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## 2.3 Biological Terrestrial and Aquatic Ecology

The following section describes ecological resources within the Project Area, including vegetation, ecological communities, wildlife, and listed threatened and endangered species.

### 2.3.1 Existing Conditions

#### 2.3.1.1 Vegetation and Ecological Communities

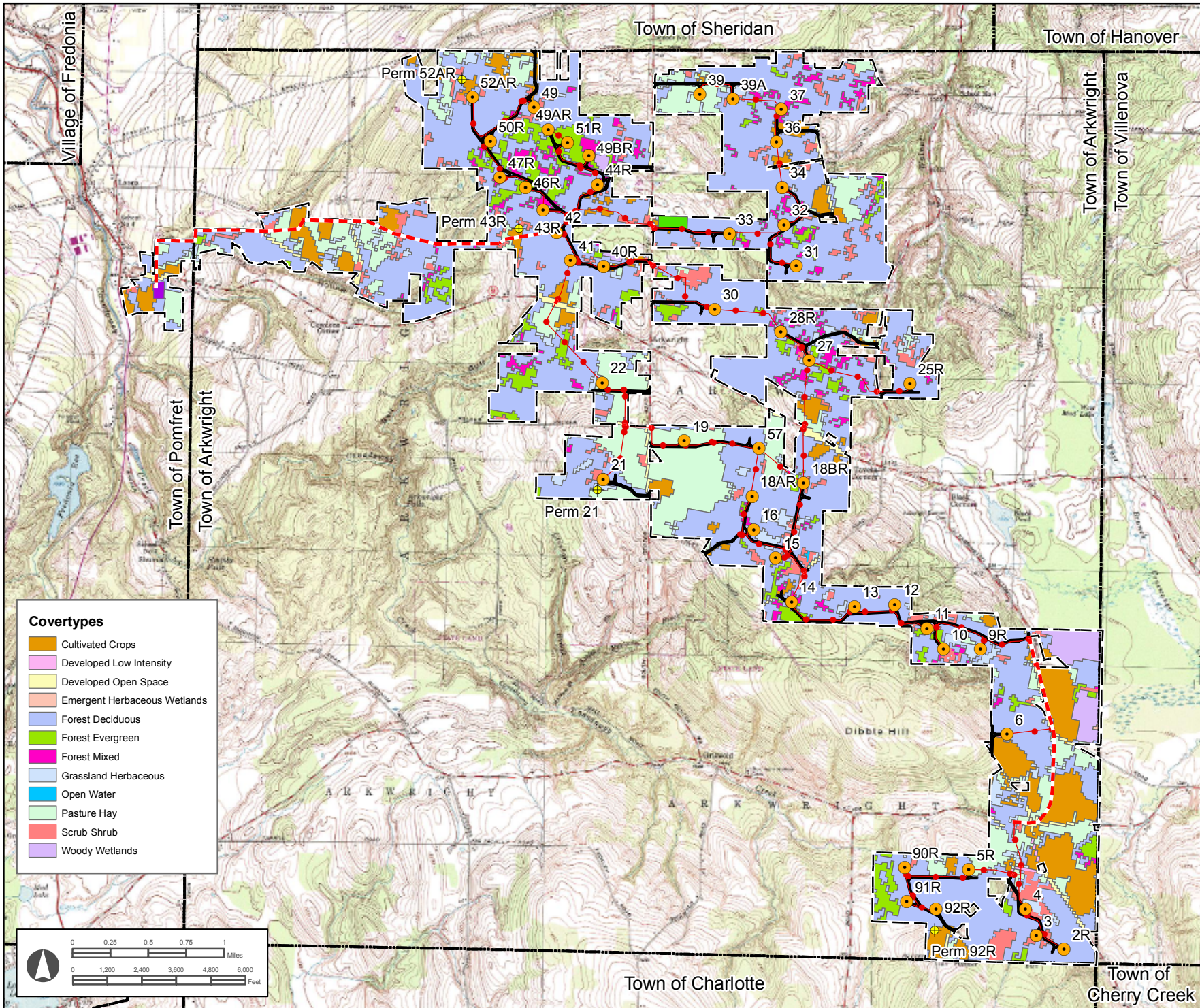
Tetra Tech used National Land Cover Data (NLCD) information compiled by the United States Geological Survey (USGS) to determine the land cover in the Project Area. The Project Area and adjacent parcels loosely encompass more than 19,000 acres of mostly forested and agricultural lands, as shown in Table 2.3-1. More than half (61 percent) of the Project Area is characterized as upland forest. Upland forested lands found within the Project Area consist of deciduous, evergreen, and mixed forests. Most upland forest communities, as described by Edinger et al. (2002), include hemlock-northern hardwoods, and beech-maple mesic forests. Large forested tracts in excess of 100 acres are not uncommon within the Project Area; however, these tracts are often bisected by agricultural lands, as shown in Figure 2.3-1. Agricultural lands, present in the form of pasture, hayfields, and croplands, are also abundant in the Project Area (38 percent). The remaining lands within the Project Area comprise less than one percent of the total coverage which include wetland habitats (forested and non-forested; 0.15 percent), open water habitat (0.05 percent), residential areas (0.09 percent), and commercial, industrial, transportation, and quarry uses (0.29 percent). As

**Table 2.3-1 Land Cover Classes Found within the Project Area**

| Land Cover Class                              | Acres         | Percent Cover (%) |
|---|---------------|-------------------|
| Cultivated Crops                              | 1,400         | 7%                |
| Pasture/Hay                                   | 5,891         | 31%               |
| Grasslands/Herbaceous                         | <1            | <1%               |
| Upland Forest Types                           |               |                   |
| Deciduous Forest                              | 6,263         | 33%               |
| Evergreen Forest                              | 75            | <1%               |
| Mixed Forest                                  | 5,354         | 28%               |
| Forested Wetlands                             | 28            | <1%               |
| Non-forested Wetlands                         | <1            | <1%               |
| Open Water                                    | 10            | <1%               |
| Residential                                   | 16            | <1%               |
| Commercial/Industrial/Transportation/Quarries | 55            | <1%               |
| <b>Total</b>                                  | <b>19,093</b> |                   |

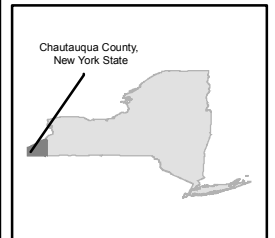
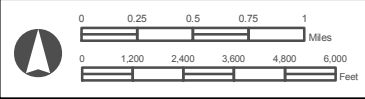
Source: NLCD 2001

recommended by the United States Fish and Wildlife Service (USFWS) in its letter dated January 19, 2007 (Appendix A), identification of unique habitats such as wetlands, and any other significant habitat types identified by local or state agencies, will be conducted concurrent with the routine, on-site wetland boundary determination in 2008.



**Covertypes**

- Cultivated Crops
- Developed Low Intensity
- Developed Open Space
- Emergent Herbaceous Wetlands
- Forest Deciduous
- Forest Evergreen
- Forest Mixed
- Grassland Herbaceous
- Open Water
- Pasture Hay
- Scrub Shrub
- Woody Wetlands



- Permanent Met Towers
- Turbines
- Overhead Collection System
- Underground Collection System
- Access Roads
- Laydown Yard
- Substation
- Wind Overlay Zone
- Town Boundary

SOURCE:  
 NATIONAL LANDCOVER DATASET  
 U.S. GEOLOGICAL SURVEY 2001

TOPO  
 USGS 7.5 MINUTE QUADRANGLES  
 DUNKIRK, 1978; FORESTVILLE, 1978;  
 CASSADAGA, 1978; HAMLET, 1978



**TETRA TECH EC, INC.**

**NEW GRANGE WIND FARM**  
 CHAUTAUQUA COUNTY,  
 NEW YORK

FIGURE 2.3-1  
 VEGETATIVE COVERTYPES  
 WITHIN THE PROJECT SITE

NEW GRANGE WIND FARM LLC  
 FEBRUARY 2008

P:\New Grange Wind Farm\GIS\Spatial\MOU\1\grangeLayouts\Rev6\Appl\LEIS\_Figures\Biological\NSW\_ProjectLayout\_8x11\_Vegetative\_Covertypes.mxd

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### 2.3.1.2 *Significant Ecological Communities and Rare Plant Species*

Written replies to requests for information regarding listed threatened and endangered species, and sensitive or significant habitats were received from the USFWS, the New York Natural Heritage Program (NHP), and the New York State Department of Environmental Conservation Headquarters (NYSDEC) on January 19, 2007, December 4, 2006, and November 7, 2006, respectively (Appendix A). Response from the USFWS indicated that except for occasional transient individuals, no federally listed or proposed endangered or threatened species or designated critical habitats are known to exist within the study area. The USFWS identified wetlands as unique habitats that should be considered during wetland delineation surveys. Response from the NHP indicated that no state-listed threatened or endangered plant species have been documented to occur within the Project Area. Response from the NYSDEC indicated that there were no Critical Environmental Areas, National Natural Landmarks, or Wild, Scenic, or Recreational Rivers in or near the Project Area. Sensitive resources indicated by the NYSDEC within the Project Area include six protected NYSDEC streams, one NYSDEC freshwater wetland, and National Wetland Inventory (NWI) wetlands; these sensitive resources are discussed in Section 2.2.1.1. Wetland resources were observed during reconnaissance-level wetland inventories performed by Tetra Tech – NEA in the fall of 2007 but no rare plant species or other significant ecological communities were observed. Additionally, two NYSDEC lands, the Canadaway Creek Wildlife Management Area (CCWMA) and the Boutwell Hill State Forest, are adjacent to or near the southern project boundary (see Appendix A for Agency Correspondence); these areas are described in Section 2.3.1.5.

### 2.3.1.3 *Wildlife and Terrestrial Habitat*

Wildlife species and wildlife habitat within the Project Area were identified based on existing data sources such as the New York State Breeding Bird Atlas (BBA) and the New York State Reptile and Amphibian Atlas. This information was supplemented through correspondence with the USFWS, the NHP, and the NYSDEC, and through observations made during reconnaissance-level wetland inventories performed by Tetra Tech – NEA during the fall of 2007. Additionally, Western EcoSystems Technology, Inc. (WEST) conducted site-specific surveys for bat and bird populations during spring and fall seasons in 2005 and spring, summer, and fall seasons in 2007.

#### *Birds*

To identify birds that could be affected by the Project, avian surveys and desktop studies targeted breeding birds, migratory raptors, nocturnal migratory birds, and special status species. Survey information presented in this section summarizes the studies conducted by WEST; more detailed information, as well as an assessment of the potential risk to these resources, is provided in Appendix E.

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### Breeding Bird Survey

As part of the desktop study of the Project, Tetra Tech – NEA reviewed data from the New York State BBA study. Survey blocks 1470A, 1470B, 1470C, and 1470D, which occur within and near the Project Area, were queried for potential breeding bird species. According to this query, 95 species of birds were observed within the survey blocks; however, only 19 species exhibited behaviors that confirmed breeding activity. Many of these species are protected by the Migratory Bird Treaty Act (MBTA) of 1918, which prohibits the taking, killing, possession, transportation, and importation of the migratory birds, their eggs, parts and nests, with few exceptions. Special status species are discussed in Section 2.3.1.4 of this DEIS.

A breeding bird survey of the Project Area was conducted by WEST during June/early July 2007 based on the regional timing recommended by USGS BBS in western New York. The objective of the breeding bird survey was to estimate the spatial and temporal use of the Project Area by breeding resident birds. A total of 1,117 species were recorded during two surveys (see Appendix E). European starling (*Sturnus vulgaris*), red-winged blackbird (*Agelaius phoeniceus*), and American crow (*Corvus brachyrhynchos*) were the most common passerines observed. The diversity of species observed is indicative of the mosaic of habitat types in the Project Area. No New York state endangered or threatened species were recorded during breeding bird surveys. Only one New York species of special concern, sharp-shinned hawk, was observed. Three species on the USFWS Birds of Conservation Concern list for BCR 13 (Lower Great Lakes/St. Lawrence Plain) were recorded, including black-billed cuckoo, Canada warbler, and bobolink. These three species are not federally listed by the Endangered Species Act (ESA), but are recognized as declining species by USFWS and may or may not be candidate species for listing by ESA in the future.

