boundaries defined as 82 22' 30" West Longitude, 83 107' 30" West Longitude, 41 33' 00" North Latitude, and 42 100'00" North Latitude.

 In Ohio, two areas have been designated critical habitat for the piping plover (<u>Charadrius melodus</u>) and are defined as lands 0.62 miles inland from normal high water line. Unit OH-1 extends from the mouth of Sawmill Creek to the western property boundary of Sheldon Marsh State Natural Area, Eric County, encompassing approximately 2.0 miles. Unit OH-2 extends from the eastern boundary line of Headland Dunes Nature Preserve to the western boundary of the Nature Preserve and Headland Dunes State Park, Lake County, encompassing approximately 0.5 mile.

g. Oak Openings: Notification is required for all activities conducted in the Oak Openings Region of Northwest Ohio located in Lucas, Henry, and Fulton counties. For a map of the Oak Openings Region, visit <u>http://www.oakopen.org/maps/</u>.

6. Notification Submittals: In addition to the information required under Nationwide Permit General Condition 31, the following information is needed for all Notifications:

a. Drawings: The Notification must include project drawings on 8 1/2" x 11" paper. The illustrations must clearly depict the project boundaries and include all known elements and phases of the proposed work. Three types of illustrations are needed to properly depict the work to be undertaken. These illustrations or drawings are identified as a Vicinity Map (i.e. a location map such as a USGS topographical map), a Plan View and a Typical Cross-Section. Each illustration should identify the project, the applicant, and the type of illustration (vicinity map, plan view or cross-section). In addition, each illustration should be identified with a figure or attachment number.

b. United States Fish & Wildlife Service (USFWS): Prior to submitting notifications, it is recommended that the applicant contact the USFWS, Ohio Ecological Services Field Office by phone at (614) 416-8993, by e-mail at <u>ohio@fws.gov</u>, through their website at <u>http://www.fws.gov/midwest/ohio</u>, or by writing to 625 Morse Road, Suite 104, Columbus, OH 43230. The USFWS can provide information to assist in complying with Nationwide Permit General Condition 18 pertaining to endangered species and Nationwide Permit General Condition 19 pertaining to migratory birds and bald and golden eagles. The USFWS can also provide project recommendations specific to Federal Candidate species and the bald eagle (*Haliaeetus leucocephalus*). Federal Candidate species are those for which the USFWS has sufficient information to propose them as endangered or threatened under the Endangered Species Act (ESA), but for which a listing proposal is precluded by other higher priority listing activities. Information regarding Federal Candidate species can be found at: <u>http://www.fws.gov/midwest/endangered/section7/s/process/index.html</u>.

Bald Eagle: Applicants must ensure that activities associated with Nationwide Permits do not result in unpermitted take of bald eagles (*Haliaeetus leucocephalus*) under the Bald and Golden Eagle Protection Act and Migratory Bird Treaty Act. Information regarding activities that may result in take of bald eagles, thus requiring a permit from the USFWS under the Act, can be found at http://www.fws.gov/midwest/MidwestBird/EaglePermits/index.html. Applicants should determine whether a bald eagle nest is located near a permitted activity by contacting the U.S. Fish and Wildlife Service, Ohio Ecological Services Field Office, 4625 Morse Road, Suite 104, Columbus, Ohio 43230, phone: 614-416-8993, http://www.fws.gov/midwest/Ohio/.

All relevant information obtained from the USFWS should be submitted with the Notification.

c. Cultural Resources: The Notification must provide justified conclusions concerning whether or not the proposed activity could affect any historic properties listed, determined to be eligible, or which you have reason to believe may be eligible, for listing on the National Register of Historic Places. This data shall be utilized by the Corps to determine if the proposed activity has the potential to affect historic properties. Be advised that further effort may be required to take into account the effects the proposed activity may have on historic properties, as required by the National Historic Preservation Act of 1966. To ensure compliance with Nationwide Permit General Condition 20, the following basic project information is needed:

 A detailed description of the project site in its current condition (i.e. prior to construction activities) including information on the terrain and topography of the project site, the acreage of the project site, the proximity of the project site to major waterways, and any known disturbances within the project site. Photographs, keyed to mapping, are also needed which show the site conditions and all buildings or structures both within the project site and on adjacent parcels.
 A detailed description of past land uses in the project site. Particular attention should be given to past activities pertinent to the potential for historic properties to exist in the project area. Photographs and maps supporting past land uses should be provided as available.

3) A detailed description of the construction activities proposed to take place on the project site and a comparison of how the site will look after completion of the project compared to how it looked before the project.

4) Information regarding any past cultural resource studies or coordination pertinent to the project area, if available,

5) Any other data the applicant deems pertinent.

The applicant is encouraged to consult with professionals meeting the Professional Qualification Standards as set forth in the Secretary of the Interior's *Standards and Guidelines for Archeology and Historic Preservation* (48 FR 44716) during this data gathering process. These professionals can assist with compiling the basic project information discussed above and should provide recommendations as to whether or not the proposed project has the potential to affect historic properties and if further effort is required or not required to identify historic properties or assess potential effects to historic properties. These professionals can also

compile basic preliminary review information to submit to the District Engineer. A preliminary resource review encompasses a search radius of 2 miles, centered on the project area, and consists of the following resources:

- OHPO United States Geological Survey (USGS) 7.5' series topographic maps;
- 2) Ohio Archaeological Inventory (OAI) files;
- 3) Ohio Historic Inventory files (OHI);
- OHPO Cultural Resources Management (CRM)/contract archaeology files;
- 5) National Register of Historic Places (NRHP) files including Historie Districts; and
- County atlases, histories and historic USGS 15' series topographic map(s).

As an alternative to submitting the information described above, the applicant may choose to complete the Ohio Historic Preservation Office Section 106 Review Project Summary Form or request comments from the Ohio Historic Preservation Office and District Engineer on specific requirements appropriate to the particular circumstances of the project. Similarly, the applicant may choose to hire someone meeting the Professional Qualification Standards as set forth in the Secretary of the Interior's *Standards and Guidelines for Archeology and Historic Preservation* (48 FR 44716) to conduct what they recommend to be appropriate historic property identification efforts (e.g. archeological survey and/or historic structure inventories) to expedite the review process. Be advised, undertaking identification efforts prior to consideration of the potential of the proposed activity to affect historic properties by the Corps in not without risk. It is possible that previous efforts could be determined insufficient or even potentially unnecessary once reviewed by the Corps and other consulting parties.

Upon receipt and review of the information listed above, the Corps will evaluate the submittal. If the Corps determines the proposed activity has the potential to cause effects to a historic property, the Corps will seek consulting parties. In consultation with those parties, the Corps will scope appropriate historic property identification efforts and take into account the effect of the proposed activity on historic properties.

d. National Wild and Scenic Rivers: Prior to submitting Notifications for work in a National Wild and Scenic River System, it is recommended that the applicant contact the National Park Service Regional Wild and Scenic Rivers Specialist, at the Midwest Regional Office, 601 Riverfront Drive, Omaha, Nebraska 68102, for assistance in complying with Nationwide Permit General Condition 16.

e. 401 Water Quality Certification: For activities that result in between 1/10 and ½ acre of loss of waters of the U.S., two copies of the Notification must be submitted. In order to determine if a project meets the terms and conditions of Ohio EPA's 401 water quality certification the following additional information must be submitted:

1) To determine the quality of the wetlands on the site, all wetland delineations must include the latest approved version of the Ohio Rapid Assessment Method (ORAM) for wetland evaluation long form; and

2) Photographs of all the waterbodies.

Prior to submitting Notifications, the applicant may contact Ohio EPA, Division of Surface Water by writing to (614) 644-2001 at P.O. Box 1049, Columbus, Ohio 43216-1049 and request verification of the ORAM score of the wetlands on the site to expedite the permit process. All relevant information obtained from Ohio EPA should be submitted with the Notification.

f. Agency Coordination: In an effort to expedite full agency permit review, it is requested that the applicant submit five (5) copies of the Notification package when the Notification requires full agency coordination in accordance with Nationwide Permit General Condition 31 (d)(2). Applicants are encouraged to submit this information in electronic format as CDs, in order to minimize the use of paper.

g. Floodplain Coordination: All Notifications must include a copy of the applicable FIRM map. You can get a FIRMette free from: <u>http://www.msc.fema.gov</u>. From this page select the "Product Catalog" tab at the top. Then select "Effective FIRMs /FHBMs". The choices allow you to select a state and county. Then you follow the instructions to create a FIRMette. In addition, from the same web-site, you can obtain a FIRMette for a specific address. From <u>http://www.msc.fema.gov</u> conduct a "Product Search" for "Public Flood Map" and then follow the instructions to create a FIRMette.

Note 1: In circumstances where there is another lead Federal agency with set procedures for addressing Endangered Species, Cultural Resources, and National Wild and Scenic River Coordination, the applicant can submit documentation showing the coordination has already been completed instead of submitting the additional Notification information requested above.

Note 2: Nationwide Permit General Condition 31 requires the applicant to include a delineation of special aquatic sites and all other waters of the U.S. on the project site. Special aquatic sites include sanctuaries and refuges, wetlands, mudflats, vegetated shallows, coral reefs, and riffie and pool complexes.

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F. Definitions

Best management practices (BMPs): Policies, practices, procedures, or structures implemented to mitigate the adverse environmental effects on surface water quality resulting from development. BMPs are categorized as structural or non-structural.

<u>Compensatory mitigation</u>: The restoration (re-establishment or rehabilitation), establishment (creation), enhancement, and/or in certain circumstances preservation of aquatic resources for the purposes of offsetting unavoidable adverse impacts which remain after all appropriate and practicable avoidance and minimization has been achieved.

Currently serviceable: Useable as is or with some maintenance, but not so degraded as to essentially require reconstruction.

Direct effects: Effects that are caused by the activity and occur at the same time and place.

Discharge: The term "discharge" means any discharge of dredged or fill material.

Enhancement: The manipulation of the physical, chemical, or biological characteristics of an aquatic resource to heighten, intensify, or improve a specific aquatic resource function(s). Enhancement results in the gain of selected aquatic resource function(s), but may also lead to a decline in other aquatic resource function(s). Enhancement does not result in a gain in aquatic resource area.

Ephemeral stream: An ephemeral stream has flowing water only during, and for a short duration after, precipitation events in a typical year. Ephemeral stream beds are located above the water table year-round. Groundwater is not a source of water for the stream. Runoff from rainfall is the primary source of water for stream flow.

Establishment (creation): The manipulation of the physical, chemical, or biological characteristics present to develop an aquatic resource that did not previously exist at an upland site. Establishment results in a gain in aquatic resource area.

High Tide Line: The line of intersection of the land with the water's surface at the maximum height reached by a rising tide. The high tide line may be determined, in the absence of actual data, by a line of oil or scum along shore objects, a more or less continuous deposit of fine shell or debris on the foreshore or berm, other physical markings or characteristics, vegetation lines, tidal gages, or other suitable means that delineate the general height reached by a rising tide. The line encompasses spring high tides and other high tides that occur with periodic frequency but does not include storm surges in which there is a departure from the normal or predicted reach of the tide due to the piling up of water against a coast by strong winds such as those accompanying a hurricane or other intense storm.

<u>Historic Property</u>: Any prehistoric or historic district, site (including archaeological site), building, structure, or other object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria (36 CFR part 60).

Independent utility: A test to determine what constitutes a single and complete non-linear project in the Corps regulatory program. A project is considered to have independent utility if it would be constructed absent the construction of other projects in the project area. Portions of a multi-phase project that depend upon other phases of the project do not have independent utility. Phases of a project that would be constructed even if the other phases were not built can be considered as separate single and complete projects with independent utility.

