



United States Department of the Interior



FISH AND WILDLIFE SERVICE
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March 12, 2009

Colonel Philip T. Feir, District Commander
New England District
Corps of Engineers
696 Virginia Road
Concord, MA 01742

Dear Colonel Feir:

This is in response to Public Notice No. NAE-2008-410, dated January 27, 2009, an application by Granite Reliable Power (GRP), a subsidiary of Noble Environmental Power, to develop a 100-megawatt wind energy facility in Coos County, New Hampshire. These comments are provided in accordance with the Fish and Wildlife Coordination Act 16 U.S.C. 662, et seq., the Clean Water Act 33 U.S.C. 1344 (m), and the Migratory Bird Treaty Act 16 U.S.C. 703-712.

Introduction

The proposed project involves the upgrading of approximately 19 miles of existing logging roads and trails, the construction of 12 miles of new roads, the construction of 33 wind turbine pads and foundations, the erection of 33 3-mw wind turbines, the construction of about 30 miles of new overhead and underground electric transmission lines, a switch yard, and associated facilities. Approximately 300 acres of land would be cleared, and of this, about 203 acres would be disturbed by construction activities.

Construction-related effects pertaining to the upgrade of 19 miles of existing logging roads and trails include additional clearing on one or both sides to allow for road widening, vertical and horizontal changes in alignment, replacement and upgrading of bridges, box culverts and pipe culverts, and the installation of erosion control measures. All access roads will be constructed within a right-of-way (ROW), defined as the width needed to install the road (with any cut and fill included), plus 10 feet on either side [Site Evaluation Committee (SEC) application, page 46]. Typically, the access road surface would be 25-34 feet wide, resulting in a clearing about 40-50 feet wide except in cut and fill sections where the width of clearing would be enlarged.

Project Purpose

The purpose and need statement for the project is considerably different in the dredge and fill permit applications for the state and the Corps public notice. In the July 11, 2008 letter from Horizons Engineering transmitting the application to the New Hampshire Wetlands Bureau, the purpose and need is "The proposed wetland impacts are needed for the construction and operation of a wind park to provide alternative electrical energy." Later, in a December 11, 2008 letter, Noble provided a different (more narrow) basic project purpose. The Corps public notice identifies the purpose and need as "The purpose of the work is the development of an economically viable wind power project in New Hampshire." We do not understand why, despite the December 11, 2008 letter mentioned above, the Corps decided to define the project purpose and need more narrowly than the applicant did only six (6) months earlier in the state wetland application. In either case, we think the purpose and need should be defined more broadly to include the development of renewable energy for the New England Grid, an alternative energy and geographic scope consistent with the application documents as discussed below.

Off-site Alternatives

The alternatives analysis developed by the applicant is located in three pre-public notice documents: 1) Section H of the SEC application; 2) the July 11, 2008 letter from Horizons Engineering transmitting the wetlands application to the New Hampshire Department of Environmental Services; and 3) an October 23, 2008 letter from the applicant's counsel, Orr & Reno, to SEC Chairman Thomas Burack. On February 26, 2009, the applicant provided a new off-site alternatives analysis consisting of a coarse scale review of five sites.

It is clear that the initial screening for alternative sites included the New England states and New York (SEC application, Section H, page 55). The application identifies the screening criteria used as follows: "The project site in Coos County was one of many sites evaluated within New England using the following criteria:

- Availability of sufficient wind resources
- Proximity of existing roads and transmission lines
- Availability of privately-owned lands
- Presence of environmental and land use constraints
- Identification of preferred project site and turbine locations" (SEC application, page 55).

The February 26, 2009 alternatives analysis changed the last bullet above to:

- "Local support for a wind energy facility".

