Exhibit O. Breeding Bird Survey

August 2011

BREEDING BIRD SURVEY
FOR THE
REPUBLIC WIND, LLC
SENECA AND SANDUSKY COUNTIES, OHIO

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EXECUTIVE SUMMARY

The Republic Wind, LLC Project Area spans approximately 39,627 acres (ac; 16,036 hectares [ha]) northeast of the town of Republic, Ohio. The Project Area includes land for turbine development and a transmission line. Breeding Bird Survey (BBS) observations on the Project Area yielded a total of 1,359 individual birds of 64 species. Most of the species were birds of open country, as 51.6% of the documented species were classified as open woodland (31.3%) and grassland birds (20.3%) using the Cornell Lab of Ornithology (2011) classification. Many of the open woodland bird species are ubiquitous and highly adaptable species such as the American robin, American crow, common grackle, northern cardinal, and mourning dove. Four out of five of the most numerous grassland species observed were also common birds adaptable to open settings, including intensively managed agricultural lands, i.e., horned lark, savannah sparrow, brown-headed cowbird, and killdeer.

Six species of the 64 documented species (9.3%) comprised just over 50% of all individual birds observed. Species with the greatest number of observed individuals were, in order of abundance, the common grackle, American crow, European starling, red-winged blackbird, house sparrow, and mourning dove.

A single bald eagle was incidentally observed within the Project Area during the BBS of the Project Area. No bald eagle nests are located in the Project Area. Three bald eagle nests are located within 2.25 miles of the Project Area, although only one nest was successful in producing eaglets in 2011. This nest was near the proposed powerline, but over 5 miles from the nearest proposed turbine location. In addition, the US Fish and Wildlife Service (USFWS) records indicate 20 bald eagle nests have been documented within 10 miles of the Project boundary. Additional studies on potential eagle use of the Project Area are ongoing.

Elevated topography, river corridors, forest cover, scrublands, water, wetlands, and large grasslands are the types of features associated with diverse breeding bird populations. These characteristics are generally lacking in the Project Area. The results of the Republic BBS are consistent with habitats that lack diversity or important resources attractive to breeding birds.

The BBS of the Project Area suggests that the potential for breeding bird displacement or collision caused by the proposed Republic turbines should be similar to other Midwestern wind farms where the landscape is dominated by row crop agriculture. The BBS data shows few Ohio sensitive bird species use the Project Area. No federally listed bird species were observed breeding in or near the proposed Project Area and none have been documented according to data query results from USFWS and the Ohio Department of Natural Resources.

1.0 INTRODUCTION

1.1 PROPOSED PROJECT

Republic Wind, LLC (Republic) proposes construction of the Republic Wind Farm (Project or Project Area) wind energy generation facility in Seneca and Sandusky counties, Ohio (Figure 1). The purpose of the Republic Breeding Bird Survey (BBS) was to document the bird species observed in the Project Area during the 2011 summer and late-summer breeding season to support assessment of avian impacts for an Ohio Power Siting Board Siting Certificate Application.

The Project spans approximately 39,627 acres (ac; 16,036 hectares [ha]) northeast of the town of Republic, Ohio. The Project Area represents the maximum area considered for placement of turbines and facility infrastructure. The layout and number of turbines has not yet been selected; however, the actual area disturbed by the turbines and access roads that will comprise the facility will be a very small percentage of the Project Area (less than 2 percent [%]).

The turbines will be lit with red strobe-like or incandescent flashing lights. Lighting will be limited to the minimum number required by the Federal Aviation Administration (FAA) for aircraft safety. Each turbine tower will be set upon a concrete pad. Crops and other vegetation will be cleared during construction in an area not expected to exceed 3 ac for each pad. Infrastructure (access roads, cabling, substations) will also require land disturbance. Tree removal will be minimized.

1.2 TOPOGRAPHIC/PHYSIOGRAPHIC AND HABITAT DESCRIPTION

Habitat in the Project Area can be broadly characterized through a review of the ecoregion type. An ecoregion is an area with similar or related physiography, where communities or associations of plants and animals, both common and rare, have adapted to that particular environment. Climate, soils, drainage, and anthropogenic factors may have an effect on biological communities and ecoregions.

The Project lies in Ecoregion Section 222I – Erie and Ontario Lake Plain. Ecoregion Section 222I comprises part of the Central Lowlands geomorphic province and is characterized by level to gently rolling till-plain and shallow entrenchment of drainages. Section 222I is a combination of Wisconsinan glacial till and lacustrine deposits. Dominant soils include Udalfs and Aqualfs (US Forest Service [USFS] 1994).

The potential natural vegetation of Section 222I includes northern hardwood forest, beech-maple forest, and elm-ash forest. Beech-maple mesic forest (north), maple-basswood forest, hemlock-northern forest, oak openings, and pitch pine-heath barrens make up the other regionally defining important vegetation. Approximately 50% of the land in Section 222I is agricultural with farm woodlot forest lands comprising 30% of the area (USFS 1994).

Precipitation averages 700 to 1,150 millimeters (mm; 27 to 45 inches) per year. Mean annual temperature is approximately 7 to 11°C (45 to 52°F). The growing season ranges from 140 to 160 days (USFS 1994).

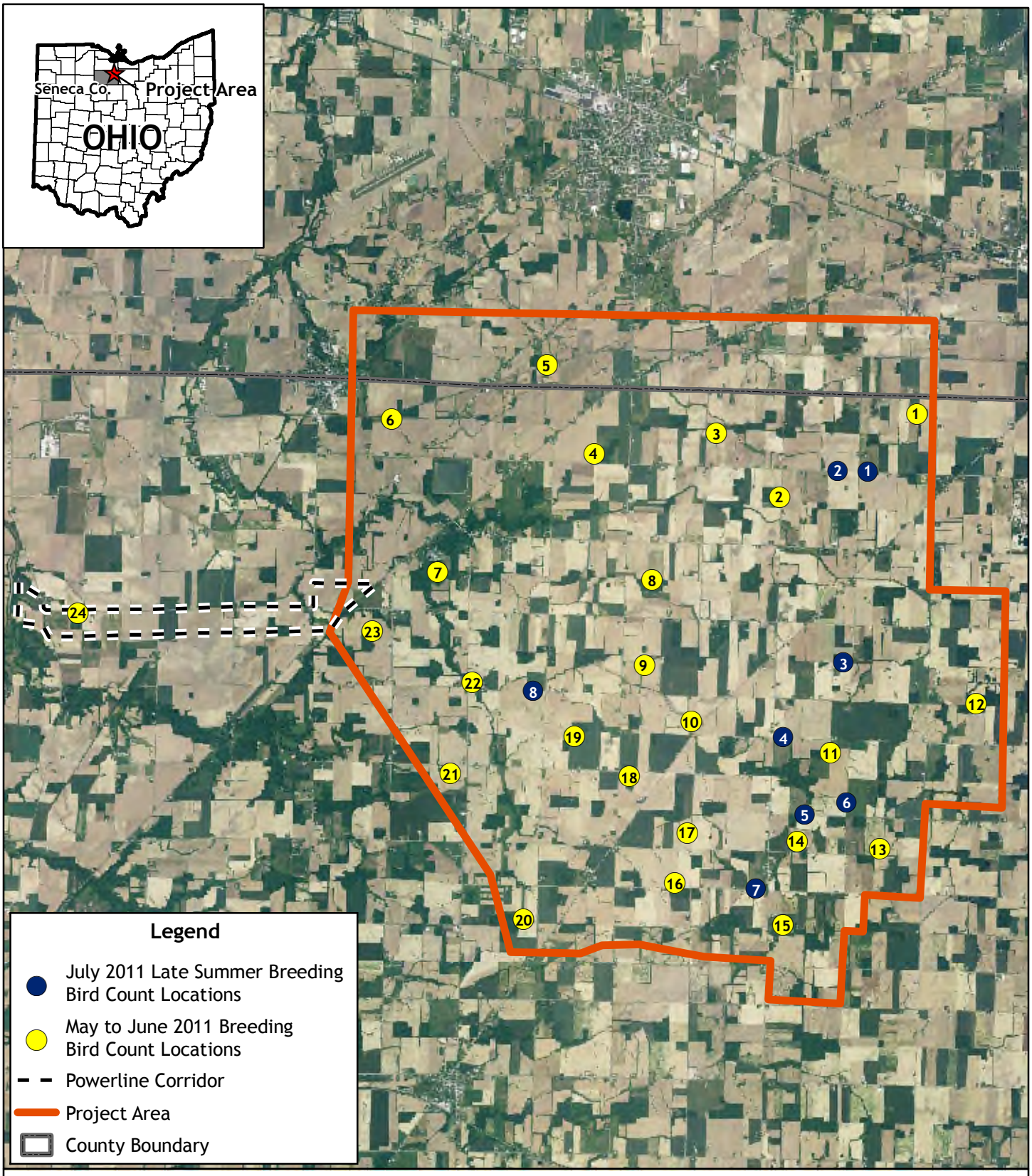

Figure 1. Breeding Bird Point Count Locations for the Republic Wind, LLC Project Area, Seneca and Sandusky Counties, Ohio.

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August 2011

Project No. 1953.001.005

Basemap:
NAIP Imagery - Seneca and Sandusky Counties, OH (2010)

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The Project Area is heavily influenced by agricultural practices that have drained natural wetlands and cleared forests. Over 84.7% of the Republic Project Area is devoted to intensive row crop agriculture production with occasional woodlots that comprise 7.6% of the Project Area (Table 1; Figure 2).

Table 1. National land use/land cover acreages in the Republic Wind, LLC Project Area, Seneca and Sandusky Counties Ohio.