Indirect effects: Effects that are caused by the activity and are later in time or farther removed in distance, but are still reasonably foreseeable.

Intermittent stream: An intermittent stream has flowing water during certain times of the year, when groundwater provides water for stream flow. During dry periods, intermittent streams may not have flowing water. Runoff from rainfall is a supplemental source of water for stream flow.

Loss of waters of the United States: Waters of the United States that are permanently adversely affected by filling, flooding, excavation, or drainage because of the regulated activity. Permanent adverse effects include permanent discharges of dredged or fill material that change an aquatic area to dry land, increase the bottom elevation of a waterbody, or change the use of a waterbody. The acreage of loss of waters of the United States is a threshold measurement of the impact to jurisdictional waters for determining whether a project may qualify for an NWP; it is not a net threshold that is calculated after considering compensatory mitigation that may be used to offset losses of aquatic functions and services. The loss of stream bed includes the linear feet of stream bed that is filled or excavated. Waters of the United States temporarily filled, flooded, excavated, or drained, but restored to pre-construction contours and elevations after construction, are not included in the measurement of loss of waters of the United States. Impacts resulting from activities eligible for exemptions under Section 404(I) of the Clean Water Act are not considered when calculating the loss of waters of the United States.

Non-tidal wetland: A non-tidal wetland is a wetland that is not subject to the ebb and flow of tidal waters. The definition of a wetland can be found at 33 CFR 328.3(b). Non-tidal wetlands contiguous to tidal waters are located landward of the high tide line (i.e., spring high tide line).

Open water: For purposes of the NWPs, an open water is any area that in a year with normal patterns of precipitation has water flowing or standing above ground to the extent that an ordinary high water mark can be determined. Aquatic vegetation within the area of standing or flowing water is either non-emergent, sparse, or absent. Vegetated shallows are considered to be open waters. Examples of "open waters" include rivers, streams, lakes, and ponds.

Ordinary High Water Mark: An ordinary high water mark is a line on the shore established by the fluctuations of water and indicated by physical characteristics, or by other appropriate means that consider the characteristics of the surrounding areas (see 33 CFR 328.3(e)).

<u>Perennial stream</u>: A perennial stream has flowing water year-round during a typical year. The water table is located above the stream bed for most of the year. Groundwater is the primary source of water for stream flow. Runoff from rainfall is a supplemental source of water for stream flow.

Practicable: Available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes.

<u>Pre-construction notification</u>: A request submitted by the project proponent to the Corps for confirmation that a particular activity is authorized by nationwide permit. The request may be a permit application, letter, or similar document that includes information about the proposed work and its anticipated environmental effects. Pre-construction notification may be required by the terms and conditions of a nationwide permit, or by regional conditions. A pre-construction notification may be voluntarily submitted in cases where pre-construction notification is not required and the project proponent wants confirmation that the activity is authorized by nationwide permit.

<u>Preservation</u>: The removal of a threat to, or preventing the decline of, aquatic resources by an action in or near those aquatic resources. This term includes activities commonly associated with the protection and maintenance of aquatic resources through the implementation of appropriate legal and physical mechanisms. Preservation does not result in a gain of aquatic resource area or functions.

Re-establishment: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former aquatic resource. Re-establishment results in rebuilding a former aquatic resource and results in a gain in aquatic resource area and functions.

Rehabilitation: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing natural/historic functions to a degraded aquatic resource. Rehabilitation results in a gain in aquatic resource function, but does not result in a gain in aquatic resource area.

<u>Restoration</u>: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former or degraded aquatic resource. For the purpose of tracking net gains in aquatic resource area, restoration is divided into two categories: re-establishment and rehabilitation.

<u>Riffle and pool complex</u>: Riffle and pool complexes are special aquatic sites under the 404(b)(1) Guidelines. Riffle and pool complexes sometimes characterize steep gradient sections of streams. Such stream sections are recognizable by their hydraulic characteristics. The rapid movement of water over a course substrate in riffles results in a rough flow, a turbulent surface, and high dissolved oxygen levels in the water. Pools are deeper areas associated with riffles. A slower stream velocity, a streaming flow, a smooth surface, and a finer substrate characterize pools.

<u>Riparian areas</u>: Riparian areas are lands adjacent to streams, lakes, and estuarine-marine shorelines. Riparian areas are transitional between terrestrial and aquatic ecosystems, through which surface and subsurface hydrology connects riverine, lacustrine, estuarine, and marine waters with their adjacent wetlands, non-wetland waters, or uplands. Riparian areas provide a variety of ecological functions and services and help improve or maintain local water quality. (See general condition 23.)

Shellfish seeding: The placement of shellfish seed and/or suitable substrate to increase shellfish production. Shellfish seed consists of immature individual shellfish or individual shellfish attached to shells or shell fragments (i.e., spat on shell). Suitable substrate may consist of shellfish shells, shell fragments, or other appropriate materials placed into waters for shellfish habitat.

Single and complete linear project: A linear project is a project constructed for the purpose of getting people, goods, or services from a point of origin to a terminal point, which often involves multiple crossings of one or more waterbodies at separate and distant locations. The term "single and complete project" is defined as that portion of the total linear project proposed or accomplished by one owner/developer or partnership or other association of owners/developers that includes all crossings of a single water of the United States (i.e., a single waterbody) at a specific location. For linear project for purposes of NWP authorization. However, individual channels in a braided stream or river, or individual arms of a large, irregularly shaped wetland or lake, etc., are not separate waterbodies, and crossings of such features cannot be considered separately.

Single and complete non-linear project: For non-linear projects, the term "single and complete project" is defined at 33 CFR 330.2(i) as the total project proposed or accomplished by one owner/developer or partnership or other association of owners/developers. A single and complete non-linear project must have independent utility (see definition of "independent utility"). Single and complete non-linear projects may not be "piecemealed" to avoid the limits in an NWP authorization.

Stormwater management: Stormwater management is the mechanism for controlling stormwater runoff for the purposes of reducing downstream erosion, water quality degradation, and flooding and mitigating the adverse effects of changes in land use on the aquatic environment.

Stormwater management facilities: Stormwater management facilities are those facilities, including but not limited to, stormwater retention and detention ponds and best management practices, which retain water for a period of time to control runoff and/or improve the quality (i.e., by reducing the concentration of nutrients, sediments, hazardous substances and other pollutants) of stormwater runoff.

Stream bed: The substrate of the stream channel between the ordinary high water marks. The substrate may be bedrock or inorganic particles that range in size from clay to boulders. Wetlands contiguous to the stream bed, but outside of the ordinary high water marks, are not considered part of the stream bed.

Stream channelization: The manipulation of a stream's course, condition, capacity, or location that causes more than minimal interruption of normal stream processes. A channelized stream remains a water of the United States.

Structure: An object that is arranged in a definite pattern of organization. Examples of structures include, without limitation, any pier, boat dock, boat ramp, wharf, dolphin, weir, boom, breakwater, bulkhead, revetment, riprap, jetty, artificial island, artificial reef, permanent mooring structure, power transmission line, permanently moored floating vessel, piling, aid to navigation, or any other manmade obstacle or obstruction.

<u>Tidal wetland</u>: A tidal wetland is a wetland (i.e., water of the United States) that is inundated by tidal waters. The definitions of a wetland and tidal waters can be found at 33 CFR 328.3(b) and 33 CFR 328.3(f), respectively. Tidal waters rise and fall in a predictable and measurable rhythm or cycle due to the gravitational pulls of the moon and sun. Tidal waters end where the rise and fall of the water surface can no longer be practically measured in a predictable rhythm due to masking by other waters, wind, or other effects. Tidal wetlands are located channelward of the high tide line, which is defined at 33 CFR 328.3(d).

<u>Vegetated shallows</u>: Vegetated shallows are special aquatic sites under the 404(b)(1) Guidelines. They are areas that are permanently inundated and under normal circumstances have rooted aquatic vegetation, such as seagrasses in marine and estuarine systems and a variety of vascular rooted plants in freshwater systems.

<u>Waterbody</u>: For purposes of the NWPs, a waterbody is a jurisdictional water of the United States. If a jurisdictional wetland is adjacent – meaning bordering, contiguous, or neighboring – to a waterbody determined to be a water of the United States under 33 CFR 328.3(a)(1)-(6), that waterbody and its adjacent wetlands are considered together as a single aquatic unit (see 33 CFR 328.4(c)(2)). Examples of "waterbodies" include streams, rivers, lakes, ponds, and wetlands.

G. Water Quality Certification

Water Quality Certification General Limitations And Conditions

A. CULVERTS

For intermittent and perennial streams:

- 1. Bottomless or buried culverts are required when culvert size is greater than 36° diameter. This condition does not apply if the culverts will have a gradient of greater than 1% grade or is installed on bedrock. A buried culvert means that the bottom 10% by dimension shall be buried below the existing stream bed elevation.
- 2. The culvert shall be designed and sized to accommodate bankfull discharge and match the existing depth of flow to facilitate the passage of aquatic organisms.

- 3. When practicable, culverts shall be installed at the existing streambed slope, , to allow for the natural movement of bedload and aquatic organisms.
- 4. The conditions in this section apply only to the installation of new culverts regardless of which NWP is used to authorize the activity.

B. BEST MANAGEMENT PRACTICES

- All best management practices for storm water management shall be designed and implemented in accordance with the most current 1. edition of fhe NPDES construction general permit available at: http://www.epa.ohio.gov/dsw/storm/construction index.aspx#Construction%20General%20Permit, or watershed specific any construction general permit.
- 2. All avoided water resources and associated buffers/riparian areas shall be demarcated in the field and protected with suitable materials (e.g., silt fencing, snow fencing, signage, etc.) prior to site disturbance. These materials shall remain in place and be maintained throughout the construction process.
- 3. Disturbance and removal of vegetation from the project construction area is to be avoided where possible and minimized when necessary. Entry to surface waters shall be through a single point of access whenever practicable to minimize disturbance to riparian habitat. Unavoidable temporary impacts to forested riparian habitat shall be restored as soon as practicable after in-water work is complete using tree and shrub species native to the specific ecoregion where the project is located.
- 4. All dredged material placed at an upland site shall be controlled so that sediment runoff to adjacent surface waters is minimized to the maximum extent practicable.
- 5. Straw bales shall not be used as a form of erosion/sediment control unless used in conjunction with another structural control such as silt fencing.
- 6. Heavy equipment shall not be placed below the ordinary high water mark of any surface water, except when no other alternative is practicable.
- 7. Temporary fill shall consist of suitable non-erodible material and shall be stabilized to prevent erosion.
- 8. Cadmium chromium arsenate (CCA) and creosote treated lumber shall not be used in structures that come into contact with waters of the state.

C. MITIGATION

- 1. Compensatory mitigation is required for the discharge of dredged or fill material into wetlands, whether temporary or permanent, exceed one-tenth acre.
- 2. When required, compensatory mitigation shall be provided in accordance with chapters 3745-1 and 3745-32 of the Ohio Administrative Code.
- 3. When compensatory mitigation will be provided wholly or in part at a mitigation bank, credit purchase shall only be authorized at those banks approved by the interagency review team and having an active instrument signed by the director of Ohio EPA.
- Compensatory mitigation projects for stream impacts shall result in the preservation, restoration, or enhancement of stream habitat and/or biological functions.
- 5. Stream restoration activities shall maintain or enhance the habitat values of the stream as determined by an appropriate habitat assessment method and adhere to "natural channel design" principles. Natural channel design means a technique that integrates knowledge of natural stream processes to create a stable stream that maintains its form and function over time and achieves a targeted habitat or biological end point.

