr	anns -LOCa	ation: PL=Pore Lining. M=N	
Hydric Soil						0.5	(00) (105	-	Indicators for Prob	lematic Hydric Soils : ³
				□ Poly MLF	value Belc A 149B)	w Surface	(S8) (LRR I	२,	2 cm Muck (A10)	(LRR K, L, MLRA 149B)
	ipedon (A2)					face (S9) (LRR R. MLI	RA 149B)	Coast Prairie Red	ox (A16) (LRR K, L, R)
Black His						Mineral (F1			🗌 5 cm Mucky Peat	or Peat (S3) (LRR K, L, R)
	n Sulfide (A4)					Matrix (F2)		, ,	Dark Surface (S7) (LRR K, L)
_	I Layers (A5)	C	11)		leted Matr		/			Surface (S8) (LRR K, L)
	Below Dark		.11)			urface (F6)			Thin Dark Surface	e (S9) (LRR K, L)
_	rk Surface (A			_		Surface (F	7)		Iron-Manganese	Masses (F12) (LRR K, L, R)
_	uck Mineral (S				ox Depres		.,		Piedmont Floodpl	ain Soils (F19) (MLRA 149B)
_	leyed Matrix (<u>(</u> \$4)			on Bopios				Mesic Spodic (TA	6) (MLRA 144A, 145, 149B)
_	edox (S5)								Red Parent Mater	
	Matrix (S6)		1400)						Very Shallow Dar	k Surface (TF12)
	face (S7) (LR								Other (Explain in	Remarks)
³ Indicators of	of hydrophytic	c vegetatio	n and wetla	nd hydrolog	y must be	present, ur	nless disturl	bed or probl	lematic.	
Restrictive I	Layer (if obs	served):								
Type: b										
Depth (in									Hydric Soil Present?	Yes $ullet$ No $igodot$
Remarks:										
Remarks.										

Project/Site: Antrim Wind Project		City/County: Antrim		Sampling Date: 1	6-Aug-11
Applicant/Owner: Eolian Renewable E	nergy, LLC		State: NH	Sampling Point:	an20 upland
Investigator(s): AF JG		Section, Township, Ra	nge: S. T.	R.	
Landform (hillslope, terrace, etc.):	Hillside	Local relief (concave, conv	vex, none): convex	Slope:	15.0 % / 8.5°
Subregion (LRR or MLRA):	Lat.:		Long.:	Da	tum:
Soil Map Unit Name:			NWI classi	ification:	
Are climatic/hydrologic conditions of Are Vegetation , Soil Are Vegetation , Soil Summary of Findings - At	, or Hydrology Significant , or Hydrology naturally p	tly disturbed? Are "No problematic? (If nee	ormal Circumstances" ded, explain any answ	present? Yes	
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes O No O Yes No O Yes No O	Is the Sampled A within a Wetland		٥	
Remarks: (Explain alternative pro Maintained ROW	cedures here or in a separate repo	ort.)			

Wetland Hydrology Indicators:		
5 00	shook all that apply)	Secondary Indicators (minimum of 2 required)
Primary Indicators (minimum of one required; c		Surface Soil Cracks (B6)
Surface Water (A1)	Water-Stained Leaves (B9)	Drainage Patterns (B10)
High Water Table (A2)	Aquatic Fauna (B13)	Moss Trim Lines (B16)
Saturation (A3)	Marl Deposits (B15)	Dry Season Water Table (C2)
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)
Sediment Deposits (B2)	Oxidized Rhizospheres along Living Roots (C3)	Saturation Visible on Aerial Imagery (C9)
Drift deposits (B3)	Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)
Iron Deposits (B5)	Thin Muck Surface (C7)	Shallow Aquitard (D3)
Inundation Visible on Aerial Imagery (B7)		Microtopographic Relief (D4)
Sparsely Vegetated Concave Surface (B8)		FAC-neutral Test (D5)
Field Observations:		
Surface Water Present? Yes O No O	Depth (inches):	
Water Table Present? Yes O No 🖲	Depth (inches):	
Saturation Present? (includes capillary fringe) Yes O No •	Wetland Hyd Depth (inches):	drology Present? YES 🔾 NO 🖲
Describe Recorded Data (stream gauge, monitor	ring well, aerial photos, previous inspections), if ava	ailable:
Remarks:		
 ☐ Inundation Visible on Aerial Imagery (B7) ☐ Sparsely Vegetated Concave Surface (B8) Field Observations: Surface Water Present? Yes No ● Water Table Present? Yes No ● Saturation Present? Yes No ● Saturation Present? Yes No ● Describe Recorded Data (stream gauge, monitor 	Depth (inches): Wetland Hyd	Microtopographic Relief (D4) FAC-neutral Test (D5) Grology Present? Yes No

		Dominant Species?		Sampling Point: an20 upland
Tree Stratum (Plot size:)	Absolute % Cover	Rel.Strat.	Indicator Status	Dominance Test worksheet:
<u> </u>	0	0.0%		Number of Dominant Species That are OBL, FACW, or FAC: 0 (A)
2.	0	0.0%		()
3.	0	0.0%		Total Number of Dominant Species Across All Strata: 2 (B)
4	0	0.0%		Species Across All Strata: 2 (B)
5		0.0%		Percent of dominant Species
6.		0.0%		That Are OBL, FACW, or FAC: 0.0% (A/B)
7		0.0%		Prevalence Index worksheet:
		= Total Cover		Total % Cover of: Multiply by:
Sapling/Shrub Stratum (Plot size: 15')				$\frac{1}{0\text{BL species}} = 0 \text{ x 1} = 0$
1. Rhus copallinum	25	✔ 100.0%	NI	FACW species $0 \times 2 = 0$
2	0	0.0%		
3	0	0.0%		
4	0	0.0%		FACU species 10 x 4 = 40
5.		0.0%		UPL species $\frac{95}{1000}$ x 5 = $\frac{475}{10000}$
6.		0.0%		Column Totals: 105 (A) 515 (B)
7.	0	0.0%		Prevalence Index = $B/A = 4.905$
	25	= Total Cover		
Herb Stratum (Plot size: 5')				Hydrophytic Vegetation Indicators:
1.Dennstaedtia punctilobula	95	90.5%	UPL	Rapid Test for Hydrophytic Vegetation
2.Rubus alumnus	10	9.5%	FACU-	Dominance Test is > 50%
3.	0	0.0%		Prevalence Index is $\leq 3.0^{1}$
4.	0	0.0%		Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
5.	0	0.0%		
6.	0	0.0%		Problematic Hydrophytic Vegetation ¹ (Explain)
7.	0	0.0%		¹ Indicators of hydric soil and wetland hydrology must
8.	0	0.0%		be present, unless disturbed or problematic.
9.	0	0.0%		Definitions of Vegetation Strata:
10.	0	0.0%		_
11.	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
12.	0	0.0%		at bleast height (DDH), regardless of height.
		= Total Cover		Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall
Woody Vine Stratum (Plot size:)	0			
1	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
2	0			
3	0	0.0%		Woody vine - All woody vines greater than 3.28 ft in
4	0	0.0%		height.
	0	= Total Cover		
				Hydrophytic Vegetation
				Present? Yes No •
Remarks: (Include photo numbers here or on a separate she	et.)			
• • • • • • • • • • • • • • • • • • •				

Depth	-	be to the depth trix	needed to document the indicator or confirm Redox Features	the absence of indicators.)	
(inches)	Color (mois	st) %	Color (moist) % Type 1 Lo	oc ² Texture	Remarks
0-5	10YR 3	3/2 100%		Fine Sandy Loam	_
5-10	10YR 4	4/4 100%		Fine Sandy Loam	
10-18	10YR 5	5/8 100%		Fine Sandy Loam	
			·		
			·		
			·		
			·		
			·		
1					
		pietion. KM=Rec	luced Matrix, CS=Covered or Coated Sand Grains	Location: PL=Pore Lining. M=	
<u> </u>	Indicators:			Indicators for Prob	lematic Hydric Soils : 3
Histosol			Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	2 cm Muck (A10)	(LRR K, L, MLRA 149B)
	bipedon (A2)		Thin Dark Surface (S9) (LRR R, MLRA 149	B) Coast Prairie Rec	lox (A16) (LRR K, L, R)
Black His	stic (A3) en Sulfide (A4)		Loamy Mucky Mineral (F1) LRR K, L)	5 cm Mucky Peat	t or Peat (S3) (LRR K, L, R)
	d Layers (A5)		Loamy Gleyed Matrix (F2)	Dark Surface (S7	
	d Below Dark Surfa	re (A11)	Depleted Matrix (F3)		Surface (S8) (LRR K, L)
	ark Surface (A12)		Redox Dark Surface (F6)		e (S9) (LRR K, L)
	luck Mineral (S1)		Depleted Dark Surface (F7)		Masses (F12) (LRR K, L, R)
	leyed Matrix (S4)		Redox Depressions (F8)		lain Soils (F19) (MLRA 149B)
	edox (S5)			Red Parent Mate	.6) (MLRA 144A, 145, 149B)
	Matrix (S6)			Very Shallow Dar	. ,
Dark Su	rface (S7) (LRR R,	MLRA 149B)		Other (Explain in	
³ Indicators	of hydrophytic yea	etation and wetl	and hydrology must be present, unless disturbed or		Kennarksy
	Layer (if observe	ed):			
Type:	1			Hydric Soil Present?	Yes 🔿 No 🖲
Depth (in	ches):				
Remarks:					



AN20 Wetland



AN20 Upland

Project/Site: Antrim Wind Project	City/County:	Antrim			Sampling Date: 1	6-Aug-11	
Applicant/Owner: Eolian Renewable Energy, LLC		Sta	ite: NH		Sampling Point:	an21 wetland	
Investigator(s): AF JG	Section, T	ownship, Range:	S .	Т.	R.		
Landform (hillslope, terrace, etc.): Toeslope	Local relief (c	oncave, convex, n	none): (concave	Slope:	3.0 % /	1.7 °
Subregion (LRR or MLRA): Lat.:		Long	g.:		Da	tum:	
Soil Map Unit Name:			NV	VI classifi	cation: PEM		
	ntly disturbed? problematic? sampling p	•	explain a	iny answe	ers in Remarks.)		etc.
Hydrophytic Vegetation Present? Yes No Hydric Soil Present? Yes No Wetland Hydrology Present? Yes No		e Sampled Area n a Wetland?	Yes 🤇	● No ○			
Remarks: (Explain alternative procedures here or in a separate rep Isolated PEM entirely within ROW	ort.)						

Wetland Hydrology Indicators:		Secondary Indicators (minimum of 2 required)
Primary Indicators (minimum of one required;	check all that apply)	Surface Soil Cracks (B6)
Surface Water (A1)	Drainage Patterns (B10)	
✓ High Water Table (A2)	Aquatic Fauna (B13)	Moss Trim Lines (B16)
Saturation (A3)	Marl Deposits (B15)	Dry Season Water Table (C2)
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)
Sediment Deposits (B2)	Oxidized Rhizospheres along Living Roots (C3)	Saturation Visible on Aerial Imagery (C9)
Drift deposits (B3)	Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)
Iron Deposits (B5)	Thin Muck Surface (C7)	Shallow Aquitard (D3)
Inundation Visible on Aerial Imagery (B7)	Other (Explain in Remarks)	Microtopographic Relief (D4)
Sparsely Vegetated Concave Surface (B8)		FAC-neutral Test (D5)
Field Observations:		
Surface Water Present? Yes O No •	Depth (inches):	
Water Table Present? Yes No	Depth (inches): <u>3</u>	drology Present? Yes 🖲 No 🔾
Saturation Present? (includes capillary fringe) Yes • No	Wetland Hy Depth (inches): 0	drology Present? Yes 💿 No 🔿
	oring well, aerial photos, previous inspections), if av	ailable:
Remarks:		

		Dominant Species?		Sampling Point: an21 wetland
Tree Stratum (Plot size:)	Absolute % Cover	Rel.Strat.	Indicator Status	Dominance Test worksheet:
<u> </u>	0	0.0%		Number of Dominant Species That are OBL, FACW, or FAC: 5
0	0	0.0%		
		0.0%		Total Number of Dominant
3	0			Species Across All Strata: 5 (B)
4		0.0%		Percent of dominant Species
5		0.0%		That Are OBL, FACW, or FAC: 100.0% (A/B)
6		0.0%		
7	0	0.0%		Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: 15')	0	= Total Cove	r	Total % Cover of: Multiply by: 0BL speci es 75 x 1 = 75
1. Spiraea tomentosa	5	33.3%	FACW	
2. Acer rubrum	5	33.3%	FAC	
3. Spiraea alba	5	33.3%	FACW+	FAC species $5 \times 3 = 15$
4.		0.0%		FACU species $0 \times 4 = 0$
5.		0.0%		UPL species $0 \times 5 = 0$
6.	0	0.0%		Column Totals: 124 (A) 178 (B)
7	0	0.0%		
		= Total Cove	r	Prevalence Index = B/A = <u>1.435</u> Hydrophytic Vegetation Indicators:
Herb Stratum (Plot size: 5')				Rapid Test for Hydrophytic Vegetation
1.Osmunda cinnamomea	5	4.6%	FACW	
2.Scirpus cyperinus	8	7.3%	FACW+	Dominance Test is > 50%
3. Carex scoparia	1	0.9%	FACW	✓ Prevalence Index is $\leq 3.0^{1}$
4. Carex crinita	50	45.9%	OBL	Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
5. Onoclea sensibilis		18.3%	FACW	
6.Equisetum fluviatile		22.9%	OBL	Problematic Hydrophytic Vegetation ¹ (Explain)
7.	0	0.0%		¹ Indicators of hydric soil and wetland hydrology must
8.				be present, unless disturbed or problematic.
9.	0	0.0%		Definitions of Vegetation Strata:
	0	0.0%		
10	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter
11	0	0.0%		at breast height (DBH), regardless of height.
12	0	0.0%		Sapling/shrub - Woody plants less than 3 in. DBH and
Woody Vine Stratum (Plot size:)	109	= Total Cove	r	greater than 3.28 ft (1m) tall.
	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of
2	0	0.0%		size, and woody plants less than 3.28 ft tall.
3	0	0.0%		Weathering All weatherings greater than 2.29 ft in
Δ	0	0.0%		Woody vine - All woody vines greater than 3.28 ft in height.
T		= Total Cove		
	0	= Total Cove	ſ	
				Hydrophytic Vegetation
				Present? Yes \bigcirc No \bigcirc
Remarks: (Include photo numbers here or on a separate she	et)			•
Remarks. (Include proto numbers here or on a separate she	ei.)			

(inches)		Matrix		-		dox Featu			···		
	Color (I	moist)	%	Color	(moist)	%	Type 1	Loc ²	Texture	Remark	۲.S
0-9	10YR	3/2	100%						Loam		
9-14	2.5Y	4/2	95%	10YR	4/6	5%	С	Μ	Fine Sandy Loam		
									-		
									<u>.</u>		
Type: C=Con	centration. D	=Depletio	n. RM=Red	uced Matrix,	CS=Cover	ed or Coate	ed Sand Gr	ains ² Loca	ation: PL=Pore Lining. M=N	latrix	
Hydric Soil I	ndicators:								Indicators for Probl	ematic Hydric So	oils: ³
Histosol (A	A1)			🗌 Poly	value Belo	w Surface ((S8) (LRR F	ξ ,	2 cm Muck (A10)		
	pedon (A2)			_	A 149B)					ox (A16) (LRR K, L,	
Black Hist	tic (A3)			_		face (S9) (l				or Peat (S3) (LRR	
	Sulfide (A4)					Mineral (F1)			Dark Surface (S7)		
	Layers (A5)					Matrix (F2)				Surface (S8) (LRR K	(, L)
	Below Dark S		11)		leted Matr	urface (F6)			Thin Dark Surface		
	k Surface (A			_		Surface (F6)	7)		Iron-Manganese I	Masses (F12) (LRR	K, L, R)
	ick Mineral (S						/)		Piedmont Floodpl	ain Soils (F19) (MLI	RA 149B)
_	eyed Matrix (S4)			ox Depres	SIONS (F8)			Mesic Spodic (TA	5) (MLRA 144A, 14	5, 149B)
Sandy Re									Red Parent Mater	ial (TF2)	
	Matrix (S6)								Very Shallow Darl	Surface (TF12)	
Dark Surfa	ace (S7) (LRI	r r, mlra	149B)						Other (Explain in	Remarks)	
³ Indicators of	f hydrophytic	vegetatio	n and wetla	nd hydrolog	y must be	present, un	less disturk	ed or probl	ematic.		
mulcaturs 0		n									
	ayer (if obs	ervea):									
Restrictive L		erved):							Underla Call Dessault2	Yes 🔍 No	o O
Restrictive La Type: bc	oulders	erved):							Hydric Soil Present?	Yes 🗢 No	
Restrictive La Type: <u>bc</u> Depth (incl	oulders	erved):							Hydric Soli Present?	Yes 🔍 No	
Restrictive La Type: bc	oulders	erved):							Hydric Soil Present?	Yes S No	
Restrictive La Type: <u>bc</u> Depth (incl	oulders	erved):							Hyaric Soli Present?	Yes 🔍 No	<u>-</u>
Restrictive La Type: <u>bc</u> Depth (incl	oulders	erved):							Hyaric Soli Present?		
Restrictive La Type: <u>bc</u> Depth (incl	oulders	ervea):							Hyaric Soli Present?		-
Restrictive La Type: <u>bc</u> Depth (incl	oulders	ervea):							Hyaric Soli Present?		-
Restrictive La Type: <u>bc</u> Depth (incl	oulders	ervea):							Hyaric Soli Present?		-
Restrictive La Type: <u>bc</u> Depth (incl	oulders	erved):							Hyaric Soli Present?		-
Restrictive La Type: <u>bc</u> Depth (incl	oulders	erved):							Hyaric Soli Present?		-
Restrictive La Type: <u>bc</u> Depth (incl	oulders	erved):							Hyaric Soli Present?		-
Restrictive La Type: <u>bc</u> Depth (incl	oulders	erved):							Hyaric Soli Present?		
Restrictive La Type: <u>bc</u> Depth (incl	oulders	erved):							Hyaric Soli Present?		-
Restrictive La Type: <u>bc</u> Depth (incl	oulders	erved):							Hyaric Soli Present?		-
Restrictive La Type: <u>bc</u> Depth (incl	oulders	erved):							Hyaric Soli Present?		-
Restrictive La Type: <u>bc</u> Depth (incl	oulders	erved):							Hyaric Soli Present?		-
Restrictive La Type: <u>bc</u> Depth (incl	oulders	erved):							Hyaric Soli Present?		-
Restrictive La Type: <u>bc</u> Depth (incl	oulders	erved):							Hydric Soll Present?		
Restrictive La Type: <u>bc</u> Depth (incl	oulders	erved):							Hydric Soli Present?		-

Project/Site: Antrim Wind Project		City/County: Antrim			Sampling Date: 1	6-Aug-11
Applicant/Owner: Eolian Renewable E	nergy, LLC		State:	NH	Sampling Point:	an21 upland
Investigator(s): AF JG		Section, Township,	Range: S.	т.	R.	
Landform (hillslope, terrace, etc.):	Hillside	Local relief (concave, c	convex, non	e): convex	Slope:	18.0 % / 10.2
Subregion (LRR or MLRA):	Lat.:		Long.:		Dat	tum:
Soil Map Unit Name:		-	_	NWI classi	fication:	-
Are climatic/hydrologic conditions of Are Vegetation , Soil Are Vegetation , Soil Summary of Findings - At	, or Hydrology Significant , or Hydrology naturally p	tly disturbed? Are	"Normal Cin		present? Yes	
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes O No O Yes No O Yes No O	Is the Sample within a Wetla		Yes 🔿 No 🖲)	
Remarks: (Explain alternative pro Maintained ROW	cedures here or in a separate repo	rt.)				

	Secondary Indicators (minimum of 2 required)
check all that apply)	Surface Soil Cracks (B6)
Water-Stained Leaves (B9)	Drainage Patterns (B10)
Aquatic Fauna (B13)	Moss Trim Lines (B16)
Marl Deposits (B15)	Dry Season Water Table (C2)
Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)
Oxidized Rhizospheres along Living Roots (C3)	Saturation Visible on Aerial Imagery (C9)
Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)
Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)
Thin Muck Surface (C7)	Shallow Aquitard (D3)
	Microtopographic Relief (D4)
	FAC-neutral Test (D5)
Depth (inches):	
Depth (inches):	rdrology Present? Yes 🔿 No 🖲
Wetland Hy Depth (inches):	rdrology Present? Yes 🔾 No 🖲
pring well, aerial photos, previous inspections), if av	ailable:
	Aquatic Fauna (B13) Marl Deposits (B15) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Living Roots (C3) Presence of Reduced Iron (C4) Recent Iron Reduction in Tilled Soils (C6) Thin Muck Surface (C7) Other (Explain in Remarks) Depth (inches): Depth (inches): Uepth (inches):

		Dominant Species?		Sampling Point: an21 upland
Tree Stratum (Plot size:)	Absolute % Cover	Rel.Strat.	Indicator Status	Dominance Test worksheet:
1	0	0.0%		Number of Dominant Species That are OBL, FACW, or FAC: 1 (A)
2	0	0.0%		
3.	0	0.0%		Total Number of Dominant Species Across All Strata: 6 (B)
4	0	0.0%		
5.	0	0.0%		Percent of dominant Species
6.		0.0%		That Are OBL, FACW, or FAC: <u>16.7%</u> (A/B)
7		0.0%		Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: 15')		= Total Cove	-	Total % Cover of: Multiply by:
1. Acer rubrum	5	20.0%	FAC	OBL species $0 \times 1 = 0$
	5	20.0%	FACU	FACW species $0 \times 2 = 0$
2	5	20.0%	FACU-	FAC species8 x 3 =24
A		20.0%	FACU	FACU species x 4 =112
		✓ 20.0%✓ 20.0%	FACU-	UPL species $\frac{95}{1000} \times 5 = \frac{475}{1000}$
		0.0%	FACU-	Column Totals: 131 (A) 611 (B)
	0	0.0%		
7	-			Prevalence Index = B/A = 4.664
Herb Stratum (Plot size: 5')	25	= Total Cove	Ē	Hydrophytic Vegetation Indicators:
1 Demostra dalla muna tilla buda	95	✔ 89.6%	UPL	Rapid Test for Hydrophytic Vegetation
2 Triantalla haraalla	3	2.8%	FAC	Dominance Test is > 50%
	8	7.5%	FACU	□ Prevalence Index is \leq 3.0 ¹
4.	0	0.0%	TACU	Morphological Adaptations ¹ (Provide supporting
5.	0	0.0%		data in Remarks or on a separate sheet)
6.				Problematic Hydrophytic Vegetation ¹ (Explain)
7.	0			¹ Indicators of hydric soil and wetland hydrology must
8.	0			be present, unless disturbed or problematic.
9.	0			Definitions of Vegetation Strata:
10.	0			
11.	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter
12.	0	0.0%		at breast height (DBH), regardless of height.
	0 106	= Total Cover	 r	Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall
Woody Vine Stratum (Plot size:)	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of
0	0	0.0%		size, and woody plants less than 3.28 ft tall.
3	0	0.0%		
Δ	0	0.0%	-	Woody vine - All woody vines greater than 3.28 ft in height.
т. <u> </u>		= Total Cove		l sign
				Hydrophytic
				Vegetation Present? Yes O No •
				Present? 105 C No C
				1
Remarks: (Include photo numbers here or on a separate she	et.)			

	•		lepth needed to document the ind		absence of indicators.)	
Depth (inches)	M Color (mo	atrix	Redox Fea Color (moist) %		Texture	Remarks
0-4	10YR	3/2 100			Fine Sandy Loam	Remarks
4-9	10YR	4/6 100	%		Fine Sandy Loam	
					·,	
					<u>.</u>	
					·,	
					,	
					. <u> </u>	
¹ Type: C=Cor	ncentration. D=D	epletion. RN	=Reduced Matrix, CS=Covered or Co	ated Sand Grains ² Loca	ation: PL=Pore Lining. M=M	atrix
Hydric Soil	Indicators:				Indicators for Proble	ematic Hydric Soils : ³
Histosol	(A1)		Polyvalue Below Surfac	e (S8) (LRR R,	_	(LRR K, L, MLRA 149B)
🗌 Histic Ep	ipedon (A2)		MLRA 149B)			x (A16) (LRR K, L, R)
Black His	stic (A3)		Thin Dark Surface (S9)	(LRR R, MLRA 149B)		or Peat (S3) (LRR K, L, R)
Hydroge	n Sulfide (A4)		Loamy Mucky Mineral (
Stratified	l Layers (A5)		Loamy Gleyed Matrix (F2)	Dark Surface (S7)	
	Below Dark Sur	face (A11)	Depleted Matrix (F3)			urface (S8) (LRR K, L)
	rk Surface (A12)		Redox Dark Surface (Fe	6)	Thin Dark Surface	
	uck Mineral (S1)		Depleted Dark Surface	(F7)		lasses (F12) (LRR K, L, R)
	leyed Matrix (S4)		Redox Depressions (F8)		in Soils (F19) (MLRA 149B)
_	edox (S5)) (MLRA 144A, 145, 149B)
_	Matrix (S6)				Red Parent Materia	
	face (S7) (LRR R		2)		Very Shallow Dark	
					Other (Explain in F	Remarks)
³ Indicators of	of hydrophytic ve	getation and	wetland hydrology must be present,	unless disturbed or proble	ematic.	
Restrictive L	ayer (if observ	/ed):				
Туре:						
Depth (ind	ches):				Hydric Soil Present?	Yes 🔿 No 🖲
Remarks:						
Remarks.						
1						
1						



AN21 Wetland



AN21 Upland

Project/Site: Antrim Wind Project		City/County:	Antrim				Sampling Date: 1	7-Aug-11	
Applicant/Owner: Eolian Renewable E	nergy, LLC		St	ate:	NH		Sampling Point:	an22 we	tland
Investigator(s): AF JG		Section, T	ownship, Range	: S .		т.	R.		
Landform (hillslope, terrace, etc.):	Hillside	Local relief (c	oncave, convex,	none)	: flat	-	Slope:	5.0 % /	2.9 °
Subregion (LRR or MLRA):	Lat.:		Lor	ng.:			Dat	um:	
Soil Map Unit Name:		-			NWI cla	ssifi	cation: PSS		
Are climatic/hydrologic conditions of Are Vegetation , Soil Are Vegetation , Soil Summary of Findings - At	, or Hydrology Significant , or Hydrology naturally p	tly disturbed? problematic?	-	al Circ , expla	umstance ain any ar	es" pi nswe	rs in Remarks.)		etc.
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes No ○ Yes No ○ Yes No ○ Yes No ○		e Sampled Area n a Wetland?	Y	es 🖲 No	,0			
Remarks: (Explain alternative pro Isolated PSS with moose wallow c		rt.)							

Wetland Hydrology Indicators:		Secondary Indicators (minimum of 2 required)	
Primary Indicators (minimum of one required;	Surface Soil Cracks (B6)		
Surface Water (A1)	✓ Water-Stained Leaves (B9)	Drainage Patterns (B10)	
High Water Table (A2)	Aquatic Fauna (B13)	Moss Trim Lines (B16)	
Saturation (A3)	Marl Deposits (B15)	Dry Season Water Table (C2)	
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)	
Sediment Deposits (B2)	Oxidized Rhizospheres along Living Roots (C3)	Saturation Visible on Aerial Imagery (C9)	
Drift deposits (B3)	Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)	
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)	
Iron Deposits (B5)	Thin Muck Surface (C7)	Shallow Aquitard (D3)	
Inundation Visible on Aerial Imagery (B7)	Other (Explain in Remarks)	Microtopographic Relief (D4)	
Sparsely Vegetated Concave Surface (B8)		FAC-neutral Test (D5)	
		_ 、 ,	
Field Observations:			
Surface Water Present? Yes O No O	Depth (inches):		
Water Table Present? Yes O No O	Depth (inches):	× • • •	
Saturation Present? (includes capillary fringe) Yes • No	Wetland H	ydrology Present? Yes 🖲 No 🔾	
Describe Recorded Data (stream gauge, monit	oring well, aerial photos, previous inspections), if a	vailable:	
Remarks:			

VEGETATION - Use scientific names of plan		Sampling Point: an22 wetland				
Tree Stratum (Plot size:)	Absolute % Cover		Indicator Status	Dominance Test worksheet:		
			Status	Number of Dominant Species		
1	0	0.0%		That are OBL, FACW, or FAC: (A)		
2	0	0.0%		Total Number of Dominant		
3		0.0%		Species Across All Strata: (B)		
4	0			Percent of dominant Species		
5		0.0%		That Are OBL, FACW, or FAC: 100.0% (A/B)		
6		0.0%		-		
7				Prevalence Index worksheet:		
Sapling/Shrub Stratum (Plot size: 15')	0	= Total Cover	ſ	Total % Cover of: Multiply by: OBL species 8 x 1 = 8		
1. Fraxinus pennsylvanica	10	20.8%	FACW	FACW species $55 \times 2 = 110$		
2. Acer rubrum	25	52.1%	FAC			
3. Spiraea tomentosa	5	10.4%	FACW			
4. Viburnum lentago	8	16.7%	FAC	$\frac{1}{2} x 4 = -\frac{1}{2}$		
5	0	0.0%		UPL species x 5 =		
6	0	0.0%		Column Totals: (A) (B)		
7	0	0.0%		Prevalence Index = $B/A = 2.283$		
Herb Stratum (Plot size: 5')	48	= Total Cover	-	Hydrophytic Vegetation Indicators:		
Herb Stratum (Plot size: 5)				Rapid Test for Hydrophytic Vegetation		
1. Onoclea sensibilis	25	49.0%	FACW	✓ Dominance Test is > 50%		
2.0smunda cinnamomea	15	29.4%	FACW	✓ Prevalence Index is $\leq 3.0^{1}$		
3.Carex crinita	8		OBL	Morphological Adaptations ¹ (Provide supporting		
4.Equisetum arvense	3	5.9%	FAC	data in Remarks or on a separate sheet)		
5	0	0.0%		Problematic Hydrophytic Vegetation ¹ (Explain)		
6	0	0.0%				
7	0	0.0%		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.		
8	0	0.0%				
9	0	0.0%		Definitions of Vegetation Strata:		
10	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter		
11	0	0.0%		at breast height (DBH), regardless of height.		
12	0	0.0%		Sapling/shrub - Woody plants less than 3 in. DBH and		
Woody Vine Stratum (Plot size:)	51	= Total Cover	r	greater than 3.28 ft (1m) tall.		
,,,	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of		
2	0	0.0%		size, and woody plants less than 3.28 ft tall.		
3	0	0.0%		Weady vine All weady vince greater than 2.29 ft in		
4	0	0.0%		Woody vine - All woody vines greater than 3.28 ft in height.		
	0	= Total Cover	- <u> </u>	5		
				Hydrophytic		
				Vegetation Present? Yes No		
Remarks: (Include photo numbers here or on a separate she	et.)					
remarks. (monare proto nambers here or on a separate she						

_

	ription: (De		the depth	needed to				onfirm the	absence of indicators.)	
Depth (inches)	Color (Matrix moist)	- %	Color	Re (moist)	dox Featu		Loc ²	Texture	Remarks
0-8	10YR	3/2	100%	000	moisty		Туре		Loam	Remarks
8-15	2.5Y	4/2	90%	10YR	5/8	10%	C	М	Fine Sandy Loam	
				·						
¹ Type: C=Cor	ncentration. D	- Depletio	n. RM=Rec	luced Matrix.	CS=Cover	ed or Coate	d Sand Gra	ains ² Loc	ation: PL=Pore Lining. M=N	 Natrix
Hydric Soil				,						
Histosol				Poly	value Belo	w Surface (S8) (LRR F	2,	_	ematic Hydric Soils : ³
	ipedon (A2)				RA 149B)					(LRR K, L, MLRA 149B)
Black His				L Thir	n Dark Surf	ace (S9) (l	.RR R, MLF	RA 149B)		ox (A16) (LRR K, L, R)
	n Sulfide (A4)			Loa	my Mucky	Mineral (F1) LRR K, L)		Dark Surface (S7)	or Peat (S3) (LRR K, L, R)
Stratified	Layers (A5)					Matrix (F2)				Surface (S8) (LRR K, L)
Depleted	Below Dark S	Surface (A	11)		leted Matri				Thin Dark Surface	
Thick Da	rk Surface (A	12)		_	ox Dark Su					Masses (F12) (LRR K, L, R)
Sandy M	uck Mineral (S	S1)				Surface (F	7)			ain Soils (F19) (MLRA 149B)
Sandy GI	eyed Matrix (S4)			ox Depres	sions (F8)				6) (MLRA 144A, 145, 149B)
Sandy Re									Red Parent Mater	
	Matrix (S6)								Very Shallow Dar	< Surface (TF12)
Dark Sur	face (S7) (LR	r r, mlra	(149B)						Other (Explain in	Remarks)
³ Indicators of	of hydrophytic	vegetatio	n and wetla	and hydrolog	y must be	present, un	less disturb	ed or probl	lematic.	
Restrictive L	_ayer (if obs	erved):								
Type: s	tony									
Depth (ind									Hydric Soil Present?	Yes 🔍 No 🔾
Remarks:										
riomanio										

Subregion (LRR or MLRA): Lat.: Long.: Datum: Soil Map Unit Name: NWI classification: NWI classification: Are climatic/hydrologic conditions on the site typical for this time of year? Yes	Project/Site: Antrim Wind Project		City/County: Antrim		Sampling Date: 1	7-Aug-11	
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): flat Slope: 12.0 % / 6 Subregion (LRR or MLRA): Lat.: Long.: Datum: Soil Map Unit Name: NWI classification: Are climatic/hydrologic conditions on the site typical for this time of year? Yes Image: NWI classification: Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.) Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc Hydrophytic Vegetation Present? Yes No Is the Sampled Area within a Wetland? Yes No Is the Sampled Area within a Wetland? Yes No	Applicant/Owner: Eolian Renewable E	nergy, LLC	Sta	ate: NH	Sampling Point:	AN22 Up	land
Subregion (LRR or MLRA): Lat.: Long.: Datum: Soil Map Unit Name: NWI classification: NWI classification: Are climatic/hydrologic conditions on the site typical for this time of year? Yes	Investigator(s): AF JG		Section, Township, Range:	S. T.	R.		
Soil Map Unit Name: NWI classification: Are climatic/hydrologic conditions on the site typical for this time of year? Yes	Landform (hillslope, terrace, etc.):	Hillside	Local relief (concave, convex, i	n one) : flat	Slope:	12.0 % /	6.8°
Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.) Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.) Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc Hydrophytic Vegetation Present? Yes No Hydric Soil Present? Yes No Yes No No Is the Sampled Area within a Wetland? Yes No Wetland?	Subregion (LRR or MLRA):	Lat.:	Lon	g.:	Dat	tum:	
Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.) Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc Hydrophytic Vegetation Present? Yes No Is the Sampled Area within a Wetland? Yes No Is the Sampled Area	Soil Map Unit Name:			NWI classif	fication:		
Hydric Soil Present? Yes No No Is the Sampled Area within a Wetland? Yes No	Are Vegetation, Soil Are Vegetation, Soil	, or Hydrology Significant	tly disturbed? Are "Norma problematic? (If needed,	l Circumstances" explain any answ	present? Yes		ètc.
Wetland Hydrology Present? Yes O No 🔍	Hydrophytic Vegetation Present?		Is the Sampled Area				

Wetland Hydrology Indicators:		Secondary Indicators (minimum of 2 required)		
Primary Indicators (minimum of one required;	check all that apply)	Surface Soil Cracks (B6)		
Surface Water (A1)	Water-Stained Leaves (B9)	Drainage Patterns (B10)		
High Water Table (A2)	Aquatic Fauna (B13)	Moss Trim Lines (B16)		
Saturation (A3)	Marl Deposits (B15)	Dry Season Water Table (C2)		
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)		
Sediment Deposits (B2)	 Oxidized Rhizospheres along Living Roots (C3) 	Saturation Visible on Aerial Imagery (C9)		
Drift deposits (B3)	Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)		
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)		
Iron Deposits (B5)	Thin Muck Surface (C7)	Shallow Aguitard (D3)		
Inundation Visible on Aerial Imagery (B7)	Other (Explain in Remarks)	Microtopographic Relief (D4)		
Sparsely Vegetated Concave Surface (B8)		FAC-neutral Test (D5)		
Field Observations:				
Surface Water Present? Yes O No 💿	Depth (inches):			
Water Table Present? Yes O No •	Depth (inches):	drology Present? Yes 🔿 No 🖲		
Saturation Present? (includes capillary fringe) Yes O No O	Wetland Hyd Depth (inches):	drology Present? Yes 🔾 No 🖲		
Describe Recorded Data (stream gauge, monit	oring well, aerial photos, previous inspections), if ava	ailable:		
Remarks:				

		Dominant Species?		Sampling Point: AN22 Upland
Tree Stratum (Plot size: 30')	Absolute % Cover	Rel.Strat.	Indicator Status	Dominance Test worksheet:
				Number of Dominant Species
1. Tsuga canadensis	20	33.3%	FACU	That are OBL, FACW, or FAC: 1 (A)
2. Betula papyrifera		16.7%	FACU	Total Number of Dominant
3. Fagus grandifolia		33.3%	FACU	Species Across All Strata: 6 (B)
4. Acer rubrum		16.7%	FAC	Dereent of deminent Species
5	0	0.0%		Percent of dominant Species That Are OBL, FACW, or FAC:16.7% (A/B)
6	0	0.0%		
7	0	0.0%		Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: 15')	60	= Total Cove	r	Total % Cover of: Multiply by:
1. Betula alleghaniensis	25	✓ 50.0%	FAC	$\begin{array}{c} \text{OBL species} \qquad 0 \qquad \text{x 1} = 0 \\ \hline \end{array}$
2. Acer pensylvanicum		30.0%	FACU	FACW species $0 \times 2 = 0$
3. Fagus grandifolia		20.0%	FACU	FAC species 45 x 3 = 135
4.		0.0%		FACU species x 4 =
5	0	0.0%		UPL species $\frac{66}{x 5} = \frac{330}{x 5}$
5	0	0.0%		Column Totals: 201 (A) 825 (B)
6. 7.	0	0.0%		Prevalence Index = B/A = 4.104
		= Total Cove	r	
Herb Stratum (Plot size: 5')			•	Hydrophytic Vegetation Indicators:
1. Trientalis borealis	10	11.0%	FAC	Rapid Test for Hydrophytic Vegetation
2. Dennstaedtia punctilobula	66	72.5%	UPL	Dominance Test is > 50%
3.Aralia nudicaulis	15	16.5%	FACU	Prevalence Index is $\leq 3.0^{1}$
4.	0	0.0%		Morphological Adaptations ¹ (Provide supporting
5.		0.0%		data in Remarks or on a separate sheet)
6.	0	0.0%		Problematic Hydrophytic Vegetation ¹ (Explain)
7		0.0%		¹ Indicators of hydric soil and wetland hydrology must
8.	0	0.0%		be present, unless disturbed or problematic.
9.	0	0.0%		Definitions of Vegetation Strata:
10.	0	0.0%		
11.	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
12.	0	0.0%		at bloast holght (BBH), regardloss of holght.
		= Total Cove	r	Sapling/shrub - Woody plants less than 3 in. DBH and
Woody Vine Stratum (Plot size:)	71			greater than 3.28 ft (1m) tall
1	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of
2	0	0.0%		size, and woody plants less than 3.28 ft tall.
3	0	0.0%		Woody vine - All woody vines greater than 3.28 ft in
4	0	0.0%		height.
	0	= Total Cove	r	
				Hydrophytic
				Vegetation Present? Yes O No O
Pomarke: (Include photo numbers here or on a concrete a	hoot)			1
Remarks: (Include photo numbers here or on a separate s	neet.)			

Depth		Matrix		Redox Fea			
(inches)	Color (%	Color (moist) %	Type 1 Loc ²		Remarks
0-9	10YR	3/2	100%			Loam	
9-13	2.5Y	5/3	100%			Very Fine Sandy Loam	
							—
				· ·			
¹ Type: C=Co	ncentration. D	=Depletio	n. RM=Red	uced Matrix, CS=Covered or Co	ated Sand Grains ² Lc	cation: PL=Pore Lining. M=	=Matrix
Hydric Soil	Indicators:					Indicators for Pro	blematic Hydric Soils : ³
Histosol	(A1)			Polyvalue Below Surfac	e (S8) (LRR R,)) (LRR K, L, MLRA 149B)
Histic Ep	pipedon (A2)			MLRA 149B)	<i></i>		dox (A16) (LRR K, L, R)
Black Hi	stic (A3)			Thin Dark Surface (S9)			at or Peat (S3) (LRR K, L, R)
	en Sulfide (A4)			Loamy Mucky Mineral (Dark Surface (S	
	d Layers (A5)			Loamy Gleyed Matrix (I	-2)		/ Surface (S8) (LRR K, L)
	d Below Dark S		11)	Depleted Matrix (F3)			ce (S9) (LRR K, L)
_	ark Surface (A			Redox Dark Surface (Fe			e Masses (F12) (LRR K, L, R)
	luck Mineral (S			Depleted Dark Surface			plain Soils (F19) (MLRA 149B)
	leyed Matrix (S4)		Redox Depressions (F8)		A6) (MLRA 144A, 145, 149B)
	edox (S5)					Red Parent Mate	erial (TF2)
	Matrix (S6)					Very Shallow Da	ark Surface (TF12)
Dark Su	rface (S7) (LR	r r, mlra	(149B)			Other (Explain i	n Remarks)
³ Indicators	of hydrophytic	vegetatio	n and wetla	nd hydrology must be present,	unless disturbed or pro	blematic.	
Restrictive	Layer (if obs	erved):					
Type: k							
	ches): 13					Hydric Soil Present?	? Yes 🔾 No 🖲
	10						
Remarks:							



AN22 Wetland



AN22 Upland

			5					
Project/Site: Antrim Wind Project		City/County: Antrim	Sampling Date: 17-Aug-11					
Applicant/Owner: Eolian Renewable	Energy, LLC	State: NH	Sampling Point: AN23 Wetland					
Investigator(s): AF JG		Section, Township, Range: S. T.	R.					
Landform (hillslope, terrace, etc.):	Hillside	Local relief (concave, convex, none): concave	Slope : 12.0 % / 6.8 °					
Subregion (LRR or MLRA):	Lat.:	Long.:	Datum:					
Soil Map Unit Name:		NWI class	ification: PFO/PSS					
Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No Are Vegetation , soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.) Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.								
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes ● No ○ Yes ● No ○ Yes ● No ○	Is the Sampled Area within a Wetland? Yes • No)					
Remarks: (Explain alternative pro Isolated PFO/PSS hillside seep dis	ocedures here or in a separate repo sturbed by Skidder activity.	ort.)						

