

Black Oak & Getty Wind Avian and Bat Protection Plan



Black Oak Wind, LLC &
Getty Wind Company, LLC
Updated July 9, 2012

Docket Nos. IP6853/WS-10-1240
IP6866/WS-11-831

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List of Abbreviations

ABPP: Avian and Bat Protection Plan
APLIC: Avian Power Line Interaction Committee
BBCS: Bird and Bat Conservation Strategies
BGEPA: Bald and Golden Eagle Protection Act
BMP: Best Management Practices
DNR: Minnesota Department of Natural Resources
EFP: Minnesota Department of Commerce Energy Facility Permitting
EI: Environmental Inspector
ESA: Environmental Site Assessment
FD: Flight Diverters

GIS: Geographical Information System
HDR: HDR Engineering, Inc.
IEUA: Important Eagle-Use Area
MBTA: Migratory Bird Treaty Act
MPCA: Minnesota Pollution Control Agency
MPUC: Minnesota Public Utilities Commission
NPDES: National Pollutant Discharge Elimination System
NWCC: National Wind Coordinating Committee
PLSS: Public Land Survey System
PWRA: Paynesville Wind Resource Area
RLB: Raptor/Large Bird
SGCN: Species of Greatest Conservation Need
SWPPP: Storm Water Pollution Prevention Plan
TES: Threatened and Endangered Species
USDA NRCS: United States Department of Agriculture Natural Resource Conservation Service
USFWS: United States Fish and Wildlife Service
WCA: State of Minnesota Wetland Conservation Act
WIRS: Wildlife Incident Reporting System
WMA: Wildlife Management Area
WPA: Waterfowl Production Area
WTG: Wind Turbine Generator
WTGAC: Wind Turbine Guidelines Advisory Committee

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Revision Log

Revision	Date	Notes
Rev 0	2/2012	Issued for review with the Getty Site Permit
Rev 1	7/2012	Revised to reflect new Fish and Wildlife Service Guidelines, FWS Comments, DNR Comments, EFP Comments, new corporate standards.

1. INTRODUCTION

Black Oak Wind, LLC and Getty Wind Company, LLC (the Owners) are developing the Black Oak and Getty Wind projects (the Projects) in Stearns County, Minnesota. The Owners are developing this plan to provide operational guidance to the Projects and to document the assessment of the Projects' pre-construction impacts to avian and bat species. Because of the Projects' geographic proximity, the Owners are jointly developing this Avian and Bat Protection Plan (ABPP) to address the Projects' potential cumulative impacts on avian and bat species via cooperative, effective, and responsive planning and operations.

The Owners are also developing this ABPP to document their scientific analysis of the Projects' potential impacts on avian and bat species and their habitats, and their systematic process for mitigating these impacts. The Projects are using the tiered approach described in the U.S. Fish and Wildlife Services' Land Based Wind Energy Guidelines to assess potential impacts to avian and bat species. The tiered approach is a process for gathering information about the Projects in increasing detail. It quantifies the Projects' risks relating to species of concern and their habitats, and thereby informs decision-making regarding development, siting, and construction. As described in the Fish and Wildlife Services Land-Based Wind Energy Guidelines:

The Guidelines use a "tiered approach" for assessing potential adverse effects to species of concern and their habitats. The tiered approach is an iterative decision making process for collecting information in increasing detail; quantifying the possible risks of proposed wind energy projects to species of concern and their habitats; and evaluating those risks to make siting, construction, and operation decisions. During the pre-construction tiers (Tiers 1, 2, and 3), developers are working to identify, avoid and minimize risks to species of concern. During post-construction tiers (Tiers 4 and 5), developers are assessing whether actions taken in earlier tiers to avoid and minimize impacts are successfully achieving the goals and, when necessary, taking additional steps to compensate for impacts. Subsequent tiers refine and build upon issues raised and efforts undertaken in previous tiers. Each tier offers a set of questions to help the developer evaluate the potential risk associated with developing a project at the given location. Briefly, the tiers address:

Tier 1 – Preliminary site evaluation (landscape-scale screening of possible project sites)

Tier 2 – Site characterization (broad characterization of one or more potential project sites)

Tier 3 – Field studies to document site wildlife and habitat and predict project impacts

Tier 4 – Post-construction studies to estimate impacts

Tier 5 – Other post-construction studies and research

The tiered approach provides the opportunity for evaluation and decision-making at each stage, enabling a developer to abandon or proceed with project development, or to collect additional information if required. This approach does not require that every tier, or every element within each tier, be implemented for every project. The Service anticipates that many distributed or community facilities will not need to follow the Guidelines beyond Tiers 1 and 2. Instead, the tiered approach allows efficient use of developer and wildlife agency resources with increasing levels of effort.

The Owners developed Bird and Bat Conservation Strategies (BBCSs) based on the results from the tiered assessment and the Best Management Practices (BMPs) that are outlined in Chapter 7 of the Land-Based Wind Energy Guidelines. The BBCSs that have been tailored from the BMPs to meet project specific needs are documented in the sections discussing construction and operation of this ABPP. All of the BBCSs for the project are summarized in Appendix A.

Early communication with the various wildlife agencies allows for the greatest opportunity for avoiding and/or mitigating negative impacts to wildlife. In order to best serve its purpose, this ABPP specifically incorporates recommendations made by the Minnesota Department of Natural Resources (DNR), the Minnesota Department of Commerce's Energy Facility Permitting (EFP) Staff, and the USFWS. The Owners will continue to communicate with these agencies throughout the Projects' development, construction, and operations. This ABPP also helps ensure compliance with the regulatory framework outlined in Section 3.

The Owners' overall goals for the Projects in relation to this ABPP include:

1. Minimized avian and bat fatalities and secondary effects on wildlife at the Projects' sites;
2. Compliance with federal and state wildlife regulations;
3. Fulfillment of the proposed wildlife-related conditions contained in the MPUC site permits;
4. Effective documentation of bird and bat injuries and fatalities that will provide a basis for ongoing development of avian and bat protection procedures;
5. Ongoing surveys, monitoring and management efforts to avoid and minimize adverse wildlife impacts throughout all phases of the Projects;
6. Adequate implementation training for the Construction Contractor and Operations and Maintenance staff;
7. Effective and continuous coordination between the Projects, wildlife agencies, EFP Staff, and the MPUC.

2. PROJECT DESCRIPTION

The Projects collectively constitute an 82 megawatt (MW) wind energy facility, with Black Oak contributing 42 MW (up to 28 turbines) and Getty contributing 40 MW (up to 26 turbines). The Projects may be built concurrently or separately. Together the Projects make up a approximately 14,700 acre site (approximately 22 square miles) located in Stearns County, Minnesota. The Getty Wind project is located within both Sauk Centre and Getty Townships, and its project boundary encompasses approximately 7,600 acres. The Black Oak Wind Farm is located within Ashley and Raymond Townships, and its project boundary encompasses approximately 7,100 acres. The Projects may share common facilities, which may include a substation, a transmission line, an operations and maintenance facility, and associated roads. Both Projects will also include collection systems, permanent meteorological towers, and a SODAR or LIDAR weather monitoring station. Table 1 identifies the Public Land Survey System (PLSS) locations within both Projects’ boundaries. See Figure 1 for a map of the Black Oak and Getty Wind projects.

Table 1: Project Sites’ PLSS locations

Project Name	County	Township Name	Township	Range	Section
Black Oak	Stearns	Ashley	126N	35W	25-27, 34-36
Black Oak	Stearns	Raymond	125N	35W	1-3, 11-14, 23
Getty	Stearns	Getty	125N	35W	4-9, 16-21
Getty	Stearns	Sauk Centre	126N	35W	29-33

2.1 Tiered Assessment of Site

The Owners have undertaken a tiered assessment to describe the Projects’ environmental setting. This tiered assessment has been based off of the draft versions of the U.S. Fish and Wildlife Services’ Land-Based Wind Energy Guidelines that were available to the Owners at the time of development. The FWS notes that “(t)he tiered approach provides a decision framework for collecting information in increasing detail to evaluate risk and make siting and operational decisions.” (U.S. Fish and Wildlife Service, 2012) The following description of the environmental setting of the Projects is based off of the results of this tiered assessment.