D. MISCELLANEOUS

- 1. Nationwide permits cannot be combined to increase any of the special or general limitations and conditions of this certification.
- 2. Authorization under this certification does not relieve the permittee from the responsibility of obtaining any other federal, state or local permits, approvals or authorizations.
- 3. In the event that the issuance of a nationwide permit by the Corps requires individual state water quality certification for an activity that constitutes an emergency as defined in 33 CFR 325.2(e)(4), the limitation and/or condition requiring the individual water quality certification is not applicable and the project may proceed upon approval by the Corps provided all other terms of this certification, including mitigation, have been met.
- 4. In nationwide permits where the district engineer has been granted authority to waive certain requirements, the corresponding general limitations and conditions of this certification as well as specific nationwide permit conditions shall apply unless written authorization from the director of Ohio EPA is obtained to authorize additional impacts.
- 5. For any project that does not meet one or more of the terms and conditions of this certification as they pertain to stream and lake shoreline length limitations, stream designated/existing aquatic life uses and stream antidegradation categories, Ohio EPA may determine, on a case-by-case basis, that a project will have such a minimal impact on water quality that individual state water quality certification is not necessary provided all other terms and conditions of this certification, including mitigation, have been met.

To qualify for consideration, the applicant must provide to Ohio EPA the following information:

- a. a copy of the pre-construction notification submitted to the Army Corps of Engineers including all attachments;
- b. a copy of the provisional nationwide permit issued by the Army Corps of Engineers including all attachments and special conditions, if any;
- c. a detailed description of the proposed mitigation or a copy of the mitigation plan as approved by the Army Corps of Engineers;
- d. a rationale of how the applicant believes the project will minimally impact water quality; and
- e. any other documentation as may be required under this certification.

Pending such a determination, all of the limitations and conditions of this certification shall apply unless written authorization from the director of Ohio EPA, stating otherwise, is obtained.

6. Representatives from Ohio EPA, Division of Surface Water will be allowed to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of this certification. This includes, but is not limited to, access to and copies of any records that must be kept under the conditions of this certification; and, authorization to sample and/or monitor any discharge activity or mitigation site. Ohio EPA will make a reasonable attempt to notify the applicant of its intention to inspect the site in advance of that inspection.

H. Ohio Coastal Management Program Federal Consistency Concurrence Determination

The Ohio Department of Natural Resources (ODNR) concurs with the U.S. Army Corps of Engineers' Federal Consistency determination for all nationwide permits except 3, 7, 12, 13, 14, 15, 17, 36, 38, and 51. Therefore, project specific CZMA Federal Consistency Determinations are required from the Ohio Department of Natural Resources prior to the use of nationwide permits 3, 7, 12, 13, 14, 15, 17, 36, 38, and 51 for projects in Lake Eric, including Maumee Bay and Sandusky Bay.

I. Further Information

- 1. District Engineers have authority to determine if an activity complies with the terms and conditions of an NWP.
- 2. NWPs do not obviate the need to obtain other federal, state, or local permits, approvals, or authorizations required by law.
- 3. NWPs do not grant any property rights or exclusive privileges.
- 4. NWPs do not authorize any injury to the property or rights of others.
- 5. NWPs do not authorize interference with any existing or proposed Federal project.

 TABLE 1:
 TRISHE WIND OHIO, LLC WIND POWER PROJECT

 PAULDING COUNTY, OHIO

WATER IMPACT TABLE REVISED: September 21, 2015

						_															
Perm. Culvert	NA	NA	NA	10"	(Extension)				NA	NA	NA	4.2KT	NA	NA	NTA	AN		24" (New)	24" (New)	48" (New)	いたシシシシシシシシシシシシシシシシシシシシシシシシシシシシシシシシシシシシシ
Applicable Impact Typical Section(s)	TARIW &	TARLWC	TCTPSC	TCTPSC &	TARSC culvert	extension for road,	mats for crane	crossing	TCTPSC	TCTPSC	TCTPSC		TCTPSC	TTLB (42 inch	temp culvert)	diameter temp	culvert extension)	TARSC & TARIW	TARSC & TARIW	TARSC & TARIW	
Class of Aquatic Resource	Ag/Road Ditch	Ag/Road Ditch	Ag/Road Ditch	Ag/Road Ditch					Ag/Koad Ditch	Ag/Road Ditch	Stream (Zielke	Ditch)	Ag/Road Ditch	Ag/Road Ditch	Ac/Road Ditch	TIMIT TOTAL		Ag/Road Ditch	Ag/Road Ditch	Ag/Road Ditch)
Perm. Impact Type	NA	RD	NA	RD				NY.A	NA	NA	NA		NA	NA	NA	4		ß	RD	ß	
Perm. Impact (Acres)	None	0.001	None	0.001				Nono	ALIONI	None	None		None	None	None			0.010	0.009	0.020	_
Temp. Impact Type	IR/CP	NA	CP	Cb				ور	5	CP	G		6	R	CP		-	¥	R	r IR	
Temp. Impact (Acres)	0.033	None	0.010	0.010				0.004	+ ~ ~ ~	0.004	0.020		0.030	0.010	0.010		0000	070-0	0.040	0.030	
Cowardin Class	PEMBX	PEMBx	PEMBX	PEMBx				PEMB *		PEMBx	R4SB5x		PEMBX	PEMBX	PEMBX			r E.MUBX	PEMBx	PEMBX	
Longitude	-84.65793026730	-84.50799508100	-84.50387264400	-84.50564696940				-84.50800649140		-84.50999661900	-84.65651700630		-84.55840291870	-84.55401104540	-84.51516603990		-24 51501010000	00671017010-	-84.51513852660	-84.49609175040	
Latitude	41.06246934830	41.06971669460	41.06838695840	41.06887839330				41.06901766980	11 010010010	41.07001291150	41.05452942990	41 06110500000	0/7000/1100.14	41.05122754050	41.05543649960		41 06263502140		41.05240251340	41.06503964060	
Site Name	WI	W2A	W2B	W2C				W2D	C	17 M	W3	A VIII	V44A	W4B	W5A		WSB		W5C	W6A	

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As/Road Ditch	Ag/Road Ditch	Ag/Road Ditch	Ag/Road Ditch	Stream	(Cunningham Crik)	Ag/Road Ditch	Stream (Blue Crk)	Ag/Road Ditch		Ag/Road Ditch	Ag/Road Ditch	Stream (Dog	Kun)	Ag/Koad Ditch	Ag/Road Ditch	Ag/Road Ditch	Ag/Road Ditch	Ag/Road Ditch	Ao/Road Ditch	TATA MANA A.	Stream (Prairie Cric)	Stream	
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41.04781701480	41.04389708490	41.04059255770	41.04790893400	41.04102938610	41.03710173310	11 03557032580	000000/00001+	06/00/7100014	11 01007710570	0/074//0040.14	41.03714863560	41.03757821240	41.02622736740		41.03339298740	41.03237729980	41.03802978400	41.03350327780	41.03353797910	41.02907940440		41.02636204290	
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Impact Types

NA = Not Applicable

RD = Turbine Access Road Crossing using Culvert and Fill or At-Grade Lower Water Crossing

IR = Temporary Intersection Radius Enlargement or Truck Turning Lane using Fill (construction mats will be used if conditions allow)

CP = Temporary Crane Crossing using Culvert and Fill (construction mats will be used if conditions allow)

Applicable Impact Typical Section (see original Section 404 permit application package)

TARSC = Typical Turbine Access Road Stream Crossing (permanent culvert) TARLWC = Turbine Access Road Low Water Crossing (at grade, no culvert) TARIW = Turbine Access Road Intersection Widening (temporary) TTTLB = Truck Traffic Turning Lane B (temporary)

TCTPSC = Temporary Crane Travel Path Stream Crossing (temporary culvert)

Note: Cross sections for collection system crossings are not listed as they will all be directionally drilled or installed below a road or crane crossing.









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Cultural Resources Avoidance Plan

The following cultural resource avoidance plan is pertaining to construction of the Phase I access roads only. This construction is scheduled to occur in December 2013 and take approximately 10 days to complete. A revised cultural resources avoidance plan will be submitted prior to the next phases of construction.

Phase I access road construction will not affect any cultural resources identified during the Archaeological Investigation performed by Weller & Associates, Inc. (documented in Appendix Q of the amended CECPN application). This survey included 300 foot wide corridors encompassing all of the turbine access roads that will be constructed during this initial phase of the project. Access roads will be 16 feet wide and grading limits will be limited to 50 feet wide (i.e. 25 feet on either side of the access road centerline). No cultural resources potentially eligible for the National Register of Historic Places (NRHP) were identified during the field investigation of Phase I access road corridors.

No archeological artifacts were found within the 300 foot wide corridors encompassing the access roads to Turbines T-03, T-04, T-26, T-27, T-28, T-53, T-54, T-56 and T-57. Two sites were identified within the 300 foot survey corridors for the access roads to turbines T-52 and T-56 (sites 33PA0278 and 33PA0291, respectively). However, both sites are sufficiently distant from the grading limits for these access roads that avoidance will be accomplished by demarcation and adherence to the grading limits. These sites are discussed below.

Site 33PA0278

Site 33PA0278 consists of a lithic scatter that was identified during surface collection of an immature wheat field. The artifacts were identified on a slight rise positioned on the south side of Prairie Creek and are just east of CR 131. The site area was determined to be 10 meters north-south by 5 meters east-west, giving it an approximate site size of 50 square meters. The site was found to lack integrity and not to be eligible for the NRHP. This site is more than 75 feet from the nearest disturbance limit for the access road to turbine T-52, which will provide an adequate spatial buffer to ensure impact avoidance. The contractor has been made aware of the location of this site to ensure strict adherence to grading limits in this area.

Site 33PA0291

A single biface fragment was found along the south edge of the 300 foot wide survey corridor encompassing the access road to T-56 and has been designated Site 33PA0291. The site of this isolated find encompasses 1 square meter, lacks integrity and was found not to be eligible for the NRHP. This site is more than 100 feet from the nearest disturbance limit for the access road, which will provide an adequate spatial buffer to ensure impact avoidance. The contractor has been made aware of the location of this site to ensure strict adherence to grading limits in this area.

If previously unknown cultural resources are encountered during access road construction, construction work will temporarily cease and a qualified archaeologist will be brought in to

examine the site, ascertain the site boundaries and determine the need for further work. Once the archaeologist has delineated the site boundaries, orange snow fence will be installed around the site plus a 10 meter buffer. While the site is being evaluated, the remainder of access road construction activities will continue unrestricted. The evaluation may have one of several possible outcomes:

(1) If the archaeologist finds that the site appears to have integrity and potential for significance, the access road design may be revised slightly to avoid the site entirely. Any such revised access road alignment would be placed in a location that has already been surveyed and cleared for cultural resources.

(2) The archaeologist may determine the site is not significant or does not have integrity. However, if avoidance is readily achievable, the access road design may be revised slightly to avoid the site entirely. Any such revised access road alignment would be placed in a location that has already been surveyed and cleared for cultural resources. If avoidance of the site is not readily achievable, the archaeologist will write a letter report explaining his/her reasoning regarding the site's lack of integrity and/or significance. If OHPO concurs, construction work will recommence on the original access road alignment as soon as that concurrence is received. If additional data or survey work is requested by OHPO, the archaeologist would supply the additional data and survey results in a supplemental report and concurrence would again be requested. Again, construction work would recommence upon OHPO concurrence.