### Migratory Raptors

Insight about migratory raptor presence is gained, in part, through review of published information from the Hawk Migration Association of North America, which monitors 14 survey sites in New York. During spring migration, raptor movement is concentrated along shorelines of the Great Lakes as raptors avoid crossing large bodies of water. In fall, raptor migration occurs primarily along ridgelines of central and eastern New York. The Ripley Hawk Watch, an established hawk watch site 37 miles southwest of the Project in Chautauqua County, is located where an escarpment, or a steep ridge, runs parallel to Lake Erie, which acts to narrow and concentrate the migration pathway used by many birds. Data from the Ripley Hawk Watch reports the presence of bald eagles and peregrine falcons migrating through the area during the spring (May). Bald eagles have been recorded nesting in Chautauqua County near Lake Erie and are regular migrants along the lakeshore. Ripley Hawk Watch generally reports moderate raptor numbers each year.

Migratory raptor surveys were conducted by WEST at four survey points in the Project Area during spring and fall 2005 and three survey points in spring and fall 2007. Three survey points

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were also established in a Reference Area west of the Project Area to provide additional information on raptor migration closer to the lakeshore. The objective of the migratory raptor surveys was to estimate spatial and temporal use of the site by raptors and other diurnal migrants during spring and fall migration seasons. Appropriate sampling periods for maximizing observations were determined by consulting existing data from nearby raptor migration watch sites in New York and Canada. In spring 2005, four fixed points were surveyed 5 times, for a total of 20 surveys conducted from April 16 to May 15, 2005. Three fixed points were surveyed 5 times in spring 2007, for a total of 15 surveys from April 27 to May 22, 2007. A total of 273 large birds, of which 98 were raptors, were observed. On average in spring, migratory passage rate at the Project Area was three raptors per surveyor hour. On the same survey days, Ripley Hawk Watch reported an average passage rate of 21 raptors per surveyor hour, while other spring hawk watch sites along the Great Lakes in New York reported an average of 46 to 68 raptors per surveyor hour. During fall migration 2005, three survey points were sampled 6 times (18 surveys) from September 17 to October 15, 2005. In fall 2007, three points were surveyed 6 times from September 21 to October 28, 2007, for an additional 18 surveys. A total of 466 large birds, of which 212 were raptors were observed. Passage rates in fall at the Project Area were lower (six raptors per surveyor hour) than reported for the same sample days at two hawk watch sites on the western and northern shore of Lake Erie in Ontario, Canada (Holiday Beach, 404 raptors per surveyor hour; Hawk Cliff, 173 raptors per surveyor hour) or at a central New York hawk watch site (9 raptors per surveyor hour).

Typical northern New York raptors were observed during spring and fall migrant raptor surveys. Turkey vulture was the most common raptor observed at the Project Area. Turkey vulture (groups and individuals) contributed to approximately half of all spring raptor observations and 75% of fall raptor observations. Red-tailed hawks were also frequently seen during both spring and falls seasons. Turkey vulture and red-tailed hawk had the highest frequency of occurrence among raptors during both spring and fall migration seasons. Other raptors, such as sharp-shinned hawk and American kestrel, were observed with greater frequency during either spring or fall, respectively. An eagle species (e.g., golden eagle or bald eagle) was sighted within the Project Area and would represent a federal and state-listed species. Other listed species observed include: northern harrier (NYS threatened), Cooper's hawk, sharp-shinned hawk, and red-shouldered hawk (all NYS species of special concern). Each of these species was represented by fewer than 10 total individuals for both years of surveys and often were represented by one or two individuals only. Despite proximity to Lake Erie, waterfowl (e.g. Canada geese) and waterbirds (e.g. gulls) were not seen with great frequency at the fixed point locations at the Project Area.

Mean flight height for all avian groups at the Project Area fell at or below the zone of risk of turbine blades (ZOR; defined as 25 – 125 meters). Flight height for raptors in general fell just above the ZOR. Certain types of raptors (buteos, eagles, vultures) were observed flying above the ZOR, while others (accipiters, falcons) were often within the ZOR. Northern harrier, a state

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species of special concern, was generally observed (80%) at heights below the ZOR. Waterbirds and waterfowl seen within the Project Area had mean flight heights of approximately 50m, within the ZOR. Exposure indices were calculated as the mean use estimates for all surveys (number of birds/60-minute survey) times the percent of birds observed flying times the percent of birds flying within the zone of risk (defined as the approximate rotor-swept area). Exposure indices for all species observed at the Project Area are provided in Appendix E. Turkey vulture had the highest exposure index for all species observed, a combination of high use estimate and typical flight height. Second to turkey vulture, red-tailed hawk had the highest exposure index for raptors observed at the Project Area. The majority of species with high exposure indices are common species associated with agriculture and development, such as European starling, American crow, Canada goose, and ring-billed gull. Each of these species is abundant and widely distributed.

Surveys at the Reference Area located west of the Project Area were analyzed separately to allow comparisons between the sites. Five additional species were noted at the Reference Area; however, species observed at the Reference Area were similar to those in the Project Area. Two species of note, bald eagle and sandhill crane, were observed within the Reference Area that were not observed in the Project Area. Similarly, the great blue heron species, which anecdotal evidence suggested would be found in the Project Area, was observed in the Reference Area, but not in the Project Area. The number of individuals and overall mean use at the Reference Area were approximately twice that observed at the Project Area. This is primarily due to high numbers of American crow sighted at the Reference Area. The number of raptors seen per hour was similar at both sites. Mean flight height for all birds and for raptors only at the Reference Area was slightly higher (approximately 25m) than at the Project Area. Fewer birds were seen within the ZOR at the Reference Area; however, approximately half of all raptors seen at both locations were observed flying within the ZOR.

#### Nocturnal Migrants

The overall purpose of the nocturnal radar survey was to characterize avian migration over the Project Area and provide data to determine the relative magnitude of nocturnal migration when compared to other sites. The primary objective of the radar survey was to collect baseline information on flight direction, passage rates, and flight altitude of nocturnal migrants for the Project Area.

A single mobile radar lab (Furuno FR1510-MKIII, similar to other radar labs used to study wind power development sites throughout the U.S.) was deployed at a fixed sampling location within the Project Area. The sampling location was selected based on constraints of the radar (e.g., minimization of ground interference), safety, and land owner access; but was chosen to provide good radar coverage of the Project Area. Surveys were conducted from sunset to sunrise each night during spring (April 25 – June 8) and fall (August 16 – October 17) in 2007. Passage rates were calculated for both horizontal and vertical data collection modes. Methodology and results can be found in Appendix E.

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Average passage rates during spring and fall migration were slightly lower at the New Grange Project Area than at most radar studies in New York and the eastern U.S. Passage rates in both horizontal and vertical modes varied greatly by night, particularly during spring migration when average nightly passage rates in vertical mode occasionally exceeded 400 targets/night. In early May 2007, passage rates in both horizontal mode and vertical mode were much higher than average. These passage rates suggest that pulses of migrants may occur with ideal weather conditions at the Project Area. Mean flight height of targets at the Project Area was similar to that reported for other radar studies. Mean flight heights during spring and fall migrations never entered into the ZOR and the lowest range of nightly flight heights rarely entered the ZOR. On spring nights with high average passage rates, flight height is consistently above the ZOR (typically greater than 500m). These data indicate that though some birds are passing within the ZOR on certain nights, the percentage of birds exposed to this risk is actually quite low.

Based on the data collected in the spring and fall 2007, it does not appear as if the Project Area occurs in an area with high concentrations of avian migrants. The migration characteristics were similar to numerous other studies conducted at proposed wind projects in the eastern U.S. It is not expected that the Project would pose any greater risk to avian migrants than other sites studied. Impacts to avian migrants from the wind project are expected to be similar or less than other eastern wind projects studied.

### *Mammals*

Response from the USFWS identified bats as sensitive species in the study area. The aquatic and forest habitats near the Project may provide migration, foraging, roosting, and/or rearing habitat for bat populations. There are ten species of bats recorded in New York State, with five (little brown [*Myotis lucifugus*], big brown [*Eptesicus fuscus*], hoary bat [*Lasiurus cinereus*], eastern red bat [*Lasiurus borealis*], eastern pipistrelle [*Pipistrellus subflavus*]) of these being common and likely to occur in the mixed forest and open habitat mosaic of the Project Area (Young et al. 2004). The Indiana bat (*Myotis sodalis*), a federal and state listed endangered species, has not been recorded in western New York and is unlikely to occur in the Project Area (Young et al. 2004).

Research at other wind farms indicates that fall migratory bat species appear to be at greatest risk of collision with wind turbines while summer resident and spring migrant or dispersing bats appear to be at less risk (Young et al. 2004), though bat fatalities do occur throughout the summer at forested wind project sites (BCI 2006). Correspondence from the USFWS recommends pre-construction studies of bat use within the Project Area and post-construction bat mortality monitoring studies (USFWS 2007).

WEST conducted surveys during spring, summer, and fall 2007 to assess the use of the Project Area by migratory and resident breeding bats. Migratory and breeding bats traveling within the New Grange Project Area were passively and actively sampled acoustically using AnaBat II



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ultrasonic bat detectors. The objective of acoustic AnaBat surveys was to record the relative abundance of echo-locating bats flying through the Project Area during the spring and fall migration seasons and to determine bat species present during summer breeding season. The results of these surveys are summarized below. Results of the migratory and resident bat surveys are provided in Appendix E.

Passive acoustic monitoring for echo-locating bats was conducted continuously within the Project Area from April 26 to October 29, 2007. One AnaBat unit was deployed in spring 2007 at ground level at the meteorological tower to passively record echo-lating bats within the Project Area. In early summer 2007, a pulley system was established on the met tower which allowed two additional AnaBat units to be raised/lowered along the met tower to approximately 25 meters (mid-tower) and 50 meters (top of tower). Data gathered from the passive AnaBat units were used to calculate bat activity (designated as number of calls/night) present at the Project Area during the spring and fall migration periods and summer breeding period periods. During the breeding season, an additional “roaming” or mobile AnaBat unit was deployed to assess resident/breeding bat species present within the Project Area. Roaming sampling was conducted for 4-5 hours following sunset using a handheld AnaBat unit for 3 sampling periods of 3 consecutive nights (June 20-22, July 5-7, and August 1-3). Sampling focused on habitats likely to have high numbers of resident bats, such as travel corridors (trails and roads), linear landscape features (forest edges), and access to water (riparian areas). Active sampling was conducted from sunset until approximately 4-5 hours after sunset. Results of passive and mobile sampling are provided in Appendix E. Ground surveys of the Project Area were also conducted to map vegetation communities and habitats in more detail and to look for caves, mines, karst habitat, or other potential bat colony sites. Though several wetland wooded areas exist as potential roosting habitat, particularly within the southeastern portion of the Project Area, no caves, mines or karst areas were located within the Project Area.

The total number of calls recorded by each passive AnaBat unit varied by season and position along the met tower. Number of calls/night ranged from 0.4 calls/night recorded during fall migration at the high unit to 5.5 calls/night recorded at the ground unit during spring migration. Bat species commonly found in western New York were detected by the passive AnaBat units during spring, summer, and fall. Big brown bat was a frequently detected species in both spring and fall. *Myotis* species calls were more frequent in the summer and likely represent resident little brown bats (*Myotis lucifugus*). Eastern red bats were present in all seasons; however, calls of this species were not detected very frequently by passive monitoring. Hoary bats were detected very infrequently by the passive AnaBat units in spring and summer only. Only two calls with characteristics of the eastern pipistrelle were recorded during fall monitoring at the fixed AnaBat unit. Species encountered frequently during mobile surveys included (in decreasing order of frequency): eastern red bat, little brown bat, and big brown bat. Other species, such as hoary bat, were recorded to a lesser extent. No eastern pipistrelle calls were detected by the mobile breeding bat surveys. No calls with characteristics similar to silver-haired bat were detected either, though calls of this species are very similar to big brown bat

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and therefore difficult to confirm/deny. Also difficult to differentiate are the calls of *Myotis* species, such as Indiana bat, northern myotis, and small-footed bat. Calls with these characteristics were grouped into a *Myotis* species category.

### Other Mammals

No formal surveys for mammal presence were conducted for the study area; however, inferences can be made about common wildlife species that are likely to occur based on the predominant vegetative cover and land use. Additionally, species likely to occur in the largely fragmented forest and agricultural habitats that typify the Project are those that tolerate or benefit from an association with human presence. Each of these species is common and widely distributed throughout New York State. These species include whitetail deer, black bear, eastern cottontail, eastern chipmunk, woodchuck, gray squirrel, red squirrel, raccoon, red fox, muskrat, skunk, opossum, coyote, and a variety of mice, voles and shrews. Black bears occupy three distinct ranges in New York State: Adirondack, Catskill, and Allegany. Chautauqua County is included in the Allegany or Southern Bear Range, which is open to bear hunting.

