

MEMORANDUM

To: Gregg Tivnan, Assistant Town Manager, Town of Nantucket
CC: George Aronson, Project Manager, CRMC
From: Sarah Barnum, PhD, Senior Wildlife Ecologist, Normandeau Associates
Date: November 16, 2010
Re: Wildlife Consultations for the Proposed Madaket Wind Turbine Project

The following memo summarizes the results of consultations regarding the need for wildlife-related permitting for the proposed Madaket Wind Turbine Project (the project). Consultations were conducted with the US Fish and Wildlife Service (USFWS) and the Massachusetts Natural Heritage and Endangered Species Program (NHESP). These consultation meetings addressed threatened and endangered permitting requirements as well as other species that may be covered under other permitting processes.

USFWS Consultation

Sarah Barnum, PhD, Senior Wildlife Ecologist, of Normandeau Associates met with Susi von Ottingen, Endangered Species Specialist, and Maria Tur, Federal Activities Specialist, of the USFWS on October 12, 2010 to discuss the federal permitting needs of the proposed Nantucket Community Wind project. George Aronson of CRMC joined the meeting by phone. The meeting began with Mr. Aronson giving an overview of the project. This introduction was followed by a free ranging discussion about if and how federal permitting requirements apply to this project. The salient points of this discussion are summarized below.

1. Federally protected species with some (small) potential to be present in the rotor swept area of the project include piping plover (FT) and roseate tern (FE). Additionally, all migratory birds are protected under the Migratory Bird Treaty Act. Of special interest is the long-tailed duck, which “commutes” in large numbers (70,000+) across the western tip of the island daily in the winter months.
2. If no new areas are disturbed to construct the project there is no reasonable expectation of impacts on the federally protected American burying beetle. Therefore, this species needs no further consideration for the proposed project.
3. Because no federal funds will be used for the project and no US Army Corp wetlands permit is required, there is no nexus to require USFWS administered permits to construct and operated the proposed project.
4. Post-construction, if “take” of a federally protected species should occur as a result of project operations, the USFWS would have authority to fine the Town and/or curtail turbine operations.
5. Potential fines and/or curtailment can be minimized and/or avoided by implementing an adaptive management plan to document any operations-related impacts and to implement actions to minimize or eliminate future impacts which may occur.
6. A well-designed adaptive management plan, with a menu of options to reduce impacts, based on the type of impact that may occur, should be in place before operations begin. The existence of this

type of plan demonstrates the Town's good faith efforts to minimize impacts to protected species, and would be taken into consideration if the USFWS undertakes any regulatory actions against the project in the future.

NHESP Consultation

Sarah Barnum and George Aronson met with Jessica Remple, NHESP Endangered Species Review Biologist, on October 25, 2010, to discuss State endangered species permitting needs of the proposed project. The meeting began with Mr. Aronson giving an overview of the project. Ms. Remple then explained that the MA Endangered Species Act (MESA) will not apply to the project if all ground disturbing activities are restricted to currently disturbed DPW lands, which are not mapped as Potential Habitat of Estimated Habitat. Subsequent to the October 25 meeting, NHESP issued a letter to the Town of Nantucket dated October 28, 2010, indicating that no MESA permit is required to construct the proposed project. Additionally, NHESP requested that post-construction mortality monitoring be conducted, using a protocol acceptable to NHESP.

It should be noted that NHESP and MDFW do not currently have any regulatory requirements in place for pre-construction surveys of wind turbine projects. Additionally, there are no State regulations in place that specifically apply to general wildlife impacts (as opposed to impacts to threatened and endangered species) created by construction or operations of a wind turbine.

Summary of Issues

Neither the USFWS nor the NHESP has regulatory authority over the construction process of the proposed project, as construction does not appear to have any potential to cause take of a State or federally protect species. Both the USFWS and the NHESP request that post-construction monitoring be conducted to assess the project's impact on avian species. Further, the USFWS requests that the post-construction monitoring be a component of an adaptive management plan designed to reduce the level of any impacts that occur as a result of operations.

Adaptive management plans (AMPs) are widely applied to wildlife management programs. The basic building blocks of an AMP are 1) sufficient baseline data to understand existing conditions and predict likely conditions in the future, after an action has been implemented; 2) development of a reasonable menu of options to improve and/or mitigate unwanted outcomes; and 3) a plan to monitor future conditions to determine if implementing any of the mitigation measures developed is warranted.