Land Use	Acres	Percent
Cultivated Crops	33,571.5	84.7%
Deciduous Forest	3,012.7	7.6%
Developed, Open Space	2,101.0	5.3%
Hay/Pasture	425.0	1.1%
Herbaceous	209.96	0.5%
Developed, Low Intensity	136.6	0.3%
Open Water	116.1	0.3%
Woody Wetlands	32.0	0.1%
Emergent Herbaceous Wetlands	10.5	<0.1%
Developed, Medium Intensity	8.3	<0.1%
Evergreen Forest	3.2	<0.1%
Total	**39,626.6**	**100.0%**

2.0 METHODS

Literature and database searches were completed, including a review of relevant printed, published, unpublished, and electronic material such as US Geological Survey (USGS) Breeding Bird Survey, Ohio Breeding Bird Atlas, Ohio Natural Heritage Inventory, Ohio Department of Natural Resources (ODNR) information, US Fish and Wildlife Service (USFWS) information, and other sources of information concerning breeding birds that may breed in the Project Area (Figure 3; Table 2).

Coordination was sought from the ODNR and USFWS. Field investigation methods were based upon agency input, study intensity maps included within the ODNR "On-Shore Bird and Bat Pre- and Post-Construction Monitoring Protocol for Commercial Wind Energy Facilities in Ohio," and queries of agency databases (Appendix A).

A total of 24 BBS points were established within the Project Area for the summer BBS and another 8 points were established for the late-summer BBS in accordance with the recommendations of the ODNR (Figure 1). Photographs (Appendix B) and global positioning system (GPS) coordinates were collected at each survey point. The BBS of the Project Area was conducted in May, June, and July 2011 using the ODNR Protocol. Just prior to the July survey, the grasslands had been mowed.

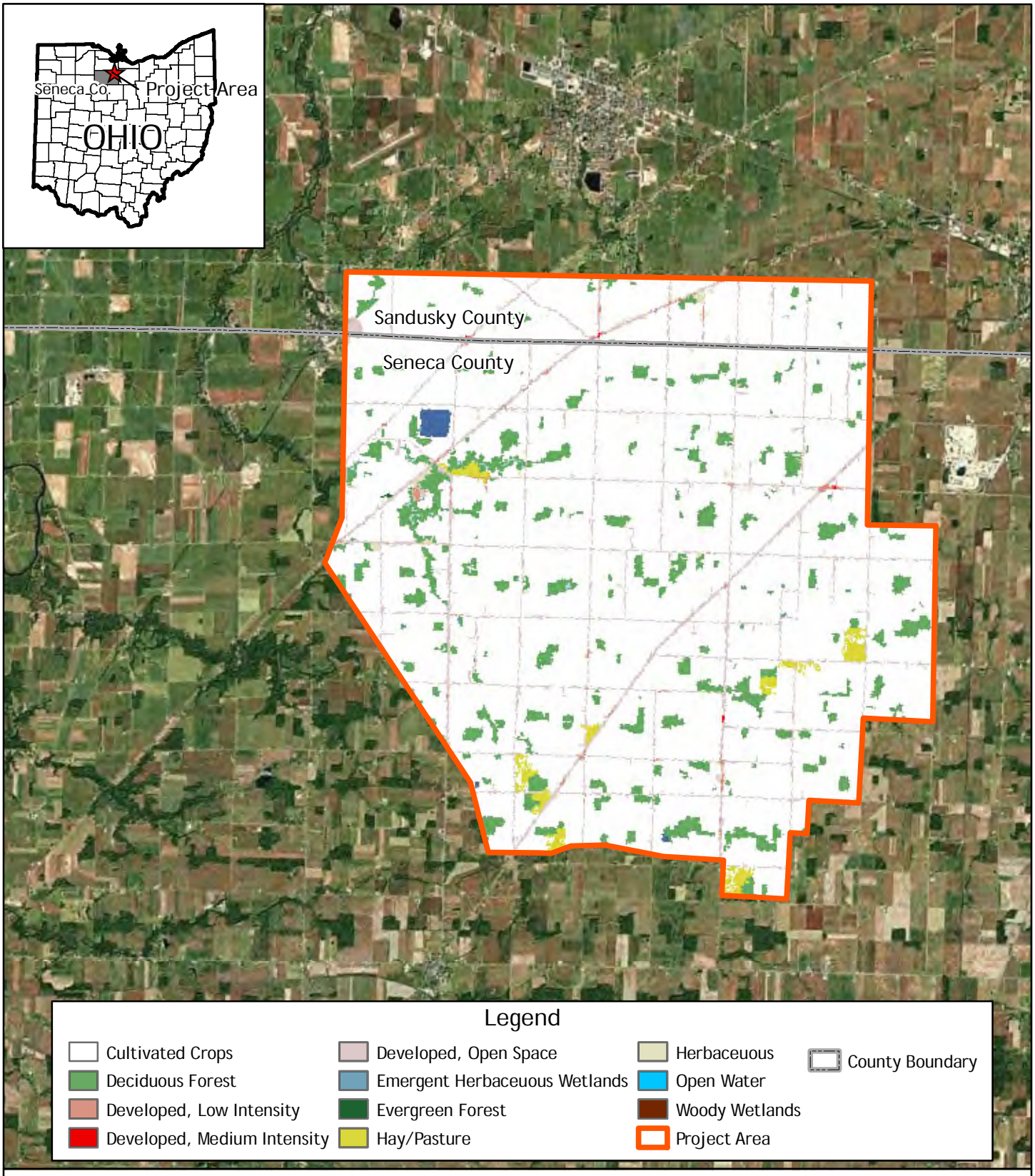

Figure 2. Land Uses Within the Republic Wind, LLC Project Area, Seneca and Sandusky Counties, Ohio.

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Project No. 1953.001.005

Basemap:
NAIP Imagery - Seneca and Sandusky Counties, OH (2010)

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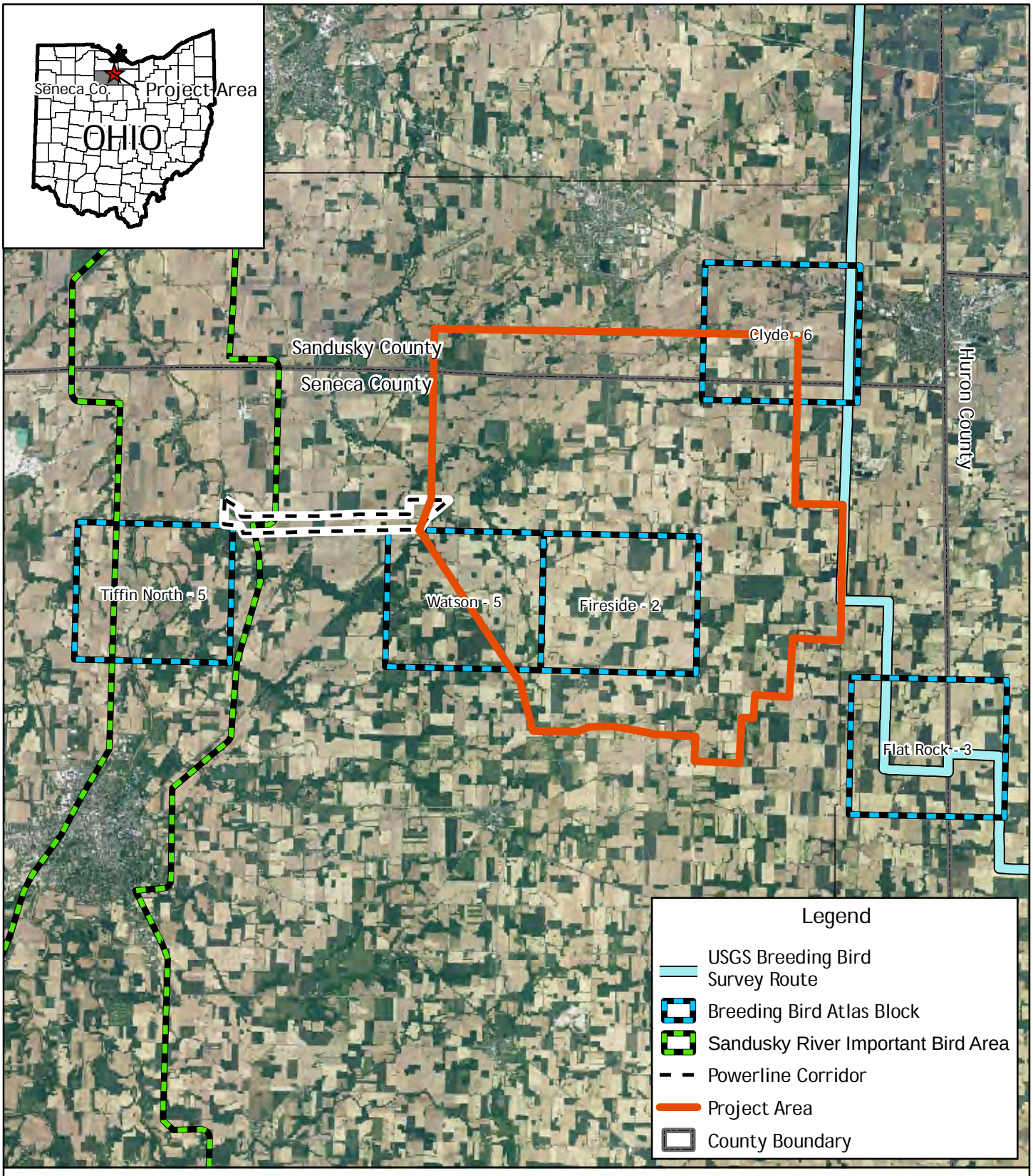

Figure 3. Breeding Bird Survey Routes and Breeding Bird Atlas Locations Near the Republic Wind, LLC Project Area, Seneca and Sandusky Counties, Ohio.

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August 2011

Project No. 1953.001.005

Basemap:NAIP Imagery - Seneca, Sandusky, and Huron Counties, OH (2010); USGS BBA Explorer (http://bird.atlasing.org/Atlas/OH/) (http://oh.audubon.org/bsc/sites2.html)

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Table 2. Breeding bird data sources accessed to review the Republic Wind, LLC Project Area.