### *Reptiles and Amphibians*

The potential occurrence of reptile and amphibian species within the Project Area was assessed through review of the New York State Amphibian and Reptile Atlas (NYSDEC 2007a) and The Amphibians and Reptiles of New York State (Gibbs et al., 2007). Data for the Atlas was collected over a period of 10 years (1990 through 1999) and organized according to USGS 7.5-minute quadrangles. Based on the Atlas data, assessment of suitable habitat in the vicinity of the Project Area, and reptile and amphibian distribution ranges and habitat requirements, it is estimated that 30 species could occur within the area (Table 2.3-2).

### *Fish*

Waterbodies within the Project Area support both warm water and cold water freshwater fish populations, some of which are stocked. Of the seven waterbodies described in Section 2.2.1.1, three of the streams and their tributaries are likely to support trout fisheries (as denoted by the NYSDEC Classification of (T)), while the remaining waterbodies are likely to support cool water or warm water fisheries. Waters within the Project Area are not known to support trout spawning habitat (6 NYCRR Part 800 [Conewango Drainage] and 838 [Chautauqua-Conneaut Drainage]). Based on the available surface water resources, fish species such as sunfish, smallmouth bass, largemouth bass, brown trout, shiners, and dace are likely to occur within the Project Area. A number of state-classified trout streams occur within the Project Area consisting of headwaters and tributaries to Upper Canadaway Creek, Walnut Creek, and West Branch Conewango Creek. These trout streams support a cold water fish community. Ponds within the Project Area likely support a warm water fish community. Information from the NYSDEC (2007) indicates that Canadaway Creek and West Branch Conewango Creek are stocked with brown trout.

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**Table 2.3-2. Reptiles and Amphibians that Potentially Occur in the Project Area**

| <b>Common Name</b>                | <b>Scientific Name</b>               |
|-----------------------------------|--------------------------------------|
| Alleghany dusky salamander        | <i>Desmognathus ochrophaeus</i>      |
| American toad                     | <i>Bufo americanus</i>               |
| blue-spotted salamander <u>a/</u> | <i>Ambystoma laterale</i>            |
| bullfrog                          | <i>Rana catesbeiana</i>              |
| common garter snake               | <i>Thamnophis sirtalis</i>           |
| common mudpuppy                   | <i>Necturus maculosus</i>            |
| common snapping turtle            | <i>Chelydra serpentine</i>           |
| eastern American toad             | <i>Bufo americanus</i>               |
| eastern box turtle <u>a/</u>      | <i>Terrapene carolina</i>            |
| eastern milk snake                | <i>Lampropeltis triangulum</i>       |
| four-toed salamander              | <i>Hemidactylium scutatum</i>        |
| gray treefrog                     | <i>Hyla versicolor</i>               |
| green frog                        | <i>Rana clamitans melanota</i>       |
| Jefferson salamander <u>a/</u>    | <i>Ambystoma jeffersonianum</i>      |
| northern brown snake              | <i>Storeria dekayi</i>               |
| northern dusky salamander         | <i>Desmognathus fuscus</i>           |
| northern leopard frog             | <i>Rana pipiens</i>                  |
| northern red-backed salamander    | <i>Plethodon cinereus</i>            |
| northern redbelly snake           | <i>Storeria occipitomaculata</i>     |
| northern ringneck snake           | <i>Diadophis punctatus edwardsii</i> |
| northern slimy salamander         | <i>Plethodon glutinosus</i>          |
| northern spring peeper            | <i>Pseudacris crucifer</i>           |
| northern spring salamander        | <i>Gyrinophilus porphyriticus</i>    |
| northern two-lined salamander     | <i>Eurycea bislineata</i>            |
| northern water snake              | <i>Nerodia sipedon</i>               |
| painted turtle                    | <i>Chrysemys picta</i>               |
| pickerel frog                     | <i>Rana palustris</i>                |
| red-spotted newt                  | <i>Notophthalmus viridescens</i>     |
| smooth green snake                | <i>Liochlorophis vernalis</i>        |
| spotted salamander                | <i>Ambystoma maculatum</i>           |
| wood frog                         | <i>Rana sylvatica</i>                |
| wood turtle <u>a/</u>             | <i>Clemmys insculpta</i>             |

a/ State-listed Species of Special Concern

Sources: The Amphibians and Reptiles of New York State (Gibbs et al., 2007), New York State Amphibian and Reptile Atlas (2007)

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### *Wildlife Habitats*

As described in Section 2.3.1.1, the Project Area supports a variety of ecological community types. The value of these communities to wildlife species is summarized below.

*Agricultural Land and Successional Old Field Habitats:* The dominance of graminoid vegetation in these habitats provides suitable nesting and foraging habitat for grassland species of birds, such as eastern meadowlark, bobolink, red-winged blackbird, grasshopper sparrow, savannah sparrow, American kestrel, and short-eared owl. Open expanses of dense tall grasses and

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herbaceous plants provide food and cover for birds, small mammals, whitetail deer, woodchuck, and eastern cottontail. Raptors and mammalian predators, such as eastern coyote and red fox, use open fields to hunt for prey. Crops that are farmed in monotypic plots provide less suitable habitat for native birds and mammals because they consist of same-aged, non-native vegetation with reduced cover, nesting, and foraging value. Frequent disturbance from plowing, seeding, and harvesting further reduces the suitability of this community type to wildlife. Despite the limited benefits of agricultural lands, black bear may forage on maturing crops (NYSDEC 2007b).

*Forested Habitats:* Dense tracts of deciduous and mixed forested lands may provide suitable habitat for interior forest species, such as eastern wood pewee, red-eyed vireo, ruffed grouse, hermit thrush, and tufted titmouse. Mammals found within forested areas include eastern chipmunk, gray squirrel, and whitetail deer. From a regional context, large contiguous tracts of forested lands may provide dispersal corridors for long ranging large mammal species, such as black bear. Large tracts of forested lands associated with the Canadaway Creek Wildlife Management Area and the Boutwell State Forest are located adjacent to the southern Project boundary. The Allegany portion of the Southern Bear Range, which encompasses Chautauqua County, has a growing population of black bears (300-500). Although black bear typically occur within large forested tracts, they are known to use open fields and forest fragment land types similar to that found within the Project Area (NYSDEC 2007b).

*Forested Wetlands:* Red maple-hardwood swamps and hemlock-hardwood swamps are found within the Project, and may provide habitat for waterfowl, beaver, and mink. These swamps may also provide breeding habitats for wetland-obligate reptiles and amphibians, such as American toad, wood frog, and spotted salamander. Overwintering deer prefer to browse on hemlock and maples (Latham et al. 2005), which are common to forested wetlands in the Project Area. Forested wetlands are important for black bear that feed on succulent vegetation during spring (NYSDEC 2007).

*Scrub-Shrub Wetlands:* Scrub-shrub wetlands are found within the Project Area and provide breeding, forage, and cover habitat for a variety of wildlife. Migratory birds find food such as grasshoppers, crickets, beetles, dragonflies, ants, katydids, wasps, spiders, earthworms, and sow bugs which are abundant in healthy scrub-shrub habitat. A sampling of birds that can be found in scrub-shrub wetlands includes alder flycatcher, American woodcock, and common yellowthroat. Fruits and seeds are used by a variety of species. Additionally, prey species such as small rodents, rabbits, snakes, lizards, and small songbirds that aggregate in scrub-shrub habitat are important prey for raptors (USDA 2007). Other predators attracted to scrub-shrub habitat may include great blue heron, raccoon, and mink. Scrub-shrub habitat provides nesting for birds and cover for species such as rabbits, fox, bears, birds, reptiles and amphibians (University of New Hampshire 1995).

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*Shallow Emergent Marsh, Vernal Pool, and Open Water Habitats:* Aquatic habitats support a variety of frogs, turtles, fish, birds, mammals, and aquatic invertebrates. Emergent vegetation provides habitat for secretive species of marsh birds, such as rails, American bittern, common yellowthroat, and American woodcock. Many insectivorous birds and bats prefer to forage for insects in proximity to aquatic habitats. Vernal pools are often found in upland forest habitats, but may also occur within other palustrine or terrestrial communities. Many salamanders and frogs are obligate breeders in vernal pools and ponds with organic leaf litter substrates. Additional species expected to use wetlands for habitat include raccoon, muskrat, beaver, mink, painted turtles, great blue herons, and wood ducks.

#### *2.3.1.4 Threatened and Endangered Species*

An assessment of federal and/or state-listed wildlife species that potentially occur within or near the Project Area was performed through correspondence with the USFWS and the NHP, preliminary results from avian surveys conducted in April – May and September – October 2005 by WEST, Inc., and the extrapolation of existing data from the New York Amphibian and Reptile Atlas and the New York BBA. This information is supported by results of avian studies conducted by WEST in 2005 and 2007 and bat studies conducted in 2007.

As a result of these assessments, 16 New York special status species potentially occur near the Project Area; no federal listed species were identified within or near the Project. One state endangered and four state threatened bird species were identified during this assessment; the remaining species were state species of special concern, as listed in Table 2.3-3. Five species listed in Table 2.3-3 were documented within the Project Area during breeding bird or migratory raptor surveys conducted by WEST in 2005 and 2007.

**Table 2.3-3 New York State Special Status Species Likely to Occur in the Project Area**

| <b>Species</b>  | <b>NYS Status</b> | <b>Ecology Comments <u>a/</u></b>  |
|---|-------------------|--|
| Short-eared owl<br><i>Asio flammeus</i>                 | Endangered        | Open country, including prairie, meadows, tundra, moorlands, marshes, savanna and open woodland. Nest is a scrape in the ground lined with grasses. In New York State, short-eared owls are more common as winter residents than as breeders. Habitat for this species occurs in the Project Site; however, it was not observed during WEST's avian surveys and is uncommon in the area.   |
| Bald eagle<br><i>Haliaeetus leucocephalus</i>           | Threatened        | Typical breeding habitat includes rivers, lakes, or other bodies of water where prey, including fish, waterfowl, and seabirds are plentiful. Preferentially roosts in conifers or other sheltered sites in winter; typically selects the larger, more accessible trees. Little suitable habitat present; rare transient individuals may occur in the Project Site. This species was not observed in the Project Site during WEST's avian surveys but it was observed along the Lake Erie shore outside of the Project Area during West's avian surveys.  |
| Henslow's sparrow<br><i>Ammodramus henslowii</i>        | Threatened        | Typically found in patchy weedy old fields with open ground; scattered breeding records throughout western NY. Suitable habitat exists in the Project Site (abandoned fields). This species may occur in the Project Site; however, it was not observed during WEST's avian surveys.   |
| Northern harrier<br><i>Circus cyaneus</i>               | Threatened        | Marshes, meadows, grasslands, and cultivated fields. Perches on ground or on stumps or posts. Nests on the ground, commonly near low shrubs, in tall weeds or reeds, sometimes in bog; or on top of low bush above water, or on knoll of dry ground, or on higher shrubby ground near water, or on dry marsh vegetation. Forages on small birds and small mammals from grassy fields. Suitable habitat for this species occurs in the Project Site. This species was documented to occur in the Project Site during WEST's avian migratory raptor surveys and breeding bird surveys. This species is likely a breeding resident. |
| Sedge wren<br><i>Cistothorus platensis</i>              | Threatened        | Typically found in moist, tall-grass meadows with scattered bushes; no breeding records from Chautauqua county. Little suitable habitat is present in the Project Site. This species is unlikely to occur in the Project Site and it was not observed during WEST's avian surveys.   |
| Eastern box turtle<br><i>Terrapene carolina</i>         | Special Concern   | Typically found in deciduous woodlands or mixed upland habitats; will frequent wet areas; NY range is mainly southeast but some records from southern western NY including Chautauqua County. Some suitable habitat exists in the Project Site. This species may occur in the Project Site but it was not observed during sensitive species surveys conducted by WEST. Occurrence in project area is unknown.  |
| Blue-spotted salamander<br><i>Ambystoma laterale</i>    | Special Concern   | Generally associated with lowland swamps and marshes and surrounding uplands with sandy or loamy soils in overgrown pastures. Feeds on aquatic and terrestrial invertebrates. Forested wetland habitats are present in the Project Site; this species may occur in the Project Site.   |
| Jefferson salamander<br><i>Ambystoma jeffersonianum</i> | Special Concern   | Breeds in temporary ponds and wetlands in wooded areas; found throughout western NY but no records from Chautauqua County; wooded wetlands in project area considered suitable habitat. Forested wetland and pond habitats are present in the Project Site; this species may occur in the Project Site.  |
| Cooper's hawk<br><i>Accipiter cooperii</i>              | Special Concern   | Forest raptor that specializes in eating birds. Breeds in deciduous, mixed, and coniferous forests of eastern United States. Becoming more common in urban areas. Large concentrations can be seen during migration. Suitable habitat for this species occurs in the Project Site. This species was documented to occur in the Project Site during WEST's avian migratory raptor surveys.  |