(3) If the site has integrity, is potentially significant and cannot be avoided, the archaeologist may recommend that Phase II Evaluative Testing be conducted to determine whether the site is eligible for the National Register of Historic Places. Consultation on the scope of work for Phase II Evaluative Testing would be undertaken with OHPO and would be initiated upon OHPO's concurrence. Based on the results of Phase II testing, appropriate mitigation measures would be developed in consultation with OHPO. Construction of the applicable section of access road would recommence once the agreed upon mitigation has been accomplished and confirmed by OHPO to be satisfactory.

As described above, the results of any evaluations (and potential mitigation measures) described above will be submitted to the OHPO for review and concurrence. Due to the time sensitivity associated with construction, the OHPO will be requested to expedite review and provide concurrence within 3 business days. If concurrence is not received within this time frame, the Permittee will request that OPSB staff coordinate with OHPO to facilitate the review process. If concurrence has not been received from OHPO within 2 business days, Permittee will request that OPSB allow construction to recommence without formal OHPO concurrence. Also, should the Permittee and the OHPO at any point be unable to reach an agreement on an issue, the Permittee will request that the OPSB mediate between the two parties.

If the unanticipated discovery involves potential human remains, the archaeologist will immediately notify OHPO. Local law enforcement authorities will also be contacted to obtain confirmation that any such remains are historic and do not represent a potential crime scene. The State of Ohio does not have regulations regarding the handling of unanticipated historic human burials that may be encountered during construction projects. However, if an unanticipated discovery is confirmed to contain human remains, the site will be treated as a potentially significant archaeological site. The remains will be left in place, the site delineated and the access road alignment will be modified to avoid the site if possible. Orange snow fence will be placed to delineate the site to facilitate avoidance and will be removed immediately upon completion of construction. If avoidance is not possible, appropriate mitigation measures will be developed in consultation with OHPO. Construction of the applicable section of access road would not recommence until the agreed upon mitigation has been accomplished and confirmed by OHPO to be satisfactory.

On-Shore Bird and Bat Pre- and Post-Construction Monitoring Protocol for Commercial Wind Energy Facilities in Ohio

An Addendum to the Ohio Department of Natural Resource's Voluntary Cooperative Agreement

The following protocols are meant to establish a standardized framework in which preand post-construction surveying should be conducted at proposed commercial wind turbine facilities within the state of Ohio. The Ohio Department of Natural Resources (ODNR) will assess the level of surveying effort required within the project area boundary limits (henceforth referred to as the "site"), based upon the information provided from section 1.(a) of the Cooperative Agreement, the habitat characteristics within the site (determined through a site visit by ODNR Division of Wildlife biologists and GIS analysis), and its proximity to focal points of bird and bat activity. Additional surveys for species other than birds and bats may be requested based upon a review of the ODNR Division of Natural Areas and Preserves' natural heritage database. These studies are meant to document the level and timing of species activity, diversity and abundance. Results of the studies outlined within this document will allow the ODNR Division of Wildlife to assess the potential impact that a proposed turbine facility may have either directly through mortalities or indirectly through avoidance behaviors, on Ohio's wildlife resources. Post-construction mortality estimates will be used to validate or refute preconstruction predictions, and to determine if the use of mitigation measures is warranted in order to minimize impacts to wildlife. By having consistent study methodology among projects, over time a regional assessment may be formed for adjusting the methods or duration of the studies recommended.

The type of surveying recommended will be at the discretion of the ODNR Division of Wildlife, and will be tailored to the specific site, but may fit generally into one of the categories listed below. These survey types are to be cumulative, meaning if the "moderate" level of surveying is required, the survey techniques described in the "minimum" level must also be conducted. While this document is intended to serves as a guide for wind developers as they plan projects and determine the level and type of wildlife monitoring that is likely to be recommended, the ODNR Division of Wildlife reserves the right to be flexible in the application of these surveys based on site-specific or project-specific conditions.

• Minimum

These areas are large tracts of agricultural lands that do not come within 500 meters of a woodland ≥ 10 hectares, wetlands ≥ 3 hectares, or large water body (i.e., rivers, lakes or reservoirs).

• Moderate

Primarily agricultural or grasslands, with patches of forests, wetlands, and/or other habitat.

• Extensive

These include those areas within proximity to migratory corridors, staging areas, Audubon Important Bird Areas (IBAs), or the Lake Erie shoreline (3-mile buffer) (Fig. 1).

In an effort to standardize information collected among projects, data should be recorded on forms provided for each of the various types of recommended surveys for all pre- and post-construction monitoring activities. Completed forms should be returned to the ODNR Division of Wildlife at the conclusion of surveying. Weather data should be recorded during all types of surveying (e.g. temperature, relative humidity, cloud cover, wind speed and direction).

1. Minimum Surveying Effort

1.1. Breeding birds

While breeding birds in the eastern United States have not been shown to be at high risk of mortality from turbines within their territories, it is important to identify what species may be impacted through habitat disturbance or avoidance. Therefore, point-counts should be conducted at all proposed turbine locations, with 2 points established for each turbine. The first set of points should be ~ 100 meters from the turbine or any adjacent proposed turbine locations. The second set of points will be between 125 to 300-meters (distance assigned by ODNR on a site by site basis) from any proposed turbines. The 100-meter point will be used to assess those species that may be directly affected by construction of the turbine; the second point will be used to assess indirect impacts such as avoidance. Effort should be made to place all points in nearby undisturbed habitat that will remain post-construction. Habitat for the point-counts should be similar to that of the turbine location. Because of increased detectability, points within grassland habitats may be placed at every other turbine. If turbine locations have not yet been determined, 2 point-count locations should be established for the maximum number of turbines proposed. These points should be randomly stratified across the site relative to the proportion of individual habitat types. Generally, active agricultural fields are not considered suitable nesting habitat for most species of birds; thus, surveys do not need to be conducted at any point that falls within these areas. Point-count locations (GIS coverage and/or GPS coordinates) should be provided to the ODNR Division of Wildlife. Three 10-minute point-count surveys should be conducted at each point: 1 in May, and 2 in June.

Certain bird species do not frequently sing until later in the breeding season; given this reduced detectability, 1 additional point-count is required in July for sites with suitable habitat for the Henslow's sparrow, dickcissel, and/or sedge wren. These additional point-counts should be conducted on sites that contain or are directly adjacent to >50 hectares of contiguous grassland (for all 3 species) or >1 hectare of wet meadow or freshwater marsh (for sedge wren only).

All surveys should begin at approximately dawn and not extend past 10:00 a.m. EST. Surveys should be conducted by experienced personnel who are able to distinguish Ohio breeding bird species by sight and sound. All birds detected during surveys should be identified to species and their behavior, indications of breeding activity (refer to breeding bird atlas codes¹), estimated distance, and direction (bearing) should be recorded. Birds flying overhead that do not land or originate within 200-meters of the center of the point should be listed as "fly over." Observations should be recorded using appropriate alpha species codes². Incidental observations of state and federal threatened or endangered species (Table 1) should be noted regardless of whether detected with the given survey time or while at a point-count location. Due to reduced detectability, surveys are not to be conducted on mornings of heavy wind (>5 meters/second), prolonged periods of rain (>20 minutes), or fog. To assess avoidance of the project area after construction, surveys should be conducted 1 year prior to <u>and</u> 1 year post-construction.

For wind energy development projects proposed by Voluntary Agreement cooperators on sites deemed to pose minimum risk to wildlife resources only, breeding bird surveying can occur prior to construction and after submission of the associated permit application to the Ohio Power Siting Board (OPSB). Under these conditions, the ODNR Division of Wildlife will certify to the OPSB that these data are not required prior to evaluating the potential ecological impacts at the site of the proposed project. Submission of survey results to the ODNR Division of Wildlife must occur prior to construction, and post-construction monitoring, as noted above, is still required.

1.2. Raptor nest searching

One early season (1 February -31 March) survey should be conducted on and within 1 mile of the proposed site. A 2-mile buffer should be used if the site is within 1 mile of large water bodies (lakes, rivers, or reservoirs) or wetlands >5 hectares as these areas have a higher potential for use by threatened or endangered species of raptors. The species and locations of nest sites should be marked on USGS 1:24,000 topographic quadrangles.

1.2.1. Raptor nest monitoring

Monitoring should be conducted to assess the daily movement patterns of any species of protected raptor whose nest is located within 2 miles of the proposed site. During the incubation and rearing stage the location of adult birds should be tracked for at least 4 hours twice per week until consistent activity patterns are established. Alternate monitoring strategies that assess the degree to which nesting raptors use the proposed turbine facility will be considered (contact ODNR Division of Wildlife). Information collected

¹ <u>http://www.ohiobirds.org/obba2/uploads/Handbook%20Body.pdf</u>

² <u>http://www.pwrc.usgs.gov/bbL/manual/sname.htm</u>

will be used to document how frequently the birds enter the proposed turbine facility and whether particular turbines may pose a more substantial risk.

1.3. Bat acoustic monitoring

With the expansion of wind turbines into the eastern United States, incidences of bat mortalities have become increasingly more common. Initially, these issues were limited to forested sites within the Appalachian Mountains. Now, unfortunately, they have been documented on agricultural sites as well. As a result, bat activity levels should be assessed at all proposed wind turbine facilities. For sites deemed to pose minimum risk to wildlife resources only, bat acoustic monitoring can be waived for Voluntary Agreement cooperators if the permit application for the wind turbine facility is conditioned such that turbines will not operate at wind speeds ≤ 4 meters/second (as measured within the rotor swept area) from dusk to dawn, July 1 to October 31 annually. Under these conditions, post-construction acoustic data will not be required unless unacceptable mortality rates are detected.

At least 1 full season (15 March – 15 November) of acoustic monitoring should be conducted. This can be accomplished by attaching AnaBat (either SD1 or those equipped with CF ZCAIMS) units to all meteorological towers, with 1 unit positioned at 5 meters of the ground, and 1 unit within or as close as possible to the rotor swept area. In an effort to standardize results among study sites, the AnaBat's sensitivity should be adjusted to detect a calibration tone³ at 20 meters. AnaBat units must monitor from 0.5 hour before sunset until 0.5 hour after sunrise. A "pass" will be defined as any file with \geq 2 echolocation pulses. When possible, detections should be identified to species or species group (e.g., big brown/silver-haired) within AnaLook. Copies of original and identified detections should be provided to the ODNR Division of Wildlife. In an effort to assess both potential attractant issues, and to correlate the number of detections with bat mortalities, acoustic monitoring should continue through the conclusion of postconstruction monitoring.

2. Moderate surveying effort

2.1. Passerine migration

Numerous incidences exist of nocturnally migrating songbirds colliding with tall structures such as lighthouses, cell phone towers, and tall buildings. It is unclear what the cumulative impact of potentially 100s of turbines on the landscape will be to migrating birds. In an effort to gauge the amount of use a particular site receives during bird migration, point-counts should be conducted in the spring and fall. One point-count location should be established for every 100 hectares of

³ Unlike most ultrasonic pest repellers, this product produces a constant ultrasonic sound and should be used to calibrate AnaBat units. <u>http://home.earthlink.net/~nevadabat/BatChirp/index.html</u>

combined forest, shrub, and wooded wetland; however if the site would require <5 survey points, the ODNR Division of Wildlife will consider eliminating this survey requirement after a field review of habitat quality. Points should be established in patches of the aforementioned habitats, and should be stratified across the extent of the site. Surveys should be conducted once weekly from1 April to 31 May, and from 15 August to 15 November. All surveys should begin at approximately dawn and not extend past 10:00 a.m. EST. Observers should record every bird seen or heard, during a 10-minute period at each point. Birds flying overhead that do not land or originate within 200 meters of the center of the point should be listed as "fly over." The direction (bearing) and estimated distance of the bird from the observer should also be recorded.