In Tier 1 of the assessment, Owners reviewed publically available data to identify habitat resources on a landscape scale. Based on that information, Owners refined their boundary to a narrow area and coordinated with the FWS and DNR to identify any additional information on the refined area that might be pertinent to the Projects. Owners also contracted with trained biologists to complete Tier 2 site visits of the Projects’ area. The site permit applications for the Projects provide complete results of the Tier 1 and II assessments. Owners then identified key information gaps and designed site specific surveys to further assess the project in Tier 3. These surveys included

Avian Use/Flight Path surveys, Wetland Utilization surveys, Marbled Godwit surveys, and Raptor/Large Bird (RLB) nest surveys and eagle nest monitoring. Results of the Tier 3 assessment are provided in Appendix C as the avian report and the bat report for the project areas.¹

The Projects and their transmission line are located on the eastern edge of the Minnesota River Prairie Subsection of the Prairie Parkland Province and the Hardwood Hills Subsection of the Eastern Broadleaf Forest Province of the Minnesota DNR's Ecological Classification System. The Minnesota River Prairie is a large subsection that includes part of northwestern Iowa and spreads across southwestern Minnesota and into eastern South Dakota. The Hardwood Hills Subsection lies within the Mississippi flyway, within which lies the prairie pothole region and associated wetlands. This region provides breeding habitat for North American and neotropical migratory waterfowl and waterbird species.

Land use in this area is entirely rural with an agricultural-based economy. The Projects' facilities are sited primarily within agricultural land. Typical land cover includes agricultural or cropped fields, grasslands, isolated wetlands and small woodlots. The shared transmission line corridor is located primarily along agricultural field edges with the primary boundary being the roadway. Farmsteads are scattered along the relatively flat to gently rolling topography typically classified as rural open space. Farmsteads are typically encircled by isolated groves of deciduous and coniferous trees which function as windbreaks or windrows. Landowners established the groves to prevent erosion and to shelter dwellings.

The Projects are situated near and/or encompass lakes, wetlands, and ditches that attract waterfowl. Several Waterfowl Production Areas (WPAs) and Wildlife Management Areas (WMAs) are located within or near the Projects' boundaries. Corn, soybeans, small grains and forage crops are grown throughout Stearns County, and much of the soil within both Projects is considered prime farmland by the U.S. Department of Agriculture Natural Resource Conservation Service (USDA NRCS). Some of the wetlands within both Projects are associated with creeks and unnamed intermittent streams, as well as isolated basins. Grasslands within both Projects' boundaries also provide habitat used by Threatened or Endangered Species (TES) or Species of Greatest Conservation Need (SGCN) such as Wilson's phalarope, marbled godwit, and upland sandpiper. Woodlots and human structures can also provide roosting habitat for several bat species present in this region of the state.

The Projects consulted with wildlife agencies, gathered relevant environmental information and performed formal avian surveys of the site. The Projects identified the presence of habitat for protected or sensitive species, and sited turbines outside or away from these lands. These areas include wetlands, grasslands, prairie, depressions, and

¹ As of writing, the avian report is in draft form and the bat survey is ongoing. Revisions to this appendix are anticipated to incorporate the results.

other habitats utilized by TES and/or SGCN, or concentration areas used by species covered by the federal Migratory Bird Treaty Act (MBTA). Many of these lands are within or near WMAs and WPAs that are either adjacent or in close proximity to the Projects, such as Padua and Tower WMAs and Behnen, Kenna and Trisko WPAs. Avian TES or SGCN noted during 2011 Tier 3 analyses include:

- trumpeter swans
- American white pelican
- American bittern
- northern harrier
- marbled godwits
- upland sandpipers
- Wilson’s phalaropes
- western grebes
- red-necked grebes
- common loon
- sandhill cranes
- bald eagles
- Forster’s terns
- black terns
- Franklin’s gulls
- northern rough-winged swallow
- sedge wren
- marsh wren
- brown thrasher
- swamp sparrow
- bobolink

Surveyors observed a majority of these birds in the spring and fall migratory surveys, a few unique species were observed during breeding bird surveys. A pair of nesting bald eagles was observed 0.25 mile east of the Black Oak project boundaries between Getty and Raymond Townships, north of the Padua WMA, and two nesting pairs of marbled godwits were observed in pastured lands adjacent to the Black Oak project boundary southwest of the Padua WMA. Nesting red-necked grebes were observed within the Padua WMA.

2.2 Project Design

2.2.1. TURBINE SITING

The siting for the Projects’ wind turbines and associated facilities takes into consideration the topographic and environmental characteristics of the site, the efficiency of selected turbine models, and maintaining minimal impacts to area residents. Siting also considers the MPUC General Wind Turbine Permit Setbacks and Standards for LWECs permitted pursuant to Minnesota Statute §216F.08 and the setback requirements of Section 6.60 of Stearns County Zoning Ordinance 439. The Table 2 enumerates setbacks in siting the Projects. See Figures 2a, 2b and 2c for potential turbine layouts

The Owners are providing all of the setbacks used for the Projects to provide context for the design of the project.

Table 2: Project Setback Requirements

Features	Setback
Wind access buffer (from non-participating)	3 rotor diameters (RD) non-prevailing, 5 RD prevailing wind direction

Features	Setback
Public or private right-of-way	250 ft
Participating residences	1,000 ft (plus any additional distance to meet noise standard)
Non-Participating residences	1,000 ft (plus any additional distance to meet noise standard)
Internal wind spacing	5 RD prevailing, 3 RD non-prevailing with up to 20% of turbines closer than this requirement
Critical Avian Corridors	Outside those identified in Avian Report
WMAs and WPAs (Getty Wind specific setback)	1,800 ft (approximately 5.5 RD) from WMAs and WPAs (Getty Wind specific setback)

The layout and design of the Projects will maximize energy generation while minimizing impacts to the land and surrounding community. The Projects adhere to a voluntary setback of a minimum of 1,000 feet from non-participating residences, unless other arrangements have been made with specific residents. The Projects also incorporate a 250-foot setback from all public and private rights-of-way. All turbines will be sited a minimum of five rotor diameters (RD) from the project perimeter and non-participating properties in the prevailing wind direction, and three RD in the non-prevailing wind direction. The Getty Wind project will also site its turbines at least 1,800 feet (approximately 5.5 RD) from all WPAs and WMAs.

Access roads, wind turbine locations, and the underground collector system will not require significant cut and/or fill. The collector system will be buried to minimize impact to existing farm operations. To minimize adverse impacts to avian species, nearly all wind turbines and associated facilities are sited on cropland. Any disruption to drainage tile will be avoided to the extent possible during construction; any damage to tile as a result of construction activities will be repaired.

3. REGULATORY FRAMEWORK

The Projects are governed by federal, state and local environmental regulations; this section outlines the relevant regulations. The Projects' intent is to comply with all of the regulations outlined below. This document also serves as a guide by which construction and operations staff will be able to identify whether or not they are in compliance. Of particular note to the Projects is the State of Minnesota's Wind Siting Act (MN Statute 216F), discussed in Section 3.3.2 below. This act provides that the site permit application is the environmental document for the wind farm, with no other environmental document required by state or local governments (i.e. an Environmental Assessment, Environmental Assessment Worksheet or an Environmental Impact Statement). A site permit application to the Minnesota Public Utilities Commission under this act is the source of most of the operational conditions and protocol that define standard procedures at the Projects. The County of Stearns, MN will have oversight of the routing of the Projects' transmission line, under its Essential Services ordinance (Section 9).

3.1. FEDERAL REGULATIONS

The main federal regulations affecting the Projects are those laws discussed below that are managed by the USFWS. The USFWS developed a set of guidelines for evaluating and managing regulatory compliance in their Land-Based Wind Energy Guidelines (March 2012). A critical part of these Guidelines is the development of Bird and Bat Conservation Strategies (BBCS). The USFWS introduced BBCS as a distinct concept for wind energy projects in its Land-Based Wind Energy Guidelines (March 2012). Wind energy developers prepare a BBCS to describe the steps they could or have taken to apply the Land-Based Wind Energy Guidelines. A BBCS may be a single document, or a compilation of documents. This ABPP ties into the Projects' planned BBCS by (1) describing the research and steps that the Projects have completed to apply the Land-Based Wind Energy Guidelines; (2) providing documentation for the completed steps; and (3) outlining the Projects' future plans relating to BBCSs.

3.1.1.1 ENDANGERED SPECIES ACT OF 1973

In accordance with Section 7 of the Endangered Species Act (ESA) of 1973, actions that have a federal nexus such as involvement of federal land, federal funding or major federal permits necessitate consultation with the USFWS. The consultation may be either informal or formal depending on the effects determination made by the lead federal agency. If it is determined in the Biological Assessment that the effects are "no affect" or "may affect, not likely to adversely affect" the consultation can be completed informally. If, in their review, the USFWS makes a determination of "may affect," or, "likely to adversely affect," then the USFWS will write a Biological Opinion. Neither the Projects nor the transmission line involve federal funding, land or major permitting, and therefore, they do not trigger consultation under Section 7. However, the Projects have worked with USFWS and other wildlife agencies to address concerns; these interactions are discussed in Appendix D of this document.