Subject	Database link	Source	Area Evaluated
Breeding Bird Survey	http://www.mbr-pwrc.usgs.gov/cgi-bin/rtena07a.pl?66	USGS	Nearest surveys to Project Area
Ohio Breeding Bird Atlas	http://bird.atlasing.org/Atlas/OH/Main	Ohio State University/ODNR	Nearest atlas blocks to Project Area
Ohio Natural Heritage Inventory	N/A: Letter query	ODNR-Div. Natural Areas and Preserves	Project Area plus 5 mi buffer
State and Federal Threatened and Endangered Species	N/A: Letter query	USFWS Columbus Field Office	Project Area plus 5 mi buffer
Wind and Wildlife Protocol	http://www.dnr.state.oh.us/LinkClick.aspx?fileticket=S24B8hy2Iu4%3D&tabid=21467	ODNR- Div. Wildlife	Project Area plus 5 mi buffer
Bald Eagle Nest Locations	USFWS letter Personal comm. with A. Tibbels	ODNR- Div. Wildlife	Project Area plus 5 mi buffer

BBS point-count surveys were conducted in May and June at 24 points randomly stratified across the Project Area relative to the proportion of individual habitat types throughout the Project Area. Three 10-minute point-count surveys were conducted at each point: 31 May, 2 June, 13 June, 14 June, 27 June, and 28 June 2011.

Certain bird species do not frequently sing until later in the breeding season; given this reduced detectability, an additional point-count survey was conducted in July for sites with suitable habitat for the Henslow's sparrow (*Ammodramus henslowii*; Ohio species of concern), dickcissel, and sedge wren (*Cistothorus platensis*; Ohio species of concern). This additional single-day, late-summer BBS point-count was conducted on sites near grassland (for all three species) or wet areas for the sedge wren only on 7 July 2011.

All surveys began at approximately dawn and did not extend past 10:00 A.M. Eastern Daylight Time. Surveys were conducted by an experienced observer who was able to distinguish Ohio breeding bird species by sight and sound. All birds detected during surveys were identified to species, estimated distance from the point, and direction (bearing) were recorded. Birds flying overhead that did not land or originate within 200-meters of the point were listed as "fly over." Observations were recorded using appropriate alpha species codes. Incidental observations of any listed species were noted regardless of whether detected within the given survey time or while at a point-count location.

3.0 RESULTS

3.1 LITERATURE REVIEW

3.1.1 USGS Breeding Bird Survey

Each summer, a large-scale roadside survey of North American birds is conducted for the USGS. The survey encompasses most of the continental United States and southern Canada, and includes parts of Alaska and northern Mexico. The BBS are conducted by experienced birders each May or June when breeding birds are at the peak of song production. Each route is 39.4 kilometers (km; 24.5 miles [mi]) long and includes 50 stops located at 0.8 km (0.5 mi) intervals. Data from the BBS provide researchers with valuable information regarding both long- and short-term population trends of many bird species and can help characterize breeding at a particular site.

The closest route to the Project Area is the Vickory Route (66113), which runs approximately 51,122 meters long and runs north-south through Sandusky, Seneca, and Huron counties, Ohio (Figure 3). The Vickory BBS route merges with the eastern-most property boundary for the Project Area. Four Ohio state-listed species have been detected during the Vickory BBS: the state threatened black-crowned night heron (*Nycticorax nycticorax*); the state species of concern bobolink (*Dolichonyx oryzivorus*); the state species of concern great egret (*Ardea alba*); and the state endangered northern harrier (*Circus cyaneus*). No federally listed species have been detected along this route.

Of the listed species observed on the Vickory Route, only the bobolink was detected during this BBS of the Project Area (Table 3). However, a pair of northern harriers and a great egret were incidentally observed on the Project Area (Table 4).

3.1.2 Breeding Bird Atlas

Breeding Bird Atlas (BBA) projects are grid-based surveys used to document the status and distribution of all bird species that breed within a given country, state, or county. Most atlas projects base their survey grid on 7.5-minute USGS topographic maps. As is typical of most, the Ohio BBA survey "blocks" were defined by dividing topographic maps into six areas of equal size (approximately 16 km^2 [10 mi^2] each). Volunteers place each species observed into one of three breeding categories: possible, probable, or confirmed. Atlas projects typically require 5 to 6 years, but can vary in length.

Five BBA blocks are near the Project Area: the Watson 5 (38C1CE) Block, the Flat Rock 3 (38C3SW) Block, the Fireside 2 (38C2CW) Block, the Clyde 6 (38B2SE) Block, and the Tiffin North 5 (37C7CE) Block.

The Watson 5 (38C1CE) Block is divided by the southwest boundary of the Project Area. Six Ohio state-listed species were documented in the Watson 5 Block. The state-listed loggerhead shrike (*Lanius ludovicianus*) and the state endangered least flycatcher (*Empidonax minimus*) were both given a breeding bird status of "probable" during the 1982 – 1987 effort. The state species of concern, cerulean warbler (*Dendroica cerulea*) and the northern bobwhite (*Colinus virginianus*), were assigned a breeding bird status of "confirmed" and "possible," respectively. None of these four species were observed during the 2006 – 2011 effort. Although the state threatened bald eagle (*Haliaeetus leucocephalus*)

Table 3. Bird species and individuals observed during the Breeding Bird Survey of the Republic Wind, LLC Project Area, May, June, and July 2011.

Species	Number Recorded	Percent of Total	Cornell Bird Habitat Use Type[1]	Conservation Status[2]
Common Grackle	147	10.8%	open woodland	LC
American Crow	131	9.6%	open woodland	LC
European Starling	125	9.2%	town	LC
Red-winged Blackbird	123	9.1%	marsh	LC
House Sparrow	94	6.9%	town	LC
Mourning Dove	72	5.3%	open woodland	LC
American Robin	71	5.2%	open woodland	LC
Horned Lark	58	4.3%	grassland	LC
Song Sparrow	55	4.0%	open woodland	LC
Canada Goose	37	2.7%	lake/pond	LC
American Goldfinch	36	2.6%	open woodland	LC
Savannah Sparrow	29	2.1%	grassland	LC
Eastern Bluebird	24	1.8%	grassland	LC
Indigo Bunting	23	1.7%	open woodland	LC
Killdeer	21	1.5%	grassland	LC
Chipping Sparrow	21	1.5%	open woodland	LC
Field Sparrow	18	1.3%	scrub	LC
Blue Jay	17	1.3%	forest	LC
Northern Cardinal	15	1.1%	open woodland	LC
Barn Swallow	15	1.1%	town	LC
House Finch	15	1.1%	town	LC
Brown-headed Cowbird	14	1.0%	grassland	LC
Tufted Titmouse	13	1.0%	forest	LC
Wood Thrush	12	0.9%	forest	LC
Gray Catbird	12	0.9%	open woodland	LC
Common Yellowthroat	12	0.9%	scrub	LC
Red-eyed Vireo	11	0.8%	forest	LC
House Wren	10	0.7%	open woodland	LC
Red-bellied Woodpecker	9	0.7%	forest	LC
Eastern Meadowlark	9	0.7%	grassland	LC
Grasshopper Sparrow	7	0.5%	forest	LC
Rose-breasted Grosbeak	7	0.5%	forest	LC
Great Blue Heron	7	0.5%	marsh	LC
Red-headed Woodpecker	7	0.5%	open woodland	LC
Dickcissel	6	0.4%	grassland	LC
Northern Flicker	6	0.4%	open woodland	LC
Black-capped Chickadee	5	0.4%	forest	LC
Mallard	5	0.4%	lake/pond	LC

Table 3. Bird species and individuals observed during the Breeding Bird Survey of the Republic Wind, LLC Project Area, May, June, and July 2011.

Species	Number Recorded	Percent of Total	Cornell Bird Habitat Use Type[1]	Conservation Status[2]
Baltimore Oriole	5	0.4%	open woodland	LC
Vesper Sparrow	4	0.3%	grassland	LC
Great Crested Flycatcher	4	0.3%	open woodland	LC
Turkey Vulture	4	0.3%	open woodland	LC
Eastern Towhee	4	0.3%	scrub	LC
Eastern Wood Peewee	3	0.2%	forest	LC
Scarlet Tanager	3	0.2%	forest	LC
White-breasted Nuthatch	3	0.2%	forest	LC
Bobolink[3]	3	0.2%	grassland	LC
Red-tailed Hawk	3	0.2%	grassland	LC
Greater Yellowlegs	3	0.2%	marsh	LC
Chimney Swift	3	0.2%	town	LC
Acadian Flycatcher	2	0.1%	forest	LC
Cooper's Hawk	2	0.1%	forest	LC
Willow Flycatcher	2	0.1%	marsh	LC
Brown Thrasher	2	0.1%	scrub	NT
Blue-headed Vireo	1	0.1%	forest	LC
Downy Woodpecker	1	0.1%	forest	LC
Eastern Kingbird	1	0.1%	grassland	LC
Henslow's Sparrow[3]	1	0.1%	grassland	LC
Wood Duck	1	0.1%	lake/pond	LC
Least Sandpiper	1	0.1%	marsh	LC
Carolina Wren	1	0.1%	open woodland	LC
Warbling Vireo	1	0.1%	open woodland	LC
Wild Turkey	1	0.1%	open woodland	LC
Yellow-billed Cuckoo	1	0.1%	open woodland	LC
TOTAL	**1,359**			

1 - Habitats use type from Cornell Lab of Ornithology website.
2 – Conservation Status by International Union for Conservation of Nature:
LC = Least concern
NT = Near threatened
3 - Ohio Species of Concern

Table 4. Incidental observations of Ohio-listed bird species observed during summer breeding season at the Republic Wind, LLC Project Area, Seneca and Sandusky counties, Ohio, May, June, and July 2011.

Species	Observations
Bald Eagle[1]	Observed feeding on carrion near Breeding Bird Survey (BBS) Point 11 on 15 May.
Northern Harrier[2]	Pair was observed 5 June near Passerine Migration Point I.
Upland Sandpiper[1]	One bird observed on 18 May near a flood pond along Township Road (TR) 178 just East of State Route 18.
Least Flycatcher[1]	One observed and heard at Passerine Migration Point F on 12 May.
Red-Breasted Nuthatch[3]	Observed at Passerine Migration Survey Point E on 16 May and Point I on 2 May.
Blue Grosbeak[3]	One male bird was seen and heard on 12 May at the intersection of TR 80 and TR 148.
Western Meadowlark[3]	One bird was seen and heard on 12 May near BBS Point 6.
Great Egret[4]	Observed using farm and recreational ponds as late as 15 June.