To this end, the USFWS requested that the project's AMP would include collecting a reasonable amount of preconstruction information about the species of interest, and a menu of mitigation options as well as conducting post-construction mortality surveys. The USFWS agreed that a "reasonable" amount of pre-construction data would consist of:

1. Collecting and compiling existing information regarding use of the general project area by birds and bats.
2. Wintering bird surveys – 1 or 2 surveys per month, November through March.
3. Breeding bird survey – standard point count, three reps during the breeding season (Late May-June).
4. Observations of Long Pond for use by terns, in conjunction with the breeding bird surveys.

5. Bi-weekly surveys of the project area for over flights by commuting long-tailed ducks, during the 2010-2011 wintering season.
6. Radar surveys of migrating birds are not warranted.
7. Acoustic surveys of bat activity in the project area are not warranted.

Implementation

To comply with the USFWS and NHESP recommendations in place of a formal permit submittal and approval process, Normandeau Associates will complete the following tasks to collect and interpret the baseline data for the project's AMP:

1. Collect and compile existing information regarding use of the general project area by birds and bats. Normandeau will also collect and compile available and relevant information on the impacts of existing wind turbines in other locations on the behavior and flight patterns of long-tailed ducks and other species of concern.
2. Subcontract with a Nantucket resident, Edith Ray, to perform field surveys of the project area for over flights by commuting long-tailed ducks, during the 2010-2011 wintering season. Edith Ray will also record observations regarding use of the area by other species of concern.
3. Supplement the long-tailed duck field surveys with acoustic monitoring surveys using an inexpensive monitoring system that has recently become available.
4. Conduct the wintering bird surveys and the breeding bird surveys.
5. Prepare the AMP in the form of a written report summarizing recommendations to avoid, minimize and mitigate potential construction and operations impacts based on evaluation of the survey results and other assembled information.

These tasks are documented in the following attachments to this memorandum:

- A Letter proposal from Normandeau Associates dated August 26, 2010, to perform the USFWS and NHESP consultations and support the permitting effort.
- B Request for Quotes for cost of services from a firm or individual for avian field surveys, issued by CRMC on behalf of the Town of Nantucket, November 1, 2010.
- C Letter proposal from Normandeau Associates dated November 5, 2010, to conduct an acoustic survey for long-tailed duck activity.
- D Letter proposal from Normandeau Associates dated November 12, 2010, to conduct the long-tailed duck survey.
- E Letter to the Town of Nantucket from Thomas French, Massachusetts Division of Fisheries & Wildlife, dated October 28, 2010.

C. Elizabeth Gibson
Town Manager, Town of Nantucket
16 Broad Street, 1st Floor
Nantucket, MA 02554

August 26, 2010

Dear Ms. Gibson,

Normandeau Associates (Normandeau) is pleased to present the Town of Nantucket with a proposal to conduct an initial assessment of sensitive plant and animal resources that may be affected by the proposed Nantucket Community Wind project. As outlined in the attached informational sheets, Normandeau is a full service environmental company that can provide a range of environmental permitting services for wind projects. Normandeau staff have the experience and knowledge to conduct and/or manage all the types of surveys and analyses that we anticipate to be required to complete this assessment. The proposed Project Manager is Dr. Sarah Barnum, Senior Wildlife Ecologist. Dr. Barnum has over 15 years of experience managing complex wildlife surveys and permitting efforts, and her credentials are provided in the attached resume.

As requested, this proposal covers four tasks to support the permitting effort. The permitting effort itself, which will require filling out permitting applications, generating documents that support the permit application, and negotiations with the regulatory agencies that oversee the permitting process, will be covered under a separate proposal and contract. The tasks covered under this proposal are described in detail below.

Task 1. Review Existing Information

Normandeau will review and compile existing information regarding species of interest in cooperation with on-island subject experts identified with assistance from Commonwealth Resource Management Corporation personnel and the Town. Species of interest include birds and bats in general, as well as animals (including insects) and plants listed by the MA or Federal Endangered Species Acts as sensitive, threatened or endangered. Existing information will include published or unpublished results of recent on-island studies of plant and animal species of interest, as well as informal observations of these species made by local experts if supported by adequate record keeping (i.e., dated notes and/or photographs), or redundant observations made by multiple individuals. An analysis of existing NexRad radar data to summarize passage by night migrants is not included in this proposal, as Nantucket is located too far from the nearest NexRad station (Taunton, MA) for these data to provide accurate

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results. Information about night migration will instead be gleaned from other on-island sources (as described above).

A report summarizing the existing information will be written, based on the above data collection effort. This report will include a bibliography of the published and unpublished reports and papers reviewed. The report will be suitable for submission to the permitting agencies, in support of Task 2. Assuming a contact date of September 1, the first draft of the report will be completed by October 8, assuming that on-island collaborators can provide information in a timely manner. This draft will be provided to the Town for review and finalized within one week of receipt of comments.