Section 9 of the Endangered Species Act (ESA) provides protection for rare and migratory wildlife, specifically under three types of species designations: *endangered*, *threatened* and *candidate*. Under the *endangered* and *threatened* designations, it is unlawful for anyone to *take* an endangered listed species. *Take* includes, but is not limited to, harassing, harming, pursuing, hunting, shooting, wounding, trapping, killing, capturing or collecting protected species within the United States and its territorial seas. *Take* also extends to threatened species per 50 C.F.R. §§ 17.31 and 17.21. More specifically, *harm* in the definition of *take* means,

“...an act which actually kills or injures wildlife [including] habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering.” (50 C.F.R. 17.3)

Candidate species are not statutorily protected under the ESA because their listing is hindered by higher-priority listing activities. These species include both animals and plants that carry significant risk factors to deem them as endangered or threatened by the USFWS.

3.1.2 MIGRATORY BIRD TREATY ACT

The Migratory Bird Treaty Act (MBTA) is a statute that protects 1,006 bird species within the United States, making it unlawful to pursue, capture, kill, or possess any migratory bird or part, nest, or egg of any such bird listed in wildlife protection treaties between the United States, Great Britain, Mexico, Japan, and Russia (and several other countries of the former Soviet Union). Most birds (outside of introduced species and non-migratory game birds) within the US and the project area are protected under the MBTA. This protection extends to most avian species, except non-migratory game birds such as pheasants, grouse, quail, or any species introduced into the U.S. such as pigeons and house sparrows. More specifically, the Act prohibits activities that, in effect, result in direct taking or nest destruction, and not habitat. The MBTA protects from activities that “pursue, hunt, take, capture, kill, attempt to take, capture or kill, possess, offer for sale, sell, offer to purchase, purchase, deliver for shipment, ship, cause to be shipped, deliver for transportation, transport, cause to be transported, carry, or cause to be carried by any means whatsoever, receive for shipment, transportation or carriage, or export, at any time, or in any manner, any migratory bird, included in the terms of this Convention...for the protection of migratory birds...or any part, nest, or egg of any such bird,” (16 USC 703), unless these activities are permitted by regulatory means.

Because the MBTA is a strict liability statute, proof of intent to harm or kill a migratory bird is not required for an action to be considered a criminal offense. While violations of these statutes may result in prosecution, The USFWS Land-Based Wind Energy Guidelines (March 2012) indicate on page 6 that adherence to Guidelines, including communication with the USFWS, represents “an appropriate means of identifying and implementing reasonable and effective measures to avoid the take of species protected under the MBTA and BGEPA” and that the USFWS “will take such adherence and communication fully into account when exercising discretion” regarding MBTA and BGEPA enforcement actions. Further, in a recent United

States District Court case, the Court ruled that “otherwise lawful commercial activity which indirectly kills a migratory bird does not violate the MBTA” (US v. Brigham Oil and Gas et al. 2012).

The USFWS is able to exercise its jurisdiction and prosecute persons and entities that failed to adequately consult with the agency and develop reasonable measures to prevent the incidental take of migratory birds. The Projects have consulted and will continue to consult with relevant wildlife agencies, as discussed in this ABPP.

3.1.3 BALD AND GOLDEN EAGLE PROTECTION ACT

The Bald and Golden Eagle Protection Act of 1940 (BGEPA; 16 USC 668–668c, as amended) is administered by the USFWS. The BGEPA protects bald and golden eagles, their nests, eggs, and parts (e.g., feathers or talons). The BGEPA states that no person shall take, possess, sell, purchase, barter, offer for sale, transport, export, or import any bald or golden eagle alive or dead, or any part, nest or egg without a valid permit to do so (USFWS, n.d.). The BGEPA also prohibits the take of bald and golden eagles unless pursuant to regulations. “Take” is defined by the BGEPA as an action “to pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb.” Disturb is defined in the BGEPA as “to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available: (1) injury to an eagle; (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior; or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior” (USFWS, n.d.). In addition to immediate impacts, this definition also covers impacts that result from human-caused alterations initiated around a previously used nest site during a time when eagles were not present. Permits are issued to Native Americans to possess eagle feathers for religious purposes. Salvaged eagle carcasses can be sent to the National Eagle Repository in Colorado where they are redistributed to Native Americans. Although the bald eagle was removed from the Endangered Species List in June 2007, it is still federally protected under the BGEPA and Migratory Bird Treaty Act. In addition, the *National Bald Eagle Management Guidelines* were published in conjunction with delisting by the USFWS in May 2007 to provide provisions to continue to protect bald eagles from harmful actions and impacts.

In 2009, the USFWS issued a final rule on new permit regulations that would allow some disturbance of eagles “in the course of conducting lawful activities” (74 FR 46836–46879). USFWS’s description of its 2009 rule suggests that physical take of an eagle will only be authorized if every avoidance measure has been exhausted. Removal of nests will still generally be permitted only in cases where the nest poses a threat to human health, or where the removal would protect eagles. Explanations of the rule on USFWS’s website specify that take permits may be issued when “necessary for the protection of...other interests in any particular locality” (USFWS 2009). The discussion expands the definition of such public and private interests to include utility infrastructure development and maintenance. Considerations for issuing take permits include the health of the local and regional eagle populations, availability of suitable nesting and foraging habitat for any displaced eagles, and whether the take and associated mitigation provides a net benefit to eagles (74 FR 46836–46879, USFWS 2009).

(<http://www.fws.gov/midwest/Eagle/guidelines/bgepa.html>). In February of 2012 the USFWS issued its latest set of draft guidance on assessing, avoiding and mitigating bald and golden eagle impacts for wind farms.

3.2 STATE REGULATIONS

3.2.1 STATE THREATENED AND ENDANGERED SPECIES LAWS

Under Minnesota law, a person “may not take, import, transport, or sell any portion of an endangered species of wild animal or plant, or sell or possess with intent to sell an article made with any part of the skin, hide, or parts of an endangered species of wild animal or plant,” except as provided in the statute Minn. Stat. 84.0895. The statute directs the Commissioner of the DNR to develop lists of endangered species, threatened species, and species of concern. This list of state-listed species can be found on the DNR website. At the time of writing, the DNR is reviewing and revising Minnesota’s List of Endangered, Threatened, and Special Concern Species.

3.2.2 MINNESOTA WIND SITING ACT

Minnesota Statutes 216F and Minnesota Rules 7854 provide the procedure for environmental and public review that the Projects followed in seeking a site permit for the wind farm portion of the Projects. These regulations place the permitting review and coordination in the hands of the MPUC. In addition to these rules, the Projects followed a number of guidance documents from the EFP Staff to define the scope of the environmental review and to identify best practices in project design. The Projects will provide ongoing compliance under these statutes and rules, as well as follow conditions as required by the MPUC site permit. Most environmental compliance matters will be coordinated through the MPUC; however there are other relevant state and federal agency stakeholders involved with compliance matters.

LOCAL REGULATIONS AND ZONING

The Projects are located in Stearns County, Minnesota in agriculturally zoned districts. The construction and operation of a wind farm, ancillary components, and transmission line are consistent with local regulations and zoning. Additionally, the Projects are within the Sauk River Watershed and the North Fork of the Crow River Watershed. Both of these watersheds have their own regulations, standards, and reviews. The Projects will comply with the watersheds’ requirements.

4. AGENCY CONSULTATION

Ongoing communications between the Projects and wildlife agencies, including the DNR and USFWS, began in July 2009. The Projects and wildlife agencies continued their communications throughout the Projects' development and the state permitting process. These agency consultations and communications played an integral role in informing the Projects' siting processes. Throughout these correspondences, the Projects avoided and minimized impacts to environmentally-sensitive areas, and will continue to do so. These environmentally-sensitive areas include but are not limited to: native prairie, wetlands, woodlots, and flyways between and among habitat resources. Minimizing the permanent impacts to wetlands, native prairie and other quality habitat areas is a chief concern for the wildlife and permitting agencies and a priority for the Projects.