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**Table 2.3-3 New York State Special Status Species Likely to Occur in the Project Area**

| <b>Species</b>                                      | <b>NYS Status</b>            | <b>Ecology Comments <u>a/</u></b>   |
|---|------------------------------|---|
| Eastern small-footed myotis<br><i>Myotis leibii</i> | Special<br>Concern           | Hilly or mountainous areas; deciduous or evergreen forest; open farmland. May prefer heavy hemlock forests in the foothills of mountains that rise to 2,000 feet (600 meters). Warm-season roosts include hollow trees, spaces beneath the loose bark of trees, cliff crevices, buildings, bridges, and towers. Forages over ponds and streams. Summer roosting habitats occur in the Project Site. Riparian corridors that may be used for feeding occur in the Project Site. This species may occur in the Project Site. Species-specific analyses of acoustic data collected by WEST was unable to confirm the presence of this species in the Project Site. |
| Grasshopper sparrow<br><i>Ammodramus savannarum</i> | Special<br>Concern           | Preferred breeding habitat is grasslands of intermediate height; occasionally inhabits cropland, such as corn and oats, but at much lower densities than in grasslands. Eats insects, other small invertebrates, grain, seeds. Suitable habitat exists in the Project Site. This species may occur in the Project Site; however, it was not observed during WEST's avian surveys.   |
| Red-shouldered hawk<br><i>Buteo lineatus</i>        | Special<br>Concern           | Small forest buteo usually found near water, swamps or forested wetlands; common breeder in western NY; woodlots and forest wetlands in project area suitable; also some migrants likely through the area. Suitable habitat for this species occurs in the Project Site. This species was documented to occur in the Project Site during WEST's avian migratory raptor surveys.   |
| Sharp-shinned hawk<br><i>Accipiter striatus</i>     | Special<br>Concern           | Woodland raptor typically found in deciduous or mixed woodlands. Common breeder in forests throughout New York. Suitable habitat for this species occurs in the Project Site. This species was documented to occur in the Project Site during WEST's avian surveys. This species was documented to occur in the Project Site during both migratory raptor surveys and breeding bird surveys.  |
| Vesper sparrow<br><i>Pooecetes gramineus</i>        | Special<br>Concern           | Prairie, dry shrublands, weedy pastures, fields, and woodland clearings. Feeds on seeds and insects from or near the ground. Nests on ground in small depression. Suitable habitat exists in the Project Site. This species may occur in the Project Site; however, it was not observed during WEST's avian surveys.  |
| Wood turtle<br><i>Clemmys insculpta</i>             | Special<br>Concern           | Typically found in wooded wetlands, ponds in woodlands, wooded swamps; will utilize upland habitats far from water; records throughout western NY including southern Chautauqua County. Some wooded wetlands in project area are likely suitable habitat in the Project Site. This species may occur in the Project Site however; occurrence in project area unknown.   |
| Great blue heron<br><i>Ardea herodias</i>           | State<br>Protected <u>b/</u> | Found along calm freshwater and seacoasts. Usually nests in trees near water, but colonies can be found away from water. Nests in colonies, sometimes as lone pair. In Chautauqua County, usually more than 50 nests/year, but some years less. Occurs on ridgetops with mature northern hardwoods-beech, maple, hemlock forests. Nests mostly in beech trees. Suitable habitat exists in the Project Site; however, it was not observed in Project Area during WEST's avian surveys. A known nesting colony occurs adjacent to the Project Site.   |

a/ Ecology comments from Gibbs et al., 2007; NatureServe Explorer, 2007; Cornell Lab of Ornithology, 2003.

b/ The great blue heron is not a listed species, however, heron rookeries are protected by NYSDEC.

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According to the New York BBA, one state-listed threatened species (northern harrier), and five state-listed species of special concern (red-shouldered hawk, Cooper's hawk, sharp-shinned hawk, grasshopper sparrow, and vesper sparrow), are documented in the BBA blocks that overlap with the project boundaries. In addition to data from the BBA, correspondence with NHP

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identified the occurrence of one state-listed endangered species (short-eared owl), three state-listed threatened bird species (bald eagle, Henslow's sparrow, and sedge wren), and one state-listed protected bird species (great blue heron) within 10 miles of the Project Area.

WEST conducted sensitive species surveys to determine the presence/absence and spatial distribution of state and federal listed avian species in the Project Area. Sensitive species surveys were conducted in appropriate nesting habitat on 7 days in 2007 that corresponded with the timing of breeding bird surveys (June 20-23, July 5-7). A total of 40 hours were spent during June and 24 hours during July covering roads in the Project Area in an attempt to document presence/absence of sensitive species. In addition to formal searches, sensitive species were always noted when encountered by biologists working within the Project Area. Approximate coordinates of first observation were recorded and efforts were made to maximize observation time to record information on behavior, habitat, and direction of travel. Mapped locations of sensitive species sightings are provided in Appendix E.

One NYS-threatened avian species, northern harrier, was documented during formal presence/absence searches, breeding bird and migratory raptor surveys, and incidental sightings in 2005 and 2007. This species is common in agricultural settings with mixed forest or wetland and is likely a breeding resident within or near the Project Area. An unidentified eagle species was observed in the Project Area and two bald eagles were observed in the Reference Area west of the Project Area during migratory raptor surveys. Three species of concern, sharp-shinned hawk, Cooper's hawk, and red-shouldered hawk, were recorded during migratory raptor surveys in both the Project Area and Reference Area. One sharp-shinned hawk was also documented during breeding bird surveys. No upland sandpipers or short-eared owls, species which may be present but difficult to detect, were documented in the Project Area during the surveys.

According to the New York Amphibian and Reptile Atlas (NYSDEC 2007), four state-listed species of special concern (blue-spotted salamander, Jefferson salamander, eastern box turtle, and wood turtle), are known to occur near the Project Site. Jefferson salamanders breed in temporary ponds and wetlands in wooded areas. Blue-spotted salamanders require forested upland habitat with dense organic leaf litter, roots, and woody debris for winter hibernacula in proximity to seasonal vernal pools with a leaf litter substrate as obligate breeding habitat. Individual vernal pools are typically small (<0.5 acre), are surrounded by upland forest with trees that overhang the pool, providing a continuous leaf litter substrate, and are generally sparsely vegetated and fishless. Vernal pools are recognized by the presence of obligate vernal pool species, such as fairy shrimp, fingernail clams, the mole salamanders and the wood frog. Targeted searches for potential vernal pools will be conducted concurrently with routine, onsite wetland delineations planned for 2008; the results of this survey will be included in the wetland delineation report in support of the FEIS.



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The eastern box turtle is typically found in deciduous woodlands or mixed upland habitats and will frequent wet areas. Its New York range is mainly southeast but there are some records from southwestern NY including Chautauqua County. The wood turtle is typically found in wooded wetlands, ponds in woodlands, and wooded swamps. Wood turtles use upland habitats far from water and there are occurrence records throughout western NY including southern Chautauqua County.

No listed endangered, threatened, or special concern mammal species were observed in the Project Area or reported through correspondence with the USFWS and the NHP. Based upon existing habitat conditions and the known habitat requirements of special status mammal species in New York, special status mammals are not expected to occur in the vicinity of the Project Area. Eastern small-footed bats occur throughout New York State but are generally uncommon. They can be found in hilly or mountainous areas, deciduous or evergreen forest, and open farmland. Warm-season roosts include hollow trees, spaces beneath the loose bark of trees, cliff crevices, buildings, bridges, and towers. Foraging habitat includes ponds and streams. No eastern small-footed myotis were captured and no calls with characteristics of small-footed myotis were recorded during spring, summer, and fall 2007. Though some individuals may disperse through the Project Area, breeding populations are either absent within the Project Area or exist in such small numbers as to be difficult to detect with capture techniques.

The NHP maintains a list of rare plants by county, which is updated on a periodic basis. This list is published to assist the conservation and protection efforts of government and private organizations as well as the public. This information can also be used in the environmental review process. Although correspondence with the NHP and USFWS did not indicate the presence of rare plant species in or near the Project Site, Young (2007) list 32 state-listed and 14 rare or unprotected plant species occurrences in Chautauqua County, as listed in Table 2.3-4.

Surveys can confirm the presence of rare plants on a site, but negative results do not guarantee that rare plant species are absent. However, for practical purposes, surveys that adhere to standardized methods provide reasonable evidence that rare plants do not occur in the survey area. Rare plant surveys will be conducted by qualified biologists and will target the phenology, based on Young (2007) and other sources, and preferred habitats of each protected species that are likely to occur in the Project Area. Either systematic or random meander search patterns will be used to survey areas that appear likely to support rare taxa based on habitat. Much of the Project footprint is limited to relatively narrow rights-of-way; many of which are currently used or have historically been used as access roads. For these areas a random meander search pattern will be used. For the turbine work areas, a systematic approach will be used to provide greater coverage of the area and minimize overlap. Results of this survey will be included in the FEIS.

**Table 2.3-4. Rare Plants that Occur in Chautauqua County <sup>a/</sup>**

| Scientific Name   | Common Name                 | Global Rank | State Rank | State Status | Wetland Indicator |
|---|-----------------------------|-------------|------------|--------------|-------------------|
| <i>Allium tricoccum</i> var. <i>burdickii</i>             | Burdick's Wild Leek         | G4G5        | SH         | E            | NI                |
| <i>Aplectrum hyemale</i>                                  | Puttyroot                   | G5          | S1         | E            | FAC               |
| <i>Botrychium oneidense</i>                               | Blunt-lobe Grape Fern       | G4Q         | S2S3       | E            | NI                |
| <i>Carex atherodes</i>                                    | Awned Sedge                 | G5          | S2S3       | E            | OBL               |
| <i>Collinsia verna</i>                                    | Blue-eyed-Mary              | G5          | SH         | E            | FAC-              |
| <i>Eriophorum angustifolium</i> ssp. <i>Scabriusculum</i> | Narrow-leaf Cottongrass     | G5T5        | SH         | E            | OBL               |
| <i>Geum vernum</i>  | Spring Avens                | G5          | S2S3       | E            | FACU              |
| <i>Hydrocotyle ranunculoides</i>                          | Floating Pennywort          | G5          | S1         | E            | OBL               |
| <i>Liparis liliifolia</i>                                 | Large Twayblade             | G5          | S1         | E            | FACU-             |
| <i>Listera convallarioides</i>                            | Broad-lipped Twayblade      | G5          | S1         | E            | FACW              |
| <i>Littorella uniflora</i>                                | American Shore-grass        | G5          | S1         | E            | OBL               |
| <i>Monarda clinopodia</i>                                 | Basil-balm                  | G5          | S1S2       | E            | NI                |
| <i>Phlox maculata</i> ssp. <i>maculata</i>                | Wild Sweet-william          | G5T4T5      | S1         | E            | FACW              |
| <i>Phlox pilosa</i> ssp. <i>pilosa</i>                    | Downy Phlox                 | G5T5        | SH         | E            | FACU              |
| <i>Polygonum aviculare</i> ssp. <i>buxiforme</i>          | Small's Knotweed            | G5T5        | S1         | E            | NI                |
| <i>Potentilla paradoxa</i>                                | Bushy Cinquefoil            | G5          | S1         | E            | OBL               |
| <i>Ptelea trifoliata</i> ssp. <i>Trifoliata</i>           | Wafer-ash                   | G5T5        | S1S2       | E            | FAC               |
| <i>Ranunculus hispidus</i> var. <i>nitidus</i>            | Swamp Buttercup             | G5T5        | S1         | E            | FAC               |
| <i>Sisyrinchium mucronatum</i>                            | Michaux's Blue-eyed-grass   | G5          | S1         | E            | FAC+              |
| <i>Smallanthus uvedalius</i>                              | Bear's-foot                 | G4G5        | SH         | E            | NI                |
| <i>Stuckenia filiformis</i> ssp. <i>Alpina</i>            | Slender Pondweed            | G5T5        | S1         | E            | NI**              |
| <i>Stuckenia filiformis</i> ssp. <i>Occidentalis</i>      | Sheathed Pondweed           | G5T5        | S1         | E            | NI**              |
| <i>Trillium sessile</i>                                   | Toad-shade                  | G4G5        | S1         | E            | NI                |
| <i>Vernonia gigantea</i> ssp. <i>gigantea</i>             | Tall Ironweed               | G5T5        | S1         | E            | FAC               |
| <i>Vittaria appalachiana</i>                              | Appalachian Shoestring Fern | G4          | S1         | E            | NI                |
| <i>Arethusa bulbosa</i>                                   | Dragon's Mouth Orchid       | G4          | S2         | T            | OBL               |
| <i>Asimina triloba</i>                                    | Pawpaw                      | G5          | S2         | T            | FACU+             |
| <i>Bidens beckii</i>                                      | Water-marigold              | G4G5        | S3         | T            | OBL               |
| <i>Chamaelirium luteum</i>                                | Fairy Wand                  | G5          | S1S2       | T            | FAC               |
| <i>Pinguicula vulgaris</i>                                | Butterwort                  | G5          | S2         | T            | OBL               |
| <i>Pycnanthemum muticum</i>                               | Blunt Mountain-mint         | G5          | S2S3       | T            | FACW              |
| <i>Utricularia minor</i>                                  | Lesser Bladderwort          | G5          | S3         | T            | OBL               |
| <i>Cyperus schweinitzii</i>                               | Schweinitz's Flatsedge      | G5          | S3         | R            | FACU              |
| <i>Linum striatum</i>                                     | Stiff Yellow Flax           | G5          | S3         | R            | FACW              |
| <i>Trollius laxus</i>                                     | Spreading Globeflower       | G3          | S3         | R            | OBL               |
| <i>Agrimonia parviflora</i>                               | Swamp Agrimony              | G5          | S3         | U            | FAC               |
| <i>Arnoglossum atriplicifolium</i>                        | Pale Indian-plantain        | G4G5        | SH         | U            | NI                |
| <i>Cardamine douglassii</i>                               | Purple Cress                | G5          | S2S3       | U            | FACW+             |
| <i>Carex cryptolepis</i>                                  | Northeastern Sedge          | G4          | S3         | U            | OBL               |
| <i>Carex oligosperma</i>                                  | Few-seed Sedge              | G5?         | S3         | U            | OBL               |
| <i>Clintonia umbellulata</i>                              | Speckled Woodlily           | G5          | S3         | U            | NI                |
| <i>Cyperus erythrorhizos</i>                              | Red-rooted Flatsedge        | G5          | S3         | U            | FACW+             |
| <i>Cyperus odoratus</i>                                   | Rusty Flatsedge             | G5          | S3         | U            | FACW              |
| <i>Galactia volubilis</i>                                 | Downy Milk-pea              | G5          | SX         | U            | FAC+              |
| <i>Juglans cinerea</i>                                    | Butternut                   | G3G4        | S4         | U            | FACU+             |
| <i>Lathyrus ochroleucus</i>                               | Creamy Wild-pea             | G4G5        | S3         | U            | NI                |