Wetland Hydrology Indicators:		Secondary Indicators (minimum of 2 required)		
Primary Indicators (minimum of one required;	check all that apply)	Surface Soil Cracks (B6)		
Surface Water (A1)	Water-Stained Leaves (B9)	Drainage Patterns (B10)		
High Water Table (A2)	Aquatic Fauna (B13)	Moss Trim Lines (B16)		
Saturation (A3)	Marl Deposits (B15)	Dry Season Water Table (C2)		
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)		
Sediment Deposits (B2)	 Oxidized Rhizospheres along Living Roots (C3) 	Saturation Visible on Aerial Imagery (C9)		
Drift deposits (B3)	Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)		
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)		
Iron Deposits (B5)	Thin Muck Surface (C7)	Shallow Aquitard (D3)		
Inundation Visible on Aerial Imagery (B7)	Other (Explain in Remarks)	Microtopographic Relief (D4)		
Sparsely Vegetated Concave Surface (B8)		FAC-neutral Test (D5)		
Field Observations:				
Surface Water Present? Yes O No O	Depth (inches):			
Water Table Present? Yes O No •	Depth (inches):			
Saturation Present? (includes capillary fringe) Yes • No	Depth (inches):0	/drology Present? Yes 🖲 No 🔾		
Describe Recorded Data (stream gauge, monited	oring well, aerial photos, previous inspections), if av	ailable:		
Remarks:				

	int5	Dominant Species?		Sampling Point: AN23 Wetland
Tree Stratum (Plot size: 30')	Absolute % Cover	Rel.Strat.	Indicator Status	Dominance Test worksheet:
1. Fraxinus pennsylvanica	33	40.7%	FACW	Number of Dominant Species That are OBL, FACW, or FAC: 5 (A)
0 Assa milimum		40.7%	FAC	
	45	18.5%	FAC	Total Number of Dominant
4		0.0%	140	Species Across All Strata: 5 (B)
		0.0%		Percent of dominant Species
5				That Are OBL, FACW, or FAC:(A/B)
6	0	0.0%		
7		0.0%		Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: 15')	81	= Total Cove	r	Total % Cover of: Multiply by:
1. Fraxinus pennsylvanica	8	28.6%	FACW	OBL species $5 \times 1 = 5$
2. Spiraea tomentosa	45	53.6%	FACW	FACW species <u>139</u> x 2 = <u>278</u>
		17.9%	FACU	FAC speci es 56 x 3 = 168
4		0.0%	1400	FACU species $5 \times 4 = 20$
E		0.0%		UPL species x 5 =
c				Column Totals: 205 (A) 471 (B)
7		0.0%		
1		0.0%		Prevalence Index = B/A = 2.298
Herb Stratum (Plot size: 5')	28	= Total Cove	r	Hydrophytic Vegetation Indicators:
1 a b b b b b b b b b b	75	78.1%	FACW	Rapid Test for Hydrophytic Vegetation
2.Osmunda cinnamomea	8	8.3%	FACW	✓ Dominance Test is > 50%
2 F		8.3%	FAC	✓ Prevalence Index is ≤3.0 1
4. Carex lurida			OBL	Morphological Adaptations ¹ (Provide supporting
F		5.2%	UBL	data in Remarks or on a separate sheet)
		0.0%		\Box Problematic Hydrophytic Vegetation ¹ (Explain)
6	0	0.0%		
7		0.0%		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
8	0	0.0%		
9	0	0.0%		Definitions of Vegetation Strata:
10	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter
11	0	0.0%		at breast height (DBH), regardless of height.
12	0	0.0%		Sapling/shrub - Woody plants less than 3 in. DBH and
Woody Vine Stratum (Plot size:)	96	= Total Cove	r	greater than 3.28 ft (1m) tall.
	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of
2	0	0.0%		size, and woody plants less than 3.28 ft tall.
3	0	0.0%		Woody vine - All woody vines greater than 3.28 ft in
4.	0	0.0%		height.
	0	= Total Cove	r	
				Hydrophytic
				Vegetation Present? Yes • No ·
Domarka, (Include photo numbers have as a commente sh	not)			1
Remarks: (Include photo numbers here or on a separate she	eet.)			

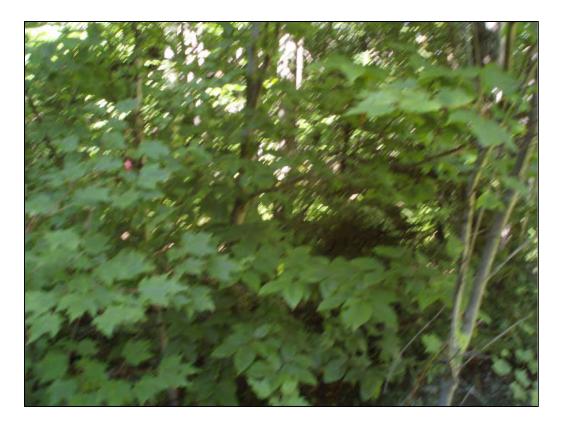
Depth		Matrix		needed to document the indicator or confirm Redox Features		
(inches)	Color (r		%	Color (moist) % Type 1 Lo		Remarks
0-7	10YR	3/2	100%		Loam	
7-15	2.5Y	4/1	100%		Sandy Loam	
¹ Type: C=Co	ncentration. D	=Depletio	n. RM=Red	uced Matrix, CS=Covered or Coated Sand Grains	Location: PL=Pore Lining. M=	 Matrix
	Indicators:					blematic Hydric Soils : ³
Histosol				Polyvalue Below Surface (S8) (LRR R,) (LRR K, L, MLRA 149B)
Histic Ep	pipedon (A2)			MLRA 149B)		dox (A16) (LRR K, L, R)
Black Hi	stic (A3)			Thin Dark Surface (S9) (LRR R, MLRA 149E	יי <u>ה</u>	t or Peat (S3) (LRR K, L, R)
	n Sulfide (A4)			Loamy Mucky Mineral (F1) LRR K, L)	Dark Surface (S	
_	d Layers (A5)			Loamy Gleyed Matrix (F2)		Surface (S8) (LRR K, L)
	d Below Dark S		11)	Redox Dark Surface (F6)	Thin Dark Surfac	e (S9) (LRR K, L)
_	ark Surface (A1			Depleted Dark Surface (F7)	Iron-Manganese	Masses (F12) (LRR K, L, R)
_	luck Mineral (S			Redox Depressions (F8)	Piedmont Flood	olain Soils (F19) (MLRA 149B)
_	leyed Matrix (S edox (S5)	54)		(, , , , , , , , , , , , , , , ,		A6) (MLRA 144A, 145, 149B)
	Matrix (S6)				Red Parent Mate	
	face (S7) (LRF	R. MIRA	149B)			rk Surface (TF12)
					Other (Explain ir	n Remarks)
			n and wetla	nd hydrology must be present, unless disturbed or p	problematic.	
	Layer (if obs	erved):				
Type: s					Hydric Soil Present?	Yes 💿 No 🔿
Depth (in	ches): 15				riyune Jon Present:	Tes S No C
Remarks:						

Project/Site: Antrim Wind Project		City/County: Antrim		Sampling Date: 1	7-Aug-11
Applicant/Owner: Eolian Renewable E	Energy, LLC		State: NH	Sampling Point:	an23 upland
Investigator(s): AF JG		Section, Township, Rang	e: S. T.	R.	
Landform (hillslope, terrace, etc.):	Hillside	Local relief (concave, conve	x, none) : flat	Slope:	15.0 % / 8.5 °
Subregion (LRR or MLRA):	Lat.:	L	ong.:	Dai	tum:
Soil Map Unit Name:			NWI classi	fication:	
Are climatic/hydrologic conditions of Are Vegetation , Soil Are Vegetation , Soil Summary of Findings - At	, or Hydrology Significant	tly disturbed? Are "Norr problematic? (If neede	(If no, explain ir nal Circumstances" d, explain any answ ONS, transects	present? Yes	
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes ○ No ● Yes ○ No ● Yes ○ No ●	Is the Sampled Area within a Wetland?	Yes 🔿 No 🖲	٥	
Remarks: (Explain alternative pro	ocedures here or in a separate repo	ort.)			

Wetland Hydrology Indicators:		Secondary Indicators (minimum of 2 required)			
Primary Indicators (minimum of one required;	Surface Soil Cracks (B6)				
Surface Water (A1)	Water-Stained Leaves (B9)	Drainage Patterns (B10)			
High Water Table (A2)	Aquatic Fauna (B13)	Moss Trim Lines (B16)			
Saturation (A3)	Marl Deposits (B15)	Dry Season Water Table (C2)			
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)			
Sediment Deposits (B2)	Oxidized Rhizospheres along Living Roots (C3)	Saturation Visible on Aerial Imagery (C9)			
Drift deposits (B3)	Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)			
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)			
Iron Deposits (B5)	Thin Muck Surface (C7)	Shallow Aquitard (D3)			
Inundation Visible on Aerial Imagery (B7)	Other (Explain in Remarks)	Microtopographic Relief (D4)			
Sparsely Vegetated Concave Surface (B8)		FAC-neutral Test (D5)			
Field Observations:					
Surface Water Present? Yes O No 🖲	Depth (inches):				
Water Table Present? Yes O No O					
Saturation Present? (includes capillary fringe) Yes O No O	Wetland Hyd Depth (inches):	drology Present? Yes 🔾 No 🖲			
Describe Recorded Data (stream gauge, monitor	pring well, aerial photos, previous inspections), if ava	ailable:			
Remarks:					

		Dominant Species?		Sampling Point: an23 upland
Tree Stratum (Plot size: 30')	Absolute	Rel.Strat.	Indicator	Dominance Test worksheet:
	% Cover		Status	Number of Dominant Species
1. Quercus rubra	25	29.4%	FACU-	That are OBL, FACW, or FAC: 2 (A)
2. Fagus grandifolia	25	29.4%	FACU	Total Number of Dominant
3. Betula alleghaniensis	25	29.4%	FAC	Species Across All Strata: 6 (B)
4. Tsuga canadensis		11.8%	FACU	Demonst of deminent Creation
5	0	0.0%		Percent of dominant Species That Are OBL, FACW, or FAC:33.3% (A/B)
6	0	0.0%		
7	0	0.0%		Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: 15')	85	= Total Cove	r	Total % Cover of: Multiply by: OBL species 0 x 1 = 0
1. Acer rubrum	20	50.0%	FAC	
2. Pinus strobus	10	25.0%	FACU	FACW species $0 \times 2 = 0$
3. Fraxinus americana	5	12.5%	FACU	FAC species $50 \times 3 = 150$
4. Quercus rubra	5	12.5%	FACU-	FACU speci es $113 \times 4 = 452$
5	0	0.0%		UPL species $3 \times 5 = 15$
6	0	0.0%		Column Totals: 166 (A) 617 (B)
7	0	0.0%		Prevalence Index = $B/A = 3.717$
··		= Total Cove		
Herb Stratum (Plot size: 5')	40		•	Hydrophytic Vegetation Indicators:
1.Aralia nudicaulis	33	80.5%	FACU	Rapid Test for Hydrophytic Vegetation
2. Trientalis borealis	5	12.2%	FAC	Dominance Test is > 50%
3.Polygonatum pubescens		7.3%	UPL	Prevalence Index is \leq 3.0 ¹
4.		0.0%		Morphological Adaptations ¹ (Provide supporting
5.		0.0%		data in Remarks or on a separate sheet)
6.	0	0.0%		Problematic Hydrophytic Vegetation ¹ (Explain)
7.	0	0.0%		¹ Indicators of hydric soil and wetland hydrology must
8	0	0.0%		be present, unless disturbed or problematic.
9.	0	0.0%		Definitions of Vegetation Strata:
10.	0	0.0%		
11.	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
12.	0	0.0%		at breast height (DBH), regardless of height.
		= Total Cove	r	Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall
Woody Vine Stratum (Plot size:)		_	-	
1	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
2	0			
3	0	0.0%		Woody vine - All woody vines greater than 3.28 ft in
4	0	0.0%		height.
	0	= Total Cove	r	
				Hydrophytic Vegetation
				Present? Yes O No O
Remarks: (Include photo numbers here or on a separate she	et.)			

Depth (inches)		Matrix			edox Features		·	- .
	Color (I		<u>%</u>	Color (moist)	% Type ¹	Loc ²	Texture	Remarks
0-9	10YR	3/2	100%				Loam	
9-12	10YR	4/3	100%				Fine Sandy Loam	
							-	
							-	
Type: C=Co	ncentration. D	=Depletio	n. RM=Red	uced Matrix, CS=Cove	ered or Coated Sand Gra	ains ² Loca	tion: PL=Pore Lining. M=N	latrix
Hydric Soil	Indicators:						Indicators for Probl	ematic Hydric Soils : ³
Histosol	(A1)			Polyvalue Bel	low Surface (S8) (LRR F	R,		(LRR K, L, MLRA 149B)
	oipedon (A2)			MLRA 149B)		A 140D)		ox (A16) (LRR K, L, R)
Black Hi					rface (S9) (LRR R, MLF			or Peat (S3) (LRR K, L, R)
	en Sulfide (A4)				y Mineral (F1) LRR K, L) d Matrix (E2)		Dark Surface (S7)	(LRR K, L)
	d Layers (A5)			Depleted Mat			Polyvalue Below S	Surface (S8) (LRR K, L)
	d Below Dark S		.11)	Redox Dark S			Thin Dark Surface	(S9) (LRR K, L)
_	ark Surface (A1				k Surface (F7)		Iron-Manganese N	Masses (F12) (LRR K, L, R)
	luck Mineral (S leyed Matrix (S			Redox Depre				ain Soils (F19) (MLRA 149B)
	edox (S5)	54)						5) (MLRA 144A, 145, 149B)
·	Matrix (S6)						Red Parent Mater	
	rface (S7) (LRI	R R, MLRA	A 149B)				Very Shallow Dark	
				nd hydrology must be	e present, unless disturk	and or proble	Other (Explain in	Remarks)
			iii aliu wetia	na nyarology must be	e present, unless disturt			
	Layer (if obs	erved):						
Туре: Е							Hydric Soil Present?	Yes 🔿 No 🖲
Depth (in	ches): 12							
Remarks:								



AN23 Upland



AN23 Wetland

					0	
Project/Site: Antrim Wind Project		City/County:	Antrim		Sampling Date: 1	8-Aug-11
Applicant/Owner: Eolian Renewable E	Energy, LLC		State:	NH	Sampling Point:	AN24 wetland
Investigator(s): AF JG		Section, T	ownship, Range: S.	Т.	R.	
Landform (hillslope, terrace, etc.):	Terrace	Local relief (c	oncave, convex, none)	concave	Slope:	0.0 % / 0.0
Subregion (LRR or MLRA):	Lat.:		Long.:		Dat	tum:
Soil Map Unit Name:		p		NWI classif	ication: PFO	
Are Vegetation , Soil Are Vegetation , Soil Summary of Findings - At	, or Hydrology naturally	tly disturbed? problematic? sampling p	Are "Normal Circu (If needed, expla oint locations, t	in any answ	ers in Remarks.)	● No ○ eatures, etc.
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes ● No ○ Yes ● No ○ Yes ● No ○		e Sampled Area n a Wetland? Ye	s 🖲 No C)	
Remarks: (Explain alternative pro Isolated PFO with ATV trail throug	ocedures here or in a separate reportion of west side of wetland. Contains					

Wetland Hydrology Indicators:		Secondary Indicators (minimum of 2 required)
Primary Indicators (minimum of one required;	check all that apply)	Surface Soil Cracks (B6)
Surface Water (A1)	✓ Water-Stained Leaves (B9)	✓ Drainage Patterns (B10)
High Water Table (A2)	Aquatic Fauna (B13)	Moss Trim Lines (B16)
Saturation (A3)	Marl Deposits (B15)	Dry Season Water Table (C2)
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)
Sediment Deposits (B2)	Oxidized Rhizospheres along Living Roots (C3)	Saturation Visible on Aerial Imagery (C9)
Drift deposits (B3)	Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)
Iron Deposits (B5)	Thin Muck Surface (C7)	Shallow Aquitard (D3)
Inundation Visible on Aerial Imagery (B7)	Other (Explain in Remarks)	Microtopographic Relief (D4)
Sparsely Vegetated Concave Surface (B8)	_ 、,	FAC-neutral Test (D5)
Field Observations:		
Surface Water Present? Yes No	Depth (inches): 2	
Water Table Present? Yes O No •	Depth (inches):	
Saturation Present? (includes capillary fringe) Yes • No	Wetland Hy Depth (inches):0	drology Present? Yes $ullet$ No $igloo$
Describe Recorded Data (stream gauge, monit	oring well, aerial photos, previous inspections), if ava	ailable:
Remarks:		
Sphagnum 50% cover.		
		enthe central and North cost Device . Interview Version

	into i	Dominant Species?		Sampling Point: AN24 wetland
Tree Stratum (Plot size: 30')	Absolute % Cover	-	Indicator Status	Dominance Test worksheet:
1 Acer rubrum	33	76.7%	FAC	Number of Dominant Species That are OBL, FACW, or FAC: 6 (A)
O Detuis elle elevelende	10	 ✓ 70.7% ✓ 23.3% 	FAC	
-			FAC	Total Number of Dominant
3		0.0%		Species Across All Strata: 6 (B)
4	0	0.0%		Demonst of dominant Crossics
5		0.0%		Percent of dominant Species That Are OBL, FACW, or FAC:100.0% (A/B)
6		0.0%		
7	0	0.0%		Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: 15')	43	= Total Cove	r	Total % Cover of: Multiply by: OBL species 0 x 1 = 0
1. Hamamelis virginiana	10	66.7%	FAC-	
2. Betula alleghaniensis	5	33.3%	FAC	
3.		0.0%		FAC speci es $58 \times 3 = 174$
4	0	0.0%		FACU species $0 \times 4 = 0$
5	0	0.0%		UPL species $0 \times 5 = 0$
		0.0%		Column Totals: 93 (A) 244 (B)
7		0.0%		
-		= Total Cove	r	Prevalence Index = B/A = 2.624 Hydrophytic Vegetation Indicators:
Herb Stratum (Plot size: 5')				Rapid Test for Hydrophytic Vegetation
1.Osmunda cinnamomea	25	71.4%	FACW	✓ Dominance Test is > 50%
2.Rubus hispidus	10	28.6%	FACW	✓ Dominance rest is > 50% ✓ Prevalence Index is $\leq 3.0^{1}$
3	0	0.0%		
4.	0	0.0%		Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
5.	0	0.0%		Problematic Hydrophytic Vegetation ¹ (Explain)
6.	0	0.0%		
7.	0	0.0%		¹ Indicators of hydric soil and wetland hydrology must
8.	0	0.0%		be present, unless disturbed or problematic.
9.	0	0.0%		Definitions of Vegetation Strata:
10.	0	0.0%		
11.				Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
12.	0	0.0%		a breast height (DBH), regardless of height.
	0 35	0.0% = Total Cove	r	Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall
Woody Vine Stratum (Plot size:)	0	0.0%		
1				Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
2				
3	0	0.0%		Woody vine - All woody vines greater than 3.28 ft in
4	0	0.0%		height.
	0	= Total Cove	r	
				Hydrophytic Vegetation Present? Yes • No O
Remarks: (Include photo numbers here or on a separate she	eet.)			

Depth		Matrix	-	Redox Features	_		
(inches)	Color (I		%	Color (moist) % Type 1 L	-0C ²	Texture	Remarks sapri c
0-8	10YR	2/1	100%			Muck	
8-12	10YR	2/1	100%			Very Fine Sandy Loan	n
				·			
				·			
				·			
						P	
				·			
¹ Type: C=Cor		- Depletio	n RM=Rec	Juced Matrix, CS=Covered or Coated Sand Grains	² l ocati	ion: PI =Pore Lining N	M=Matrix
Hydric Soil		Depictio			Locati		
Histosol				Polyvalue Below Surface (S8) (LRR R,		Indicators for Pr	roblematic Hydric Soils : ³
	ipedon (A2)			MLRA 149B)		2 cm Muck (A	10) (LRR K, L, MLRA 149B)
Black His	•			Thin Dark Surface (S9) (LRR R, MLRA 14	9B)	Coast Prairie F	Redox (A16) (LRR K, L, R)
_	n Sulfide (A4)			Loamy Mucky Mineral (F1) LRR K, L)		5 cm Mucky P	Peat or Peat (S3) (LRR K, L, R)
	I Layers (A5)			Loamy Gleyed Matrix (F2)			(S7) (LRR K, L)
	Below Dark S	Surfaco (A	11)	Depleted Matrix (F3)			ow Surface (S8) (LRR K, L)
_	rk Surface (A		11)	Redox Dark Surface (F6)			face (S9) (LRR K, L)
_	uck Mineral (S			Depleted Dark Surface (F7)			ese Masses (F12) (LRR K, L, R)
	leyed Matrix (3			Redox Depressions (F8)		_	odplain Soils (F19) (MLRA 149B)
	edox (S5)	34)		• • • •			(TA6) (MLRA 144A, 145, 149B)
_	Matrix (S6)					Red Parent Ma	. ,
	face (S7) (LRI		1/0R)				Dark Surface (TF12)
						Other (Explain	n in Remarks)
³ Indicators of	of hydrophytic	vegetatio	n and wetl	and hydrology must be present, unless disturbed o	r probler	matic.	
Restrictive I	_ayer (if obs	erved):					
Type: R	lefusal						
Depth (in	ches): 12					Hydric Soil Presen	nt? Yes $ullet$ No $igodom$
Remarks:							
Remains.							

						0		
Project/Site: Antrim Wind Project		City/County:	Antrim			Sampling Date: 1	8-Aug-11	
Applicant/Owner: Eolian Renewable Energy, LLC				State: N	H	Sampling Point:	AN24 Up	land
Investigator(s): AF JG		Section, T	ownship, Ran	ge: S.	т.	R.		
Landform (hillslope, terrace, etc.): Hillside		Local relief (c	oncave, conve	ex, none):	undulating	g Slope:	5.0 % /	2.9°
Subregion (LRR or MLRA):	Lat.:		l	Long.:		Dat	um:	
Soil Map Unit Name:				-	NWI classifi	cation:		
Are climatic/hydrologic conditions on the site typical Are Vegetation , Soil , or Hydrology Are Vegetation , Soil , or Hydrology Summary of Findings - Attach site ma	significant	ly disturbed? problematic?	(If need	mal Circur ed, explair	2	resent? Yes		etc.
Hydrophytic Vegetation Present?YesNoHydric Soil Present?YesNoWetland Hydrology Present?YesNo	ullet		e Sampled Are n a Wetland?	ea Yes	○ _{No} ●			
Remarks: (Explain alternative procedures here or i	n a separate repo	rt.)						

	Secondary Indicators (minimum of 2 required)
check all that apply)	Surface Soil Cracks (B6)
Water-Stained Leaves (B9)	Drainage Patterns (B10)
Aquatic Fauna (B13)	Moss Trim Lines (B16)
Marl Deposits (B15)	Dry Season Water Table (C2)
Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)
Oxidized Rhizospheres along Living Roots (C3)	Saturation Visible on Aerial Imagery (C9)
Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)
Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)
Thin Muck Surface (C7)	Shallow Aquitard (D3)
	Microtopographic Relief (D4)
	FAC-neutral Test (D5)
Depth (inches):	
Depth (inches):	rdrology Present? Yes 🔿 No 🖲
Wetland Hy Depth (inches):	rdrology Present? Yes 🔾 No 🖲
pring well, aerial photos, previous inspections), if av	ailable:
	Aquatic Fauna (B13) Marl Deposits (B15) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Living Roots (C3) Presence of Reduced Iron (C4) Recent Iron Reduction in Tilled Soils (C6) Thin Muck Surface (C7) Other (Explain in Remarks) Depth (inches): Depth (inches): Uepth (inches):

	int5	Dominant Species?		Sampling Point: AN24 Upland
Tree Stratum (Plot size: 30')	Absolute % Cover	Rel.Strat.	Indicator Status	
1. Picea rubens	10	16.7%	FACU	Number of Dominant Species That are OBL, FACW, or FAC: 2 (A)
2. Tsuga canadensis		41.7%	FACU	
3. Betula papyrifera		16.7%	FACU	Total Number of Dominant
1	45	25.0%	FACU-	Species Across All Strata: 8 (B)
4. <u>Quercus rubra</u> 5		0.0%		Percent of dominant Species
6.		0.0%		That Are OBL, FACW, or FAC: 25.0% (A/B)
		0.0%		
7				Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: 15')	60	= Total Cove	r	Total % Cover of: Multiply by:
1. Fagus grandifolia	5	20.0%	FACU	OBL species $0 \times 1 = 0$
2. Picea rubens		20.0%	FACU	FACW species $0 \times 2 = 0$
3. Hamamelis virginiana		20.0%	FAC-	FAC speci es 18 x 3 = 54
4		40.0%	FAC	FACU speci es $84 x 4 = 336$
_		0.0%		UPL species $5 \times 5 = 25$
C		0.0%		Column Totals: 107 (A) 415 (B)
7		0.0%		
1	-	-		Prevalence Index = B/A = <u>3.879</u>
Herb Stratum (Plot size: 5')	25	= Total Cove	۲.	Hydrophytic Vegetation Indicators:
1.Aralia nudicaulis	8	36.4%	FACU	Rapid Test for Hydrophytic Vegetation
2.Lycopodium obscurum		13.6%	FACU	Dominance Test is > 50%
3 Décembritiques accuellingues		13.6%	FACU	Prevalence Index is $\leq 3.0^{1}$
		22.7%	UPL	Morphological Adaptations ¹ (Provide supporting
E		13.6%	FAC	data in Remarks or on a separate sheet)
6.		0.0%	TAC	Problematic Hydrophytic Vegetation ¹ (Explain)
7.				¹ Indicators of hydric soil and wetland hydrology must
8.		0.0%		be present, unless disturbed or problematic.
o <u>.</u> 9.		0.0%		Definitions of Vegetation Strata:
	0	0.0%		
10	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter
11		0.0%		at breast height (DBH), regardless of height.
12	0	0.0%		Sapling/shrub - Woody plants less than 3 in. DBH and
Woody Vine Stratum (Plot size:)	22	= Total Cove	r	greater than 3.28 ft (1m) tall
1	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of
2	0	0.0%		size, and woody plants less than 3.28 ft tall.
3	0	0.0%		Woody vine - All woody vines greater than 3.28 ft in
4	0	0.0%		height.
	0	= Total Cove	r	
				Hydrophytic
				Vegetation Present? Yes O No •
Remarks: (Include photo numbers here or on a separate she	eet)			
remarks. (Include proto numbers here of on a separate sh				

Depth		Matrix	•	needed to document the indicator or confirm the Redox Features		
(inches)	Color (r		%	Color (moist) % Type 1 Loc ²		Remarks
0-4	10YR	3/2	100%		Loam	
4-8	10YR	4/3	100%		Fine Sandy Loam	
8-10	10YR	5/8	100%		Fine Sandy Loam	
1- 0.0						
		=Depletio	n. KM=Red	uced Matrix, CS=Covered or Coated Sand Grains ² Lo		2
Hydric Soil Histosol				Polyvalue Below Surface (S8) (LRR R,		lematic Hydric Soils : 3
	ipedon (A2)			MLRA 149B)		(LRR K, L, MLRA 149B)
Black His				Thin Dark Surface (S9) (LRR R, MLRA 149B)		lox (A16) (LRR K, L, R)
_	n Sulfide (A4)			Loamy Mucky Mineral (F1) LRR K, L)		or Peat (S3) (LRR K, L, R)
	Layers (A5)			Loamy Gleyed Matrix (F2)	Dark Surface (S7) (LRR K, L) Surface (S8) (LRR K, L)
Depleted	l Below Dark S	Surface (A	.11)	Depleted Matrix (F3)		e (S9) (LRR K, L)
Thick Da	rk Surface (A1	2)		Redox Dark Surface (F6)		Masses (F12) (LRR K, L, R)
Sandy M	uck Mineral (S	51)		Depleted Dark Surface (F7)		lain Soils (F19) (MLRA 149B)
_	eyed Matrix (S	54)		Redox Depressions (F8)		6) (MLRA 144A, 145, 149B)
	edox (S5)				Red Parent Mate	rial (TF2)
	Matrix (S6) face (S7) (LRF	אסווא סכ	1400)		Very Shallow Dar	
					Other (Explain in	Remarks)
³ Indicators of	of hydrophytic	vegetatio	n and wetla	nd hydrology must be present, unless disturbed or pro	blematic.	
Restrictive I		erved):				
Type: R					Hydric Soil Present?	Yes 🔿 No 🖲
Depth (ind	ches): 10				Tryane son resent.	
Remarks:						



AN24 Wetland



AN24 Upland



AN24 Wetland

					•	
Project/Site: Antrim Wind Project		City/County:	Antrim		Sampling Date: 1	8-Aug-11
Applicant/Owner: Eolian Renewable E	nergy, LLC		State: N	Н	Sampling Point:	AN25 Wetland
Investigator(s): AF JG		Section, To	wnship, Range: S.	т.	R.	
Landform (hillslope, terrace, etc.):	Terrace	Local relief (co	oncave, convex, none):	concave	Slope:	0.0 % / 0.0 °
Subregion (LRR or MLRA):	Lat.:		Long.:	-	Dat	tum:
Soil Map Unit Name:				NWI classif	ication: PFO	
Are Vegetation , Soil Are Vegetation , Soil Summary of Findings - At	, or Hydrology 🗌 naturally p	ily disturbed? problematic? sampling p	Are "Normal Circu (If needed, explai Dint locations, tr	n any answe	ers in Remarks.)	
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes ● No Yes ● No Yes ● No		Sampled Area n a Wetland? Yes	s 🖲 No C)	
	cedures here or in a separate repo contains VP-4. Adjacent to ATV tra	•				

Wetland Hydrology Indicators:		Secondary Indicators (minimum of 2 required)
Primary Indicators (minimum of one required;	check all that apply)	Surface Soil Cracks (B6)
Surface Water (A1)	✓ Water-Stained Leaves (B9)	Drainage Patterns (B10)
High Water Table (A2)	Aquatic Fauna (B13)	Moss Trim Lines (B16)
Saturation (A3)	Marl Deposits (B15)	Dry Season Water Table (C2)
✓ Water Marks (B1)	Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)
Sediment Deposits (B2)	Oxidized Rhizospheres along Living Roots (C3)	Saturation Visible on Aerial Imagery (C9)
Drift deposits (B3)	Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)
Iron Deposits (B5)	Thin Muck Surface (C7)	Shallow Aquitard (D3)
Inundation Visible on Aerial Imagery (B7)	Other (Explain in Remarks)	Microtopographic Relief (D4)
Sparsely Vegetated Concave Surface (B8)		✓ FAC-neutral Test (D5)
Field Observations:		
Surface Water Present? Yes No	Depth (inches): <u>6</u>	
Water Table Present? Yes O No O	Depth (inches):	
Saturation Present? (includes capillary fringe) Yes • No	Wetland Hyd Depth (inches):0	drology Present? Yes $ullet$ No $igodoldsymbol{ imes}$
Describe Recorded Data (stream gauge, monit	oring well, aerial photos, previous inspections), if ava	ailable:
Remarks:		
Contained up to 2 feet of standing water in Ma	iy.	

	113	Dominant Species?		Sampling Point: AN25 Wetland
Tree Stratum (Plot size: <u>30'</u>)	Absolute % Cover	Rel.Strat.	Indicator Status	Dominance Test worksheet:
1. Acer rubrum	50	100.0%	FAC	Number of Dominant Species That are OBL, FACW, or FAC: 5 (A)
2	0	0.0%		
3.	0	0.0%		Total Number of Dominant Species Across All Strata: 5 (B)
4	0	0.0%		Species Across All Strata: (B)
5.		0.0%		Percent of dominant Species
6		0.0%		That Are OBL, FACW, or FAC:(A/B)
7	0	0.0%		Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: 15')		= Total Cover	·	Total % Cover of: Multiply by:
	0	✔ 100.0%	54014	OBL species 5 x 1 = 5
1. <u>Ilex verticillata</u>	3		FACW+	FACW species $21 \times 2 = 42$
2	0	0.0%		FAC species 50 x 3 = 150
3	0	0.0%		FACU species $0 \times 4 = 0$
4	0	0.0%		UPL species $0 \times 5 = 0$
5	0	0.0%		
6	0	0.0%		Column Totals: <u>76</u> (A) <u>197</u> (B)
7	0	0.0%		Prevalence Index = $B/A = 2.592$
Herb Stratum (Plot size: 5')	3	= Total Cover	Γ	Hydrophytic Vegetation Indicators:
1.Osmunda regalis	5	21.7%	OBL	Rapid Test for Hydrophytic Vegetation
	10	43.5%	FACW+	✓ Dominance Test is > 50%
3.0smunda cinnamomea	5	 ✓ 43.3 % ✓ 21.7% 	FACW	✓ Prevalence Index is ≤3.0 1
4. Carex intumescens	3	13.0%	FACW+	Morphological Adaptations ¹ (Provide supporting
5.	0	0.0%	TACW+	data in Remarks or on a separate sheet)
6.	0	0.0%		Problematic Hydrophytic Vegetation ¹ (Explain)
7.	0	0.0%		¹ Indicators of hydric soil and wetland hydrology must
8.				be present, unless disturbed or problematic.
9.				Definitions of Vegetation Strata:
9. 10.	0			
11.	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter
12.	0	0.0%		at breast height (DBH), regardless of height.
12	 23	= Total Cover		Sapling/shrub - Woody plants less than 3 in. DBH and
Woody Vine Stratum (Plot size:)		_		greater than 3.28 ft (1m) tall
1	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
2	0	0.0%		size, and woody plants less than 3.26 it tall.
3	0	0.0%		Woody vine - All woody vines greater than 3.28 ft in
4	0	0.0%		height.
	0	= Total Cover	r	
				Hydrophytic
				Vegetation Present? Yes I No
				Present? Yes VO C
Pamarks: (Include photo numbers here or on a constate she	at)			1
Remarks: (Include photo numbers here or on a separate shee	=1.)			

O-8 TOVR 2/1 Muck 8-16 2.5Y 5/1 70% 10YR 5/6 25% M Fine Loamy Sand 8-16 2.5Y 5/1 70% 10YR 5/6 25% M Fine Loamy Sand 9 2.5Y 6/1 5% D M Image: Sand Sand Sand Sand Sand Sand Sand Sand	0-8 10YR 2/1	Depth (inchos)		Matrix				dox Featu				- ·
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2.5Y 6/1 5% D M 2.5Y 6/1 5% D D 2.5Y 6/1 5% D D 2.5Y 6/1 5% D D 2.5Y 6/1 10 10 D 2.5Y 10 10 10 10 2.5Y 2	2.5Y 6/1 5% D M Image: C = Concentration. D = Depletion. RM = Reduced Matrix, CS = Covered or Coated Sand Grains *Location: PL = Pore Lining. M = Matrix Image: C = Concentration. D = Depletion. RM = Reduced Matrix, CS = Covered or Coated Sand Grains *Location: PL = Pore Lining. M = Matrix Image: C = Concentration. D = Depletion. RM = Reduced Matrix, CS = Covered or Coated Sand Grains *Location: PL = Pore Lining. M = Matrix Image: C = Concentration. D = Depletion. RM = Reduced Matrix, CS = Covered or Coated Sand Grains *Location: PL = Pore Lining. M = Matrix Image: C = Concentration. D = Depletion. RM = Reduced Matrix, CS = Covered or Coated Sand Grains *Location: PL = Pore Lining. M = Matrix Image: C = Concentration. D = Depletion. RM = Reduced Matrix, CS = Covered or Coated Sand Grains *Location: PL = Pore Lining. M = Matrix Image: C = Concentration. D = Depletion. RM = Reduced Matrix (CS = Covered or Coated Sand Grains *Location: PL = Pore Lining. M = Matrix Image: C = Concentration. D = Depletion. RM = Reduced Matrix (F3) Image: C = Concentration Reduced Matrix (F3) Image: C = Concentration Reduced Matrix (F3) Image: C = Concentration Reduced Surface (S9) (LRR K, L) Image: C = Concentration Reduced Matrix (F3) Image: C = Concentration Reduced Surface (F7) Image: C = Concentration Reduced Matrix (F3) Image: C = Concent Reduce	0-8	10YR	2/1								
pe: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains ² Location: PL=Pore Lining, M=Matrix rdric Soil Indicators: Indicators (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) Histic Explored n (A2) MLRA 149B) Coast Prainie Redox (A16) (LRR K, L, R) Black Histic (A3) Thin Dark, Surface (S9) (LR R, MLRA 149B) Coast Prainie Redox (A16) (LRR K, L, R) Stratified Layers (A5) Loamy Gleyed Matrix (F2) Depleted Matrix (F2) Depleted Below Dark Surface (A11) Depleted Matrix (F3) Depleted Matrix (F2) Sandy Muck Mineral (S1) Depleted Matrix (F3) Thin Dark Surface (F7) Sandy Muck Mineral (S1) Depleted Matrix (F3) Depleted Matrix (F3) Sandy Muck Mineral (S1) Depleted Matrix (F3) Pledmont Floodplain Solis (F19) (MLRA 149B) Sandy Muck Mineral (S1) Depleted Matrix (F3) Pledmont Floodplain Solis (F19) (MLRA 149B) Sandy Muck Mineral (S1) Depleted Matrix (F4) Pledmont Floodplain Solis (F19) (MLRA 149B) Sandy Ruck Mineral (S1) Depleted Matrix (S6) Redox Depressions (F8) Sandy Ruck Mineral (S1) Depleted Matrix (S6) Pledmont Floodplain Solis (F19) (MLRA 149B) Micators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. <td>ge: CConcentration. D-Depletion. RM-Reduced Matrix, CS-Covered or Coated Sand Grains ?Location: PL-Pore Lining. M-Matrix ge: CConcentration. D-Depletion. RM-Reduced Matrix, CS-Covered or Coated Sand Grains ?Location: PL-Pore Lining. M-Matrix ge: CConcentration. D-Depletion. RM-Reduced Matrix, CS-Covered or Coated Sand Grains ?Location: PL-Pore Lining. M-Matrix ge: CConcentration. D-Depletion. RM-Reduced Matrix, CS-Covered or Coated Sand Grains ?Location: PL-Pore Lining. M-Matrix ge: CConcentration. D-Depletion. RM-Reduced Matrix, CS-Covered or Coated Sand Grains ?Location: PL-Pore Lining. M-Matrix Histic Explored on (A2) International Surface (S8) (LRR R, MLRA 1498) Indicators for Problematic Hydric Soils : ³ Histic Surface (A1) Depleted Matrix (F2) Depleted Matrix (F2) Depleted Matrix (F3) Depleted Dark Surface (A12) Depleted Dark Surface (F7) Depleted Dark Surface (F7) Depleted Matrix (F3) Sandy Muck Mineral (S1) Depleted Dark Surface (F7) Piedmont Floodplain Soils (F19) (MLRA 1498) Mesic Spodic (TA6) (MLRA 1448, 145, 1498) Sandy Kuck Mineral (S1) Depleted Matrix (S6) Wesic Spodic (TA6) (MLRA 1448, 145, 1498) Mesic Spodic (TA6) (MLRA 1444, 145, 1498) Sandy Kuck Mineral (S1) Depleted Matrix (S6) Wesic Spodic (TA6) (MLRA 1448, 145, 1498) Mesic Spodic (TA6) (MLRA 1448, 145, 1498) <td< td=""><td>8-16</td><td>2.5Y</td><td>5/1</td><td>70%</td><td>10YR</td><td>5/6</td><td>25%</td><td>C</td><td>Μ</td><td>Fine Loamy Sand</td><td></td></td<></td>	ge: CConcentration. D-Depletion. RM-Reduced Matrix, CS-Covered or Coated Sand Grains ?Location: PL-Pore Lining. M-Matrix ge: CConcentration. D-Depletion. RM-Reduced Matrix, CS-Covered or Coated Sand Grains ?Location: PL-Pore Lining. M-Matrix ge: CConcentration. D-Depletion. RM-Reduced Matrix, CS-Covered or Coated Sand Grains ?Location: PL-Pore Lining. M-Matrix ge: CConcentration. D-Depletion. RM-Reduced Matrix, CS-Covered or Coated Sand Grains ?Location: PL-Pore Lining. M-Matrix ge: CConcentration. D-Depletion. RM-Reduced Matrix, CS-Covered or Coated Sand Grains ?Location: PL-Pore Lining. M-Matrix Histic Explored on (A2) International Surface (S8) (LRR R, MLRA 1498) Indicators for Problematic Hydric Soils : ³ Histic Surface (A1) Depleted Matrix (F2) Depleted Matrix (F2) Depleted Matrix (F3) Depleted Dark Surface (A12) Depleted Dark Surface (F7) Depleted Dark Surface (F7) Depleted Matrix (F3) Sandy Muck Mineral (S1) Depleted Dark Surface (F7) Piedmont Floodplain Soils (F19) (MLRA 1498) Mesic Spodic (TA6) (MLRA 1448, 145, 1498) Sandy Kuck Mineral (S1) Depleted Matrix (S6) Wesic Spodic (TA6) (MLRA 1448, 145, 1498) Mesic Spodic (TA6) (MLRA 1444, 145, 1498) Sandy Kuck Mineral (S1) Depleted Matrix (S6) Wesic Spodic (TA6) (MLRA 1448, 145, 1498) Mesic Spodic (TA6) (MLRA 1448, 145, 1498) <td< td=""><td>8-16</td><td>2.5Y</td><td>5/1</td><td>70%</td><td>10YR</td><td>5/6</td><td>25%</td><td>C</td><td>Μ</td><td>Fine Loamy Sand</td><td></td></td<>	8-16	2.5Y	5/1	70%	10YR	5/6	25%	C	Μ	Fine Loamy Sand	
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Stratified Layers (A5) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L) Depleted Below Dark Surface (A11) Depleted Matrix (F3) Polyvalue Below Surface (S8) (LRR K, L) Thick Dark Surface (A12) Redox Dark Surface (F6) Thin Dark Surface (S9) (LRR K, L) Sandy Muck Mineral (S1) Depleted Dark Surface (F7) Piedmont Floodplain Soils (F19) (MLRA 1449B) Sandy Redox (S5) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144A, 145, 149B) Stripped Matrix (S6) Red Parent Material (TF2) Very Shallow Dark Surface (TF12) Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks) Other (Explain in Remarks) ndicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Hydric Soil Present? Yes No	Stratified Layers (A5) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L) Depleted Below Dark Surface (A11) Depleted Matrix (F3) Polyvalue Below Surface (S8) (LRR K, L) Thick Dark Surface (A12) Redox Dark Surface (F6) Iron-Manganese Masses (F12) (LRR K, L, R) Sandy Muck Mineral (S1) Depleted Dark Surface (F7) Piedmont Floodplain Soils (F19) (MLRA 149B) Sandy Redox (S5) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144A, 145, 149B) Stripped Matrix (S6) Red Parent Material (TF2) Very Shallow Dark Surface (TF12) Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks) Other (Explain in Remarks) ndicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Hydric Soil Present? Yes No	-)		Loa	my Mucky	Mineral (F1) LRR K, L)	1		
Image: Depleted Below Dark Surface (A11) Depleted Matrix (r3) Image: Depleted Matrix (r3) Image: Thick Dark Surface (A12) Redox Dark Surface (F6) Image: Image: Tron-Manganese Masses (F12) (LRR K, L, R) Sandy Muck Mineral (S1) Depleted Dark Surface (F7) Piedmont Floodplain Soils (F19) (MLRA 149B) Sandy Gleyed Matrix (S4) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144A, 145, 149B) Sandy Redox (S5) Red Parent Material (TF2) Very Shallow Dark Surface (TF12) Stripped Matrix (S6) Very Shallow Dark Surface (TF12) Other (Explain in Remarks) Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Hydric Soil Present? Yes No	Depleted Below Dark Surface (A11) Depleted Matrix (F3) Thick Dark Surface (A12) Redox Dark Surface (F6) Sandy Muck Mineral (S1) Depleted Dark Surface (F7) Sandy Gleyed Matrix (S4) Redox Depressions (F8) Sandy Redox (S5) Redox Depressions (F8) Stripped Matrix (S6) Red Parent Material (TF2) Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks) ndicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Other (Explain in Remarks) Type:					Loa	my Gleyed	Matrix (F2))			
Thick Dark Surface (A12) Redox Dark Surface (F0) Iron-Manganese Masses (F12) (LRR K, L, R) Sandy Muck Mineral (S1) Depleted Dark Surface (F7) Piedmont Floodplain Soils (F19) (MLRA 149B) Sandy Gleyed Matrix (S4) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144A, 145, 149B) Sandy Redox (S5) Red Parent Material (TF2) Very Shallow Dark Surface (TF12) Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks) ndicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Other (Explain in Remarks) Strictive Layer (if observed): Type:	Thick Dark Surface (A12) Redox Dark Surface (F0) Iron-Manganese Masses (F12) (LRR K, L, R) Sandy Muck Mineral (S1) Depleted Dark Surface (F7) Piedmont Floodplain Soils (F19) (MLRA 149B) Sandy Gleyed Matrix (S4) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144A, 145, 149B) Sandy Redox (S5) Red Parent Material (TF2) Stripped Matrix (S6) Very Shallow Dark Surface (TF12) Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks) ndicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Hydric Soil Present? Yes No	Depleted	Below Dark	Surface (A	.11)							
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Stripped Matrix (S6) Very Shallow Dark Surface (TF12) Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks) Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Strictive Layer (if observed): Type:	Stripped Matrix (S6) Uvery Shallow Dark Surface (TF12) Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks) ndicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Strictive Layer (if observed): Type:	Sandy R	edox (S5)									
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks) Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Strictive Layer (if observed): strictive Layer (if observed): Hydric Soil Present? Yes No O Depth (inches): No O	Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks) ndicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. strictive Layer (if observed): Type: Depth (inches): Hydric Soil Present? Yes No O	Stripped	Matrix (S6)									
ndicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. strictive Layer (if observed): Type: Depth (inches): Hydric Soil Present? Yes No	ndicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. strictive Layer (if observed): Type: Depth (inches): Hydric Soil Present? Yes No	Dark Sur	face (S7) (LF	rr r, mlra	A 149B)							
strictive Layer (if observed): Type: Depth (inches): Hydric Soil Present? Yes No	strictive Layer (if observed): Type: Depth (inches): Hydric Soil Present? Yes No	Indicators of	of hydrophyti	c vegetatio	n and wetla	nd hydrolog	y must be	present, un	less disturk	bed or probl		
Type:	Type:						-					
Depth (inches): Hydric Soil Present? Yes • No · · · · · · · · · · · · · · · · · ·	Depth (inches): Hydric Soil Present? Yes • No O			serveu).								
			choc).								Hydric Soil Present?	Yes 🔍 No 🔾
	emarks:	-									-	

Project/Site: Antrim Wind Project		City/County: Antrim		Sampling Date: 1	18-Aug-11
Applicant/Owner: Eolian Renewable E	nergy, LLC		State: NH	Sampling Point:	AN25 upland
Investigator(s): AF JG		Section, Township, Ran	ge: S. T.	R.	
Landform (hillslope, terrace, etc.):	Undulating	Local relief (concave, conve	ex, none): convex	Slope:	20.0 % / 11.3°
Subregion (LRR or MLRA):	Lat.:		Long.:	Dat	tum:
Soil Map Unit Name:			NWI classi	fication:	-
Are climatic/hydrologic conditions of Are Vegetation , Soil Are Vegetation , Soil Summary of Findings - At	, or Hydrology Significant	tly disturbed? Are "Nor problematic? (If need	(If no, explain in "mal Circumstances" ed, explain any answ ions, transects	present? Yes	
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes O No O Yes No O Yes No O	Is the Sampled Are within a Wetland?		D	
Remarks: (Explain alternative pro ATV trail nearby	cedures here or in a separate repo	rt.)			