The Projects have performed a tiered assessment of the avian and bat impacts from the project (see Section 1); wildlife agencies have played a significant role in this process and have provided information that assisted in the development of data in the first two Tiers of the project. The Projects developed Tier 3 methodologies in cooperation with the DNR and USFWS. Avian studies began on the Projects' sites in April of 2011 and continued through the winter of 2011-2012. Acoustical bat monitoring is ongoing and will be complete in the fourth quarter of 2012. More details about these preconstruction surveys are discussed in Section 3 of this document. Avian studies conducted at the Projects' sites, along with the corresponding Acoustic Bat Studies for the Paynesville-Zion Wind Resource Area,² provided both the Projects and the agencies with a better understanding of potential impacts to birds and bats at the Projects' sites. The Projects will continue to work collaboratively and share study data with these agencies as needed. Further agency consultation is planned and will occur under the structure outlined in Section 7.3.4.

² Ibid. Paynesville Bat Study Report 56352

5. WILDLIFE RISK ASSESSMENT

The DNR has reviewed the project layouts and determined that the current turbine arrays constitute a moderate risk level. The Owners are continuing to coordinate with the FWS office to determine their view of project risk. The FWS is currently evaluating risks to eagles and other birds. The Owners accept that the DNR sees the project as having a moderate risk level from a design stand point and intent to continue to work with DNR staff to determine mitigation options that may be able to reduce risk further. As the Owners continue to coordinate with the FWS on eagle and any other risks they may see from the project Owners will identify any mitigation techniques and incorporate them into this plan. These techniques may include an eagle conservation plan or additional BBCSs.

6. CONSTRUCTION PHASE

To ensure that the regulatory framework in Section 4 is adhered to, Owners will have an onsite staff Owners Environmental Coordinator (OEC) to oversee the construction crew's environmental compliance. Additionally, the BOP Contractors for the wind farm and transmission line will also have their environmental staff overseeing the work, including storm water BMPs. The following sections address the minimization of impacts to avian and bat species as well as general construction BMPs to ensure that the construction complies with the regulatory framework in Section 3.

6.1 MINIMIZE DISTURBANCE

The construction phase of the project will result in ground disturbance activities. In coordination with natural resource management agencies, the Owners designed the project to avoid areas of sensitive habitat such as protected waters and native prairie to the extent practicable and have minimized impacts where it was not possible. The Projects will minimize the areas of construction and temporary ground-disturbance activities to the extent practicable. Temporary disturbances during construction of the project include crane pads at each turbine location, temporary crane paths, temporary laydown areas at the base of each turbine, trenching in the underground electrical collection system and storage or stockpile areas. The majority of this work will occur within tilled and cultivated agricultural fields, thereby minimizing impacts to quality habitat and fragmentation.

Owners will designate construction corridors for the construction team to work within; corridors will be surveyed by a biologist before construction to ensure there is no disruption of native prairie or other sensitive avian or bat habitat. The purpose of these corridors is to limit the location of construction activity in the project area and ensure that any disturbance occurs in the least sensitive areas possible. If BOP Contractors need to modify these corridors they will work with the OEC to review the modifications in the field to verify that the modification meets the standards of the permits for this project. Occasionally, the BOP Contractors will need to perform out of corridor work on the fly to ensure the safety of their staff, particularly during the erection of the turbines. Areas around the turbines will be surveyed much wider than the corridor and Owners will identify any critical exclusion areas for the BOP Contractors in advance of erection.

6.2 SITE MAINTENANCE

The Projects will exercise proper caution and safety measures to minimize risks to avian and bat populations near and within the site. To minimize the risk of wildfire that could destroy bird and bat habitat, or that could be injurious to construction personnel, the contractor will be responsible for maintaining a clean and orderly site, and handling and storing flammable chemicals, petroleum and other materials with the potential for combustion, in a safe manner. Accumulation of outdoor storage or waste will be addressed immediately so as not to attract

birds and bats. The site manager will be responsible for enforcement of BMPs that focus on reducing impacts to birds and bats, as well as the implementation of this document.

The Projects will implement management measures to restore areas that are impacted due to temporary construction activities. After all practicable avoidance measures are taken to reduce temporary impacts to vegetated areas; any temporarily disturbed areas will be re-vegetated to blend with existing vegetation. Further measures will be taken to minimize disturbance from construction activities. The Projects will ensure construction teams are aware of and attempt to prevent spreading invasive species via the movement of people, materials and equipment into and out of the site to prevent the spread and colonization of any new populations of invasive species. Measures include washing off any soil, dirt and debris on equipment, such as wheels and turbine components, as well as footwear if necessary, prior to moving equipment over native prairie land, as soil may be embedded with roots or seeds of invasive plant species.

The Projects will restore the pre-construction vegetation in areas where temporary ground-disturbance activities, such as temporary crane paths or the installation of underground infrastructure, will occur. Additionally, while impacts to avian nesting cover are not anticipated due to construction timing, the Projects will avoid the clearing of perennial vegetation and any potential avian nesting cover to the extent practicable.

6.3 TRAINING

The BOP contractor will be the lead entity for the construction management of the Projects and will be responsible to provide training to all construction staff working on the project. Owners will review their training to make sure it covers the critical issues discussed in this document, reflects the BMPs outlined in the Land Based Wind Energy Guidelines, and addresses any additional environmental issues pertaining to ground disturbance that may arise in the final engineering and permitting of the Projects. These training materials will be finalized after a contractor is selected because the materials will be specifically designed to fit in with the contractor's site training curriculum. Training will include but is not limited to:

- Environmental compliance
- Threatened & endangered species, and species of concern
- Avian and bat issues
- Sediment and erosion control BMPs
- Vegetation management and noxious weeds
- Invasive species training
- Wetland and water resources
- Hazardous materials
- Water crossings
- Cultural and historic resources

Training, both formal and informal, will be provided for all construction staff depending on the work responsibilities of personnel. A variety of formats will be employed to present information to those receiving training such as department or group meetings and discussions,

one-on-one training, presentations, posters and handouts. Copies of any training materials distributed will also be kept at the construction trailer/field office, and the hours and attendees of training sessions will be documented by the appropriate designee. Expected formal training opportunities include:

- Pre-construction meeting with contractor and construction managers
- Pre-construction meeting with relevant agencies
- Regular status meetings as determined by contractor
- Regular field meetings with construction personnel

Table 3 summarizes the timing for training and issues that will be covered for the construction personnel at the site during that time period. It is important to train the appropriate individuals during the appropriate time period, and this sequencing will help ensure that this occurs.

TABLE 3: SUMMARY OF CONSTRUCTION TRAINING ACTIVITIES AND TIMING

Issue	Concerns/Summary
Eagle	Nesting bird disturbance Training on bird identification and proper notification procedure Trained biologist conducting nest monitoring April 15 – August 15
Birds	Destruction of occupied nests Training to identify potential nesting habitat for marbled godwits Identification and protection of areas of native prairie that exist within the Projects' area ³
General Wildlife	General awareness and sensitivity training related to all wildlife

The primary, civil, erection and electrical contractors will implement BMPs to construct the project in a way that minimizes impacts to avian species on-site. This includes maintaining flexibility in the construction of components where feasible, as well as encouraging the education of construction teams on site-specific environmental and avian concerns. Education may also include training in the identification of different types of birds and bats, which may be accomplished by utilizing posters that identify sensitive species, and which are posted at the construction trailer facility. The site personnel will be required to receive training on the Wildlife Incident Reporting System discussed in Section 7.3.

The Projects will ensure that the civil contractor has a proper safety program in place, and that construction and operations crews have been adequately trained to that effect. To minimize the risk of wildfire that could destroy bird and bat habitat, or that could be injurious to construction personnel, construction crews will exercise proper caution and safety measures while handling and storing flammable chemicals, petroleum, and other materials with the potential for combustion. The contractor will be required to maintain a clean and orderly site, and the

³ If native prairie is identified in preconstruction surveys

unnecessary accumulation of outdoor storage or waste will be addressed immediately so as not to attract birds and bats. The site manager will be responsible for enforcement of BMPs that focus on reducing impacts to birds and bats, as well as the implementation of this document. Operations and Maintenance (O&M) staff will be trained on this document, and training on avian protection planning and practices external to this document is highly encouraged by the Projects.

In the event of permit non-compliance issues, the construction contractor will take the measures necessary to correct the situation and maintain compliance. A stop work order may be issued if an emergency occurs, or if a violation is not corrected in a reasonable timeframe. The contractor will designate a project representative responsible for notifying and documenting issues of non-compliance with the permit.