<sup>a/</sup> Young 2007

**Global Rank**

G1 = Critically imperiled throughout its range due to extreme rarity (5 or fewer sites or very few remaining individuals) or extremely vulnerable to extinction due to biological factors. (8 taxa in 2007)

**Table 2.3-4. Rare Plants that Occur in Chautauqua County a/**

| Scientific Name   | Common Name | Global Rank | State Rank | State Status | Wetland Indicator |
|---|-------------|-------------|------------|--------------|-------------------|
| <p>G2 = Imperiled throughout its range due to rarity (6 - 20 sites or few remaining individuals) or highly vulnerable to extinction due to biological factors. (11 taxa in 2007)</p> <p>G3 = Either very rare and local throughout its range (21 - 100 sites), with a restricted range (but possibly locally abundant), or vulnerable to extinction due to biological factors. (47 taxa in 2007)</p> <p>G4 = Apparently secure throughout its range (but possibly rare in parts).</p> <p>G5 = Demonstrably secure throughout its range (but possibly rare in parts).</p> <p>GH = No extant sites known but it may be rediscovered.</p> <p>GX = Species believed extinct.</p> <p>TU &amp; T? = Status of the subspecies or variety unknown.</p>  |             |             |            |              |                   |
| <p><u>State Rank</u></p> <p>S1 = Critically imperiled in New York State because of extreme rarity (5 or fewer sites or very few remaining individuals) or extremely vulnerable to extirpation from New York State due to biological or human factors.</p> <p>S2 = Imperiled in New York State because of rarity (6 - 20 sites or few remaining individuals) or highly vulnerable to extirpation from New York State due to biological or human factors.</p> <p>S3 = Rare in New York State (usually 21 - 35 extant sites).</p> <p>S4 = Apparently secure in New York State.</p> <p>S5 = Demonstrably secure in New York State.</p> <p>SH = Historical. No existing sites known in New York State in the last 20-30 years but it may be rediscovered.</p> <p>SX = Apparently extirpated from New York State, very low probability of rediscovery.</p> <p>SR = Reported from the state, but existence has not been documented.</p> <p>SU = Status uncertain because of the cryptic nature of the plant.</p>                 |             |             |            |              |                   |
| <p><u>State Legal Status</u></p> <p>E = Endangered Species</p> <p>T = Threatened</p> <p>R = Rare</p> <p>V = Exploitably vulnerable</p> <p>U = Unprotected</p>   |             |             |            |              |                   |
| <p><u>Wetland Indicator Status – Based on the 1988 NWI Vascular Plant List</u></p> <p>OBL = Obligate Wetland; Occurs almost always (estimated probability 99%) under natural conditions in wetlands.</p> <p>FACW = Facultative Wetland; Usually occurs in wetlands (estimated probability 67%-99%), but occasionally found in non-wetlands.</p> <p>FAC = Facultative; Equally likely to occur in wetlands or non-wetlands (estimated probability 34%-66%).</p> <p>FACU = Facultative Upland; Usually occurs in non-wetlands (estimated probability 67%-99%), but occasionally found on wetlands (estimated probability 1%-33%).</p> <p>UPL = Obligate Upland; Occurs in wetlands in another region, but occurs almost always (estimated probability 99%) under natural conditions in non-wetlands in the regions specified. If a species does not occur in wetlands in any region, it is not on the National List.</p> <p>NI = No indicator; Insufficient information was available to determine an indicator status.</p> |             |             |            |              |                   |

### 2.3.1.5 Other Sensitive Wildlife Resources

During breeding bird surveys, WEST identified three species in the Project Area noted to be in decline by the USFWS *Birds of Conservation Concern 2002 (BCC 2002)*, including black-billed cuckoo (*Coccyzus erythrophthalmus*), Canada warbler (*Wilsonia canadensis*), and bobolink. The intent of *BCC 2002* is to identify the migratory and non-migratory bird species that represent to the USFWS high conservation priorities and draw attention to species in need of conservation action. It accomplishes this by identifying geographic region(s) where a species may be in decline to identify the need for, and achieve through proactive measures, targeted conservation. While all of the bird species included in *BCC 2002* are priorities for conservation action, the USFWS list makes no finding with regard to whether they warrant consideration for listing in

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accordance with the Endangered Species Act of 1973 (ESA). While these three species are not protected by the ESA or by NYSDEC (beyond the MBTA), each merits a brief discussion, as follows:

*Black-billed Cuckoo* – This species usually found in edges and clearings of young deciduous and mixed deciduous-coniferous woods, thickets, and is frequently associated with water. WEST observed one black-billed cuckoo during the breeding bird surveys. BBA data (2000) indicate this species is a probable breeder in each of the four survey blocks queried in this DEIS. This species is likely to be present in the Project Area during the breeding season.

*Canada Warbler* – This species most commonly occurs in moist, mixed coniferous-deciduous forests with a well-developed understory, and it often occurs near open water. WEST observed one Canada warbler during its breeding bird surveys. None of the four breeding bird survey blocks queried for this DEIS listed the Canada warbler as present. Rare or transient individuals could occur in the Project Area during the breeding season.

*Bobolink* – This species appears to prefer fields comprised of a mixture of grasses and broad-leaved forbs. Bobolink density is significantly higher in fields in west-central New York with relatively low amounts of total vegetative cover but with high litter cover and high grass-to-legume ratios relative to other nearby fields. These vegetative characteristics occur in hay fields in New York that have not been plowed and reseeded for at least 8 years; and in these particular fields, bobolink density is much higher than in younger fields (Martin et al., 1995). West reported 36 individuals observed in 22 groups during its 2007 breeding bird surveys. BBA data (2000), list the bobolink as a probable breeder in each of the four survey blocks queried for this DEIS. This species is likely to be present in the Project Area during the breeding season.

Hunting, trapping, and fishing are common recreational activities throughout New York. The Canadaway Creek Wildlife Management Area (CCWMA) and the Boutwell Hill State Forest are adjacent to or in the vicinity of the southern project boundary. The CCWMA is owned and managed by the NYSDEC for the production of and use by wildlife, and for public recreation. The CCWMA is just north of the Boutwell Hill State Forest. The CCWMA and the Boutwell Hill State Forest together make up the Boutwell Hill Management Unit. The CCWMA is a 2,160-acre tract of mixed deciduous hardwood forest interspersed with conifer plantations that includes both upland and riparian areas. The area is primarily managed for ruffed grouse habitat, but provides multiple uses including maintaining habitat for wildlife diversity and protecting water quality. In addition, it provides recreational opportunities such as hiking, biking, fishing, hunting, and birdwatching. A great blue heron nesting colony and red-shoulder hawk nests occur within the CCWMA. This area is used as a pheasant release site by the NYSDEC. The CCWMA also includes the Eastside Overland Trail, a popular wilderness recreation area, where there are

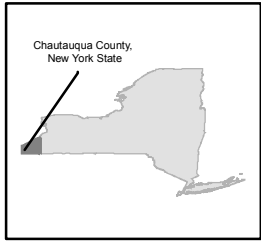
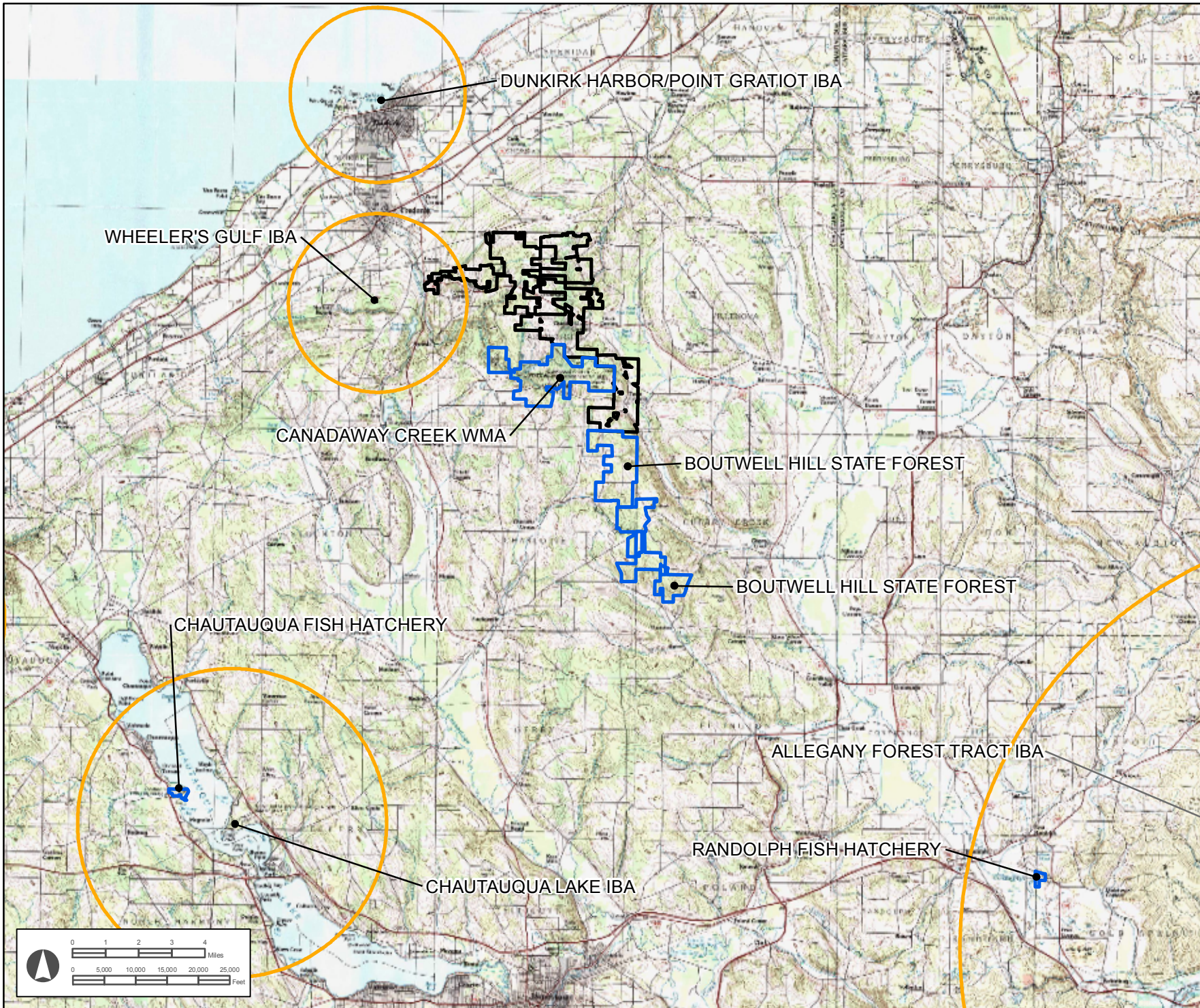
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waterfalls, creeks, ponds, and woodlands. Recreational activities would occur on private property as well. Figure 2.3-2 shows the locations of these sensitive wildlife resources within the Project Area.