2.2. Diurnal bird/raptor migration

Though modern turbines seem to pose less of a threat to birds during the day, surveys should still be undertaken to minimize possible wildlife/wind turbine interactions. Day-long (9:00 a.m. to 4:00 p.m.) surveys should be conducted 3 times a week, during seasonally favorable weather for migration (southerly winds in spring, northerly winds in fall). Due to species-specific differences in migration timing, surveying should be conducted from15 March to 1 May, and 1 September to 31 October. The number of sample points will vary with the size and configuration of the proposed facility.

2.3. Owl playback surveys

These surveys should be conducted once monthly for the appropriate species: January (great horned), February (barred), and March (screech). One sample point should be created for every 100 hectares of contiguous forest. Points should be established within forest patches and be spaced >400 meters apart. Surveys should begin 0.5 hour after sunset. Owl calls should be played through a megaphone or portable radio. Three replications of 1 minute of calls, followed by 4 minutes of listening (15 minutes total per station) should be played at each point-count location. Playback calls should have a minimum of background noise, and equipment must be able to broadcast so that the sound pressure is 80-90 dB at 1 meter from the speaker.

2.4. Bat mist-netting

While acoustic monitoring may be able to provide a generalized activity level for the site, it can not discriminate distinct individuals nor indisputably determine species composition. Thus, mist-netting should be performed to determine species diversity and locate potential concentrations of activity. Also, the range of the federal and state endangered Indiana myotis (*Myotis sodalis*) is considered statewide within Ohio. This species is known to occur in a variety of habitats including stream and river corridors, forest canopy, and edges. Mist-net surveys

should be conducted in accordance with U.S. Fish & Wildlife Service guidelines⁴, and by an individual approved to handle Indiana myotis (contact U.S. Fish & Wildlife Service for list) and have obtained an ODNR issued scientific collectors permit. Prior to beginning mist-netting activities, project consultants must meet with ODNR Division of Wildlife and U.S. Fish & Wildlife Service staff on-site to review habitats within the project area. Two netting stations should be established per square kilometer of forested area. In order to better assess the bat species community, each station should consist of a minimum of 4 net sets, with at least 1 set being a high net (3 standard mist nets stacked on top of one another to create one set that is ~ 7.5 meters tall). Each site should be surveyed on 2, nonconsecutive nights between 15 June - 31 July. Mist-netting should occur during the 5 hours following sunset. Documentation photos should be taken for all species encountered on site. To identify within night recaptures, a small (i.e., ~ 5 mm) mark of non-toxic water-soluble paint should be applied to one forearm of all captured bats. Due to concerns over White Nose Syndrome (WNS), equipment should be decontaminated following U.S. Fish & Wildlife Service protocols⁵.

If Indiana myotis, Rafinesque's big-eared bat, or eastern small-footed myotis⁶ are encountered during mist-netting surveys the ODNR Division of Wildlife must be notified within 24 hours and additional information must be collected. Each individual captured should have voucher photographs taken of the head, body, and species-specific identifiable features, such as the calcar, foot, or mask. Radio telemetry should be conducted on up to 4 Indiana myotis (3-4 females, no more than 1 male) and all Rafinesque's big-eared bats or eastern small-footed myotis. Home range (nightly locations taken every 5 minutes, for the life of the transmitter), roost trees, and maternity colonies should all be identified. If multiple maternity colonies of listed species are suspected to be located on or adjacent to the proposed site, additional transmitters may be requested. Photos, GPS location, tree species, dbh, site characteristics, and exit counts should be collected at each roost. If high densities (>15 of 1 species) of lactating females of the more common colonial species (e.g., big brown bat, little brown, or northern myotis) are captured within a night's trapping, radio telemetry should be used to identify the location of the maternity colony. A maximum of 10 transmitters should be allocated for this task, and their use should be stratified across the proposed facility. Maternity colonies represent an area of increased activity and thus greater risk if turbines were located in proximity to nightly travel routes. Additionally, Indiana myotis are known to occasionally share roosts with the more common little brown myotis. Banding (following U.S. Fish & Wildlife Service $protocol^7$) should be done on Indiana myotis and Rafinesque's big-eared bat, but not eastern small-footed myotis due to entrapment concerns associated

⁴ http://www.fws.gov/northeast/nyfo/es/2007Mistnetting.pdf

⁵ http://www.fws.gov/midwest/Endangered/mammals/BatDisinfectionProtocol.html

⁶ Rafinesque's big-eared bat and the eastern small-footed myotis have each only been recorded once within the state. Though the likelihood of encountering these species is low, if one was captured it is important to maximize the opportunity to gather habitat information on these species.

with its over-wintering habitat. Bands will be provided by ODNR Division of Wildlife.

Finally, any possible hibernacula sites on or within 5 miles of the proposed site should be trapped during spring emergence and fall swarming to determine potential use. Monitoring should follow the current U.S. Fish & Wildlife Service protocol⁷. Surveys are to be conducted every 2 weeks from 15 March – 15 April, and 15 September – 15 November. More extensive monitoring may be requested if listed species of bat are detected during summer mist-net surveys. Nightly captures should be marked similar to those captured during mist-netting. Internal surveys are not recommended due to safety concerns, difficultly in determining species absence, and the potential transmission of WNS.

Where applicable (determined by ODNR)

2.5. Nocturnal marsh bird surveys

Ohio has lost >90% of its original wetland habitat. Accordingly, several species of marsh birds are protected within the state. For projects that contain or that are directly adjacent to \geq 3 hectares of contiguous wetland, marsh bird surveys should be conducted. Playback surveys should be used to assess the presence of least bittern, sora, Virginia rail, king rail, and American bittern. Surveys are to be conducted weekly from 20 May to 15 June. One survey location should be established for every 50 hectares of contiguous wetland, or 1 location per wetland \geq 3 hectares in size if there are multiple isolated patches of habitat. Points should be spaced >400 meters apart in appropriate habitat. Each survey should be conducted during a 2-hour period centered on either sunrise or sunset. Thirty seconds of territorial calls should be broadcast through either a portable radio or megaphone, followed by 30 seconds of listening, for each species. Playback calls should have a minimum of background noise, and equipment must be able to broadcast so that the sound pressure is 80-90 dB at 1 meter from the speaker. Due to interspecies competition, the sequence of the species calls should be played as they are listed above.

2.6. Barn owl surveys

Barn owls are a state listed threatened species in Ohio; thus, if suitable habitat exists additional effort should be taken to identify if individuals are nesting within the region. These surveys should be undertaken if the proposed site is within areas depicted in Fig. 2 and includes or is adjacent to \geq 80 hectares of combined wet meadow, pasture, and grassland. Surveyors should contact property owners of lands that have either barns or barn owl nest boxes and inquire about whether barn owls are currently using these structures. Surveyors should also visit each suitable barn or nest box in the area once from 15 June to 15 July to look for whitewashing, pellet material, fresh pellets, feathers, or other indications of the

⁷ <u>http://www.fws.gov/Midwest/endangered/mammals/inba/DrftSrvyPrtcl.html</u>

presence of nesting barn owls. If barn owls are suspected of using a structure, playback calls should be used in an attempt to elicit begging responses from young that may be concealed in the rafters. Playback surveys should consist of broadcasting 1 minute of adult calls, followed by 2 minutes of listening for young. This procedure should be repeated 3 times per survey and should be conducted between 0.5 hour after sunset and midnight.

2.7. Sandhill crane migration

Sandhill cranes are listed as an endangered species in Ohio. If sandhill cranes are known to migrate within the vicinity of the proposed project (Fig. 2), additional surveys should be conducted. These surveys will be an extension of the weekly diurnal bird/raptor migration protocol to include the timing of sandhill crane migration, from 1 November to 15 December.

2.8. Waterfowl surveys

Ohio not only has a large migratory population of waterfowl, but also provides important over-wintering habitat for numerous species. If the site includes \geq 3 hectares of wetlands, rivers, lakes, or agricultural fields where concentrations of waterfowl are known to feed, static or driving surveys of the waterfowl community should be conducted twice monthly, from 1 September – 1 April. The number of points will vary with the size and configuration of the water body. Consult with the ODNR Division of Wildlife for possible locations, survey times, or tracts.

2.9. Shorebird migration

The Lake Erie basin provides important stopover habitat for migratory shorebirds. Twice monthly point-counts (15 April to 31 May, and 15 July to 15 October) should be conducted in appropriate habitat such as beaches, flooded fields and mudflats. A minimum of 10 minutes should be spent at each point; additional time may be spent to accurately assess the number and species composition of the flock. The number of points will vary with the habitat surveyed as well as the size and configuration of the site. Consultation with ODNR Division of Wildlife is strongly recommended.

3. Extensive

3.1. Radar monitoring

Marine radar should be used to monitor nightly passage rates, 5 nights a week from 15 April to 31 May, and 15 August to 31 October. Surveys should begin at sunset and continue until sunrise. Information on estimated numbers/density, direction, hourly changes in activity and altitudes should be included. Preferably 2 radar units should be operated simultaneously; to assess target density and

altitudes concurrently; if that is not logistically possible, the radar unit should be alternated between the vertical and horizontal position every 20 minutes. Hourly weather data should also be recorded in order to correlate passage rates with climatic factors. Due to reduced detectability, monitoring should not be conducted on nights of heavy rain or fog.

Interpretation of pre-construction survey results

Upon completion of surveys, a summary report of all findings should be presented to the ODNR Division of Wildlife. Once permitting applications have been filed with the OPSB, these reports will be made available to the public. Construction should not commence prior to review of these data and findings by ODNR Division of Wildlife (and U.S. Fish & Wildlife Service for federal listed species). A pre-construction meeting to review monitoring results and discuss potential concerns with respect to turbine locations and wildlife resources will be scheduled with ODNR staff, the developer, and project consultants before construction of the facility begins and before official agency comments are provided for any permits pending. Based on survey results, the ODNR Division of Wildlife may recommend 1 or several of the following:

- a) The project should constructed without altering the initial design.
- b) Changes are needed regarding the number or micro-siting of turbines, auxiliary structures, and/or access roads.
- c) Additional surveying is recommended based upon initial survey results.
- d) The project should not be constructed due to significant wildlife and/or related ecological concerns.

Facility design

Several measures are thought to decrease the likelihood of wildlife strikes at wind turbine facilities. Accordingly, these measures should be incorporated into the design of all turbine facilities within Ohio.

Lighting

Passerines use celestial cues to aid in navigation during migration. Lights are known to disorient nocturnally migrating passerines; this may directly increase the mortality risk from collisions, or indirectly through exhaustion. Therefore, the number of lights on a site should be minimized. Turbines and meteorological towers should have the fewest number of lights permitted by the Federal Aviation Administration (FAA). Preferably these will be white lights with the minimum intensity, and number of flashes per minute (longest strobe) allowable by the FAA. Lights around substations or auxiliary structures should be down-shielded, equipped with motion sensors, or turned off when not in use.

Minimization of perches

New commercial wind turbine facilities have discontinued the use of lattice-work towers which were thought to contribute to the large numbers of raptor fatalities at sites such as Altamont, California. However, effort should still be made to reduce the number of perches available at a site. When possible all electrical cables connecting turbines to each other or to the substation should be buried.

Guyed structures

Guy wires seem to pose a particularly high threat to migratory birds as demonstrated by the large number of fatalities found at certain communication towers. Thus, to the degree possible, unguyed meteorological towers should be used to reduce possible mortalities from striking wires.