6.4 CONSTRUCTION MONITORING PLAN

The Projects are sited in an area dominated by cultivated agriculture, thereby minimizing risk for potential environmental impacts. While this proper siting avoids and minimizes most potential impacts to birds, bats, and other wildlife, the Projects will implement the following training and actions during the construction phase. The Projects recognize that different phases of construction will utilize different construction personnel at different times of the year. The construction monitoring plan, which will be informed by wildlife agency comments and recommendations, is designed to be implemented during these appropriate times, so that the construction personnel receive the necessary training and implement the plan accordingly. Construction personnel will be trained in the following areas when appropriate:

- awareness and general identification of bald eagles and marbled godwits;
- awareness of potential bird nesting areas;
- awareness of potential bat roosting/breeding habitat and; and
- awareness of general wildlife issues.

It is through this awareness training that all construction personnel can be accountable in observing and reporting potential issues to the appropriate site representative (e.g., construction manager). Additional training will be given to the identified site representative on procedures to be followed and actions to be taken at the appropriate times of the year and in the appropriate situations.

6.5 CONSTRUCTION STANDARDS

6.5.1 AVIAN SPECIES

The primary concern for avian species during the construction phase will be (1) the disturbance of the active bald eagle nest, (2) impacts to the marbled godwit, which utilizes grasslands both within and outside of the Projects' boundaries, and (3) the consideration/protection of other nests as protected under the MBTA. Construction personnel will be trained to identify potential nesting habitat (e.g., grasslands, wetlands, wooded areas) and to contact the Site Manager prior to disturbance. The Site Manager will coordinate any necessary searches with the

environmental inspector (EI), and will notify the construction personnel when construction can continue.

6.5.2 BAT SPECIES

Similar to avian species, the primary concern for bats during the construction phase will be to the destruction of occupied roosting or breeding habitat (e.g., large trees, old buildings). If construction occurs between April 1 and October 15 that will directly take down large trees, remove old buildings, or otherwise directly impact potential bat roosting or breeding habitat, construction personnel will be directed to halt activities and a trained biologist(s) will search the area to ensure no bats are present. This searching could include visual inspection of trees, old buildings, and other cavities where bats may be found, or watching for bats departing these areas during dusk or returning at dawn. Construction personnel will be trained to identify potential habitat and to contact the Site Manager prior to disturbance. The Site Manager will coordinate the searches with the EI and will notify the construction personnel when construction can continue. If areas are previously disturbed prior to April 1 or after October 15, concerns with bat species during construction can be averted.

6.5.3 GENERAL WILDLIFE RESOURCES

In addition to training related to identifying issues and avoidance measures during construction for bald eagles, marbled godwits, and other birds and bats, construction personnel will also be trained to identify and avoid impacts to wildlife in general. For example, during construction, personnel will visually inspect each open trench/pit daily to determine if any animal has become entrapped in the trench/pit. If an animal has become entrapped, the Site Manager will be notified and appropriate actions will be taken to safely remove and release the animal. This will require general wildlife awareness and sensitivity training for all construction personnel.

6.5.4 TRAFFIC PLAN

During the construction period, heavy trucks, light trucks, and other construction equipment will access construction sites via existing county and gravel roads. Routes that avoid travel near the existing eagle nest will be developed for and utilized by construction personnel. Other construction vehicle travel will be reduced by requiring all construction workers to park their personal vehicles at a central location on the project. The Projects will confine all construction and construction-related activities to the minimum necessary to safely construct generation, transportation, transmission and maintenance facilities as depicted in the final site design and engineering plans. Approved work space limits shall be marked and maintained throughout the construction period. All construction-related traffic within the wind farm areas will be limited to a maximum speed limit of 25 mph unless a lower speed limit is posted. Any carrion killed by collisions with vehicles will be removed from roads constructed to maintain or access project facilities.

During the operational phase of the project, traffic volume will be minimal, consisting mainly of local traffic and routine trips by technicians to check and maintain wind generation and transportation equipment.

6.5.5 COLLECTION AND TRANSMISSION LINES

The Projects will design project electrical facilities based upon the Avian Power Line Interaction Committee's (APLIC) guidelines for minimizing risk of electrocution of birds from power lines. Electrocution is a common concern with electrical facilities, and the electrocution of large birds, such as raptors, is more commonly associated with distribution lines.

Electrocution occurs when birds with large wingspans come in contact with two conductors or a conductor and a grounding device. Adequate spacing of the transmission line design diminishes the risk of raptor electrocution, and the Projects will implement such a design to eliminate the risk of electrocution. To the extent practicable, the collector system will be placed underground, thereby eliminating the risk of electrocution.

Historically, utilities have successfully reduced collisions on transmission lines by marking the shield wires with flight diverters (FDs). FDs are preformed, spiral-shaped devices made of polyvinyl chloride that are wrapped around the shield wire and designed to increase its visibility. The locations of the Projects' FDs will be determined after input from the EFP, DNR, and USFWS. Maps of the final FD locations will be provided after the design of the collector system and transmission line is completed.

The Projects recognize the potential for temporary displacement of wildlife during the construction of both the wind farm and the transmission line. However, this displacement is anticipated only for a short distance and is temporary. Fallow farm fields, fencerows and woodlots in cultivated areas may provide cover for displaced birds during construction of the transmission line.

Raptors, waterfowl and other bird species may be affected by the construction and placement of the transmission lines. Avian collisions with transmission structures are a possibility in areas where agricultural fields serve as feeding areas, wetlands, and open water. As such, transmission structures will not be located within these wetland areas to the extent feasible.

6.5.6 MINIMIZATION OF ROADS

The Projects will expand the widths of access roads only as necessary during the construction phase of the project, and will build only those access roads necessary to access the turbines. After construction, any expanded road widths will be narrowed to approximately 14-16 feet, and vegetation alongside the roads will be restored. BMPs for erosion and sediment control will be implemented in areas where runoff may result in the degradation of soil quality and in environmentally sensitive areas.

6.5.7 SWPPP

The Projects' Storm Water Pollution Prevention Plan (SWPPP) will be a resource to ensure control measures are taken to prevent erosion and runoff during construction of the project. Of particular concern is runoff into sensitive habitats as well as runoff into streams and roadside ditches. The measures within the SWPPP will comply with the requirements of the Minnesota Pollution Control Agency (MPCA) General Permit for Storm Water Associated with Construction Activity under the National Pollutant Discharge Elimination System (NPDES) / State Disposal System Permit Program.

During construction the Projects will follow regulations set forth by the MPCA to comply with National Pollutant Discharge Elimination System (NPDES) Guidelines. A Storm Water Pollution Prevention Plan (SWPPP) will be implemented with site specific Best Management Practices (BMPs). This portion of the document will be revised at that time to reflect the BMPs that will be used during construction. These rules are reflected in the following construction erosion and sediment control BMPs:

- Minimize disturbed area and install silt fence at down gradient edge of disturbed area, prior to disturbance, to minimize sediment flow and pollution to natural areas outside the construction zone.
- If streams are within the area of construction additional silt fence must be placed along the edge of the stream ten feet (10') from edge of channel, if possible, as a primary sediment break. If natural vegetation along the edge of stream is to be disturbed, silt curtain must be placed at the edge of said stream, in a fashion proper with rate of flow, as a secondary precaution. If natural vegetation is not to be disturbed then it should provide necessary filtration to preclude the need of silt curtain in the stream.
- If soil is disturbed outside of the agricultural till area, the soil must be stabilized within fourteen (14) days of non-disturbance. If said area is along special or impaired water (PWI waters) the area must be stabilized within seven (7) days of disturbance. Ditch bottoms 200 feet from edge of surface water or property must be stabilized within 24 hours. If soil is disturbed around culvert or other water discharge location the area has to be stabilized within 24 hours of disturbance.
- Erosion and sediment control devices require weekly inspections to ensure that they are staying effective. In the event of a half inch ($\frac{1}{2}$ ") or greater rainfall inspection must occur within 24 hours.
- If failures are found any discharge associated with said failure must be cleaned up as soon as possible and no later than seven (7) days from time of discovery.
- Clean up any track out from vehicles traveling through the site on to roadways must be cleaned up within 24 hours.
- Upon construction completion, disturbed areas must be stabilized within 14 days.
- Material stockpiling will be kept to specified areas and will be surrounded with silt fence at least eight feet (8') from the edge of the stock pile as to provide barrier for potential erosion and sediment run off from stock pile yard. Hazardous material will be handled per the individual material guidelines as well as on-site spill kits.