The preliminary screening section in the SEC application and the other pre-public notice alternatives documents above, July 8 and October 23, 2008 letters, do not identify the names or locations of any of the "many" alternative sites evaluated in New York and New England, only the proposed project location (SEC application, page 55). The February 26, 2009 off-site alternatives analysis identifies the general location of five potential sites and indicates where turbine strings might be located on three of them. The coarse level of analysis appears to be limited to a map/GIS layer review of available information. Essential information such as the size of the project area, miles of new and upgraded road required, miles of new and upgraded

transmission line required, number of new or upgraded stream crossings, number and acreage of new or expanded wetland alterations, potential to affect high elevation habitats, old growth stands, sensitive species, high quality waters, and other environmental information is missing. The off-site alternatives analysis is based on a 99-mw scale facility, not on a capacity sized to each individual site. Alternative sites that would not provide this 99-mw capacity either because of size or wind resource or both were discarded. In addition, other sites such as the 148-mw facility Noble has been pursuing north of the Phillips Brook site, and the 50-mw Grandpa's Knob site west of Rutland, Vermont also being studied by Noble are not mentioned in the February 26, 2009 off-site alternatives analysis. Accordingly, this means, from a site selection perspective, the public notice, including the applicant's documents, cannot demonstrate compliance with the alternatives analysis required by 40 CFR 230.10(a) that the site selected is the least damaging practicable site. Insufficient information is provided in the application documents to identify alternative sites, wetlands and other waters on these sites, and other environmental features that might be adversely affected. The rebuttable presumption that practicable alternatives exist that do not involve impacts, or would have the smallest impact on special aquatic sites, has not been overcome. It is not clear to what extent, if at all, that waters and wetlands were considered in an objective manner at the site selection stage since on-site delineation work would be needed to provide reliable information on the numbers, locations, and boundaries of wetlands and waters in these forested areas.

On-site Alternatives

Within the approximately 80,000-acre project (lease) area, the applicant initially evaluated a 100-mw project consisting of 67 1.5-mw turbines on ridgelines east and west of Phillips Brook, exclusive of the Bayroot parcel (SEC application, page 56). The 100-mw project size is based on maximum available excess capacity on the existing 115-kv transmission line near the site. In a subsequent iteration, the smaller 1.5-mw turbines were replaced by 3.0-mw turbines which, along with the addition of the Bayroot parcel, allowed the 100-mw project to be sited on ridges north and east of Phillips Brook (SEC application, page 56).

A smaller project alternative is discussed in the SEC application, page 59. However, no information is provided on the scale of the project such as the number and capacity of the turbines, which ridgelines were considered for turbine strings, how much excess transmission capacity exists without a transmission line upgrade, and what transmission upgrade alternatives were considered besides re-sagging the lines to gain the maximum possible capacity.

We find the public notice, SEC application, and other documents referenced above to lack essential information to demonstrate that avoidance of wetlands and waters was accomplished at either the site selection stage or during on-site planning at the Phillips Brook site. Specifically, all of the site selection and on-site planning activities up to and including layout of the roads, turbine strings and turbine pads were accomplished prior to wetland delineation work being initiated (fall 2007) and completed (June 2008) (SEC application, pages 55-59, October 23, 2008 letter from the applicant's counsel to SEC). No wetlands/waters delineation work was presented in the SEC application to support the site selection process which took place in 2006. No wetlands/waters delineation work was available in 2006/2007 for the on-site evaluation of the 67-turbine proposal, the 33-turbine project, or the smaller project configuration. In fact, no

wetlands/waters delineation work is currently available for the ridgelines west of Phillips Brook where many of the turbines for the 67-turbine project were proposed. This precludes an evaluation of the site even today to demonstrate avoidance of wetlands/waters and other environmental values as required by 40 CFR 230.10(a) to establish which on-site alternative is the least damaging practicable alternative.