Tree removal

In order to reduce the potential for the incident take of bats that form large maternity colonies, including the federally endangered Indiana bat, tree clearing should be minimized and necessary clearing should be constrained to the dates suggested by U.S. Fish & Wildlife Service (1 October to 31 May).

Avoidance of nests for protected species of raptor

Raptor nests represent an area of increased activity and thus, turbines within close proximity may pose an increase risk. Therefore, the ODNR Division of Wildlife suggests a minimum setback of ½ mile from any nest of a protected species of raptor.

Post-construction monitoring (all sites)

Wildlife monitoring

Several monitoring studies should be continued through the post-construction monitoring period. These studies will be used to assess potential behavioral changes in wildlife due to the presence of wind turbines. While avoidance behavior has been noted in species of grouse, it is unclear whether other species of grassland or forest-dwelling birds will avoid areas with wind turbines. Thus, breeding bird surveys should be continued to examine any species-specific threshold distances. Alternately, the high number of bat mortalities at turbine facilities in the eastern U.S. suggests the possibility that bats are actually being attracted to the site post-construction. In order to assess attraction and to potentially correlate bat morality with detection frequency, acoustic monitoring should also be continued throughout the post-construction monitoring phase.

Mortality searches

One initial year (1 April to 15 November) of daily mortality searches will be recommended to the OPSB for each site with an optional second season depending on the first year results. The results of the mortality searches should be submitted to ODNR Division of Wildlife and U.S. Fish and Wildlife Service for review. Depending on the results of the first year, ODNR Division of Wildlife will determine if post-construction monitoring of mortality in the second year can be waived, reduced (i.e., focused on time periods when higher numbers of fatalities were detected), or continued for a full year.

The number of turbines searched will depend on the number of turbines at the facility.

- $\circ \leq 10$: all searched.
- \circ 11-40: 1/2 searched, minimum of 10.
- \circ >40: 1/4 searched, minimum of 20.
- All meteorological towers.

Turbines to be searched will be randomly selected but may include specific turbines in areas of concern if so noted by the ODNR Division of Wildlife or U.S. Fish & Wildlife Service based on pre-construction monitoring results. Recommendations for monitoring during any second year may differ, as noted above, both in terms of time period, specific turbines and number of turbines searched to address potential wildlife impacts.

Transect area and design

At each searched turbine, north-south oriented transects should be established every 5 meters. The length of these transects, and the perpendicular distance that transects should extend from the turbine base should be equal to twice the blade length of the turbine being searched. Transects should not venture into hazardous areas, such as steep slopes or high water. Vegetation mapping should be done for each of the searched turbines 3 times a year (spring, summer, and fall), given that vegetation influences carcass detectability. Mapping will consist of recording the GPS location, vegetation height and percent cover (1-meter transect) every 10 meters for each transect. Additional points should be taken at abrupt transition zones such as the edge of a road. An estimate of searchable area also should be provided for each searched turbine. If turbines are within agricultural regions, developers should encourage landowners to plant areas within 60 meters of the turbine in either soybean or wheat crops to increase the probability of detecting carcasses.

Searcher efficiency and Scavenging rates

In order to compensate for carcasses that are scavenged or those missed by observers, searcher efficiency and scavenging rates should be determined for each site using the

procedure described below. These indices should be calculated for each year of postconstruction monitoring.

Searcher efficiency

Search efficiency trials consist of placing test carcasses at locations chosen at random to assess an individual's ability to detect turbine mortalities. These surveys should be conducted by someone who is not actively involved in the searches, and carcasses should be placed unbeknownst to the searchers. Individual trials should be conducted randomly at least 200 times each year (a trial consists of the placement of an individual carcass). Carcasses may be used for multiple trials throughout the searched area) and direction selected at a turbine, with distance (within the searched area) and direction selected at random. Each carcass should be discreetly marked to identify it as a trial individual. Carcasses must be similar to those expected to be encountered during the search and should vary in both species composition and stage of decomposition. After a searcher has finished his or her survey, the individual conducting the efficiency trial should attempt to recover any missed carcasses to ascertain whether they were scavenged prior to the beginning of the search.

Scavenging rate

In an effort to assess how quickly carcasses are removed from the site by scavengers, a minimum of 50 carcasses per year should be placed at random distances and directions. Several carcasses should be placed each month, since rates are likely to change throughout the year. These carcasses should be checked daily for the first week, then every 2 days until the carcass is removed or completely decomposed. Preferably, carcasses used for scavenging rate estimation will be those collected from the site, and not surrogate species such as pigeons, starlings, or house sparrows since these have been found to be scavenged less frequently. Characteristics that should be recorded for each placed carcass include: the GPS location, vegetation height, percent cover, distance/direction from turbine, and species.

Turbine site searches

Each day searches should begin approximately at first light; this reduces the number of carcasses removed by diurnal scavengers and increases the likelihood of recovering live individuals. The appropriate number of surveyors should be hired to completely search the allotted turbines by 1:00 p.m. The initial start and stop time should be recorded for each survey. Searchers should walk slowly, scanning ~ 2.5 meters on either side of the transect. When a bird or bat is encountered, the distance when the observer first detected it should be recorded. The searcher should then assess whether the individual is alive or dead. If the individual is alive, efforts should be made to release or take the animal to a

licensed rehabilitator⁸. If successful rehabilitation is not likely, then the individual should be humanely euthanized through cervical dislocation⁹. For each individual (regardless of dead or alive), the site should be flagged, and returned to after the turbine search has been completed. Once relocated, a photograph should be taken of the carcass before it is moved. The carcass should be collected in individual resealable plastic bags, and the carcass identification number written in pencil on a piece of write-in-the-rain paper enclosed with the carcass. All information on the "Fatality Reporting Form" should be recorded. Mortalities encountered outside the bounds of an official search should be collected, and the above information recorded, but "Incidental" should be written into the notes area. These will not be used in the calculation of site mortality rates, but may (depending on species) be used in searcher efficiency or carcass removal trials. Bats within the Myotis family are difficult to differentiate, and should not be used for scavenging rate or searcher efficiency trials. These carcasses should be frozen and given to the ODNR Division of Wildlife at a prearranged date. If a state or federal threatened or endangered species is located, the ODNR Division of Wildlife and U.S. Fish & Wildlife Service must be contacted within 48 hours. At that time arrangements will be made for turning over the carcass to the appropriate agency. If a larger than expected mortality event occurs, ODNR Division of Wildlife and the U.S. Fish & Wildlife Service must be notified within 24 hours. For our purposes a significant mortality event will be defined as >5 birds/bats at an individual turbine, and/or >20 birds and/or bats across the entire facility.

Note: ODNR suggests individuals involved in collecting mortalities under turbines take the same precautions as those individuals handling live bats during mist-netting operations (i.e., leather gloves and maintain up-to-date rabies vaccinations).

Mitigation measures

The ODNR, Division of Wildlife (DOW) recognizes that it is unreasonable to expect wind turbine facilities in Ohio to have no impact on wildlife; however, wildlife impacts from wind energy and other "green" development projects should be minimized. Ultimately, the DOW will use Ohio-specific data from wind energy facilities to define typical or expected versus unacceptable levels of mortality to wildlife from the operation of land-based wind turbines. Those data, however, do not exist at this time. Thus, the DOW will review all available postconstruction mortality data from regional wind energy facilities in landscapes with habitats similar to what is found in Ohio's commercially viable wind resource areas. Data from sites and studies deemed relevant to Ohio, as determined by the DOW, will be used to define mortality rates for birds and bats that will be considered acceptable, of concern, and unacceptable.

⁸ Contact the Ohio Division of Wildlife District office nearest to the site for area wildlife rehabilitators (Fig. 3)

⁹ If the species in question is a state or federally protected species the appropriate agency must be contacted before the individual is euthanized.

If operation of wind turbines at a permitted facility in Ohio results in mortality rates at or below the regional average for comparable landscapes, the DOW will not recommend additional post-construction monitoring or use of mitigation measures. When mortality rates are within 1 standard deviation (SD) above the regional average, mitigation measures should be employed to curtail impacts to Ohio's wildlife resources and bring the mortality rate for the facility to the regional average or below. While the DOW will require the facility to take action and monitor the results, specific mitigation measures will not be mandated. Rather, the DOW will work collaboratively with the facility operators to develop an economically tenable mitigation strategy with a reasonable likelihood of reducing mortality rates to the regional average or below. Mitigation measures for consideration include, but are not limited to, those listed within the National Wind Coordinating Collaborative's Mitigation toolbox¹⁰. The collection of additional data to better define the spatial or temporal extent of observed mortality rates or test specific mitigation measures may be considered as part of an overall mitigation strategy. If mortality rates exceed the regional average by more than 1 SD, mitigation measures must be employed to curtail impacts to Ohio's wildlife resources and bring the mortality rate for the facility to the regional average or below. The DOW will require that unacceptable mortality to bats, at a minimum, must include seasonal curtailment as defined under Section 1.3 (Bat acoustic *monitoring*), unless the DOW and facility operators agree to an alternative strategy based on site-specific conditions showing that the temporal and/or spatial distribution of mortality can be reduced effectively with the application of other mitigation measures or new technologies in a more economically viable manner for the facility.

Future definition of normal or acceptable mortality rates for birds and bats due to operation of commercial-scale wind energy facilities in Ohio, as well as mortality rates of concern and those that are unacceptable, will be based on Ohio-specific data. If revised trigger points are more favorable for operators of wind energy facilities in Ohio, we will also apply them to all previously permitted sites. If revised trigger points become more stringent, the trigger points in use at the time a facility was permitted will continue to be applied to that site during its operating lifetime.

Neither the federal Migratory Bird Treaty Act nor the Ohio Revised Code differentiates between the taking of species of migratory non-game birds based upon abundance; thus, relative abundance of impacted bird species will not be a factor in the application of trigger points noted above. However, any mortality to federal or state-listed wildlife species attributed to operation of wind energy facilities in Ohio will require development and implementation of mitigation measures in cooperation with the DOW (and U.S. Fish & Wildlife Service for federal trust species).

¹⁰ http://www.nationalwind.org/publications/wildlife/Mitigation_Toolbox.pdf

Finally, while the currently accepted metric for defining mortality at wind energy facilities is number of birds (or bats) killed per turbine (or megawatt, MW) per year, the use of this metric does not imply that the need for mitigation and its application will be targeted at individual turbines within a permitted facility. Rather, just as an entire facility is proposed for permitting, and pre-construction wildlife monitoring recommendations are based on the landscape containing the proposed facility, a mortality rate for birds and similar rate for bats will be calculated using all relevant data for the entire facility. Unless the average mortality rate for the entire facility is of concern or unacceptable, mitigation measures will not be recommended or required. Thus, it is possible that a subset of individual turbines could have uncharacteristically high mortality rates while the overall rate for the permitted facility is within the acceptable or "normal" range for similar sites in Ohio or the region. We would expect the facility operator to exercise good faith in dealing with mortality rates in such situations. On the other hand, if a facility's mortality rate for birds, bats or both is of concern or unacceptable, we will use the best available data to define the temporal and spatial extent of the problem and work with the facility operators to target mitigation measures to the individual turbines and/or time periods that contribute disproportionately to the overall rate. Where possible, the goal is to find a workable solution for minimizing mortality to wildlife while having as small an impact on the site's economic viability as possible.