Wetland Hydrology Indicators:		Secondary Indicators (minimum of 2 required)
Primary Indicators (minimum of one required;	check all that apply)	Surface Soil Cracks (B6)
Surface Water (A1)	Water-Stained Leaves (B9)	Drainage Patterns (B10)
High Water Table (A2)	Aquatic Fauna (B13)	Moss Trim Lines (B16)
Saturation (A3)	Marl Deposits (B15)	Dry Season Water Table (C2)
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)
Sediment Deposits (B2)	 Oxidized Rhizospheres along Living Roots (C3) 	Saturation Visible on Aerial Imagery (C9)
Drift deposits (B3)	Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)
Iron Deposits (B5)	Thin Muck Surface (C7)	Shallow Aquitard (D3)
Inundation Visible on Aerial Imagery (B7)	Other (Explain in Remarks)	Microtopographic Relief (D4)
Sparsely Vegetated Concave Surface (B8)		FAC-neutral Test (D5)
Field Observations:		
Surface Water Present? Yes O No O	Depth (inches):	
Water Table Present? Yes O No •	Depth (inches):	drology Present? Yes 🔿 No 🖲
Saturation Present? Yes O No •	Wetland Hy	drology Present? Yes 🔾 No 鱼
Describe Recorded Data (stream gauge, monit	oring well, aerial photos, previous inspections), if ava	ailable:
Remarks:		

VEGETATION - Use scientific names of pra	ants	Dominant Species?		Sampling Point: AN25 upland
Tree Stratum (Plot size: 30')	Absolute % Cover	Rel.Strat.	Indicator Status	Dominance Test worksheet:
1. Picea rubens	15	14.2%	FACU	Number of Dominant Species That are OBL, FACW, or FAC: 0 (A)
2. Tsuga canadensis		23.6%	FACU	
3. Quercus rubra		62.3%	FACU-	Total Number of Dominant Species Across All Strata: 7 (B)
4.		0.0%		Species Across All Strata: 7 (B)
5.	0	0.0%		Percent of dominant Species
6.	0	0.0%		That Are OBL, FACW, or FAC: 0.0% (A/B)
7	0	0.0%		Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: 15')		= Total Cove	r	Total % Cover of: Multiply by:
	10	33.3%	FACU	OBL species $0 \times 1 = 0$
	15	✓ 50.0%	FACU	FACW species $0 \times 2 = 0$
0		16.7%	FACU	FAC species x 3 =45
		0.0%	1400	FACU speci es 216 x 4 = 864
4	0	0.0%		UPL species $10 \times 5 = 50$
5	0	0.0%		Column Totals: 241 (A) 959 (B)
6	0	0.0%		·
7				Prevalence Index = B/A = <u>3.979</u>
Herb Stratum (Plot size: 5')	30	= Total Cove	r	Hydrophytic Vegetation Indicators:
1.Maianthemum canadense	10	9.5%	FAC-	Dominance Test is > 50%
2.Pteridium aquilinum	50	47.6%	FACU	Prevalence Index is $\leq 3.0^{-1}$
3.Medeola virginiana	5	4.8%	UPL	
4.Gaultheria procumbens	15	✓ 14.3%	FACU	Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
5.Polygonatum pubescens	5	4.8%	UPL	Problematic Hydrophytic Vegetation ¹ (Explain)
6.Cornus canadensis	5	4.8%	FAC-	
7.Aralia nudicaulis	15	✔ 14.3%	FACU	¹ Indicators of hydric soil and wetland hydrology must
8	0	0.0%		be present, unless disturbed or problematic.
9	0	0.0%		Definitions of Vegetation Strata:
10	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter
11	0	0.0%		at breast height (DBH), regardless of height.
12	0	0.0%		Carling/abruh Wasdu plants loss than 2 in DDU and
Woody Vine Stratum (Plot size:)	105	= Total Cove	r	Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall
1	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of
2	0	0.0%		size, and woody plants less than 3.28 ft tall.
3	0	0.0%		Woody vine - All woody vines greater than 3.28 ft in
4	0	0.0%		height.
	0	= Total Cove	r	
				Hydrophytic Vegetation Present? Yes No 💿
Remarks: (Include photo numbers here or on a separate sh	neet.)			I

Depth		Matrix		Redox Features		
(inches)	Color (I	moist)	%	Color (moist) % Type 1 Loc ²	Texture	Remarks
0-5	10YR	2/1	100%		Loam	
5-6	2.5Y	5/1	100%		Fine Loamy Sand	
6-16	5YR	4/4	100%		Sandy Loam	
					-	
					-	
					-	
						-
		-Depletio	n PM-Pod	uced Matrix, CS=Covered or Coated Sand Grains ² Loc.	ation: DI – Dore Lining M–N	
Hydric Soil						2
Histosol				Polyvalue Below Surface (S8) (LRR R,		lematic Hydric Soils : ³
	ipedon (A2)			MLRA 149B)		(LRR K, L, MLRA 149B)
Black His				Thin Dark Surface (S9) (LRR R, MLRA 149B)		ox (A16) (LRR K, L, R)
	n Sulfide (A4)			Loamy Mucky Mineral (F1) LRR K, L)		or Peat (S3) (LRR K, L, R)
Stratified	Layers (A5)			Loamy Gleyed Matrix (F2)	Dark Surface (S7	Surface (S8) (LRR K, L)
	Below Dark S	Surface (A	.11)	Depleted Matrix (F3)	Thin Dark Surface	
Thick Da	rk Surface (A	12)		Redox Dark Surface (F6)		Masses (F12) (LRR K, L, R)
Sandy M	uck Mineral (S	51)		Depleted Dark Surface (F7)		ain Soils (F19) (MLRA 149B)
	leyed Matrix (S4)		Redox Depressions (F8)	_	6) (MLRA 144A, 145, 149B)
	edox (S5)				Red Parent Mater	ial (TF2)
	Matrix (S6)				Very Shallow Dar	k Surface (TF12)
Dark Sur	face (S7) (LRI	r r, mlra	A 149B)		Other (Explain in	Remarks)
³ Indicators of	of hydrophytic	vegetatio	n and wetla	nd hydrology must be present, unless disturbed or prob	ematic.	
Restrictive I	Layer (if obs	erved):				
Type:	-					
Depth (in	ches):				Hydric Soil Present?	Yes 🔾 No 🖲
Remarks:					-H	
Spodosol						



AN25 Wetland



AN25 Upland

				•	
Project/Site: Antrim Wind Project	City/County:	Antrim		Sampling Date: 1	8-Aug-11
Applicant/Owner: Eolian Renewable Energy, LLC		State:	NH	Sampling Point:	AN26 Wetland
Investigator(s): AF JG	Section, To	ownship, Range: S.	т.	R.	
Landform (hillslope, terrace, etc.): Valley bottom	Local relief (co	oncave, convex, none)	concave	Slope:	0.0 % / 0.0
Subregion (LRR or MLRA): Lat.	:	Long.:		Dat	tum:
Soil Map Unit Name:			NWI classif	ication: PFO	
	ntly disturbed? y problematic? sampling p e	Are "Normal Circ (If needed, expla oint locations, t	in any answ	ers in Remarks.)	
Hydrophytic Vegetation Present? Yes No Hydric Soil Present? Yes No Wetland Hydrology Present? Yes No		sampled Area n a Wetland? Ye	s 🔍 No C)	
Remarks: (Explain alternative procedures here or in a separate rep Wetland within saddle continues off site.	port.)				

Wetland Hydrology Indicators:		Secondary Indicators (minimum of 2 required)
Primary Indicators (minimum of one require	d; check all that apply)	Surface Soil Cracks (B6)
Surface Water (A1)	Water-Stained Leaves (B9)	Drainage Patterns (B10)
High Water Table (A2)	Aquatic Fauna (B13)	Moss Trim Lines (B16)
Saturation (A3)	Marl Deposits (B15)	Dry Season Water Table (C2)
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)
Sediment Deposits (B2)	 Oxidized Rhizospheres along Living Roots (C3) 	Saturation Visible on Aerial Imagery (C9)
Drift deposits (B3)	Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)
Iron Deposits (B5)	Thin Muck Surface (C7)	Shallow Aquitard (D3)
Inundation Visible on Aerial Imagery (B7)	Other (Explain in Remarks)	Microtopographic Relief (D4)
Sparsely Vegetated Concave Surface (B8)		✓ FAC-neutral Test (D5)
Field Observations:		
Surface Water Present? Yes No	Depth (inches): 2	
Water Table Present? Yes O No		
Saturation Present? (includes capillary fringe) Yes • No	Depth (inches): 0	-lydrology Present? Yes $ullet$ No $igodoldsymbol{ imes}$
Describe Recorded Data (stream gauge, mor	nitoring well, aerial photos, previous inspections), if a	available:
Remarks:		

	ints	Dominant Species?		Sampling Point: AN26 Wetland
Tree Stratum (Plot size: 30')	Absolute % Cover	Rel.Strat.	Indicator Status	Dominance Test worksheet:
1. Acer rubrum	20	57.1%	FAC	Number of Dominant Species That are OBL, FACW, or FAC: 7 (A)
O Debute elle el entre de	15	42.9%	FAC	
-			TAC	Total Number of Dominant
3		0.0%		Species Across All Strata: 7 (B)
4	0	0.0%		Demont of dominant Spacing
5		0.0%		Percent of dominant Species That Are OBL, FACW, or FAC:100.0% (A/B)
6		0.0%		
7	0	0.0%		Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: 15')	35	= Total Cove	r	Total % Cover of: Multiply by: OBL species 3 x 1 = 3
1. Fraxinus pennsylvanica	5	25.0%	FACW	
2. Acer rubrum	10	✓ 50.0%	FAC	
3. Picea mariana		25.0%	FACW-	FAC speciles $60 \times 3 = 180$
4.	_	0.0%		FACU species x 4 =
E		0.0%		UPL species x 5 =
6		0.0%		Column Totals: 111 (A) 279 (B)
7				
1		0.0%		Prevalence Index = $B/A = 2.514$
Herb Stratum (Plot size: _5')	20	= Total Cove	r	Hydrophytic Vegetation Indicators:
1.Onoclea sensibilis	8	14.3%	FACW	Rapid Test for Hydrophytic Vegetation
2.Osmunda claytoniana		26.8%	FAC	✓ Dominance Test is > 50%
3.0smunda regalis				✓ Prevalence Index is ≤3.0 1
		5.4%	OBL	Morphological Adaptations ¹ (Provide supporting
4. Impatiens capensis		35.7%	FACW	data in Remarks or on a separate sheet)
5.Coptis trifolia	10	17.9%	FACW	Problematic Hydrophytic Vegetation ¹ (Explain)
6	0	0.0%		1
7	0	0.0%		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
8	0	0.0%		
9	0	0.0%		Definitions of Vegetation Strata:
10.	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter
11.	0	0.0%		at breast height (DBH), regardless of height.
12.	0	0.0%		
Woody Vine Stratum (Plot size:)	56	= Total Cove	r	Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall
, ,	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of
	0	0.0%		size, and woody plants less than 3.28 ft tall.
2 3		0.0%		
3	0	0.0%		Woody vine - All woody vines greater than 3.28 ft in
4		-		height.
	0	= Total Cove	r	
				Hydrophytic Vegetation
				Present? Yes No
Remarks: (Include photo numbers here or on a separate sh	eet.)			
	,			

(inches)			- ~ -	Redox Features	- Tet	Demender
	Color (m		%	Color (moist) % Type 1 Loc ²	Texture	Remarks sapri c
0-8	10YR	2/1	100%		Muck	
8-9	2.5Y	6/1	100%		Loamy Sand	
					· .	
vpe: C=Cor	ncentration. D=	Depletion	. RM=Redu	uced Matrix, CS=Covered or Coated Sand Grains ² Loc.	ation: PL=Pore Lining. M	=Matrix
-	Indicators:					2
Histosol				Polyvalue Below Surface (S8) (LRR R,		blematic riguite solis .
	ipedon (A2)			MLRA 149B)		0) (LRR K, L, MLRA 149B)
Black His				Thin Dark Surface (S9) (LRR R, MLRA 149B)		edox (A16) (LRR K, L, R)
	n Sulfide (A4)			Loamy Mucky Mineral (F1) LRR K, L)		at or Peat (S3) (LRR K, L, R)
	I Layers (A5)			Loamy Gleyed Matrix (F2)	Dark Surface (S7) (LRR K, L)
			1)	Depleted Matrix (F3)	Polyvalue Belov	w Surface (S8) (LRR K, L)
	Below Dark Su		1)	Redox Dark Surface (F6)	Thin Dark Surfa	ace (S9) (LRR K, L)
	rk Surface (A12)			Depleted Dark Surface (F7)	Iron-Manganes	e Masses (F12) (LRR K, L, R)
	uck Mineral (S1)			Redox Depressions (F8)	Piedmont Floor	iplain Soils (F19) (MLRA 149B)
-	eyed Matrix (S4	+)			Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
	edox (S5)				Red Parent Ma	terial (TF2)
-	Matrix (S6)				Very Shallow D	ark Surface (TF12)
Dark Sur	face (S7) (LRR I	R, MLRA	149B)		Other (Explain	in Remarks)
ndicators of	of hydrophytic v	egetation	and wetlar	nd hydrology must be present, unless disturbed or prob	lematic.	
strictive I	_ayer (if obser	rved).				
Strictive		veu).				
Turner e	LONY				Hydric Soil Present	? Yes 🖲 No 🔾
Depth (in						
Depth (in						
Depth (in					L	
Depth (in					1	
Depth (in						
Depth (in						
Depth (in						
Depth (in						
Depth (in						
Depth (in						
Depth (in						
Depth (in						
Depth (in						
-						
Depth (in						
Depth (in						
Depth (in						
Depth (in						

Project/Site: Antrim Wind Project	City/County: Antrim	:	Sampling Date: 1	8-Aug-11	_
Applicant/Owner: Eolian Renewable Energy, LLC	State: NH		Sampling Point:	AN26 uplan	nd
Investigator(s): AF JG	Section, Township, Range: S.	т.	R.		
Landform (hillslope, terrace, etc.): Toeslope	Local relief (concave, convex, none): f	lat	Slope:	15.0%/8	8.5 °
Subregion (LRR or MLRA):	t.: Long.:		Dat	um:	
Soil Map Unit Name:	NW	VI classific	ation:		
	cantly disturbed? Are "Normal Circums Ily problematic? (If needed, explain a	ny answer	resent? Yes (2.
Hydrophytic Vegetation Present? Yes No ● Hydric Soil Present? Yes No ● Wetland Hydrology Present? Yes No ●	Is the Sampled Area within a Wetland? Yes	🔿 No 🖲			
Remarks: (Explain alternative procedures here or in a separate r	report.)				

Secondary Indicators (minimum of 2 required)
Surface Soil Cracks (B6)
Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial Imagery (C9)
Stunted or Stressed Plants (D1)
Geomorphic Position (D2)
Shallow Aquitard (D3)
Microtopographic Relief (D4)
FAC-neutral Test (D5)
loav Present? Yes 🔿 No 🖲
logy Present? Yes 🔾 No 🖲
ble:

	11.5	Dominant Species?		Sampling Point: AN26 upland
Tree Stratum (Plot size: 30')	Absolute % Cover	Rel.Strat.	Indicator Status	Dominance Test worksheet:
				Number of Dominant Species
1. Fagus grandifolia		 16.7% ✓ 55.6% 	FACU	That are OBL, FACW, or FAC: (A)
2. <u>Picea rubens</u>	50		FACU	Total Number of Dominant
3. Betula papyrifera	15	16.7%	FACU	Species Across All Strata: (B)
4. Betula alleghaniensis		11.1%	FAC	Dercent of dominant Species
5		0.0%		Percent of dominant Species That Are OBL, FACW, or FAC:0.0% (A/B)
6		0.0%		
7	0	0.0%		Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: 15')	90	= Total Cove	r	Total % Cover of: Multiply by:
1. Fagus grandifolia	10	23.3%	FACU	OBL species $0 \times 1 = 0$
2. Acer pensylvanicum		76.7%	FACU	FACW species $0 \times 2 = 0$
3.		0.0%		FAC species <u>14</u> x 3 = <u>42</u>
4	0	0.0%		FACU species x 4 =
5	0	0.0%		UPL species5 x 5 =25
C	0	0.0%		Column Totals: 162 (A) 639 (B)
7.	0	0.0%		Prevalence Index = $B/A = 3.944$
		= Total Cove		
Herb Stratum (Plot size: 5')	43	- 10121 0000	1	Hydrophytic Vegetation Indicators:
1.Aralia nudicaulis	20	69.0%	FACU	Rapid Test for Hydrophytic Vegetation
2. Maianthemum canadense	3	10.3%	FAC-	Dominance Test is > 50%
3. Trientalis borealis	1	3.4%	FAC	$\square Prevalence Index is \leq 3.0^{1}$
4.Polygonatum pubescens	5	17.2%	UPL	Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
5.		0.0%		Problematic Hydrophytic Vegetation ¹ (Explain)
6.	0	0.0%		
7.	0	0.0%		¹ Indicators of hydric soil and wetland hydrology must
8.	0	0.0%		be present, unless disturbed or problematic.
9.	0	0.0%		Definitions of Vegetation Strata:
10.	0	0.0%		
11.	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
12.	0	0.0%		
		= Total Cove	er	Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall
Woody Vine Stratum (Plot size:)		_		
1	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of
2	0	0.0%		size, and woody plants less than 3.28 ft tall.
3	0	0.0%		Woody vine - All woody vines greater than 3.28 ft in
4	0	0.0%		height.
	0	= Total Cove	r	
				Hydrophytic Vegetation
				Present? Yes No •
Remarks: (Include photo numbers here or on a separate she	et.)			
•				

(inches)		Matrix		Redox Features	- <u>-</u> .	. .
	Color (n		%	Color (moist) % Type 1 Loc ²	Texture	Remarks
0-5	10YR	3/2	100%		Loam	
5-16	10YR	4/6	100%		Fine Sandy Loam	
					<u></u>	
						_
Type: C=Cor	ncentration. D	=Depletio	n. RM=Red	uced Matrix, CS=Covered or Coated Sand Grains ² Loc	ation: PL=Pore Lining. M=I	Matrix
Hydric Soil	Indicators:				Indicators for Droh	lematic Hydric Soils : ³
Histosol				Polyvalue Below Surface (S8) (LRR R,		iematic riguite solis .
	ipedon (A2)			MLRA 149B)		(LRR K, L, MLRA 149B)
Black His				Thin Dark Surface (S9) (LRR R, MLRA 149B)		ox (A16) (LRR K, L, R)
	n Sulfide (A4)			Loamy Mucky Mineral (F1) LRR K, L)		or Peat (S3) (LRR K, L, R)
	Layers (A5)			Loamy Gleyed Matrix (F2)	Dark Surface (S7	
	Below Dark S	urface (A	11)	Depleted Matrix (F3)	Thin Dark Surface	Surface (S8) (LRR K, L)
	rk Surface (A1			Redox Dark Surface (F6)		
_	uck Mineral (S			Depleted Dark Surface (F7)		Masses (F12) (LRR K, L, R)
	leyed Matrix (S			Redox Depressions (F8)		ain Soils (F19) (MLRA 149B)
-	edox (S5)				Red Parent Mater	6) (MLRA 144A, 145, 149B)
5						
Stripped	Matrix (S6)					
Stripped		R, MLRA	149B)		Very Shallow Dar	
Dark Sur	face (S7) (LRR			and hydrology must be present, unless disturbed or prob	Other (Explain in	
Dark Sur	face (S7) (LRR of hydrophytic	vegetatio		nd hydrology must be present, unless disturbed or prob	Other (Explain in	
Dark Sur	face (S7) (LRR	vegetatio		nd hydrology must be present, unless disturbed or prob	Other (Explain in	
Dark Sur ³ Indicators of Restrictive I Type:	face (S7) (LRR of hydrophytic .ayer (if obse	vegetatio erved):	n and wetla	nd hydrology must be present, unless disturbed or prob	Other (Explain in lematic.	Remarks)
Dark Sur ³ Indicators c Cestrictive L	face (S7) (LRR of hydrophytic .ayer (if obse	vegetatio erved):	n and wetla		Other (Explain in	
Dark Sur ³ Indicators of Restrictive I Type:	face (S7) (LRR of hydrophytic .ayer (if obse	vegetatio erved):	n and wetla		Other (Explain in lematic.	Remarks)
Dark Sur ³ Indicators c Restrictive I Type: Depth (ind	face (S7) (LRR of hydrophytic .ayer (if obse	vegetatio erved):	n and wetla		Other (Explain in lematic.	Remarks)
Dark Sur ³ Indicators c Restrictive I Type: Depth (ind	face (S7) (LRR of hydrophytic .ayer (if obse	vegetatio erved):	n and wetla		Other (Explain in lematic.	Remarks)
Dark Sur ³ Indicators c Restrictive I Type: Depth (ind	face (S7) (LRR of hydrophytic .ayer (if obse	vegetatio erved):	n and wetla		Other (Explain in lematic.	Remarks)
Dark Sur ³ Indicators c restrictive I Type: Depth (ind	face (S7) (LRR of hydrophytic .ayer (if obse	vegetatio erved):	n and wetla		Other (Explain in lematic.	Remarks)
Dark Sur ³ Indicators c estrictive L Type: Depth (ind	face (S7) (LRR of hydrophytic .ayer (if obse	vegetatio erved):	n and wetla		Other (Explain in lematic.	Remarks)
Dark Sur ³ Indicators c estrictive L Type: Depth (ind	face (S7) (LRR of hydrophytic .ayer (if obse	vegetatio erved):	n and wetla		Other (Explain in lematic.	Remarks)
Dark Sur ³ Indicators c estrictive L Type: Depth (ind	face (S7) (LRR of hydrophytic .ayer (if obse	vegetatio erved):	n and wetla		Other (Explain in lematic.	Remarks)
Dark Sur Indicators c estrictive L Type: Depth (ind	face (S7) (LRR of hydrophytic .ayer (if obse	vegetatio erved):	n and wetla		Other (Explain in lematic.	Remarks)
Dark Sur Indicators c estrictive I Type: Depth (ind	face (S7) (LRR of hydrophytic .ayer (if obse	vegetatio erved):	n and wetla		Other (Explain in lematic.	Remarks)
Dark Sur ³ Indicators c estrictive L Type: Depth (ind	face (S7) (LRR of hydrophytic .ayer (if obse	vegetatio erved):	n and wetla		Other (Explain in lematic.	Remarks)
Dark Sur ³ Indicators c restrictive I Type: Depth (ind	face (S7) (LRR of hydrophytic .ayer (if obse	vegetatio erved):	n and wetla		Other (Explain in lematic.	Remarks)
Dark Sur ³ Indicators c Restrictive I Type: Depth (ind	face (S7) (LRR of hydrophytic .ayer (if obse	vegetatio erved):	n and wetla		Other (Explain in lematic.	Remarks)
Dark Sur ³ Indicators c Restrictive I Type: Depth (ind	face (S7) (LRR of hydrophytic .ayer (if obse	vegetatio erved):	n and wetla		Other (Explain in lematic.	Remarks)
Dark Sur ³ Indicators c Restrictive I Type: Depth (ind	face (S7) (LRR of hydrophytic .ayer (if obse	vegetatio erved):	n and wetla		Other (Explain in lematic.	Remarks)
Dark Sur ³ Indicators c Restrictive I Type: Depth (ind	face (S7) (LRR of hydrophytic .ayer (if obse	vegetatio erved):	n and wetla		Other (Explain in lematic.	Remarks)
Dark Sur ³ Indicators c Restrictive I Type: Depth (ind	face (S7) (LRR of hydrophytic .ayer (if obse	vegetatio erved):	n and wetla		Other (Explain in lematic.	Remarks)
Dark Sur ³ Indicators c estrictive L Type: Depth (ind	face (S7) (LRR of hydrophytic .ayer (if obse	vegetatio erved):	n and wetla		Other (Explain in lematic.	Remarks)
Dark Sur Indicators c estrictive L Type: Depth (ind	face (S7) (LRR of hydrophytic .ayer (if obse	vegetatio erved):	n and wetla		Other (Explain in lematic.	Remarks)



AN26 Wetland



AN26 Upland

Project/Site: Antrim Wind Project	City/County:	Antrim			Sampling Date: 18-Aug-11			
Applicant/Owner: Eolian Renewable Energy, LLC			State:	NH	Sampling Point:	AN27 wetland		
Investigator(s): AF JG		Section, Te	ownship, Ran	ige: S.	т	R.		
Landform (hillslope, terrace, etc.): Saddle		Local relief (c	oncave, conv	ex, none): undulating	g Slope:	8.0 % /	4.6°
Subregion (LRR or MLRA):	Lat.:			Long.:		Dat	um:	
Soil Map Unit Name:		<u>la</u>		-	NWI classifi	cation: PFO		
	significant naturally	tly disturbed? problematic?	(If need	rmal Cir led, exp	•	resent? Yes		etc.
Hydrophytic Vegetation Present? Yes ● No ○ Hydric Soil Present? Yes ● No ○ Wetland Hydrology Present? Yes ● No ○			e Sampled Are n a Wetland?		∕es ● No ○			
Remarks: (Explain alternative procedures here or in a sepa	arate repo	prt.)						

Wetland Hydrology Indicators:	Secondary Indicators (minimum of 2 required)			
Primary Indicators (minimum of one required; o	Surface Soil Cracks (B6)			
Surface Water (A1)	✓ Drainage Patterns (B10)			
✓ High Water Table (A2)	Aquatic Fauna (B13)	Moss Trim Lines (B16)		
Saturation (A3)	Marl Deposits (B15)	Dry Season Water Table (C2)		
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)		
Sediment Deposits (B2)	Oxidized Rhizospheres along Living Roots (C3)	Saturation Visible on Aerial Imagery (C9)		
Drift deposits (B3)	Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)		
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)		
Iron Deposits (B5)	Thin Muck Surface (C7)	Shallow Aquitard (D3)		
Inundation Visible on Aerial Imagery (B7)	Other (Explain in Remarks)	Microtopographic Relief (D4)		
Sparsely Vegetated Concave Surface (B8)		✓ FAC-neutral Test (D5)		
Field Observations:				
Surface Water Present? Yes O No 🖲	Depth (inches):			
Water Table Present? Yes No	Depth (inches): <u>1</u>	drology Present? Yes 🔍 No 🔿		
Saturation Present? Yes • No ·	Depth (inches):0	drology Present? Yes • No 🔾		
Describe Recorded Data (stream gauge, monitor	ring well, aerial photos, previous inspections), if ava	ailable:		
Remarks:				

	int5	Dominant Species?		Sampling Point: AN27 wetland
Tree Stratum (Plot size: 30')	Absolute % Cover	Rel.Strat.	Indicator Status	Dominance Test worksheet:
				Number of Dominant Species
1. Picea mariana	50		FACW-	That are OBL, FACW, or FAC: <u>5</u> (A)
2. Acer rubrum	50	45.5%	FAC	Total Number of Dominant
3. Betula alleghaniensis		9.1%	FAC	Species Across All Strata: 5 (B)
4		0.0%		
5		0.0%		Percent of dominant Species That Are OBL, FACW, or FAC:100.0% (A/B)
6	0	0.0%		
7	0	0.0%		Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: 15')	110	= Total Cove	r	Total % Cover of: Multiply by:
1. Betula alleghaniensis	5	50.0%	FAC	$\begin{array}{ccc} \text{OBL species} & 0 & \text{x 1} = & 0 \\ \hline & 107 & & 0 \\ \hline \end{array}$
2. Picea mariana	_	50.0%	FACW-	FACW species 105 x 2 = 210
3.		0.0%		FAC species $65 \times 3 = 195$
4	0	0.0%		FACU species $0 \times 4 = 0$
н Б	0	0.0%		UPL species $0 \times 5 = 0$
56.				Column Totals: 170 (A) 405 (B)
a construction of the second se		0.0%		
7		0.0%		Prevalence Index = B/A = 2.382
Herb Stratum (Plot size: 5')	10	= Total Cove	r	Hydrophytic Vegetation Indicators:
1.Osmunda cinnamomea	50	✓ 100.0%	FACW	Rapid Test for Hydrophytic Vegetation
2.		0.0%		✓ Dominance Test is > 50%
3.	0			✓ Prevalence Index is ≤3.0 1
	0			Morphological Adaptations ¹ (Provide supporting
4 <u>.</u>	0	0.0%		data in Remarks or on a separate sheet)
5	0	0.0%		Problematic Hydrophytic Vegetation ¹ (Explain)
6	0	0.0%		1
7	0	0.0%		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
8	0	0.0%		
9	0	0.0%		Definitions of Vegetation Strata:
10	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter
11	0	0.0%		at breast height (DBH), regardless of height.
12	0	0.0%		Sepling/shrub Weedy plants less than 2 in DDU and
Woody Vine Stratum (Plot size:)	50	= Total Cove	r	Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall
<u> </u>	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of
0	0	0.0%		size, and woody plants less than 3.28 ft tall.
3	0	0.0%		
J	0	0.0%		Woody vine - All woody vines greater than 3.28 ft in height.
4				light.
	0	= Total Cove		
				Hydrophytic
				Vegetation Present? Yes I No
	+ >			1
Remarks: (Include photo numbers here or on a separate she	eet.)			

Depth		Matrix	ie depth r		dox Features	iiirm the	absence of indicator	5.)
(inches)	Color (n		%	Color (moist)	% Type 1	Loc ²	Texture	Remarks
0-36	10YR	2/1					Mucky Peat	nemi c
					· ·			
							-	
					· ·			
¹ Type: C=Cor	centration. D	Depletion.	RM=Redu	ced Matrix, CS=Covere	ed or Coated Sand Grai	ns ² Loca	ation: PL=Pore Lining.	M=Matrix
Hydric Soil	Indicators:						Indicators for P	Problematic Hydric Soils : ³
✓ Histosol ((A1)				w Surface (S8) (LRR R,			A10) (LRR K, L, MLRA 149B)
	pedon (A2)			MLRA 149B)			_	
Black His				Thin Dark Surfa	ace (S9) (LRR R, MLRA	A 149B)		Redox (A16) (LRR K, L, R)
	n Sulfide (A4)			🗌 Loamy Mucky I	Mineral (F1) LRR K, L)			Peat or Peat (S3) (LRR K, L, R)
	Layers (A5)			Loamy Gleyed	Matrix (F2)			e (S7) (LRR K, L)
	Below Dark S	urface (A11)	Depleted Matri	x (F3)			low Surface (S8) (LRR K, L)
_	rk Surface (A1		,	Redox Dark Su	rface (F6)			Irface (S9) (LRR K, L)
_	uck Mineral (S			Depleted Dark	Surface (F7)		_	ese Masses (F12) (LRR K, L, R)
	eyed Matrix (S			Redox Depress			_	oodplain Soils (F19) (MLRA 149B)
		4)		·			Mesic Spodic	: (TA6) (MLRA 144A, 145, 149B)
Sandy Re							Red Parent M	Naterial (TF2)
_	Matrix (S6)						Very Shallow	Dark Surface (TF12)
Dark Surf	face (S7) (LRR	R, MLRA 1	49B)				Other (Explai	in in Remarks)
³ Indicators o	f hydrophytic	vegetation	and wetlar	d hydrology must be p	present, unless disturbe	d or probl	ematic.	
Restrictive L	aver (if obse	erved).						
Type:								
Depth (inc	aboc).						Hydric Soil Prese	nt? Yes \bullet No \bigcirc
	ines):							
Remarks:								

Project/Site: Antrim Wind Project		City/County: Antrim		Sampling Date: 1	8-Aug-11
Applicant/Owner: Eolian Renewable E	nergy, LLC	Sta	nte: NH	Sampling Point:	AN27 upland
Investigator(s): AF JG		Section, Township, Range:	S. T.	R.	
Landform (hillslope, terrace, etc.):	Hillside	Local relief (concave, convex, i	none): convex	Slope:	20.0 % / 11.3 °
Subregion (LRR or MLRA):	Lat.:	Lon	g.:	Dat	tum:
Soil Map Unit Name:			NWI classi	fication:	
Are Vegetation , Soil Are Vegetation , Soil Soil Summary of Findings - At	, or Hydrology 🗌 naturally p	problematic? (If needed,	If no, explain ir) I Circumstances" explain any answ ns, transects	present? Yes	
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes No Yes No Yes No No	Is the Sampled Area within a Wetland?	Yes 🔿 No 🤇	٥	
Remarks: (Explain alternative pro	cedures here or in a separate repo	ort.)			

Wetland Hydrology Indicators:		Secondary Indicators (minimum of 2 required)		
Primary Indicators (minimum of one required;	Surface Soil Cracks (B6)			
Surface Water (A1)	Water-Stained Leaves (B9)	Drainage Patterns (B10)		
High Water Table (A2)	Aquatic Fauna (B13)	Moss Trim Lines (B16)		
Saturation (A3)	Marl Deposits (B15)	Dry Season Water Table (C2)		
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)		
Sediment Deposits (B2)	Oxidized Rhizospheres along Living Roots (C3)	Saturation Visible on Aerial Imagery (C9)		
Drift deposits (B3)	Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)		
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)		
Iron Deposits (B5)	Thin Muck Surface (C7)	Shallow Aquitard (D3)		
Inundation Visible on Aerial Imagery (B7)	Other (Explain in Remarks)	Microtopographic Relief (D4)		
Sparsely Vegetated Concave Surface (B8)		FAC-neutral Test (D5)		
Field Observations:				
Surface Water Present? Yes O No 🖲	Depth (inches):			
Water Table Present? Yes O No 🖲	Depth (inches):	Iroloay Present? Yes 🔿 No 🖲		
Saturation Present? Yes O No O	Depth (inches):	Irology Present? Yes 🔾 No 🖲		
Describe Recorded Data (stream gauge, monito	pring well, aerial photos, previous inspections), if ava	ilable:		
Remarks:				

	11.5	Dominant Species?		Sampling Point: AN27 upland
Tree Stratum (Plot size: 30')	Absolute % Cover	Rel.Strat.	Indicator Status	Dominance Test worksheet:
				Number of Dominant Species
1. Fagus grandifolia	20	28.6%	FACU	That are OBL, FACW, or FAC: 1 (A)
2. Quercus rubra		21.4%	FACU-	Total Number of Dominant
3. Betula papyrifera	20	28.6%	FACU	Species Across All Strata: 7 (B)
4. Picea rubens		21.4%	FACU	Percent of dominant Species
5	0	0.0%		That Are OBL, FACW, or FAC: <u>14.3%</u> (A/B)
6	0	0.0%		
7		0.0%		Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: 15')	70	= Total Cove	r	Total % Cover of: Multiply by:
1. Fagus grandifolia	20	80.0%	FACU	OBL species0 $x \ 1 = 0$ FACW species0 $x \ 2 = 0$
2. Betula papyrifera	5	20.0%	FACU	
3.		0.0%		FAC species $2 \times 3 = 6$
4.	0	0.0%		FACU species $\frac{95}{2}$ x 4 = $\frac{380}{2}$
5	0	0.0%		UPL species $\underbrace{0}$ x 5 = $\underbrace{0}$
6	0	0.0%		Column Totals: 97 (A) 386 (B)
7	0	0.0%		Prevalence Index = $B/A = 3.979$
	25	= Total Cove	r	
Herb Stratum (Plot size: 5')				Hydrophytic Vegetation Indicators:
1.Acer rubrum	2	100.0%	FAC	
2	0	0.0%		 Dominance Test is > 50% Prevalence Index is ≤3.0¹
3	0	0.0%		
4	0	0.0%		Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
5	0	0.0%		Problematic Hydrophytic Vegetation ¹ (Explain)
6	0	0.0%		
7	0	0.0%		¹ Indicators of hydric soil and wetland hydrology must
8	0	0.0%		be present, unless disturbed or problematic.
9	0	0.0%		Definitions of Vegetation Strata:
10	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter
11	0	0.0%		at breast height (DBH), regardless of height.
12	0	0.0%		Sopling/abrub Woody plants loss than 2 in DPH and
Woody Vine Stratum (Plot size:)	2	= Total Cove	r	Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall
	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of
1				size, and woody plants less than 3.28 ft tall.
3	0	0.0%		
4	0	0.0%		Woody vine - All woody vines greater than 3.28 ft in height.
4				neight.
	0	= Total Cove	ſ	
				Hydrophytic
				Vegetation Present? Yes No •
				Present? Yes V No 🛡
				I
Remarks: (Include photo numbers here or on a separate she	et.)			

(inches)		Matrix _		Redox Features		_ .
~ .	Color (m		%	Color (moist) % Type 1 Loc ²	Texture	Remarks
0-4	10YR	3/2	100%		Loam	
4-6	10YR	4/3	100%		Fine Sandy Loam	
6-11	10YR	5/6	100%		Fine Sandy Loam	
					<u>.</u>	
		Depletior	n. RM=Redu	uced Matrix, CS=Covered or Coated Sand Grains ² Loca	ation: PL=Pore Lining. M=N	atrix
Hydric Soil					Indicators for Probl	ematic Hydric Soils : ³
				Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	2 cm Muck (A10)	(LRR K, L, MLRA 149B)
	pedon (A2)			Thin Dark Surface (S9) (LRR R, MLRA 149B)	Coast Prairie Redo	x (A16) (LRR K, L, R)
Black His	n Sulfide (A4)			Loamy Mucky Mineral (F1) LRR K, L)		or Peat (S3) (LRR K, L, R)
	Layers (A5)			Loamy Gleyed Matrix (F2)	Dark Surface (S7)	
	Below Dark Su	rface (A1	1)	Depleted Matrix (F3)		urface (S8) (LRR K, L)
_	rk Surface (A12			Redox Dark Surface (F6)	Thin Dark Surface	(S9) (LRR K, L) lasses (F12) (LRR K, L, R)
Sandy Mu	uck Mineral (S1))		Depleted Dark Surface (F7)		in Soils (F19) (MLRA 149B)
Sandy Gl	eyed Matrix (S4	ł)		Redox Depressions (F8)) (MLRA 144A, 145, 149B)
Sandy Re					Red Parent Materi	
	Matrix (S6)				Very Shallow Dark	
Dark Surf	face (S7) (LRR	r, mlra	149B)		Other (Explain in I	Remarks)
³ Indicators o	f hydrophytic v	egetatior	n and wetla	nd hydrology must be present, unless disturbed or proble	ematic.	
Restrictive L	ayer (if obser	rved):				
Type: st	ony					\bigcirc
Depth (inc	:hes): 11				Hydric Soil Present?	Yes 🔾 No 🖲
Remarks:						
Remarks:						
Remarks:						
Remarks:						
Remarks:						
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AN27 Upland



AN27 Wetland



AN27 Wetland



AN27 Wetland



AN27 Wetland



AN27 Upland

						0		
Project/Site: Antrim Wind Project		City/County:	Antrim			Sampling Date: 2	2-Aug-11	
Applicant/Owner: Eolian Renewable E	Energy, LLC		S	tate: N	IH	Sampling Point:	AN30 we	tland
Investigator(s): AF JG		Section, To	ownship, Range	e: S.	т.	R.		
Landform (hillslope, terrace, etc.):	Footslope	Local relief (c	oncave, convex	, none):	concave	Slope:	3.0%/	1.7 '
Subregion (LRR or MLRA):	Lat.:		Lo	ng.:		Da	tum:	
Soil Map Unit Name:		<u>1</u> -			NWI classif	ication: PFO		
Are climatic/hydrologic conditions of Are Vegetation , Soil Are Vegetation , Soil Are Vegetation , Soil Summary of Findings - At	, or Hydrology Significan	tly disturbed? problematic?	(If needed	al Circu I, explai	•	ers in Remarks.)		etc.
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes ● No ○ Yes ● No ○ Yes ● No ○ Yes ● No ○		e Sampled Area n a Wetland?	Ye	s 🖲 No C)		
Remarks: (Explain alternative pro Isolated PFO with ephemeral inlet	cedures here or in a separate report and outlet towards intermittant s	•						

Wetland Hydrology Indicators:		Secondary Indicators (minimum of 2 required)		
Primary Indicators (minimum of one required; of	Surface Soil Cracks (B6)			
Surface Water (A1)	Water-Stained Leaves (B9)	✓ Drainage Patterns (B10)		
High Water Table (A2)	Aquatic Fauna (B13)	Moss Trim Lines (B16)		
Saturation (A3)	Marl Deposits (B15)	Dry Season Water Table (C2)		
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)		
Sediment Deposits (B2)	Oxidized Rhizospheres along Living Roots (C3)	Saturation Visible on Aerial Imagery (C9)		
Drift deposits (B3)	Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)		
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)		
Iron Deposits (B5)	Thin Muck Surface (C7)	Shallow Aguitard (D3)		
Inundation Visible on Aerial Imagery (B7)	Other (Explain in Remarks)	Microtopographic Relief (D4)		
Sparsely Vegetated Concave Surface (B8)		✓ FAC-neutral Test (D5)		
		_ 、 /		
Field Observations:				
Surface Water Present? Yes O No 🖲	Depth (inches):			
Water Table Present? Yes O No 🖲	Depth (inches):			
Saturation Present? Yes O No •	Wetland Hyd Depth (inches):	drology Present? Yes $ullet$ No $igloo$		
Describe Recorded Data (stream gauge, monito	ring well, aerial photos, previous inspections), if ava	ailable:		
Remarks:				

		Dominant Species?		Sampling Point: AN30 wetland
Tree Stratum (Plot size:)	Absolute % Cover	Rel.Strat.	Indicator Status	Dominance Test worksheet:
<u> </u>	0	0.0%		Number of Dominant Species That are OBL, FACW, or FAC: 3 (A)
2.	0	0.0%		
3.	0	0.0%		Total Number of Dominant
3	0	0.0%		Species Across All Strata: (B)
4				Percent of dominant Species
5				That Are OBL, FACW, or FAC: 75.0% (A/B)
6		0.0%		
7	0	0.0%		Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: 15')	0	= Total Cove	ſ	Total % Cover of: Multiply by: 0BL species 0 x 1 = 0
1. Betula alleghaniensis	10	✓ 50.0%	FAC	FACW species $35 \times 2 = 70$
2. Fraxinus pennsylvanica	10	50.0%	FACW	
3	0	0.0%		
4	0	0.0%		
5	0	0.0%		UPL species x 5 =
6.	0	0.0%		Column Totals: 70 (A) 225 (B)
7	0	0.0%		Prevalence Index = $B/A = 3.214$
1	-	= Total Cove		
Herb Stratum (Plot size: 5')	20			Hydrophytic Vegetation Indicators:
1. Onoclea sensibilis	25	✓ 50.0%	FACW	Rapid Test for Hydrophytic Vegetation
2.Polygonatum pubescens	25	✓ 50.0%	UPL	Dominance Test is > 50%
3	0	0.0%		□ Prevalence Index is \leq 3.0 ¹
4.				Morphological Adaptations ¹ (Provide supporting
5.	0			data in Remarks or on a separate sheet)
	0	0.0%		Problematic Hydrophytic Vegetation ¹ (Explain)
6	0	0.0%		
7	0	0.0%		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
8	0	0.0%		
9.	0	0.0%		Definitions of Vegetation Strata:
10	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter
11	0	0.0%		at breast height (DBH), regardless of height.
12.	0	0.0%		Conling/ohr/h. Weady plants less than 2 in DBU and
Woody Vine Stratum (Plot size:)	50	= Total Cove	r	Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall
	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of
0	0	0.0%		size, and woody plants less than 3.28 ft tall.
2 3	0	0.0%		
۵ ۸	0	0.0%		Woody vine - All woody vines greater than 3.28 ft in height.
4				neight.
	0	= Total Cove	ſ	
				Hydrophytic Vegetation
				Present? Yes I No
Remarks: (Include photo numbers here or on a separate she	et)			
Remarks. (menuce proto numbers here of on a separate sile	,			

Depth		Matrix		needed to document the indicator or confirm the Redox Features		
(inches)	Color (m	noist)	%	Color (moist) % Type 1 Loc ²	Texture	Remarks
0-8	10YR	3/2	100%		Loam	
8-16	2.5Y	5/1	100%		Loamy Sand	
				·		
				·		
				·		
				·		
1 Turnov C. Con		Doplatia	DM Dog	luced Matrix CS Covered or Costed Sand Crains 21 ac	tion: DL Doro Lining M L	
		-nehierio	. RIVI=ReC	luced Matrix, CS=Covered or Coated Sand Grains ² Loca		
Hydric Soil	Indicators:			Polyvalue Below Surface (S8) (LRR R,		lematic Hydric Soils : ³
	(AT) ipedon (A2)			MLRA 149B)		(LRR K, L, MLRA 149B)
Black His				Thin Dark Surface (S9) (LRR R, MLRA 149B)		ox (A16) (LRR K, L, R)
	n Sulfide (A4)			Loamy Mucky Mineral (F1) LRR K, L)		or Peat (S3) (LRR K, L, R)
_	Layers (A5)			Loamy Gleyed Matrix (F2)	Dark Surface (S7	
_	Below Dark Su	urface (A	.11)	Depleted Matrix (F3)		Surface (S8) (LRR K, L) e (S9) (LRR K, L)
Thick Da	rk Surface (A12	2)		Redox Dark Surface (F6)		Masses (F12) (LRR K, L, R)
Sandy M	uck Mineral (S1)		Depleted Dark Surface (F7)		lain Soils (F19) (MLRA 149B)
Sandy G	leyed Matrix (S	4)		Redox Depressions (F8)		6) (MLRA 144A, 145, 149B)
Sandy R	edox (S5)				Red Parent Mater	
Stripped	Matrix (S6)				Very Shallow Dar	
Dark Sur	face (S7) (LRR	r, mlra	A 149B)		Other (Explain in	
³ Indicators of	of hydrophytic v	vegetatio	n and wetl	and hydrology must be present, unless disturbed or probl	ematic.	
Restrictive	Layer (if obse	rved):				
Туре:						
Depth (in	ches).				Hydric Soil Present?	Yes 🔍 No 🔾
Remarks:						

Project/Site: Antrim Wind Project		City/County: Antrim		Sampling Date: 2	2-Aug-11				
Applicant/Owner: Eolian Renewable E	nergy, LLC		State: NH	Sampling Point:	AN30 upland				
Investigator(s): AF JG		Section, Township, Ra	nge: S. T.	R.					
Landform (hillslope, terrace, etc.):	Footslope	Local relief (concave, conv	vex, none): flat	Slope:	3.0 % / 1.7 °				
Subregion (LRR or MLRA):	Lat.:		Long.:	Dat	um:				
Soil Map Unit Name:			NWI class	ification:					
Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.) Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.) Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.									
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes ○ No ● Yes ○ No ● Yes ○ No ●	Is the Sampled A within a Wetland							
Remarks: (Explain alternative pro	cedures here or in a separate repo	rt.)							