In particular, the public notice and applicant's documents presented no information to show how a wind project could be sited on this 80,000-acre tract of land using the sequential mitigation process required by the Guidelines to: first, avoid impacting wetlands/waters, and especially undisturbed wetlands such as high elevation spruce/fir wetlands and old growth stands; and second, minimization of impacts to these resources. For example, the Fishbrook turbine string of 12 turbines is situated on ridgelines with elevations in the 2,500-2,600-foot range, well below the high elevation (>2,800 feet) habitats on Owlhead, Kelsey and Dixville. These lower elevation ridgelines are much more likely to be in mixed forest stands of softwood and hardwoods subject to a history of commercial forestry practices. Wetland impacts resulting from turbine strings on these lower elevation ridges on this large (80,000-acre) site may be significantly less also. For example, the 12-turbine string on Fishbrook (Sheets 81-88, July 2008 site plans) impacts 11 wetlands/0.49 acre (12/08 Summary of Wetland Impacts), whereas the 8-turbine Kelsey string (Sheets 104-107) impacts 52 wetlands (2.8 acres), all of which are high elevation spruce/fir or fir, including old growth stands. In fact, Sheets 105, 106, and 107 on the Kelsey string each have more individual wetland impacts than the entire Fishbrook turbine string. Similar results exist when the Dixville string, 39 impact sites (2.3 acres), is compared to the Fishbrook string. It would be useful to know whether similar impacts result, e.g., fewer wetlands and acreage impacted, from the placement of turbine strings on ridgelines of comparable elevation and land use history on the west side of Phillips Brook and elsewhere in the project area, and request that the necessary wetland delineation work and analysis be completed for all of the ridgelines with Class 4 winds and above in the 80,000-acre easement area.

Stream Crossings

Stream crossings and on-site runoff are being handled somewhat differently on existing roads that are being upgraded, formerly-abandoned roads, and new access roads, and also based on whether the stream is classed as perennial or intermittent. All or nearly all of the perennial stream (R3 classification on 12/08 Summary of Wetland Impacts) crossing structures are bridges or embedded box culverts. These structures would likely protect existing uses in these streams, as required by water quality standards and antidegradation policy. All or nearly all of the intermittent stream (R4 classification) crossings would be made using smooth bore plastic pipe culverts. Since these pipe culverts are smooth and not embedded, they would not retain typical stream substrate, hydraulic, light and aquatic life conditions similar to upstream and downstream areas. Accordingly, these structures would not protect existing uses in the 15 intermittent stream crossings in new roads, including the Dixville Connector Road. In the case of the road upgrades, the 51 replacement culverts on intermittent streams represent a missed opportunity to restore uses and meet designated uses in these waters. Under the 404(b)(1) Guidelines, these stream crossing proposals are clearly not the least environmentally damaging practicable alternative. Embedded box culverts and bridges are the least damaging alternative for crossing perennial and intermittent streams.

Most of the new roads, excluding the Dixville Connector Road, are designed to minimize the concentration of runoff/flow by using frequent cross culverts and other treatments to disperse flow. Much less effort has been made to reverse the existing conditions which serve to concentrate flow on and along the 19 miles of existing road proposed for upgrade and especially so for the new Dixville Connector Road.

Time-of-Year Restrictions

Time-of-year restrictions need to be developed and implemented to protect the most sensitive life cycle functions such as breeding/nesting and spawning/incubation during the project construction period. Vegetation clearing activities should be scheduled to occur outside the primary bird nesting period which likely occurs from March-July in this area. Instream work in perennial and intermittent streams should be scheduled during the summer low flow period August-September to provide protection to fish spawning and incubation functions. Streams in the project area are used as spawning and incubation habitat in both the fall/winter and spring/early summer period. Episodic effects to stream hydrology and suspended sediment need to be avoided during these spawning/incubation periods.

Old Growth Stands

The new access roads leading to the turbines on Dixville, Kelsey/Owlhead and Fishbrook cross a large number of wetlands, mostly needle-leaved evergreens consisting of red spruce/balsam fir and fir. In particular, stands of spruce/fir and fir exist on Dixville and Kelsey that show no sign of logging activity and are considered to be old growth. Above approximately 3,000 feet± where spruce/fir transitions into fir, the stands show evidence of stunted growth and appear to be of little or perhaps no commercial value.