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Table 1. Endangered and threatened birds and bats of Ohio*

Endangered

Indiana myotis ^E	Myotis sodalis
American bittern	Botaurus lentiginosus
Northern harrier	Circus cyaneus
King rail	Rallus elegans
Sandhill crane	Grus Canadensis
Piping plover ^E	Charadrius melodus
Common tern	Sterna hirundo
Black tern	Chlidonias niger
Yellow-bellied sapsucker	Sphyrapicus varius
Bewick's wren	Thryomanes bewickii
Loggerhead shrike	Lanius ludovicianus
Golden-winged warbler	Vermivora chrysoptera
Kirtland's warbler ^E	Denroica kirtlandii
Lark sparrow	Chondestes grammacus
Trumpeter swan	Cygnus buccinator
Snowy egret	Egretta thula
Cattle egret	Bubulcus ibis

Threatened

Upland sandpiper	Bartramia longicauda
Black-crowned night-heron	Nycticorax nycticorax
Yellow-crowned night-heron	Nyctanassa violacea
Barn owl	Tyto alba
Dark-eyed junco	Junco hyemalis
Hermit thrush	Catharus guttatus
Least bittern	Ixobrychus exilis
Least flycatcher	Empidonax minimus
Bald eagle	Haliaeetus leucocephalus
Peregrine falcon	Falco peregrinus
Osprey	Pandion haliaetus

^E Federally listed endangered *Updated 13 May 2008.

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Figure 1. Survey effort.



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Figure 3. Ohio Department of Natural Resources district offices.
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Appendix A. Timing of surveying effort. Colors correspond to the general effort categories; minimum (green), moderate (yellow), where applicable (orange), and extensive (red).



Wildlife Monitoring Survey Forms

FORM WD01OHIO DEPARTMENT OF NATURAL RESOURCESPage __of __6/27/08DIVISION OF WILDLIFE

BIRD SURVEY LOCATION FORM

Project Name:_____

Total Number of Points:_____

Type of Survey:_____

One form should be provided for each type of survey conducted (*breeding/migration*, *owl, marsh bird, waterfowl, raptor, or shorebird*). Coordinates should be recorded in UTM NAD83, Zone 17 North. Do not use Lat/Lon.

Point Number	Easting	Northing	Habitat type

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Point Number	Easting	Northing	Habitat type

FORM WD02 OHIO DEPARTMENT OF NATURAL RESOURCES Page___of ____ DIVISION OF WILDLIFE 6/27/08

BIRD SURVEY FORM

Project Name	e:	Survey type	e:	Date:		
Observer:	St	art time:	(militar	y time) Stop time:		
Point number	r: Temp (°	C):Win	d speed (m/s):	Cloud cover%		
Species	Estimated distance (m)	Direction (bearing)	Flyover # in flock	Behavior/notes		

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FORM WD02OHIO DEPARTMENT OF NATURAL RESOURCESPage_ of __6/27/08DIVISION OF WILDLIFE

Observer: _____ Start time: _____ (*military time*) Stop time: _____

Point number: _____ Temp (°C): _____ Wind speed (m/s): _____ Cloud cover ___%

Species	Estimated distance (m)	Direction (bearing)	Flyover # in flock	Behavior/notes

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			DIG	JRNAL MI	GRATION SI	RVEY FORM	W	
Company:			Project nar	ne:		Date:	Point numb	er:
Survey period:	Mornin	g Afte	ernoon Even	iing Star	t time:		End time:	
Weather	Temp (°C	:(Wind speed	d (m/s):	Cloud cc	ver	Ŷ	
Observer:				Notes:				
Species	#	Time	Age	Obs Height	ervation	Circling (vves/no)	Entered project area	Estimated time
				IIIgIII	דווענוש		(on text)	
Total:								

#: Number in flock or kettle. Heights: 1) 0-40m, 2) 40-180m, 3) > 180m. Direction: Compass direction the bird is heading (e.g. SSW).

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Date:____

Point number:

Estimated time	within rotor area												
Entered project area	(yes/no)												
Circling	(yes/no)												
ervation	Direction												
Obs	Height												
Δ αρ	ABU												
Time													
#	ŧ												
Snecies	collorde												Total:

FORM WD04OHIO DEPARTMENT OF NATURAL RESOURCES6/27/08DIVISION OF WILDLIFE

NIGHTLY BAT SURVEY SUMMARY FORM

Project Name:			Date:
Surveyors:			
Survey Type:	Hibernacula	Summer	
Site description:			

Time and Weather

	Time	Temp (°C)	Wind speed (m/s)	Cloud cover (%)
Start				
End				

Notes:_____

Trap type and location

Set #	Trap type	Size (note if stacked	Location (UTM NAD83 Zone 17N)						
	(harp trap of mist net)	mist nets)	Easting	Northing					
1									
2									
3									
4									
5									
6									
7									

Total net area:_____

Notes:_____

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Project Name:_____

Date:_____

Capture summary

Snecies	Ad	lult	Juv	venile	Subtotal
	Male	Female	Male	Female	Subtotui
Big brown					
Evening					
Silver-haired					
Eastern red					
Hoary					
Tri-colored bat					
Little brown					
Northern					
Small-footed					
Indiana					
Rafinesque's big-eared					
Other:					
				Total:	

Notes:

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OHIO DEPARTMENT OF NATURAL RESOURCES DIVISION OF WILDLIFE

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BAT SURVEY FORM

Project Name:_

Date:

Decentiire/Band #	Nocapiulo Dallu #									
Nat #										
rams)	Weight									
meters and gi	Tragus									
nents (milli	Ear									
Measurer	Forearm									
Reproductive	status									
Cav	202									
Time	(military)									
Chanian	collorde									

Species code: Big brown (EPFU), Silver-haired (LANO), Red (LABO), Hoary (LACI), Tri-colored (PESU), Rafinesque's big-eared (CORO)^{1,2}, Little brown (MYLU), Northern (MYSE), Small-footed (MYLE)¹, and Indiana (MYSO)^{1,2}. Radio-telemetry, and documentation photographs required¹. Banding required².

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OHIO DEPARTMENT OF NATURAL RESOURCES DIVISION OF WILDLIFE

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π F Q/ τ Q	Kecapture/Band #											
TT TT	Net #											
rams)	Weight											
meters and g	Tragus											
nents (milli	Ear											
Measurer	Forearm											
Reproductive	status											
ŭ	Sex											
Time	(military)											
	opecies											

FORM WD06 6/27/08

OHIO DEPARTMENT OF NATURAL RESOURCES DIVISION OF WILDLIFE

FATALITY REPORTING FORM

Date:

Turbine #:_____

Searcher:

Total number of fatalities found during search:___

Start time:

End time:

Carcass ID ¹ :			L	ransect Informati	on	From Tu	rbine
Time	Turbine #	Carcass #	Transect #	Perp. Dist ² (m)	Obs. Dist ³ (m)	Distance (m)	Bearing
Species	Age^4	Sex ⁵	Condition	Alive / Dead	Estimat	ed time on grou	nd ⁶
			Euthanized	Yes / No			
GPS file:			Scavenged	Yes / No	Veg. Height	% Cover	
Photo ID			Notes				

Carcass ID:			T	ransect Informati	uo	From Tu	ırbine
Time	Turbine #	Carcass #	Transect #	Perp. Dist. (m)	Obs. Dist. (m)	Distance (m)	Bearing
Species	Age	Sex	Condition	Alive / Dead	Estimat	ted time on grou	Ind
			Euthanized	Yes / No			
GPS file:			Scavenged	Yes / No	Veg. Height	% Cover	
Photo ID			Notes				

¹ Carcass ID = MMDDYYYY - Turbine # - Fatality number for that search ² Perpendicular distance from transect

² Perpendicular distance from transect ³ Distance from which the searcher detected the carcass

⁴ Adult / Juvenile / Unknown ⁵ Male / Female/ Unknown ⁶ Last night / 2 – 3 days / 4 – 7 days / 7 – 14 days / > 2 weeks / Unknown

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WD06	
FORM	6/27/08

Carcass ID:			T	ransect Informati	on	From Tu	rbine
Time	Turbine #	Carcass #	Transect #	Perp. Dist. (m)	Obs. Dist. (m)	Distance (m)	Bearing
Species	Age	Sex	Condition	Alive / Dead	Estimat	ted time on grou	nd
			Euthanized	Yes / No			
GPS file:			Scavenged	Yes / No	Veg. Height	% Cover	
Photo ID			Notes				

Carcass ID:			L	ransect Informati	uo	From Tu.	rbine
Time	Turbine #	Carcass #	Transect #	Perp. Dist. (m)	Obs. Dist. (m)	Distance (m)	Bearing
Species	Age	Sex	Condition	Alive / Dead	Estimat	ted time on grou	nd
			Euthanized	Yes / No			
GPS file:			Scavenged	Yes / No	Veg. Height	% Cover	
Photo ID			Notes				

Carcass ID:			T	ransect Informati	uo	From Tu	rbine
Time	Turbine #	Carcass #	Transect #	Perp. Dist. (m)	Obs. Dist. (m)	Distance (m)	Bearing
Species	Age	Sex	Condition	Alive / Dead	Estimat	ed time on grou	nd
			Euthanized	Yes / No			
GPS file:			Scavenged	Yes / No	Veg. Height	% Cover	
Photo ID			Notes				

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FORM WD07 6/27/08

SEARCHER EFFICIENCY FORM

			Photo ID		Direction	Distance (m)		Turbine #:
(yes/no)	cover	v eg. neignt	rung		Easuing	species	Date	Carcass ID
Detected	Percent	Veg. height	rthing	Noi	Easting ¹	Snecies	Date	Carcass ID

Detected (yes/no)	
Percent cover	
Veg. height	
orthing	Photo ID
Ž	
Easting	Direction
S.	
Specie	Distance (m)
Date	
Carcass ID	Turbine #:

Distance Direction (m) Photo ID	s ID Date	Species	Easting	Northing	Veg. height	Percent cover	Detected (yes/no)
Distance Direction Photo ID							
	Ι	Distance (m)	Direction	Photo ID			

Carcass ID	Date	Species	Easting	Northing	Veg. height	Percent cover	Detected (yes/no)
Turbine #:		Distance (m)	Direction	Photo ID			

¹ Coordinates should be recorded in UTM NAD83, Zone 17 North. Do not use Lat/Lon.

FORM WD07 6/27/08

Detected (yes/no)	
Percent cover	
Veg. height	
orthing	Photo ID
No	
Easting	Direction
Species	ance n)
Date	Dist (r
Carcass ID 1	Furbine #:

Detected (yes/no)	
Percent cover	
Veg. height	
thing	Photo ID
ION	
Easting	Direction
Species	Distance (m)
Date	
Carcass ID	Turbine #:

Carcass ID	Date	Species	Easting	Northing	Veg. height	Percent cover	Detected (yes/no)
Turbine #:		Distance (m)	Direction	Photo ID			

Carcass IL	Date	Species	Easting	Northing	Veg. height	Percent cover	Detected (yes/no)
Turbine #:		Distance (m)	Direction	Photo ID			

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Ohio Wildlife Data Map



Key

Blue—5-mile buffer around Federally-listed avian species Green Outline—Audubon Ohio Important Bird Areas Pink—1 mile buffer around major river corridors Aqua—3-mile buffer along Lake Erie shoreline

Data Source: US Fish and Wildlife Service Current as of October 20, 2006 Using the Wildlife Data layers of the Ohio Wind Map:

Geographic Information System (GIS) wildlife data layers have been prepared to overlay on the Ohio wind map. This data was gathered at the request of the Ohio Wind Working Group. These layers were provided by the U.S. Fish & Wildlife Service, Reynoldsburg, Ohio Field Office (Service), with information contributed by the Service and Ohio Department of Natural Resources.