Wetland Hydrology Indicators:		Secondary Indicators (minimum of 2 required)				
Primary Indicators (minimum of one required;	Surface Soil Cracks (B6)					
Surface Water (A1)	Water-Stained Leaves (B9)	Drainage Patterns (B10)				
High Water Table (A2)	Aquatic Fauna (B13)	Moss Trim Lines (B16)				
Saturation (A3)	Marl Deposits (B15)	Dry Season Water Table (C2)				
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)				
Sediment Deposits (B2)	Oxidized Rhizospheres along Living Roots (C3)	Saturation Visible on Aerial Imagery (C9)				
Drift deposits (B3)	Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)				
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)				
Iron Deposits (B5)	Thin Muck Surface (C7)	Shallow Aguitard (D3)				
Inundation Visible on Aerial Imagery (B7)	Other (Explain in Remarks)	Microtopographic Relief (D4)				
Sparsely Vegetated Concave Surface (B8)		FAC-neutral Test (D5)				
Field Observations:						
Surface Water Present? Yes O No 💿	Depth (inches):					
Water Table Present? Yes O No O	Depth (inches):	Wetland Hydrology Present? Yes O No 🖲				
Saturation Present? (includes capillary fringe) Yes O No O	Wetland Hyd Depth (inches):	Wetland Hydrology Present? Yes 🔾 No 🖲				
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:						
Remarks:						

Dominant		Sampling Point: AN30 upland		
Tree Stratum (Plot size: 30')	Absolute % Cover	Rel.Strat.	Indicator Status	Dominance Test worksheet:
	25	31.3%	FACU	Number of Dominant Species That are OBL, FACW, or FAC: 1 (A)
	15	18.8%	FACU-	
0		31.3%	FACU-	Total Number of Dominant
A Batala allo shareta	45	18.8%	FAC	Species Across All Strata: 8 (B)
4. Betula alleghaniensis		0.0%	FAC	Percent of dominant Species
5		0.0%		That Are OBL, FACW, or FAC: <u>12.5%</u> (A/B)
6				
7		0.0%		Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: 15')	80	= Total Cove	r	Total % Cover of: Multiply by:
1. Fagus grandifolia	10	40.0%	FACU	OBL species $0 \times 1 = 0$
2. Pinus strobus	_	20.0%	FACU	FACW species $0 \times 2 = 0$
		20.0%	FACU-	FAC speci es $30 \times 3 = 90$
4		20.0%	FACU	FACU speci es 109 x 4 = 436
-		0.0%	11100	UPL species $0 \times 5 = 0$
C		0.0%		Column Totals: 139 (A) 526 (B)
7	·	0.0%		
<i>I</i>		-		Prevalence Index = B/A = <u>3.784</u>
Herb Stratum (Plot size: 5')	25	= Total Cove	r	Hydrophytic Vegetation Indicators:
1.Maianthemum canadense	10	29.4%	FAC-	Rapid Test for Hydrophytic Vegetation
2 Analia mudiaaulia	15	44.1%	FACU	Dominance Test is > 50%
2 .		8.8%	FACU	□ Prevalence Index is \leq 3.0 ¹
		2.9%	FACU	Morphological Adaptations ¹ (Provide supporting
5 .		14.7%	FAC	data in Remarks or on a separate sheet)
5. I rientalis borealis 6.	0	0.0%	TAC	Problematic Hydrophytic Vegetation ¹ (Explain)
7				¹ Indicators of hydric soil and wetland hydrology must
8.				be present, unless disturbed or problematic.
8 <u>.</u> 9.		0.0%		Definitions of Vegetation Strata:
9 <u>.</u> 10.	0	0.0%		
10 <u>.</u> 11.		0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter
		0.0%		at breast height (DBH), regardless of height.
12	0	0.0%		Sapling/shrub - Woody plants less than 3 in. DBH and
Woody Vine Stratum (Plot size:)	34	= Total Cove	r	greater than 3.28 ft (1m) tall
1	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of
2	0	0.0%		size, and woody plants less than 3.28 ft tall.
3	0	0.0%		Woody vine - All woody vines greater than 3.28 ft in
4	0	0.0%		height.
	0	= Total Cove	r	
				Hydrophytic
				Vegetation Present? Yes O No •
- · / · · · · · ·				1
Remarks: (Include photo numbers here or on a separate she	eet.)			

(inches) Color (moist) % Color (moist) % Type 1 Loc2 Texture R 0-8 10YR 3/2 100%	emarks
8-12 10YR 4/3 100% Loamy Sand	
¹ Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains ² Location: PL=Pore Lining. M=Matrix	
Hydric Soil Indicators: Indicators for Problematic Hydric Soil Indicators for Problematic Hydric Hydric Soil Indicators for Problematic Hydric Hydrin Hydric Hydric Hydric Hydric Hydric Hydric H	dric Soils : ³
Histosol (A1) Polyvalue Below Surface (S8) (LRR R,	
Histic Epipedon (A2)	
Black Histic (A3)	
Loamy Mucky Mineral (F1) LRR K, L)	(
Stratified Layers (A5)	(LRR K, L)
Thin Dark Surface (S9) (LRR	K, L)
Iron-Manganese Masses (F12)) (LRR K, L, R)
Piedmont Floodplain Soils (F1	9) (MLRA 149B)
Sandy Gleyed Matrix (34) Mesic Spodic (TA6) (MLRA 14	4A, 145, 149B)
	-12)
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	
Restrictive Layer (if observed):	
Type: bouldery Denth (inches): 12 Hydric Soil Present? Yes) No 🖲
Depth (inches): 12 Yes	
Remarks:	



AN30 Wetland



AN30 Upland

Project/Site: Antrim Wind Project		City/County: Antrim			Sampling Date: 2	2-Aug-11	
Applicant/Owner: Eolian Renewable E	inergy, LLC	S	state: NH		Sampling Point:	AN31 We	tland
Investigator(s): AF JG		Section, Township, Range	e: S.	т.	R.		
Landform (hillslope, terrace, etc.):	Terrace	Local relief (concave, convex	a, none) : flat		Slope:	2.0 % /	1.1 °
Subregion (LRR or MLRA):	Lat.:	Lo	ong.:		Datum:		
Soil Map Unit Name:			NWI c	lassifi	cation: PSS		
Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.) Are Vegetation , Soil , or Hydrology related to the site typical for this time of year? Yes No (If no, explain in Remarks.) Are Vegetation , Soil , or Hydrology related to the site typical for this time of year? Yes No (If needed, explain any answers in Remarks.) Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.							
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes ● No ○ Yes ● No ○ Yes ● No ○	Is the Sampled Area within a Wetland?	Yes 🖲 I	No O			
	ocedures here or in a separate repo nin maintained transmission line RC						

Wetland Hydrology Indicators:		Secondary Indicators (minimum of 2 required)	
Primary Indicators (minimum of one require	Surface Soil Cracks (B6)		
Surface Water (A1)	Drainage Patterns (B10)		
High Water Table (A2)	Aquatic Fauna (B13)	Moss Trim Lines (B16)	
Saturation (A3)	Marl Deposits (B15)	Dry Season Water Table (C2)	
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)	
Sediment Deposits (B2)	Oxidized Rhizospheres along Living Roots (C3)	Saturation Visible on Aerial Imagery (C9)	
Drift deposits (B3)	Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)	
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)	
Iron Deposits (B5)	Thin Muck Surface (C7)	Shallow Aguitard (D3)	
Inundation Visible on Aerial Imagery (B7)	Other (Explain in Remarks)	Microtopographic Relief (D4)	
Sparsely Vegetated Concave Surface (B8)			
		FAC-neutral Test (D5)	
Field Observations:			
Surface Water Present? Yes O No	Depth (inches):		
Water Table Present? Yes O No			
Saturation Present? Yes Solution View Solution Present? Yes Solution No Contract Solution Present?	Depth (inches): 2	-lydrology Present? Yes $ullet$ No $igodoldsymbol{ imes}$	
Describe Recorded Data (stream gauge, mor	nitoring well, aerial photos, previous inspections), if a	available:	
Remarks:			

	11.5	Dominant Species?		Sampling Point: AN31 Wetland
Tree Stratum (Plot size:)	Absolute % Cover	Rel.Strat.	Indicator Status	Dominance Test worksheet:
1	0	0.0%		Number of Dominant Species That are OBL, FACW, or FAC: 4 (A)
2.	0	0.0%		
3.	0	0.0%		Total Number of Dominant Species Across All Strata: 4 (B)
4	0	0.0%		Species Across All Strata: (B)
5		0.0%		Percent of dominant Species
6		0.0%		That Are OBL, FACW, or FAC:(A/B) (A/B)
7	0	0.0%		Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: 15')		= Total Cove	r	Total % Cover of: Multiply by:
1. Acer rubrum	10	25.0%	FAC	OBL species 18 x 1 = 18
O transfer Benefative	5	12.5%	FACW	FACW species X 2 =176
0		 ✓ 62.5% 	FACW+	FAC species $10 \times 3 = 30$
		0.0%	TACW+	FACU species $15 \times 4 = 60$
		0.0%		UPL species x 5 =
5	0	0.0%		Column Totals: 131 (A) 284 (B)
6				
<i>I</i>	0	0.0%		Prevalence Index = $B/A = 2.168$
Herb Stratum (Plot size: 5')	40	= Total Cove	r	Hydrophytic Vegetation Indicators:
1.Scirpus cyperinus	8	8.8%	FACW+	Rapid Test for Hydrophytic Vegetation
2.Onoclea sensibilis	25	27.5%	FACW	✓ Dominance Test is > 50%
3.Carex crinita	5	5.5%	OBL	✓ Prevalence Index is ≤3.0 1
4.Carex lurida	5	5.5%	OBL	Morphological Adaptations ¹ (Provide supporting
5 outrout the structure		8.8%	OBL	data in Remarks or on a separate sheet)
6				Problematic Hydrophytic Vegetation ¹ (Explain)
	15	16.5%✓ 27.5%	FACU	¹ Indicators of hydric soil and wetland hydrology must
7.Rubus hispidus 8.			FACW	be present, unless disturbed or problematic.
8 <u>.</u> 9.	0			Definitions of Vegetation Strata:
9. 10.	0			
11.	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter
12.	0	0.0%		at breast height (DBH), regardless of height.
12	0	0.0%		Sapling/shrub - Woody plants less than 3 in. DBH and
Woody Vine Stratum (Plot size:)	91	= Total Cove	r	greater than 3.28 ft (1m) tall
1	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of
2		0.0%		size, and woody plants less than 3.28 ft tall.
3	0	0.0%		Woody vine - All woody vines greater than 3.28 ft in
4	0	0.0%		height.
	0	= Total Cove	r	
				Hydrophytic Vegetation Present? Yes • No O
Remarks: (Include photo numbers here or on a separate shee	et.)			

Depth		Matrix	ane depth			edox Featu			absence of indicators.)	
(inches)	Color (%	Color (~ %		Loc ²	Texture	Remarks
0-8	10YR	3/2							Loam	
8-16	2.5Y	4/1	90%	10YR	5/8	10%	С	М	Fine Sandy Loam	
						_				
						_				
						_				
									·	
¹ Type: C=Co	ncentration. D	D=Depletio	n. RM=Red	uced Matrix,	CS=Cover	red or Coate	ed Sand Gra	ains ² Loca	ation: PL=Pore Lining. M=N	<i>N</i> atrix
_	Indicators:			_					Indicators for Probl	ematic Hydric Soils : ³
Histosol				Poly	value Belc A 149B)	ow Surface ((S8) (LRR F	R,	2 cm Muck (A10)	(LRR K, L, MLRA 149B)
	ipedon (A2)					face (S9) (I		2Δ 149R)	Coast Prairie Red	ox (A16) (LRR K, L, R)
Black His						Mineral (F1			5 cm Mucky Peat	or Peat (S3) (LRR K, L, R)
	n Sulfide (A4))				Matrix (F2)			Dark Surface (S7)) (LRR K, L)
	l Layers (A5) I Below Dark S	Surface (A	11)		leted Matr					Surface (S8) (LRR K, L)
_	rk Surface (A		11)			urface (F6)			Thin Dark Surface	
	uck Mineral (S			_		Surface (F	7)			Masses (F12) (LRR K, L, R)
_	leyed Matrix (Red	ox Depres	sions (F8)			_	ain Soils (F19) (MLRA 149B)
_	edox (S5)	(34)								6) (MLRA 144A, 145, 149B)
	Matrix (S6)								Red Parent Mater	• •
_	face (S7) (LR	R R, MLRA	149B)						Very Shallow Darl	
³ Indicators (of hydrophytic	voqotatio	n and woth	and bydrology	, must bo	procont un	loss disturk	od or prob		
				ind nyurology	must be	present, un				
Restrictive	ayer (if obs	served):								
Туре:									Hydric Soil Present?	Yes 🔍 No 🔾
Depth (in	ches):									
Remarks:										

Project/Site: Antrim Wind Project		City/County: Antrim		Sampling Date: 2	2-Aug-11			
Applicant/Owner: Eolian Renewable E	inergy, LLC	St	tate: NH	Sampling Point:	AN31 Upland			
Investigator(s): AF JG		Section, Township, Range	: S. T.	R.				
Landform (hillslope, terrace, etc.):	Undulating	Local relief (concave, convex,	none): undulatin	g Slope:	5.0 % / 2.9°			
Subregion (LRR or MLRA):	Lat.:	Lo	ng.:	Datum:				
Soil Map Unit Name:			NWI classif	ication:				
Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.) Are Vegetation , soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No Are Vegetation , soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.) Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.								
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes ○ No ● Yes ○ No ● Yes ○ No ●	Is the Sampled Area within a Wetland?	Yes 🔿 No 🖲)				
Remarks: (Explain alternative pro Transmission line maintained ROV	ocedures here or in a separate repo V	rt.)						

Wetland Hydrology Indicators:				
5 00	shook all that apply)	Secondary Indicators (minimum of 2 required)		
Primary Indicators (minimum of one required; c	Surface Soil Cracks (B6)			
Surface Water (A1)	Water-Stained Leaves (B9)	Drainage Patterns (B10)		
High Water Table (A2)	Aquatic Fauna (B13)	Moss Trim Lines (B16)		
Saturation (A3)	Marl Deposits (B15)	Dry Season Water Table (C2)		
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)		
Sediment Deposits (B2)	Oxidized Rhizospheres along Living Roots (C3)	Saturation Visible on Aerial Imagery (C9)		
Drift deposits (B3)	Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)		
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)		
Iron Deposits (B5)	Thin Muck Surface (C7)	Shallow Aquitard (D3)		
Inundation Visible on Aerial Imagery (B7)		Microtopographic Relief (D4)		
Sparsely Vegetated Concave Surface (B8)		FAC-neutral Test (D5)		
Field Observations:				
Surface Water Present? Yes O No O	Depth (inches):			
Water Table Present? Yes O No 🖲	Depth (inches):			
Saturation Present? (includes capillary fringe) Yes O No •	Wetland Hyd Depth (inches):	drology Present? YES 🔾 NO 🖲		
Describe Recorded Data (stream gauge, monitor	ring well, aerial photos, previous inspections), if ava	ailable:		
Remarks:				
 ☐ Inundation Visible on Aerial Imagery (B7) ☐ Sparsely Vegetated Concave Surface (B8) Field Observations: Surface Water Present? Yes No ● Water Table Present? Yes No ● Saturation Present? Yes No ● Saturation Present? Yes No ● Describe Recorded Data (stream gauge, monitor 	Depth (inches): Wetland Hyd	Microtopographic Relief (D4) FAC-neutral Test (D5) Grology Present? Yes No		

	11.5	Dominant Species?		Sampling Point: AN31 Upland
Tree Stratum (Plot size:)	Absolute % Cover		Indicator Status	Dominance Test worksheet:
	0	0.0%		Number of Dominant Species That are OBL, FACW, or FAC: 1 (A)
2.	0	0.0%		
				Total Number of Dominant
3	0	0.0%		Species Across All Strata: 4 (B)
4		0.0%		Dercent of dominant Species
5		0.0%		Percent of dominant Species That Are OBL, FACW, or FAC:25.0% (A/B)
6		0.0%		
7	0	0.0%		Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: 15')		= Total Cove	r	Total % Cover of:Multiply by:OBL species0x 1 =
1. Populus tremula	10	47.6%	FACU	
2. Prunus serotina	3	14.3%	FACU	
3. Acer saccharum	5	23.8%	FACU-	
4. Quercus rubra		14.3%	FACU-	FACU species $\frac{86}{344}$ x 4 = $\frac{344}{344}$
5		0.0%		UPL species x 5 =
C		0.0%	-	Column Totals: 124 (A) 420 (B)
7	0	0.0%		
<i>I</i>	-			Prevalence Index = B/A = <u>3.387</u>
Herb Stratum (Plot size: 5')	21	= Total Cove	r	Hydrophytic Vegetation Indicators:
1.Rubus alumnus	15	14.6%	FACU-	Rapid Test for Hydrophytic Vegetation
2.Solidago canadensis	50	48.5%	FACU	Dominance Test is > 50%
3.Onoclea sensibilis			-	□ Prevalence Index is \leq 3.0 ¹
P			FACW	Morphological Adaptations ¹ (Provide supporting
4.Spiraea alba	5	4.9%	FACW+	data in Remarks or on a separate sheet)
5	0	0.0%		Problematic Hydrophytic Vegetation ¹ (Explain)
6	0	0.0%		1
7	0	0.0%		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
8	0	0.0%		
9	0	0.0%		Definitions of Vegetation Strata:
10	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter
11	0	0.0%		at breast height (DBH), regardless of height.
12.	0	0.0%		Orall's states to Manda states to be a three of the DDU and
Woody Vine Stratum (Plot size:)	103	= Total Cove	r	Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall
<u> </u>	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of
0	0	0.0%		size, and woody plants less than 3.28 ft tall.
2 3	0	0.0%		
۵ ۱	0	0.0%		Woody vine - All woody vines greater than 3.28 ft in height.
7				noight.
	0	= Total Cove	r	
				Hydrophytic
				Vegetation
				Present? Yes No •
Remarks: (Include photo numbers here or on a separate she	et.)			

Depth		Matrix	-	needed to document the indicator or confirm the Redox Features		
(inches)	Color (%	Color (moist) % Type 1 Loc		Remarks
0-7	10YR	3/2	100%	·	Loam	
7-12	10YR	4/3	100%		Sandy Loam	
12-16	2.5Y	5/1	100%		Medium Sand	
16-24	10YR	4/6	100%		Sandy Loam	
						_
				·		
				·		
				·		
		D=Depletic	n. RM=Red	luced Matrix, CS=Covered or Coated Sand Grains ² L	ocation: PL=Pore Lining. M=I	Matrix
Hydric Soil					Indicators for Prob	lematic Hydric Soils : ³
				Polyvalue Below Surface (S8) (LRR R, MLRA 149B)		(LRR K, L, MLRA 149B)
	ipedon (A2)			Thin Dark Surface (S9) (LRR R, MLRA 149B)	Coast Prairie Red	lox (A16) (LRR K, L, R)
Black His	n Sulfide (A4)			Loamy Mucky Mineral (F1) LRR K, L)	5 cm Mucky Peat	or Peat (S3) (LRR K, L, R)
	I Layers (A5)			Loamy Gleyed Matrix (F2)	Dark Surface (S7	
	Below Dark	Surface (A	.11)	Depleted Matrix (F3)		Surface (S8) (LRR K, L)
_	rk Surface (A			Redox Dark Surface (F6)		e (S9) (LRR K, L) Masses (F12) (LRR K, L, R)
Sandy M	uck Mineral (S	S1)		Depleted Dark Surface (F7)		lain Soils (F19) (MLRA 149B)
Sandy G	leyed Matrix ((S4)		Redox Depressions (F8)		6) (MLRA 144A, 145, 149B)
Sandy R	edox (S5)				Red Parent Mater	
	Matrix (S6)				Very Shallow Dar	. ,
Dark Sur	face (S7) (LR	R R, MLRA	A 149B)		Other (Explain in	Remarks)
³ Indicators of	of hydrophytic	vegetatio	n and wetla	and hydrology must be present, unless disturbed or pr	oblematic.	
Restrictive I	_ayer (if obs	served):				
Type:	-				_	
Depth (in	ches):				Hydric Soil Present?	Yes 🔾 No 🖲
Remarks:						



AN31 Wetland



AN31 Upland



AN31 Wetland

Project/Site: Antrim Wind Project		City/County:	Antrim				Sampling Date: 2	2-Aug-11	
Applicant/Owner: Eolian Renewable E	Energy, LLC		S	tate:	NH		Sampling Point:	AN32 we	tland
Investigator(s): AF JG		Section, T	ownship, Range	e: S.		т.	R.		
Landform (hillslope, terrace, etc.):	Footslope	Local relief (c	oncave, convex	, none	e): flat	_	Slope:	0.0%/	0.0
Subregion (LRR or MLRA):	Lat.:		Lo	ng.:			Datum:		
Soil Map Unit Name:				-	NWI c	assif	ication: PSS		
Are Vegetation , Soil Are Vegetation , Soil Summary of Findings - At	, or Hydrology 🗌 naturally	tly disturbed? problematic? sampling p	•	l, expl	ain any a	Inswe	ers in Remarks.)		etc.
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes ● No ○ Yes ● No ○ Yes ● No ○		e Sampled Area n a Wetland?	Ŷ	′es 🖲 N	lo C)		
	ocedures here or in a separate repo nin maintained transmission line R	•							

Wetland Hydrology Indicators:		Secondary Indicators (minimum of 2 required)					
Primary Indicators (minimum of one required;	check all that apply)	Surface Soil Cracks (B6)					
Surface Water (A1)	Water-Stained Leaves (B9)	✓ Drainage Patterns (B10)					
High Water Table (A2)	Aquatic Fauna (B13)	Moss Trim Lines (B16)					
Saturation (A3)	Marl Deposits (B15)	Dry Season Water Table (C2)					
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)					
Sediment Deposits (B2)	Oxidized Rhizospheres along Living Roots (C3)	Saturation Visible on Aerial Imagery (C9)					
Drift deposits (B3)	Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)					
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)					
Iron Deposits (B5)	Thin Muck Surface (C7)	Shallow Aquitard (D3)					
Inundation Visible on Aerial Imagery (B7)	Other (Explain in Remarks)	Microtopographic Relief (D4)					
Sparsely Vegetated Concave Surface (B8)							
		FAC-neutral Test (D5)					
Field Observations:							
Surface Water Present? Yes O No 🖲	Depth (inches):						
Water Table Present? Yes O No O	Depth (inches):	× •					
Saturation Present? Yes • No ·	Depth (inches): 2 Wetland Hy	/drology Present? Yes 🖲 No 🔾					
Describe Recorded Data (stream gauge, monito	pring well, aerial photos, previous inspections), if av	vailable:					
Remarks:							

		Dominant Species?		Sampling Point: AN32 wetland
Tree Stratum (Plot size:)	Absolute % Cover	Rel.Strat.	Indicator Status	Dominance Test worksheet:
1	0	0.0%		Number of Dominant Species That are OBL, FACW, or FAC: 3 (A)
0	0	0.0%		
		0.0%		Total Number of Dominant
3				Species Across All Strata: 4 (B)
4	0	0.0%		Dercent of dominant Species
5		0.0%		Percent of dominant Species That Are OBL, FACW, or FAC:75.0% (A/B)
6		0.0%		
7	0	0.0%		Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: 15')	0	= Total Cove	r	Total % Cover of: Multiply by: OBL species 12 x 1 = 12
1. Spiraea alba	50	83.3%	FACW+	·
2. Acer rubrum	10	16.7%	FAC	FACW species $108 \times 2 = 216$
3.	0	0.0%		FAC species $10 \times 3 = 30$
4		0.0%		FACU species 25 x 4 = 100
		0.0%		UPL species x 5 =
5				Column Totals: 155 (A) 358 (B)
6		0.0%		
/	0	0.0%		Prevalence Index = $B/A = 2.310$
Herb Stratum (Plot size: 5')	60	= Total Cove	r	Hydrophytic Vegetation Indicators:
1.Carex crinita	12	12.6%	OBL	Rapid Test for Hydrophytic Vegetation
2.Onoclea sensibilis	33	34.7%	FACW	✓ Dominance Test is > 50%
3 Carray Intermediate		26.3%	FACW+	\checkmark Prevalence Index is ≤3.0 ¹
P				Morphological Adaptations ¹ (Provide supporting
4. Rubus hispidus	0	0.0%	FACW	data in Remarks or on a separate sheet)
5. Solidago canadensis	25	26.3%	FACU	Problematic Hydrophytic Vegetation ¹ (Explain)
6	0	0.0%		
7	0	0.0%		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
8.	0	0.0%		
9.	0	0.0%		Definitions of Vegetation Strata:
10.	0	0.0%		
11.	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
12.	0	0.0%		at broadt height (DDH), regardloss of height.
		= Total Cove		Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall
Woody Vine Stratum (Plot size:) 1	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of
0	0			size, and woody plants less than 3.28 ft tall.
2	0	0.0%		
3				Woody vine - All woody vines greater than 3.28 ft in
4	0	0.0%		height.
	0	= Total Cove	r	
				Hydrophytic
				Vegetation Present? Yes No
Remarks: (Include photo numbers here or on a separate she	et.)			

Depth	_	Matrix	_			dox Featu			_	
(inches)	Color (I	moist)	%	Color (moist)	%	Type 1	Loc ²	Texture	Remarks
0-18	10YR	3/2	100%						Loam	_
18-24	2.5Y	4/2	95%	10YR	5/8	5%	С	М	Sandy Loam	
¹ Type: C=Cor	ncentration. D	=Depletio	n. RM=Red	uced Matrix,	CS=Cover	ed or Coate	ed Sand Gra	ains ² Loca	ation: PL=Pore Lining. M=N	/atrix
Hydric Soil	Indicators:	-							Indiantors for Drob	ematic Hydric Soils · ³
Histosol				Polv	value Belo	w Surface ((S8) (LRR R			enatic rigane sons .
	ipedon (A2)			MLR	A 149B)		, .=	-		(LRR K, L, MLRA 149B)
Black His	•			🗌 Thin	Dark Surf	ace (S9) (I	lrr r, mlr	A 149B)		DX (A16) (LRR K, L, R)
	n Sulfide (A4)			🗌 Loar	ny Mucky	Mineral (F1) LRR K, L)			or Peat (S3) (LRR K, L, R)
	Layers (A5)			Loar	ny Gleyed	Matrix (F2))		Dark Surface (S7)	
	Below Dark S	Surface (A	.11)	Dep	leted Matr	ix (F3)			Thin Dark Surface	Surface (S8) (LRR K, L)
_	rk Surface (A1			_		urface (F6)				9 (39) (LRR K, L) Masses (F12) (LRR K, L, R)
_	uck Mineral (S					Surface (F	7)			ain Soils (F19) (MLRA 149B)
	leyed Matrix (Red	ox Depres	sions (F8)				6) (MLRA 144A, 145, 149B)
	edox (S5)								Red Parent Mater	
Stripped	Matrix (S6)								Very Shallow Dar	
Dark Sur	face (S7) (LRI	r R, MLRA	A 149B)						Other (Explain in	
³ Indicators (of hydrophytic	voqotatio	n and wotla	nd hydrology	must bo	prosont un	loss disturb	od or prob		
				na nyarology	must be	present, un				
	ayer (if obs	erved):								
Туре:									Hydric Soil Present?	Yes 💿 No 🔿
Depth (in	ches):								Hydric Soli Present?	
Remarks:										

Project/Site: Antrim Wind Project		City/County: Antrim			Sampling Date: 2	22-Aug-11	
Applicant/Owner: Eolian Renewable E	nergy, LLC		State:	NH	Sampling Point:	AN32 up	land
Investigator(s): AF JG		Section, Township, Rang	ge: S.	т.	R.		
Landform (hillslope, terrace, etc.):	Undulating	Local relief (concave, conve	x, non	e): undulatir	ng Slope:	8.0 % /	4.6 °
Subregion (LRR or MLRA):	Lat.:	L	ong.:		Da	tum:	
Soil Map Unit Name:				NWI classi	fication:		
Are Vegetation . , Soil . Are Vegetation . , Soil . Soil . Summary of Findings - At	, or Hydrology 🗌 naturally p	problematic? (If neede	ed, exp	2	vers in Remarks.)		etc.
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes No Yes No Yes No No	Is the Sampled Are within a Wetland?	a ,	Yes 🔿 No 🤇			
Remarks: (Explain alternative proc	edures here or in a separate repo	ort.)					

	Secondary Indicators (minimum of 2 required)
check all that apply)	Surface Soil Cracks (B6)
Water-Stained Leaves (B9)	Drainage Patterns (B10)
Aquatic Fauna (B13)	Moss Trim Lines (B16)
Marl Deposits (B15)	Dry Season Water Table (C2)
Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)
Oxidized Rhizospheres along Living Roots (C3)	Saturation Visible on Aerial Imagery (C9)
Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)
Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)
Thin Muck Surface (C7)	Shallow Aquitard (D3)
	Microtopographic Relief (D4)
	FAC-neutral Test (D5)
Depth (inches):	
Depth (inches):	rdrology Present? Yes 🔿 No 🖲
Wetland Hy Depth (inches):	rdrology Present? Yes 🔾 No 🖲
pring well, aerial photos, previous inspections), if av	ailable:
	Aquatic Fauna (B13) Marl Deposits (B15) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Living Roots (C3) Presence of Reduced Iron (C4) Recent Iron Reduction in Tilled Soils (C6) Thin Muck Surface (C7) Other (Explain in Remarks) Depth (inches): Depth (inches): Uepth (inches):

		Dominant Species?		Sampling Point: AN32 upland
Tree Stratum (Plot size:)	Absolute % Cover		Indicator Status	Dominance Test worksheet:
1	0	0.0%		Number of Dominant Species That are OBL, FACW, or FAC: 1 (A)
2.		0.0%		
3.		0.0%		Total Number of Dominant
3		0.0%		Species Across All Strata: <u>3</u> (B)
4		0.0%		Percent of dominant Species
5		0.0%		That Are OBL, FACW, or FAC: <u>33.3%</u> (A/B)
6				
7		0.0%		Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: 15')	0	= Total Cover	-	Total % Cover of: Multiply by: 0BL species 10 x 1 = 10
1. Rhus copallinum	50	✔ 76.9%	NI	· <u> </u>
2. Pinus strobus	5	7.7%	FACU	FACW species $33 \times 2 = 66$
3. Prunus serotina		7.7%	FACU	FAC species 15 x 3 = 45
4. Acer rubrum		7.7%	FAC	FACU species x 4 =292
5.		0.0%		UPL species $0 \times 5 = 0$
6		0.0%	·	Column Totals: 131 (A) 413 (B)
7		0.0%		
<i>I</i>		= Total Cove		Prevalence Index = B/A = <u>3.153</u>
Herb Stratum (Plot size: 5')	65			Hydrophytic Vegetation Indicators:
1.Pteridium aquilinum	20	17.2%	FACU	Rapid Test for Hydrophytic Vegetation
2.Rubus idaeus	10	8.6%	FAC-	Dominance Test is > 50%
2 Butter all sharely and		8.6%	FACU-	Prevalence Index is \leq 3.0 1
		28.4%	FACU	Morphological Adaptations ¹ (Provide supporting
E RULL II				data in Remarks or on a separate sheet)
5.Phalaris arundinacea			FACW+	Problematic Hydrophytic Vegetation ¹ (Explain)
6.Carex crinita	10	8.6%	OBL	¹ Indicators of hydric coil and watland hydrology must
7	0	0.0%		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
8	0	0.0%		Definitions of Vegetation Strata:
9	0	0.0%		Demittons of Vegetation Strata.
10	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter
11	0	0.0%		at breast height (DBH), regardless of height.
12	0	0.0%		Sapling/shrub - Woody plants less than 3 in. DBH and
Woody Vine Stratum (Plot size:)	116	= Total Cover		greater than 3.28 ft (1m) tall.
1	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of
2	0	0.0%		size, and woody plants less than 3.28 ft tall.
3	0	0.0%		Woody vine - All woody vines greater than 3.28 ft in
4.	0	0.0%		height.
	0	= Total Cover	-	
				Hydrophytic
				Vegetation Present? Yes O No O
Pomarks: (Include photo numbers here or on a consiste sh	oot)			1
Remarks: (Include photo numbers here or on a separate sh	eel.)			

(inches)		atrix		R	edox Features					
(inclies)	Color (mo	ist)	%	Color (moist)	%Ty	pe 1 Loc ²	Texture		Ren	narks
0-8	10YR	3/3	100%				Loam			
8-13	10YR	4/3	100%				Sandy Loam			
								_		
								_		
¹ Type: C=Cond	centration. D=D	epletion.	RM=Red	uced Matrix, CS=Cove	red or Coated Sar	nd Grains ² Loo	ation: PL=Pore Lin	ing. M=Ma	trix	
Hydric Soil I						Low		-		ia S aila - ³
				Polyvalue Belr	ow Surface (S8) (Indicators f			
Histic Epip				MLRA 149B)					RR K, L, MLF	
Black Histi				Thin Dark Sur	face (S9) (LRR R	, MLRA 149B)			(A16) (LRR	
	Sulfide (A4)			🗌 Loamy Mucky	Mineral (F1) LRR	K, L)			Peat (S3) (L	LRR K, L, R)
	Layers (A5)			Loamy Gleyed	I Matrix (F2)			face (S7) (
	Below Dark Surf	face (A11)	Depleted Mate	rix (F3)				rface (S8) (L	
	k Surface (A12)			Redox Dark S	urface (F6)				S9) (LRR K,	
_	ck Mineral (S1)			Depleted Dark	surface (F7)					LRR K, L, R)
	yed Matrix (S4)			Redox Depres	sions (F8)					(MLRA 149B)
Sandy Rec										, 145, 149B)
Stripped N								ent Material	(TF2) Surface (TF1)	2)
	ace (S7) (LRR R	, MLRA 1	49B)					xplain in Re		2)
3100		actation	and wotla	nd hydrology must be	procont unloss d	isturbod or prot			and K3)	
- indicators of		getation		na nyarology mast be	present, unless u	isturbed of prot				
Restrictive La	ayer (if observ									\bigcirc
Restrictive La	ayer (if observ						Hydric Soil Pr	ocont?	Vac O	
Restrictive La	ayer (if observ						Hydric Soil Pr	esent?	$Yes \bigcirc $	No 🖲
Restrictive La	ayer (if observ						Hydric Soil Pr	resent?	Yes O	No •
Restrictive La Type: Depth (inch	ayer (if observ						Hydric Soil Pr	esent?	Yes O	No 🔍
Restrictive La Type: Depth (inch	ayer (if observ						Hydric Soil Pr	esent?	Yes O	No 🔍
Restrictive La Type: Depth (inch	ayer (if observ						Hydric Soil Pr	esent?	Yes O	No 🔍
Restrictive La Type: Depth (inch	ayer (if observ						Hydric Soil Pr	resent?	Yes O	No
Restrictive La Type: Depth (inch	ayer (if observ						Hydric Soil Pr	resent?	Yes O	No
Restrictive La Type: Depth (inch	ayer (if observ						Hydric Soil Pr	resent?	Yes O	No
Restrictive La Type: Depth (inch	ayer (if observ						Hydric Soil Pr	resent?	Yes O	No
Restrictive La Type: Depth (inch	ayer (if observ						Hydric Soil Pr	esent?	Yes O	No
Restrictive La Type: Depth (inch	ayer (if observ						Hydric Soil Pr	esent?	Yes O	No
Restrictive La Type: Depth (inch	ayer (if observ						Hydric Soil Pr	esent?	Yes O	No
Restrictive La Type: Depth (inch	ayer (if observ						Hydric Soil Pr	resent?	Yes O	No •
Restrictive La Type: Depth (inch	ayer (if observ						Hydric Soil Pr	resent?	Yes O	No •
Restrictive La Type: Depth (inch	ayer (if observ						Hydric Soil Pr	esent?	Yes O	No •
Restrictive La Type: Depth (inch	ayer (if observ						Hydric Soil Pr	esent?	Yes O	No •
Restrictive La Type: Depth (inch	ayer (if observ						Hydric Soil Pr	esent?	Yes O	No •
Restrictive La Type: Depth (inch	ayer (if observ						Hydric Soil Pr	resent?	Yes O	No •
Restrictive La Type: Depth (inch	ayer (if observ						Hydric Soil Pr	resent?	Yes O	No
Restrictive La Type: Depth (inch	ayer (if observ						Hydric Soil Pr	resent?	Yes O	No



AN32 Upland



AN32 Wetland

Project/Site: Antrim Wind Project	City/County:	Antrim	im		2-Aug-11
Applicant/Owner: Eolian Renewable Energy, LLC		State:	NH	Sampling Point:	AN33 Wetland
Investigator(s): AF JG	Section, T	ownship, Range: S.	т.	R.	
Landform (hillslope, terrace, etc.): Footslope	Local relief (c	oncave, convex, non	e): flat	Slope:	3.0 % / 1.7°
Subregion (LRR or MLRA): Lat.:		Long.:		Dat	tum:
Soil Map Unit Name:	-		NWI classif	ication: PSS	
	ntly disturbed? problematic? sampling p		olain any answ	ers in Remarks.)	
Hydrophytic Vegetation Present? Yes No Hydric Soil Present? Yes No Wetland Hydrology Present? Yes No		e Sampled Area n a Wetland?	Yes $ullet$ No $igcap$)	
Remarks: (Explain alternative procedures here or in a separate rep Isolated PSS wetland within skidder trail.	ort.)				

Wetland Hydrology Indicators:		Secondary Indicators (minimum of 2 required)
Primary Indicators (minimum of one required;	check all that apply)	Surface Soil Cracks (B6)
Surface Water (A1)	✓ Water-Stained Leaves (B9)	Drainage Patterns (B10)
High Water Table (A2)	Aquatic Fauna (B13)	Moss Trim Lines (B16)
Saturation (A3)	Marl Deposits (B15)	Dry Season Water Table (C2)
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)
Sediment Deposits (B2)	Oxidized Rhizospheres along Living Roots (C3)	Saturation Visible on Aerial Imagery (C9)
Drift deposits (B3)	Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)
Iron Deposits (B5)	Thin Muck Surface (C7)	Shallow Aquitard (D3)
Inundation Visible on Aerial Imagery (B7)	Other (Explain in Remarks)	Microtopographic Relief (D4)
Sparsely Vegetated Concave Surface (B8)		FAC-neutral Test (D5)
Field Observations:		
Surface Water Present? Yes O No 💿	Depth (inches):	
Water Table Present? Yes O No O	Depth (inches):	
Saturation Present? (includes capillary fringe) Yes • No	Wetland Hy Depth (inches):0	drology Present? Yes 🖲 No 🔾
Describe Recorded Data (stream gauge, monit	oring well, aerial photos, previous inspections), if available	ailable:
Remarks:		

VEGETATION - Use scientific names of plan	nts	Dominant Species?		Sampling Point: AN33 Wetland
Tree Stratum (Plot size:)	Absolute % Cover	Rel.Strat.	Indicator Status	Dominance Test worksheet:
	0	0.0%	Status	Number of Dominant Species
	0	0.0%		That are OBL, FACW, or FAC: (A)
2		0.0%		Total Number of Dominant
3	0	0.0%		Species Across All Strata: 5 (B)
4	0	0.0%		Percent of dominant Species
5 6	-	0.0%		That Are OBL, FACW, or FAC: 80.0% (A/B)
		0.0%		Developer Index werkelses
7				Prevalence Index worksheet: Total % Cover of: Multiply by:
Sapling/Shrub Stratum (Plot size: 15')	0	= Total Cover	-	OBL species 36 x 1 = 36
1. Cornus stolonifera	5	✓ 50.0%	FACW+	FACW speci es $70 \times 2 = 140$
2. Viburnum dentatum	5	50.0%	FAC	
3	0	0.0%		
4	0	0.0%		FACU species $33 \times 4 = 132$
5	0	0.0%		UPL species x 5 =
6	0	0.0%		Column Totals: <u>144</u> (A) <u>323</u> (B)
7.	0	0.0%		Prevalence Index = $B/A = 2.243$
Herb Stratum (Plot size: 5')	10	= Total Cover		Hydrophytic Vegetation Indicators:
				Rapid Test for Hydrophytic Vegetation
1.Onoclea sensibilis	40	29.9%	FACW	✓ Dominance Test is > 50%
2.Solidago canadensis	33	24.6%	FACU	\checkmark Prevalence Index is $\leq 3.0^{1}$
3.Carex crinita	33	24.6%	OBL	Morphological Adaptations ¹ (Provide supporting
4. Rubus hispidus	25	18.7%	FACW	data in Remarks or on a separate sheet)
5.Osmunda regalis	3	2.2%	OBL	Problematic Hydrophytic Vegetation ¹ (Explain)
6	0	0.0%		
7	0	0.0%		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
8	0	0.0%		
9	0	0.0%		Definitions of Vegetation Strata:
10	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter
11	0	0.0%		at breast height (DBH), regardless of height.
12	0	0.0%		Sapling/shrub - Woody plants less than 3 in. DBH and
Woody Vine Stratum (Plot size:)	134	= Total Cover	-	greater than 3.28 ft (1m) tall
1	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of
2	0	0.0%		size, and woody plants less than 3.28 ft tall.
3	0	0.0%		Woody vine - All woody vines greater than 3.28 ft in
4	0	0.0%		height.
	0	= Total Cover	-	
				Hydrophytic Vegetation
				Present? Yes I No
Remarks: (Include photo numbers here or on a separate she	et.)			