This task assumes that on-island experts will provide existing information in their possession gratis.

Task 2. Initial Consultation

Normandeau will lead consultations with the Nantucket Conservation Commission, MA Natural Heritage and Endangered Species Program, (NHESP), MA Division of Fish and Wildlife (MDFW), and US Fish and Wildlife Service (USFWS), to determine the adequacy of the summarized existing information, and to determine what additional type of information is needed for the permitting process. Because there is likely to be a request for survey of wintering birds, which should begin on or about November 1, consultations should be scheduled in early October, to coincide with the availability of the draft summary of existing information. The price quoted below for Task 2 assumes one in-person meeting, and one additional conference call as needed, with each of the three agencies listed above.

Task 3. Coordination of Baseline Surveys

This task and its pricing is based on two assumptions: 1) The permitting agencies will request the surveys listed below; and; 2) Normandeau will sub-contract to and coordinate the efforts of on-island experts to conduct the field work needed and prepare reports of the results. Normandeau will work with the on-island experts to devise an appropriate field protocol for all surveys.

- An assessment of wintering birds in and around the proposed project area, consisting of two visits/month during November, December, January and February.
- An assessment of state listed plants and habitat suitability for state-listed insects potentially present at the proposed turbine locations. The appropriate date of survey will be determined by the biology of the species of interest, and one or two visits are likely to be required to account for all species of interest.
- An assessment of breeding birds in and around the proposed project area, consisting of 3 visits between May 25 and June 30.

Observations of the evening long-tailed duck commute, to determine how often and under what weather conditions these flocks actually pass over the island, and where they pass over, may also be requested, but this survey is not included in the cost estimate for Task 3. Options for this survey include using human observers or portable radar; or, potentially, radar data from the airport could be analyzed to determine the location of these flocks. All three options are labor intensive. Normandeau will provide a price estimate for a long-tailed duck survey if necessary, based on the approach requested by the permitting agencies, but a separate contract will be required for this survey.

Additionally, there could be a request for direct study of nocturnal migrants (birds and bats) using portable radar, and general bat activity, using passive acoustic monitoring equipment. These studies are not included in this proposal.

Task 4. Impact Evaluation

Normandeau will conduct an in-depth impact evaluation, based on the data collected in Tasks 1 and 3. A written report summarizing recommendations to avoid, minimize, and mitigate potential construction and operations impacts will be provided to the Town, based on the results of the evaluation. These recommendations may include adjustment to project design, timing of construction, monitoring of species during construction, protocols to exclude vulnerable species from the construction site, and adjustment to activities during operations. An initial draft of this evaluation will be completed after the existing information has been identified and summarized. This draft will be augmented as needed, with additional recommendations based on the results of the winter bird surveys, breeding bird survey, and the plant and insect evaluations as these results become available.

COST ESTIMATE

Table 1 below lists our projected costs for Tasks 1-4. Additional assumptions used in calculating these costs are provided below Table 1.

Table 1 – Estimated costs for Tasks 1-4.

Task	Task/Site	Estimated Cost
Task 1	Summarize Existing Information	\$6,160.00
Task 2	Initial Consultation	\$2,550.00
Task 3	Coordination of Baseline Surveys	\$4,170.00
Task 4	Impact Evaluation	\$5,780.00
	Direct Costs (includes on-island expert subcontractors)	\$6,240.00
TOTALS		\$24,900.00

We have made the following assumptions in calculating the price quoted above:

- All field work will be conducted by on-island experts, sub-contracted to Normandeau at a price not to exceed \$90/hr. The sub-contractors will provide the data collected to Normandeau in a pre-determined format, and Normandeau will report the findings to the Town.
- The price includes a single on-island visit by the Normandeau Project Manager, if required.

I trust this proposal is sufficient to meet your current needs. Do not hesitate to contact Sarah at 603-637-1157 if you have any questions regarding this proposal.

Sincerely,



Lee E. Carbonneau, PWS/NHCWS
Principal Scientist/Group Manager



Sarah A. Barnum, Ph.D., CWB
Senior Wildlife Ecologist

Town of Nantucket Madaket Wind Turbine Project

Quote for cost of services from a firm or individual for avian field surveys

The Town seeks to retain a qualified individual or environmental services with capabilities and local expertise in avian field surveys (the Avian Surveyor) for the Madaket Wind Turbine Project (the Project). The Avian Surveyor will be required to have experience with and a working knowledge of accepted professional methods for conducting avian field surveys in order to collect high-quality field data suitable for review by local, state and federal agencies of applicable jurisdiction.