In addition to the regulations set forth by the MPCA, Stearns County has an established set of BMPs for storm water pollution prevention. These BMPs include control measures meant to meet the requirements of the NPDES Phase II permit. The six minimum control measures are as follows:

1. Public Education and outreach on storm water impacts
 - a. Example: brochures, handouts and newsletters
2. Public participation and involvement
 - a. Example: Storm Water Pollution Prevention Program annual public hearing

- b. Example: Adopt-A-Highway Program
- 3. Illicit discharge detection and elimination
 - a. Example: Recycling and Hazardous Material Collection Program
- 4. Construction site runoff control
 - a. Example: Erosion control training for County staff
- 5. Post-construction storm water management in new development and redevelopment
 - a. Example: MPCA guidelines for County-owned projects
- 6. Pollution prevention/good housekeeping for municipal operations
 - a. Example: NPDES permit for industrial activity

7. OPERATIONAL PHASE

7.1 AVIAN AND BAT FATALITY

The Owners will work to minimize avian fatality through informed operational procedures. While the Owners have undertaken significant pre-construction study efforts to assess avian risk at the site, it is difficult to estimate the level of take that may occur at the project site.

“The Summary of Post-Construction Monitoring at Wind Projects” (Poulton, 2010) prepared for EFP provides a comprehensive cross-section of results from publicly-available post-construction avian and bat mortality monitoring studies at wind farms across the U.S. Table 4, below, provides a summary of the publicly available avian and bat fatality data.

TABLE 4: AVIAN AND BAT FATALITY RATES AT WIND FARMS

Location	Name of Wind Farm	Nameplate Capacity in MW	No. of Turbines	Adjusted Bird Fatalities/MW/Yr	Adjusted Bird Fatalities/Turbine/Yr	Adjusted Bat Fatalities/MW/YR	Adjusted Bat Fatalities/WTG/Yr
Minnesota	Buffalo Ridge	Approx 235	354	1.43-5.93	0.5-4.45	0.76-2.72	0.26-2.04
Wisconsin	Blue Sky Green Field	145	88	7.17	11.83	24.6	40.5
Wisconsin	Kewaunee	20.46	31	1.95	1.29	6.45	4.26
Iowa	Top of Iowa	80.1	89	0.49 (2003)	.44 (2003)	7.34 (2003)	6.60 (2003)
Iowa	Top of Iowa	80.1	89	1.07 (2004)	0.96 (2004)	9.81 (2004)	8.83 (2004)
Wyoming	Foote Creek Rim	41.4	69	2.50	1.5	2.23	1.34
Alberta, Canada	Summerview	70.2	39	1.06	1.91	10.27	18.49
Maine	Mars Hill	42	28	1.65	2.47	0.12	0.17

The Poulton et al. document concurs that the hierarchical data collection and decision-making process discussed within the Federal Advisory Commission’s (FAC) advisement to the USFWS Wind Turbine Guidelines is generally a good structure to follow in planning wildlife studies. The Projects have performed an Avian Report (see Appendix C) to define species in the area and the risk level, but has not used it to define an acceptable level for avian mortality.

7.2 OPERATIONAL STANDARDS

During the operational phase of the Projects, the Projects' Operations Manager will enforce this plan in an effort to reduce risks to birds and bats. The Operations Manager will designate an EI on his team of operations staff to manage a majority of the compliance activities. The operations team will be trained in the process and protocols for project compliance with this document. Additionally the team will be required to adhere to site management as outlined below to ensure that the site does not attract avian species or operate in a high risk manner. The following standards are based on industry best practices at the time of writing and may be revised as new on wind farm impact minimization becomes available. The project's Operations Manager and the EI will be responsible for maintaining training and site management protocols. Additionally, the EI will take the lead on the coordinated avian and bat mortality monitoring discussed in 6.3.

7.2.1 MINIMIZE LIGHTING

During the operational phase of the Projects, the site operations manager will enforce this plan in an effort to reduce risks to birds and bats. All unnecessary lighting, except those required for safety by the FAA and other lights needed for safety and security purposes, will be turned off.

USFWS' Wind Turbine Guidelines⁴ recommend that wind turbine lighting be designed such that the blinking lights illuminate simultaneously in order to prevent disorientation with birds and bats. This measure is less likely to attract insects to a constant light source, and thus the birds and bats that feed on them. Further, the USFWS recommends the use of minimum intensity, maximum off-phased strobe lights where necessary; constantly lighted sources, such as L-810 obstruction lights, are not recommended. The FAA recommends synchronized flashing or blinking red lights (L864), and generally recommends lighting only the perimeter of the wind farm project with lighting gaps of no more than 0.5 mile between lights, and no more than one mile across turbine clusters, as well as lighting turbines that are isolated from strings or clusters of other turbines. Turbines within the Projects will be lighted in compliance with FAA minimum standards. In keeping with the Guidelines, the use of motion or infrared activated lights on building facilities will be investigated as a method to reduce attraction of insects, birds and bats. The use of high-intensity lights such as spotlights, steadily-burning bright lights, and sodium vapor lights will be minimized.

7.2.2. NEST MANAGEMENT

This ABPP includes procedures for nest management for the life of the project on operational grounds and on project structures. These procedures will be explained to the Projects' employees during training to ensure uniform treatment of avian nest issues among personnel. Many bird species build nests on transmission and generation facilities as well as on the adjacent maintenance pads, roads and other ground cover. Species such as barn swallows, cliff swallows, kingbirds, crows, robins and several raptor species are known to use generation and

⁴ U.S. Fish and Wildlife Service Land-Based Wind Energy Guidelines: *Recommendations on measures to avoid, minimize, and compensate for effects to fish, wildlife and their habitats.*

transmission facilities as nesting substrate. Additionally, turbine pads can provide substrate to ground nesting species such as common nighthawks, killdeer, horned larks among others. Depending on where nests are located, they may pose fire, safety, power outage, bird electrocution, and bird collision risks. Nest management may include trimming nest material, removing nests, or relocating nests to areas of less risk. In some instances nesting platforms can be constructed in locations that reduce the risk to birds using the area and to equipment.

By siting turbines, collector lines and other facilities in agricultural lands, impact to bald eagles and marbled godwits is minimized. However, in the absence of other suitable nest sites, other species such as some songbirds and raptors will use man-made structures for nesting. State and federal laws and regulations protect these nests from removal at certain times of the year without first obtaining authorization from state and federal wildlife agencies. It is unlawful to destroy nests when eggs or young birds are in them. The Projects' employees will be trained to understand that no impacts to occupied nests can occur unless there is an immediate safety threat, in which case, coordination with the USFWS and DNR will need to occur. While some nests are benign and need no management, others may need to be managed to reduce the risk of equipment failure, bird and bat collisions, and electrocution.

7.3 POST CONSTRUCTION AVIAN AND BAT MONITORING

Post-construction avian and bat fatality monitoring will be performed in compliance with the final Site Permits issued by the MPUC and the Fish and Wildlife Service Land-Based Wind Energy Guidelines. Monitoring protocol that complies with the Site Permits and Guidelines will be developed in coordination with the DNR and the local FWS Office. This monitoring protocol will be included as an amendment to this ABPP. Quarterly reports will be prepared summarizing fatality monitoring. These reports will also be made available to project partners and utilized for decision-making purposes. Reporting protocol is discussed in Section 7.3.2 of this document.

Upon commissioning, the Projects will employ the site-specific Wildlife Incident Reporting System (WIRS). The WIRS will be designed to provide a means of recording avian and bat casualties found in the wind project to increase the understanding of wind turbine and wildlife interactions. The WIRS will provide a set of standardized instructions for the Projects' personnel to follow in response to wildlife incidents in the Projects' area. The WIRS form can be found in Appendix B of this document. Each incident will be documented on a data sheet and reported by the EI to the designated environmental affairs contact per the requirements of the Projects' Site Permits. The data will be logged into and maintained within a tracking spreadsheet by the Projects' environmental affairs staff, and regular review of the reported incidents will be undertaken by the same. Site personnel will be required to receive training on WIRS procedures as well as how to complete and submit the WIRS report.

The long-term operational effort will consist of managerial, operations, and maintenance staff documenting and reporting of fatality discovered during the course of wind farm operation. The WIRS will provide a set of standardized instructions for wind farm personnel to follow in response to wildlife incidents within the Projects. An example of the WIRS form can be found in Appendix B of this document. Each incident will be documented on a data sheet and

reported to the designated environmental affairs contact per the requirements of site permits issued by the MPUC. The data will be logged into and maintained within a tracking spreadsheet by the Projects' environmental affairs staff, and regular review of the reported incidents will be undertaken by the same. Designated site personnel will be required to receive training on WIRS procedures, as well as how to complete and submit the WIRS report. Quarterly reports are due by the 15th of each January, April, July and October commencing the day following commercial operation and terminating upon the expiration of the permits. Each report shall identify any dead or injured avian and bat species, locations of find and the date the species was discovered. A Geographical Information System (GIS) may also be used to generate maps and identify problem areas by tracking both the specific locations where mortalities may be occurring, as well as the extent of such mortalities. Issue rectification and design configurations can also be tracked.