_

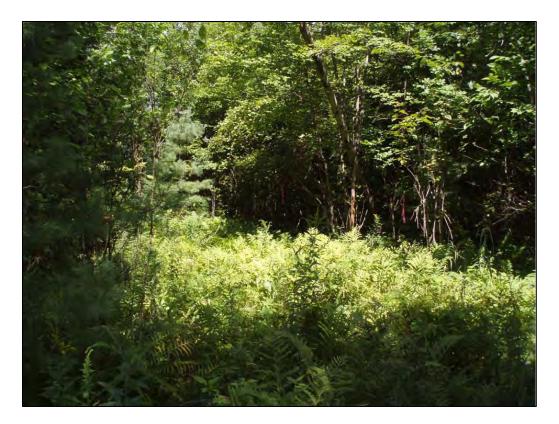
		Matrix		-		dox Featu					
(inches)	Color (%	Color	(moist)	%	Type 1	Loc ²	Texture	Remar	ks
0-14	10YR	3/2	100%						Loam		
14-20	2.5Y	5/2	90%	2.5Y	5/1	10%	D	Μ	Sand		
									·		
									-		
ype: C=Cor	centration. D	=Depletio	n. RM=Red	uced Matrix,	CS=Cover	ed or Coate	ed Sand Gra	ains ² Loca	ation: PL=Pore Lining.	M=Matrix	
	Indicators:										oils · ³
Histosol (Poly	walue Belo	w Surface ((S8) (I RR F		_	roblematic Hydric S	
_	pedon (A2)			MLF	RA 149B)			·,		(10) (LRR K, L, MLRA	
Black His				🗌 Thir	n Dark Surf	face (S9) (I	LRR R, MLF	RA 149B)		Redox (A16) (LRR K, L	
	n Sulfide (A4)			🗌 Loa	my Mucky	Mineral (F1) LRR K, L)			Peat or Peat (S3) (LRR	K, L, R)
						Matrix (F2)			Dark Surface	(S7) (LRR K, L)	
	Layers (A5)				leted Matri					ow Surface (S8) (LRR	K, L)
-	Below Dark S		11)			urface (F6)			Thin Dark Su	face (S9) (LRR K, L)	
-	rk Surface (A			_		Surface (F	7)		Iron-Mangan	ese Masses (F12) (LRR	R K, L, R)
_	uck Mineral (S				lox Depres		,)		Piedmont Flo	odplain Soils (F19) (MI	LRA 149B)
Sandv Gl	eyed Matrix (S4)			iox Depres				Mesic Spodic	(TA6) (MLRA 144A, 14	45, 149B)
-									Red Parent M	aterial (TF2)	
Sandy Re											
Sandy Re	Matrix (S6)									Dark Surface (TF12)	
Sandy Re		r r, mlra	(149B)								
Sandy Re Stripped Dark Sur	Matrix (S6) face (S7) (LRI			nd hydrolog	y must be	present, un	less disturk	ed or probl	Very Shallow		
Sandy Re Stripped Dark Sur	Matrix (S6) face (S7) (LR f hydrophytic	vegetatio		nd hydrolog	y must be	present, un	less disturb	ed or probl	Very Shallow		
Sandy Re Stripped Dark Sur Indicators o	Matrix (S6) face (S7) (LRI	vegetatio		nd hydrolog	y must be	present, un	less disturt	ed or probl	Very Shallow		
Sandy Re Stripped Dark Sur Indicators o estrictive L	Matrix (S6) face (S7) (LRI f hydrophytic .ayer (if obs	vegetatio		nd hydrolog	y must be	present, un	less disturk	ed or probl	Very Shallow	n in Remarks)	
Sandy Re Stripped Dark Sur Indicators o	Matrix (S6) face (S7) (LRI f hydrophytic .ayer (if obs	vegetatio		nd hydrolog	y must be	present, un	less disturb	bed or probl	Very Shallow	n in Remarks)	lo ⁽⁾
Sandy Re Stripped Dark Sur Indicators o estrictive L	Matrix (S6) face (S7) (LRI f hydrophytic .ayer (if obs	vegetatio		nd hydrolog	y must be	present, un	less disturb	ed or probl	Very Shallow	n in Remarks)	lo ()
Sandy Re Stripped Dark Sur Indicators o estrictive L Type: Depth (inc	Matrix (S6) face (S7) (LRI f hydrophytic .ayer (if obs	vegetatio		nd hydrolog	y must be	present, un	less disturb	bed or probl	Very Shallow	n in Remarks)	lo ()
Sandy Re Stripped Dark Suri Indicators o estrictive L Type: Depth (inc	Matrix (S6) face (S7) (LRI f hydrophytic .ayer (if obs	vegetatio		nd hydrolog	y must be	present, un	less disturb	ed or probl	Very Shallow	n in Remarks)	lo ⁽⁾
Sandy Re Stripped Dark Suri Indicators o estrictive L Type: Depth (inc	Matrix (S6) face (S7) (LRI f hydrophytic .ayer (if obs	vegetatio		nd hydrolog	y must be j	present, un	less disturb	ed or probl	Very Shallow	n in Remarks)	lo ⁽⁾
Sandy Re Stripped Dark Suri Indicators o estrictive L Type: Depth (inc	Matrix (S6) face (S7) (LRI f hydrophytic .ayer (if obs	vegetatio		nd hydrolog	y must be j	present, un	less disturb	ed or probl	Very Shallow	n in Remarks)	lo ()
Sandy Re Stripped Dark Sur Indicators o estrictive L Type: Depth (inc	Matrix (S6) face (S7) (LRI f hydrophytic .ayer (if obs	vegetatio		nd hydrolog	y must be	present, un	less disturb	ed or probl	Very Shallow	n in Remarks)	lo ()
Sandy Re Stripped Dark Sur Indicators o estrictive L Type: Depth (inc	Matrix (S6) face (S7) (LRI f hydrophytic .ayer (if obs	vegetatio		nd hydrolog	y must be	present, un	less disturb	ed or probl	Very Shallow	n in Remarks)	lo ⁽⁾
Sandy Re Stripped Dark Suri Indicators o estrictive L Type: Depth (inc	Matrix (S6) face (S7) (LRI f hydrophytic .ayer (if obs	vegetatio		nd hydrolog	y must be	present, un	less disturt	ed or probl	Very Shallow	n in Remarks)	lo ⁽⁾
Sandy Re Stripped Dark Sur Indicators o estrictive L Type: Depth (inc	Matrix (S6) face (S7) (LRI f hydrophytic .ayer (if obs	vegetatio		nd hydrolog	y must be	present, un	less disturt	ed or probl	Very Shallow	n in Remarks)	lo ⁽)
Sandy Re Stripped Dark Sur Indicators o estrictive L Type: Depth (inc	Matrix (S6) face (S7) (LRI f hydrophytic .ayer (if obs	vegetatio		nd hydrolog	y must be	present, un	less disturk	ed or probl	Very Shallow	n in Remarks)	lo ⁽⁾
Sandy Re Stripped Dark Sur Indicators o estrictive L Type: Depth (inc	Matrix (S6) face (S7) (LRI f hydrophytic .ayer (if obs	vegetatio		nd hydrolog	y must be	present, un	less disturb	ed or probl	Very Shallow	n in Remarks)	lo ⁽⁾
Sandy Re Stripped Dark Sur Indicators o estrictive L Type: Depth (inc	Matrix (S6) face (S7) (LRI f hydrophytic .ayer (if obs	vegetatio		nd hydrolog	y must be j	present, un	less disturb	ed or probl	Very Shallow	n in Remarks)	lo ⁽⁾
Sandy Re Stripped Dark Suri Indicators o estrictive L Type: Depth (inc	Matrix (S6) face (S7) (LRI f hydrophytic .ayer (if obs	vegetatio		nd hydrolog	y must be j	present, un	less disturb	ed or probl	Very Shallow	n in Remarks)	lo ⁽⁾
Sandy Re Stripped Dark Suri Indicators o estrictive L Type: Depth (inc	Matrix (S6) face (S7) (LRI f hydrophytic .ayer (if obs	vegetatio		nd hydrolog	y must be	present, un	less disturb	ed or probl	Very Shallow	n in Remarks)	lo ⁽⁾
Sandy Re Stripped Dark Sur Indicators o estrictive L Type: Depth (inc	Matrix (S6) face (S7) (LRI f hydrophytic .ayer (if obs	vegetatio		nd hydrolog	y must be	present, un	less disturt	ed or probl	Very Shallow	n in Remarks)	lo ()
Sandy Re Stripped Dark Sur Indicators o estrictive L Type: Depth (inc	Matrix (S6) face (S7) (LRI f hydrophytic .ayer (if obs	vegetatio		nd hydrolog	y must be	present, un	less disturt	ed or probl	Very Shallow	n in Remarks)	lo ()
Sandy Re Stripped Dark Sur Indicators o estrictive L Type: Depth (inc	Matrix (S6) face (S7) (LRI f hydrophytic .ayer (if obs	vegetatio		nd hydrolog	y must be	present, un	less disturt	ed or probl	Very Shallow	n in Remarks)	lo ()
Sandy Re Stripped Dark Suri Indicators o estrictive L Type: Depth (inc	Matrix (S6) face (S7) (LRI f hydrophytic .ayer (if obs	vegetatio		nd hydrolog	y must be	present, un	less disturk	ed or probl	Very Shallow	n in Remarks)	lo ()
Sandy Re Stripped Dark Sur Indicators o estrictive L Type: Depth (inc	Matrix (S6) face (S7) (LRI f hydrophytic .ayer (if obs	vegetatio		nd hydrolog	y must be	present, un	less disturk	ed or probl	Very Shallow	n in Remarks)	lo ()

Subregion (LRR or MLRA): Lat.: Long.: Datum: Soil Map Unit Name: NWI classification: NWI classification: Are climatic/hydrologic conditions on the site typical for this time of year? Yes I No (If no, explain in Remarks.) Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No (Yes No (If needed, explain any answers in Remarks.) Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.) Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc. Hydrophytic Vegetation Present? Yes No (Is the Sampled Area within a Wetland? Hydrig Soil Present? Yes No (Is the Sampled Area within a Wetland? Yes No (Is the Sampled Area within a Wetland?	Project/Site: Antrim Wind Project		City/County: Antrim			Sampling Date: 2	2-Aug-11	
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): flat Slope: 5.0 % / 2 Subregion (LRR or MLRA): Lat.: Long.: Datum: Soil Map Unit Name: NWI classification: Are climatic/hydrologic conditions on the site typical for this time of year? Yes Image: NWI classification: Are Vegetation , soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.) Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc. Hydrophytic Vegetation Present? Yes No Is the Sampled Area within a Wetland? Yes No Is the Sampled Area within a Wetland? Yes No	Applicant/Owner: Eolian Renewable E	nergy, LLC		State: N	Н	Sampling Point:	AN33 Up	land
Subregion (LRR or MLRA): Lat.: Long.: Datum: Soil Map Unit Name: NWI classification: NWI classification: Are climatic/hydrologic conditions on the site typical for this time of year? Yes I No (If no, explain in Remarks.) Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No (Yes No (If needed, explain any answers in Remarks.) Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.) Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc. Hydrophytic Vegetation Present? Yes No (Is the Sampled Area within a Wetland? Hydrig Soil Present? Yes No (Is the Sampled Area within a Wetland? Yes No (Is the Sampled Area within a Wetland?	Investigator(s): AF JG		Section, Township, Rar	nge: S.	Т.	R.		
Soil Map Unit Name: NWI classification: Are climatic/hydrologic conditions on the site typical for this time of year? Yes	Landform (hillslope, terrace, etc.):	Hillside	Local relief (concave, conv	ex, none):	flat	Slope:	5.0 % /	2.9 °
Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.) Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.) Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc. Hydrophytic Vegetation Present? Yes No Hydric Soil Present? Yes No Yes No Hydrode Area within a Wetland? Yes No No No No No No No No	Subregion (LRR or MLRA):	Lat.:		Long.:	-	Dat	um:	
Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.) Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc. Hydrophytic Vegetation Present? Yes No Hydric Soil Present? Yes No	Soil Map Unit Name:				NWI classif	ication:		
Hydric Soil Present? Yes No No Is the Sampled Area within a Wetland? Yes No	Are Vegetation, Soil Are Vegetation, Soil	, or Hydrology Significant	tly disturbed? Are "No problematic? (If need	rmal Circui led, explaii	mstances" µ n any answe	ers in Remarks.)		etc.
Wetland Hydrology Present? Yes U No 🔍	Hydric Soil Present?				: 🔿 No 🖲)		

Wetland Hydrology Indicators:		Secondary Indicators (minimum of 2 required)
Primary Indicators (minimum of one required;	check all that apply)	Surface Soil Cracks (B6)
Surface Water (A1)	Water-Stained Leaves (B9)	Drainage Patterns (B10)
High Water Table (A2)	Aquatic Fauna (B13)	Moss Trim Lines (B16)
Saturation (A3)	Marl Deposits (B15)	Dry Season Water Table (C2)
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)
Sediment Deposits (B2)	 Oxidized Rhizospheres along Living Roots (C3) 	Saturation Visible on Aerial Imagery (C9)
Drift deposits (B3)	Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)
Iron Deposits (B5)	Thin Muck Surface (C7)	Shallow Aguitard (D3)
Inundation Visible on Aerial Imagery (B7)	Other (Explain in Remarks)	Microtopographic Relief (D4)
Sparsely Vegetated Concave Surface (B8)		FAC-neutral Test (D5)
Field Observations:		
Surface Water Present? Yes O No 💿	Depth (inches):	
Water Table Present? Yes O No •	Depth (inches):	drology Present? Yes 🔿 No 🖲
Saturation Present? (includes capillary fringe) Yes O No O	Wetland Hyd Depth (inches):	drology Present? Yes 🔾 No 🖲
Describe Recorded Data (stream gauge, monit	oring well, aerial photos, previous inspections), if ava	ailable:
Remarks:		

	113	Dominant Species?		Sampling Point: AN33 Upland
	Absolute	Rel.Strat.		Dominance Test worksheet:
Tree Stratum (Plot size: <u>30'</u>)	% Cover		Status	Number of Dominant Species
1. Fagus grandifolia	10	33.3%	FACU	That are OBL, FACW, or FAC: 0 (A)
2. Acer saccharum	10	33.3%	FACU-	Total Number of Dominant
3. Tsuga canadensis	10	33.3%	FACU	Species Across All Strata:6(B)
4		0.0%		
5	0	0.0%		Percent of dominant Species That Are OBL, FACW, or FAC:(A/B)
6	0	0.0%		
7	0	0.0%		Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: 15')	30	= Total Cove	r	Total % Cover of: Multiply by:
1. Fagus grandifolia	25	✓ 41.7%	FACU	$\begin{array}{c} \text{OBL specilles} & 0 & \text{x 1} = & 0 \\ \hline & & & & \\ \end{array}$
2. Populus tremula	15	25.0%	FACU	FACW species 10 x 2 = 20
3. Pinus strobus	5	8.3%	FACU	FAC species $3 \times 3 = 9$
4. Fraxinus pennsylvanica	10	16.7%	FACW	FACU speci es $\frac{80}{100}$ x 4 = $\frac{320}{100}$
5. Quercus rubra	5	8.3%	FACU-	UPL species $\frac{75}{2}$ x 5 = $\frac{375}{2}$
6.	0	0.0%		Column Totals: 168 (A) 724 (B)
7.	0	0.0%		Prevalence Index = $B/A = 4.310$
-		= Total Cove	r	
Herb Stratum (Plot size: 5')			•	Hydrophytic Vegetation Indicators:
1.Dennstaedtia punctilobula	75	96.2%	UPL	Rapid Test for Hydrophytic Vegetation
2. Malanthemum canadense	3	3.8%	FAC-	Dominance Test is > 50%
3.	0	0.0%		Prevalence Index is $\leq 3.0^{1}$
4.	0	0.0%		Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
5.	0	0.0%		Problematic Hydrophytic Vegetation ¹ (Explain)
6.	0	0.0%		
7.	0	0.0%		¹ Indicators of hydric soil and wetland hydrology must
8	0	0.0%		be present, unless disturbed or problematic.
9.	0	0.0%		Definitions of Vegetation Strata:
10.	0	0.0%		
11.	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
12.	0	0.0%		
Woody Vine Stratum (Plot size:)		= Total Cove	r	Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall
	0			Lierh All berbesseur (zen wordt) plante regerdiese of
1	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
2	0	0.0%		
3	0	0.0%		Woody vine - All woody vines greater than 3.28 ft in
4				height.
	0	= Total Cove	r	
				Hydrophytic
				Vegetation
				Present? Yes No •
Remarks: (Include photo numbers here or on a separate she	et.)			

(inches)		atrix _		needed to document the indicator or confirm the Redox Features	_	
0.0	Color (moi		%	Color (moist) % Type 1 Loc ²	Texture	Remarks
0-8			00%		Loam	
8-15	2.5Y	5/3 1	00%		Loamy Sand	
					p	
Type: C=Con	centration. D=De	epletion. I	RM=Red	uced Matrix, CS=Covered or Coated Sand Grains ² Loca	ation: PL=Pore Lining. M=N	latrix
Hydric Soil I						ematic Hydric Soils : ³
Histosol (Polyvalue Below Surface (S8) (LRR R,		(LRR K, L, MLRA 149B)
Histic Epi	pedon (A2)			MLRA 149B)		ox (A16) (LRR K, L, R)
Black Hist	tic (A3)			Thin Dark Surface (S9) (LRR R, MLRA 149B)		or Peat (S3) (LRR K, L, R)
	n Sulfide (A4)			Loamy Mucky Mineral (F1) LRR K, L)	Dark Surface (S7)	
_	Layers (A5)			Loamy Gleyed Matrix (F2)		Surface (S8) (LRR K, L)
	Below Dark Surf	ace (A11)		Redox Dark Surface (F6)	Thin Dark Surface	(S9) (LRR K, L)
	rk Surface (A12)			Depleted Dark Surface (F7)	Iron-Manganese	Masses (F12) (LRR K, L, R)
_	uck Mineral (S1)			Redox Depressions (F8)	Piedmont Floodpla	ain Soils (F19) (MLRA 149B)
Sandy Gle	eyed Matrix (S4)					5) (MLRA 144A, 145, 149B)
	Matrix (S6)				Red Parent Mater	
	face (S7) (LRR R,	MIRA 14	9B)		Very Shallow Dark	
					Other (Explain in	Remarks)
31	£		nd wetta	nd hydrology must be present, unless disturbed or probl	ematic.	
Restrictive L	ayer (if observ.					
Restrictive L Type: <u>B</u>	ayer (if observ oulders				Hydric Soil Present?	
Restrictive L	ayer (if observ oulders				Hydric Soil Present?	Yes 🔿 No 🖲
Restrictive L Type: Bo	ayer (if observ oulders				Hydric Soil Present?	Yes O No O
Restrictive L Type: <u>B</u> Depth (inc	ayer (if observ oulders				Hydric Soil Present?	Yes 🔿 No 🖲
Restrictive L Type: <u>B</u> Depth (inc	ayer (if observ oulders				Hydric Soil Present?	Yes 🔿 No 🖲
Restrictive L Type: <u>B</u> Depth (inc	ayer (if observ oulders				Hydric Soil Present?	Yes 🗘 No 🖲
Restrictive L Type: <u>B</u> Depth (inc	ayer (if observ oulders				Hydric Soil Present?	Yes O No O
Restrictive L Type: <u>B</u> Depth (inc	ayer (if observ oulders				Hydric Soil Present?	Yes O No 🖲
Restrictive L Type: <u>B</u> Depth (inc	ayer (if observ oulders				Hydric Soil Present?	Yes O No 🖲
Restrictive L Type: <u>B</u> Depth (inc	ayer (if observ oulders				Hydric Soil Present?	Yes O No O
Restrictive L Type: <u>B</u> Depth (inc	ayer (if observ oulders				Hydric Soil Present?	Yes O No O
Restrictive L Type: <u>B</u> Depth (inc	ayer (if observ oulders				Hydric Soil Present?	Yes O No O
Restrictive L Type: <u>B</u> Depth (inc	ayer (if observ oulders				Hydric Soil Present?	Yes O No O
Restrictive L Type: <u>B</u> Depth (inc	ayer (if observ oulders				Hydric Soil Present?	Yes O No O
Restrictive L Type: <u>B</u> Depth (inc	ayer (if observ oulders				Hydric Soil Present?	Yes O No O
Restrictive L Type: <u>B</u> Depth (inc	ayer (if observ oulders				Hydric Soil Present?	Yes O No O
Restrictive L Type: <u>B</u> Depth (inc	ayer (if observ oulders				Hydric Soil Present?	Yes O No O
Restrictive L Type: <u>B</u> Depth (inc	ayer (if observ oulders				Hydric Soil Present?	Yes O No O
Restrictive L Type: <u>B</u> Depth (inc	ayer (if observ oulders				Hydric Soil Present?	Yes O No O
Restrictive L Type: <u>B</u> Depth (inc	ayer (if observ oulders				Hydric Soil Present?	Yes O No O



AN33 Wetland



AN33 Upland



AN33 Wetland



AN33 Wetland

						0		
Project/Site: Antrim Wind Project	City/County:	Antrim			Sampling Date: 26-Sep-11			
Applicant/Owner: Eolian Renewable E	Energy, LLC		St	tate: N	Н	Sampling Point:	AN35 we	tland
Investigator(s): AF JG		Section, To	wnship, Range	: S .	т.	R.		
Landform (hillslope, terrace, etc.):	Footslope	Local relief (co	oncave, convex,	none):	flat	Slope:	5.0 % /	2.9
Subregion (LRR or MLRA):	Lat.:		Lor	ng.:		Dat	tum:	
Soil Map Unit Name:				<u>.</u>	NWI classif	fication: PFO/PSS		
Are Vegetation , Soil Are Vegetation , Soil Summary of Findings - Af	, or Hydrology 🗌 naturally	tly disturbed? problematic? sampling p	•	al Circu , explai	mstances" n any answ	ers in Remarks.)		etc.
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes ● No ○ Yes ● No ○ Yes ● No ○		Sampled Area a Wetland?	Yes	s 🖲 No 🤇)		
	ocedures here or in a separate reportion ROW and extends downslope	-						

Wetland Hydrology Indicators:		Secondary Indicators (minimum of 2 required)		
Primary Indicators (minimum of one required; of	Surface Soil Cracks (B6)			
Surface Water (A1)	✓ Water-Stained Leaves (B9)	✓ Drainage Patterns (B10)		
✓ High Water Table (A2)	Aquatic Fauna (B13)	Moss Trim Lines (B16)		
Saturation (A3)	Marl Deposits (B15)	Dry Season Water Table (C2)		
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)		
Sediment Deposits (B2)	✓ Oxidized Rhizospheres along Living Roots (C3)	Saturation Visible on Aerial Imagery (C9)		
Drift deposits (B3)	Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)		
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)		
Iron Deposits (B5)	Thin Muck Surface (C7)	Shallow Aquitard (D3)		
Inundation Visible on Aerial Imagery (B7)	Other (Explain in Remarks)	Microtopographic Relief (D4)		
Sparsely Vegetated Concave Surface (B8)		✓ FAC-neutral Test (D5)		
Field Observations:				
Surface Water Present? Yes O No 🖲	Depth (inches):			
Water Table Present? Yes No	Depth (inches): 2			
Saturation Present? (includes capillary fringe) Yes • No	Depth (inches): Wetland Hydrology Present? Yes No			
	ring well, aerial photos, previous inspections), if ava	ailable:		
Remarks:				

	1113	Dominant Species?		Sampling Point: AN35 wetland
Tree Stratum (Plot size: 30')	Absolute % Cover	Rel.Strat.	Indicator Status	Dominance Test worksheet:
				Number of Dominant Species
1. Acer rubrum	15	27.3%	FAC	That are OBL, FACW, or FAC: <u>6</u> (A)
2. Betula alleghaniensis	15	27.3%	FAC	Total Number of Dominant
3. Fraxinus pennsylvanica	25	45.5%	FACW	Species Across All Strata: 6 (B)
4	0	0.0%		Demonst of deminent Creation
5	0	0.0%		Percent of dominant Species That Are OBL, FACW, or FAC:100.0% (A/B)
6	0	0.0%		
7	0	0.0%		Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: 15')	55	= Total Cove	r	Total % Cover of: Multiply by:
1. Fraxinus pennsylvanica	20	66.7%	FACW	$\begin{array}{c} \text{OBL species} 0 \text{x 1} = 0 \\ \hline 115 1 = 0 \\ \hline 200 1 \\ \hline \end{array}$
2. Ilex verticillata	10	33.3%	FACW+	FACW species $115 \times 2 = 230$
3.		0.0%		FAC species $30 \times 3 = 90$
4.	0	0.0%		FACU species x 4 =
5.	0	0.0%		UPL species x 5 =
6.	0	0.0%		Column Totals: 145 (A) 320 (B)
7.	0	0.0%		Prevalence Index = $B/A = 2.207$
	30	= Total Cove	r	
Herb Stratum (Plot size: 5')				Hydrophytic Vegetation Indicators:
1. Onoclea sensibilis	50	83.3%	FACW	✓ Dominance Test is > 50%
2.Osmunda cinnamomea	10		FACW	V Dominance rest is > 50% V Prevalence Index is $\leq 3.0^{1}$
3	0	0.0%		
4 <u>.</u>	0	0.0%		Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
5	0	0.0%		Problematic Hydrophytic Vegetation ¹ (Explain)
6.	0	0.0%		
7.	0	0.0%		¹ Indicators of hydric soil and wetland hydrology must
8.	0	0.0%		be present, unless disturbed or problematic.
9.	0	0.0%		Definitions of Vegetation Strata:
10.	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter
11.	0	0.0%		at breast height (DBH), regardless of height.
12.	0	0.0%		Conting/abruh Woody plants less than 2 in DDU and
Woody Vine Stratum (Plot size:)	60	= Total Cove	r	Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall.
1	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of
	0	0.0%		size, and woody plants less than 3.28 ft tall.
3	0	0.0%		
4	0	0.0%		Woody vine - All woody vines greater than 3.28 ft in height.
7		= Total Cove		noight.
			1	
				Hydrophytic
				Vegetation Present? Yes • No O
				present?
				1
Remarks: (Include photo numbers here or on a separate she	et.)			

Profile Desc Depth	ription: (Des	scribe to Matrix	the depth	needed to		t the indic dox Featu		nfirm the	absence of indicators.)	
(inches)	- Color (I		~ %	Color	(moist)	~ %		Loc ²	Texture	Remarks
0-8	10YR	3/2	100%						Loam	
8-14	2.5Y	4/2	95%	10YR	4/6	5%	С	М	Fine Sandy Loam	
14+										Bedrock
						_	_			
										-
1- 0.0										
		=Depletio	n. KIVI=Red	ucea Matrix,	US=Cover	ed or Coate	ed Sand Gra	ains ² Loca	ation: PL=Pore Lining. M=I	2
Hydric Soil					volu- D. /	f	(60) (100 5		Indicators for Prob	lematic Hydric Soils : 3
Histosol	(A1) ipedon (A2)				value Belo RA 149B)	w Surface	(S8) (LRR F	,		(LRR K, L, MLRA 149B)
Black His	•			🗌 Thir	n Dark Surf	ace (S9) (LRR R, MLF	A 149B)		ox (A16) (LRR K, L, R)
	n Sulfide (A4)			🗌 Loa	my Mucky	Mineral (F1) LRR K, L)			or Peat (S3) (LRR K, L, R)
	Layers (A5)			🗌 Loa	my Gleyed	Matrix (F2))		Dark Surface (S7	
	Below Dark S	Surface (A	11)	🗌 Dep	leted Matri	ix (F3)				Surface (S8) (LRR K, L)
_	rk Surface (A1			_		urface (F6)				e (S9) (LRR K, L) Masses (F12) (LRR K, L, R)
Sandy M	uck Mineral (S	51)		_		Surface (F	7)			ain Soils (F12) (LKK K, L, K)
Sandy G	eyed Matrix (S4)		Red	ox Depres	sions (F8)				6) (MLRA 144A, 145, 149B)
Sandy Re	edox (S5)								Red Parent Mater	
Stripped	Matrix (S6)								Very Shallow Dar	. ,
Dark Sur	face (S7) (LRI	r r, mlra	149B)						Other (Explain in	
³ Indicators of	of hydrophytic	vegetatio	n and wetla	nd hydrolog	must be	present, ur	nless disturb	ed or probl	lematic.	
Restrictive I	aver (if obs	erved):								
Type:										
Depth (in	ches):								Hydric Soil Present?	Yes $ullet$ No $igcap$
Remarks:										
Romants.										

Project/Site: Antrim Wind Project	City/County:	Antrim		Sampling Date: 2	Sampling Date: 26-Sep-11			
Applicant/Owner: Eolian Renewable E	nergy, LLC	-	Sta	ate: NH	Sampling Point:	an35 upland		
Investigator(s): AF JG	Section, To	wnship, Range:	S.	T. R.				
Landform (hillslope, terrace, etc.):	Footslope	Local relief (co	ncave, convex,	none): flat	Slope:	5.0%/2.9°		
Subregion (LRR or MLRA):	Lat.:		Lon	g.:	Da	Datum:		
Soil Map Unit Name:		-		NWI cla	ssification:			
Are climatic/hydrologic conditions of Are Vegetation , Soil Are Vegetation , Soil Soil Summary of Findings - At	, or Hydrology Significant , or Hydrology naturally p	tly disturbed?	(If needed,	l Circumstance explain any ar	swers in Remarks.)			
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes No Yes No Yes No		Sampled Area a Wetland?	Yes $^{\bigcirc}$ No) •			
Remarks: (Explain alternative pro	cedures here or in a separate repo	ort.)						

Wetland Hydrology Indicators:	Secondary Indicators (minimum of 2 required)			
Primary Indicators (minimum of one required;	Surface Soil Cracks (B6)			
Surface Water (A1)	Water-Stained Leaves (B9)	Drainage Patterns (B10)		
High Water Table (A2)	Aquatic Fauna (B13)	Moss Trim Lines (B16)		
Saturation (A3)	Marl Deposits (B15)	Dry Season Water Table (C2)		
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)		
Sediment Deposits (B2)	 Oxidized Rhizospheres along Living Roots (C3) 	Saturation Visible on Aerial Imagery (C9)		
Drift deposits (B3)	Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)		
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)		
Iron Deposits (B5)	Thin Muck Surface (C7)	Shallow Aquitard (D3)		
Inundation Visible on Aerial Imagery (B7)	Other (Explain in Remarks)	Microtopographic Relief (D4)		
Sparsely Vegetated Concave Surface (B8)		FAC-neutral Test (D5)		
Field Observations:				
Surface Water Present? Yes O No 🖲	Depth (inches):			
Water Table Present? Yes O No 🖲	Depth (inches):	rology Present? Yes \bigcirc No \bigcirc		
Saturation Present? (includes capillary fringe) Yes O No O	Wetland Hyd	Irology Present? Yes 🔾 No 🖲		
	pring well, aerial photos, previous inspections), if ava	ilable:		
Remarks:				

	1113	Dominant Species?		Sampling Point: an35 upland
Tree Stratum (Plot size: 30')	Absolute % Cover	Rel.Strat.	Indicator Status	
	33	46.5%	FACU-	Number of Dominant Species That are OBL, FACW, or FAC: 2 (A)
	20	 ✓ 40.3 % ✓ 28.2% 	FACU	
O Disus stastus	8	11.3%	FACU	Total Number of Dominant
1		14.1%	FACU-	Species Across All Strata: 7 (B)
4. Acer saccharum			FACU-	Percent of dominant Species
5	0			That Are OBL, FACW, or FAC:
6		0.0%		
7		0.0%		Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: 15')	71	= Total Cove	r	Total % Cover of: Multiply by:
1. Fagus grandifolia	15	60.0%	FACU	OBL species $0 \times 1 = 0$
2. Fraxinus pennsylvanica		40.0%	FACW	FACW species $10 \times 2 = 20$
0		0.0%		FAC species 15 x 3 = 45
3 4		0.0%		FACU speci es 111 x 4 = 444
т 5	0	0.0%		UPL species $10 \times 5 = 50$
56.	0	0.0%		Column Totals: 146 (A) 559 (B)
	0			
7		0.0%		Prevalence Index = B/A = <u>3.829</u>
Herb Stratum (Plot size: <u>5'</u>)	25	= Total Cove	r	Hydrophytic Vegetation Indicators:
1.Trientalis borealis	15	30.0%	FAC	Rapid Test for Hydrophytic Vegetation
2		✓ 50.0%	FACU	Dominance Test is > 50%
3. Dennstaedtla punctilobula	10	 ✓ 30.0 % ✓ 20.0% 	UPL	□ Prevalence Index is \leq 3.0 ¹
4.	0	0.0%		Morphological Adaptations ¹ (Provide supporting
F				data in Remarks or on a separate sheet)
5 <u>.</u> 6.		0.0%		Problematic Hydrophytic Vegetation ¹ (Explain)
	0	0.0%		¹ Indicators of hydric soil and wetland hydrology must
7	0	0.0%		be present, unless disturbed or problematic.
8	0	0.0%		Definitions of Vegetation Strata:
9	0	0.0%		Demittons of Vegetation Strata.
10	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter
11	0	0.0%		at breast height (DBH), regardless of height.
12	0	0.0%		Sapling/shrub - Woody plants less than 3 in. DBH and
Woody Vine Stratum (Plot size:)	50	= Total Cove	r	greater than 3.28 ft (1m) tall.
1	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of
2	0	0.0%		size, and woody plants less than 3.28 ft tall.
3	0	0.0%		Woody vine - All woody vines greater than 3.28 ft in
4	0	0.0%		height.
	0	= Total Cove	r	
	0	- 10101 0010	•	
				Hydrophytic
				Vegetation V O V O
				Present? Yes V NO
				<u> </u>
Remarks: (Include photo numbers here or on a separate she	et.)			

Depth	-	latrix	the depth	needed to document the indicator or confire Redox Features		absence of indicators.)	
(inches)	Color (mo	oist)	%	Color (moist) % Type 1 L	Loc2	Texture	Remarks
0-6	10YR	3/2	100%			Loam	
6-11	10YR	4/6	100%			Fine Sandy Loam	
11-16	10YR	4/4	100%			Fine Sandy Loam	
						P	
				·			
1						tion DI Dens Lining M A	
		rehietioi	ιι. κivi=Ked	uced Matrix, CS=Covered or Coated Sand Grains	~LOCal		2
<u> </u>	Indicators:			Dolwaluo Polow Surface (SO) (LDD D			ematic Hydric Soils : ³
Histosol	(AT) vipedon (A2)			Polyvalue Below Surface (S8) (LRR R, MLRA 149B)			(LRR K, L, MLRA 149B)
Black His	•			Thin Dark Surface (S9) (LRR R, MLRA 14	19B)		ox (A16) (LRR K, L, R)
	n Sulfide (A4)			Loamy Mucky Mineral (F1) LRR K, L)			or Peat (S3) (LRR K, L, R)
_ · ·	d Layers (A5)			Loamy Gleyed Matrix (F2)		Dark Surface (S7)	
	d Below Dark Sur	face (A	11)	Depleted Matrix (F3)			Surface (S8) (LRR K, L)
	ark Surface (A12)		,	Redox Dark Surface (F6)		Thin Dark Surface	
	luck Mineral (S1)			Depleted Dark Surface (F7)			Masses (F12) (LRR K, L, R) ain Soils (F19) (MLRA 149B)
	leyed Matrix (S4)			Redox Depressions (F8)			5) (MLRA 144A, 145, 149B)
	edox (S5)					Red Parent Materi	
Stripped	Matrix (S6)					Very Shallow Dark	
Dark Sur	rface (S7) (LRR F	r, mlra	149B)			Other (Explain in	
³ Indicators of	of hydrophytic ve	egetatio	n and wetla	nd hydrology must be present, unless disturbed o	or proble		
	Layer (if observ						
Type:		veu).					
Depth (in	ches).					Hydric Soil Present?	Yes 🔿 No 🖲
	cnes)					-	
Remarks:							



AN35 Wetland

Project/Site: Antrim Wind Project	City/County:	Antrim		Sampling Date: 2	7-Sep-11	
Applicant/Owner: Eolian Renewable E	nergy, LLC		Sta	ate: NH	Sampling Point:	an36 wetland
Investigator(s): AF JG		Section, T	ownship, Range:	S. 1	г. R .	
Landform (hillslope, terrace, etc.):	Local relief (c	oncave, convex, i	none): flat	Slope:	0.0 % / 0.0°	
Subregion (LRR or MLRA):	Lat.:		Lon	g.:	Dat	tum:
Soil Map Unit Name:				NWI clas	sification: PFO	
Are climatic/hydrologic conditions of Are Vegetation , Soil Are Vegetation , Soil Summary of Findings - At	, or Hydrology Significant	tly disturbed? problematic?	(If needed,	. ,	s" present? Yes	
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes No ○ Yes No ○ Yes No ○ Yes No ○		e Sampled Area n a Wetland?	Yes 🖲 No	0	
Remarks: (Explain alternative pro Saddle PFO between ridgline near	• •	-				

Wetland Hydrology Indicators:		Secondary Indicators (minimum of 2 required)					
Primary Indicators (minimum of one required; c	Surface Soil Cracks (B6)						
Surface Water (A1)	Drainage Patterns (B10)						
✓ High Water Table (A2)	Water-Stained Leaves (B9) Aquatic Fauna (B13)	Moss Trim Lines (B16)					
Saturation (A3)	Marl Deposits (B15)	Dry Season Water Table (C2)					
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)					
Sediment Deposits (B2)	 And the second se	Saturation Visible on Aerial Imagery (C9)					
Drift deposits (B3)	Oxidized Rhizospheres along Living Roots (C3) Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)					
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)					
☐ Iron Deposits (B5)		Shallow Aquitard (D3)					
Inundation Visible on Aerial Imagery (B7)	Thin Muck Surface (C7)	Microtopographic Relief (D4)					
Sparsely Vegetated Concave Surface (B8)	Other (Explain in Remarks)	✓ FAC-neutral Test (D5)					
Field Observations:							
Surface Water Present? Yes O No O	Depth (inches):						
Water Table Present? Yes No	Depth (inches): <u>1</u>						
Saturation Present? (includes capillary fringe) Yes • No	Depth (inches): 0 Wetland Hyd	drology Present? Yes $ullet$ No $igodoldsymbol{ imes}$					
Describe Recorded Data (stream gauge, monitor	ring well, aerial photos, previous inspections), if ava	ilable:					
Remarks:							

	113	Dominant Species?		Sampling Point: an36 wetland
Tree Stratum (Plot size: <u>30'</u>)	Absolute % Cover	Rel.Strat.	Indicator Status	Dominance Test worksheet:
1. Acer rubrum	20	✓ 100.0%	FAC	Number of Dominant Species That are OBL, FACW, or FAC: 5 (A)
2	0	0.0%		
3.	0	0.0%		Total Number of Dominant
4	0	0.0%		Species Across All Strata: (B)
5.		0.0%		Percent of dominant Species
6		0.0%		That Are OBL, FACW, or FAC:(A/B)
7	0	0.0%		Prevalence Index worksheet:
		= Total Cove	r	Total % Cover of: Multiply by:
Sapling/Shrub Stratum (Plot size: 15')				OBL speci es 3 x 1 = 3
1. Acer rubrum	20	34.5%	FAC	FACW species 23 x 2 = 46
2. Betula alleghaniensis	20	⊻ 34.5%	FAC	FAC species 85 x 3 = 255
3. Fraxinus pennsylvanica	8	13.8%	FACW	FACU species $0 \times 4 = 0$
4. Viburnum lantanoides	10	17.2%	FAC	
5	0	0.0%		UPL species $\underbrace{0}_{111}$ x 5 = $\underbrace{0}_{201}$
6	0	0.0%		Column Totals: <u>111</u> (A) <u>304</u> (B)
7	0	0.0%		Prevalence Index = B/A = 2.739
Herb Stratum (Plot size: 5')	58	= Total Cove	r	Hydrophytic Vegetation Indicators:
1.Betula alleghaniensis	15	✔ 45.5%	FAC	Rapid Test for Hydrophytic Vegetation
	3	9.1%	OBL	✓ Dominance Test is > 50%
2.Osmunda regalis 3.Osmunda cinnamomea	15	45.5%	FACW	V Prevalence Index is \leq 3.0 ¹
4.	0	0.0%		Morphological Adaptations ¹ (Provide supporting
5.	0	0.0%		data in Remarks or on a separate sheet)
6.	0	0.0%		Problematic Hydrophytic Vegetation ¹ (Explain)
7.	0	0.0%		¹ Indicators of hydric soil and wetland hydrology must
8.	0	0.0%		be present, unless disturbed or problematic.
9.				Definitions of Vegetation Strata:
3 <u>.</u> 10.	0	0.0%		
11.	0			Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
12.	0	0.0%		at bleast height (DBH), regardless of height.
12	 33	0.0% = Total Cove		Sapling/shrub - Woody plants less than 3 in. DBH and
Woody Vine Stratum (Plot size:)				greater than 3.28 ft (1m) tall
1	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of
2	0	0.0%		size, and woody plants less than 3.28 ft tall.
3	0	0.0%		Woody vine - All woody vines greater than 3.28 ft in
4	0	0.0%		height.
	0	= Total Cove	r	
				Hydrophytic
				Vegetation Present? Yes • No ·
				Present? Yes VO V
Demontra (la chuda ata da	-+ >			1
Remarks: (Include photo numbers here or on a separate sheet)	et.)			