Task description

The Avian Surveyor would conduct field work to ascertain and record the presence of long-tailed ducks at the portion of the site close to the location of the Project, which is at the site of a former radio tower on a property owned by the Town and adjacent to the Town's municipal landfill at 188 Madaket Road in Nantucket. An aerial view of the property (Map 58, Lot 1) and nearby areas is provided on the Town's website at http://www.nantucket-ma.gov/Pages/NantucketMA_Planning/energycomm.

The field work would be conducted in accordance with the requirements of the Town's existing avian permitting consultant, which is Normandeau Associates. The field work would involve the following:

- Conduct surveys at both dawn and dusk on three consecutive days, every seven days (i.e., three days of survey, seven days off, three days of survey, etc.). Surveys shall be conducted during at least 10 such consecutive three-day survey periods over the period from November 15, 2010, through February 28, 2011, resulting in a minimum of at least 30 full days of completed surveys (where one full day includes one dawn and one dusk survey).
- Surveys shall be conducted from the location of the radio tower.
- Surveys shall be conducted regardless of weather conditions during the scheduled survey period, so long as conditions are not unsafe for the observer.
- Surveys will be conducted for a minimum of two hours for each survey.
- Dawn surveys will begin one half hour prior to dawn (National Weather Service) and continue to 1.5 hours after sunrise. If flocks are observed later than this, the observer shall remain in place until all flocks larger than 10 birds have passed.
- Dusk surveys shall begin 1.5 hours prior to sunset (National Weather Service) and continue until darkness precludes observation.
- The observer shall keep a record of activity, number of birds in flock, time of observation, and location of all birds flying in and around the airspace of the project area. Long-tailed ducks will be noted by species, but other species may be grouped (e.g., large gulls spp., small gulls spp., scoter spp., etc)
- All flocks observed will be mapped and their distance from the observation point estimated.
- Weather data for the entire three day period during which the survey is conducted shall be obtained from the National Weather Service/Nantucket Memorial Airport.

- Data sheets and the final details of the data collection approach will be designed in consultation with Normandeau Associates' project manager.
- A succinct, final report, summarizing the survey results and the raw data will be provided to Normandeau Associates for inclusion in the final report of all pre-construction bird surveys conducted in support of the proposed wind project.

At the end of each three-day survey period, the Avian Surveyor shall provide written confirmation to Normandeau Associates, by email or otherwise, either that each dawn and dusk survey was actually performed or the reason for non-performance. If surveys are not performed for any reason, the Avian Surveyor shall perform make-up surveys on a schedule that is approved by the project manager from Normandeau Associates.

Deliverable and Schedule

- Final Report containing all and raw data and summarizing survey results, to be provided by April 30, 2010.

Budget limit

In accordance with applicable procurement laws, the Town cannot make awards on the basis of quoted costs for projects having values that exceed \$25,000. Respondents are advised that multiple quotes are being solicited in order to award the work to a qualified entity providing the best price to the Town.

Response. Please provide a written response by email or otherwise by close of business on November 5, 2010, describing the approach to providing the requested service briefly and quoting a cost, to:

George H. Aronson, Project Manager
CRMC
229 Billings Street
Sharon, MA 02067
Email: garonson@crmex.com

George H. Aronson, Project Manager
CRMC
229 Billings Street
Sharon, MA 02067

November 5, 2010

Dear Mr. Aronson;

Normandeau Associates (Normandeau) is please to present this proposal to conduct an acoustic survey for long-tailed duck (LTD) activity at the location of the proposed wind turbine for the Nantucket Community Wind project. The acoustic survey does require cooperation from the contractor hired to conduct the visual survey. If it is not possible to conduct both surveys, the Town should opt to conduct the visual survey only.

The acoustic survey will provide continuous data collection for the entire survey period, recording the calls of all birds that fly through the recording (wind project) area. The size of this area is dependent on the level of surrounding ambient noise, but can minimally be expected to encompass a radius of 200m around the recoding device and an area 200-400m above the recording device. The dimensions of the area sampled by the recording device can be estimated by comparing acoustic results to the results of the visual survey, but cannot be precisely known. The goal of the acoustic survey is to record continuous data, but we feel that an 80% data recovery rate is more realistic, given that electronic equipment placed in harsh environments is likely to occasionally fail.

The time frame for the acoustic survey will match the visual survey, with the caveat that the recording devices are built-to-order by the vendor and have up to a three week lag time in delivery from when the order is placed. Normandeau will be ordering units specifically for this project.

The acoustic survey will consist of the following tasks:

TASK 1

Deploy acoustic recording equipment at the site of the proposed turbine and train the contractor hired to conduct the visual survey to swap data cards, swap batteries, and recognize when the equipment is non-functional. A back up unit will be provided to replace the field unit should it become non-operational.