The high elevation wetland systems on these mountains warrant special protection and recognition due to their limited occurrence in the region, their fragile nature due to shallow, cold soils, and other harsh environmental conditions, and because they serve as critically important wildlife habitat for habitat specialists such as the three-toed woodpecker, Bicknell's thrush, and pine marten.

Breeding Birds

The breeding bird survey of the project area conducted by New Hampshire Audubon Society staff identified 25 bird species of moderate to highest priority conservation concern in the North American Landbird Conservation Plan for bird conservation region 14. At least 22 species identified in the Audubon breeding bird survey and that are also censused by the North American Breeding Bird Survey (BBS) show evidence of long-term population decline in the northeast region (1969-2005). In particular, Bicknell's thrush (not adequately censused by BBS) was detected on Mount Kelsey (transect above 3,100 feet) and Dixville Peak (transect above 2,969 feet) by the New Hampshire Audubon survey. Bicknell's thrush is considered by the U.S. Fish and Wildlife Service (Service) to be a species at great risk due to a highly restricted and fragmented breeding habitat and other factors contributing to a declining population. The

preferred breeding habitat for this species is in regeneration stands of dense fir or spruce/fir that occur in high elevation habitat created by natural disturbance such as wind throw and disease.

The proposed turbine strings and access road on Kelsey and Dixville ridgelines are overlain on the core of the available breeding habitat for Bicknell's thrush, creating a serious land use conflict. The breeding bird survey transects established by New Hampshire Audubon were laid out and conducted along the Kelsey and Dixville ridgelines at about 2,900 feet elevation and above. Consequently, we cannot assume that suitable and occupied breeding habitat exists downslope of these ridges below 2,900 feet and beyond the detection range of these transects/point counts (approximately 50 meters, perhaps less due to persistent wind conditions during the survey). Additional survey work would be required to determine habitat suitability and occupancy in these downslope areas. This survey work was requested by the Service (4/23/08) but as of this date has not been conducted by the applicant. Construction of roads and turbine pads through the core of the Bicknell's breeding habitat would eliminate about 90 acres of high elevation habitat along the ridgelines and cause any remaining adjacent habitat to be less suitable or unsuitable at least for an extended period of time. Indirect effects caused by these long linear clearings could include a change in microclimate that could affect the remaining adjacent spruce/fir and fir habitat by causing more wind throw, greater seedling mortality due to temperature and moisture extremes, and from freezing/frost action in these thin soils. Disturbed soils would be slow to recover to spruce/fir (approximately 20-25 years) based on experience with alpine ski trails in Vermont (personal communication, K. McFarland/V. Lang).

The Service is concerned that wind turbines may not be compatible developments in or near Bicknell's thrush breeding habitat. During the breeding season, male Bicknell's perform aerial displays during the crepuscular periods which would put them in the rotor-swept zone and wind wake zone of the turbines where they could be injured or killed. This behavior is not restricted to the breeding season, as it also occurs in the fall pre-migratory period. In our view, this represents an unknown risk for a species in a perilous population status.

In addition to the *Catharus* thrushes, at least one other migratory bird species, the purple finch (state bird for New Hampshire), performs an aerial display in the mornings and evenings during the breeding season. This species was detected on Owlhead and Kelsey transects and is likely to occur elsewhere in the project area. Wind turbines in or near its breeding habitat may not be compatible with conservation of this species. The purple finch is experiencing a long-term population decline in the northeast based on breeding bird survey data (1969-2005).

Several of the breeding birds identified on the Fishbrook, Owlhead, Kelsey and Dixville ridges such as Swainson's thrush, blackpoll warbler, veery, red-eyed vireo, ovenbird, Canada warbler, and white-throated sparrow are forest-interior specialists. The habitat fragmentation effects from the construction of 12 miles of new roads, 33 turbine pads, and wind turbines include, but are not limited to, the direct loss of habitat, increased nest predation and parasitism, an increase in edge habitat and generalist species, and a concurrent decrease in forest-interior habitat and interior species, and greater disturbance due to man's activities and wind turbine noise.