0-22 10YR 22+ 2.5Y		Color (moist) % Type 1 Loc	Peat Gravelly Sand Location: PL=Pore Lining. M=Matrix
22+ 2.5Y 22+ 2.5Y 1 Type: C=Concentration. Hydric Soil Indicators ✓ Histosol (A1) Histic Epipedon (A2) Black Histic (A3) Hydrogen Sulfide (A Stratified Layers (A5)	5/1 100%		Gravelly Sand
I Type: C=Concentration. Hydric Soil Indicators ✓ Histosol (A1) ☐ Histic Epipedon (A2) ☐ Black Histic (A3) ☐ Hydrogen Sulfide (A) ☐ Stratified Layers (A5)	D=Depletion. RM=R		Location: PL=Pore Lining. M=Matrix
Hydric Soil Indicators ✓ Histosol (A1) □ Histic Epipedon (A2) □ Black Histic (A3) □ Hydrogen Sulfide (A □ Stratified Layers (A5)			
Hydric Soil Indicators ✓ Histosol (A1) □ Histic Epipedon (A2) □ Black Histic (A3) □ Hydrogen Sulfide (A □ Stratified Layers (A5)			
Hydric Soil Indicators ✓ Histosol (A1) □ Histic Epipedon (A2) □ Black Histic (A3) □ Hydrogen Sulfide (A □ Stratified Layers (A5)			
Hydric Soil Indicators ✓ Histosol (A1) □ Histic Epipedon (A2) □ Black Histic (A3) □ Hydrogen Sulfide (A □ Stratified Layers (A5)			
Hydric Soil Indicators ✓ Histosol (A1) □ Histic Epipedon (A2) □ Black Histic (A3) □ Hydrogen Sulfide (A □ Stratified Layers (A5)			
Hydric Soil Indicators ✓ Histosol (A1) □ Histic Epipedon (A2) □ Black Histic (A3) □ Hydrogen Sulfide (A □ Stratified Layers (A5)			
Hydric Soil Indicators ✓ Histosol (A1) □ Histic Epipedon (A2) □ Black Histic (A3) □ Hydrogen Sulfide (A □ Stratified Layers (A5)			
Hydric Soil Indicators ✓ Histosol (A1) → Histic Epipedon (A2) Black Histic (A3) → Hydrogen Sulfide (A → Stratified Layers (A5			
Hydric Soil Indicators ✓ Histosol (A1) → Histic Epipedon (A2) Black Histic (A3) → Hydrogen Sulfide (A Stratified Layers (A5)			
Hydric Soil Indicators ✓ Histosol (A1) → Histic Epipedon (A2) Black Histic (A3) → Hydrogen Sulfide (A Stratified Layers (A5)			
Hydric Soil Indicators ✓ Histosol (A1) → Histic Epipedon (A2) Black Histic (A3) → Hydrogen Sulfide (A Stratified Layers (A5)			
Hydric Soil Indicators ✓ Histosol (A1) → Histic Epipedon (A2) Black Histic (A3) → Hydrogen Sulfide (A Stratified Layers (A5)			
Hydric Soil Indicators ✓ Histosol (A1) → Histic Epipedon (A2) Black Histic (A3) → Hydrogen Sulfide (A → Stratified Layers (A5			
Histosol (A1) Histic Epipedon (A2) Black Histic (A3) Hydrogen Sulfide (A Stratified Layers (A5)	:	Dolwaluo Polow Surface (SS) (LDD D	
Histic Epipedon (A2) Black Histic (A3) Hydrogen Sulfide (A Stratified Layers (A5		Dolyvaluo Polow Surfaco (S9) (LPD D	Indicators for Problematic Hydric Soils : 3
Black Histic (A3) Hydrogen Sulfide (A Stratified Layers (A5)			2 cm Muck (A10) (LRR K, L, MLRA 149B)
Hydrogen Sulfide (A Stratified Layers (A5		MLRA 149B)	Casat Prairie Daday (A1() (LDD K L D)
Stratified Layers (A5		Thin Dark Surface (S9) (LRR R, MLRA 1498)	\square 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
	4)	Loamy Mucky Mineral (F1) LRR K, L)	Dark Surface (S7) (LRR K, L)
Depleted Below Dar		Loamy Gleyed Matrix (F2)	Polyvalue Below Surface (S8) (LRR K, L)
		Depleted Matrix (F3)	Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12)	Redox Dark Surface (F6)	Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Muck Mineral	(S1)	Depleted Dark Surface (F7)	Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed Matrix	(S4)	Redox Depressions (F8)	Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (S5)			Red Parent Material (TF2)
Stripped Matrix (S6)			Very Shallow Dark Surface (TF12)
Dark Surface (S7) (L	RR R, MLRA 149B)		Other (Explain in Remarks)
³ Indicators of hydrophy	ic vegetation and we	tland hydrology must be present, unless disturbed or p	roblematic.
Restrictive Layer (if ol			
Type:			
Depth (inches):			Hydric Soil Present? Yes \bullet No \bigcirc
• • •			
Remarks:			

Project/Site: Antrim Wind Project		City/County: Antrin	n		Sampling Date: 2	7-Sep-11		
Applicant/Owner: Eolian Renewable E	nergy, LLC		State:	NH	Sampling Point:	an36 upland		
Investigator(s): AF JG		Section, Townshi	ip, Range: S.	т.	R.			
Landform (hillslope, terrace, etc.):	Saddle	Local relief (concave	, convex, non	e): convex	Slope:	15.0 % / 8.5°		
Subregion (LRR or MLRA):	Lat.:		Long.:		Dat	um:		
Soil Map Unit Name:	NWI classification:							
Are climatic/hydrologic conditions on the site typical for this time of year? Yes NO (If no, explain in Remarks.) Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes NO Are Vegetation , soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.) Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.								
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes No Yes No Yes No	Is the Samp within a We		Yes 🔿 No 🖲)			
Remarks: (Explain alternative pro	cedures here or in a separate repo	ort.)						

Wetland Hydrology Indicators:		Secondary Indicators (minimum of 2 required)					
Primary Indicators (minimum of one required;	Surface Soil Cracks (B6)						
Surface Water (A1)	Water-Stained Leaves (B9)	Drainage Patterns (B10)					
High Water Table (A2)	Aquatic Fauna (B13)	Moss Trim Lines (B16)					
Saturation (A3)	Marl Deposits (B15)	Dry Season Water Table (C2)					
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)					
Sediment Deposits (B2)	Oxidized Rhizospheres along Living Roots (C3)	Saturation Visible on Aerial Imagery (C9)					
Drift deposits (B3)	Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)					
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)					
Iron Deposits (B5)	Thin Muck Surface (C7)	Shallow Aquitard (D3)					
Inundation Visible on Aerial Imagery (B7)	Other (Explain in Remarks)	Microtopographic Relief (D4)					
Sparsely Vegetated Concave Surface (B8)		FAC-neutral Test (D5)					
Field Observations:							
Surface Water Present? Yes O No 🖲	Depth (inches):						
Water Table Present? Yes O No 🖲	Depth (inches):	/etland Hydrology Present? Yes 🔿 No 🖲					
Saturation Present? Yes O No •	Wetland Hyd	/etland Hydrology Present? Yes 🔾 No 鱼					
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:							
Remarks:							

VEGETATION OSC Scientific humes of pla	11.5	Dominant Species?		Sampling Point: an36 upland
Tree Stratum (Plot size: 30')	Absolute % Cover	Rel.Strat.	Indicator Status	Dominance Test worksheet:
				Number of Dominant Species
1. Acer saccharum	15	33.3%	FACU-	That are OBL, FACW, or FAC: 2 (A)
2. Fagus grandifolia	15	33.3%	FACU	Total Number of Dominant
3. Betula alleghaniensis	15	33.3%	FAC	Species Across All Strata: 8 (B)
4	0	0.0%		Demonst of deminent Creation
5	0	0.0%		Percent of dominant Species That Are OBL, FACW, or FAC:25.0%(A/B)
6	0	0.0%		
7	0	0.0%		Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: 15')	45	= Total Cove	r	Total % Cover of: Multiply by:
1. Fagus grandifolia	8	30.8%	FACU	OBL species $0 \times 1 = 0$
2. Picea rubens	18	69.2%	FACU	FACW species $0 \times 2 = 0$
3.	0	0.0%		FAC species $20 \times 3 = 60$
4	0	0.0%		FACU species $\frac{66}{x 4} =264$
	0	0.0%		UPL species x 5 =
5	0	0.0%		Column Totals: 86 (A) 324 (B)
6	0	0.0%		
7	-			Prevalence Index = B/A = <u>3.767</u>
Herb Stratum (Plot size: 5')	26	= Total Cove	ſ	Hydrophytic Vegetation Indicators:
1.Aralia nudicaulis	5	33.3%	FACU	Rapid Test for Hydrophytic Vegetation
2.Fagus grandifolia	5	33.3%	FACU	Dominance Test is > 50%
3. Trientalis borealis	5	33.3%	FAC	□ Prevalence Index is \leq 3.0 ¹
4.	0	0.0%		Morphological Adaptations ¹ (Provide supporting
5.	0	0.0%		data in Remarks or on a separate sheet)
6.	0	0.0%		Problematic Hydrophytic Vegetation ¹ (Explain)
7.				¹ Indicators of hydric soil and wetland hydrology must
8.	0			be present, unless disturbed or problematic.
9.	0			Definitions of Vegetation Strata:
9. 10.	0	0.0%		
11.	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
12.	0	0.0%		at breast height (DBH), regardless of height.
12	0	0.0%		Sapling/shrub - Woody plants less than 3 in. DBH and
Woody Vine Stratum (Plot size:)	15	= Total Cove	r	greater than 3.28 ft (1m) tall
1	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of
2	0	0.0%		size, and woody plants less than 3.28 ft tall.
3	0	0.0%		Woody vine - All woody vines greater than 3.28 ft in
4	0	0.0%		height.
	0	= Total Cove	r	
				Hydrophytic
				Vegetation Present? Yes O No •
				i result.
				1
Remarks: (Include photo numbers here or on a separate she	et.)			

Profile Desc	ription: (Desc	ribe to	the depth	needed to document the indicator or confirm the	absence of indicators.)	
Depth		latrix		Redox Features		
(inches)	Color (mo		%	Color (moist) % Type 1 Loc ²	Texture	Remarks
0-6	10YR	3/2	100%		Loam	
6-9	10YR	4/4	100%		Sandy Loam	
9-13	10YR	4/6	100%		Sandy Loam	
					·	
		Donlatio		uced Matrix, CS=Covered or Coated Sand Grains ² Loca	ation: PL-Pore Lining M-M	atriv
		Pehierini				
Hydric Soil				Polyvalue Below Surface (S8) (LRR R,		ematic Hydric Soils : ³
	ipedon (A2)			MLRA 149B)		(LRR K, L, MLRA 149B)
Black His				Thin Dark Surface (S9) (LRR R, MLRA 149B)		x (A16) (LRR K, L, R)
	n Sulfide (A4)			Loamy Mucky Mineral (F1) LRR K, L)		or Peat (S3) (LRR K, L, R)
	Layers (A5)			Loamy Gleyed Matrix (F2)	Dark Surface (S7)	
	Below Dark Sur	rface (A'	11)	Depleted Matrix (F3)	Thin Dark Surface	urface (S8) (LRR K, L)
Thick Da	rk Surface (A12))		Redox Dark Surface (F6)		(39) (LRR K, L) lasses (F12) (LRR K, L, R)
Sandy M	uck Mineral (S1))		Depleted Dark Surface (F7)		in Soils (F19) (MLRA 149B)
Sandy GI	eyed Matrix (S4)		Redox Depressions (F8)) (MLRA 144A, 145, 149B)
	edox (S5)				Red Parent Materia	
	Matrix (S6)				Very Shallow Dark	
Dark Sur	face (S7) (LRR F	r, mlra	149B)		Other (Explain in R	Remarks)
³ Indicators of	of hydrophytic ve	egetatio	n and wetla	and hydrology must be present, unless disturbed or probl	ematic.	
	_ayer (if obser					
Type:		,				
Depth (inc	ches):				Hydric Soil Present?	Yes 🔿 No 🖲
Remarks:	,					
Remarks.						



AN36 Wetand

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project		City/County:	Antrim				Sampling Date: 27-Sep-11		
Applicant/Owner: Eolian Renewable Energy, LLC				State:	NH		Sampling Point:	an37 wet	tland
Investigator(s): AF JG		Section, Te	ownship, Rar	nge: S.		Т.	R.		
Landform (hillslope, terrace, etc.): Terrace		Local relief (c	oncave, conv	ex, non	e): fla	at –	Slope:	0.0%/	0.0 °
Subregion (LRR or MLRA):	Lat.:			Long.:			Dat	:um:	
Soil Map Unit Name:	_	-			NW	I classif	ication: PFO		
	aturally p	tly disturbed? problematic? sampling p	(If need	rmal Cir led, exp	cumst	ances" µ answo	Remarks.) present? Yes (ers in Remarks.) , important fe		etc.
Hydrophytic Vegetation Present?YesNoHydric Soil Present?YesNoWetland Hydrology Present?YesNo			e Sampled Aro n a Wetland?		Yes 🖲) No C)		
Remarks: (Explain alternative procedures here or in a separ	rate repo	ort.)							

Hydrology

Wetland Hydrology Indicators:		Secondary Indicators (minimum of 2 required)
Primary Indicators (minimum of one required;	Surface Soil Cracks (B6)	
Surface Water (A1)	✓ Drainage Patterns (B10)	
✓ High Water Table (A2)	✓ Water-Stained Leaves (B9) Aquatic Fauna (B13)	Moss Trim Lines (B16)
Saturation (A3)	Marl Deposits (B15)	Dry Season Water Table (C2)
Water Marks (B1)		Crayfish Burrows (C8)
Sediment Deposits (B2)	Hydrogen Sulfide Odor (C1)	
	Oxidized Rhizospheres along Living Roots (C3)	Saturation Visible on Aerial Imagery (C9)
Drift deposits (B3)	Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)
Iron Deposits (B5)	Thin Muck Surface (C7)	Shallow Aquitard (D3)
Inundation Visible on Aerial Imagery (B7)	Other (Explain in Remarks)	Microtopographic Relief (D4)
Sparsely Vegetated Concave Surface (B8)		✓ FAC-neutral Test (D5)
Field Observations:		
Surface Water Present? Yes No	Depth (inches): 1	
Water Table Present? Yes No	Depth (inches): 0	droloav Present? Yes $ullet$ No \bigcirc
Saturation Present? (includes capillary fringe) Yes • No	Wetland Hy Depth (inches):0	drology Present? Yes $ullet$ No $igloodow$
Describe Recorded Data (stream gauge, monitor	pring well, aerial photos, previous inspections), if available	ailable:
Remarks:		

	110	Dominant Species?		Sampling Point: an37 wetland
Tree Stratum (Plot size: <u>30'</u>)	Absolute % Cover	Rel.Strat.	Indicator Status	Dominance Test worksheet:
1. Acer rubrum	20	✓ 100.0%	FAC	Number of Dominant Species That are OBL, FACW, or FAC: 5 (A)
2	0	0.0%		
3.	0	0.0%		Total Number of Dominant Species Across All Strata: 5 (B)
4	0	0.0%		Species Across All Strata: 5 (B)
5		0.0%		Percent of dominant Species
6		0.0%		That Are OBL, FACW, or FAC:(A/B)
7	0	0.0%		Prevalence Index worksheet:
1		= Total Cover		Total % Cover of: Multiply by:
Sapling/Shrub Stratum (Plot size: 15')				OBL species 3 x 1 = 3
1. Acer rubrum	10	28.6%	FAC	
2. Betula alleghaniensis	20	57.1%	FAC	
3. Vaccinium corymbosum	5	14.3%	FACW-	
4.	0	0.0%		FACU species $0 \times 4 = 0$
5	0	0.0%		UPL species $0 \times 5 = 0$
6	0	0.0%		Column Totals: <u>63</u> (A) <u>173</u> (B)
7.	0	0.0%		Prevalence Index = $B/A = 2.746$
	35	= Total Cover	-	
Herb Stratum (Plot size: 5')				Hydrophytic Vegetation Indicators:
1.Osmunda cinnamomea	5	62.5%	FACW	Rapid Test for Hydrophytic Vegetation
2.Carex lurida	3	37.5%	OBL	Dominance Test is > 50%
3.	0	0.0%		✓ Prevalence Index is $\leq 3.0^{1}$
4.	0	0.0%		Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
5.	0	0.0%		Problematic Hydrophytic Vegetation ¹ (Explain)
6.	0	0.0%		
7.	0	0.0%		¹ Indicators of hydric soil and wetland hydrology must
8.	0	0.0%		be present, unless disturbed or problematic.
9.	0	0.0%		Definitions of Vegetation Strata:
10.	0	0.0%		
11.	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
12.	0	0.0%		
Woody Vine Stratum (Plot size:)		= Total Cover		Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall
<u> </u>	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of
0	0	0.0%		size, and woody plants less than 3.28 ft tall.
3	0	0.0%		
3	0	0.0%		Woody vine - All woody vines greater than 3.28 ft in height.
4		-		
	0	= Total Cover	-	
				I hadaa ahadia
				Hydrophytic Vegetation
				Present? Yes No
Remarks: (Include photo numbers here or on a separate she	et.)			

(inches)	-	latrix		Redox Features		
	Color (mo		%	Color (moist) % Type 1 Loc ²		emarks
0-10	10YR	3/2	100%		Muck	
10-15	2.5Y	4/2	100%		Fine Sandy Loam	
			-			
¹ Type: C=Cor	ncentration. D=D	Depletior	. RM=Red	uced Matrix, CS=Covered or Coated Sand Grains ² Loca	ation: PL=Pore Lining. M=Matrix	
Hydric Soil	Indicators:				Indicators for Problematic Hyd	dric Soils : ³
Histosol ((A1)			Polyvalue Below Surface (S8) (LRR R,	2 cm Muck (A10) (LRR K, L, N	
Histic Epi	ipedon (A2)			MLRA 149B)	Coast Prairie Redox (A16) (LR	
Black His				Thin Dark Surface (S9) (LRR R, MLRA 149B)	5 cm Mucky Peat or Peat (S3)	
	n Sulfide (A4)			Loamy Mucky Mineral (F1) LRR K, L)	Dark Surface (S7) (LRR K, L)	
	Layers (A5)			Loamy Gleyed Matrix (F2)	Polyvalue Below Surface (S8)	(LRR K, L)
_	Below Dark Sur		1)	Depleted Matrix (F3)	Thin Dark Surface (S9) (LRR	
_	rk Surface (A12)			Redox Dark Surface (F6)	Iron-Manganese Masses (F12)	
	uck Mineral (S1)			Depleted Dark Surface (F7) Redox Depressions (F8)	Piedmont Floodplain Soils (F1	9) (MLRA 149B)
_	eyed Matrix (S4))			Mesic Spodic (TA6) (MLRA 14	4A, 145, 149B)
Sandy Re					Red Parent Material (TF2)	
	Matrix (S6)				Very Shallow Dark Surface (T	F12)
Dark Surf	face (S7) (LRR R	r, Mlra	149B)		Other (Explain in Remarks)	
		enetation	and wetla	nd hydrology must be present, unless disturbed or probl	ematic.	
	of hydrophytic ve	gotation				
³ Indicators o						
³ Indicators o Restrictive L	f hydrophytic ve .ayer (if observ					
³ Indicators o Restrictive L Type:	ayer (if obser				Hydric Soil Present? Yes •) No ()
³ Indicators o Restrictive L Type: Depth (ind	ayer (if obser				Hydric Soil Present? Yes 🦲) _{No} ()
³ Indicators o Restrictive L Type:	ayer (if obser				Hydric Soil Present? Yes •) No ()
³ Indicators o Restrictive L Type: Depth (ind	ayer (if obser				Hydric Soil Present? Yes 🖲) No ()
³ Indicators o Restrictive L Type: Depth (ind	ayer (if obser				Hydric Soil Present? Υes Θ) No ()
³ Indicators o Restrictive L Type: Depth (ind	ayer (if obser				Hydric Soil Present? Yes ④) No ()
³ Indicators o Restrictive L Type: Depth (inc	ayer (if obser				Hydric Soil Present? Yes ●) No ()
³ Indicators o Restrictive L Type: Depth (inc	ayer (if obser				Hydric Soil Present? Yes ●) No ()
³ Indicators o Restrictive L Type: Depth (ind	ayer (if obser				Hydric Soil Present? Yes ●) No ()
³ Indicators o Restrictive L Type: Depth (ind	ayer (if obser				Hydric Soil Present? Yes Θ) No ()
³ Indicators o Restrictive L Type: Depth (ind	ayer (if obser				Hydric Soil Present? Yes Θ	> No ○
³ Indicators o Restrictive L Type: Depth (ind	ayer (if obser				Hydric Soil Present? Yes ●	> No ○
³ Indicators o Restrictive L Type: Depth (inc	ayer (if obser				Hydric Soil Present? Yes ●	> No ○
³ Indicators o Restrictive L Type: Depth (ind	ayer (if obser				Hydric Soil Present? Yes •) No ()
³ Indicators o Restrictive L Type: Depth (ind	ayer (if obser				Hydric Soil Present? Yes •) No ()
³ Indicators o Restrictive L Type: Depth (ind	ayer (if obser				Hydric Soil Present? Yes •) No ()
³ Indicators o Restrictive L Type: Depth (inc	ayer (if obser				Hydric Soil Present? Yes	> No ○
³ Indicators o Restrictive L Type: Depth (inc	ayer (if obser				Hydric Soil Present? Yes	> No ○
³ Indicators o Restrictive L Type: Depth (inc	ayer (if obser				Hydric Soil Present? Yes •) No ○
³ Indicators o Restrictive L Type: Depth (inc	ayer (if obser				Hydric Soil Present? Yes •	D No ○
³ Indicators o Restrictive L Type: Depth (inc	ayer (if obser				Hydric Soil Present? Yes •) No ()

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project		City/County: Antrim		Sampling Date: 27-Sep-11				
Applicant/Owner: Eolian Renewable E	inergy, LLC	State	:	Sampling Point:	an37 upland			
Investigator(s): AF JG		Section, Township, Range: S.	т.	R.				
Landform (hillslope, terrace, etc.):	Hillside	Local relief (concave, convex, nor	ne): undulating	g Slope:	25.0 % / 14.0 °			
Subregion (LRR or MLRA):	Lat.:	Long.:	-	Datum:				
Soil Map Unit Name:			NWI classif	ication:				
Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.) Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No Are Vegetation , soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.) Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.								
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes ○ No ● Yes ○ No ● Yes ○ No ●	Is the Sampled Area within a Wetland?	Yes 🔿 No 🖲)				
Remarks: (Explain alternative pro	cedures here or in a separate repo	rt.)						

Hydrology

_			
Surface Soil Cracks (B6)			
_			

	11.5	Dominant Species?		Sampling Point: an37 upland
Tree Stratum (Plot size: <u>30'</u>)	Absolute % Cover	Rel.Strat.	Indicator Status	Dominance Test worksheet:
1. Quercus rubra	50	60.2%	FACU-	Number of Dominant Species That are OBL, FACW, or FAC: 2 (A)
2. Tsuga canadensis	33	✓ 39.8%	FACU	
3.		0.0%		Total Number of Dominant Species Across All Strata: 7 (B)
4		0.0%		Species Across All Strata: 7 (B)
5.	0	0.0%		Percent of dominant Species
6.		0.0%		That Are OBL, FACW, or FAC:(A/B)
7		0.0%		Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: 15')		= Total Cove	r	Total % Cover of: Multiply by:
	10	25.0%	FAC	OBL species $0 \times 1 = 0$
0	45	 ✓ 25.0 % ✓ 37.5 % 	FACU	FACW species $0 \times 2 = 0$
o		 ✓ 37.5% ✓ 37.5% 	FAC	FAC species 25 x 3 = 75
4		0.0%	FAC	FACU species x 4 =452
E		0.0%		UPL species x 5 =
6				Column Totals: 138 (A) 527 (B)
7		0.0%		
7	 40	0.0%	 r	Prevalence Index = B/A = <u>3.819</u>
Herb Stratum (Plot size: 5')			-	Hydrophytic Vegetation Indicators:
1.Aralia nudicaulis	5	33.3%	FACU	Rapid Test for Hydrophytic Vegetation
2. Quercus rubra	10	66.7%	FACU-	Dominance Test is > 50%
3.	0	0.0%		$\square Prevalence Index is \leq 3.0^{1}$
4.	0	0.0%		Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
5.	0	0.0%		Problematic Hydrophytic Vegetation ¹ (Explain)
6.	0	0.0%		
7.	0	0.0%		¹ Indicators of hydric soil and wetland hydrology must
8.	0	0.0%		be present, unless disturbed or problematic.
9.	0	0.0%		Definitions of Vegetation Strata:
10.	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter
11.	0	0.0%		at breast height (DBH), regardless of height.
12.	0	0.0%		
Woody Vine Stratum (Plot size:)	15	= Total Cove	r	Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall
,,	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of
2	0	0.0%		size, and woody plants less than 3.28 ft tall.
3	0	0.0%		Weady vine All weady vince greater than 2.28 ft in
4	0	0.0%		Woody vine - All woody vines greater than 3.28 ft in height.
	0	= Total Cove	r	5
				Hydrophytic Vegetation
				Present? Yes O No O
Remarks: (Include photo numbers here or on a separate she	et.)			

Profile Desc	ription: (Desc	ribe to	the depth	needed to document the indicator or confirm the	e absence of indicators.)	
Depth (inches)		latrix		Redox Features		
	Color (m		%	Color (moist) % Type 1 Loc ²		Remarks
0-8	10YR	3/2	100%		Loam	
8-16	10YR	4/4	100%		Sandy Loam	
16+						Bedrock
					_	
	·			······································		
		Depletio	n. RM=Red	uced Matrix, CS=Covered or Coated Sand Grains ² Lo	cation: PL=Pore Lining. M=I	Matrix
Hydric Soil					Indicators for Prob	lematic Hydric Soils : ³
Histosol				Polyvalue Below Surface (S8) (LRR R, MLRA 149B)		(LRR K, L, MLRA 149B)
	ipedon (A2)			Thin Dark Surface (S9) (LRR R, MLRA 149B)		ox (A16) (LRR K, L, R)
Black His				_		or Peat (S3) (LRR K, L, R)
	n Sulfide (A4)			Loamy Mucky Mineral (F1) LRR K, L)	Dark Surface (S7	
	Layers (A5)			Depleted Matrix (F3)	Polyvalue Below	Surface (S8) (LRR K, L)
	Below Dark Su		11)	Redox Dark Surface (F6)	Thin Dark Surface	e (S9) (LRR K, L)
	rk Surface (A12)			Depleted Dark Surface (F7)	Iron-Manganese	Masses (F12) (LRR K, L, R)
	uck Mineral (S1)			Redox Depressions (F8)	Piedmont Floodp	lain Soils (F19) (MLRA 149B)
	eyed Matrix (S4)			Mesic Spodic (TA	6) (MLRA 144A, 145, 149B)
	edox (S5)				Red Parent Mater	rial (TF2)
	Matrix (S6)		1 (00)		Very Shallow Dar	k Surface (TF12)
	face (S7) (LRR I				Other (Explain in	Remarks)
³ Indicators of	of hydrophytic ve	egetatio	n and wetla	and hydrology must be present, unless disturbed or prol	plematic.	
Restrictive I	ayer (if obser	ved):				
Type: B	edrock					
Depth (ind	ches): 16				Hydric Soil Present?	Yes 🔾 No 🖲
Remarks:						
Remarks.						



AN37 Wetand

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Antrim Wind Project	City/County: Antrim		Sampling Date: 27-Sep-11		
Applicant/Owner: Eolian Renewable E	Energy, LLC	S	tate: NH	Sampling Point:	an38 wetland
Investigator(s): AF JG		Section, Township, Range	e: S. T.	R.	
Landform (hillslope, terrace, etc.):	Terrace	Local relief (concave, convex	, none): flat	Slope:	0.0 % / 0.0
Subregion (LRR or MLRA):	Lat.:	Lo	ing.:	Dat	um:
Soil Map Unit Name:			NWI classi	ification: PFO/PSS	
Are Vegetation , Soil Are Vegetation , Soil Summary of Findings - At	, or Hydrology naturally	problematic? (If needed	al Circumstances" d, explain any answ DNS, transects	vers in Remarks.)	
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes ● No ○ Yes ● No ○ Yes ● No ○	Is the Sampled Area within a Wetland?	Yes 🖲 No 🤇	\supset	
	ocedures here or in a separate repo ledge pocket on West side of ridge	•			

Hydrology

Wetland Hydrology Indicators:		Secondary Indicators (minimum of 2 required)		
Primary Indicators (minimum of one required;	Surface Soil Cracks (B6)			
✓ Surface Water (A1)	Drainage Patterns (B10)			
✓ High Water Table (A2)	Water-Stained Leaves (B9) Aquatic Fauna (B13)	Moss Trim Lines (B16)		
Saturation (A3)	Marl Deposits (B15)	Dry Season Water Table (C2)		
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)		
Sediment Deposits (B2)		Saturation Visible on Aerial Imagery (C9)		
Drift deposits (B3)	Oxidized Rhizospheres along Living Roots (C3)	Stunted or Stressed Plants (D1)		
Algal Mat or Crust (B4)	Presence of Reduced Iron (C4)			
Iron Deposits (B5)	Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)		
	Thin Muck Surface (C7)	Shallow Aquitard (D3)		
Inundation Visible on Aerial Imagery (B7)	Uther (Explain in Remarks)	Microtopographic Relief (D4)		
Sparsely Vegetated Concave Surface (B8)		✓ FAC-neutral Test (D5)		
Field Observations: Surface Water Present? Yes Image: No Image: Surface Water Present?				
	Depth (inches): <u>12</u>			
Water Table Present? Yes No	Depth (inches):0	drology Present? Yes 🖲 No 🔾		
Saturation Present? Yes • No •	Depth (inches):0	drology Present? Yes • No 🔾		
Describe Recorded Data (stream gauge, monito	ring well, aerial photos, previous inspections), if ava	ailable:		
Remarks:				

	110	Dominant Species?		Sampling Point: an38 wetland
Tree Stratum (Plot size: 30')	Absolute % Cover	Rel.Strat.	Indicator Status	Dominance Test worksheet:
1. Acer rubrum	20	✔ 100.0%	FAC	Number of Dominant Species That are OBL, FACW, or FAC: 4 (A)
2.	0	0.0%		
3	0	0.0%		Total Number of Dominant Species Across All Strata: 4 (B)
4	0	0.0%		Species Across All Strata: (B)
5		0.0%		Percent of dominant Species
6		0.0%		That Are OBL, FACW, or FAC:(A/B)
7	0	0.0%		Prevalence Index worksheet:
1		= Total Cover		Total % Cover of: Multiply by:
Sapling/Shrub Stratum (Plot size: 15')				$\begin{array}{c c c c c c c c c c c c c c c c c c c $
1. Ilex verticillata	50	100.0%	FACW+	
2.	0	0.0%		
3.		0.0%		FAC species $20 \times 3 = 60$
4	0	0.0%		FACU species $0 \times 4 = 0$
5.	0	0.0%		UPL species x 5 =
6.	0	0.0%		Column Totals:98(A)213(B)
7.	0	0.0%		Prevalence Index = $B/A = 2.173$
··		= Total Cover		
Herb Stratum (Plot size: 5')				Hydrophytic Vegetation Indicators:
1.Osmunda cinnamomea	10	35.7%	FACW	Rapid Test for Hydrophytic Vegetation
2. Iris versicolor	3	10.7%	OBL	Dominance Test is > 50%
3. Coptis trifolia	15	53.6%	FACW	✓ Prevalence Index is $\leq 3.0^{1}$
4.	0	0.0%		Morphological Adaptations ¹ (Provide supporting
5.	0	0.0%		data in Remarks or on a separate sheet)
6.	0	0.0%		Problematic Hydrophytic Vegetation ¹ (Explain)
7.	0	0.0%		¹ Indicators of hydric soil and wetland hydrology must
8.	0	0.0%		be present, unless disturbed or problematic.
9.				Definitions of Vegetation Strata:
10.	0	0.0%		
11.	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter
	0	0.0%		at breast height (DBH), regardless of height.
12	0	0.0%		Sapling/shrub - Woody plants less than 3 in. DBH and
Woody Vine Stratum (Plot size:)	28	= Total Cover		greater than 3.28 ft (1m) tall
1	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of
2	0	0.0%		size, and woody plants less than 3.28 ft tall.
3	0	0.0%		Woody vine - All woody vines greater than 3.28 ft in
4	0	0.0%		height.
	0	= Total Cover		
				Hydrophytic Vegetation
				Present? Yes • No O
Remarks: (Include photo numbers here or on a separate she	ot)			
remarks. (Include proto numbers here of on a separate sne				

Depth		Matrix		Redox Features	_	
(inches)	Color (%	Color (moist) % Type 1 Loc		Remarks
0-12	2.5Y	2/1	100%		Muck	
12+	2.5Y	5/1	100%		Gravelly Sand	
¹ Type: C=Co	ncentration. D)=Depletio	n. RM=Red	uced Matrix, CS=Covered or Coated Sand Grains 2	Location: PL=Pore Lining.	M=Matrix
Hydric Soil	Indicators:				Indicators for Pr	oblematic Hydric Soils : ³
Histosol				Polyvalue Below Surface (S8) (LRR R,		
_	ipedon (A2)			MLRA 149B)		10) (LRR K, L, MLRA 149B)
Black His				Thin Dark Surface (S9) (LRR R, MLRA 149E	y	Redox (A16) (LRR K, L, R)
	n Sulfide (A4))		Loamy Mucky Mineral (F1) LRR K, L)		eat or Peat (S3) (LRR K, L, R)
_	Layers (A5)			Loamy Gleyed Matrix (F2)		(S7) (LRR K, L)
_	Below Dark	Surface (A	.11)	Depleted Matrix (F3)		ow Surface (S8) (LRR K, L) face (S9) (LRR K, L)
_	irk Surface (A			Redox Dark Surface (F6)		ise Masses (F12) (LRR K, L, R)
_	uck Mineral (S			Depleted Dark Surface (F7)		odplain Soils (F19) (MLRA 149B)
	leyed Matrix (Redox Depressions (F8)	_	(TA6) (MLRA 144A, 145, 149B)
	edox (S5)				Red Parent Ma	
	Matrix (S6)				_	Dark Surface (TF12)
	face (S7) (LR	r r, mlra	A 149B)		Other (Explain	
³ Indicators	of hydrophytic	vogotatio	n and wate	nd hydrology must be present, unless disturbed or p		
				ind hydrology must be present, diffess disturbed of p		
Restrictive I	Layer (if obs	served):				
Туре:						t? Yes ● No ◯
Depth (in	ches):				Hydric Soil Presen	tr Yes Vo U
Remarks:						

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Investigator(s): AF JG Section, Township, Range: S. T. R. Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): undulating Slope: 25.0 G Subregion (LRR or MLRA): Lat.: Long.: Datum: Soil Map Unit Name: NWI classification: NWI classification: Are climatic/hydrologic conditions on the site typical for this time of year? Yes Image: No (If no, explain in Remarks.) Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes Image: Networks.) Submary of Findings - Attach site map showing sampling point locations, transects, important feature	upland
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): undulating Slope: 25.0 ° Subregion (LRR or MLRA): Lat.: Long.: Datum: Soil Map Unit Name: NWI classification:	5 / <u>14.0</u>
Subregion (LRR or MLRA): Lat.: Long.: Datum: Soil Map Unit Name: NWI classification: NWI classification: Are climatic/hydrologic conditions on the site typical for this time of year? Yes I No (If no, explain in Remarks.) Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes I No Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.) Summary of Findings - Attach site map showing sampling point locations, transects, important feature	6 / 14.0
Soil Map Unit Name: NWI classification: Are climatic/hydrologic conditions on the site typical for this time of year? Yes	
Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.) Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.) Summary of Findings - Attach site map showing sampling point locations, transects, important feature	
Are Vegetation , Soil , or Hydrology asignificantly disturbed? Are "Normal Circumstances" present? Yes Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.) Summary of Findings - Attach site map showing sampling point locations, transects, important feature	
Hydrophytic Vegetation Present? Yes No Is the Sampled Area within a Wetland? Yes No Hydric Soil Present? Yes No Is the Sampled Area within a Wetland? Yes No	

Hydrology

Wetland Hydrology Indicators:		Secondary Indicators (minimum of 2 required)			
Primary Indicators (minimum of one required	l; check all that apply)	Surface Soil Cracks (B6)			
Surface Water (A1)	Water-Stained Leaves (B9)	Drainage Patterns (B10)			
High Water Table (A2)	Aquatic Fauna (B13)	Moss Trim Lines (B16)			
Saturation (A3)	Marl Deposits (B15)	Dry Season Water Table (C2)			
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)			
Sediment Deposits (B2)	Oxidized Rhizospheres along Living Roots (C3)	Saturation Visible on Aerial Imagery (C9)			
Drift deposits (B3)	Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)			
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)			
Iron Deposits (B5)					
Inundation Visible on Aerial Imagery (B7)	Microtopographic Relief (D4)				
Sparsely Vegetated Concave Surface (B8)	Uther (Explain in Remarks)	FAC-neutral Test (D5)			
Field Observations:					
Surface Water Present? Yes O No 🖲	Depth (inches):				
Water Table Present? Yes No Depth (inches): Wetland Hydrology Present? Yes No No No					
Saturation Present? Yes O No O	Depth (inches):	/drology Present? Yes VIV S			
Describe Recorded Data (stream gauge, mor	itoring well, aerial photos, previous inspections), if av	vailable:			
Remarks:					

	int5	Dominant Species?		Sampling Point: AN38 upland
Tree Stratum (Plot size: 30')	Absolute % Cover	Rel.Strat.	Indicator Status	Dominance Test worksheet:
	33	34.4%	FACU	Number of Dominant Species That are OBL, FACW, or FAC: 0 (A)
	22	 ✓ 34.4% 	FACU	
2 Ourse a tra	45	15.6%	FACU-	Total Number of Dominant
4				Species Across All Strata: 5 (B)
4. Tsuga canadensis			FACU	Percent of dominant Species
5	0	0.0%		That Are OBL, FACW, or FAC: 0.0% (A/B)
6		0.0%		
7		0.0%		Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: 15')	96	= Total Cove	r	Total % Cover of: Multiply by:
1. Fagus grandifolia	25	100.0%	FACU	OBL species $0 \times 1 = 0$
2.		0.0%		FACW species $0 \times 2 = 0$
3.	0	0.0%		FAC species $0 \times 3 = 0$
4	0	0.0%		FACU speciles 123 x 4 = 492
5	0	0.0%		UPL species x 5 =
56.		0.0%		Column Totals: 123 (A) 492 (B)
7		0.0%		
1				Prevalence Index = B/A = 4.000
Herb Stratum (Plot size: 5')	25	= Total Cove	ſ	Hydrophytic Vegetation Indicators:
1.Quercus rubra	1	50.0%	FACU-	Rapid Test for Hydrophytic Vegetation
2.Fagus grandifolia	1	50.0%	FACU	Dominance Test is > 50%
3.	0	0.0%	1400	☐ Prevalence Index is ≤3.0 1
4.	0	0.0%		Morphological Adaptations ¹ (Provide supporting
5.	0	0.0%		data in Remarks or on a separate sheet)
6.	0	0.0%		\Box Problematic Hydrophytic Vegetation ¹ (Explain)
7.				¹ Indicators of hydric soil and wetland hydrology must
8.	0			be present, unless disturbed or problematic.
o <u>.</u> 9.	0	0.0%		Definitions of Vegetation Strata:
	0	0.0%		
10	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter
11	0	0.0%		at breast height (DBH), regardless of height.
12	0	0.0%		Sapling/shrub - Woody plants less than 3 in. DBH and
_Woody Vine Stratum (Plot size:)	2	= Total Cove	r	greater than 3.28 ft (1m) tall
1	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of
2	0	0.0%		size, and woody plants less than 3.28 ft tall.
3	0	0.0%		Woody vine - All woody vines greater than 3.28 ft in
4	0	0.0%		height.
	0	= Total Cove	r	
				Hydrophytic Vegetation
				Present? Yes \bigcirc No \bigcirc
Remarks: (Include photo numbers here or on a separate she	et)			
Remarks: (Include proto numbers here of on a separate she	eet.)			

(inches)		Matrix	- ~ -	Redox Features	- Tt	Demand
0 F	Color (n		%	Color (moist) % Type 1 Loc ²		Remarks
0-5	10YR	3/2	100%		Loam	
5-7	2.5Y	6/1	100%		Fine Sandy Loam	
7-14	10YR	4/4	100%		Sandy Loam	
14-20	10YR	4/6	100%		Sandy Loam	
Type: C=Con	centration. D=	=Depletic	n. RM=Red	uced Matrix, CS=Covered or Coated Sand Grains ² Loca	ation: PL=Pore Lining. M=M	atrix
Hydric Soil I					ī	ematic Hydric Soils : ³
Histosol (Polyvalue Below Surface (S8) (LRR R,		(LRR K, L, MLRA 149B)
Histic Epi	pedon (A2)			MLRA 149B)		x (A16) (LRR K, L, R)
Black Hist	tic (A3)			☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)		or Peat (S3) (LRR K, L, R)
Hydroger	Sulfide (A4)			Loamy Mucky Mineral (F1) LRR K, L)	Dark Surface (S7)	
Stratified	Layers (A5)			Loamy Gleyed Matrix (F2)		urface (S8) (LRR K, L)
_	Below Dark S		.11)	Depleted Matrix (F3)	Thin Dark Surface	
	k Surface (A1			Redox Dark Surface (F6)		lasses (F12) (LRR K, L, R)
Sandy Mu	ick Mineral (S	1)		Depleted Dark Surface (F7)		in Soils (F19) (MLRA 149B)
_	eyed Matrix (S	54)		Redox Depressions (F8)	_) (MLRA 144A, 145, 149B)
Sandy Re					Red Parent Materi	al (TF2)
	Matrix (S6)				Very Shallow Dark	Surface (TF12)
Dark Surf	ace (S7) (LRR	R, MLRA	A 149B)		Other (Explain in F	Remarks)
³ Indicators o	f hydrophytic	vegetatio	n and wetla	nd hydrology must be present, unless disturbed or probl	ematic.	
		erved):				
	ayer (if obse					~ ~ ~
	ayer (if obse					
Restrictive L					Hydric Soil Present?	Yes 🔾 🛛 No 🖲
Restrictive L Type: Depth (inc					Hydric Soil Present?	Yes U No 🔍
Restrictive L Type:					Hydric Soil Present?	Yes 🔾 No 🔍
Restrictive L Type: Depth (inc					Hydric Soil Present?	Yes 🔾 No 🖲
Restrictive L Type: Depth (inc					Hydric Soil Present?	Yes 🔾 No 🗨
Restrictive L Type: Depth (inc					Hydric Soil Present?	Yes 🔾 No 🖲
Restrictive L Type: Depth (inc					Hydric Soil Present?	Yes 🔾 No 🗨
Restrictive L Type: Depth (inc					Hydric Soil Present?	Yes 🔾 No 🗨
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Restrictive L Type: Depth (inc					Hydric Soil Present?	Yes U No O
Restrictive L Type: Depth (inc					Hydric Soil Present?	Yes U No 🔍
Restrictive L Type: Depth (inc					Hydric Soil Present?	Yes 🔾 No 🔍
Restrictive L Type: Depth (inc					Hydric Soil Present?	Yes U No O
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Restrictive L Type: Depth (inc					Hydric Soil Present?	Yes U No O
Restrictive L Type: Depth (inc					Hydric Soil Present?	Yes U No 🔍
Restrictive L Type: Depth (inc					Hydric Soil Present?	Yes U No 🔍
Restrictive L Type: Depth (inc					Hydric Soil Present?	Yes U No O
Restrictive L Type: Depth (inc					Hydric Soil Present?	Yes U No O



AN38 Wetland



AN38 Upland



AN38 Wetland



AN38 Wetland

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

						•		
Project/Site: Antrim Wind Project		City/County:	Antrim			Sampling Date: 3	0-Nov-11	
Applicant/Owner: Eolian Renewable E	nergy, LLC			State:	NH	Sampling Point:	AN41	up
Investigator(s): AF JG	Section, T	ownship, Rang	e: S.	т.	R.			
Landform (hillslope, terrace, etc.):	Toeslope	Local relief (c	oncave, conve	x, none	e): convex	Slope:	0.0%/	0.0 °
Subregion (LRR or MLRA): LRR R	Lat.:		Lo	ong.:		Dat	um:	
Soil Map Unit Name:		<u>la</u>		-	NWI class	ification:		
Are climatic/hydrologic conditions of Are Vegetation , Soil Are Vegetation , Soil Summary of Findings - At	, or Hydrology Significant , or Hydrology naturally	tly disturbed? problematic?	(If neede	nal Cir d, exp	•	present? Yes (etc.
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes No Yes No Yes No No		e Sampled Area n a Wetland?	3 Y	fes \bigcirc No $($	٢		
Remarks: (Explain alternative pro	cedures here or in a separate repo	ort.)						