These layers are intended to provide a coarse overview of areas in Ohio where potential wildlife and/or natural resource areas of concerns are present and may be an issue relative to potential wind power developments; use of the wildlife layers does not preclude additional project-specific review of individual proposals by the Service and other State and/or Federal resource agencies. The Service implements the Endangered Species Act and Migratory Bird Treaty Act, which prohibit the killing of Federally listed threatened and endangered species and migratory birds, respectively. The data layers and guidance provided below are intended to help wind power developers avoid known locations where these species of concern are found, and to identify upfront actions that may needed to assess the impact of projects that are proposed within these areas of concern.

The layers and their intended uses are described below:

1) Lake Erie buffer:

A 3-mile buffer from the shoreline of Lake Erie/Sandusky Bay, which incorporates areas commonly used by migratory birds, shorebirds, and waterfowl has been included. This area is heavily used during the migration season, when millions of birds move between their nesting and wintering grounds in spring and fall. Bird migration does not follow a well-defined corridor, but rather a broad front. Lake Erie acts as a barrier to migration for a number of bird species, which then follow the shoreline of the lake to pass through the area. Significant data exist to support this claim in the western basin of Lake Erie (roughly Toledo to Sandusky), where more than 20 years of bird studies have been completed documenting this phenomenon. Less data is available for the central basin (Sandusky to Conneaut), however the migration process (following the shoreline to pass the migration "obstacle" of Lake Erie) is generally the same. Bird use of a given area is somewhat dependent on habitat types. One would expect more diverse species assemblages and larger numbers of individual birds in areas with significant habitat, such as forest, grasslands, and wetlands. One would expect less diverse species assemblages and smaller numbers of individuals in areas that do not support significant habitat, such as urban areas or intensive agricultural areas. While migration fronts are not necessarily dependent on habitat types, the presence of a large number of birds flying at low altitudes and/or stopping to rest during the migration process would be more likely encountered where suitable habitat (as described above) is present. Wind power development projects proposed within 3 miles of Lake Erie have increased potential of impacting migratory birds relative to other more inland areas. Killing of migratory birds is prohibited by the Migratory Bird Treaty Act, which applies to both individuals and organizations. Wind power developers should note that bird use studies, risk assessments, onsite habitat delineations, implementation of bird conservation measures, and post-construction

mortality studies may be recommended. Furthermore, if significant bird kills are documented post-construction, remedial actions may be recommended to address bird mortality and/or enforcement actions could be taken by state or federal government agencies.

2) Federal Species Buffer:

A 5-mile buffer from known locations of Federally listed avian species of significant concern relative to wind power development has been included. This layer represents known locations of Federally listed threatened and endangered species, including the bald eagle, Indiana bat, and Karner blue butterfly. Because they are flying species, these animals are more likely to be impacted by wind power development than many other federally listed species in Ohio. Wind power development projects within these areas could result in take of Federally listed species, which is prohibited under Section 9 of the Endangered Species Act, unless a permit authorizing take has been issued by the Service. If the Service deems that take is likely, formal consultation under Section 10 or 7 of the Endangered Species Act could be completed to authorize take. Developers should note that avian use studies, risk assessments, onsite habitat delineations, implementation of listed species in these areas. Similar to the bird layer, locations of Federal species are often habitat-specific, so individual site-specific project review is strongly encouraged.

3) Important Bird Areas:

Important Bird Areas (IBAs), designated by Audubon Ohio, have been included. According to Audubon Ohio's webpage, "IBAs provide essential habitat for one or more species of birds and include sites that birds use during their nesting season, during the winter and/or while they are migrating. Usually these sites stand out as special from the surrounding landscape. To determine where IBAs are in the state, the Ohio IBA Technical Committee reviews nominations submitted by volunteers. The selected IBAs are identified using standardized, science-based criteria. More than 80 IBAs have been identified so far in Ohio. The goal of the IBA program is to conserve the identified IBAs and protect bird populations. To accomplish this, Audubon Ohio will:

- 1. Identify IBAs through a science-based nomination process;
- 2. Publicly dedicate sites and raise public-awareness of bird conservation;
- 3. Involve public and private participation in conservation planning on sites;
- 4. Provide public education and outreach about sites;
- 5. Encourage legislation that promotes IBAs and bird conservation."

Wind power development within designated IBAs is strongly discouraged, due to the potential impact to birds. Wind power developers should note that bird use studies, risk assessments, onsite habitat delineations, implementation of bird conservation measures, and post-construction mortality studies may be recommended. Furthermore, if significant bird kills are documented post-construction, remedial actions may be recommended to

address bird mortality, and/or enforcement actions could be taken by state or federal government agencies.

4) Major River Buffer:

A 1 mile buffer along major rivers in Ohio that serve as migratory fronts for birds has been included. These buffers have been identified along major river corridors that support significant riparian habitat and are known or thought to provide migration fronts for birds. Wind power developers should note that bird use studies, risk assessments, onsite habitat delineations, implementation of bird conservation measures, and postconstruction mortality studies may be recommended. Furthermore, if significant bird kills are documented post-construction, remedial actions may be recommended to address bird mortality, and/or enforcement actions could be taken by state or federal government agencies.

For a complete evaluation of wildlife concerns relative to a specific project, please contact the U.S. Fish and Wildlife Service's Ohio Field Office at 6950 Americana Parkway, Suite H, Reynoldsburg, OH 43068-4127, (614) 469-6923.

If you have questions about these layers, or if we may be of additional assistance, please contact Service biologist Megan Seymour, at (614) 469-6923 ext. 16.

Ohio's Federally Threatened, Endangered, Proposed and Candidate Species' County Distribution

For more information about threatened and endangered species in Ohio, contact: U.S. Fish & Wildlife Service 4625 Morse Road, Suite 104, Columbus, OH 43230 or phone (614) 416-8993.

Revised November 2009

Species	Status	Counties	Habitat
Mammals			
Indiana bat <i>(Myotis sodalis)</i>	Endangered	All counties in Ohio	Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests
Piping plover (Charadrius melodus)	Endangered	Ashtabula, Cuyahoga, Erie, Lake, Lorain, Lucas, Ottawa, Sandusky	Beaches along shorelines of the Great Lakes
Piping Plover (Charadrius melodus)	Critical Habitat Designated	Erie, Lake	Beaches along shorelines of the Great Lakes
Reptiles			
Copperbelly water snake (Nerodia erythrogaster neglecta)	Threatened	Defiance, Hardin, Williams	Wooded and permanently wet areas such as oxbows, sloughs, brushy ditches and floodplain woods
Eastern massasauga (<i>Sistrurus catenatus</i>)	Candidate	Ashtabula, Champaign, Clark, Clinton, Columbiana, Crawford, Defiance, Erie, Fairfield, Fayette, Fulton, Greene, Hardin, Huron, Licking, Logan, Lorain, Lucas, Marion, Medina, Montgomery, Ottawa, Paulding, Portage, Preble, Sandusky, Seneca, Stark, Trumbull, Warren, Wayne, Wyandot	
Lake Erie water snake (Nerodia sipedon insularum)	Threatened	Erie, Ottawa	Shorelines of islands in western Lake Erie
Fish			
Scioto madtom (Noturus trautmani)	Endangered	Franklin, Madison, Pickaway, Union	Stream riffles of moderate flow over sandy gravel bottom

Species	Status	Counties	Habitat
Mussels			
Clubshell mussel (Pleurobema clava)	Endangered	Ashtabula, Champaign, Coshocton, Defiance, Delaware, Fairfield, Franklin, Greene, Hancock, Hardin, Madison, Pickaway, Pike, Ross, Scioto, Trumbull, Union, Williams	Found in coarse sand and gravel areas of runs and riffles within streams and small rivers
Fanshell (Cyprogenia stegaria) (=C. irrorata)	Endangered	Adams, Athens, Brown, Clermont, Coshocton, Gallia, Hamilton, Lawrence, Meigs, Morgan, Muskingum, Scioto, Washington	Found in areas of packed sand and gravel at locations in a good current
Northern riffleshell (Epioblasma torulosa rangiana)	Endangered	Defiance, Franklin, Madison, Pickaway, Pike, Ross, Scioto, Union, Williams	Large streams and small rivers in firm sand of riffle areas; also occurs in Lake Erie
Pink mucket pearlymussel <i>(Lampsilis abrupta)</i> <i>(= L. orbiculata)</i>	Endangered	Adams, Athens, Brown, Clermont, Gallia, Hamilton, Lawrence, Meigs, Morgan, Scioto, Washington,	The lower Ohio River and its larger tributaries
Purple cat's paw pearlymussel (Epioblasma obliquata obliquata)	Endangered	Coshocton	Gravel riffles of medium to large rivers
Rabbitsfoot Quadrula cylindrica cylindrica	Candidate	Champaign, Coshocton, Franklin, Madison, Pickaway, Union, and Williams	
Rayed bean mussel (<i>Villosa fabalis</i>)	Candidate	Brown, Champaign, Clermont, Coshocton, Defiance, Delaware, Fairfield, Franklin, Fulton, Hancock, Hardin, Logan, Lucas, Madison, Marion, Miami, Montgomery, Morrow, Pickaway, Pike, Ross, Scioto, Shelby, Union, Warren, Williams, Wyandot	Rivers
Sheepnose mussel (<i>Plethobasus cyphyus</i>)	Candidate	Adams, Athens, Belmont, Brown, Clermont, Columbiana, Coshocton, Gallia, Hamilton, Jefferson, Lawrence, Meigs, Monroe, Morgan, Muskingum, Scioto, Washington	Rivers
White cat's paw pearlymussel (Epioblasma obliquata perobliqua)	Endangered	Defiance, Williams	Firm sand or gravel riffles in small streams and medium to large rivers
Insects			
American burying beetle (Nicrophorus americanus)	Endangered	Athens, Hocking, Morgan, Perry, Vinton	

Species	Status	Counties	Habitat
Mitchell's satyr (Neonympha mitchellii mitchellii)	Endangered	Portage	Fens; wetlands characterized by calcareous soils which are fed by carbonate-rich water from seeps and springs
Karner blue (Lycaeides melissa samuelis)	Endangered	Lucas	Pine barrens and oak savannas on sandy soils and containing wild lupines (<i>Lupinus perennis</i>), the only known food plant of the larvae
Plants			
Eastern prairie fringed orchid (Platanthera leucophaea)	Threatened	Clark, Holmes, Lucas, Ottawa, Sandusky, Wayne	Mesic to wet prairies and meadows
Lakeside daisy (Hymenoxys herbacea) (Formerly H. acaulis var. glabra)	Threatened	Erie, Ottawa	Dry rocky prairies; limestone rock surfaces including outcrops and quarries
Northern monkshood (Aconitum noveboracense)	Threatened	Hocking, Portage, Summit	Cool, moist, shaded cliff faces or talus slopes in wooded ravines, near water seeps
Running buffalo clover (Trifolium stoloniferum)	Endangered	Adams, Brown, Clermont, Hamilton, Hocking, Lawrence, Scioto, Warren	Disturbed bottomland meadows; disturbed sites that have shade during part of each day
Small whorled pogonia (Isotria medeoloides)	Threatened	Hocking, Scioto	Dry woodland; upland sites in mixed forests (second or third growth stage)
Virginia spiraea (Spirea virginiana)	Threatened	Scioto	Stream banks and floodplains

Revised November 2009

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Summary: Notice of Update to September 18, 2017 Filing Regarding Notification of Compliance with Condition 27 – NPDES Permits (Part 2 of 2) electronically filed by Mr. William V Vorys on behalf of Trishe Wind Ohio, LLC