Significant Degradation

Based on our review of available information, the extensive impacts to needle-leaved evergreen wetlands on Mount Kelsey (52 impact sites) and Dixville (39 impact sites) cause or contribute to significant degradation of waters of the United States. Specifically, under the Guidelines, 40 CFR 230.10(c), effects contributing to significant degradation include:

230.10(c)(2) significantly adverse effects on the breeding life stage of Bicknell's thrush caused by death and/or injury in the rotor-swept zone and wind wake area during aerial displays in the breeding season and pre-migratory periods. Mortality to Bicknell's thrush during the breeding season and pre-migratory period may cause these mountaintop sites to shift from stable or recruitment sources to population sinks. The effects of habitat degradation from project construction in high elevation needle-leaved evergreen wetlands and uplands, and injury/mortality during project operation combine to further restrict the already highly restricted and fragmented breeding habitat for this species and may contribute to the population decline of this at risk species. Several forest-interior birds identified during the breeding bird survey such as Swainson's thrush, veery, and ovenbird would be adversely affected by the direct loss of habitat and creation of edge conditions which would make remaining adjacent forest habitat unsuitable or less suitable during the breeding life stage for distances up to or greater than 250 m from the new edge; and

230.10(c)(3) significantly adverse effects on ecosystem diversity and productivity due to the loss and degradation of suitable and occupied breeding habitat for Bicknell's thrush on Mount Kelsey and Dixville, and injury and/or mortality to the species in the rotor-swept zone and wind wake areas of the proposed turbines during the breeding season and pre-migratory period. Several forest-interior birds identified by the breeding bird survey and mammals such as the pine marten could be adversely affected by habitat fragmentation, including the direct loss of habitat and creation of edge conditions which would make remaining adjacent forest habitat unsuitable or less suitable for distances up to or greater than 250 m from the new edge.

The determinations under section 230.11 of the Guidelines include effects such as:

230.11(b) changes in the hydrologic regime to numerous wetlands and waters due to interception of surface and ground water flow by extensive cuts and fills and blasting to construct access roads and turbine pads in this montane setting;

230.11(c) changes in suspended sediment loadings to wetlands and waters due to the construction of gravel access roads in this montane setting. The effects of storms and runoff conditions during cold season conditions when culverts may be frozen would likely cause sedimentation in stream courses and wetlands;

230.11(e) the structure and function of aquatic ecosystems would be adversely affected by direct loss of habitat due to filling for access roads and turbine pads. Adjacent aquatic systems would be adversely affected due to changes in microclimate (increased wind throw, extremes in temperature and moisture regime) and habitat fragmentation effects such as an increase in edge

habitat and generalist species, and a concurrent decrease in the suitability of remaining adjacent habitat for forest-interior bird and mammal species dependent on interior habitat; and

230.11(h) secondary effects, including habitat fragmentation effects on forest-interior species due to the construction of access roads, transmission lines and turbines; secondary effects related to project operations, including injury and mortality to Bicknell's thrush during the breeding season and pre-migratory period, and to migrating birds and bats during spring and fall migration seasons.

From the standpoint of conservation biology, the restricted and fragmented breeding habitat of the Bicknell's thrush, which is limited to high elevation mountaintops containing spruce/fir and fir in the northeastern United States, should be considered a site of last resort or unsuitable for large-scale habitat-altering projects. A recent study in Vermont by McFarland et al. 2008 estimated that Bicknell's habitat occupied less than 10% of the class 4 and higher wind resource areas in that state.