There are two New York State Important Bird Areas (IBA) near the Project Area. The Dunkirk Harbor/Point Gratiot IBA is located approximately four miles north of the Project study area, and Wheeler's Gulf IBA located approximately five miles south of the Project area (Audubon 2006). The Dunkirk Harbor IBA is also a Watchable Wildlife Site (NYSDEC 2006). IBA's are local sites that provide important habitat for native bird populations. These sites are uniquely important to birds because they support species of conservation concern, species with restricted ranges, populations that are concentrated in one habitat type or species that occur at high densities due to their congregatory behavior (i.e., waterfowl).

Big game species likely to occur within the Project Area include whitetail deer and black bear. Chautauqua County is among the top five in New York State for whitetail deer take (New York Game and Fish 2008). The NYSDEC manages black bear hunting within the Allegany or Southern Bear Range in Chautauqua County. Bear hunting in Chautauqua County is low relative to other bear hunting ranges in the state. Seven black bear were taken during the open hunting season in 2004 (NYSDEC 2005). Small game and furbearing mammals are also hunted/trapped in the Project Area, including coyote, cottontail, frogs, pheasant, ruffed grouse, squirrel, wild turkey, raccoon, fox, opossum, squirrel, and weasel. Chautauqua and Cattaraugus Counties are the leading counties in New York State for turkey harvests (New York Game and Fish 2008).

Two state-operated fish hatcheries are located approximately 25 miles from the Project Area, including the Chautauqua Hatchery located near the Village of Mayville in Chautauqua County and the Randolph Hatchery located in the Village of Randolph in Cattaraugus County. The Chautauqua Hatchery is the only NYSDEC hatchery currently raising pure strain muskellunge, which are obtained from netting and egg collection on Chautauqua Lake and in some years from Waneta Lake. Pond-reared walleye fingerlings are also grown at this hatchery. Total production is 3,300 pounds annually (NYSDEC 2008). The Randolph Hatchery is a major brood stock facility which annually handles five-six million brook, brown and rainbow trout eggs. Annual production totals 100,000 pounds of fish. State fish hatcheries rear species that are released into public streams, rivers, and ponds across New York. In 2007, a total of 980 two year old or spring yearling brown trout were stocked into the Canadaway Creek and West Branch Conewango Creek (NYSDEC 2007). These hatcheries do not occur within the footprint of the Project and are not anticipated to be affected by construction or operational activities.



- Important Bird Areas (IBA)
- NYSDEC Conservation Land
- Wind Overlay Zone

SOURCE:  
 IBAS  
 AUDUBON NEW YORK GIS  
 ITHACA, NY 4/2/2005

TOPO  
 USGS 7.5 MINUTE QUADRANGLES  
 DUNKIRK, 1978; FORESTVILLE, 1978;  
 CASSADAGA, 1978; HAMLET, 1978



**TT TETRA TECH EC, INC.**

**NEW GRANGE WIND FARM  
 CHAUTAUQUE COUNTY,  
 NEW YORK**

**FIGURE 2.3-2  
 SENSITIVE WILDLIFE  
 RESOURCES WITHIN THE  
 PROJECT AREA**

P:\New Grange Wind Farm\GIS\Spatial\MXD\1\urbanLayouts\Rev6\Apply\ES\_Figures\Biological\NSW\_1\_fig\_32\_Sensitive\_Wildlife\_Resources.mxd

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## 2.3.2 *Potential Impacts*

### 2.3.2.1 *Construction*

#### *Vegetation*

The Project was designed to minimize impacts to vegetation communities through siting Project components away from sensitive and valuable areas and using degraded and previously disturbed areas where practicable. Construction activities will cause temporary and permanent impacts to vegetative communities and associated wildlife habitats; however, significant adverse effects to vegetation are not expected, because vegetative communities present in the Project Area are locally and regionally common. Activities that would result in direct impacts to vegetation include the cutting and clearing of vegetation, the removal of rooted systems and stumps, and soil disturbance. Indirect impacts to vegetation may include increased soil erosion and sedimentation, greater solar exposure and a higher heat index, and the establishment of invasive species and noxious weeds.

Construction of the Project is anticipated to temporarily affect 464 acres of vegetative communities, consisting of upland forests (71 percent), and lands under active agricultural practices (e.g, cultivated crops, pasture, and hay; 29 percent). Of upland forest cover classes, mixed forest communities would be most affected by project construction (37 percent of the Project Site). Forest cover in the Project Site would be cleared to create temporary workspaces and would regenerate through time. Logging activities occur in Chautauqua County and the Project Area, and temporary clearing of upland forests during construction of the Project would be consistent with this use. Within the Project Site, pasture and hay fields account for 24 percent of temporarily affected vegetation communities, and croplands account for only 5 percent. Construction-related disturbance in active agricultural lands is consistent with typical land use practices, where disturbance and vegetation alterations through mowing, plowing, and harvesting activities occur on a routine basis. Overall, 2.4 percent of vegetation in the Project Area would be temporarily affected by construction activities. Table 2.3-4 lists the anticipated effects to each vegetative cover class crossed by the Project.

The vegetative communities that would be permanently converted to Project facilities total 171 acres. As with temporary effects to vegetation, upland deciduous and mixed forests, and pasture/hay fields account for all permanent disturbances in the Project Site. Combined, forested uplands would account for 102.2 acres of disturbed land, followed by 68.8 acres of cropland, and pasture and hay fields. Less than 1 percent (0.90 percent) of vegetation in the Project would be permanently affected by construction activities. Table 2.3-4 lists the anticipated impacts to each vegetative cover class crossed by the Project.

**Table 2.3-4. Vegetative Cover Classes Affected by the New Grange Wind Farm**

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| <b>Land Use Class</b> | <b><u>Temporary Impacts</u></b> |                   | <b><u>Permanent Impacts</u></b> |                   |
|-----------------------|---------------------------------|-------------------|---------------------------------|-------------------|
|                       | <b>(acres)</b>                  | <b>(% Impact)</b> | <b>(acres)</b>                  | <b>(% Impact)</b> |

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| Land Use Class                                | <u>Temporary Impacts</u> |            | <u>Permanent Impacts</u> |            |
|---|--------------------------|------------|--------------------------|------------|
|   | (acres)                  | (% Impact) | (acres)                  | (% Impact) |
| Cultivated Crops                              | 24.02                    | 5%         | 14.1                     | 8%         |
| Pasture/Hay                                   | 109.17                   | 24%        | 54.7                     | 32%        |
| Grassland/Herbaceous                          | 0                        | 0%         | 0                        | 0%         |
| Upland Forests                                |                          |            |                          |            |
| Deciduous Forest                              | 158.99                   | 34%        | 51.9                     | 30%        |
| Evergreen Forest                              | 0.40                     | 0%         | 0                        | 0%         |
| Mixed Forest                                  | 171.45                   | 37%        | 50.3                     | 29%        |
| Forested Wetlands <u>a/</u>                   | 0                        | 0%         | 0                        | 0%         |
| Non-Forested Wetlands <u>a/</u>               | 0                        | 0%         | 0                        | 0%         |
| Open Water                                    | 0                        | 0%         | 0                        | 0%         |
| Residential                                   | 0                        | 0%         | 0                        | 0%         |
| Commercial/Industrial/Transportation/Quarries | 0                        | 0%         | 0                        | 0%         |
| <b>Total</b>                                  | <b>464.03</b>            |            | <b>171.0</b>             |            |

a/ Affected acreage of wetlands are from NLCD 2001 coverages and thus are estimated; wetland presence will be verified during formal wetland delineations scheduled for early 2008.  
Source: National Land Cover Dataset 2001

### *Birds and Bats*

The Project was designed to minimize impacts to bird and bat populations through siting project components away from sensitive habitats and using degraded and previously disturbed areas where practicable. Significant impacts on migrant or resident birds and bats are not expected during the construction of the Project. While some avian species may avoid the Project Area during active construction, most birds observed during breeding bird surveys are strongly linked with disturbed lands and thus are unlikely to be affected by construction. The most abundant resident bird species found in the New Grange Wind Farm avian surveys, including starlings, blackbirds and crows, are species that cause crop damage and are managed in some areas as agricultural pests (Cabe 1993; Verbeek and Caffrey 2002; Yasukawa and Searcy 1995). These species will not be significantly affected by construction.

Indirect impacts to birds and bats could occur as a result of habitat alteration during construction; however, these displaced species are expected to disperse to suitable habitats that occur adjacent to the Project or use temporarily disturbed habitats. Additionally, construction-related disturbance is consistent with current agricultural practices, such as land clearing and plowing, which occur with regularity in the Project Area. Anticipated permanent loss of forested habitats, which provide nesting and roosting sites for many bird and bat species, is expected to be minimal. Relative to the larger Project Area, a loss of less than one percent of forest cover from the Project Site is expected. Clearing required for construction and operation of project facilities may result in the creation of suitable edge habitat for foraging birds and bats.



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### *Fish and Wildlife*

The Project has been designed to minimize impacts to fish and wildlife through siting Project components away from sensitive and valuable habitat resources and using degraded and previously disturbed areas where practicable. Impacts to wildlife due to construction activities may include displacement due to noise and human activity, incidental mortality of less mobile species, habitat loss and fragmentation, and temporary siltation and sedimentation impacts to aquatic habitats. Displacement of wildlife species will vary based on construction activity, seasonal timing, and species sensitivity. Species most likely to be displaced or disturbed by construction activities are forest-dependent species. Incidental mortality and injury to sedentary and slow moving species, which are unable to evade construction machinery, is anticipated. Seasonal effects may occur during the breeding season to the eggs and young of birds, reptiles, amphibians, and small mammals. Interior forest-dwelling species, such as some migratory birds, may be affected by “edge effects” caused by fragmenting forested lands.

Fish and wildlife populations within the Project Area appear to be stable and are locally common. Although wildlife will be affected by construction, these impacts would not cause significant reductions in local resident populations. Most adult wildlife species are expected to disperse to adjacent, undisturbed areas.

Aquatic systems may also be temporarily affected as a result of construction activities. Impacts to fisheries are expected to be minor and of short-term duration. Vegetation clearing for temporary workspaces may increase solar radiation and temperature of aquatic systems, which may lower habitat quality for fishes and aquatic species. Stream crossing methods such as dam-and-pump may temporarily obstruct fish passage, whereas flume pipe methods allow for unrestricted fish passage. Seasonal work restrictions, such as ceasing work in and around trout streams during spawning seasons, will be enforced in accordance with state and federal permits. Impacts to protected fisheries are not anticipated.

During spring and early summer, many fishes, reptiles and amphibians depend on aquatic habitats for breeding and feeding habitats. Siltation could result in direct mortality of eggs, or indirectly affect the ability of organisms to survive through reduced access to prey or reduced habitat quality. In waters designated Class D or unregulated waters, open cut waterbody crossing methods may be implemented, which may result in siltation. These effects would be minor and of short-term duration.

### *Threatened and Endangered Species*

Federal species were not identified during informal consultation with the USFWS. With the exception of rare, transient individuals, construction of this Project is not expected to cause significant impacts to federally listed species.