1 - Ohio Threatened Species
2 - Ohio Endangered Species
3 - Ohio Species of Special Interest
4 - Ohio Species of Concern

was not been found during the 1982 – 1987 effort, it was assigned a breeding bird status of "possible" during the 2006 – 2011 effort. The state species of concern bobolink was assigned a breeding bird status of "probable" during the 2006 – 2011 effort despite not being found during the 1982 – 1987 effort.

Of the listed species observed on the Watson 5 Block, only the bobolink was detected during the BBS of the Project Area. However, the least flycatcher and bald eagle were incidentally observed in or near the Project Area during the Republic BBS. Bald eagles are discussed in more detail in Section 3.3.3 below.

The Flat Rock 3 (38C3SW) Block is approximately 1 mi southeast of the Project Area. Three Ohio state-listed species were documented during the breeding season in the Flat Rock 3 Block. Both the state threatened least flycatcher and the state species of concern northern bobwhite were assigned a breeding bird status of "possible" during the 1982 – 1987 effort; neither species were found during the 2006 – 2011 effort. The state species of concern bobolink was assigned a breeding bird status of "confirmed" during the 1982 – 1987 effort and "probable" during the 2006 – 2011 effort.

Of the listed species observed on the Flat Rock 3 Block, only the bobolink was detected during the BBS of the Project Area (Table 3). However, the least flycatcher and bald eagle were incidentally observed in or near the Project Area during the Republic BBS (Table 4).

The Fireside 2 (38C2CW) Block is completely located within the southern portion of the Project Area. One state-listed species has been documented during the breeding season in the Fireside 2 Block. It is the state species of concern Henslow's sparrow was assigned a breeding bird status of "probable" during the 2006 – 2011 effort. The Henslow's sparrow was also documented during the Republic BBS (Table 3). The Fireside 2 Block has no data entered for the 1982 – 1987 breeding bird survey.

The Clyde 6 (38B2SE) Block is located in the northeast corner of the Project Area. Two state-listed species have been documented during the breeding season in the Clyde 6 Block. The state species of interest northern pintail (*Anas acuta*) was assigned a breeding bird status of "possible" during the 2006 – 2011 effort. The state species of interest ruddy duck (*Oxyura jamaicensis*) was assigned a status of "probable" during the 2006 – 2011 effort. The Clyde 6 Block has no data entered for the 1982 – 1987 breeding bird survey. No listed species observed during the BBA surveys of Fireside 2 were observed during the BBS of the Project Area (Table 3).

The Tiffin North 5 (37C7CE) Block is located approximately 3.9 mi west of the western-most point of the Project Area. One state-listed species has been documented during the breeding season in the Tiffin North 5 Block. The state threatened bald eagle was assigned a breeding bird status of "confirmed" during the 2006 – 2010 effort. The Tiffin North 5 Block has no data entered for the 1982 – 1987 breeding bird survey.

The bald eagle was an incidental observation during the BBS of the Project Area (Table 3). Bald eagles are discussed in more detail in Section 3.3.3 below.

3.1.3 Important Bird Areas, Federal and State Wildlife Refuges, and Private Protected Areas

The portion of the Project Area where turbines are proposed for development is approximately 3 mi east of the Sandusky River Important Bird Area (IBA), which is located on

the Sandusky River. The proposed transmission line extends 1 mi into this IBA and ends at the Sandusky River (Figure 3).

A review of on-line ODNR maps showed, the nearest conservation area (National Wildlife Refuge, State Park, Wildlife Management Area or Nature Preserve) is Erie Sand Barrens Nature Preserve over 12 mi northeast of the Project Area. Other conservation areas are nearly 20 mi north of the Project Area on or near Lake Erie.

3.2 BREEDING BIRD SURVEY RESULTS

3.2.1 Avian Species Composition

Observations in the Project Area yielded a total of 1,359 individual birds of 64 species (Table 3; Appendix C). Most of the species were birds of open country, as 51.6% of the documented species are classified as open woodland (31.3%) and grassland birds (20.3%) using the Cornell Lab of Ornithology (2011) classification. Many of the open woodland bird species are ubiquitous and highly adaptable species such as the American robin, American crow, common grackle, northern cardinal, and mourning dove. Others are birds of woodland edges and open thickets, i.e., song sparrow, American goldfinch, chipping sparrow, indigo bunting, gray catbird, and house wren. Four out of five of the most numerous grassland species observed were also common birds adaptable to open settings, including intensively managed agricultural lands, i.e., horned lark, savannah sparrow, brown-headed cowbird, and killdeer.

Species associated with "town" or urban setting, and birds classified as marsh birds each comprised 7.8% of the observed species. The birds were primarily comprised of introduced exotics (European starling, house sparrow) or birds that will build nests on or in man-made structures (barn swallow, house finch, chimney swift). Ninety percent of the individual marsh birds observed in the Project Area was the common red-winged blackbird. The remaining ten percent was wading birds and the willow flycatcher. A great blue heron breeding colony was identified during a separate survey of the Project Area for raptor nests (Figure 4). The twelve to fifteen nests observed in the colony are located in the northwestern portion of the Project Area; however, only 7 individual great blue herons were observed during the Republic BBS.

Forest birds comprised 21.9% of observed bird species and were characterized by common species adapted to more open habitats such as edges and urban settings, i.e., blue jay, tufted titmouse, red-bellied woodpecker, black-capped chickadee, white-breasted nuthatch, and downy woodpecker.

Common birds associated with scrub vegetation or associated with lake/ponds made up the balance of the observations (Table 3). Eighty-six percent of the individual birds classified as birds of lake/pond habitats were observed in a single flock of 37 Canada geese.

3.2.2 Avian Individual Abundance

Six of the 64 documented species (9.3 %), comprised just over 50% of all individuals observed (Table 3). Species with the greatest number of observed individuals were, in order of abundance, the common grackle, American crow, European starling, red-winged blackbird, house sparrow, and mourning dove (Table 3).

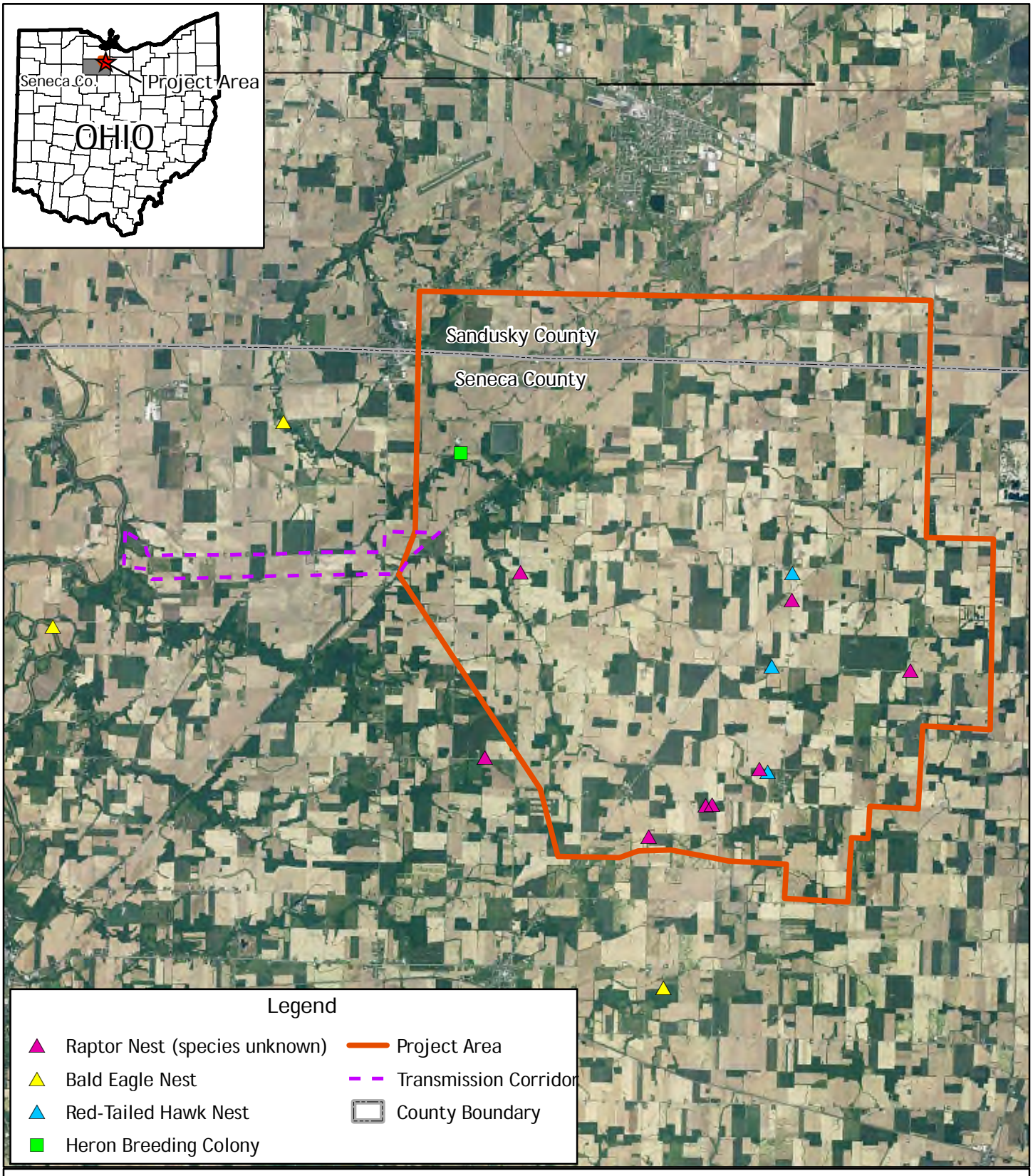

Figure 4. Raptor Nest Locations and Heron Breeding Colony Found in 2011 Within the Republic Wind, LLC, Project Area, Seneca and Sandusky Counties, Ohio.

