



August 17, 2007

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**Subject: Reconnaissance-Level Wetland and Vernal Pool Survey  
Proposed Windpark in Coos County, New Hampshire**

Dear Pip:

As requested, on May 23-26, 2007, and June 5-6, 2007, Woodlot Alternatives, Inc. (Woodlot) conducted a reconnaissance-level wetland and vernal pool survey of the summits of Mount Kelsey, Owlhead Mountain, the east side of Whitecomb Mountain, the east side of Long Mountain, and an un-named peak just west of Mount Patience (referred to as Fish Brook Ridge) in Coos County, New Hampshire. Wetland reconnaissance and vernal pool surveys were completed in order to preliminarily evaluate prospective sites for a wind power project on these ridgelines. The purpose of the investigation was to identify wetlands, streams, and other natural resource features within the project area that may affect development at the site.

A formal wetland delineation was not completed, and the following results should be used for preliminary planning purposes only. Reconnaissance-level wetland and vernal pool investigations were conducted in broad areas along each ridge top in the areas proposed for the placement of wind turbines. In general, an area approximately 300 feet wide along each ridgeline was surveyed, and the location and description of wetland resources were recorded. In general, field identification of wetlands was completed using the technical criteria of the U.S. Army Corps of Engineers (Corps) and the New Hampshire Department of Environmental Services (NHDES) Wetlands Bureau Code of Administrative Rules. Individual wetlands and vernal pools were located with a Global Positioning System (GPS) receiver. A map showing the location of the wetlands and vernal pools observed was produced using the GPS data (attached). Each wetland was characterized according to the *Classification of Wetlands and Deepwater Habitats of the United States*.<sup>1</sup> Representative photos and field notes are available upon request.

Vernal pools were identified in the field using the methods described in the *Identification and Documentation of Vernal Pools in New Hampshire*.<sup>2</sup> The New Hampshire Department of Fish and Game

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<sup>1</sup> Cowardin L.M., V. Carter, F.C. Golet, E.T. LaRoe. 1979. *Classification of Wetlands and Deepwater Habitats of the United States*. U.S. Department of the Interior, U.S. Fish and Wildlife Service, Washington, D.C.

<sup>2</sup> New Hampshire Department of Fish and Game. 1997. *Identification and Documentation of Vernal Pools in New Hampshire*. Anne Tappa, ed. 72pp.

defines a vernal pool as a temporary body of water that provides essential breeding habitat for certain amphibians and invertebrates. Following identification, a vernal pool can be documented if it occupies a confined depression without a permanently flowing outlet; contains water for at least two months in the spring/summer; contains evidence that it dries up or does not support fish; and contains evidence of vernal pool indicator species. Indicator species include fairy shrimp (*Eubranchipus* sp.), spotted salamanders (*Ambystoma maculatum*), blue-spotted salamanders (*Ambystoma laterale*), Jefferson salamanders (*Ambystoma jeffersonianum*), marbled salamanders (*Ambystoma opacum*), and wood frogs (*Rana sylvatica*). According to the New Hampshire Wetlands Board Code of Administrative Rules (1993), vernal pools are regulated in New Hampshire only if they are within other regulated wetlands. Because there is no state or local regulations that specifically regulate vernal pools, the documentation of a vernal pool is for informational purposes only.

Vernal pools are dynamic habitats that vary in water level, vegetative cover, and other physical characteristics during the course of a year, as well as from year to year. In addition, the breeding activity of amphibians, particularly the initiation of breeding, is dependent upon seasonal environmental parameters such as temperature and precipitation. Due to this variability, the presence and number of egg masses may differ between breeding seasons and during the course of a given breeding season. The presence, absence, and number of egg masses presented in this report reflect the results of this single survey event. Based on observations of the on-site vernal pools, the survey event conducted by Woodlot was at the appropriate seasonal period for characterizing vernal pools. Copies of the field notes and representative photographs are available upon request.

### **General Site Description**

Topography within the Coos County region of New Hampshire is mountainous with elevations ranging from approximately 1,000 feet to 3,400 feet. These mountains occur within a landscape dominated by industrial forestry practices. High elevations are dominated by balsam fir (*Abies balsamea*) and red spruce (*Picea rubens*) forests. The surrounding side slopes and valleys consist primarily of yellow-birch (*Betula alleghaniensis*), American beech (*Fagus grandifolia*), and sugar maple (*Acer saccharum*), species typically found in northern hardwood-conifer forests.