7.3.1 WILDLIFE CARCASS AND INJURY DISCOVERY PROCESS

The following chart provides the wildlife carcass and injury discovery process. This chart is designed to comply with the site permit reporting requirements for the Projects. The Projects will have a qualified individual such as a wildlife biologist available to review site photos and identify species in the event that a staff person is not capable of performing a field identification.

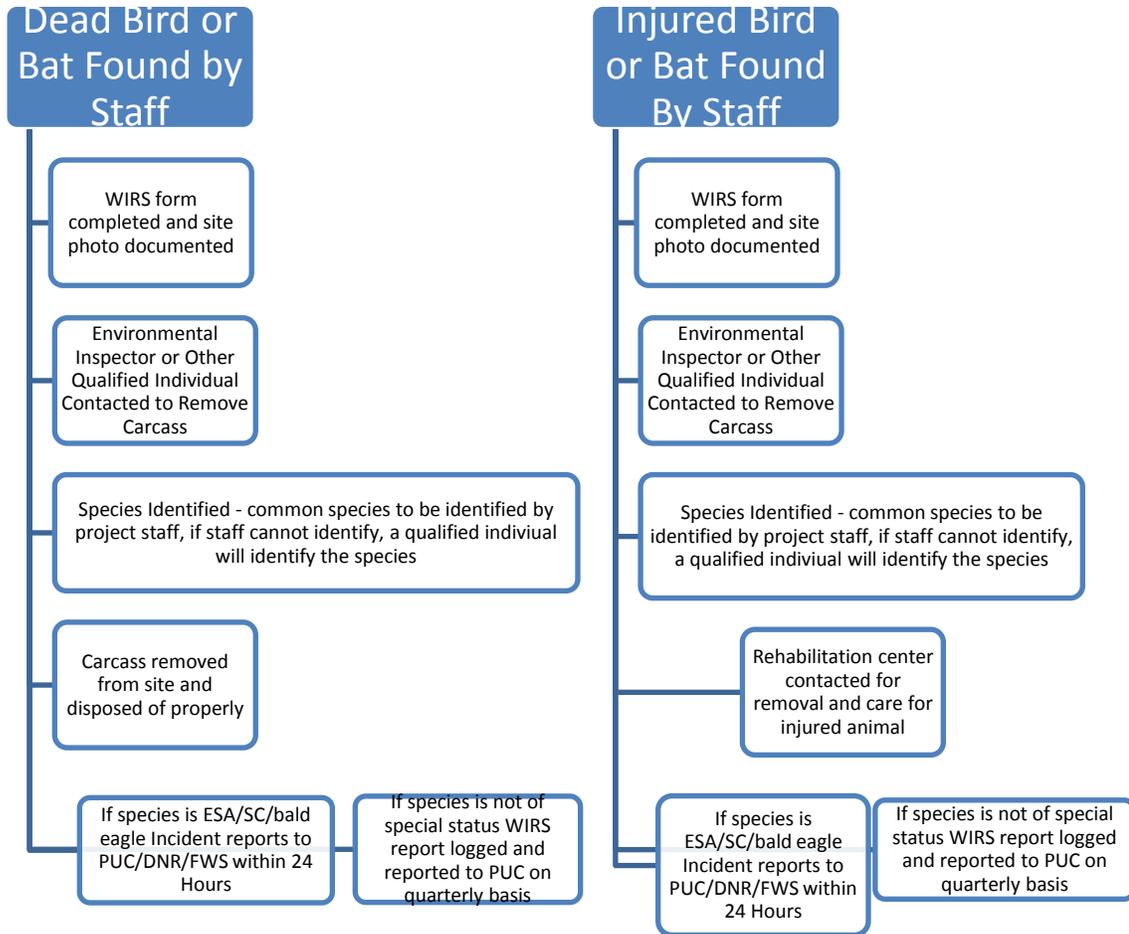


FIGURE 1: AVIAN FATALITY PROCESS

7.3.2 REPORTING PROTOCOL

Post-construction avian and bat monitoring will be conducted at the Projects’ sites, and will be performed in accordance with the final site permits issued by the MPUC. The reporting protocol for the Projects will include submitting quarterly avian and bat reports to the MPUC. Quarterly reports are due by the 15th of each January, April, July and October commencing the day following commercial operation and terminating upon the expiration of the permits. Each report shall identify any dead or injured avian and bat species, locations of find by turbine number, and the date the species was discovered. Additionally, quarterly reports will be prepared summarizing the fatality monitoring for the Projects. These reports will also be made available to project partners and utilized for decision-making purposes.

In accordance with the Projects' site permits, in the event that five or more dead or injured non-protected avian or bat species or a single dead or injured state threatened, endangered, species of special concern, federally listed species, or bald eagle are discovered in the vicinity of the rotor swept area, the MPUC, USFWS and DNR shall be notified within 24 hours.

7.3.3 POST CONSTRUCTION PERMITTING EFFORTS

The Projects will obtain required wildlife permits from the USFWS and DNR for handling dead or injured birds protected by programs such as the MBTA, BGEPA, and state nest relocation permits. Temporary possession, depredation, and salvage permits issued by the USFWS under the BGEPA and MBTA and state salvage permits will be part of the post-construction monitoring efforts and each of these permits will be acquired before monitoring begins.

Results compiled from pre-construction studies and ongoing fall/winter surveys determined that impacts to birds and bats are likely but will not be significant enough to affect area populations. This data is also being used to inform compliance with the BGEPA take permit, MBTA temporary possession, depredation, and salvage permits, and state salvage permitting requirements to monitor avian and bat fatality for up to three years post-construction.

The BGEPA and the Draft Eagle Conservation Plan Guidance of January 2011 for wind development sites provides steps for voluntary compliance. The Projects will collect additional eagle use data over the course of an entire year and up to two miles from the project boundaries. The ongoing study will focus on Important Eagle-Use Areas (IEUA) as defined by the BGEPA which states an IEUA is “an eagle nest, foraging area, or communal roost site that eagles rely on for breeding, sheltering, or feeding, and the landscape features surrounding such nest, foraging area, or roost site that are essential for the continued viability of the site for breeding, feeding, or sheltering eagles.”

Although the Eagle Take Permit rule was issued in 2009, guidance outlining permit issuance is not expected until late 2012. Therefore specific eagle study protocol will not be discussed in this document but will be finalized and developed in coordination with the USFWS and DNR. It is anticipated that the studies may consist of point counts and transect survey components to identify IEUAs and document eagle use and behaviors. Eagle observations will be used to quantify eagle activity, numbers, age, flight type, flight height, time in activity, flight direction, and other pertinent behaviors (i.e. territorial, courtship, etc.).

For compliance with the MBTA, post construction fatality monitoring study methodologies will be developed in cooperation with the USFWS and DNR and will follow guidelines set forth in the following documents:

- Draft Avian and Bat Survey Protocols for Large Wind Energy Conversion Systems in Minnesota (August 25, 2011),
- U.S. Fish and Wildlife Service Wind Turbine Guidelines Advisory Committee (March 4, 2010)

U.S. Fish and Wildlife Service Land-Based Wind Energy Guidelines (March 23, 2012)

Compliance with the BGEPA and MBTA, allowing the ‘possession’ of the bird/carcass requires the possession of a salvage, rehabilitation, special Purpose, scientific collecting, or related permits. The issuance and use of Federal Migratory Bird permits also requires annual reporting to USFWS. Contacts at the USFWS and DNR are:

USFWS:

Deanne Endrizzi
Office of Migratory Bird Permits
U.S. Fish and Wildlife Service
5600 America Boulevard West, Suite 990
Bloomington, MN 5437-1458

MN State Salvage Permit:

Laurie Naumenn
Permit and Promotions Specialist
Nongame Wildlife Program Information Officer
Division of Ecological and Water Resources
Department of Natural Resources
Box 25, 500 Lafayette Rd.
St. Paul, MN 55155
Telephone Number 651-259-5148

7.3.4 QUALITY CONTROL AND ADAPTIVE MANAGEMENT

To ensure compliance with this ABPP, the Owners will conduct annual audits of its ABPP practices and compile an annual report for internal and external use. The annual report will summarize study methods, protocols and results from the prior year. Any deficiencies or recommended changes will be noted in the report, along with a schedule for implementing the corrective or modified actions. Owners will provide a copy of the annual report to PUC, EFP, MN DNR, and USFWS no later than March 15th each year.