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August 2011

Project No. 1953.001.005

Basemap:
NAIP Imagery - Seneca and Sandusky Counties, OH (2010)

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3.2.3 Listed Bird Species

Of the 64 species observed during this BBS (Table 3), two are listed by the state of Ohio as species of concern: Henslow's sparrow and bobolink. Both of these birds are associated with grasslands and both were observed in association with grasslands in the southeastern portion of the Project Area at summer BBS point 11 and late-summer BBS point 6. Another seven state-listed birds were incidentally observed in or near the Project Area, but not during a point-count. No federally listed birds were documented.

The Project Area lies within the range of the federally endangered Kirtland's warbler (*Dendroica kirtlandii*). Kirtland's warbler migrates through Ohio in the spring (late April through May) and fall (late August through early October), traveling between its breeding grounds in Michigan, Wisconsin, and Ontario and its wintering grounds in the Bahamas (USFWS 2011). There are no records of Kirtland's warbler within the Project Area, nor were any detected during the BBS of the Project Area.

Incidental observations made outside of the sampling points are provided in Table 4. Observed birds listed in Ohio were the bald eagle, northern harrier, upland sandpiper, least flycatcher, red-breasted nuthatch, blue grosbeak, and western meadowlark.

3.2.4 Bald Eagles

While not part of the BBS for the Project Area, bald eagle nests were monitored by BHE near the Project Area as requested by ODNR and USFWS. Preliminary data from this monitoring is presented here to provide a complete picture of breeding birds in or near the Project Area. Separate reporting on bald eagle usage of the Project Area will be provided at a later date, when all data collection is completed.

A single bald eagle was incidentally observed within the Project Area during the BBS of the Project Area. It was detected feeding on carrion on 15 May 2011 near BBS point 11. The three bald eagle nests located within 2.25 mi of the Project Area (Figure 4) were monitored, although only one nest was successful in producing eaglets in 2011. The closest nest to the Project Area is the Fort Seneca (FS) nest and is approximately 1 mi south of the end of the proposed transmission line on the Sandusky River, but is more than 5 mi from the nearest area where a turbine may be placed. It was the only successful nest of the three nests nearest to the Project Area. In addition, USFWS records indicate 20 bald eagle nests have been documented within 10 mi of the Project boundary. Other than the three monitoring bald eagle nests, the 2011 success rate of the other 17 nests is not known.

BHE also conducted bald eagle nest monitoring 23 March through 19 July 2011 at the three nests nearest the Project Area. This nest monitoring occurred two days a week for 4 hours each day from 16 March through 15 May 2011. Monitoring temporarily ceased and then resumed 13 June through 19 July 2011.

Two nests ("Old Fort" and "Republic" nests), located northwest and south of the Project Area, respectively, were not used or were abandoned. The Republic nest was initially used but it was damaged in a wind storm and subsequently abandoned.

The FS nest was monitored twice a week from 4 April through 16 May 2011. Monitoring resumed on a twice weekly basis beginning 13 June 2011 as per ODNR Protocol and continued through 19 July 2011. This nest produced two eaglets that fledged. Observations showed the birds flew towards the Sandusky River and its environs almost exclusively and were not

observed using the Project Area. Few observations documented the birds flying to or from the east where the Project Area lies. More eagle use surveys are planned for the autumn of 2011, winter 2011/2012, and early spring of 2012.

4.0 DISCUSSION

Utility-scale wind turbines can directly and indirectly affect birds that breed within the boundaries of a wind energy generation facility. Nocturnally migrating passerines are the most abundant species at most wind energy facilities and are the most commonly reported fatalities (National Academy of Science [NAS] 2007). Bird mortality at wind farms is generally only a few birds per turbine distributed among many species and is influenced by factors that are largely lacking at the Project Area. In 2007, the NAS reported an average of 2.22 bird fatalities per turbine per year from wind energy facilities in the upper Midwest, the region most comparable to the Project Area. As previously noted, most of these mortalities would not have been breeding birds.

The Project Area is currently under intensive agricultural management (84.7% cropland) and presents limited habitat diversity. In total, only 2% of the Project Area supports forest, wetlands, and grasslands. A few small streams and drainageways and associated thin borders of woodland vegetation along with scattered woodlots provide habitat on-site and provide some avian habitat diversity. With so much of the Project Area in cropland (84.7%), the proposed wind farm is likely to result in negligible bird habitat fragmentation, because suitable habitat is limited and woodlands, grasslands, and wetlands are planned to be buffered and avoided, wherever feasible.

Studies detailing conclusive displacement of passerines due to the presence of wind turbines are lacking. Leddy et al. (1999) found increased densities of breeding grassland passerines at increased distances from wind turbines in Minnesota, and higher densities in a control plot than in areas close to turbines. Johnson et al. (2000) reported displacement of breeding birds at the 354 turbine Buffalo Ridge, Minnesota wind facility displaced some groups and species of birds. However, the displacement area was largely limited to areas less than 100 meters from turbines.

Construction may temporarily disrupt or displace avian nesting near a wind energy facility during the 6 to 12 months that construction occurs depending upon the location and configuration of the facility relative to the quality, location, and proximity of the habitat. This effect would be expected to be minor given the dearth of habitats within the Project Area, the relatively small footprint of wind turbines and associated infrastructure, and the ability to site turbines to avoid or minimize effects.

The topography associated with a wind turbine facility location may influence the risk of avian collisions. Studies suggest that siting turbines on the edge of steep slopes or within depressions increases collision risk, especially for raptor species (Orloff and Flannery 1992, 1996; Smallwood and Thelander 2004; Thelander and Rugge 2001). The nearest one of these features, the Sandusky River, lies about 5 miles west of the Project Area. Green Creek, a small headwater stream, runs through a portion of the Project Area.

Land-based wind farm studies results show low rates of waterbird and waterfowl mortality (Everaert 2003). Wetland habitat suitable for waterbirds in the proposed Project Area is restricted to Westerhouse Ditch, Emerson Creek, Beaver Creek Upground Reservoir, agricultural drainage ditches, farm ponds, and recreational ponds associated with homes.

The low percentage of water acreage (0.4% open water and wetlands in total Project Area) should limit waterfowl or wetland-associated bird species usage of the Project Area.

Increased perching sites can increase risk to migrating and resident breeding birds. Perching sites will be minimized through use of tubular towers on which to mount the turbines, thereby eliminating perch availability and lowering the risk of birds colliding with rotating blades.

No federally listed bird species were observed breeding in or near the proposed Project Area and none have been documented in the records of the USFWS and ODNR. Ohio listed birds observed during BBS counts were the Henslow's sparrow and bobolink. Incidentally observed listed birds were the bald eagle, northern harrier, upland sandpiper, least flycatcher, red-breasted nuthatch, blue grosbeak, and western meadowlark. Avoidance of grasslands may reduce potential interactions with five of these species (Henslow's sparrow, bobolink, northern harrier, upland sandpiper, and western meadowlark). Avoidance of woodland or scrub areas may reduce interactions with the remaining four species (bald eagle, least flycatcher, red-breasted nuthatch, and blue grosbeak).

5.0 CONCLUSIONS

Elevated topography, river corridors, forest cover, scrublands, water, wetlands, and large grasslands are the types of features associated with diverse breeding bird populations. These characteristics are generally lacking in the Project Area. The BBS data show few sensitive bird species breed in the Project Area. The results of the BBS in the Project Area are consistent with habitats that lack diversity or attractive resources for breeding birds. This BBS suggests that the potential for breeding bird displacement or collision caused by the proposed Project turbines should be similar to other Midwestern wind farms where the landscape is dominated by row crop agriculture.

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APPENDIX A

Agency Coordination

Ohio Department of Natural Resources

JOHN R. KASICH, GOVERNOR DAVID MUSTINE, DIRECTOR

Ohio Division of Wildlife

David Lane, Chief
2045 Morse Rd., Bldg. G
Columbus, OH 43229-6693
Phone: (614) 265-6300

June 8, 2011

To all interested parties,

Based upon the revised project boundary map received on 31 May 2011 and site visit conducted on 7 April 2011, the Ohio Department of Natural Resources Division of Wildlife (DOW) has prepared these revised survey recommendations for Nordex's proposed project located in Seneca and Sandusky counties.

Currently the project falls within regions that DOW has identified as needing moderate monitoring efforts. The updated boundary has increased the forested area to 3095 acres. If the developer decides to amend the boundaries, the DOW will revise our survey recommendations.

The table below was created based upon a review of the project maps provided and a site visit. The table summarizes the types and level of effort recommended by the DOW. Results from these studies will help the Department of Natural Resources assess the potential impact these turbines may pose, and influence our recommendations to the Ohio Power Siting Board. Monitoring should follow those criteria listed within the "On-shore Bird and Bat Pre-Construction Monitoring Protocol for Commercial Wind Energy Facilities in Ohio."

For additional ODNR comments, including information on the potential presence of threatened and endangered species within or adjacent to your project area, please contact Brian Mitch at (614) 265-6378 or brian.mitch@dnr.state.oh.us

	Project
Survey type	
Breeding bird	Breeding bird surveys should be conducted at all sites. The number of survey points may be based on the amount of available habitat, or twice the maximum number of turbines proposed for the site. If turbines are placed in agricultural land it, this requirement may be waived by DOW after a review of the proposed turbine locations is provided.
Raptor nest searches	Nest searches should occur on, and within a 1-mile buffer of the proposed facility.
Raptor nest monitoring	There is 3 eagle nest located on or within the 2 miles of the proposed project. The pairs within the 2 mile radius should be monitored to assess their daily movement patterns. Should any additional nests of a protected species of raptor be located during nest searches, monitoring should commence as outlined within the on-shore protocols.

Bat acoustic monitoring	To be conducted at all meteorological towers.
Passerine migration (# of survey points)	13
Diurnal bird/raptor migration (# of survey point)	1
Sandhill crane migration (same points as raptor migration)	NS
Owl playback survey points	NS
Barn owl surveys	NS
Bat mist-netting (# of survey points)	25
Nocturnal marsh bird survey points	NS
Waterfowl survey points	NS
Shorebird migration points	NS
Radar monitoring locations	1 (waived)

NS = Not required based on the lack of suitable habitat.

If you have any questions, please feel free to contact me.

