THE STATE OF NEW HAMPSHIRE

BEFORE THE

SITE EVALUATION COMMITTEE

DOCKET NO. 2012-01

APPLICATION OF ANTRIM WIND ENERGY, LLC FOR A CERTIFICATE OF SITE AND FACILITY

FIRST SUPPLEMENTAL PREFILED TESTIMONY OF DANA VALLEAU AND ADAM J. GRAVEL ON BEHALF OF ANTRIM WIND, LLC

October 11, 2012

Qualifications of Dana Valleau

Q. Please state your name, business address, employment and qualifications.

A. My name is Dana Valleau, and my business address is 14 Gabriel Drive, Augusta, Maine 04330. My employment and qualifications have not changed from what was described in my pre-filed direct testimony filed January 31, 2012 in this docket.

Qualifications of Adam Gravel

Q. Please state your name, business address, employment and qualifications.

A. My name is Adam Gravel, and my business address is 30 Park Drive, Topsham, Maine, 04086. My employment and qualifications have not changed from what was described in my pre-filed direct testimony filed January 31, 2012 in this docket.

Purpose of Supplemental Testimony

Q. What is the purpose of your supplemental testimony?

A. The purpose of our supplemental testimony is to provide the New Hampshire Site Evaluation Committee ("SEC" or "Committee") with an update to our direct testimony filed January 31, 2012 in this docket. In particular, because AWE filed a First Supplement to the Application, which included submission of a General Wildlife Impact Assessment and a revised Avian and Bat Protection Plan ("ABPP"), this supplemental testimony generally describes the assessments and plans, as well as the broader regulatory context in which the assessments and plans were developed. In addition, the following supplemental testimony addresses some of the testimony presented by several witnesses with regard to potential project impact upon core habitat, natural communities, birds and bats. Reference is made to the testimony submitted by the following witnesses: Trevor Lloyd-Evans, Carol Foss, Frances Von Mertens, Paul Nickerson, Phillip Brown, Geoffrey Jones, and Susan Morse.

Q. Please provide by way of background a description of the general process followed for developing and implementing studies to assess impacts from the Antrim Wind Project?

A. It would be helpful background to describe the process that was used in evaluating the project, especially in light of testimony that has been filed by several witnesses with regard to predicted impacts upon habitat, wildlife, birds and bats. *See, e.g.*, Direct Prefiled Testimony of Susan Morse, pp. 2-3 (predicting severe impact upon exemplary habitat); Pre-Filed Testimony of Geoffrey G. Jones, Stoddard Conservation

Commission, p.3 (development of Tuttle Hill will result in habitat loss); Prefiled Testimony of Frances Von Mertens, pp. 2-3 (value of wildlife sanctuary and value of unfragmented blocks); Prefiled Testimony of Paul Nickerson (federal protection of bald and golden eagles); Prefiled Direct Testimony of Carol R. Foss, pp. 6-7 (potential impact on Golden Eagles that can be minimized with an effective Eagle Conservation Plan); Prefiled Testimony of Phil Brown, pp. 7-8 (presence of migratory raptors, songbirds and wildlife in Willard Pond Wildlife Sanctuary).

In contrast to other forms of development that involve the construction of tall structures, e.g., communication towers, cell towers and sky scrapers, which are known to cause bird and bat mortality, wind energy projects are subject to a very rigorous permitting process at both the state and federal levels. The permitting process begins with early consultation with regulatory agencies for development of pre-proposal assessments. Thus, when the Antrim Wind Energy Project was first conceived, representatives of the project team, including, Stantec, TRC, and Eolian, initiated a pre-proposal consultation process with relevant regulatory agencies. They discussed necessary studies with both state and federal natural resource agencies on January 20, 2011, submitted survey protocols for their review on March 14, 2011, and met with both state and federal natural resource agencies at the United States Fish and Wildlife Service (USFWS) office in Concord, NH on April 6, 2011, to discuss a proposed work plan designed to assess nocturnal migration activity, bat activity, raptor migration activity, breeding bird species composition and abundance, bald eagle breeding, wetlands and vernal pools, rare plants, and natural communities in the Project area. The purpose of

early consultation with the agencies was to address any particular concerns they may have regarding the potential impacts from the project and to address all applicable laws and regulations, including the Migratory Bird Treaty Act and Bald and Golden Eagle Protection Act. (These laws were summarized in the ABPP, as described below, and raised again in the July 31, 2012 Prefiled Testimony of Paul Nickerson as a witness for the New Hampshire Audubon Society.)

Although the State of New Hampshire does not have guidelines for assessing and evaluating natural resource concerns at wind energy projects, the USFWS has two detailed sets of guidelines for wind energy projects, including the Land-Based Wind Energy Guidelines and the Eagle Conservation Plan Guidance. Both of these guidance documents served as the basis for consultation with the agencies. All studies conducted at the project were consistent with the guidelines. Furthermore, following the completion of field studies at the project, a summary of the results were presented to the USFWS and NH Fish & Game Department (NHFGD) on November 11, 2011. Reports were provided with the SEC application on January 31, 2012. While NHFGD did not have any additional survey requests, the USFWS requested that additional summer eagle use surveys be conducted at the project. As requested by USFWS, summer eagle use surveys were conducted for six days at the project between June 1 and August 20, 2012. The results of the eagle use surveys were provided to USFWS by letter dated September 6, 2012, a copy of which is attached. *See* Attachment DV & AJG-1.