### **Wetland and Vernal Pool Reconnaissance Summary**

A total of 55 wetlands were documented during Woodlot's survey, including forested and scrub-shrub swamps, emergent and open water areas, one intermittent stream, and 17 vernal pools. In general, the wetlands are dominated by balsam fir and red spruce at higher elevations, and northern hardwood transitional species such as yellow birch and red maple (*Acer rubrum*) at lower elevations. The intermittent stream flows through several of the wetland types found within the project area. Wetland classifications and vernal pool descriptions are provided in Table 1 (attached). While many of these wetlands are naturally occurring on the landscape, some have been disturbed by active and historic forestry management practices. Evidence of forestry activities include skidder ruts, slash piles, and tree stumps.

### **State and Federal Wetland Regulations**

NHDES and the Corps regulate activities that may impact the wetlands identified within the study area. NHDES permits are required to dredge, fill, or construct a structure in a wetland, on surface water, or adjacent to a municipally-designated prime wetland. A single application to NHDES will usually satisfy both state and federal application requirements. Projects that do not qualify for the Minimum Expedited

Permit and after-the-fact applications require an application through the Standard Dredge and Fill Application process.

The types of wetland projects that qualify for a major, minor, or minimum impact review are listed below.

Minimum Impact Projects –Minimum Expedited Permit

- The repair or replacement of a seasonal dock that does not qualify for the Seasonal Dock Notification;
- Fill for lot development that impacts less than 3,000 square feet of swamp or wet meadow;
- The installation of a 900 square foot perched beach for a single-family home;
- A construction project that will disturb 50 linear feet or less of an intermittent stream, with work occurring during low flow periods;
- A project to remove nuisance aquatic weeds by cutting roots and harvesting, with no mobilization of bottom sediments; and
- Repair or replacement of an existing legal structure.

Minor Impact Projects – Standard Dredge and Fill Application

- The construction or modification of a docking system that will yield no more than four boat slips (new, plus existing) and affects less than 100 linear feet of shoreline;
- The construction of a fire pond (with and inlet or an outlet) with less than 20,000 square feet of impact to very poorly drained soils (Hydric A) or impact to a stream;
- Removal of less than 20 cubic yards of rocks, gravel, sand, and/or mud from public waters;
- The repair or replacement of a retaining wall that requires work in the water but results in no change to the wall's height, length, location, or configuration; and
- The combination of a series of minimum impact projects amounting to less than 20,000 square feet of dredge and/or fill, four boat slips or less, or cumulative impacts of less than 200 linear feet of shoreline or stream bank.

Major Impacts – Standard Dredge and Fill Application

- The filling of more than 20,000 square feet of jurisdictional wetlands;
- Placing fill in public waters for the purpose of making land;
- Building a new retaining wall that will disturb more than 200 linear feet of a Great Pond's shoreline, constructed lakeward from the natural shoreline and below its natural mean high water level;
- The construction of a marina or a breakwater in public waters;
- Boardwalk construction across sand dunes in the tidal buffer zone to provide beach access;
- A combination of new plus prior site work (over the past five years) which exceeds 20,000 square feet of impact; and
- Any impacts to a wetland designated as a "prime wetland" by the host community.

**State and Federal Vernal Pool Regulations**

The State of New Hampshire has no specific regulations that address development relative to vernal pools. If a vernal pool occurs within a wetland, then NHDES has regulatory authority over activities that would impact the resource. Under the New Hampshire Programmatic General Permit, which is issued by the Corps for projects involving "minimal" wetland impacts, vernal pools are considered a type of Special Wetland. As such, the applicant must minimize surrounding upland impacts to the greatest extent practicable. Impact minimization should be in accordance with *Best Development Practices: Conserving*

*pool-breeding amphibians in residential and commercial development in the northeastern United States.*<sup>3</sup> This includes, but is not limited to, maintaining 75 percent of the critical terrestrial habitat (i.e., area within 750 feet of the vernal pool depression) as contiguous forest with undisturbed ground cover. Efforts to minimize impacts should correspond to the value of the vernal pool.

### **Local Wetland Regulations**

Dummer and Columbia, the two incorporated towns within the project area, do not have any municipal mapped prime wetlands. Wetland regulations for these towns and the unincorporated areas most likely follow the NHDES guidelines for defining and regulating freshwater wetlands.

Please contact our office if you have any questions related to the information presented in this report or if we can be of further assistance.

Sincerely,  
Woodlot Alternatives, Inc.