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cc: Mr. Stuart Siegfried, Ohio Power Siting Board
Ms. Megan Seymour, United States Fish and Wildlife Service
Mr. Brian Mitch, Ohio Department of Natural Resources

Figure 1. Survey effort map with revised boundary for Nordex's proposed Republic project.

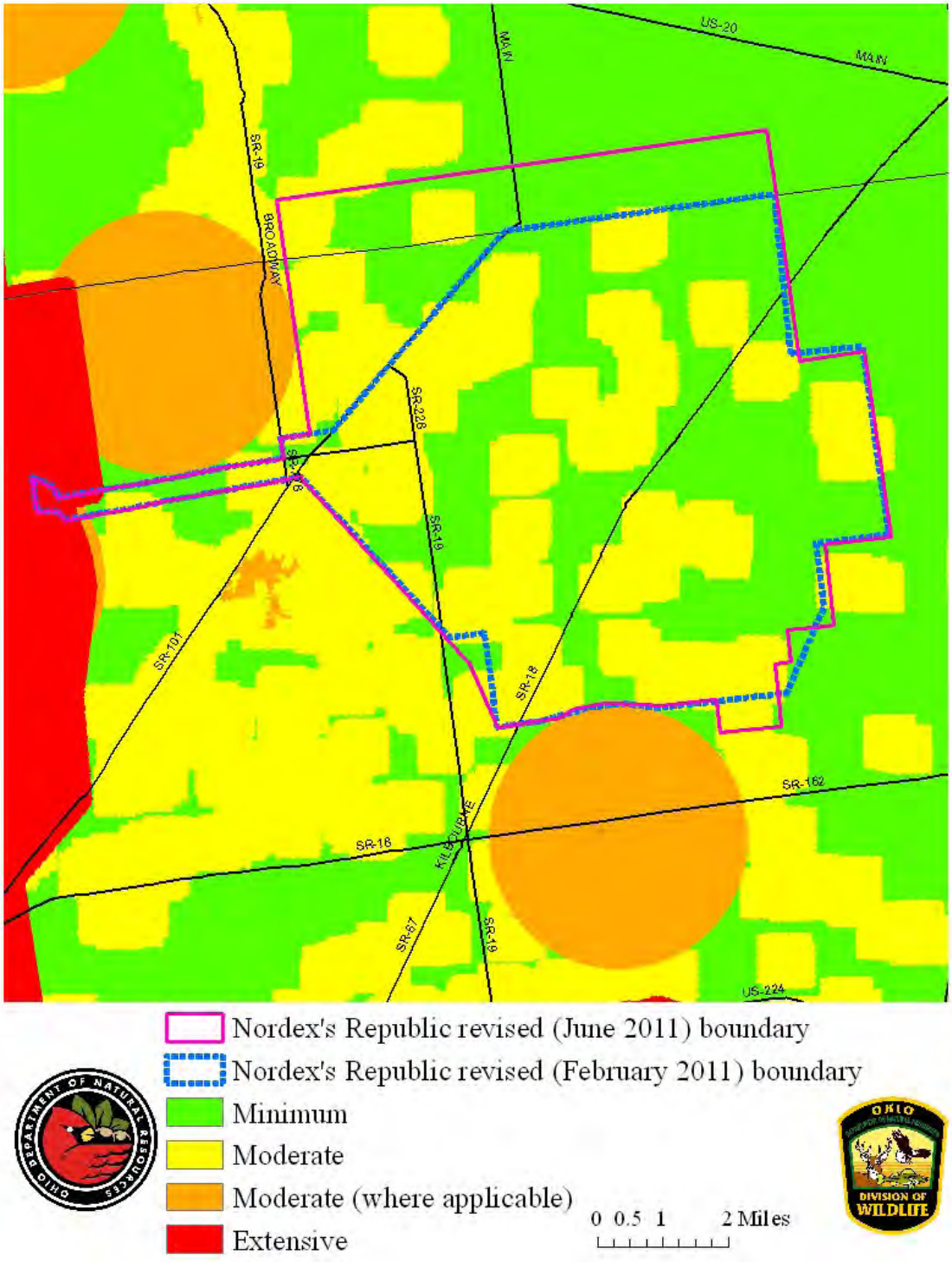
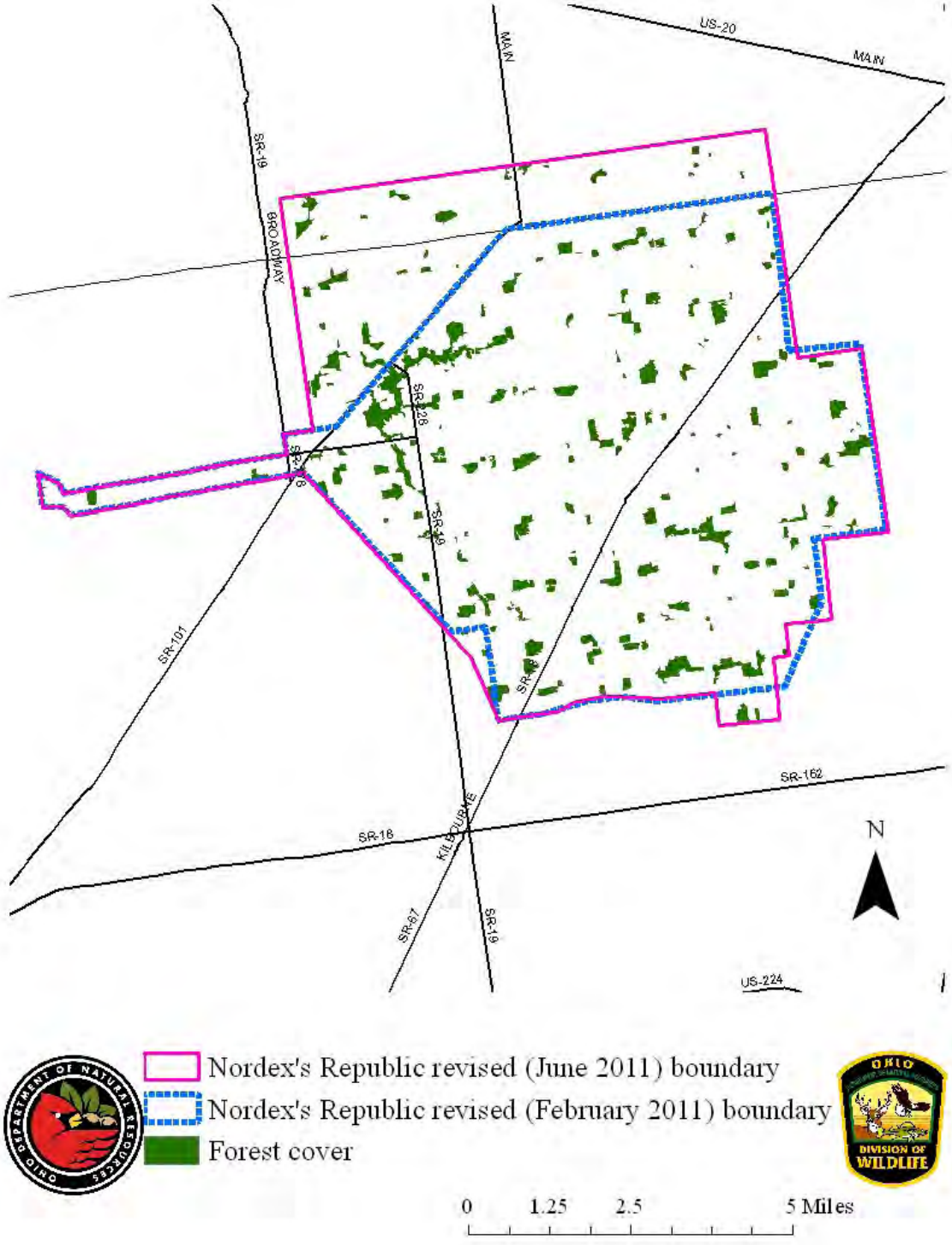


Figure 2. Forest cover map with revised boundary for Nordex's proposed Republic project.



United States Department of the Interior

FISH AND WILDLIFE SERVICE

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March 18, 2011

Laura Caspari
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TAILS : 31420-2011-TA-0502

Re: Nordex Republic Wind Project, Seneca County

Dear Ms. Caspari:

This letter is in response to a meeting with the U.S. Fish and Wildlife Service (Service) on January 31, 2011 regarding the proposed wind power project in Seneca County, Ohio. The proposed project area appears to be a mix of agricultural land with scattered forested areas throughout. The proposed project is approximately 3 miles east of the Sandusky River Important Bird Area (IBA), which is located on the Sandusky River. However, it does appear that the proposed transmission line does extend approximately 1 mile into this IBA and ends right next to the Sandusky River. The proposed project also has a very large number of karst features throughout the project area, particularly on the east and northeast side of proposed project boundary. These areas could provide potential wintering habitat for bats. We understand the proposed project is approximately 200 MW including approximately 83 turbines. In addition, you have provided the Service and ODNR with a revised project boundary that included a proposed location of an approximate 4 mile transmission line that extends directly west of the central portion of the project. According to a revised letter from the Ohio Division of Natural Resources (ODNR) dated February 16 2011, the Division of Wildlife (DOW) has determined that the proposed facility would be classified as "extensive" site under the current monitoring protocols based upon the location of the transmission line. We understand that field surveys are planned for 2011.

The following comments are being provided pursuant to the Endangered Species Act (ESA), Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, and Fish and Wildlife Act of 1956. This information is being provided to assist you in making an informed decision regarding wildlife issues, site selection, project design, and compliance with applicable laws. The Service has been working closely with ODNR Division of Wildlife to develop recommended survey protocols and site evaluations that will satisfy both state and federal wildlife statutes, and this letter describes these measures, in part. The protocols, "On-Shore Bird and Bat Pre- and Post-Construction Monitoring Protocol for Commercial Wind Energy Facilities in Ohio" are available on ODNR's website at:
http://www.dnr.state.oh.us/Home/wild_resourcessubhomepage/ResearchandSurveys/WildlifeWind/tabid/21467/Default.aspx
We encourage and appreciate your early coordination with both ourselves and ODNR, and recommend continued collaboration on this project to ensure wildlife issues are fully and appropriately addressed.