Q. Is the process described above consistent with state and federal guidelines for pre-construction studies at wind energy projects?

A. Yes. As mentioned previously, the State of New Hampshire does not currently have guidelines for evaluating wind energy projects in the State. Therefore, the USFWS's Eagle Conservation Plan Guidance and Land-Based Wind Energy Guidelines were followed. The Land-Based Wind Energy Guidelines recommend following a tiered approach which includes: Tier 1 preliminary site evaluation, Tier 2 site characterization, Tier 3 field studies and impact prediction, Tier 4 post-construction studies to estimate impacts, and Tier 5 other post-construction studies and research.

AWE's preliminary site evaluation and site characterization assessed numerous factors that are critical to the appropriate siting of an economically viable wind project, with minimal impacts to the environment. These efforts have been conducted consistent with Tiers 1 and 2 of the USFWS Guidelines. In general, the most viable wind sites include: sufficient projected wind speeds at turbine hub height to produce power in commercial quantities; proximity to adequate transportation; proximity to electric transmission or distribution infrastructure capable of handling the new generation; adequate setbacks from residences or other inhabited structures to ensure public safety; the absence of known sensitive ecological resources that may be disturbed such as critical wildlife habitats, major wetlands, and other sensitive areas ; and previous environmental impacts and/or commercial activities on site. Based on the criteria of Tiers 1 and 2, the proposed site of the Antrim Wind Energy Project constitutes a well-sited wind power project location. After the project location was determined based on the criteria of Tiers 1 and 2 described above, site specific studies were conducted (Tier 3). Here, the Tier 3 field studies have been designed to provide information to further evaluate a site for

viability and to provide in-depth information that would facilitate project design intended to avoid and minimize impacts, identify all potential impacts, design compensatory mitigation, if necessary, and to help determine the scope of post-construction monitoring. The Tier 3 process started with agency consultation to scope specific studies, as described above, and resulted in development of a proposed work plan designed to assess nocturnal migration activity, bat activity, raptor migration activity, breeding bird species composition and abundance, bald eagle breeding, wetlands and vernal pools, rare plants, and natural communities in the project area. Consultation with agencies continued through the field study period, and the eagle use survey referenced above was added to the work scope.

Q. Were additional assessments and reports prepared for birds and bats as a result of the Tier 1, 2 and 3 consultation process?

A. Yes. The ABPP was updated and revised on June 15, 2012 and submitted with AWE's First Supplement to Application. *See* Appendix 12F-1 to First Supplement to Application. The updated Plan was based upon cumulative impacts, as required under the USFWS Land-Based Wind Energy Guidelines, and as recommended in the prefiled testimony of Frances Von Mertens at p.11 and the prefiled testimony of Carol Morse at p. 7-8, among others. Applying the results of Tier 1, 2 and 3 assessments, the Plan concludes that the Project's impacts to birds and bats are expected to be low. *See* ABPP, p. 41.

Q. Does the avian and bat protection plan include construction and post-construction phase measures to avoid or minimize impacts to avian and bat species?

A. Yes. Avoidance and minimization measures have been or will be executed during project siting, design, construction and maintenance to minimize risk to avian and bat species. *See* ABPP, Appendix 12F-1 to First Supplement to Application, pp. 43-47. In addition, AWE is providing for permanent conservation of 685 acres of undeveloped forest land immediately adjacent to the project area, with direct benefit to local bird and bat species that rely on undeveloped forested areas for foraging, nesting and roosting. *See id.* at p. 47. Furthermore, post construction evaluation and management efforts for the proposed project have been (and will continue to be, per the project's ABPP) designed in consultation with NHFGD and USFWS, in accordance with the USFWS Land-Based Wind Energy Guidelines (USFWS 2012). Specifically, these efforts address questions outlined in Tier 4 of the USFWS guidelines. Post construction evaluation and management will include formal avian and bat mortality studies, a supplemental acoustic bat study, and evaluation of curtailment mitigation strategies to reduce injury and mortality for bats. The results of these Tier 4 studies (coupled with Tier 3 study information) will provide the basis for understanding actual project impacts to birds and bats, and will provide a foundation for future stewardship. This information will also inform future decisions regarding Tier 5 consultation and studies, if warranted.