*Charles Ferris*

Charles Ferris  
Wetland Scientist

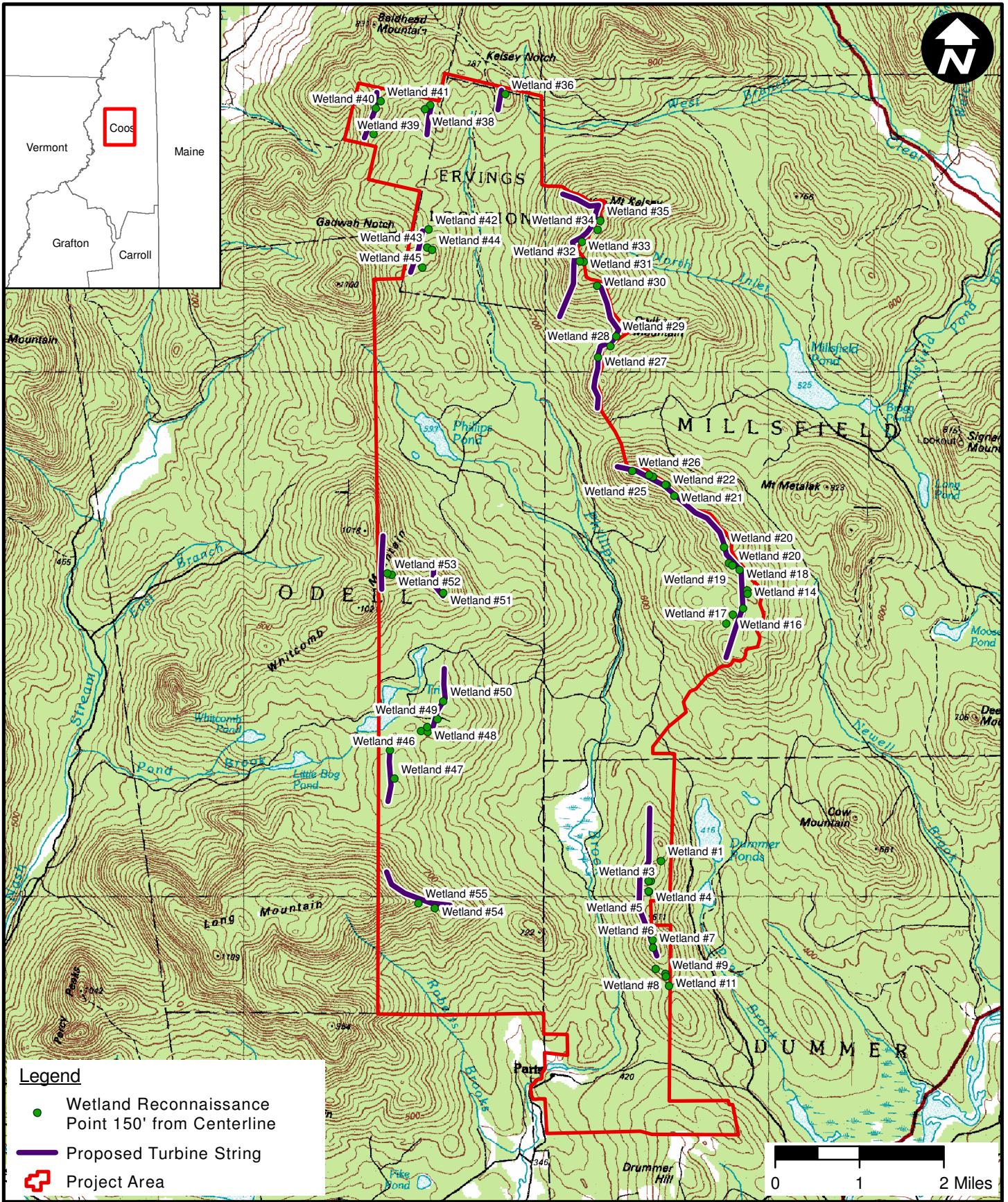
Enclosures: Wetland Reconnaissance Map  
Table 1. Wetland and Vernal Pool Descriptions

WAI File 106195.01

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<sup>3</sup> Calhoun, A. and M. Klemens. 2002. *Best Development Practices: Conserving Pool-Breeding Amphibians in Residential and Commercial Development in the Northeastern United States*. Wildlife Conservation Society, Bronx, New York.