Hydrology

Wetland Hydrology Indicators:		Secondary Indicators (minimum of 2 required)				
Primary Indicators (minimum of one required;	check all that apply)	Surface Soil Cracks (B6)				
Surface Water (A1)	Drainage Patterns (B10)					
High Water Table (A2)						
Saturation (A3)	Marl Deposits (B15)	Dry Season Water Table (C2)				
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)				
Sediment Deposits (B2)	Oxidized Rhizospheres along Living Roots (C3)	Saturation Visible on Aerial Imagery (C9)				
Drift deposits (B3)						
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	Stunted or Stressed Plants (D1) Geomorphic Position (D2)				
Iron Deposits (B5)						
Inundation Visible on Aerial Imagery (B7)	Microtopographic Relief (D4)					
Sparsely Vegetated Concave Surface (B8)	FAC-neutral Test (D5)					
Field Observations:						
Surface Water Present? Yes O No 🖲	Depth (inches):					
Water Table Present? Yes No Depth (inches): Wetland Hydrology Present? Yes No No						
Saturation Present? (includes capillary fringe) Yes O No O	Wetland Hyd	drology Present? Yes 🔾 No 🖲				
Describe Recorded Data (stream gauge, monitor	pring well, aerial photos, previous inspections), if ava	ilable:				
Remarks:						

	11.5	Dominant Species?		Sampling Point: AN41up
Tree Stratum (Plot size: <u>30'</u>)	Absolute % Cover	Rel.Strat.	Indicator Status	Dominance Test worksheet:
1. Acer rubrum	20	33.3%	FAC	Number of Dominant Species That are OBL, FACW, or FAC: 2 (A)
2. Fagus grandifolia	15	25.0%	FACU	
3. Picea rubens	10	16.7%	FACU	Total Number of Dominant Species Across All Strata: 10 (B)
4	15	25.0%	FACU-	Species Across All Strata: 10 (B)
4. <u>Quercus rubra</u> 5		0.0%	11100	Percent of dominant Species
6	0	0.0%		That Are OBL, FACW, or FAC: 20.0% (A/B)
7	0	0.0%		Prevalence Index worksheet:
7				
Sapling/Shrub Stratum (Plot size: 15')	60	= Total Cove	r	
1. Fagus grandifolia	10	40.0%	FACU	
2. Picea rubens	10	40.0%	FACU	FACW species $0 \times 2 = 0$
3. Pinus strobus	5	20.0%	FACU	FAC species $39 \times 3 = 117$
4.	0	0.0%		FACU species 120 x 4 = 480
5	0	0.0%		UPL species x 5 =
6	0	0.0%		Column Totals: 159 (A) 597 (B)
6	0	0.0%		
7		-		Prevalence Index = B/A = <u>3.755</u>
Herb Stratum (Plot size: 5')	25	= Total Cove	ſ	Hydrophytic Vegetation Indicators:
1.Dryopteris intermedia	15	20.3%	FACU	Rapid Test for Hydrophytic Vegetation
2 Caulthania maayumhana	15	20.3%	FACU	Dominance Test is > 50%
3. Thelypteris noveboracensis	19	25.7%	FAC	Prevalence Index is \leq 3.0 1
1		33.8%	FACU	Morphological Adaptations ¹ (Provide supporting
4.Lycopodium obscurum 5.			FACU	data in Remarks or on a separate sheet)
5 6.	0			Problematic Hydrophytic Vegetation ¹ (Explain)
	0	0.0%		¹ Indicators of hydric soil and wetland hydrology must
7	0	0.0%		be present, unless disturbed or problematic.
8	0	0.0%		Definitions of Vegetation Strata:
9	0	0.0%		bernitions of vegetation strata.
10	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter
11	0	0.0%		at breast height (DBH), regardless of height.
12	0	0.0%		Sapling/shrub - Woody plants less than 3 in. DBH and
Woody Vine Stratum (Plot size:)	74	= Total Cove	r	greater than 3.28 ft (1m) tall
1	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of
2	0	0.0%		size, and woody plants less than 3.28 ft tall.
3	0	0.0%		Woody vine - All woody vines greater than 3.28 ft in
4	0	0.0%		height.
	0	= Total Cove	r	
			-	
				Hydrophytic
				Vegetation Present? Yes O No O
				Present? Yes V NO 🛡
				1
Remarks: (Include photo numbers here or on a separate she	et.)			

Depth Matrix Redox Features (inches) % Type 1 Loc2 Texture Remarks 0-5 10YR 3/2 100%				the depth	needed to do				onfirm the	absence of indicators.)				
5-12 10/R 4/3 100% Sandy Loam 12-15 2.5Y 5/2 95% 10/R 4/6 5% C M Sandy Loam 15+		Color (r	Matrix noist)	~ %	Color (m				Loc ²	Texture	Remarks			
12-15 2.5Y 5/2 95% 10YR 4/6 5% C M Sandy Loam 15+	0-5									Loam				
12-15 2.5Y 5/2 95% 10YR 4/6 5% C M Sandy Loam 15+	5-12	10YR	4/3	100%						Sandy Loam				
15+ Stony refusal 15+ </td <td></td> <td></td> <td></td> <td></td> <td>10VP</td> <td>1/6</td> <td>5%</td> <td></td> <td></td> <td></td> <td></td>					10VP	1/6	5%							
Image: Concentration. D-Depletion. RM-Reduced Matrix, CS=Covered or Coated Sand Grains *Location: PL=Pore Lining. M=Matrix Image: Concentration. D-Depletion. RM-Reduced Matrix, CS=Covered or Coated Sand Grains *Location: PL=Pore Lining. M=Matrix Image: Concentration. D-Depletion. RM-Reduced Matrix, CS=Covered or Coated Sand Grains *Location: PL=Pore Lining. M=Matrix Image: Concentration. D-Depletion. RM-Reduced Matrix, CS=Covered or Coated Sand Grains *Location: PL=Pore Lining. M=Matrix Image: Concentration. D-Depletion. RM-Reduced Matrix, CS=Covered or Coated Sand Grains *Location: PL=Pore Lining. M=Matrix Image: Concentration. D-Depletion. RM-Reduced Matrix, CS=Covered or Coated Sand Grains *Location: PL=Pore Lining. M=Matrix Image: Concentration. D-Depletion. RM-Reduced Matrix, CS=Covered or Coated Sand Grains *Location: PL=Pore Lining. M=Matrix Image: Concentration. D-Depletion. RM-Reduced Matrix, CS=Covered or Coated Sand Grains *Location: PL=Pore Lining. M=Matrix Image: Concentration. D-Depletion. RM-Reduced Matrix, CS=Covered or Coated Sand Grains *Location: PL=Pore Lining. M=Matrix Image: Concentration. D=Depletion. RM-Reduced Matrix, CS=Covered or Coated Sand Grains *Location: PL=Pore Lining. M=Matrix Image: Concentration. D=Depletion. Data Surface (S9) (LRR R, L, MLRA 1498) Coast Prainie Redox (A16) (LRR K, L, R) Image: Concentratice (A11) Depleted Matrix (F3) Depletion Surface (S9) (LRR K, L, R)		2.31	5/2	7370		470	570				stony refusal			
Hydric Soil Indicators: Indicators for Problematic Hydric Soils : ³ Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B) Hydriogen Sulfide (A4) Loamy Mucky Mineral (F1) LRR K, L) Stratified Layers (A5) Loamy Gleyed Matrix (F2) Depleted Below Dark Surface (A11) Depleted Matrix (F3) Thick Dark Surface (A12) Redox Dark Surface (F6) Sandy Muck Mineral (S1) Depleted Dark Surface (F7) Sandy Gleyed Matrix (S4) Redox Depressions (F8) Stripped Matrix (S6) WLRA 149B) Dark Surface (S7) (LRR R, MLRA 149B) Red Present, unless disturbed or problematic. Restrictive Layer (if observed): Type: Bouldery	15+													
Hydric Soil Indicators: Indicators for Problematic Hydric Soils : ³ Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B) Hydriogen Sulfide (A4) Loamy Mucky Mineral (F1) LRR K, L) Stratified Layers (A5) Loamy Gleyed Matrix (F2) Depleted Below Dark Surface (A11) Depleted Matrix (F3) Thick Dark Surface (A12) Redox Dark Surface (F6) Sandy Muck Mineral (S1) Depleted Dark Surface (F7) Sandy Gleyed Matrix (S4) Redox Depressions (F8) Stripped Matrix (S6) WLRA 149B) Dark Surface (S7) (LRR R, MLRA 149B) Red Present, unless disturbed or problematic. Restrictive Layer (if observed): Type: Bouldery														
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Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B) Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R) Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R) Stratified Layers (A5) Loamy Mucky Mineral (F1) LRR K, L) Dark Surface (S7) (LRR K, L) Depleted Below Dark Surface (A11) Depleted Matrix (F2) Polyvalue Below Surface (S9) (LRR K, L) Thick Dark Surface (A12) Redox Dark Surface (F6) Thin Dark Surface (F7) Sandy Muck Mineral (S1) Depleted Dark Surface (F7) Piedmont Floodplain Soils (F19) (MLRA 149B) Sandy Redox (S5) Sandy Redox (S5) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144A, 145, 149B) 3Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Very Shallow Dark Surface (TF12) Type: Bouldery Utdate Scil Deponental Nu (Nu (Nu (Nu (Nu (Nu (Nu (Nu (Nu (Nu (2			
Implicit and the set of							v Surface (S8) (LRR F	R,		lematic rigune sons .			
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Index Burk Sourdee (M2) Depleted Dark Surface (F7) Iron-Manganese Masses (F12) (LRR K, L, R) Sandy Muck Mineral (S1) Redox Depressions (F8) Piedmont Floodplain Soils (F19) (MLRA 149B) Sandy Redox (S5) Red Parent Material (TF2) Very Shallow Dark Surface (TF12) Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks) ³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Other (Explain in Remarks) Restrictive Layer (if observed): Type: Bouldery Muck Direct (M2)				.11)						Thin Dark Surface (S9) (LRR K, L)				
Image: Sandy Widek Willerah (S1) Redox Depressions (F8) Piedmont Floodplain Soils (F19) (MLRA 149B) Image: Sandy Gleyed Matrix (S4) Mesic Spodic (TA6) (MLRA 144A, 145, 149B) Image: Sandy Redox (S5) Red Parent Material (TF2) Image: Stripped Matrix (S6) Very Shallow Dark Surface (TF12) Image: Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks) Image: All the sail Depresent of the sail Depresent (If observed): Type: Type: Bouldery								7)						
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³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Restrictive Layer (if observed): Type: Bouldery Underin Sail Present2 - Vers - Its -			r R, MLRA	A 149B)										
Restrictive Layer (if observed): Type: Bouldery	³ Indicators	of hydrophytic	vegetatio	n and wetla	nd hydrology r	must he n	resent un	less disturk	ed or probl		Kemarks)			
Type: Bouldery					ia nyarology i									
			ervea):											
Deptil (inclies). 15										Hydric Soil Present?	Yes 🔿 No 🖲			
Demention	Remarks:	15												

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

					0	
Project/Site: Antrim Wind Project		City/County:	Antrim		Sampling Date: 3	0-Nov-11
Applicant/Owner: Eolian Renewable E	nergy, LLC		State: NH		Sampling Point:	AN41wet
Investigator(s): AF JG		Section, T	ownship, Range: S.	т.	R.	
Landform (hillslope, terrace, etc.):	Toeslope	Local relief (c	oncave, convex, none):	concave	Slope:	0.0 % / 0.0
Subregion (LRR or MLRA): LRR R	Lat.:		Long.:	-	Dat	um:
Soil Map Unit Name:		-		NWI classif	ication: PFO	
Are Vegetation, Soil Summary of Findings - At	, , , , , ,	problematic? sampling p	(If needed, explain oint locations, tr	5	2	atures, etc.
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes No Yes No Yes No Yes No		e Sampled Area n a Wetland? Yes	: • No C)	
Remarks: (Explain alternative pro- Isolated PFO at toe of slope in a b		ort.)				

Hydrology

Wetland Hydrology Indicat	tors:					Secondary Indicators (minimum of 2 required)		
Primary Indicators (minim	um of one	required;	check all that apply)			Surface Soil Cracks (B6)		
Surface Water (A1) Water-Stained Leaves (B9)						Drainage Patterns (B10)		
High Water Table (A2)			Aquatic Fauna (B13)	5 (27)		Moss Trim Lines (B16)		
Saturation (A3)			Dry Season Water Table (C2)					
Water Marks (B1)						Crayfish Burrows (C8)		
Sediment Deposits (B2) Oxidized Rhizospheres along Living Roots (C3)						Saturation Visible on Aerial Imagery (C9)		
Drift deposits (B3)						Stunted or Stressed Plants (D1)		
Algal Mat or Crust (B4)			Recent Iron Reductio		5 (C6)	Geomorphic Position (D2)		
Iron Deposits (B5)			()	Shallow Aquitard (D3)				
Inundation Visible on Aeri	ial Imagery ((B7)		Microtopographic Relief (D4)				
Inundation Visible on Aerial Imagery (B7) Other (Explain in Remarks) Sparsely Vegetated Concave Surface (B8)						✓ FAC-neutral Test (D5)		
Field Observations:								
Surface Water Present?	Yes \bigcirc	No 🖲	Depth (inches):					
Water Table Present? Yes No Depth (inches): 0								
Saturation Present? Yes No Depth (inches): 0 Wetland Hydrology Present? Yes No O								
Describe Recorded Data (s	tream gau	ge, monito	ring well, aerial photos,	previous ins	pections), if avai	lable:		
Remarks:								
Sphagnum 50% cover.								
L								

	111.5	Dominant Species?		Sampling Point: AN41wet
Tree Stratum (Plot size: 30')	Absolute % Cover	Rel.Strat.	Indicator Status	Dominance Test worksheet:
1. Acer rubrum	33	76.7%	FAC	Number of Dominant Species That are OBL, FACW, or FAC: 5 (A)
		23.3%	FACW	
		0.0%	TACW	Total Number of Dominant
				Species Across All Strata: 5 (B)
4	0	0.0%		Percent of dominant Species
5		0.0%		That Are OBL, FACW, or FAC:100.0% (A/B)
6		0.0%		
7	0	0.0%		Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: 15')	43	= Total Cove	r	Total % Cover of: Multiply by: OBL species 0 x 1 = 0
1. Acer rubrum	10	55.6%	FAC	
2. Betula alleghaniensis		✔ 44.4%	FAC	FACW species $\frac{60}{51}$ x 2 = $\frac{120}{150}$
3.		0.0%		FAC species $51 \times 3 = 153$
4.	0	0.0%		FACU species $0 \times 4 = 0$
5	0	0.0%		UPL species $0 \times 5 = 0$
56.		0.0%		Column Totals: 111 (A) 273 (B)
7				·
7	0	0.0%		Prevalence Index = B/A = 2.459
Herb Stratum (Plot size: 5')	18	= Total Cove	r	Hydrophytic Vegetation Indicators:
1.0	50	✓ 100.0%	FACIAL	Rapid Test for Hydrophytic Vegetation
1.Osmunda cinnamomea			FACW	✓ Dominance Test is > 50%
2	0	0.0%		✓ Prevalence Index is $\leq 3.0^{1}$
3	0	0.0%		Morphological Adaptations ¹ (Provide supporting
4	0	0.0%		data in Remarks or on a separate sheet)
5	0	0.0%		\Box Problematic Hydrophytic Vegetation ¹ (Explain)
6	0	0.0%		
7	0	0.0%		¹ Indicators of hydric soil and wetland hydrology must
8.	0	0.0%		be present, unless disturbed or problematic.
9.	0	0.0%		Definitions of Vegetation Strata:
10.	0	0.0%		Tree - Woody plants, 3 in. (7.6 cm) or more in diameter
11.	0	0.0%		at breast height (DBH), regardless of height.
12.	0	0.0%		
Woody Vine Stratum (Plot size:)		= Total Cove	r	Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall
	0	0.0%		Herb - All herbaceous (non-woody) plants, regardless of
1				size, and woody plants less than 3.28 ft tall.
2	0	0.0%		
3	0	0.0%		Woody vine - All woody vines greater than 3.28 ft in
4	0	0.0%		height.
	0	= Total Cove	r	
				Hydrophytic Vegetation Present? Yes I No
				Present? Yes Vo V
				1
Remarks: (Include photo numbers here or on a separate she	eet.)			

Profile Desc	ription: (Des	scribe to	the depth	needed to document	the indicator	or confirm th	ne absence of	indicators.)		
Depth (inchor)	•	Matrix			dox Features				_	
(inches)	Color (r	•	%	Color (moist)	<u>%</u> T	/pe ¹ Loc ²			Ren muck	narks
0-9	2.5Y	2/1	100%				sapric			naaki na
9+	10YR	2/2	100%				Sandy Loa	am	organic st	геактиу
1										
		=Depletio	n. RM=Red	uced Matrix, CS=Cover	ea or Coated Sa	nd Grains ² L	ocation: PL=P	ore Lining. M=M	atrix	
Hydric Soil							Indica	ators for Proble	ematic Hydri	c Soils : ³
Histosol				Polyvalue Belo MLRA 149B)	w Surface (S8)	(LRR R,	2	cm Muck (A10) ((LRR K, L, MLF	RA 149B)
Histic Ep	ipedon (A2)							oast Prairie Redo		
Black His	tic (A3)			_	ace (S9) (LRR			cm Mucky Peat o		
Hydroge	n Sulfide (A4)			_	Vineral (F1) LRI	₹K, L)		ark Surface (S7)		
Stratified	Layers (A5)			Loamy Gleyed				lyvalue Below Si		RR K. L)
Depleted	Below Dark S	Surface (A	.11)	Depleted Matri				nin Dark Surface		
🗌 Thick Da	rk Surface (A1	12)		Redox Dark Su				on-Manganese M		
Sandy M	uck Mineral (S	51)		Depleted Dark				edmont Floodpla		
Sandy Gl	eyed Matrix (S	S4)		Redox Depress	ions (F8)			esic Spodic (TA6		
Sandy Re	edox (S5)							ed Parent Materia		, 143, 1470)
Stripped	Matrix (S6)							ery Shallow Dark		2)
	face (S7) (LRF	R R, MLRA	A 149B)					ther (Explain in R		2)
31	£								(emaiks)	
	or nyaropnytic	vegetatio	in and wetta	nd hydrology must be p	present, unless	disturbed or pro	oblematic.			
Restrictive I	ayer (if obs	erved):								
Туре:										
Depth (ind	ches):						Hydric S	Soil Present?	Yes 🖲	No \bigcirc
Remarks:										



AN41 Wetland

VERNAL POOL REPORT

For Antrim Wind Energy Project Town of Antrim Hillsborough County, New Hampshire

Prepared for:

Antrim Wind Energy, LLC 155 Fleet Street Portsmouth, NH 03801



Prepared by:

TRC ENVIRONMENTAL CORPORATION 10 Maxwell Drive, Suite 200 Clifton Park, New York 12065

January 2012

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1.0 INTRODUCTION

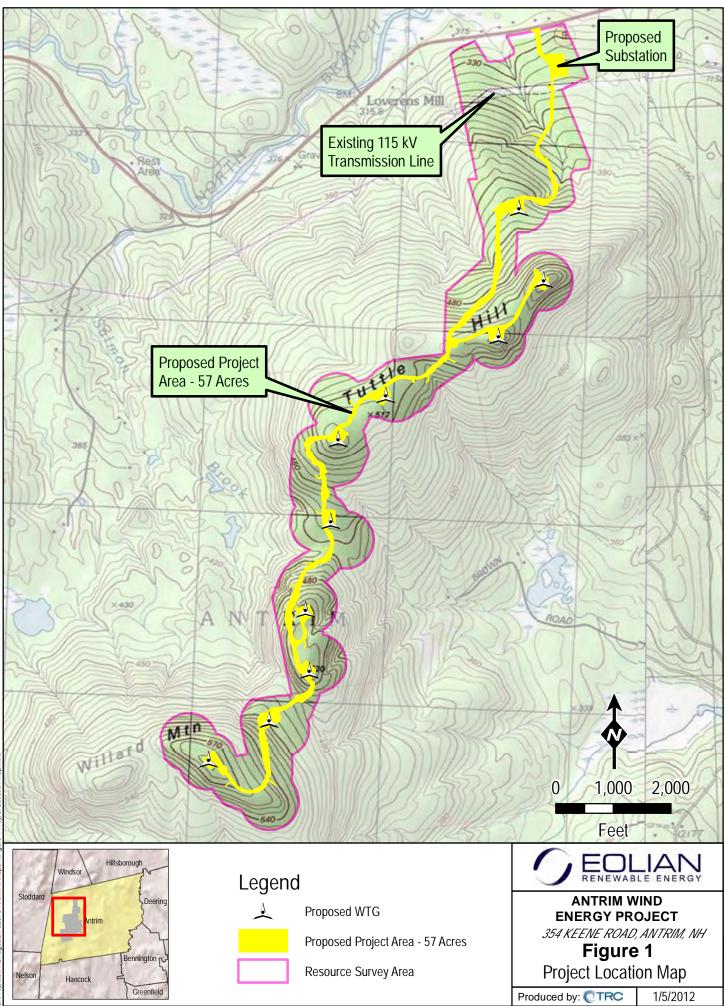
This vernal pool report has been prepared by TRC for Antrim Wind Energy, LLC (AWE) in support of state and federal environmental permit applications. Antrim Wind Energy LLC (AWE) is proposing to construct the Antrim Wind Energy Project (Project) on Tuttle Hill and Willard Mountain in the Town of Antrim, Hillsborough Country, New Hampshire. The proposed Project is sited entirely on privately owned land that is leased by AWE. The proposed Antrim Wind Energy Project involves the construction of 10 wind turbines, an electrical collection system and interconnection substation, approximately 4 miles of new access road, and an operations and maintenance building. There will be no new electrical transmission lines, other than collector system lines, constructed as part of this Project. The total direct impact for the access roads, the turbine pads, and electrical collector system will be approximately 57 acres.

The proposed project is sited on the ridges of Tuttle Hill and Willard Mountain which are oriented east-northeast to west-southwest. The ridges are approximately parallel to NH Route 9, which is about ³/₄ of a mile to the north. Between the ridgeline and Route 9 is an existing transmission corridor containing both an 115kV transmission line and a 34.5kV distribution circuit; the proposed Project will interconnect with the existing 115kV line. See Figure 1 on the following page for a map of the Project area and Project elements.

TRC Environmental Corporation (TRC) was retained by AWE to identify and delineate vernal pools within the project area to support the design, or layout, of the proposed facilities. TRC has prepared this vernal pool report on behalf of AWE to support the submittal of a Joint Application for a Permit (a U.S. Army Corps of Engineers (ACOE) and New Hampshire State wetlands permit).

TRC conducted vernal pool surveys within an approximately 409 acre survey area during May 2nd, 5th and 9th of 2011. Follow up visits were made to each pool during early June to confirm their condition (i.e., watered or dry). Additional survey was also performed during September in approximately 53 acres added to the Project survey area in several discreet sections to provide for expanded project design options. An additional potential vernal pool was identified in this area and will be revisited during the appropriate survey period in the spring of 2012 to confirm its function and spatial extents.

The following sections describe the vernal pool field survey methodology utilized.



\Projects\TRCAugusta\182878-Antrim Windpark\Figure 1 Project Location Map

2.0 VERNAL POOL SURVEY METHODOLOGY

For the purposes of the field effort, TRC adopted the vernal pool definitions as described by the USACE Programmatic General Permit (PGP) for the State of New Hampshire and the NHDES Administrative Rules Env-Wt 101.99 for identifying vernal pools and vernal pool habitat along the Project corridor. With the exception of minor differences, each agency has a similar definition of what constitutes a vernal pool. Each respective definition is provided below.

According to the ACOE NHPGP, vernal pools and vernal pool habitat consists of:

"VPs are confined basin depressions with water for two or more continuous months in the spring and/or summer, for which evidence of one of more of the following indicator vernal pools species: wood frogs (Rana sylvatica), mole salamanders (Ambystoma spp), and fairy shrimp (Eubranchipus spp) has been documented **OR** for which evidence of two or more of the following facultative organisms: caddisfly (Trichoptera) larvae casings, fingernail clams (Sphaeriidae), or amphibious snails (Basammatophora) and evidence that the pool does not contain an established reproducing fish population has been documented. Vernal pool habitat is the seasonal pool depression, seasonal pool envelope (100 FT radius from the VP edge) and seasonal pool terrestrial habitat (750 FT radius from the VP edge). The Corps will determine on a case-by-case basis which vernal pools are within their jurisdiction."

The NHDES wetlands Bureau defines a vernal pool in their Administrative Rules Env-Wt 101.106 as:

"a surface water or wetland, including an area intentionally created for purposes of compensatory mitigation, which provides breeding habitat for amphibians and invertebrates that have adapted to the unique environments provided by such pools and which:

- (a) Is not the result of on-going anthropogenic activities that are not intended to provide compensatory mitigation, including but not limited to:
 - (1) Gravel pit operations in a pit that has been mined at least every other year; and
 - (2) Logging and agricultural operations conducted in accordance with all applicable New Hampshire statutes and rules; and
- (b) Typically has the following characteristics:
 - (1) Cycles annually from flooded to dry conditions, although the hydroperiod, size, and shape of the pool might vary from year to year;
 - (2) Forms in a shallow depression or basin;
 - (3) Has no permanently flowing outlet;
 - (4) Holds water for at least 2 continuous months following spring ice-out;
 - (5) Lacks a viable fish population; and
 - (6) Supports one or more primary vernal pool indicators, or 3 or more secondary vernal pool indicators."

Primary vernal pool indicators in NH include wood frogs, mole salamanders and fairy shrimp. Secondary indicators include species of aquatic insects including the larvae of caddisfly, dragonfly, and damselfly; fingernail clams and certain aquatic beetles; and other specific species that inhabit vernal pools.

TRC utilized a comprehensive vernal pool survey protocol and field data forms found in the document "Identification and Documentation of Vernal Pools in New Hampshire", published by the New Hampshire Fish and Game Department Nongame and Endangered Wildlife Program (NHFGD 1997). In general, field surveys were conducted during the recommended timeframes for identifying amphibian egg masses and tabulating egg mass abundance. Peak breeding for wood frogs is generally earlier in the season, typically mid to late April, than that of the spotted and blue-spotted salamanders (ambystomid salamanders), typically in early May (Hunter & Calhoun 1999). Seasonal and weather conditions were also considered when applying these recommended survey timeframes as amphibian breeding can vary based on springtime conditions. For example, experiencing a cold spring versus a warm, wet spring could delay amphibian breeding for as much as two weeks and vice versa. Therefore, TRC attempted to conduct the surveys in early May of 2011 to capture the overlap of peak breeding of both the wood frogs and spotted salamanders.

2.1 General Field Survey Approach

Field surveys were conducted by a team of two qualified biologists familiar with vernal pool resources within New England. The team completed visual meanders surveys throughout the entire Project area. Each field crew was outfitted with the necessary field equipment to conduct a detailed survey and to thoroughly document each pool that was inventoried. Typical equipment consisted of hip/chest waders, polarized sunglasses, view tubes, dipnet, thermometer, fairy shrimp sampling equipment, and digital camera. For each pool, a standardized vernal pool determination field data form was completed, the vernal pool area was photo-documented, and the pool basin was located in the field using a global positioning system (GPS) unit. GPS data was specifically collected at the approximate perceived boundary of the highwater mark for all vernal pools exceeding approximately 10 feet in diameter.

2.2 Vernal Pool Species Observations

Egg mass surveys were conducted during the day time hours, preferably when the sun was out, between the hours of 9:00am to 3:00pm to the extent possible to maximize viewing opportunity within the pools. Two biologists began at one end of the pool and thoroughly searched the entire area simultaneously wading along the pool margin. The entire pool was searched (including the center) in this manner to ensure that all egg masses were tabulated. To reduce the possibility of overlooking or misidentifying egg masses, the field biologists worked together to observe, identify, and count egg masses. When agreement was reached regarding the species and number of egg masses within an individual pool, a data form and all other necessary pool documentation was completed (see Natural Resource Survey Map in Appendix A). As described in Section 2.0 above, each pool was examined twice during the survey period to document all vernal pool species utilizing the resource.

As with the egg mass surveys, surveys to document the presence/absence of fairy shrimp were also conducted concurrently. When optimal daytime conditions were not available or for pools with dark tannin stained water, field crews used dip nets and view tubes to search for fairy shrimp. When possible, sampling efforts were focused on sunny patches along the pool, as fairy shrimp often congregate in these areas.

Vernal pools were classified into one of three categories: (1) natural vernal pools; (2) potential vernal pools; and (3) non-jurisdictional features. The natural vernal pools were those pools as defined in Section 2.0 above that met the state criteria under the Administrative Rules. The potential pools were those pools that were identified outside of the indicator species breeding season as the scope of the project had changed after the initial vernal pool survey was performed. These pools had the abiotic characteristics as described in the state and federal definitions, but would require a visit in breeding season to confirm the presence of the indicator species use. The "non-jurisdictional feature" category included all other areas where amphibian breeding was documented but did not meet the state and federal definition of a vernal pool described in Section 2.0.

3.0 VERNAL POOL FIELD SURVEY RESULTS

Vernal pool surveys were conducted within the Project area on May 2nd, 5th and 9^{th of} 2011, with additional survey conducted in extra project area performed in September 2011. A total of 7 features were identified within the Project area. Of these, 5 were identified as Natural Vernal pools, 1 as a potential vernal pool (located in September), and 1 feature was designated as a non-jurisdictional amphibian breeding area. Mapping of the pools is provided on the Natural Resource Survey Map in Appendix A, and the field data forms and site photographs for each feature are provided in Appendix B. An abbreviated summary of the vernal pool data is provided in Table 1 below.

Pool Type	No. of Features Within the Project Survey Corridor
Natural Vernal Pool	5
Potential Vernal Pool	1
Non-jurisdictional Feature	1
TOTAL	7

TABLE 1: SUMMARY OF VERNAL POOLS WITHIN ANTRIM WINDPARK

A summary of the vernal pool characteristics for each pool is provided in Table 2 below. In summary, only VP4 contained significant numbers of egg masses. Vernal Pool Data Sheets are included in Appendix B.

Pool ID	Date Surveyed	Natural Setting (y/n)	Indicator Species Observed	Facultative Species Observed	Holds Water For At Least Two Months (y/n)	Associated Wetland
VP1	5/2/2011	Y	Spotted Salamander – 8 egg masses Wood Frog – 5 egg masses Green Frog - Vocalization	Green frog - Vocalization	Y	AN1
VP2	5/5/2011	Y	Spotted Salamander – 16 egg masses Wood Frog – 1 egg mass		Y	AN4
VP3	5/5/2011	Y	Spotted Salamander – 9 egg masses Wood Frog – 5 egg masses	Red-spotted newt - 1 adult	Y	AN5
VP4	5/5/2011	Y	Spotted Salamander – 55 egg masses Wood Frog – 4 egg masses		Y	AN25
VP5	5/9/2011	Y	Spotted Salamander – 10 egg masses		Y	AN24
VP6	5/9/2011	Ν	Spotted Salamander – 9 egg masses		Ν	Upland
VP7	9/27/2011	Y	None Observed		Y	AN38

 TABLE 2: VERNAL POOL CHARACTERISTICS

Six of the pools observed occurred in natural isolated basins without an inlet or an outlet and no populations of predatory fish. Vernal Pools 1-5 and 7 are within isolated palustrine forested wetlands along the Tuttle Hill ridgeline and are located in depressions within the regional bedrock.

Vernal Pool 6 is located within a depression in an old woods road and is a man-made feature. This pool was also observed to be completely dry on June 6, 2011. No hydrophytic vegetation was observed in the vicinity of the pool depression and as a result is not a jurisdictional wetland. Therefore, the pool is considered a non-jurisdictional feature.

During the siting phase of the Project, several routing options were evaluated that were later rejected due to landowner or environmental concerns. During the spring and summer of 2011 when these particular route options were still under consideration, additional surveys for vernal pools were completed. As a result, one other feature (VP7) was identified within the current Project area. VP7 is located within an isolated forested wetland (Wetland AN38) west of proposed turbines 5 and 6. The wetland was observed to have an area of standing water approximately 1 foot deep and contained an abundance of shrubby vegetation, conducive of supporting egg attachment sites for pool breeding amphibians. An ephemeral outlet was observed draining to the northwest through a gap in the regional bedrock, but did not meet the criteria for a stream or wetland and did not have the necessary characteristics to support predatory fish populations. This potential vernal pool is very similar in character to the confirmed Vernal Pools 5 and 4, and therefore will be considered in a similar manner as those pools.

Although intensively surveyed for, no fairy shrimp were found or documented within any of the vernal pools. Furthermore, no rare or state-listed threatened or endangered species known to use vernal pools for at least one critical life stage were documented in any of the vernal pools found within the Project area. The field data forms and site photographs for these seven areas are provided in Appendix B.

4.0 VERNAL POOL IMPACTS

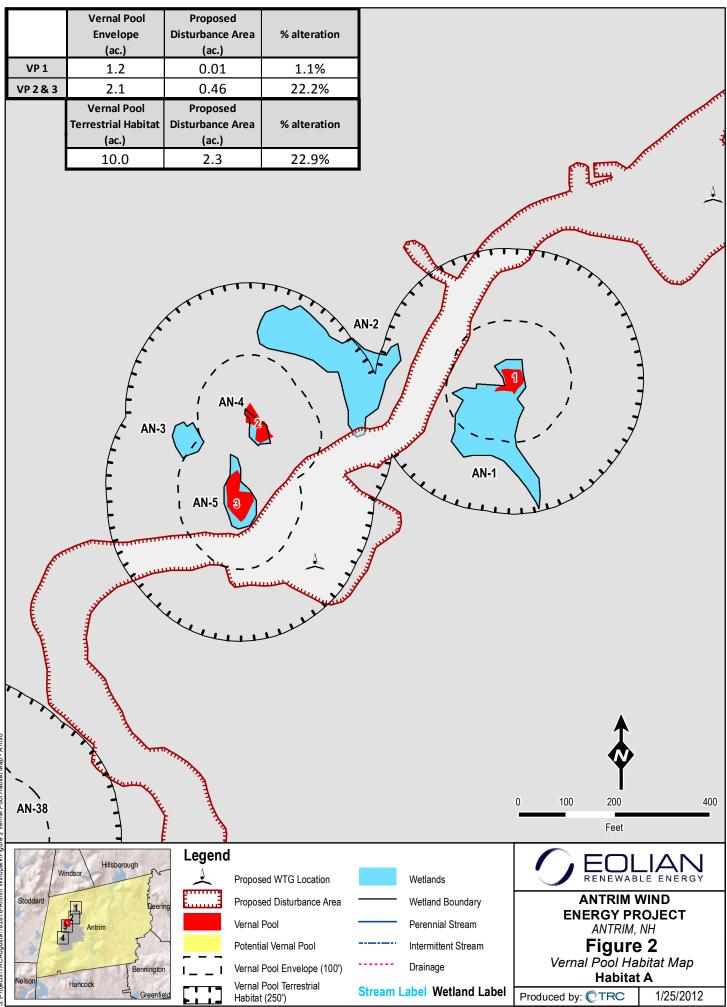
There are no impacts to vernal pool depressions. Impacts to vernal pools are indirect and are from road and turbine construction in areas adjacent to the pools. The indirect impacts to the 5 natural vernal pools (VP1-VP5) and the potential vernal pool (VP7) were all assessed. In discussions with Mark Kern from the U.S. Environmental Protection Agency and David Keddell from the Army Corps (during a site visit to the vernal pools December 13, 2011), the assessment of impacts should consider the project footprint within 250 feet of the pools, and the area within 100 feet of the vernal pool depression. The upland and wetland area within 250 feet and adjacent to the vernal pool is defined as vernal pool "terrestrial habitat", and the area within 100 feet of the pool is the vernal pool "envelope" (Calhoun and Klemens 2002; Calhoun and deMaynadier 2004). See Figure 2 for detailed maps of the vernal pools and the terrestrial habitat areas.

The vernal pools found on this site are in three distinct areas. Vernal pools 1, 2 and 3 are close to each other, and their terrestrial habitats overlap ("Habitat A"). Vernal pools 4 and 5 are also close to each other and their respective terrestrial habitat areas also overlap ("Habitat C"). Potential vernal pool VP7 terrestrial habitat does not overlap with any other vernal pool habitat ("Habitat B").

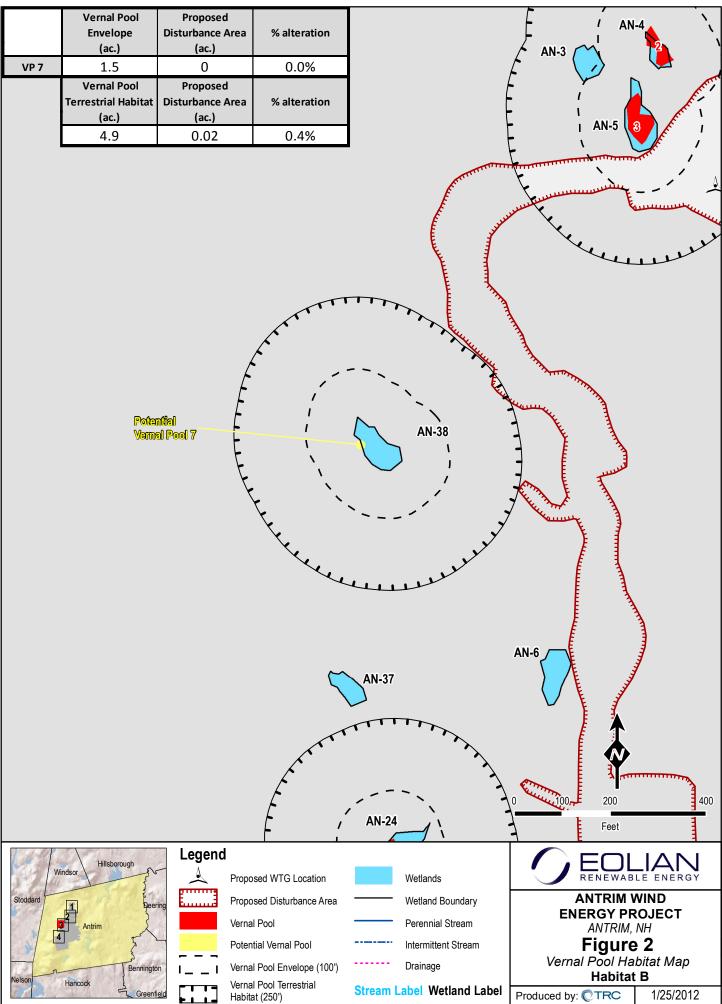
There are no state regulations in New Hampshire, other than wetland protection rules, to regulate development within and adjacent to vernal pools. The Army Corps does regulate impacts to vernal pools as a type of special wetland through Section 404 of the Clean Water Act. The Army Corps Programmatic General Permit No: NAE-2007-461 (PGP) for the State of New Hampshire states that applicants must minimize surrounding upland impacts to the greatest extent practicable, with the effort to minimize impacts being commensurate with the value of the VP. The Army Corps PGP also recommends that impacts should be excluded from the vernal pool envelope and that certain guidelines for vernal pool management are followed, which suggest that the developed area (such as gravel surfaces) is kept to less than 25% of the terrestrial habitat area (Calhoun and Klemens 2002).

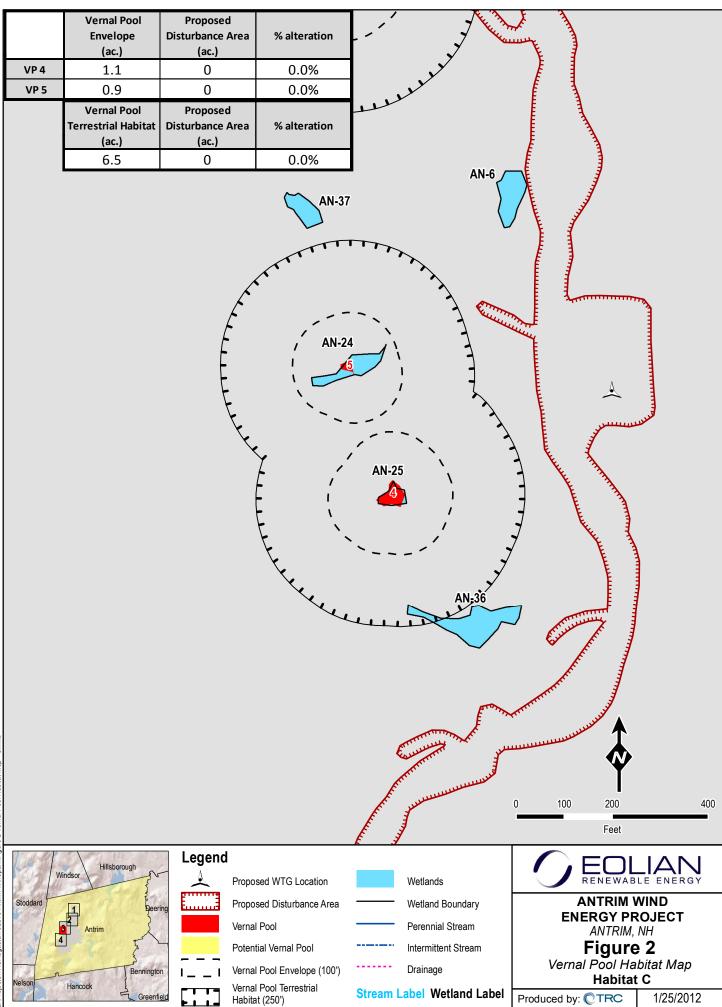
A gravel road and turbine pad is found within vernal pool Habitat A and a small portion of road is found within Habitat B. Analysis demonstrates that the impact to Habitat A terrestrial habitat is 2.3 acres of the 10 acre terrestrial habitat area, or 22.9% of the total terrestrial habitat area. Vernal pool 1 envelope impact is .01 acre of a 1.2 acre envelope area, or 1.1% of the envelope. Vernal pools 2 and 3 envelope impact is 0.46 acres to a 2.1 acre envelope area, or 22.2% of the envelope. Impact to Habitat B is approximately 0.02 acres of the 4.9 acre terrestrial habitat area, or 0.4% of the total terrestrial habitat area. There is no impact to Habitat B (VP7) vernal pool envelope. There is no impact to the terrestrial habitat or envelope of Habitat C.

The level of impact to the terrestrial habitat areas is below the recommended 25% developed area threshold. There is, however some impact to the vernal pool envelope area. These impacts are mitigated by the gravel road not being open to public vehicle traffic and as such will have a very limited volume of traffic and a very low potential to impact any vernal pool species crossing the road. Narrow gravel roads are also not significant barriers to amphibians, and will not hinder movement of the animals through the area. It is anticipated that the proposed development of this area will have no impact on the productivity of these vernal pools.