Q. Does the Plan account for risks to bald eagles?

A. Yes. The Eagle Conservation Plan Guidance (USFWS 2011; 2012) was followed at the project to assess and address potential concerns to eagles. The principles and iterative decision making from the USFWS Guidelines are applicable to assessment under the Eagle Conservation Plan Guidance; however the Eagle Conservation Plan

Guidance process utilizes "stages" as opposed to "tiers". The Antrim Wind Energy Project has addressed Stage 1, site assessment, and Stage 2, site-specific surveys and assessment up to this point in the process. This has included assessing the site for proximity to areas of importance to eagles, such as eagle nests, foraging, roost sites and migration activity. Areas suitable for potential nest sites were surveyed within a 10-mile radius of the project, and these surveys focused on relatively large water bodies that could potentially be used as foraging areas and roost sites for bald eagles. Eagle use surveys have been performed on the site, during both the spring and fall migration period and as requested by USFWS during the summer resident period. *See* Attachment DV & AJG-1. With the data collected at the site, Stage 3, predicting eagle fatalities, is now underway, and is being performed by the USFWS, pursuant to its eagle risk model. Stage 4, avoidance and minimization of risk, has been addressed with adaptive management in the ABPP , through proposed project design and construction features that are listed among advanced conservation practices in the Eagle Conservation Plan Guidance. These include:

- utilization of existing transmission corridors,
- burying powerlines,
- following the Avian Power Line Interaction Committee (APLIC) guidance on power line construction and power line siting,
- minimized habitat fragmentation,
- minimized road network,
- avoiding use of lattice structures,

- minimizing use of guy wires,
- minimized lighting,
- avoiding turbine sites where eagle prey is abundant, and
- avoiding areas with high concentrations of ponds, streams, or wetlands.

Although we expect the risk of eagle mortality to be low, this approach should address concerns raised about increased eagle mortality and is discussed in detail in the project's ABPP. *See, e.g.* Prefiled Direct Testimony of Carol R. Foss, pp. 6-7.

The potential for Stage 5 post-construction monitoring has also been addressed in the ABPP. *See* ABPP, pp. 60-67. Although current assessments do not indicate a need for Tier 5 studies, specifically for eagles, as part of the project's ABPP, AWE will monitor for fatalities during the post construction studies, and if warranted, implement an adaptive management plan to provide a framework for revisiting the stages of evaluation or proceeding with Tier 5 consultation and study. For the reasons discussed below, this approach is preferable to recommendations by some witnesses that three years of post-construction study be required by the Committee. *See, e.g.*, Testimony of Trevor Lloyd-Evans, pp. 4-6 (recommending three year post-construction study followed by adaptive management).

Q. Please explain why you think the site specific Avian and Bat Protection Plan is adequate for minimizing and monitoring potential impacts to birds and bats?

A. AWE's site specific ABPP was comprehensively created and designed to reduce potential impacts to birds and bats as a result of construction and operation of the Antrim Wind Energy Project. In formulating the ABPP, AWE incorporated recommendations

and guidance from the following sources: USFWS Draft Land-Based Wind Energy Guidelines (USFWS 2011); USFWS's Final Land-Based Wind Energy Guidelines (USFWS 2012); USFWS's Avian Protection Plan Guidelines (APLIC and USFWS, 2005); and the Edison Electric Institute's Avian Power Line Interaction Committee (APLIC). The ABPP also draws upon: the results of pre-construction bird and bat studies conducted at the project site; results from relevant post-construction surveys conducted to date at similar facilities; the latest science regarding options for effectively avoiding and minimizing potential impacts to birds and bats; and direct correspondence with the USFWS and the NHFGD.

As such, AWE's site specific ABPP represents a cutting-edge approach to avoiding, minimizing and monitoring potential avian impacts at the Project. Furthermore, the ABPP sets forth a clearly defined mode of adaptive management, which will allow for continued monitoring, reporting, learning, consultation and adaptation, as necessary, over the life of the Project. This adaptive management strategy establishes communication with resource agencies over the life of the Project and supports responsiveness to unexpected situations and changing technology.

In summary, the ABPP incorporates state-of-the-art knowledge and practices to date, and provides for growth and development to respond to future developments and discoveries. This approach is not only adequate, it is an exemplary model of how to respond to that which is known, and prepare for and adapt to that which is unknown.

Q. Has the applicant assessed natural communities and wildlife impacts?

A. Yes. The applicant's First Supplement to Application includes an updated list of natural communities and the determination by the New Hampshire Natural Heritage Bureau that the project is unlikely to impact rare plant species or exemplary natural communities. *See* First Supplement to Application, Appendix 11-A and Appendix 11-A2.

The First Supplement to the Application also included a Wildlife Impact Assessment, which addresses many witnesses' concerns about habitat fragmentation from the project. *See* Appendix 12G to First Supplement to Application. The assessment concludes that the final project impact of 11.5 acres in forest habitat loss within a much larger unfragmented habitat block of 12,994 acres creates a very narrow footprint that would not constitute fragmentation. *See id.*, p. 1. The Wildlife Impact Assessment also concludes that the project's conservation of 685 acres of habitat will benefit the existing habitat block. *See id*.

Q. Please explain in more detail your position regarding fragmentation effects as a result of construction and operation of this project, particularly with respect to concerns raised by Susan Morse in her prefiled testimony.

