

MEMORANDUM

Bald Eagle Nest Survey for the Antrim Wind Energy Project, Spring 2011

This memorandum serves to document the methods and findings of the spring 2011 bald eagle nest survey for the Antrim Wind Energy Project.

Protocol Development and Consultation

The following survey protocol, relevant to the Antrim Wind Energy Project, was provided to the United States Fish and Wildlife Service (USFWS), and the New Hampshire Fish and Game Department (NHFG) on March 17, 2011.

Survey Protocol

In general, rare raptor nest surveys will employ ground and aerial survey protocols. These protocols are described in detail in the following subsections.

In addition to these nest surveys, spring diurnal raptor migration studies (being conducted separately) will serve to document any rare raptor breeding behavior that is observed. Observations which indicate breeding include: observations of paired birds; habitual observations in the same general area; observations of rare raptors flying with food items; and observed territorial interactions with other birds.

Furthermore, in addition to formal observations recorded during rare raptor nest surveys and diurnal raptor migration surveys, any eagle and falcon activity observed in the Project vicinity will be documented as incidental observations whenever biologists are in the area.

If observations indicate suspected eagle or falcon nesting, NHF&G and USFWS biologists will be notified as soon as possible.

Ground-Based Nest Surveys

Ground-based nest surveys will focus on detecting peregrine falcon and golden eagle nesting activity. Ground surveys will be performed at any cliff habitats within 10 miles of the Project area that are deemed suitable for golden eagle or peregrine falcon nesting. The existence and location of such sites will be identified in consultation with NHF&G and USFWS.

Ground-based nest surveys at identified sites will be performed in early April, before leaf-out, as this timeframe provides optimal seasonal conditions for documentation of active nest use.

Surveys will be conducted at a suitable distance from the sites from or adjacent to existing roads by scanning each cliff face multiple times (10 to 60 times) with binoculars and spotting scopes. Surveyors will be looking for any sign of potential nest sites or activity. Perches or nest sites often have large “white-washed” areas below them from raptor liquid droppings, and the location of such perches will be documented. Personnel performing this work will be in close communication with NHF&G and USFWS throughout survey efforts. If any evidence of nesting is discovered, NHF&G and USFWS personnel will be informed immediately.

Aerial Nest Surveys

Prior to conducting aerial nest surveys, 2010 data on New Hampshire’s bald eagle population and nest locations will be obtained.

The aerial rare raptor nest survey will be conducted using a helicopter, flying as low and slow as safety and practicality will allow. A single aerial survey will be conducted prior to leaf-on conditions. The area surveyed will include suitable waterbodies (for bald eagle nesting) and cliff sites (for golden eagle or peregrine falcon nesting, if identified) within a 10 mile radius of the proposed project. During the flight, two experienced observers will visually scan appropriate habitats for evidence of rare raptor nests.

Flights will only be conducted when conditions are conducive to the survey, including skies with at least one-mile visibility and winds less than 15 mph. The location of any nests or other pertinent information observed will be recorded. Information recorded will include areas surveyed, location of any nests observed, and status of nests (active/inactive). Active participation by regional NHF&G and USFWS biologists who are familiar with the area will be sought.

Surveyor Preparedness

Personnel performing rare raptor breeding surveys will be experienced in bird identification, and will be familiar with the logistics involved with working in remote settings. Personnel performing aerial nest surveys will be experienced in bird identification and experienced conducting wildlife observations from the air.

Data Collection

All observations from rare raptor breeding surveys will be recorded into field notebooks at the time of observation. These notes will be recorded by experienced field professionals who are versed in providing all pertinent information and detail. Manually recorded data will be translated into electronic format upon return to the office from the field.

As noted, this Rare, Threatened, and Endangered Raptor Nest Survey Protocol for the Antrim Wind Energy Project was provided to agencies on March 17, 2011. Recipients included the United States Fish and Wildlife Service (USFWS), and the New Hampshire Fish and Game Department (NHFG). No written comments on the protocol were received. On April 6, 2011, a consultation meeting was conducted to discuss wildlife studies for the Antrim Wind Energy Project. The aforementioned entities (and others) were invited to attend; of the invitees relevant to this study, only USFWS was represented at the meeting. The only comment relevant to the raptor nest survey protocol was this: USFWS requested that 2010 bald eagle nesting data be obtained.

During consultation, no potential golden eagle or peregrine falcon nest habitat was identified; therefore, no ground surveys as described in the March 17, 2011 protocol were warranted as part of the rare raptor nest survey.