Radar Survey

The applicant conducted a radar survey in the spring and fall of 2007 from a location on Owlhead Mountain. The data from this study were analyzed out to a 0.5 km radius from the radar to obtain a 1 km front for evaluation purposes. In this long linear project, the northernmost turbine on Dixville is about 15 km from the southernmost turbine on Fishbrook ridgeline. Consequently, no data on the spatial and temporal uses of the air space by birds, bats and insects exist for the vast majority of this topographically complex site, as less than 7% of the site from the southernmost to the northernmost turbine was surveyed by radar. In addition, no radar and other remote-sensing data exist to provide information on year-to-year variability during the migration seasons. The Service has previously requested (11/17/06, 4/23/08) three years of radar coverage of the ridges where turbines are proposed. The limited data collected by the applicant at the Owlhead site indicate that conditions exist that would likely put migrating birds and bats at risk in the wind wake and rotor-swept zones of the proposed turbines. In the fall 2007 radar report, Appendix A, Table 1 indicates that on only 7 nights during the 29 nightly sampling events were less than 10% of the targets below 125 m (the top of the rotor-swept zone) based on mean nightly data. During the remaining 22 nights of sampling, more than 10% of the targets were below 125 m, and one night (10/13/07) reached in excess of 40% below 125 m.

In addition, Appendix A, Table 2 indicates large hour-to-hour variation in flight volume on 9/10, 9/14, 9/17, and 9/18/07. Appendix A, Table 4 indicates large hour-to-hour variation in flight height on 9/15, 10/14, and 10/15/07. Appendix A, Tables 1, 3, and 5 indicate that winds aloft and at the radar station/met tower are frequently different. These tables indicate that the wind direction at or near the ground is frequently different from target flight direction. Similar data exist in the spring 2007 radar report. Appendix A, Table 4 indicates only four nights during the 30-night sampling period when less than 10% of the targets were below 125 m. During 14 nights of the 30-night sampling period, more than 20% of the targets were below 125 m during low-to-moderate migration traffic. Appendix A, Table 2 indicates high hour-to-hour change in migration volume on 5/10 and 5/26/07. Appendix A, Table 4 indicates high hour-to-hour variation in flight height on 5/3, 5/11, and 5/12/07. Causes for these abrupt changes are unknown, but changes in

wind speed, direction, and shear forces are possibilities, as well as precipitation, cloud ceiling height and visibility. The applicant did not collect data on most of these parameters, resulting in an incomplete study on this small segment of the larger project area.

Moreover, the Owlhead site at about 2,800 feet elevation appears to be high enough to cause a topographic compression of the migration over this mountain. The fall 2006 off-site radar study was conducted at a lower elevation site (610 m, 2,000 feet) about 3 miles east of the Owlhead site. The mean flight elevation above the radar was 455 m at the 2006 site, whereas the mean flight elevation above the radar at the Owlhead site in 2007 was 343 m (spring) and 332 m (fall). These data indicate that migrants may be compressed as they fly over these higher elevation ridges of the project area which increases the risk for injury or mortality in the rotor-swept zone and wind wake area.

When the results of the radar data are displayed using whisker plots and 25th/75th percentiles to illustrate how the targets are distributed in the air space over the radar site, a very definite skew towards the rotor-swept zone and wind wake zone is evident. These limited data indicate that a large number of flying vertebrates are in or near zones where they would be at risk of injury or mortality, and particularly so when the various episodic wind and other weather events discussed above are superimposed on these flight characteristics.

Bats

Adequate surveys for bats and bat activity were not conducted for this project area. The fall 2007 radar study started on September 5, so it is likely that a substantial portion of the bat migration would have been missed. At this northern location, the bat migration would be underway in August. Bat acoustic detectors were deployed only at a single location where wind turbines are being proposed. Since the range of these acoustic detectors is about 150 feet, less than 1% of the length/area of the turbine strings was sampled. In addition, potential high use areas around streams, ponds, and wetlands were not sampled with acoustic detectors to determine if a reservoir of bat activity exists in the area. The bat acoustic detectors attached to the met towers on Owlhead and Trio Pond detected a low level of bat activity. However, the interpretation and relevance of this limited data is compromised because these devices do not adequately sample the rotor-swept and wind wake zones because of their restricted detection range. Additionally, if the resident or migratory bats are not echo-locating during nightly activity or migration, they would not be detectable with acoustic detectors. Additional survey work as requested by the Service is needed to address the major deficiencies identified above.