Five state-listed species were identified during consultation with the NHP, including the short-eared owl, bald eagle, Henslow’s sparrow, sedge wren, and great blue heron. The BBA (2000)

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indicates that five listed bird species (northern harrier, grasshopper sparrow, vesper sparrow, red-shouldered hawk, and Cooper's hawk) have been observed in the BBA blocks in or adjacent to the Project Area. Several other listed species observed during surveys conducted by WEST within or near the Project Area include northern harrier, Cooper's hawk, sharp-shinned hawk, and red-shouldered hawk. The listed bird species have differing habitat preferences ranging from open grassland (short-eared owl, northern harrier, Henslow's sparrow, grasshopper sparrow, and vesper sparrow), forested (Cooper's hawk, sharp-shinned hawk, red-shouldered hawk, and bald eagle), emergent wetland (great blue heron, northern harrier), and open water (great blue heron, and bald eagle). Because the project construction will occur within or adjacent to all of these habitats, construction associated impacts to each of these species are possible. Potential impacts could include mortality to eggs and young, avoidance, displacement and disturbance due to noise, and direct habitat loss. To avoid potential impacts to nesting great blue herons, turbine locations were sited approximately 0.25 mile away from the known great blue heron nesting colony near the Project. Minimizing impacts to grasslands, forests, wetlands, and open water will minimize potential impacts to these species and their habitats.

The New York Amphibian and Reptile Atlas indicates that two species of amphibian, the blue-spotted salamander and the Jefferson salamander, and two species of reptiles, the eastern box turtle, and the wood turtle, may occur near the Project Area. These slow-moving species could be affected by injury or death, and by habitat loss from vegetation clearing activities or permanent habitat loss. Potential vernal pools will be identified during the routine, on-site wetland delineations and will be documented in the delineation report, as described in Section 2.3.1.4. If potential vernal pools are observed during these surveys, the Applicant will modify the Project to avoid impacts to that resource.

Construction of the Project is not likely to impose any impacts to rare plants, as no rare plants were reported to occur near the Project during consultation with NHP and USFWS. As discussed in Section 2.3.1.4, a field plant survey will be conducted to document the presence of rare plants in the Project prior to the FEIS. Because construction techniques that employ best management procedures for uplands and wetlands will be used, it is likely that construction of the Project will have minimal effects on rare plant species. In the event that state-listed plants are identified in the Project Site, the Applicant will consult with NYSDEC to develop an appropriate management plan for those taxa.

### *2.3.2.2 Operation*

#### *Vegetation*

Operation of the Project would result in the permanent conversion of 171 acres of vegetated lands into project components, such as access roads, turbines, operations and maintenance facilities, and substations. As listed in Table 2.3-4, the Project is anticipated to permanently affect 102.2 acres of upland forests, and 68.8 acres of cropland, pastures and hay fields. Permanent effects to wetlands will be verified during wetland delineations in 2008. Relative to

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the larger Project Area, less than one percent of vegetated habitats would be permanently affected during operation. Vegetation communities will not be adversely affected by operation of the Project. Minor disturbances may occur to vegetation as a result of routine maintenance and unforeseen necessary repairs. The application of herbicides or pesticides would be prohibited.

### *Birds*

Operation of the Project is expected to contribute to avian mortality, although mortality caused by turbine collision is expected to be low and comparable with other nearby wind generation facilities. Based on the available data, the Project Area is unlikely to have a concentration of spring or fall migrant raptor movement. Passage rates of migrant raptors in the Project Area indicate that use is relatively low. Hawk watch sites located in New York and Ontario, Canada, particularly those along the Great Lakes shoreline, report much higher passage rates. Despite proximity of the Project Area to Lake Erie, avian surveys conducted within the Project Area suggest that the concentration of migrating raptors in spring and fall is considerably lower than that observed closer to the lakeshore. Though some species, such as turkey vulture, may be at risk of collision based on abundance and flight height characteristics, the number of raptor fatalities is expected to be low.

Based on the radar data collected in spring and fall 2007, it does not appear that the Project Area will occur in an area with a concentration of spring or fall avian songbird migration. The migration characteristics at both sites were similar to numerous other studies conducted at proposed wind projects and similar characteristics would occur in New Grange. Based on these studies, impacts to avian migrants from the Project would be similar or less than other eastern and New York wind projects. More information about migrant songbirds is found in Appendix E.

Because a high diversity of birds was observed during breeding bird surveys, potential impacts are expected to be spread over several species. Based on breeding bird survey data, the Project Area does not appear to support large or unusual populations of resident birds. At all eastern wind generation facilities where post-construction monitoring was conducted, 60 to 80 percent of avian mortality is from migratory species, rather than breeding resident species (Appendix E). Based on observations from regional and site-specific avian surveys, breeding resident birds would not be adversely affected by the Project.

In accordance with USFWS Interim Guidance on Avoiding and Minimizing Impacts to Wildlife from Wind Turbines (2003), the Applicant will conduct post-construction bird and bat mortality monitoring during project operation to determine if or to what extent mortality occurs. The Applicant will consult the USFWS and NYSDEC to develop a post-construction mortality monitoring plan. Mortality reports will be submitted to federal and state wildlife agencies for their review. Mortality monitoring will be used to assess the significance of impacts to birds and bats, and also to determine factors that may contribute to increased mortality, such as certain weather conditions. If impacts to wildlife are deemed to be significantly adverse, mitigation

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strategies would be developed that could be used to reduce potentially significant adverse impacts to those species.

### *Bats*

The mechanism(s) causing elevated mortality to some species of bats at certain wind projects is not clearly understood by bat biologists. Research efforts have been undertaken by scientists, regulatory agencies, wind developers, and conservation organizations; studies investigating these mechanisms are ongoing. In its report for this Project, WEST summarized mortality studies of bats at wind projects in the United States and emphasized several common trends: a) Risk to bats from wind turbines is unequal across species and seasons. The majority of bat fatalities at wind projects in the United States and Canada are from long-distance migrant tree bats of the *Lasiurus* genus, while the least common fatalities are of big brown bats and *Myotis* species (Johnson 2005; Kuntz et al. 2007); b) The highest mortality occurs during the fall migration period for bats from late-July to mid-September (see Johnson 2005). Information from previous studies indicates that baseline AnaBat data do not appear to be predictive of post-construction impacts. Some new information from the Maple Ridge Wind Farm post-construction monitoring appears to indicate higher bat mortality than what was expected based on the pre-construction surveys using AnaBat. Studies at Buffalo Ridge, Minnesota and Buffalo Mountain, Tennessee, did not find a correlation between the number of AnaBat calls recorded and mortality; c) AnaBat surveys and fatality surveys show a general association between the timing of the greatest number of bat calls and mortality, with both call rates and mortality the highest during the fall; and d) Studies at different locations in the United States and Canada appear to indicate that bat mortality is not related to site features or habitat. While it is hypothesized that eastern deciduous forests in mountainous areas may be high risk areas, high bat mortality also occurred at wind projects in prairie/agricultural settings and mixed deciduous woods, and agricultural settings.

Survey methods commonly used to assess pre-construction bat activity and/or presence, such as acoustic sampling, are limited in their predictive abilities in terms of post-construction mortality. Acoustic surveys of echo-locating bats can cover airspace not sampled by capture methods; however, the nature of AnaBat analysis makes it difficult to determine if calls are being made by multiple bats or single passes made by one individual. Most importantly, no sample technique has been shown to reliably predict risk to bats at wind facilities.

Data collected at other wind facilities and site-specific data collected for this Project suggest that impact to resident bats will be lower than to migratory bats (see Appendix E). Fall migratory bat activity recorded in the Project Area is much lower than acoustic activity recorded at wind facilities that also reported high bat mortality. Based on acoustic data, mortality risk to bats is expected to be similar or lower in the Project Area than other eastern wind facilities; however, correlations between acoustic activity and wind facility mortality are weak and limited. Acoustic

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surveys conducted during migratory and breeding seasons in the Project Area were unable to confirm the presence of bat species of special concern.

Though the extent of fatalities is difficult to estimate, it is likely that the Project will result in some fatalities to migratory bats. Based on data collected from other wind facilities and site-specific surveys, the species most likely to be affected include eastern red bat and hoary bat, with fewer numbers of other species. It is unlikely that federal or state protected bat species will be documented as fatalities at this location. Risk to migrant bats is expected to increase during the period of August and September, particularly on nights with conducive weather conditions. Annual bat fatality estimates from the Maple Ridge Wind Farm, the nearest monitored project to the Project, varied from 15 – 24 bats per turbine. Although the Maple Ridge Wind Farm monitoring study demonstrated higher bat mortality than what was expected based from pre-construction AnaBat surveys, it is important to note that AnaBat surveys were conducted during summer, a time when bat activity is thought to be low relative to fall activity. The Maple Ridge Wind Farm pre-construction acoustic surveys averaged 20.6 calls per detector-hour. For comparison, the average number of calls per detector-hour in this Project was 2.6 in summer and 2.2 in fall. The Maple Ridge Wind Farm bat fatality studies indicated that peaks in bat mortality coincided with the period of fall bat migration. While it is difficult to compare seasonal activity at Maple Ridge Wind Farm to activity in the Project Area, overall bat activity appears to be far lower in the Project Area. The species expected to be the most common fatalities would include eastern red bat, hoary bat, little brown bat, and big brown bat. Risk to any particular bat species from the proposed wind project is expected to be low.

As previously discussed, the Applicant will conduct post-construction bird and bat mortality monitoring during project operation to determine if or to what extent mortality occurs. Mortality monitoring will be used to assess the significance of impacts to birds and bats, and also to determine factors that may contribute to increased mortality, such as certain weather conditions. If impacts to wildlife are deemed to be significantly adverse, mitigation strategies will be developed that could be used to reduce potentially significant adverse impacts to those species.

#### *Fish and Wildlife*

Operational impacts to fish, wildlife, and their habitats are minimized through siting project components away from high quality habitats, such as expanses of grasslands, wetlands, and forested land to the greatest extent practicable. Operational impacts to wildlife and wildlife habitat may include direct and indirect mortality resulting from collisions with wind turbines, loss of habitat, forest fragmentation, and displacement due to disturbances caused by the presence of wind turbines.

*Loss of Habitat:* The Project would result in the permanent loss of 171 acres of wildlife habitat, as presented in Table 2.3-4. Most of these impacts would be to forested habitats (102.2 acres), some of which will be converted and managed as a non-forested vegetative community. These converted forestlands would be maintained as shrubland or grassland, or would be converted to

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Project facilities (e.g., crane pads, access roads, etc.). In addition to the direct loss of habitat, this action may have indirect effects on interior forest wildlife species that maintain a preferred distance away from forest edges. All things considered, loss of habitat from operation of the Project is expected to be less than one percent of the larger Project Area.

Agricultural land would also be affected during operation of the Project. Active agricultural lands (14.1 acres) consisting of row crops are of poor vegetative habitat quality and are frequently disturbed through management practices, such as, tilling, planting, and harvesting. This habitat type is of limited value to grassland species that prefer native graminoid vegetation, which is absent in this type of agricultural land use. Pasturelands and hay fields may also represent less optimal grassland bird habitat if they are grazed or harvested prior to the completion of the breeding season for grassland bird species, typically mid-July. In contrast, fallow pastures and late-harvest hay fields may present ideal breeding, foraging, and refuge habitats for grassland birds. Vegetation clearing activities in fallow pastures and late-harvest hay fields would reduce available habitats to grassland birds, which may adversely affect their reproductive success. Effects of habitat loss on wildlife are expected to be localized. The Project would permanently affect less than one percent of pasture and hay fields in the Project Area, and grasslands/herbaceous areas would be unaffected. Although some habitat would be lost to development of permanent project facilities, new habitats would be added because a portion of permanently affected lands would be maintained as non-forested areas (e.g., areas associated with the underground collection system rights-of-way). Vegetation maintenance activities would maintain open areas such as those used by grassland birds.

*Forest Fragmentation:* The loss of forested land would also locally increase forest fragmentation. Fragmentation restricts the ability of wildlife and plant seed dispersal throughout the entire forest, an effect that potentially results in loss of those species that require larger blocks of habitat. Effects of fragmentation caused by the Project are expected to be minor, as the width of buried utility collection systems and access roads through forested areas are relatively narrow and should not discourage dispersal movements of forest wildlife species among forest tracts. This disturbance may also have minor effects on predator-prey relationships as predators may benefit from the additional exposure their prey may encounter in areas with reduced vegetative cover. The amount of fragmentation that is expected to occur within the footprint of the Project is consistent with surrounding land uses, which include logging activities and land clearing for agricultural purposes.

*Displacement/Disturbance:* The effects of displacement and disturbance are expected to be high during the construction phase of the Project due to human activity and the operation of machinery and low during the operational phase. Wildlife are expected to acclimate to the presence and operation of wind turbines. Some disturbance to wildlife is expected due to noise in the vicinity of the turbines and during routine maintenance of the facilities. Grassland species sensitive to the visual presence of large objects in their habitats may suffer greater disturbances

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than forest wildlife species. Routine vegetation maintenance along buried utility collection corridors would also result in temporary or permanent displacement of locally abundant wildlife species.