TASK 2

Using proprietary software provided with the acoustic recording device by the vendor, Normandeau will analyze the data collected and incorporate the results into the final report of all pre-construction avian surveys conducted in support of the proposed wind project. The results of the acoustic LTD survey and the visual LTD survey will be compared to draw more robust conclusions about the level of LTD activity that the proposed project site experiences then either survey method could provide alone.

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Analysis of the acoustic data will consist of examining the data for quality control, call verification, and to estimate the relative numbers of birds present throughout the study period. A library of known calls will be developed to train the call identification software to recognize the species of interest (minimally LTDs; other species may be considered if the visual surveys indicate they are commonly present). Because acoustic data cannot be used to recognize individuals, the numbers of calls/species recorded will be counted, but used only as an index to report the relative numbers of each species passing through the survey area. Time and duration of passage will also be noted.

COST ESTIMATE.

The price quoted below includes rental of the acoustic equipment from Normandeau for the December 1, 2010 through February 28, 2011 survey period.

Table 1 – Estimated costs for Tasks 1 and 2.

Task	Task/Site	Estimated Cost
Task 1	Deploy equipment, train visual survey contractor, oversee data collection process, and provide support to visual survey contractor as needed.	\$1,880.00
Task 2	Data analysis and reporting	\$3,070.00
TOTALS		\$4,950.00

I trust this proposal is sufficient to meet your current needs. Do not hesitate to contact Sarah at 603-637-1157 if you have any questions regarding this quote.

Sincerely,



Lee E. Carbonneau, PWS/NHCWS
Principal Scientist/Group Manager



Sarah A. Barnum, Ph.D., CWB
Senior Wildlife Ecologist

25 Nashua Road
Bedford, New Hampshire 03110
Tel (603) 472-5191 Fax (603) 472-7052
www.normandeau.com

George H. Aronson, Project Manager
CRMC
229 Billings Street
Sharon, MA 02067

November 12, 2010

Dear Mr. Aronson:

Normandeau Associates (Normandeau) is please to present this quote to conduct a long tailed duck survey at the location of the proposed wind turbine. The price quoted below is to conduct field work and produce a report, in accordance with the protocol put forth in your Request for Quote which is attached.

Normandeau will contract with Edie Ray to conduct all field work and write the summary report. Additionally, Ms. Ray will be responsible for the care of the acoustic survey equipment after Normandeau staff deploy the equipment. Normandeau will provide support to Ms. Ray as required to keep the acoustic equipment functioning.

Normandeau requests a lump sum fee of \$13,800 to cover all costs associated with Ms. Ray's contract.

I trust this quote is sufficient to meet your current needs. Do not hesitate to contact Sarah at 603-637-1157 if you have any questions regarding this quote.

Sincerely,



Lee E. Carbonneau, PWS/NHCWS
Principal Scientist/Group Manager



Sarah A. Barnum, Ph.D., CWB
Senior Wildlife Ecologist

Bedford, NH (Corporate)

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Commonwealth of Massachusetts

Division of Fisheries & Wildlife

MassWildlife

Wayne F. MacCallum, *Director*

October 28, 2010

Gregg Tivnan, Assistant Town Manager
Town of Nantucket
16 Broad Street
Nantucket, MA 02554

RE: Project Location: Madaket Wind Turbine Project, DPW Solid Waste Facility
Town: NANTUCKET
NHESP Tracking No.: 10-27902

To Whom It May Concern:

Thank you for contacting the Natural Heritage and Endangered Species Program ("NHESP") of the MA Division of Fisheries & Wildlife for information regarding state-listed rare species in the vicinity of the above referenced site.

Based on the information provided, the NHESP has determined that at this time the site is not mapped as Priority or Estimated Habitat. The NHESP database does not contain any state-listed species records in the immediate vicinity of this site. However, we recommend that potential impacts to birds and bats be considered during the design and permitting process for all wind turbines. In addition, we request that post-construction monitoring be conducted to assess impacts to birds and bats, and that a monitoring protocol be provided to our office for review prior to the initiation of monitoring.

This evaluation is based on the most recent information available in the NHESP database, which is constantly being expanded and updated through ongoing research and inventory. Please note that this determination addresses only the matter of **rare** wildlife habitat and does not pertain to other wildlife habitat issues that may be pertinent to the proposed project. If you have any questions regarding this letter please contact Jessica Rempel, Endangered Species Review Biologist, at (508) 389-6386.

Sincerely,

Thomas W. French, Ph.D.
Assistant Director

www.masswildlife.org