Raptors

The fall 2007 raptor migration survey was conducted during an abbreviated 11-day period from a location on Owlhead Mountain. This data set is significantly different from other raptor surveys at wind project and hawk watch locations in New England due to low numbers of raptors observed (38) and the near absence of broad-winged hawks from species observed. We normally expect the total raptor count to be at least in the hundreds, with the broad-winged hawk being the most numerous. This normal pattern is also the pattern observed at the Weeks State Park hawk watch site located about 20 miles southwest of the Owlhead site. The flight characteristics of the

raptors observed, albeit low numbers, raise a concern because approximately 55% were flying below 125 m. Raptor surveys should be repeated from Owlhead and other ridgelines proposed for wind development during the breadth of the spring and fall migrations to establish a reliable baseline for raptor numbers, species composition, flight elevations, flight pathways, and temporal characteristics of migration by species.

Collision Risk

The Service considers migrant Bicknell's thrushes to be susceptible to collision mortality at man-made structures. References exist in the annotated bibliography by Avery et al. (1980) to collisions of grey-cheek thrush with man-made structures (prior to 1995, Bicknell's thrush was considered a subspecies of grey-cheeked thrush). Saunders (1930), cited in Avery et al. 1980, reported that 150 grey-cheeked thrushes were killed at the Long Point Lighthouse on Lake Erie during the period September 24-29, 1929. Kale et al. (1969), cited in Avery et al. 1980, reported bird mortality at a 200-foot television tower and a 400-foot missile tracking tower on Grand Bahamas Island on the night of 21-22 October, 1966. Of the 37 species reported being killed at these towers, the grey-cheeked thrush was the most numerous species at both towers. Grey-cheeked thrushes have also been collected beneath communication towers in Leon County, Florida (Rimmer et al. 2001)

Wind turbines located on ridgelines in the project area may pose multiple threats to migrating birds. Birds migrating to or from breeding habitat on or near the site would need to fly down through or up through rotor-swept and wind wake zones, subjecting them to risk of injury or mortality. Migrating birds using the project area as stopover habitat would need to fly up through and down through the rotor-swept and wind wake zones. Similarly, birds migrating past the project area in the spring or fall may be subject to the compression effect observed at the Owlhead site and other episodic wind, weather, and other phenomena discussed above that cause birds and bats to fly at rotor-swept and wind wake elevations, subjecting them to potential injury and mortality.

As discussed above, no radar or other remote sensing data are available to demonstrate year-to-year variability at the Owlhead site. No radar or other remote sensing data are available for the remainder of the site, including the ridgelines east and west of Phillips Brook that are below 2,700 feet elevation. Accordingly, it is difficult to determine if these ridgelines would be acceptable sites for wind energy development from the perspective of migratory birds and bats.

Wind Wake

The applicant's proposal to utilize a 3-mw wind turbine for this project raises an important question concerning the potential for birds, bats, and insects to be injured or killed in the wind wake zone of these machines. Wind turbines need to be spaced apart to avoid inefficient operation, higher maintenance costs, and catastrophic failure due to forces in the wind wake zone. For the range of operating conditions for the proposed turbines, the applicant should provide information describing the effects of wind wake forces on environmental resources, including birds, bats, and insects.