Projects\TRCAugusta\182878-Antrim Windpark\Figure 2 Vermal Pool Habitat





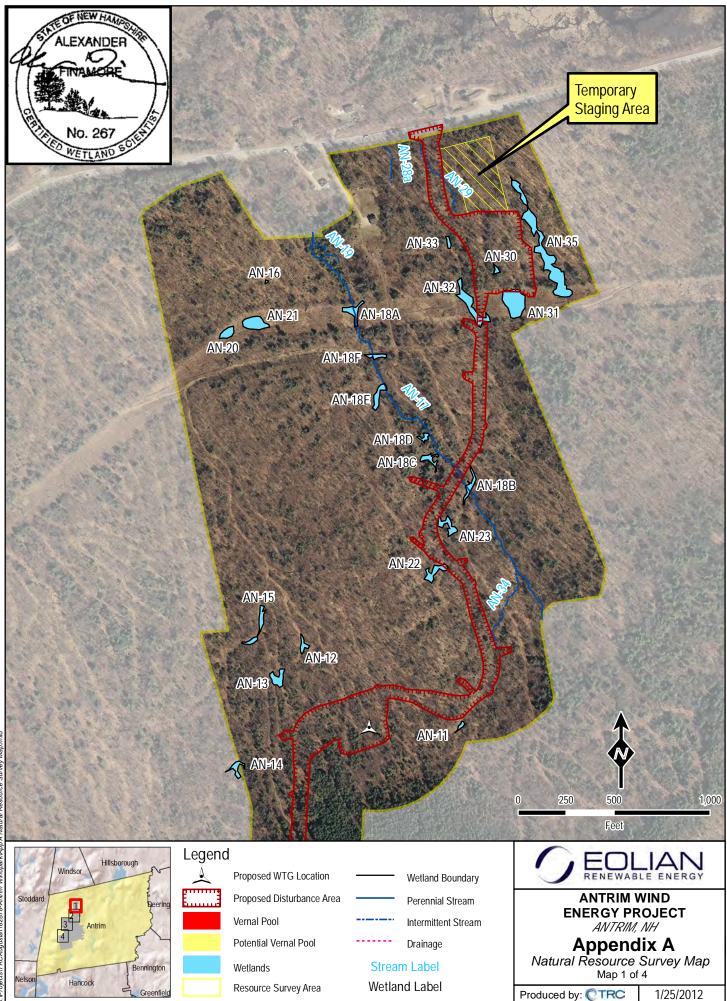
s:\Projects\TRCAugusta\182878-Antrim Windpark\Figure 2 Vernal Pool Habitat Map - C

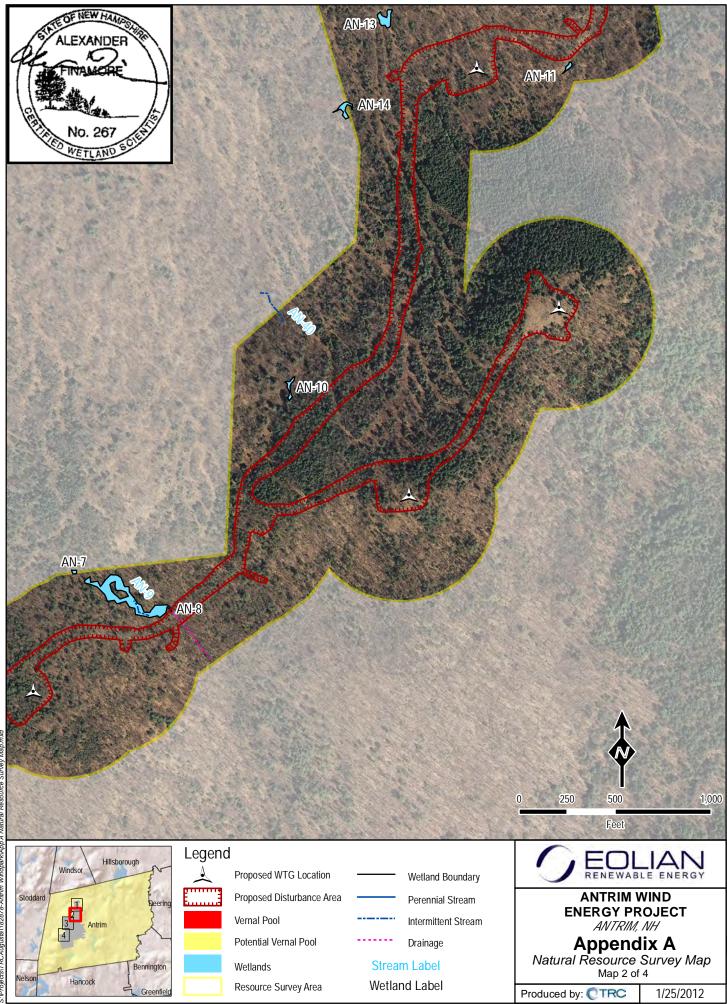
5.0 **REFERENCES**

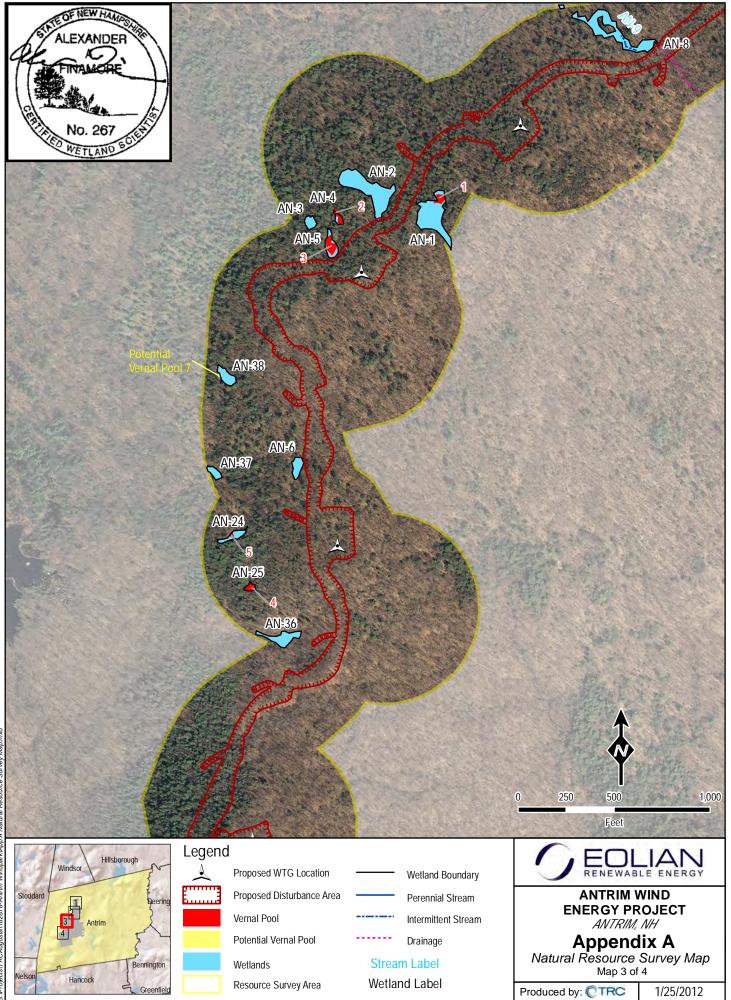
- Calhoun, A. J. K. and P. deMaynadier. 2004. Forestry habitat management guidelines for vernal pool wildlife. MCA Technical Paper No. 6, Metropolitan Conservation Alliance, Wildlife Conservation Society, Bronx, New York.
- Calhoun, A. J. K. and M. W. Klemens. 2002. Best development practice: Conserving poolbreeding amphibians in residential and commercial developments in the northeastern United States. MCA Technical Paper No. 5, Metropolitan Conservation Alliance, Wildlife Conservations Society, Bronx, New York.
- Identification and Documentation of Vernal Pools in New Hamphire. Anne Tappan, Ed. NH Fish & Game Department, Nongame and Endangered Wildlife Program. 1997.
- Maine Amphibians and Reptiles. Malcolm J. Hunter, Aram J.K. Calhoun, & Mark McCollough, Ed. University of Maine Press. 1999.

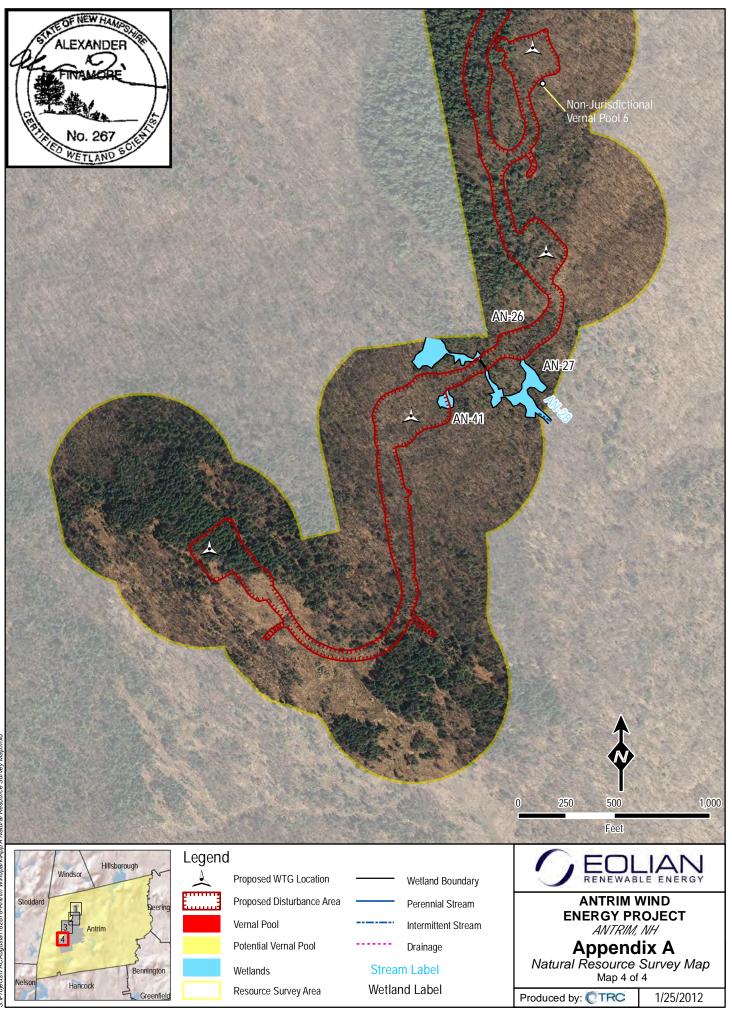
APPENDIX A

Natural Resource Survey Map









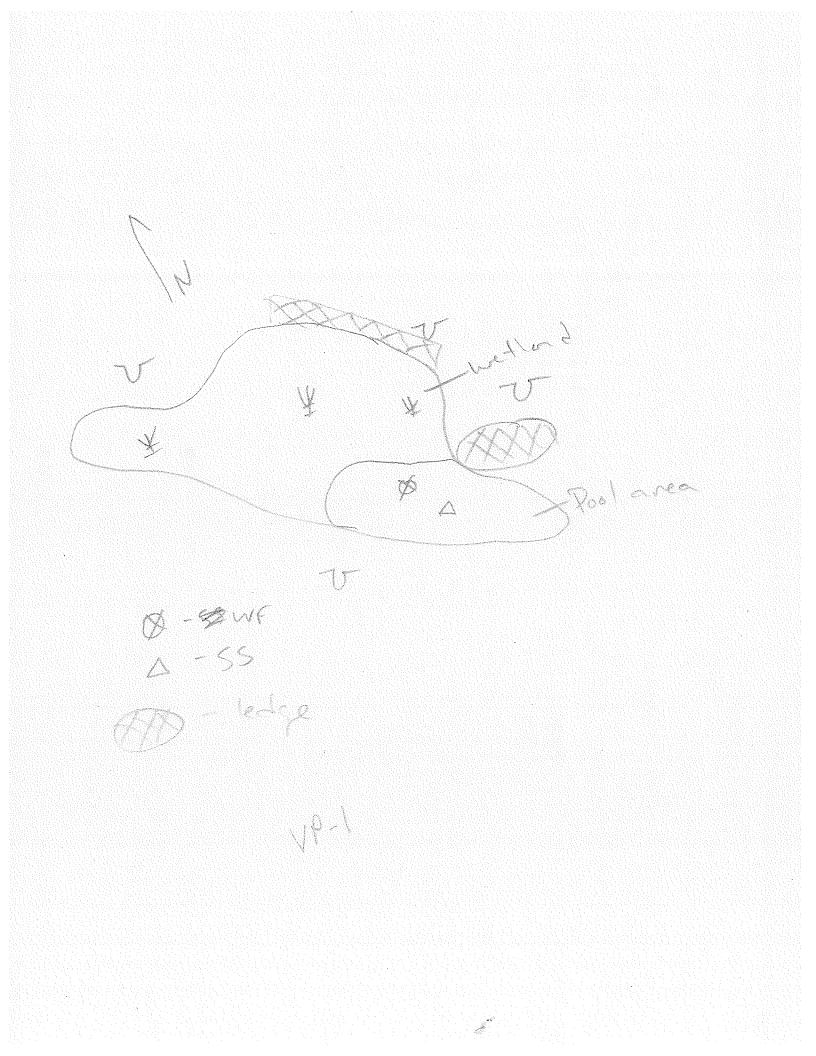
3:Projects\TRCAugusta\182878-Antrim Windpark\App A Natural Resource

APPENDIX B

Vernal Pool Field Data Forms & Vernal Pool Site Photographs

				TION (PAR			VP-
Observer's name	in Boldus	é Mext	`} NAAN SS€	Phone numbe	207)8	779-1930	Ext 143
Address 400 S	Barthkoron	ch Deir	e Sonth	Portland	ME		
Location of pool	He Hill A	hotim,	NH				
GPS (if available):	Latitude	903.4 <i>5</i> 4	Longit	ude <u>W072°0</u>	<u>1.08</u> 2	Datum	
Photos attached		pool		an	imals		
	g						
Date:5/2//	1/		Time star	1. 2:10		Time end	: 45
Weather <u>OWNCHS</u> Rud =	+ 60°4		Pool size	20XSO red Brestimat	led	Water depto2	-8
SPECIES	Stated Salan	wood frees	George hog				
adult		1					
vocalization			1				
amplexus							
courtship							
spermatophores							
eggs	Chasses	Smasses					
tadpoles/larvae							
juveniles							
Comments:							
Date:			Time s	start		Time end	
Weather			Pool si			Water depth	
SPECIES							
adult							
vocalization							
amplexus							
courtship							
spermatophores							
eggs							
tadpoles/larvae							
juveniles							
Comments:		1					1

Use the back of the sheet for sketch/field map of the pool.



1P-1 **VERNAL POOL HABITAT DOCUMENTATION (Part 2 of 2)** Pool Location Tutle Hill, AntRim, NH Observer JB + AF SITE/ TYPE: upland-isolated (pool not associated with a wetland) bottomland-isolated (pool in a floodplain, not in a wetland) wetland complex (pool within or associated with a larger wetland habitat, i.e. red maple swamp, marsh, pond edge, other) HABITAT: (estimate % of type) 50% woodland (specify type) √ mixed deciduous coniferous agriculture or open fields gravel pit residential roadside other **OVERSTORY:** heavy overstory, >50% shrubs and/or trees moderate overstory, <50% shrubs and/or trees open site with grasses, forbs, scattered shrubs COVER: Any material in the pool that can provide egg attachment sites and offer concealment to aquatic adults and/or developing arvae (estimate % of type). 20% shrubs _ emergent vegetation (i.e. grass, cattails) branches, twigs (in pool or overhanging into water) submergent vegetation 90% sphagnum moss other BOTTOM: (estimate % of types composing bottom surface) _____sand mud/soft sediment V leaf litter 90% _____ submergent vegetation emergent vegetation DOMINANT PLANTS, LIST: (optional) Ace rub, vac cor, Black spruce Sphagnum I car Sp., OSM cin P.I + mound surrounded by mossy wetland WE eggs mature COMMENTS: Attach location documentation. Photo I - South Photo 4- Wood Frog Photo Z- West Photo 3- Spotted 47

VP-1

Inclu	Ide with documentation for each vernal pool.
~	flooded pool visit photos included
	dry, drying pool visit photos included
\leq	field map of pool
	written directions to pool
	USGS map, photo copy
	ONE of the following, indicating pool location:
	tax assessors map detailed location information
	Evidence of vernal pool indicator species (check all present): fairy shrimp wood frog
Report	er's name Jim Bolduc & Alex Finamore
Addres	ss 400 Southborough Drive h PortLoud, ME 04106
<u>Jou1</u>	number (207) 879-1930 Ext 143
Phone	number $(201) - 3 (7 - 1750 - 8 \times 177)$





VP1 wood frog eggs



VP1 spotted salamander eggs





VP1 second visit June 2011



VP1 second visit June 2011

Observer's name	$\overline{\beta + A}$	£		Phone nu	mber		
Address							
Location of pool		医结核病 化合理合物 化合合合物 化合合合物 网络拉马拉马	and the second state of the second state of the	state of the second			
GPS (if available):	Latitude <u>4</u>	303.43	Longi	tude <u>72</u>	01.20	∽ Datum	AD 83
Photos attached	2	pool			_animals		
و و و و و و و و و و و						승규는 그는 가슴을 물을 가 한다. 말을 가 봐요.	
Date: <u>5-5-2</u> Weather <u>Scaller</u>	<u>2611</u>		_ Time sta	n <u>11,50</u>		Time end	<u>~ 11</u>
Weather <u>>callars</u>	2 shav	very	Pool size	<u>lox⊢</u> ured ⊋estin	t <i>o</i> mated	Water depth	<u>q''</u>
SPECIES	WR	55					
adult							
vocalization		÷,					
amplexus							
courtship							
spermatophores							
eggs	1	16					
tadpoles/larvae							
juveniles							
N	1	11		1			
Comments:							
				5004454			
)ate:			_ Time :	start		Time end	
Veather			Pool s	ize		Water depth	
SPECIES							
SPECIES adult							
						erente estistentente de	
adult							
adult vocalization							
adult vocalization amplexus							
adult vocalization amplexus courtship							
adult vocalization amplexus courtship spermatophores							

VP-2

Use the back of the sheet for sketch/field map of the pool.

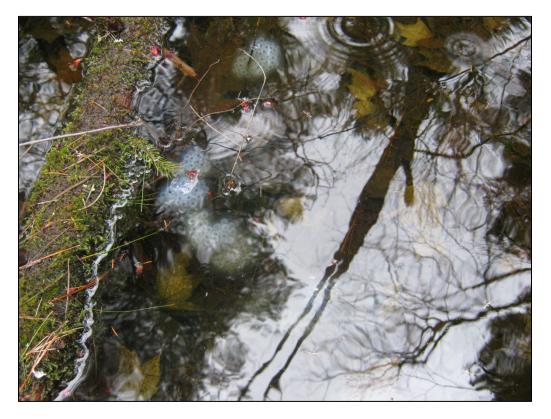
VP-2 Flage 1-10 Photos = 4 17 X -SS eggs (approx) C.I - WE Egg (Line) 🕅 - Idee overs y - yellard - v- spl-s 0 - Phut luchion

VP-2-**VERNAL POOL HABITAT DOCUMENTATION (Part 2 of 2)** Pool Location Tutte Hill, Antrim Observer TR+AF SITE/ TYPE: upland-isolated (pool not associated with a wetland) bottomland-isolated (pool in a floodplain, not in a wetland) wetland complex (pool within or associated with a larger wetland habitat, i.e. red maple swamp, marsh, pond edge, other) Trolated fed maple Swamp (very Small) HABITAT: (estimate % of type) ____ deciduous 100 woodland (specify type) mixed _____ coniferous ____agriculture or open fields gravel pit residential roadside other_ **OVERSTORY:** heavy overstory, >50% shrubs and/or trees moderate overstory, <50% shrubs and/or trees open site with grasses, forbs, scattered shrubs COVER: Any material in the pool that can provide egg attachment sites and offer concealment to aquatic adults and/or developing arvae (estimate % of type). 15 shrubs emergent vegetation (i.e. grass, cattails) 25 branches, twigs (in pool or overhanging into water) submergent vegetation Sphagnum moss other_____ BOTTOM: (estimate % of types composing bottom surface) sand mud/soft sediment 100 leaf litter submergent vegetation emergent vegetation DOMINANT PLANTS, LIST: (optional) Ace NS, Vac Cor, Sp: lat Toolated pool in pocket of ledge near Top of mat. COMMENTS: Attach location documentation.

	VP-2
'ERNAL PO	OL DOCUMENTATION COVER SHEET
Inclu	Ide with documentation for each vernal pool.
<u> </u>	flooded pool visit photos included
	dry, drying pool visit photos included
<u> </u>	field map of pool
	written directions to pool
	USGS map, photo copy
	ONE of the following, indicating pool location: tax assessors map
	detailed location information
	Evidence of vernal pool indicator species (check all present):
	salamande (spotted, Jefferson, blue-spotted) courtship spermatophores egg mass larvae
\leq	Photos of indicator species (4)
	Documentation forms and maps submitted to <u>both</u> : town conservation commission Nongame and Endangered Wildlife Program, NH Fish and Game Department, 11 Hazen Drive, Concord, NH 03301
Report	er's name Jim Bolduc + Alex Finamore
Addres	3S
Phone	number
	for participating in the vital process of protecting the resources of your and the state.



VP2 wood frog eggs



VP2 spotted salamander eggs







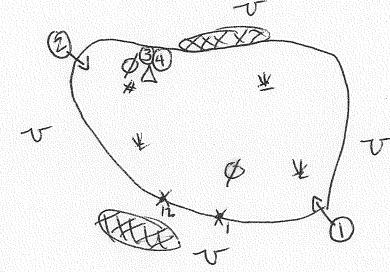
VP2 second visit June 2011

		A ~	OCUMENTATION			
Observer's name	<u>, 16 + /</u>	<u>V</u>	Phone	enumber		
Address	비. 니		A to a			
Deation of pool		3 NZ 414	Antrim Longitude 72	0 66 202		10 07
Photos attached		<u> </u>	Longitude <u>12</u>		Datum <u>_</u> ₩∳	1063
		pool	<u> </u>	animals		
Date: 5-5-	2011		Time start 12-	••••••••••••••••••••••••••••••••••••••	• • • • • • • • • •	•••••• 7 4n
leather Gate	red Show	un 55	Time start <u>12;</u>	<u></u> 5`0	Water depth	<u>2:46</u> 8''
	1	1		estimated		<u> </u>
SPECIES	WF	55	Red Newt			
adult			1			
vocalization						
amplexus						
courtship						
spermatophores						
eggs	5	9				
adpoles/larvae						
uveniles						
	<u> </u>	<u>. </u>		<u> </u>		
nments:						
and a state of the s	ennengelegelikker		•••••••		6 3 6 6 6 6 5 5	

• • • • • • • • • • • • • • • • • • •	• • • • • • • •		Time start		Time end	
	• • • • • • •		Time start Pool size		Time end Water depth_	
ather						
ather						
species						
atherSPECIES dult ocalization						
SPECIES dult coalization nplexus						
atherSPECIES duit ocalization mplexus ourtship						
SPECIES dult ocalization mplexus ourtship permatophores						
satherSPECIES adult rocalization implexus ourtship permatophores ggs						

Use the back of the sheet for sketch/field map of the pool.

VP-3 lags 1-12



Ø = 55 △ = WF # - Red Newt = ledge outerop P Photo location (+ disection) JP?S

VERNAL POOL HABITAT DOCUMENTATION (Part 2 of 2) Tuttle Hill - Antrim Observer JB + AF Pool Location SITE/ TYPE: ____ upland-isolated (pool not associated with a wetland) bottomland-isolated (pool in a floodplain, not in a wetland) wetland complex (pool within or associated with a larger wetland habitat, i.e. red maple swamp, marsh, pond edge, other) intered + Small HABITAT: (estimate % of type) /<u>oo</u> woodland (specify type) mixed ____ deciduous coniferous agriculture or open fields gravel pit residential roadside other **OVERSTORY:** heavy overstory, >50% shrubs and/or trees moderate overstory, <50% shrubs and/or trees open site with grasses, forbs, scattered shrubs COVER: Any material in the pool that can provide egg attachment sites and offer concealment to aquatic adults and/or developing arvae (estimate % of type). /S shrubs 50 emergent vegetation (i.e. grass, cattails) branches, twigs (in pool or overhanging into water) submergent vegetation 20 sphagnum moss other BOTTOM: (estimate % of types composing bottom surface) _____sand mud/soft sediment leaf litter submergent vegetation emergent vegetation DOMINANT PLANTS, LIST: (optional) COMMENTS: J Isolated Pool in ledge poced near somet (Torbin 4) Attach location documentation (Ace mb, Sci cyp, Sphagnon, Spi lat, Car Sp.) Vac Cor

	Include with documentation for each vernal pool.
	flooded pool visit photos included
	dry, drying pool visit
	photos included
	field map of pool
	written directions to pool
	USGS map, photo copy
	ONE of the following, indicating pool location:
	tax assessors map
	detailed location information
	Evidence of vernal pool indicator species (check all present):
	fairy shrimp
	wood frog chorus
	amplexus
	egg mass
	tadpoles
	salamander(spotted, Jefferson, blue-spotted) courtship
	spermatophores
	egg mass
	larvae
_	Photos of indicator species
	Documentation forms and maps submitted to both:
-	town conservation commission
	Nongame and Endangered Wildlife Program, NH Fish
	and Game Department, 11 Hazen Drive, Concord, NH 03301
F	reporter's name Jim Bolduc + Alex Finamone
\$	
β	ddress
ρ	hone number

VP-3



VP3 wood frog eggs



VP3 spotted salamander eggs







VP3 second visit June 2011

							VP-4
	VEDNAI						Plags
Observer's name		LPOOLDO					
	<u>1 16 / 17</u>			Phone numb	er		
Address	Between	~ -n.H	o HCiU	+1,516	and M	1 - K	Antriv
GPS (if available):		5 03.127				Datum NA	
Photos attached	Z		Longia	jung 1	nimals	Datum <u>y Q J</u>	(ve_
Date: 5-5			Time star	· E-1:5	52	Time end Z	.:15
Veather <u>Partlu</u>	1 Chidy	55°	Pool size	Sox40 red Restima		Water depth	16"
SPECIES	WF	55					
adult							
vocalization							
amplexus							
courtship							
spermatophores							
eggs	4	55					
tadpoles/larvae							
juveniles							
omments:	k		1	L		1	1
Ginnertə							
ate:			Time s	tart		Time end	
Date: Veather			Time si Pool si			Water depth	
/eather							
Veather							
Veather							
VeatherSPECIES adult vocalization amplexus							
Veather SPECIES adult vocalization amplexus courtship							
Veather SPECIES adult vocalization amplexus courtship spermatophores							
Veather SPECIES adult vocalization amplexus courtship							

Use the back of the sheet for sketch/field map of the pool.

UD-4 1-10 lags v trail D ۵ U D ¥ ¥=55 à = WF - wither v- upland Phato lication (w/ direction) 18.4

Pool Location Betree	- Tottle HUM + W. Mand mul Observer JB + AF
SITE/ TYPE:	
	upland-isolated (pool not associated with a wetland)
	bottomland-isolated (pool in a floodplain, not in a wetland)
	habitat, i.e. red maple swamp, marsh, pond edge, other) Hembock swamp
HABITAT: (estimate % o	f type)
<u>/00</u>	woodland (specify type) deciduous coniferous mixed agriculture or open fields
	gravel pit
	residential roadside
	other
OVERSTORY:	
<u> </u>	heavy overstory, >50% shrubs and/or trees (planlock)
	moderate overstory, <50% shrubs and/or trees open site with grasses, forbs, scattered shrubs in the pool that can provide egg attachment sites and offer concealment to aquatic adults and/or
developing arv	moderate overstory, <50% shrubs and/or trees open site with grasses, forbs, scattered shrubs
developing arv	moderate overstory, <50% shrubs and/or trees open site with grasses, forbs, scattered shrubs in the pool that can provide egg attachment sites and offer concealment to aquatic adults and/o rae (estimate % of type). shrubs emergent vegetation (i.e. grass, cattails) branches, twigs (in pool or overhanging into water) submergent vegetation sphagnum moss
developing arv	moderate overstory, <50% shrubs and/or trees open site with grasses, forbs, scattered shrubs in the pool that can provide egg attachment sites and offer concealment to aquatic adults and/o rae (estimate % of type). shrubs emergent vegetation (i.e. grass, cattails) branches, twigs (in pool or overhanging into water) submergent vegetation sphagnum moss other
developing arv	moderate overstory, <50% shrubs and/or trees open site with grasses, forbs, scattered shrubs in the pool that can provide egg attachment sites and offer concealment to aquatic adults and/o rae (estimate % of type). shrubs emergent vegetation (i.e. grass, cattails) branches, twigs (in pool or overhanging into water) submergent vegetation sphagnum moss other
developing arv	moderate overstory, <50% shrubs and/or trees open site with grasses, forbs, scattered shrubs in the pool that can provide egg attachment sites and offer concealment to aquatic adults and/o rae (estimate % of type). shrubs emergent vegetation (i.e. grass, cattails) branches, twigs (in pool or overhanging into water) submergent vegetation sphagnum moss other
developing arv	moderate overstory, <50% shrubs and/or trees open site with grasses, forbs, scattered shrubs in the pool that can provide egg attachment sites and offer concealment to aquatic adults and/o rae (estimate % of type). shrubs emergent vegetation (i.e. grass, cattails) branches, twigs (in pool or overhanging into water) submergent vegetation sphagnum moss other
developing arv	moderate overstory, <50% shrubs and/or trees open site with grasses, forbs, scattered shrubs in the pool that can provide egg attachment sites and offer concealment to aquatic adults and/o rae (estimate % of type). shrubs emergent vegetation (i.e. grass, cattails) branches, twigs (in pool or overhanging into water) submergent vegetation sphagnum moss other
developing arv	moderate overstory, <50% shrubs and/or trees open site with grasses, forbs, scattered shrubs in the pool that can provide egg attachment sites and offer concealment to aquatic adults and/o vae (estimate % of type). shrubs emergent vegetation (i.e. grass, cattails) branches, twigs (in pool or overhanging into water) submergent vegetation sphagnum moss other

	NH-4
VERNA	L POOL DOCUMENTATION COVER SHEET
	Include with documentation for each vernal pool.
	flooded pool visit photos included (x 24)
	dry, drying pool visit photos included
	field map of pool
	written directions to pool
	USGS map, photo copy
	ONE of the following, indicating pool location:
	tax assessors map detailed location information
	 wood frog chorus amplexus egg mass egg mass tadpoles salamander (spotted,)efferson, blue-spotted) courtsbip spermatophores egg mass larvae larvae
	Photos of indicator species
	Documentation forms and maps submitted to both: town conservation commission Nongame and Endangered Wildlife Program, NH Fish Nongame and Endangered Wildlife Program, NH Fish Nongame Department, 11 Hazen Drive, Concord, NH 03301
f	Reporter's name Im Bolduc + Alex Finaman
	Address
F	Phone number
	k you for participating in the vital process of protecting the resources of your nunity and the state.



VP4 spotted salamander eggs



VP4 spotted salamander eggs



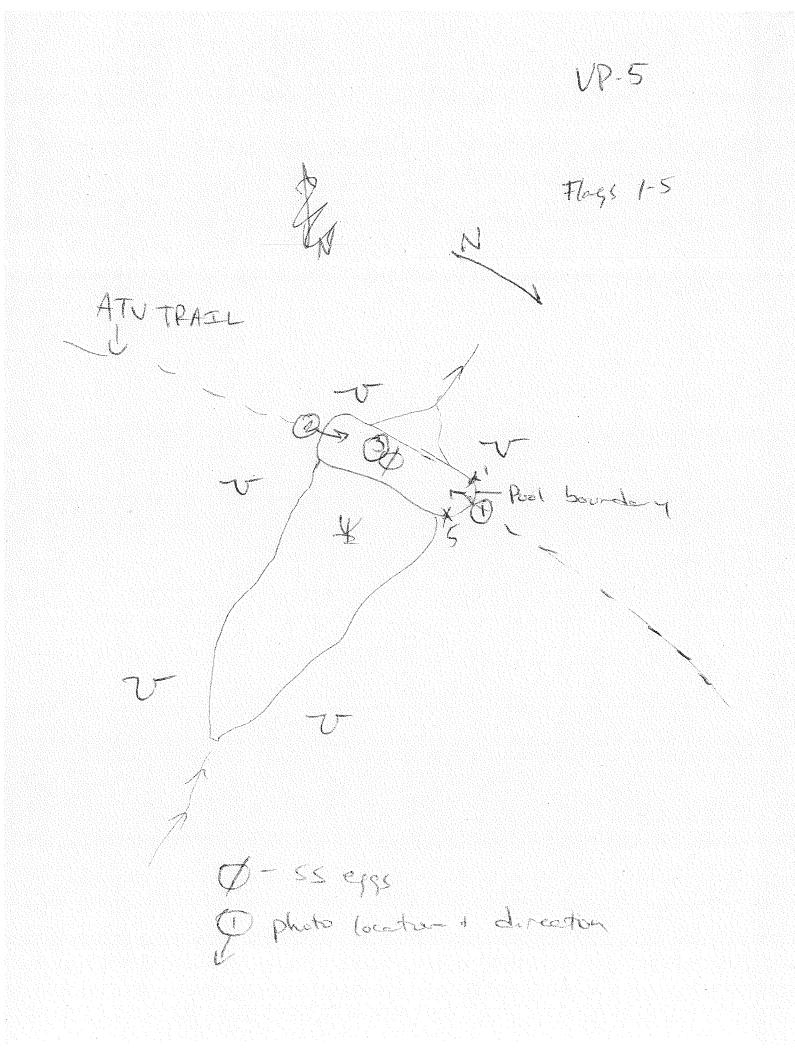




VP4 second visit June 2011

							VP-	
Observer's name	500° attime	POOL DO					V F- 5-f	
Address								
_ocation of pool	etween	THE	e Hih	L W	Mart	Annt		
GPS (if available):	Latitude <u>43</u> °	03.169	Longit	ude <u>77°</u> C	<u>91.319</u>	Mmf Datum <u>N</u> +	40 83	
Photos attached					nimals			
Date: <u>5-9</u> -			Time star	<u>1 9:00</u>	• • • • • • •	Time end	 25:45	
Weather <u>Sin</u>	$\nabla $, $r $		Pool size_ 15 X25			Water depth		
	1		🗆 measu	red Øestima	ted			
SPECIES	- 55							
adult								
vocalization								
amplexus								
courtship								
spermatophores								
eggs	10							
tadpoles/larvae								
and the second								
juveniles				L				
juveniles Comments: Date:	•••••		Time s	••••••••••••••••••••••••••••••••••••••		••••••••••••••••••••••••••••••••••••••	•••••	
Comments:						Time end		
Comments:		••••••						
Comments: Date: Veather		•••••••						
Comments: Date: Veather SPECIES								
Comments: Date: Veather SPECIES adult								
Comments: Date: Veather SPECIES adult vocalization								
Comments: Date: Veather SPECIES adult vocalization amplexus								
Comments: Date: Veather SPECIES adult vocalization amplexus courtship								
Comments: Date: Veather adult vocalization amplexus courtship spermatophores								

Use the back of the sheet for sketch/field map of the pool.



				VP-S	
	VER	NAL POOL HABIT	AT DOCUMENTATIO	DN (Part 2 of 2)	
Pool Location_	Betwee	- Tottle tive	+ willing Observe	<u>r_]B+AF</u>	
SITE/ TYPE:					
		and-isolated (pool not as			
			a floodplain, not in a wetland		
			or associated with a larger p, marsh, pond edge, other)		
	nas	Seed	p, marsh, pond cage, other)		
		$> \neg$			
HABITAT: (estim					
			deciduous	coniferous	👱 mixed
	agri grav	iculture or open fields			
	grav				
	road				
	othe	ər			
OVERSTORY:					
		vy overstory, >50% shrut			
		lerate overstory, <50% sl	nrubs and/or trees		
		n site with grasses, forbs	, scattered shrubs		
	naterial in the oping arvae (es shru eme brar subr spha	pool that can provide stimate % of type). ubs ergent vegetation (i.e. granches, twigs (in pool or ow mergent vegetation agnum moss	, scattered shrubs egg attachment sites and a iss, cattails)	offer concealment to aqua	tic adults and/or
	naterial in the oping arvae (es shru eme brar subr	pool that can provide stimate % of type). ubs ergent vegetation (i.e. granches, twigs (in pool or ow mergent vegetation agnum moss	, scattered shrubs egg attachment sites and a iss, cattails)	offer concealment to aqua	tic adults and/or
	naterial in the oping arvae (es shru eme brar subr spha	pool that can provide stimate % of type). ubs ergent vegetation (i.e. granches, twigs (in pool or ow mergent vegetation agnum moss	, scattered shrubs egg attachment sites and a iss, cattails)	offer concealment to aqua	tic adults and/or
develc	naterial in the oping arvae (es shru brar subr spha othe mate % of types	pool that can provide stimate % of type). ubs ergent vegetation (i.e. granches, twigs (in pool or over mergent vegetation agnum moss er	, scattered shrubs egg attachment sites and i iss, cattails) verhanging into water)	offer concealment to aqua	tic adults and/or
develc	naterial in the oping arvae (es shru brar subr spha sthe shrate % of types sand	pool that can provide timate % of type). Ibs Inches, twigs (in pool or or mergent vegetation agnum moss Inches, twigs (in pool or or mergent vegetation (i.e., gra Inches, twigs (in pool or or mergent vegetation agnum moss Inches, twigs (in pool or or mergent vegetation agnum moss Inches, twigs (in pool or or mergent vegetation (i.e., gra Inches, twigs (in pool or or mergent vegetation (i.e., twigs (in pool or or mergent vegetat	, scattered shrubs egg attachment sites and i iss, cattails) verhanging into water)	offer concealment to aqua	itic adults and/or
develc	naterial in the oping arvae (es shru brar spha spha spha shra shra sano sano sano sano	pool that can provide stimate % of type). ubs ergent vegetation (i.e. granches, twigs (in pool or or mergent vegetation agnum moss er composing bottom surfa	, scattered shrubs egg attachment sites and i iss, cattails) verhanging into water)	offer concealment to aqua	tic adults and/or
develc	naterial in the oping arvae (es shru subr spha spha spha shra spha spha sanc mud / <u>@0</u> leaf	pool that can provide optimate % of type). ubs ergent vegetation (i.e. granches, twigs (in pool or own mergent vegetation agnum moss er a composing bottom surfa d l/soft sediment litter	, scattered shrubs egg attachment sites and i iss, cattails) verhanging into water)	offer concealment to aqua	tic adults and/or
develc	naterial in the oping arvae (es shru shru spha spha spha shru sanc 	pool that can provide stimate % of type). ubs ergent vegetation (i.e. granches, twigs (in pool or or mergent vegetation agnum moss er composing bottom surfa	, scattered shrubs egg attachment sites and i iss, cattails) verhanging into water)	offer concealment to aqua	tic adults and/or
develc	naterial in the oping arvae (es shru shru spha spha spha shru sanc 	pool that can provide out intimate % of type). Ibs ergent vegetation (i.e. granches, twigs (in pool or or mergent vegetation agnum moss er composing bottom surfated d //soft sediment litter mergent vegetation	, scattered shrubs egg attachment sites and i iss, cattails) verhanging into water)	offer concealment to aqua	tic adults and/or
develc	naterial in the oping arvae (es shru brar subr spha spha spha spha spha subr leaf subr eme	pool that can provide outimate % of type). Ibs ergent vegetation (i.e. granches, twigs (in pool or own mergent vegetation agnum moss er a composing bottom surfar d Vsoft sediment litter mergent vegetation orgent vegetation	, scattered shrubs egg attachment sites and i iss, cattails) verhanging into water)	offer concealment to aqua	tic adults and/or
develc	naterial in the oping arvae (es shru brar subr spha spha spha spha spha subr leaf subr eme	pool that can provide outimate % of type). Ibs ergent vegetation (i.e. granches, twigs (in pool or own mergent vegetation agnum moss er a composing bottom surfar d Vsoft sediment litter mergent vegetation orgent vegetation	, scattered shrubs egg attachment sites and i iss, cattails) verhanging into water)	offer concealment to aqua	tic adults and/or
develo BOTTOM: (estim	naterial in the oping arvae (es shru sbru sphu sphu sphu sphu sanu sanu sanu leaf subr subr subr subr subr	pool that can provide optimate % of type). ubs ergent vegetation (i.e. granches, twigs (in pool or or mergent vegetation agnum moss er a composing bottom surfar d //soft sediment litter mergent vegetation urgent vegetation optional)	, scattered shrubs egg attachment sites and i iss, cattails) verhanging into water)		
develo BOTTOM: (estim	naterial in the oping arvae (es shru sbru sphu sphu sphu sphu sanu sanu sanu leaf subr subr subr subr subr	pool that can provide optimate % of type). ubs ergent vegetation (i.e. granches, twigs (in pool or or mergent vegetation agnum moss er a composing bottom surfar d //soft sediment litter mergent vegetation urgent vegetation optional)	, scattered shrubs egg attachment sites and i iss, cattails) verhanging into water)		
develo BOTTOM: (estim	naterial in the oping arvae (es shru brar subr spha spha spha spha spha subr eme .NTS, LIST: (op	pool that can provide optimate % of type). ubs ergent vegetation (i.e. granches, twigs (in pool or or mergent vegetation agnum moss er a composing bottom surfar d //soft sediment litter mergent vegetation urgent vegetation optional)	, scattered shrubs egg attachment sites and i iss, cattails) verhanging into water)		

h gazd	
VERN	AL POOL DOCUMENTATION COVER SHEET
	Include with documentation for each vernal pool.
	flooded pool visit photos included
	dry, drying pool visit photos included
	field map of pool
	written directions to pool
	USGS map, photo copy
	ONE of the following, indicating pool location:
	tax assessors map detailed location information
	Evidence of vernal pool indicator species (check all present): fairy shrimp wood frog chorus amplexus egg mass tadpoles salamander (spotted, Jefferson, blue-spotted) courtship spermatophores
	<i>ic</i> egg mass larvae
	Photos of indicator species
	Documentation forms and maps submitted to both:
	Reporter's name Jim Bolduc + Alex Forcement
	Address
	Phone number

48



VP5 spotted salamander eggs





VP5



VP5 second visit June 2011

						UT	26	
						α	2-6 -95 1	- Î
	VERNA	LPOOL	DOCUMENT	ATION (PA	RT 1 OF 2)	$\sim (>)$	Ó
Observer's name 5	B+ A	F		Phone nur	nber			
ddress								
ocation of pool	sillard	m,	nt.					_
iPS (if available):	Latitude 43	and the second second	18 Long	ritude <u>72°(</u>	51.279	Datum	AD83	
hotos attached		pool			_animals			
		5 0 5 0 6 0		,		* * * * * * *		•
ate: <u>59</u>		1 20		art (035		Time end_/	<u>25:0</u>	_
/eather <u>Sow</u>	$nq \sim$	65°	Pool siz	e <u>(0 ∧ Z</u> aured ⊠a estir	nated	Water depth	<u> </u>	-
SPECIES	4			<i>y</i>] -
adult								
vocalization								
amplexus								
courtship								
spermatophores	<u> </u>							
eggs								
tadpoles/larvae juveniles								
omments:	<u>n</u>	old	rela	ferm	<u>. d.</u>			<u></u>
								_
ate:			Time	start		Time and		٥
				size				
eather								
					영말 입장 말을 얻을			
eather								
SPECIES								
SPECIES								
SPECIES adult vocalization								
SPECIES adult vocalization amplexus								
SPECIES adult vocalization amplexus courtship								
eather SPECIES adult vocalization amplexus courtship spermatophores eggs								
SPECIES adult vocalization amplexus courtship spermatophores eggs								
SPECIES adult vocalization amplexus courtship spermatophores								

Use the back of the sheet for sketch/field map of the pool.

JP-6 1-5 Flays N q=sseque Q=ne old form road

	IA I TO M
Pool Location W(1	by mut Observer TRAAF
SITE/ TYPE:	
	upland-isolated (pool not associated with a wetland)
	bottomland-isolated (pool in a floodplain, not in a wetland)
<u>~</u>	wetland complex (pool within or associated with a larger wetland
	habitat, i.e. red maple swamp, marsh, pond edge, other) Isolates which all formed
HABITAT: (estimate % of	f type)
<u>[60</u>]	woodland (specify type) deciduous coniferous mixed
	agriculture or open fields
	gravel pit residential
	roadside
	other
OVERSTORY:	
<u> </u>	heavy overstory, >50% shrubs and/or trees
	moderate overstory, <50% shrubs and/or trees
	moderate overstory, <50% shrubs and/or trees open site with grasses, forbs, scattered shrubs
	open site with grasses, forbs, scattered shrubs in the pool that can provide egg attachment sites and offer concealment to aquatic adults and/o
	open site with grasses, forbs, scattered shrubs in the pool that can provide egg attachment sites and offer concealment to aquatic adults and/o rae (estimate % of type).
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developing arv 	open site with grasses, forbs, scattered shrubs in the pool that can provide egg attachment sites and offer concealment to aquatic adults and/o rae (estimate % of type). shrubs emergent vegetation (i.e. grass, cattails)
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developing arv <u>/O</u> BOTTOM: (estimate % of <u>/C7</u> 	open site with grasses, forbs, scattered shrubs in the pool that can provide egg attachment sites and offer concealment to aquatic adults and/o rae (estimate % of type). shrubs emergent vegetation (i.e. grass, cattails) branches, twigs (in pool or overhanging into water) submergent vegetation sphagnum moss other

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VP-6

Inclu	Ide with documentation for each vernal pool.
レ	flooded pool visit
	photos included
	dry, drying pool visit
	photos included
	field map of pool
	written directions to pool
	USGS map, photo copy
	ONE of the following, indicating pool location:
	tax assessors map detailed location information
\prec	Évidence of vernal pool indicator species (check all present): fairy shrimp
	wood frog
	chorus
	amplexus
	egg mass
	tadpoles
	salamander (spotted, Jefferson, blue-spotted)
	courtship
	spermatophores
	egg mass
	larvae
<u> </u>	Photos of indicator species
	Documentation forms and maps submitted to both:
	town conservation commission
	Nongame and Endangered Wildlife Program, NH Fish and Game Department, 11 Hazen Drive, Concord, NH 0330
Renort	er's name
Addres	SS
rnone	number

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VP6



VP6 spotted salamander eggs



VP7