A. Susan Morse concludes that habitat fragmentation will result from the project. *See* Prefiled Testimony of Susan Morse, pp. 2-6 and 9-11. We disagree. Although the project is located in an area that is largely undeveloped and has been recognized for habitat and ecological values in the New Hampshire Wildlife Action Plan, the project will occupy a relatively small slice within a much larger landscape. The un-fragmented habitat block associated with the project area is approximately 12,994 acres (source: NH

GRANIT, Wildlife Action Plan, Unfrag block layer, 2010). The area that will be initially disturbed during project construction will be 63 acres. This area will impact 5.4 acres of the Highest Ranked Habitat in New Hampshire, 6.4 acres of the Highest Ranked Habitat in the Biological Region, and 34.9 acres of Supporting Landscape, as ranked in the 2010 New Hampshire Wildlife Action Plan. The remainder of the habitat that that the project area intersects is not ranked. After construction of the ten turbines is complete, approximately 46.4 acres will be restored. Ultimately, the final project, including the maintained roads, electrical infrastructure and turbine pad footprint, will total 11.5 acres. Integral with the project is conservation easements that total 685 acres and are composed of 275.6 acres of Highest Ranked Habitat in New Hampshire, 148.9 acres of Highest Ranked Habitat in Biological Region, and 256.6 acres of Supporting Landscape.

While the project will create some degree of disruption in a forested landscape that is frequently disturbed and bisected by forest management activities, the narrow footprint of the development represents a small incision into a large block of habitat. A fragmented habitat can be defined as an "island" of suitable habitat that is cut off by and surrounded by an expanse of unsuitable habitat. This concept was first described by E.O. Wilson and R.H. MacArthur in “The Theory of Island Biogeography” (1967), and can be applied not only to islands in water bodies, but also to mountain tops and other physically isolated areas of habitat. The narrow and discontinuous footprint of the project does not create an “island” of isolated habitat and is, by the above definition, not significant habitat fragmentation. This is especially evident when viewed in context with the scale of the habitat block and what remains after the proposed project is constructed. A map

illustrating the project footprint in relation to the surrounding habitat and the New Hampshire Ranked Wildlife Habitat is submitted herewith as Attachment DV&AJG-2.

In addition, it is important to note that a fragmented habitat for one species may not be a fragmented habitat for another. Many of the species found in the project area can be considered generalists and are found in many habitat types, both valley and ridge. The project will not exclude or isolate these species from any significant area of suitable habitat. These species include moose, white-tailed deer, black bear, bobcat, coyote, red fox, and others (Degraff et al. 1992). The presence of species such as moose and black bear in a particular area can be considered to be an indication that large blocks of "core" habitat are in the area. After project construction, the large blocks of habitat will remain and it is unlikely that either species will be displaced to any significant degree by the project.

Disturbance caused by road use from vehicles will also be restricted to operations personnel and will be low in volume compared to a state or county road. Road footprints are narrow enough that there will still be ample opportunity for wildlife to traverse the area unimpeded, similar to gravel logging roads.

Finally, several large parcels of land will be conserved as part of the project, providing for protection to 685 acres of habitat that will not be developed. This habitat conservation effort, coming directly from the project developers, will ensure that a significant portion of this habitat block will remain intact.

Q. Were pre-construction studies conducted at the site consistent with other studies conducted for projects that have been before the New Hampshire Site

Evaluation Committee in the past? If so, explain how they compare and how they differ.

A. Yes. In general, most wind power project pre-construction studies encompass avian, bat, botanical, and wetland resource surveys. Initial scoping may add other site specific surveys, such as track surveys for lynx, or surveys for rare raptor nests (*e.g.*, peregrine falcon, bald eagle) depending upon consultation with state and federal resource agencies and what is known about a particular project area. Two recent New Hampshire projects, Granite Reliable Power and Groton Wind Farm, included nocturnal radar surveys, acoustic bat surveys, bat mist netting surveys, breeding bird surveys, diurnal raptor migration surveys, natural community surveys, rare plant surveys, wetland surveys, and vernal pool surveys. These are all similar to surveys performed for the Antrim Wind Energy project. Granite Reliable, being located in northern New Hampshire and in coniferous forest, included a winter track survey for two rare species found in the region, lynx and marten. Groton Wind Farm included a survey of a known peregrine falcon nest site. Antrim included a survey for bald eagle nests, due the proximity of a known nest to the project site. Furthermore, the ABPP for the project goes beyond that of other projects in the state because it includes proactive measures for minimizing impacts from the onset of operation, rather than just including specific monitoring requirements.

Q. Please describe your position on the assessment of cumulative impacts to birds and bats, which is raised by Susan Morse in her pre-filed testimony.

A. Susan Morse argues in her prefiled testimony that a Cumulative Effects Assessment should be required of companies seeking to disturb core habitat and the wild species that thrive there. *See* Prefiled Testimony of Susan Morse, p. 7-8. Ms. Morse raises this "relatively new applied environmental science" in the context of "large scale habitat loss and disturbances" from industrial development. *See id*., p.8. However, direct impacts to wildlife from construction and operation of the project are not expected to be significant. Research at this site and other recently developed wind energy sites in the region indicates that birds and bats are at a low risk of collision with project wind turbines. *See* Attachment A to Appendix 12G of the First Supplement to AWE's Application (summarizing results of mortality surveys at several projects in the northeast.) Notwithstanding this evidence, AWE nonetheless conducted a cumulative assessment by taking into account all potential impacts and benefits from the project, and concluded that there was an overall benefit. *See* ABPP, Appendix 12F-1 to First Supplement, pp. 41-42.