The above protocol states that the area surveyed for bald eagle nesting will include “suitable waterbodies (for bald eagle nesting)” within a 10 mile radius of the proposed project. Suitable waterbodies for bald eagle nesting, for the purpose of this survey, were identified based on the following criteria:

Lakes to be surveyed must

- be located (or partially located) within a 10-mile radius of the proposed project;
- be greater than 35 acres in size; and
- be judged, during a desktop assessment of aerial photography, to potentially include adequate nesting habitat.

Due to the low saturation of breeding bald eagles in the State of New Hampshire, water bodies with low nesting potential (e.g. water bodies that are less than 35 acres in size, and which lack optimal nesting habitat) were not included in the survey. This is based on the assumption that higher quality habitats will be colonized by new breeding pairs before poorer habitats.

Based on the above criteria, a total of 34 lakes and ponds were identified to be searched during the aerial effort. Lakes that were surveyed are listed in Table 1.

Table 1: Waterbodies Surveyed for Bald Eagle Nesting Activity

Waterbody	Size (Acres)
Ashuelot Pond	367
Barney Pond	192
Black Pond	86
Bolster Pond	63
Center Pond	81
Chesham Pond	90
Childs Bog	115
Contention Pond	93
Deering Reservoir	322
Dublin Pond	236
Edward MacDowell Reservoir	104
Franklin Pierce Lake	483
Granite Lake	232
Gregg Lake	200
Halfmoon Pond	75
Highland Lake	696
Howe Reservoir	117
Hunts Pond	49
Island Pond	179
Lake Skatutakee	44
Loon Pond	154
Millen Lake	143
Nubanusit Brook Reservoir	138
Nubanusit Lake	717
Otter Lake	135
Pickerel Creek Pond	46
Powder Mill Pond	419
Silver Lake	346
Skatutakee Lake	190
Spoonwood Pond	158
Tolman Pond	39
Whittemore Lake	41
Willard Pond	110
Woodward Pond	137

Results

2010 Information for Bald Eagle Nest Sites within 10-Miles of the Proposed Project Area

Pursuant to comments received from USFWS during the April 6, 2011 consultation meeting, 2010 bald eagle nesting data was obtained.

Data from the New Hampshire Audubon (New Hampshire Audubon 2010) identified one historic bald eagle nest site within a 10-mile radius of the proposed Antrim Wind Energy Project. An historic bald eagle territory and nest site, most recently occupied in 2010, was identified on Nubanusit Lake, approximately 4 miles southwest of the project area.

The historic bald eagle territory at Nubanusit Lake has been occupied for 14 years (1997-2010) since monitoring began in 1988. Nesting was documented in 12 of these years. This 14-year-long occupation constitutes the second most persistent bald eagle territory documented within the State of New Hampshire since 1988 (a territory at Lake Umbagog has been occupied during 22 years of monitoring). Nesting was most recently confirmed at Nubanusit Lake in 2010; the resident eagles successfully fledged three chicks before their nest collapsed late in the summer season. (New Hampshire Audubon 2010).

The Nubanusit Lake bald eagle territory is one of 22 occupied territories identified in New Hampshire in 2010. The number of occupied bald eagle territories has been increasing in New Hampshire: the 22 occupied territories in 2010 represent a “record-high”, and a one-year increase of 10% compared to the previous high of 20 occupied territories documented in 2009. (New Hampshire Audubon 2010).

Aerial Survey Results

On May 6, 2011, an aerial survey was conducted in an effort to identify and document bald eagle nesting activity within a 10-mile radius of the proposed Antrim Wind Energy Project. During the survey, two biologists (both experienced in conducting aerial avian and wildlife surveys) visually inspected the shoreline and islands of 34 lakes and ponds that were identified as having potential bald eagle breeding habitat (see table 1). The survey was performed from a helicopter, flying as low and slow as conditions and safety allowed. Weather during the survey was sunny and clear with light and variable winds, increasing slightly in the afternoon.