NEPA/EIS

The GRP project is an action that would likely have a significant effect on the human environment, and as such triggers the requirement for an environmental impact statement (EIS). Factors that cause or contribute to the significance determination include, but are not limited to: 1) the unique characteristics of the area, including old growth spruce/fir and fir forests at elevations above 2,700 feet on Mount Kelsey, Dixville, and parts of Owlhead Mountain. These areas provide ecologically critical habitat for mammals such as the pine marten and birds such as Bicknell's thrush. Scores of waters and wetlands would be adversely affected by the construction of access roads, turbine pads and transmission lines. The anticipated impacts are considered severe and long-lasting and as a result, the applicant is now proposing conservation easements on about 2,200 acres of land containing wetland and high elevation habitats as mitigation for significant adverse effects; 2) the proposed action is highly controversial, as several intervenor groups are engaged in the Site Evaluation Committee process at the state level, raising concerns over a variety of environmental and economic issues; 3) wind turbines situated in or near breeding habitat for Bicknell's thrush involve unique risks for this species since wind turbines may have adverse effects on this imperiled species; 4) the proposed action would create a permanent land use change from an undeveloped state to commercial/industrial use on high elevation habitat on Owlhead, Kelsey and Dixville. Portions of these high elevation lands do not support commercially-viable timber due to stunted growth, and but for this action would likely remain as undeveloped old growth habitat for the long term. The construction of roads in this steep, high elevation terrain, thin soils, and near-surface bedrock will create irreversible landform, hydrology, aesthetic and ecological conditions; 5) this action is related to other proposed energy projects in northern New Hampshire in that the GRP project would utilize all of the remaining transmission capacity on the 115-kv line in northern Coos County. Other renewable energy projects are thus foreclosed by GRP.

By way of contrast, the recent Deerfield Wind Project in Searsburg, Vermont was found to require an EIS, even though it is a much smaller project (35 mw vs. 100 mw). Deerfield would involve two ridges (GRP, 4), 5 miles of above-ground and underground transmission line (GRP, 30+), 80 acres of land clearing (GRP, 300), 4 miles of new roads and 1 mile of upgrade (GRP, 12 new, 19 upgrade), and less than 0.10 acre impact to waters/wetlands (GRP, 14 acres). In addition, Deerfield would not impact old growth habitat or an imperiled species.

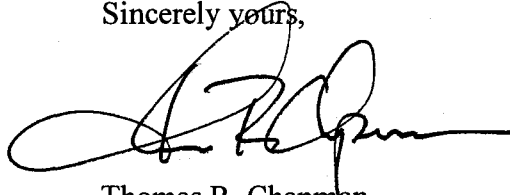
In summary, we do not believe that this application complies with the restrictions on discharge contained in the Guidelines. The project fails to comply with both the off-site and on-site alternative analysis under 230.10(a), and would cause or contribute to significant degradation under 230.10(c). Moreover, the project would likely have a significant effect on the environment, which triggers the need for an environmental impact statement. Accordingly, we recommend that an EIS be prepared prior to any decision being made to issue or deny a permit for this project. Should you elect to proceed with an environmental assessment as the first step in the NEPA process, we request that we be given the opportunity to review and comment on that document.

Colonel Philip T. Feir
March 12, 2009

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Questions concerning these comments should be directed to Mr. Vern Lang of this office at 603-223-2541 or email vernon_lang@fws.gov.

Sincerely yours,

A handwritten signature in black ink, appearing to read 'T. Chapman', with a large, sweeping flourish at the end.

Thomas R. Chapman
Supervisor
New England Field Office

Colonel Philip T. Feir
March 12, 2009

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cc: Reading File
Albert Manville, FWS/MB/WO
Randy Dettmers, FWS/MB/RO
Alex Hoar, FWS/ES/RO
Richard Roach, COE
Mark Kern, EPA
Tim Timmerman, EPA
NHSEC
Steve Weber, NHF&G
Will Staats/Jill Kelly, NH F&G
Craig Rennie, NHDES
Greg Comstock. NHDES
Pip Decker, Noble Environmental Power
Peter Roth, NHAG
Michael Bartlett, NH Audubon Society
David Publicover, AMC
Lisa Linnowes, IWA
ES: VLang:jd:3-12-09:603-223-2541

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