Even assuming more significant impacts were predicted for this project, it is important to note that the idea of cumulative impacts is conceptual and is difficult, if not impossible, to quantify for most wildlife species. Ms. Morse suggests that projects that create even low levels of mortality are unjustifiable because they add to the overall mortality. *See* Prefiled Testimony of Susan Morse at p. 7 ("any losses of bats cannot be justified"). Applying Ms. Morse's logic would result in virtually no human development, which is untenable. The significance of cumulative mortality from anthropogenic sources is difficult to rank. It is also difficult to determine whether or not these impacts rise to a

level that is truly additive and detrimental to the population or whether the mortality is compensatory with no population level impacts. Furthermore, all forms of impacts to birds and bats, not just from wind energy developments, must be considered when attempting to evaluate cumulative impacts. Even with the likelihood that mortality to wildlife will be low at the project site, AWE has incorporated avoidance and minimization into project design and operation. The project ABPP incorporates a curtailment study to assess reducing the potential for mortality to bats at the site. The plan also incorporates adaptive management to ensure monitoring and continued consultation with the appropriate agencies for purposes of developing necessary protection for avian and bat species on the site. Thus, even if it were possible to quantify the project's cumulative impacts, the mitigation measures would still be appropriate.

Q. Is it your opinion that additional data collection is necessary in light of the information that has been collected on site?

A. No, additional data collection is not necessary at this time. The ability for pre-construction wildlife survey data to be used to predict the risk to birds and bats at wind projects varies depending on species groups. Currently, there are no published reports examining relationships between pre-construction bat acoustic surveys and post-construction fatality surveys (Cryan and Barclay 2009). However, in a recent survey of post-construction mortality of bats at wind facilities, Kunz *et al.* (2007), the results of five studies in which post-construction acoustic surveys were conducted concurrently with mortality searches were presented. Although only five studies were available, the results suggest a correlation between the timing of post-construction bat detector activity

and collision mortality (Gruver 2002, Fiedler 2007, Jain 2005, Johnson et al. 2005, E. B. Arnett, Bat International, unpubl.). Patterns have emerged between pre- and post-construction monitoring studies regarding the timing of increased activity and risk of collision, as well as the species most frequently involved in collisions. Pre-construction surveys have documented that bat activity is highest on nights with wind speeds of less than 5.4 m/s (Reynolds 2006). Post-construction studies have found that bat collisions with wind turbines are greatest on relatively calm nights (wind speeds less than 4-6 meters per second [m/s]) (Arnett et al. 2008). Recent curtailment studies at operational projects have reinforced this pattern and have documented reductions in bat mortality when certain turbines were feathered at wind speeds below 5.5 m/s (Baerwald et al. 2009). Post-construction studies have indicated a greater risk of collision during the fall migration period compared to the spring, and the species most frequently involved in collisions have involved long-distance migratory species (Arnett *et al.* 2008). Pre-construction acoustic bat surveys can indicate the timing of peak periods of activity and the species composition present; therefore, pre-construction surveys can suggest periods of increased risk of collision and the species that may be involved in collisions. However, acoustic detector surveys cannot differentiate between individuals; therefore, the number of individuals that may be involved in collisions at a project cannot be extrapolated from pre-construction surveys.

Pre-construction nocturnal radar migration surveys provide activity rates and flight behaviors of nocturnal migrants. However, high passage rates and high percentages of migrants below the proposed maximum turbine height have not been

correlated with fatality rates at a project. For example, while pre-construction passage rates documented at the Lempster wind project in New Hampshire and the Mars Hill wind project in Maine were among the highest documented in the region at the time, post-construction bird and bat fatality survey results documented low levels of bird and bat fatalities (Stantec 2008, Stantec 2009, Tidhar 2009). Pre-construction radar surveys represent subsamples of seasonal nocturnal migrant activity at a project, and cannot be used to accurately determine the number of individuals that may travel over the project area, as these surveys are restricted to a sampling window and sampling area. Similarly, radar surveys cannot indicate the species that may be involved in collisions because targets cannot be identified to species. Therefore, radar surveys cannot be used to extrapolate the number of individuals or species composition of individuals that will be involved in collisions during operation of a project.

Pre-construction diurnal raptor migration studies can provide baseline data regarding the species of raptor that occur in the area, and the general flight behaviors of birds traveling through the area. However, currently there is no clear relationship between pre-construction and post-construction data for the prediction of raptor collision risk at wind projects. In other words, at existing wind farms for which pre-construction raptor migration surveys and post-construction fatality surveys are available (e.g., Stetson and Mars Hill, Maine), the passage rates and percentages of birds below turbine height observed during pre-construction surveys have not been directly correlated to the actual number of raptors that have been found during post-construction mortality studies

(Stantec 2009, Stantec 2010). This is most likely due to the fact that raptor mortality at wind projects in the northeast has been extremely low.