#### *Threatened and Endangered Species*

Federally listed threatened or endangered species were not identified during informal consultation with the USFWS. With the exception of rare, transient individuals, operation of this Project is not expected to cause significant impacts to federally listed species. In addition, no habitat in the Project Area is designated or proposed “critical habitat” in accordance with the provisions of the Endangered Species Act (Stilwell 2007, Appendix A).

According to the NHP, five listed bird species, including short-eared owl, bald eagle, Henslow’s sparrow, sedge wren, and great blue heron occur within 10 miles of the Project. The BBA indicates that five species of listed bird species (northern harrier, grasshopper sparrow, vesper sparrow, red-shouldered hawk, and Cooper’s hawk) have been observed in the BBA blocks in or adjacent to the Project Area. Of these ten species, only the bald eagle, northern harrier, red-shouldered hawk, and Cooper’s hawk were observed during breeding bird and migrant bird surveys (Appendix E). Additionally, WEST observed the sharp-shinned hawk during migrant raptor and breeding bird surveys (migration = 9 birds; breeding = 1 bird) conducted in the Project Area.

To minimize impacts to sensitive great blue heron habitats, the Project was modified to allow a protected buffer of 0.25-mile between known heron rookeries and Project facilities. Migrant and breeding bird surveys did not observe Henslow’s sparrow, sedge wren, or the short-eared owl. Additionally, none of these species were identified from the BBA survey blocks that border the Project Area. Because of the absence of these four species from WESTs surveys and the BBA, impacts to those species are anticipated to be negligible.

Although the vesper sparrow and grasshopper sparrow were not observed during WESTs avian surveys, each species occurred in one of the four BBA survey blocks; notes of these observations indicated possible (vesper sparrow) or probable (grasshopper sparrow) breeding activity. Each of these grassland bird species is affected by changes in farming practices and benefit by both reduced mowing and targeted mowing that occurs after nestlings have fledged, typically in mid-August. To reduce impacts to grassland birds, the Applicant would implement vegetation practices that both reduce the potential to harm ground-dwelling species and promotes optimal growth of grassland vegetation are described in Section 2.3.3.1. Rare transient individuals of vesper sparrow and grasshopper sparrow may occur in the Project Site during operation; however, the vegetation clearing activities that would be implemented by the Applicant would minimize or avoid significant adverse effects to those species.

Significant adverse effects to the bald eagle, northern harrier, red-shouldered hawk and Cooper’s hawk are not expected to result from operation of the Project, either because of its

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observed occurrence in the Project Area or its typical behaviors or habitats. Only rare, transient bald eagle individuals are expected to occur in the Project during operation. No known bald eagle casualties have been documented at wind projects in the United States that have been studied (Erickson et al. 2001, 2002). This species is unlikely to be adversely affected during operation of the Project.

Although northern harriers are commonly found near wind farms, they are not a common turbine fatality (Erikson et al. 2001). This species is relatively common in open agricultural areas, but on breeding territories it generally flies close to the ground (less than five meters) and rarely soars (Macwhirter et al. 1996). Because of its typical behavior, this species is unlikely to be significantly affected by turbine collisions.

All four observations of the red-shouldered hawk were from migrating raptor surveys (spring =2; fall = 2). Although breeding bird surveys did not observe this species, the Project Area falls within its normal breeding range. The breeding habitat of the red-shouldered hawk often is bottomland hardwood forests, riparian areas, or flooded deciduous swamps, areas which are lacking in the Project Area, but sometimes also breed in upland mixed deciduous-coniferous forest (Crocull 1994). Based on habitat preferences and observations from WEST's surveys, few red-shouldered hawks are expected to use the Project Site during operation; this species is not expected to be significantly adversely affected by Project Operation.

A single Cooper's hawk was observed during spring migration surveys, and one occurrence of this species was identified from BBA survey blocks which indicated possible breeding activity. Although the presence of this species from the Project Site cannot be discounted, it is unlikely to occur in the Project Area with frequency. Rosenfield and Bielefeldt (2006) note that the Cooper's hawk is tolerant of human disturbance and habitat fragmentation; nest in the New Jersey/New York area were generally on flatter terrain, and closer to roads, forest openings and human habitation. They also note that forest edge habitat is generally included within the home range of breeder Cooper's hawks and may serve as primary hunting sites. This species may benefit by the creation of additional breeding and foraging habitats associated with both the construction and operation of this Project.

The sharp-shinned hawk was observed in spring and fall migration surveys (4 and 5 individuals, respectively) as well as in breeding bird surveys (1 individual); it was not observed in the BBA (2000) for the survey blocks that encompass the Project. This species is likely to be present in the project area during spring through fall and could be affected by habitat loss and potential turbine collision. Relative to the larger landscape, the amount of forest cover that would be permanently converted to Project facilities is less than one percent of the total forest cover. Displaced individuals would be expected to relocate to adjacent forested lands. Because the loss of forested habitats is negligible relative to the larger landscape and suitable habitat is found adjunct to the Project Site, significant adverse impacts to the sharp-shinned are not expected to result from operation of the Project.



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In general, results from avian surveys indicate that the Project Area does not overlap with an area of concentrated spring and fall migrant birds. Impacts to these transient migrants would be minor and localized and are unlikely to cause significant adverse effects to regional populations. Rarely, a transient individual may occur within the locations of the turbines during dispersal. While minor and localized effects to species could potentially occur, none of the ten species identified by the NHP and BBA are expected to be adversely affected by operation of the Project.

The New York Amphibian and Reptile Atlas indicates that two species of amphibian, the blue-spotted salamander and the Jefferson salamander, and two species of reptiles, the eastern box turtle, and the wood turtle, may occur in the vicinity of the Project Area. These slow-moving species could be affected by injury or death, and by habitat loss from vegetation clearing activities or permanent habitat loss. The blue-spotted salamander, Jefferson salamander, eastern box turtle, and wood turtle records from Chautauqua County are not from areas within or adjacent to the Project Area, nor were these species identified in consultation with NHP (2006). Potential vernal pools will be identified during the routine, on-site wetland delineations and will be documented in the delineation report, as described in Section 2.3.1.4. If potential vernal pools are observed during these surveys, the Applicant will modify the Project to avoid impacts to that resource. These species are not likely to be affected by the Project.

Bird and bat mortality studies will be conducted to assess impacts to wildlife during Project operation. If federal- or state-listed species are identified in these studies, the Applicant will work with the appropriate wildlife agency to determine the extent to which these impacts could potentially occur. If appropriate, mitigation strategies would be developed and implemented to reduce potentially significant adverse impacts to those species.

Operation of the Project is not likely to impose any impacts to rare plants, as no rare plant species were reported to occur in the vicinity of the Project during consultation with NHP and USFWS. As discussed in Section 2.3.1.4, a field plant survey will be conducted to document the presence of rare plants prior to the FEIS. In the event that state-listed plants are identified in the Project Site, the Applicant will consult with NYSDEC to develop an appropriate management plan for those taxa.

### **2.3.3 Mitigation**

#### **2.3.3.1 Vegetation**

The Project has been designed to avoid sensitive ecological communities, such as wetlands and mature forest, and to minimize permanent impacts to vegetation to the greatest extent practicable. From a regional perspective, the overall loss of vegetative cover resulting from the project development and operation is anticipated to be localized and minor. The Project will result in the net loss of less than one percent of the total area of vegetated land in the Project

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Area. Project access roads and electric collection systems have been designed to maximize the use of previously disturbed areas.

The Applicant will develop and implement comprehensive sediment and erosion control plans and a Stormwater Pollution Prevention Plan (SWPPP) to reduce the potential indirect effects of sedimentation and erosion resulting from the loss of vegetation and ground disturbance. As discussed in Section 2.2.3, an environmental inspector will be responsible for ensuring that measures outlined in the erosion sediment and erosion control plans as well as the SWPPP are implemented during construction. All temporarily disturbed vegetated areas will be reseeded with regionally appropriate seed mixes<sup>1</sup> and stabilized following construction. Restoration will result in the successful re-establishment of appropriate vegetation. The Applicant will also develop an invasive species/noxious weed control plan to reduce the potential introduction and spread of invasive species throughout the Project. The environmental inspector is responsible for clearly establishing the boundaries of sensitive vegetative communities, educating construction personnel on established work restrictions and prohibitions pertaining to sensitive areas, employing, enforcing compliance with restrictions, and ensuring that Best Management Practices (BMPs) throughout all phases of construction are implemented by the contractor.

During operation of the Project, periodic vegetation maintenance would be required along collection line corridors. Vegetation maintenance activities would be timed to avoid sensitive breeding periods of birds and small mammals that may use habitats affected by mowing. According to the Cornell Cooperative Extension (2006), conducting mowing and vegetation clearing after August 15 would prevent disturbance or injury to birds and most ground-dwelling species, as well as promote optimal growth of grassland vegetation. The application of herbicides or pesticides would be prohibited.

#### *2.3.3.2 Fish and Wildlife*

As detailed in Section 2.3.2, construction related impacts to fish and wildlife would potentially include displacement due to human activities and noise, disturbance associated with the operation of construction machinery, injury and mortality due to vehicle movement and construction operations, silt sediment impacts to aquatic species, and collisions with wind turbines. The Project considered each of these potential impacts and has been designed to avoid and minimize these impacts to the greatest extent practicable.

Habitat loss and fragmentation has been generally avoided and mitigated directly through siting project components to minimize disturbance, and restoring all temporarily disturbed areas. All construction employees will receive environmental training that emphasizes mitigation measures to be implemented during all phases of construction. In addition, as described in Section 2.2.3, at least one professional environmental monitor will be contracted during the

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<sup>1</sup> Regionally appropriate seed mixes to be used by the Project will be developed through consultation with the local NRCS and affected landowners.

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construction period to provide guidance and ensure the enforcement of environmental protection criteria outlined in the permits.

Results of the site surveys indicated that federal-listed species are unlikely to occur in the Project Area, and state-listed species, as well as commonly occurring wildlife species, are unlikely to be adversely affected by development and operation of this Project. Surveys also indicate that adjusting the locations of turbines or project facilities would cause little or no change to the impact assessment. The results of the raptor migration surveys showed raptor migration through the area was low and potential impacts are expected to be low. Use of tubular towers to deter perching, underground electrical collection system, and non-guyed met towers would reduce collision risks for avian species. Results of the bat migration surveys also showed impacts from wind turbines to bats are variable by season and species. Minimizing impacts to forested areas may minimize potential impacts to tree-dwelling migratory species, which are most at risk. Any necessary aboveground power lines will be routed, designed, constructed, and operated in accordance with guidance provided by the Avian Power Line Interaction Committee.

Although significant bird and bat mortality is not anticipated, the Project will implement a post-construction bird and bat mortality monitoring program as recommended by the USFWS Interim Guidance on Avoiding and Minimizing Impacts to Wildlife from Wind Farms (2003). The monitoring program would be overseen by a Technical Advisory Committee consisting of members of regulatory agencies, environmental organizations, the wind power industry, and landowners to assure unbiased reporting of avian and bat mortality. If the Technical Advisory Committee concludes that turbine-related mortality of birds or bats is biologically significant, the Applicant will consult with the Technical Advisory Committee to develop an adaptive management plan. This adaptive management plan would examine post-construction survey protocols to determine if changes were necessary, as well as identify potential mitigative strategies that could be implemented to minimize or avoid adverse effects to wildlife.

Potential impacts to fish and aquatic organisms will be mitigated through strict adherence to and approved sediment and erosion control plan and SWPPP. The plans will be designed to comply with New York State Water Quality Standards and the NYSDEC State Pollutant Discharge Elimination System (SPDES) regulation. Additionally, the Project will develop a Spill Prevention Control and Countermeasure (SPCC) Plan, designed with approved standards outlining measures to prevent accidental spills of hazardous contaminants from entering aquatic systems. Construction of necessary stream crossings will be performed under dry conditions to prevent impacts to fish and aquatic species. For perennial streams, this may involve installing temporary dikes and pumping water around the work site. Impacts associated with sedimentation are expected to be localized and of short duration, because stream crossings typically require less than 48 hours to complete. Where necessarily applicable, the Project may use directional drilling to cross beneath streams. Seasonal work restrictions, such as ceasing work in and around trout streams during spawning seasons, will be enforced in accordance with

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state and federal permits. The use of culverts to minimize impacts to fish and fish habitat may be used where applicable. Proper installation techniques and selection of appropriate culverts will be determined through consultation with NYSDEC.