The Service supports the development of wind power as an alternative energy source, however, wind farms can have negative impacts on wildlife and their habitats if not sited and designed with potential wildlife and habitat impacts in mind. Selection of the best sites for turbine placement is enhanced by ruling out sites with known, high concentrations of birds and/or bats passing within the rotor-swept area of the turbines or where the effects of habitat fragmentation will be detrimental. In support of wind power generation as a wildlife-friendly, renewable source of power, development sites with comparatively low bird, bat and other wildlife values, would be preferable and would have relatively lower impacts on wildlife.

WATER RESOURCE COMMENTS:

The Service recommends that impacts to streams and wetlands be avoided, and buffers surrounding these systems be preserved. Streams and wetlands provide valuable habitat for fish and wildlife resources, and the filtering capacity of wetlands helps to improve water quality. Naturally vegetated buffers surrounding these systems are also important in preserving their wildlife-habitat and water quality-enhancement properties. Furthermore, forested riparian systems (wooded areas adjacent to streams) provide important stopover habitat for birds migrating through the region. The proposed activities do not constitute a water-dependent activity, as described in the Section 404(b)(1) guidelines, 40 CFR 230.10. Therefore, practicable alternatives that do not impact aquatic sites are presumed to be available, unless clearly demonstrated otherwise. Therefore, before applying for a Section 404 permit, the client should closely evaluate all project alternatives that do not affect streams or wetlands, and if possible, select an alternative that avoids impacts to the aquatic resource. If water resources will be impacted, the Buffalo Corps of Engineers should be contacted for possible need of a Section 404 permit.

ENDANGERED SPECIES COMMENTS:

Because of the potential for wind power projects to impact endangered bird, bat, or other listed species, they are subject to the Endangered Species Act (16 U.S.C. 1531-1544) section 9 provisions governing "take", similar to any other development project. Take incidental to a lawful activity may be authorized through the initiation of formal consultation if a Federal agency is involved; or if a Federal agency, Federal funding, or a Federal permit are not involved in the project, an incidental take permit pursuant to section 10(a)(1)(B) of the ESA may be obtained upon completion of a satisfactory habitat conservation plan for the listed species. However, there is no mechanism for authorizing incidental take "after-the-fact."

The proposed project lies within the range of the **Indiana bat** (*Myotis sodalis*), a federally listed endangered species. Since first listed as endangered in 1967, their population has declined by nearly 60%. Several factors have contributed to the decline of the Indiana bat, including the loss and degradation of suitable hibernacula, human disturbance during hibernation, pesticides, and the loss and degradation of forested habitat, particularly stands of large, mature trees. Fragmentation of forest habitat may also contribute to declines. During the winter Indiana bats hibernate in caves and abandoned mines. Summer habitat requirements for the species are not well defined but the following are considered important:

1. Dead or live trees and snags with peeling or exfoliating bark, split tree trunk and/or branches, or cavities, which may be used as maternity roost areas.

2. Live trees (such as shagbark hickory and oaks) which have exfoliating bark.

3. Stream corridors, riparian areas, and upland woodlots which provide forage sites.

Indiana Bat Maternity Habitat

There are no positive records for Indiana bat captures within Seneca County and in addition, there are no records within 10 miles of the proposed project boundaries. According to the interim Indiana bat and wind guidance, if both of the following conditions are true for the proposed project, Indiana bat presence is very unlikely within and near the project area during the summer period, and it is unlikely that Indiana bats will be exposed to wind facility operations during the summer.

1. No suitable foraging or roosting habitat is in the project area or within 1,000 feet of the project area boundary
2. Commuting habitat (in the project area or within 1,000 feet of the project area boundary) is isolated from (i.e., more than 1000 feet), or if connected more than 2.5 miles from, suitable roosting or foraging habitat.

If both of these conditions are not met, further analysis is required to determine whether Indiana bats exposure is likely. The project areas appear to be a mix of agricultural land with scattered forested areas throughout, with a number of forested areas exceeding 100 acres. It appears that suitable summer foraging and roosting habitat for the Indiana bat likely exists within the project area.

Mist Net Surveys: Based on ODNR's On-Shore Bird and Bat Pre- and Post-Construction Monitoring Protocol for Commercial Wind Energy Facilities in Ohio, a total of 22 mist net surveys have been requested for the proposed project boundary. The Service agrees that is an appropriate level of effort for the proposed project boundary. The surveys must be conducted by a permitted surveyor (see attached list) and be designed and conducted in coordination with the Endangered Species Coordinator for this office. Survey effort should follow ODNR's protocols, which exceed the Service's standard protocol. The highest quality Indiana bat habitat areas within the project area should be selected for mist netting. Mature woodlots greater than 100 acres in size with permanent water sources should be the primary focus of mist net surveys. Service biologists would be happy to aid in identification and selection of suitable mist net sites, if necessary. We recommend that any Indiana bats captured, especially reproductively active females, be monitored through radio-tracking to determine roost locations and foraging patterns. If an Indiana bat is captured, this office shall be notified within 24 hours, or by the next business day.

Radio Transmitters: Up to four Indiana bats should be fitted with radio transmitters and tracked to roost site(s) and foraging areas until daily activity patterns are fairly well established, or as long as the transmitter remains attached and activated. Preference shall be given to tracking female bats, though one male Indiana bat may be tracked if captured prior to capturing four female Indiana bats. Please see the ODNR's protocols for additional information on radio tracking non-Indiana bats.

Acoustic Surveys: Acoustic Surveys: Bat acoustic monitoring is to be conducted at all meteorological towers within the project area. We recommend regular inspection of the AnaBat detectors throughout the survey period to ensure proper functioning.

The results of all bat surveys should be coordinated with this office prior to initiation of any work. Based on the results of the mist net survey, we will evaluate potential impacts to the Indiana bat from the proposed project. If sufficient information is not provided to document that take is unlikely, authorization of incidental take either through Section 7 or Section 10 of the Endangered Species Act of 1973, as amended, will be necessary.

Hibernacula Habitat

The project area lies within an area primarily underlain with Silurian and Devonian carbonate bedrock, indicating that the presence of caves is possible, and several identified karst areas are found within the project area. Please see the Ohio Department of Natural Resources, Division of Geological Survey Ohio

Karst Areas Map (www.dnr.state.oh.us/portals/10/pdf/karstmap.pdf,), for additional information. If caves or sinkholes are present within the project area, we recommend further coordination with this office to determine if surveys of these areas are recommended.

Indiana Bat Migratory Habitat

Wind energy facilities in various habitat types across the U.S. and Canada have been documented to cause "widespread and often extensive fatalities of bats" (Arnett *et al.* 2008), primarily during the fall *migratory* season. Further, Indiana bat mortalities have been detected at a wind power facility in Indiana, confirming suspicions that migrating Indiana bats are also susceptible to mortality from wind turbines. At this time, research into the mechanisms that cause mortality of bats at wind power sites is still ongoing, and few operational tools exist to avoid and minimize take — feathering of turbines during times when bats are most at risk has been shown to reduce mortality in some situations. Based on this, we are advising all operating wind farms and wind farms in planning stages within the range of the listed bats that lethal take is a possibility without curtailment of operations at night during the migratory period regardless of whether summer habitat is present or if Indiana bats are detected during summer mist netting. Due to the potential of take during spring and fall migration, we recommend developers evaluate their exposure to the prohibitions of ESA. This is a risk management decision the developer must make. The Service advises you to consider the following two options to ensure violations of the Endangered Species Act (ESA) Section 9 take prohibition do not occur:

1) Feather turbines during low wind speed conditions at night during the fall and spring migratory seasons as a way to proactively and definitively avoid take of Indiana bats (and other species of bats as well). Based on the Indiana bat Draft Recovery Plan First Revision (Service, 2007), fall migration generally occurs between August 1 and October 15, and spring migration generally occurs between April 1 and May 15.

2) Wind facility developers can work with the Service to apply for an Incidental Take Permit by submitting a Habitat Conservation Plan (HCP), as required under Section 10 of the Endangered Species Act. A HCP can be used to address Indiana bat presence during both summer foraging and migration periods. A HCP does typically require some time and survey effort to complete. Alternatively, you may consider joining in the regional effort to develop a wind power HCP to address Indiana bats and other listed species.

If you plan to implement either of these two options, please contact us for further information.

The proposed project lies within the range of the **rayed bean** (*Villosa fabalis*), a freshwater mussel that is currently proposed for listing as federally endangered. The rayed bean is generally known from smaller, headwater creeks, but records exist in larger rivers. They are usually found in or near shoal or riffle areas, and in the shallow, wave-washed areas of lakes. Substrates typically include gravel and sand, and they are often associated with, and buried under the roots of, vegetation, including water willow (*Justicia americana*) and water milfoil (*Myriophyllum* sp.). Should the proposed project directly or indirectly impact any of the habitat types described above, we recommend that a survey be conducted to determine the presence or probable absence of rayed bean mussels in the vicinity of the proposed site. Any survey should be designed and conducted in coordination with the Endangered Species Coordinator for this office.

The project lies within the range of the **eastern massasauga** (*Sistrurus catenatus catenatus*), a docile rattlesnake that is declining throughout its national range and is currently a Federal Candidate species. The snake is currently listed as endangered by the State of Ohio. Your proactive efforts to conserve this species now may help avoid the need to list the species under the Endangered Species Act in the future. Due to their reclusive nature, we encourage early project coordination to avoid potential impacts to

massasaugas and their habitat. At a minimum, project evaluations should contain delineations of whether or not massasauga habitat occurs within project boundaries.

The massasauga is often found in or near wet areas, including wetlands, wet prairie, or nearby woodland or shrub edge habitat. This often includes dry goldenrod meadows with a mosaic of early successional woody species such as dogwood or multiflora rose. Wet habitat and nearby dry edges are utilized by the snakes, especially during the spring and fall. Dry upland areas up to 1.5 miles away are utilized during the summer, if available. For additional information on the eastern massasauga, including project management ideas, please visit the following website:
http://www.fws.gov/midwest/Endangered/lists/candidat.html or contact this office directly.