The combination of bird and bat pre-construction surveys conducted to date for the project have provided baseline species composition, relative activity, flight behaviors, and the timing of peak periods of activity. They were also designed to document rare, threatened or endangered species and habitats. Post-construction surveys available from other projects are perhaps more important for determining the species that may be at risk, as well as the periods when risk is elevated at the AWE project. Those projects that have also conducted pre-construction surveys for which comparisons can be made to the AWE project would provide the most useful data. As there is no method of accurately determining the number of individual birds or bats that will be involved in collisions at the project, further wildlife surveys would not provide additional data that would be critical to the assessment of risk. For this reason, the project's ABPP has been developed with specific consideration to the methods found to be successful at other projects for reducing risk to migrants (i.e., curtailment), and provides an adaptive management process that includes frequent consultation with the agencies to allow for changes in study protocol to address site-specific results of the post construction monitoring, with the ultimate goal of minimizing or eliminating impacts. This method ensures that appropriate action would be taken as more is learned about the impacts, which is superior to simply monitoring impacts, as is being done for other wind projects in the state. For these reasons, testimony suggesting that specific post-construction monitoring periods be imposed is not necessarily in the best interests of the affected species.

Q. Does this conclude your testimony?

A. Yes.

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September 6, 2012

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RE: Antrim Wind Energy Project, Antrim, NH: Eagle Use Surveys

Dear Sarah,

As you know, based on the findings of the rare raptor nesting survey conducted in 2011, USFWS requested additional eagle use data for the proposed Antrim Wind Energy Project (Project), in Antrim, New Hampshire. Specifically, data was required which would allow the USFWS to perform a qualitative prediction of potential risk to bald eagles as a result of Project development. The purpose of this letter is to provide you with the results of Eagle Use Surveys performed in support of these data needs. These surveys were designed per consultation between yourself and TRC in April and May of 2012, and were performed as described in the June 2012 revision of the Avian and Bat Protection Plan for the Project. Data were gathered that are sufficient to satisfy the prescriptions and data needs described within the Draft USFWS Eagle Conservation Plan Guidance (2011), and the Draft Eagle Conservation Plan Guidance Module 1 – Land-Based Wind Energy Technical Appendices (August 2012). It is our understanding that the supporting data will be applied to the USFWS eagle risk model to better determine a rate-of-use category (low, medium, or high).

Eagle use surveys were conducted bi-monthly (approximately once every two weeks) during the bald eagle breeding season (May 15- August 31). All surveys were 6 hours in length, and were generally conducted between the hours of 9:00 AM and 4:00 PM (with slight variation in start and end times within this general frame). In total, 36 total hours of observation were performed across 6 dates between May 15 and August 31. Surveys dates occurred on June 1, June 18, July 3, July 20, August 7 and August 20.

All observations were performed from a location on the southeast flank of Willard Mountain; this is the same vantage as was used during fall raptor migration surveys for the Project. Attached you will find an Eagle Use Survey Location Map depicting the approximate viewshed from the vantage point at Willard Mountain where all 6 surveys were conducted. An 800 meter radius is shown around the survey location which includes the area visible from the vantage and beyond.

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We estimate from this vantage point that we could see approximately 32 acres out of the 57 acres of the proposed project area within a two mile radius. This area includes all of the wind turbine generator development locations. In addition, we conservatively estimate that we could see approximately 1,457 acres within a two mile radius, which includes the proposed project area and airspace above.

The Willard Mountain survey location was scoped based on the availability of obtuse views of the area of proposed development. This location provided an obtuse horizontal view of the ridgeline where development has been proposed. On the vertical plane, this location provided views of: the Meadow Marsh valley on the south side of Tuttle Hill; the majority of the southeastern facing slope of Tuttle Hill and the northeastern slope of Willard Mountain; significant areas of the Tuttle Hill ridgeline; and, a broad expanse of airspace over the landscape, as depicted on the attached Eagle Use Survey Location Map. Furthermore, the meteorological tower on the east summit of Tuttle Hill was visible, providing a landmark of known elevation which operated as a scale of reference.

No bald eagles were observed during the entire Eagle Use Survey effort. This null observation accounts for the visible portions of Project area as well as the entire viewshed available from the Willard Mountain vantage location.

The data to date is expected to support a finding that the Project area is a “low use” area. It is our understanding that if the area is determined by the USFWS to be a “low use” area, then the USFWS will provide a letter in support for not obtaining a take permit for bald eagles.