**Table 1. Wetland and Vernal Pool Descriptions**

Wetland Number	General Wetland Type	Classification	Disturbed	Comments
1	forested	PFO	yes	Long, narrow, natural wetland in saddle
2	forested, scrub-shrub	PFO, PSS	yes	Includes a vernal pool with 1 wood frog egg mass
3	scrub-shrub	PSS	no	Small isolated wetland
4	forested	PFO	yes	Includes a vernal pool. No egg masses at time of survey
5	forested	PFO	no	Small, natural forested wetland. Includes a vernal pool with 1 wood frog egg mass
6	forested, scrub-shrub	PFO, PSS	no	Large, natural forested wetland
7	emergent	PEM	yes	Small wetland within old skidder rut
8	emergent	PEM	yes	Small vernal pool within old skidder rut; wood frog tadpoles observed
9	emergent	PEM	yes	Small vernal pool within old skidder rut, with wood frog tadpoles observed
10	emergent	PEM	yes	Small wetland within old skidder rut
11	forested, scrub-shrub, emergent	PFO, PSS, PEM	yes	Large, natural forested wetland
12	forested, open water	PFO, PUB	yes	Includes a vernal pool with 15 wood frog and 10 spotted salamander egg masses
13	scrub-shrub, emergent	PSS, PEM	yes	Includes a potential vernal pool. No egg masses at time of survey
14	emergent	PEM	yes	Includes a potential vernal pool. No egg masses at time of survey
15	forested	PFO	no	Includes a large vernal pool. No egg masses at time of survey
16	forested, scrub-shrub, emergent	PFO, PSS, PEM	yes	Small, natural wetland
17	forested, scrub-shrub	PFO/PSS	no	Large, natural forested wetland
18	forested	PFO	no	Small, natural wetland
19	forested, scrub-shrub	PFO/PSS	no	Large, natural forested wetland
20	scrub-shrub, emergent	PSS/PEM	yes	Small wetland within old skidder rut
21	emergent	PEM	yes	Small vernal pool within old skidder rut with 3 spotted salamander egg masses
22	emergent	PEM	yes	Small vernal pool within old skidder rut, with unknown number of spotted salamander egg masses
23	emergent	PEM	yes	Small vernal pool within old skidder rut with 3 spotted salamander egg masses
24	emergent	PEM	yes	Small vernal pool within old skidder rut with unknown number of spotted salamander egg masses
25	emergent	PEM	yes	Small vernal pool within old skidder rut with unknown number of spotted salamander egg masses
26	forested	PFO	no	Small, natural wetland
27	forested	PFO	no	Long, narrow, natural wetland in saddle
28	forested	PFO	no	Large, natural wetland. Includes a vernal pool with 50 wood frog egg masses
29	forested	PFO	no	Large, natural wetland. Includes a potential vernal pool. No egg masses at time of survey.
30	forested	PFO	no	Small, natural wetland
31	forested	PFO	no	Long, narrow, natural wetland in saddle
32	forested	PFO	no	Long, narrow, natural wetland in saddle
33	forested	PFO	no	Small, natural wetland
34	forested	PFO	no	Long, narrow, natural wetland in saddle
35	forested	PFO	no	Long, narrow, natural wetland in saddle
36	forested	PFO	no	Small, natural wetland
37	forested, scrub-shrub	PFO, PSS	no	Large, natural forested wetland
38	scrub-shrub, emergent	PSS, PEM	yes	Small, natural wetland
39	forested, scrub-shrub, emergent	PFO, PSS, PEM	no	Small, natural wetland
40	forested	PFO	no	Small, natural wetland
41	forested	PFO-VP	no	Large, natural wetland. Includes a vernal pool with 30 spotted salamander egg masses
42	forested	PFO	no	Large, natural forested wetland
43	forested	PFO	yes	Large, natural forested wetland

**Table 1. Wetland and Vernal Pool Descriptions**

<b>Wetland Number</b>	<b>General Wetland Type</b>	<b>Classification</b>	<b>Disturbed</b>	<b>Comments</b>
44	forested	PFO	no	Small, natural wetland
45	forested, scrub-shrub, emergent	PFO, PSS, PEM	yes	Long, narrow, natural wetland. Includes an intermittent stream
46	forested, open water	PFO, PUB	yes	Includes a vernal pool with 26 spotted salamander egg masses
47	forested, scrub-shrub	PFO, PSS	no	Large, natural wetland. Includes a vernal pool with wood frog tadpoles
48	forested, scrub-shrub	PFO, PSS	no	Large, natural forested wetland
49	forested, scrub-shrub	PFO, PSS	no	Large, natural forested wetland
50	forested	PFO	no	Small, natural wetland
51	emergent	PEM	yes	Small potential vernal pool within old skidder rut. No egg masses at time of survey.
52	forested, scrub-shrub	PFO, PSS	no	Long, narrow, natural wetland
53	forested	PFO	no	Small, natural wetland
54	emergent	PEM	yes	Small wetland within old skidder rut
55	emergent	PEM	yes	Small vernal pool in old skidder rut with 16 spotted salamander egg masses and wood frog tadpoles