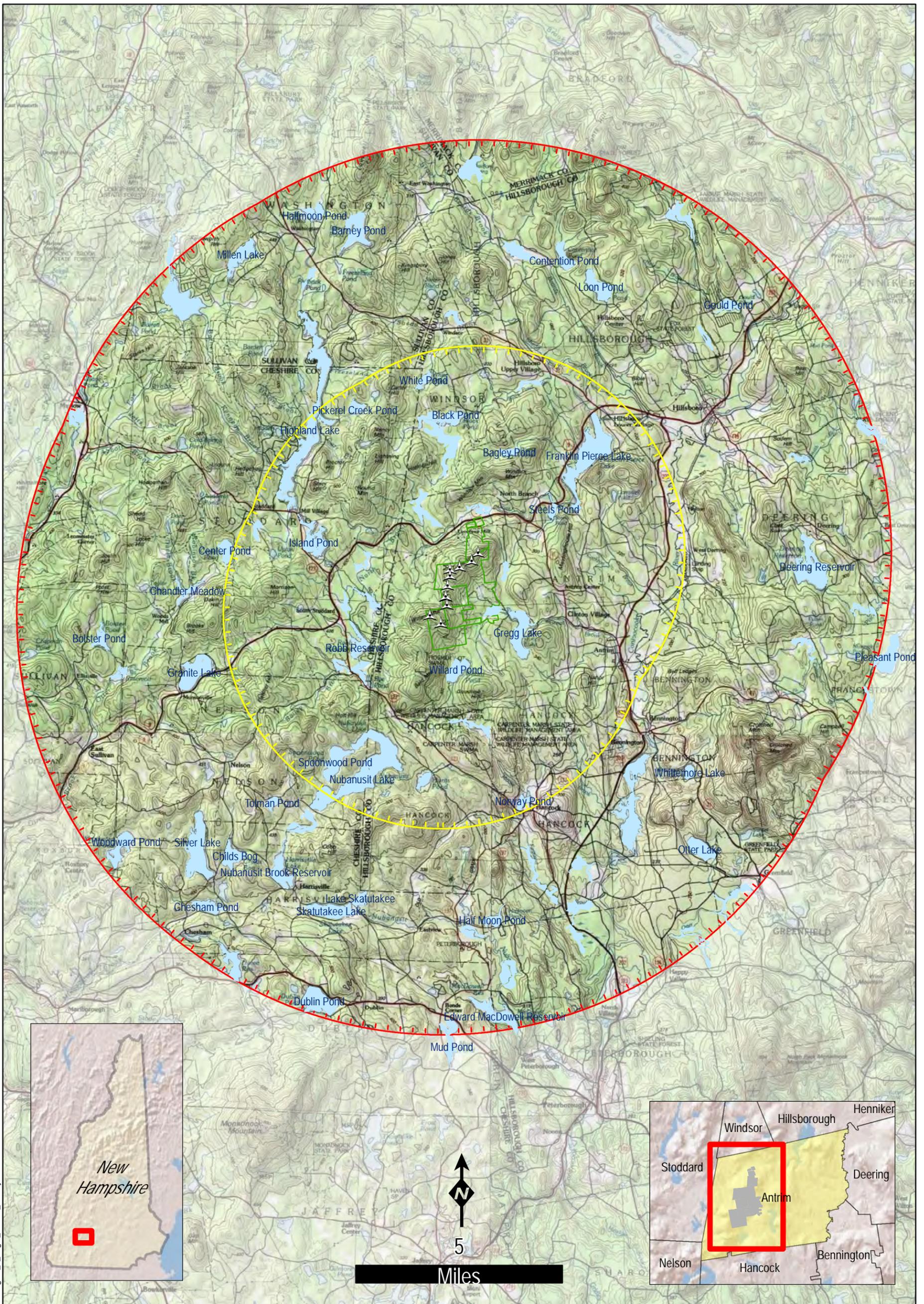
During the survey, bald eagles were observed at two locations: Millen Lake and Nubanusit Lake.

- **Millen Lake:** One immature bald eagle was observed at Millen Lake, which is located approximately 9 miles northwest of the proposed project; no adults or nesting activity were observed.
- **Nubanusit Lake:** Bald eagle nesting was confirmed at Nubanusit Lake. One adult bald eagle was observed sitting on a nest at the northeast end of Nubanusit Lake. Two chicks (in gray down) were also visible on the nest. In order to minimize disturbance, the nest was not approached to determine the presence of any additional young. A second adult bald eagle was later observed in flight over the lake. The active bald eagle nest was located on the north shore, on the far west end of the north arm of Nubanusit Lake.

No other bald eagle activity was observed during the 2011 rare raptor nest survey.

References

New Hampshire Audubon. 2010. **Status of Breeding Bald Eagles in New Hampshire in 2010.** Unpublished report prepared by Christian J. Martin, New Hampshire Audubon Senior Biologist, for New Hampshire Fish and Game Department, Nongame and Endangered Wildlife Program. November 1, 2010. Accessed online May 2011 at: <http://www.nhaidubon.org/wp-content/uploads/2011/02/2010-NH-Breeding-BAEA-Final-Report-no-app.pdf>



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Legend

-  Proposed Turbine Locations
-  Project Parcels
-  Proposed Substation Location
-  5 Mile Buffer of Proposed Project
-  10 Mile Buffer of Proposed Project
-  Lakes (>35 ac) within 10 miles of Proposed Project



ANTRIM WIND ENERGY PROJECT

ANTRIM, NEW HAMPSHIRE

Figure 1: Eagle Habitat Survey Area

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Hillsboro and Stoddard 7.5-Minute USGS Topographic Quadrangles