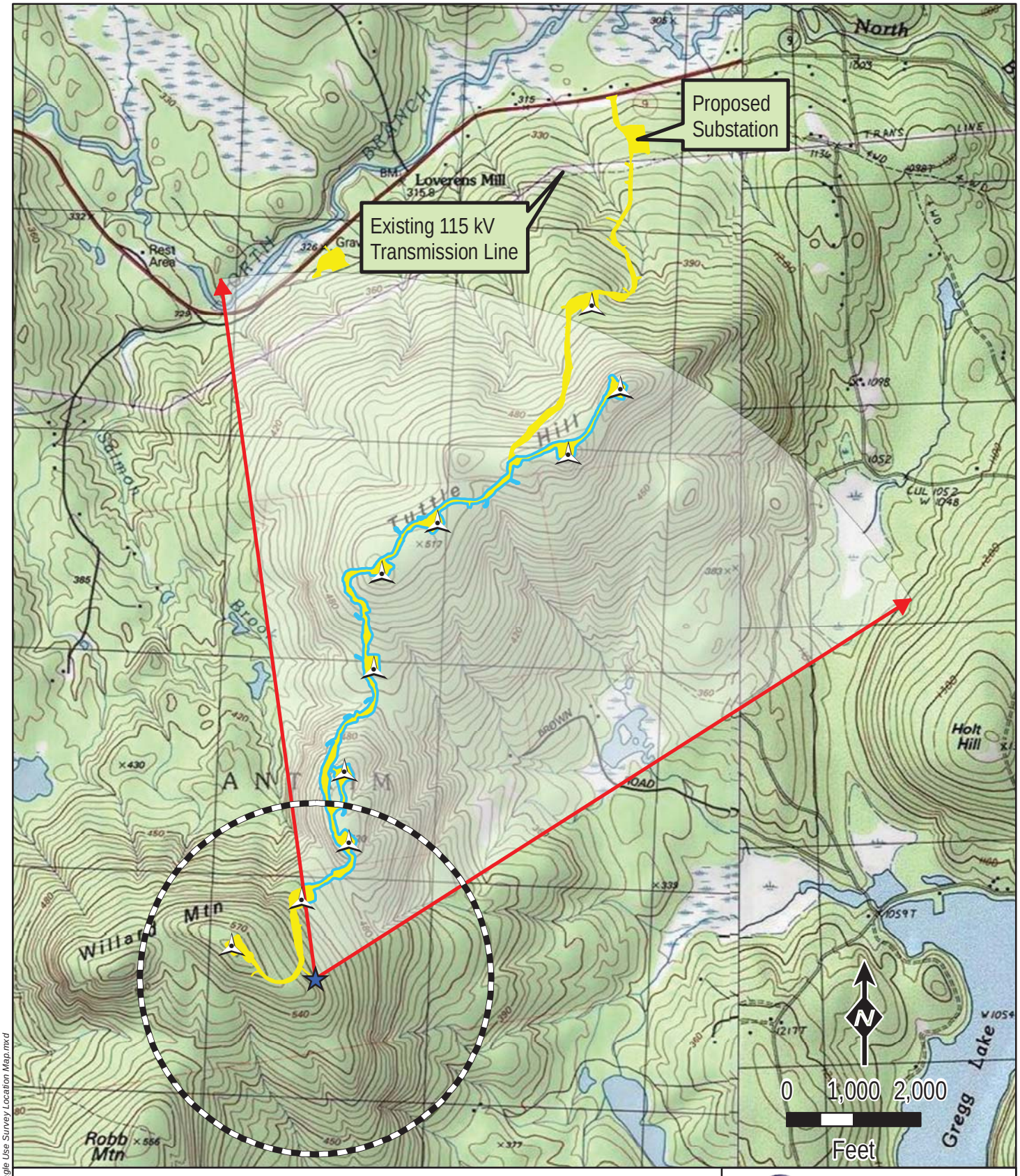
TRC looks forward to your review of these findings. Antrim Wind Energy and TRC are committed to working with USFWS to answer questions relevant to bald eagles at the Antrim Wind Energy Project in compliance with the aforementioned USFWS guidance documents. Thank you for your time in consideration of this data, and for your input in its development. Please feel free to contact me with any questions or discussion you may have.

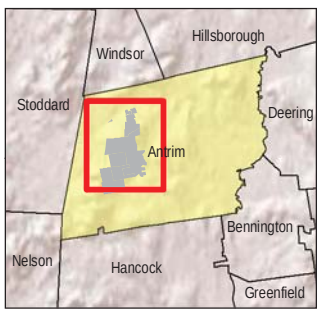
Sincerely,

Dana Valleau

Dana Valleau
Environmental Specialist

Cc: Jack Kenworthy, AWE
Susan Geiger, Orr & Reno
Carol Henderson, NHFG
Maria Tur, USFWS





Legend

- Willard Mountain Eagle Use Survey Location
- Proposed WTG
- Approximate Range of Viewshed - 2 Mile Radius
- Viewshed Area - Total 1,457 Acres
- Proposed Project Area - Total 57 Acres
- Visible Proposed Project Area - Total 32 Acres
- 800 Meter Radius