The proposed project lies within the range of the **Kirtland's warbler** (*Dendroica kirtlandii*), a federally listed endangered species. The Kirtland's warbler is a small blue-gray songbird with a bright yellow breast. This species migrates through Ohio in the spring and fall, traveling between its breeding grounds in Michigan, Wisconsin, and Ontario and its wintering grounds in the Bahamas. During migration, individual birds usually forage in low vegetation and stay in one area for a few days. This species may occur in Ohio in the spring from late April through May and in the fall from late August to early October. The ODNR has recommended 11 passerine migration surveys for the proposed project boundary. We strongly recommend that surveyors note any possible Kirtland's warbler detections during the passerine migration survey, and photo-document the detections if possible. Any sightings should be reported to the Service within 24 hours, or the next business day.

MIGRATORY BIRD COMMENTS:

The Migratory Bird Treaty Act (16 U.S.C. 703-712; MBTA) implements four treaties that provide for international protection of migratory birds. The MBTA prohibits taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests, except when specifically authorized by the Department of the Interior. While the MBTA has no provision for allowing unauthorized take, the FWS recognizes that some birds may be taken during activities such as wind turbine operation even if all reasonable measures to avoid take are implemented. The U.S. Fish and Wildlife Service's (FWS) Office of Law Enforcement carries out its mission to protect migratory birds not only through investigation and enforcement, but also through fostering relationships with individuals and industries that proactively seeks to eliminate their impacts on migratory birds. Although it is not possible under the MBTA to absolve individuals, companies, or agencies from liability (even if they implement avian mortality avoidance or similar conservation measures), the Office of Law Enforcement focuses on those individuals, companies, or agencies that take migratory birds with disregard for their actions and the law, especially when conservation measures have been developed but are not properly implemented.

At this time, we continue to encourage existing and proposed wind developments to follow current Service recommendations on wind power siting and construction (*Interim Guidelines to Avoid and Minimize Impacts from Wind Turbines – 2003)*. The Service also encourages developers to coordinate with Service biologists regarding their projects. Proper coordination will help developers make informed decisions in siting, constructing, and operating their facilities. Additionally, the Service hopes to work cooperatively with wind developers to advance the state of the art of wind power siting, construction, and operation. Advancements in these areas will represent great strides towards the environmentally safe development of this otherwise renewable and clean source of energy.

The Service and ODNR DOW have worked together to develop a recommended bird survey protocol for wind turbine projects. The details of the protocol are provided in ODNR's On-Shore Bird and Bat Pre- and Post-Construction Monitoring Protocol for Commercial Wind Energy Facilities in Ohio. ODNR has

documented that the project area qualifies for "extensive" survey effort due to the proximity to possible migratory bird high use areas. We recommend implementation of the ODNR bird survey protocol or alternatively, modification of the project boundary to avoid potential migratory bird high use areas and implementation of the "extensive" survey protocol. Bird survey results will be interpreted to determine if potential risk to birds is relatively high or low in various portions of the project area. Based on survey results we may make recommendations as to turbine placement and operation, or pre- or post-construction monitoring.

Research into the actual causes of bat and bird collisions with wind turbines is limited. To assist Service field staffs in review of wind farm proposals, as well as aid wind energy companies in developing best practices for siting and monitoring of wind farms, the Service published *Interim Guidelines to Avoid and Minimize Wildlife Impacts from Wind Turbines* (2003). On February 8, 2011, the U.S. Fish and Wildlife Service released the Draft Voluntary, Land-Based Wind Energy Guidelines that have now been published in the Federal Register and are now open for public comment until May 19, 2011. The Guidelines can be found at: http://www.fws.gov/windenergy. Until those guidelines are final, the Service recommends following the 2003 Interim Guidelines. We encourage any company/licensee proposing a new wind farm to consider the following excerpted suggestions from the guidelines in an effort to minimize impacts to migratory birds and bats.

1) Pre-development evaluations of potential wind farm sites to be conducted by a team of Federal and/or State agency wildlife professions with no vested interest in potential sites;

2) Rank potential sites by risk to wildlife;

3) Avoid placing turbines in documented locations of federally-listed species;

4) Avoid locating turbines in known bird flyways or migration pathways, or near areas of high bird concentrations. (i.e., rookeries, leks, State or Federal refuges, staging areas, wetlands, riparian corridors, etc.) Avoid known daily movement flyways and areas with a high incidence of fog, mist or low visibility;

5) Avoid placing turbines near known bat hibernation, breeding, or maternity colonies, in migration corridors, or in flight paths between colonies and feeding areas;

6) Configure turbine arrays to avoid potential avian mortality where feasible. (i.e., group turbines and orient rows of turbines parallel to known bird movements) Implement storm water management practices that do not create attractions for birds, and maintain contiguous habitat for area-sensitive species;

7) Avoid fragmenting large, contiguous tracts of wildlife habitat. Wherever practical, place turbines on lands already disturbed and away from intact healthy native habitats. If not practical, select fragmented or degraded habitats over relatively intact areas;

8) Minimize roads, fences, and other infrastructure. Wherever possible, align collection lines and access roads to minimize disturbance;

9) Develop a habitat restoration plan for the proposed site that avoids or minimizes negative impacts on vulnerable wildlife while maintaining or enhancing habitat values for other species. (i.e., avoid attracting prey animals used by raptors;

10) Use tubular supports with pointed tops rather than lattice supports to minimize bird perching and nesting opportunities. Avoid placing external ladders and platforms on tubular towers to minimize

perching/nesting. Avoid use of guy wires for turbine or meteorological tower supports. All existing guy wires should be marked with bird deterrents. (Avian Power Line Interaction Committee 1996);

11) If taller turbines (top of rotor-swept area is greater than 199 feet above ground level) require lights for aviation safety, the minimum amount of lighting specified by the Federal Aviation Administration (FAA) should be used. Unless otherwise requested by the FAA, only white strobe lights should be used at night, and should be of the minimum intensity and frequency of flashes allowable;

12) Adjust tower height to reduce risk of strikes in areas of high risk for wildlife;

13) Wherever feasible, place electric power lines underground or on the surface as insulated, shielded wire to avoid electrocution of birds. Use recommendations of the Avian Power Line Interaction Committee (1996) for any required above-ground lines, transformers, or conductors.

The full text of the guidelines is available at http://www.fws.gov/habitatconservation/wind.pdf. The Service believes that implementing these guidelines may help reduce mortality caused by wind turbines. We encourage you to consider these guidelines in the planning and design of the project. We particularly encourage placement of turbines away from any large wetland, stream corridor, or wooded areas, including the areas mentioned previously, and avoid placing turbines between nearby habitat blocks.

BALD AND GOLDEN EAGLE COMMENTS:

Bald and golden eagles are included under the Migratory Bird Treaty Act, but are afforded additional legal protection under the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d). The Service recently issued a final rule that authorizes issuance of eagle take permits, where the take to be authorized is associated with otherwise lawful activities. If take of bald eagles is likely, based on the best information available, a bald eagle take permit for this project will be necessary. We understand the original project boundary was adjusted to avoid a known bald eagle nest and the Service greatly appreciates this effort to conserve trust resources. However, there are still 3 bald eagle nests within 2 miles of the proposed project boundary, including the proposed transmission line. The closest nest is approximately 1 mile southwest of the end of the transmission line on the Sandusky River. In addition, there are also 20 bald eagle nests within 10 miles of the project boundary. Raptor nest searches and nest monitoring should be conducted in accordance with ODNR's extensive survey protocol to identify any raptors, including bald eagles that may nest in or near the project area. The results of this survey should be coordinated with this office.

On February 8, 2011, the U.S. Fish and Wildlife Service released the Draft Eagle Conservation Plan Guidance that have now been published in the Federal Register and are available for public comment until May 19, 2011. The Guidelines can be found at: http://www.fws.gov/windenergy. The Draft Eagle Conservation Plan Guidance was developed to provide interpretive guidance to wind developers, Service biologists who evaluate potential impacts on eagles from proposed wind energy projects, and others in applying the regulatory permit standards as specified by the Bald and Golden Eagle Protection Act and other federal laws. While this guidance is still draft, we believe that it deserves careful attention, as it lays out a proposed process for evaluating risk to eagles from wind power projects and developing an eagle conservation plan, in support of applying for a permit to authorize take. Appendix C of the Draft Eagle Conservation Plan Guidance suggests a monitoring protocol for wind projects. Monitoring data should be interpreted to document potential risk to eagles. If take of eagles is likely, a bald eagle take permit will be necessary.

COORDINATION OF SURVEY RESULTS:

Please submit survey results to this office for review. Survey results will be interpreted to determine areas with relatively low bat and bird activity/diversity as opposed to areas with relatively high bat and bird activity/diversity. Based on the survey results, we may make recommendations as to turbine placement and operation, additional consultation under Section 7 or 10 of the Endangered Species Act of 1973, as amended, additional permits under the Bald and Golden Eagle Protection Act, or pre- or post-construction monitoring.

POST CONSTRUCTION MONITORING:

The Service recommends the project be monitored post-construction to determine impacts to migratory birds and bats. A specific post-construction monitoring plan should be prepared and reviewed by the Service and should include a scientifically robust, peer reviewed methodology of mortality surveys. We recommend that the post-construction monitoring protocol be developed based on the results of pre-construction monitoring, and look forward to working with the project proponent to develop this document.

Thank you for the opportunity to provide comments on this proposed project. If you have questions, or if we may be of further assistance in this matter, please contact Melanie Cota at extension 15 in this office or by email at Melanie_Cota@fws.gov or visit our website at http://www.fws.gov/midwest/Ohio.

Sincerely,

Mary Knapp

Mary Knapp, Ph.D.
Supervisor

Cc: Ms. Jennifer Norris, ODNR, Olentangy Wildlife Research Station, Ashley, OH
Mr. Brian Mitch, ODNR, REALM, Columbus, OH

Attachment: USFWS Permitted Indiana bat Surveyors in Ohio

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services
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Columbus, Ohio 43230
(614) 416-8993 / FAX (614) 416-8994
December 13, 2010

USFWS permittees for Indiana bat surveys in Ohio*

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Summary: Application Exhibit O - Part 1 of 2 electronically filed by Teresa Orahood on behalf of Sally W. Bloomfield