EOLIAN RENEWABLE ENERGY

ANTRIM WIND ENERGY PROJECT

354 KEENE ROAD, ANTRIM, NH

Eagle Use Survey Location Map

Produced by: TRC | 8/31/2012

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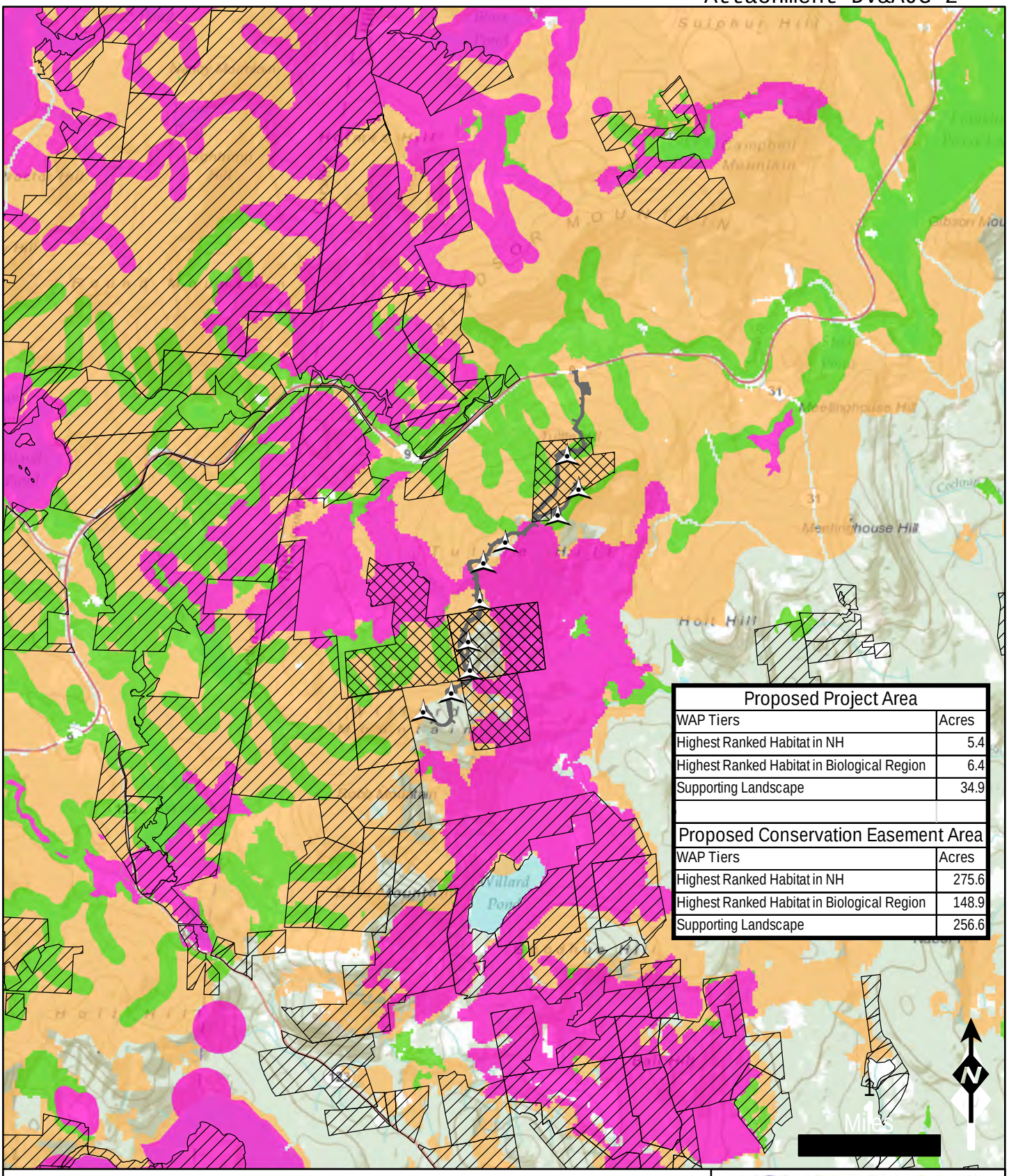
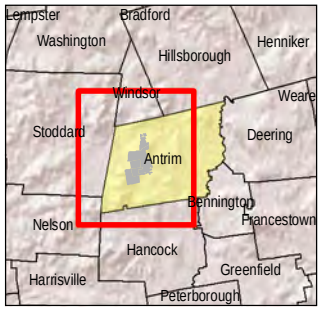


Proposed Project Area	
WAP Tiers	Acres
Highest Ranked Habitat in NH	5.4
Highest Ranked Habitat in Biological Region	6.4
Supporting Landscape	34.9

Proposed Conservation Easement Area	
WAP Tiers	Acres
Highest Ranked Habitat in NH	275.6
Highest Ranked Habitat in Biological Region	148.9
Supporting Landscape	256.6



- Proposed WTG
- Proposed Conservation Easements
- Conservation Land
- Proposed Disturbance Area
- Highest Ranked Habitat in NH
- Highest Ranked Habitat in Biological Region
- Supporting Landscapes

Wildlife Habitat layers from NH Wildlife Action Plan

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ANTRIM WIND ENERGY PROJECT

ANTRIM, NH

2010 Highest Ranked Wildlife Habitat by Ecological Condition

Figure 1

Produced by: TRC | 6/12/2012

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