Based on the results of their annual audit, the Owners will, in consultations with the agencies, consider the need for adaptive management measures commensurate with the impact. Adaptive management measures will be designed to resolve identifiable, unanticipated effects from the operation of the wind farm.

As noted in Section 3.3.1 the DNR is revising the State's list of threatened and endangered species. When changes are made to Minnesota's List of Endangered, Threatened, and Special Concern Species, the Projects will reevaluate this ABPP and their BBCS, communicate with the DNR and other state agencies, and make updates to the conservation strategies as needed. This reevaluation would also occur in the event that a new species becomes listed by the federal government or in the event that the Owners become aware of a listed species utilizing the site in a manner previously not observed in the evaluations performed in tiers 1 through 3.

Additional adaptive management measures will be designed to resolve any issue that arises on a case-by-case basis. Some examples of adaptive management are:

- Procuring habitat conservation easements
- Improving wildlife habitat
- Installing nest boxes
- Installing more avian flight diverters along transmission line
- Modification of wind turbine operations
- Additional training of wind farm staff
- Regular clearing of road kill around project site to remove scavenger food sources

KEY RESOURCES

This ABPP identifies key resources to address avian protection issues including area USFWS and DNR biologists, engineers, planners, and operation personnel who have been trained on avian interaction problems. External organizations such as the National Wind Coordination Committee (NWCC) and APLIC can also serve as helpful resources by providing guidance, workshops, materials, and contacts. An understanding of bald eagles, marbled godwits, and bat behavior can influence how and when avian and bat protection should be utilized. The Projects will connect regulators and wildlife experts with project decision makers to reduce avian and bat injury or fatality and maintain project reliability. The site manager will be responsible for enforcement of BMPs that focus on reducing impacts to birds and bats, as well as the implementation of this document. Operations and maintenance staff will be trained on this document and avian protection planning. Practices external to this document are highly encouraged by the Projects.

In the event of permit non-compliance issues during construction, the construction contractor will take the necessary measures to correct the situation and maintain compliance. A stop work order may be issued if an emergency occurs, or if a violation is not corrected in a reasonable timeframe. The contractor will designate a project representative responsible for notifying and documenting issues of non-compliance with the permit.

Table 5 lists contacts that will serve as key resources during the construction and operations phases of both Projects. These include contacts for the Projects, area biologists, rehabilitation centers, etc.

TABLE 5: LIST OF KEY RESOURCES

Organization Type	Name	Address	Phone
Rehabilitation Center	The Raptor Center / College of Veterinary Medicine, University of Minnesota	1920 Fitch Avenue St. Paul, MN 55108	612.624.4745
Rehabilitation Center	Wildlife Science Center	5463 West Broadway Avenue Forest Lake, MN 55025	651.464.3993
Government Agency	Minnesota Dept. of Natural Resources	500 Lafayette Road St. Paul, MN 55155	651.296.5484
Government Agency	U.S. Fish & Wildlife Service Twin Cities Field Office	4101 American Boulevard East Bloomington, MN 55425	612.725.3548
Government Agency	Minnesota Department of Commerce / Energy Facility Permitting	85 7 th Place East, Suite 500 St. Paul, MN 55101	800.657.3794
Developer	Black Oak Wind, LLC	Address TBD – Operations & Maintenance Facility Building	TBD
Developer	Getty Wind Company. LLC	Address TBD – Operations & Maintenance Facility Building	TBD

SUMMARY

Table 6 below summarizes the main steps that the Projects have taken, and plan to take, to avoid, minimize and mitigate impacts to wildlife species. This table will be updated during the construction and operations phases of the Projects.

TABLE 6: SUMMARY OF ABPP COMPONENTS

ABPP Component	Project Action	Status and Notes
Training	Train appropriate personnel, including managers, supervisors, engineers, wildlife biologists, dispatchers, and operations and maintenance personnel in avian and bat issues related to wind farm operation.	Construction and Operation Phases.
Permit Compliance	Ensure compliance with siting and pre-construction regulations such as WTGAC, ESA, BGEPA, MBTA and state requirements. Obtain salvage, monitoring, recovery, and transportation permits for post construction operations	Conducted pre-construction Tier 2 & 3 studies, Developing additional Tier 3 monitoring of eagles. Have identified contacts and salvage permit requirements.
Construction Design Standards	Minimize the areas of construction and temporary ground-disturbance activities, incorporate avian and bat-safe structures and protocols.	Pre-Construction Phase. The Projects have instituted siting designs that have avoided high use flight paths between WMA's and WPA's on the site.

ABPP Component	Project Action	Status and Notes
Nest Management	Train appropriate personnel to ensure uniform treatment of avian nest issues and procedures.	Construction and Operation Phases.
Wildlife Incident Reporting	Institute Wildlife Incident Reporting procedures and maintain database for quarterly reporting to regulating agencies.	Construction and Operation Phases. The Projects have developed the Wildlife Incident Reporting forms and procedures to monitor wildlife interaction.
Risk Assessment	Assess available data addressing areas of high avian/bat use, avian/bat mortality, nesting problems, established flyways, adjacent wetlands, prey populations, perch availability, evidence of perching on utility structures by large birds, effectiveness of existing procedures, institute remedial actions and other factors that can reduce avian and bat contacts with project facilities.	Pre-Construction Phase.
Mortality Reduction Measures	Identify retrofit or rectification efforts, and where new construction warrants, pay special attention to bald eagles, marbled godwits, and other wildlife issues where fatalities or injuries are being documented.	Operation Phase.
Quality Control	Review existing practices and ensure quality control. Update this plan annually	Construction and Operation Phases.

ABPP Component	Project Action	Status and Notes
Key Resources	Identify area USFWS and DNR biologists, engineers, planners, and operation personnel who are trained in avian interaction problems.	Construction and Operation Phases. Identified agency personnel and rehabilitation centers for injured wildlife.
Risk Assessment	Assess available data addressing areas of high avian/bat use, avian/bat mortality, nesting problems, established flyways, adjacent wetlands, prey populations, perch availability, evidence of perching on utility structures by large birds, effectiveness of existing procedures, institute remedial actions and other factors that can reduce avian and bat contacts with project facilities.	Pre-Construction Phase.
Mortality Reduction Measures	Identify retrofit or rectification efforts, and where new construction warrants, pay special attention to bald eagles, marbled godwits, and other wildlife issues where fatalities or injuries are being documented.	Operation Phase.
Quality Control	Review existing practices and ensure quality control. Update this plan annually	Construction and Operation Phases.
Key Resources	Identify area USFWS and DNR biologists, engineers, planners, and operation personnel who are trained in avian interaction problems.	Construction and Operation Phases. Identified agency personnel and rehabilitation centers for injured wildlife.

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Appendix A: Bird and Bat Conservation Strategies

As noted in Section 1, Owners are implementing the Fish and Wildlife Service BMPs as their BBCSs. The following table provides a summary of the BBCSs/BMPs, the specific section that the BBCS is discussed in if it needed to be discussed in detail, and any other notes regarding the particular BBCS relevant at the time of writing.

BMP Number	FWS Guideline BMP	Discussed in Section	Other Notes
1	Minimize, to the extent practicable, the area disturbed by pre-construction site monitoring and testing activities and installations.	1. Introduction	
2	Avoid locating wind energy facilities in areas identified as having a demonstrated and unmitigatable high risk to birds and bats.	2.2 Project Design; 6.1 Minimize Disturbance	
3	Use available data from state and federal agencies, and other sources (which could include maps or databases), that show the location of sensitive resources and the results of Tier 2 and/or 3 studies to establish the layout of roads, power lines, fences, and other infrastructure.	2.1 Tiered Assessment of Site	
4	Minimize, to the maximum extent practicable, roads, power lines, fences, and other infrastructure associated with a wind development project. When fencing is necessary, construction should use wildlife compatible design	6.1 Minimize Disturbance; 6.5.6 Minimization of Roads	

BMP Number	FWS Guideline BMP	Discussed in Section	Other Notes
	standards.		
5	Use native species when seeding or planting during restoration. Consult with appropriate state and federal agencies regarding native species to use for restoration.	Not discussed at this time	The ABPP include measures to re-vegetate disturbed areas to blend with existing vegetation (6.2 Site Maintenance). In the permitting process associated with the State of Minnesota Wetland Conservation Act (WCA) seed mixes are designated for temporary and permanent revegetation based on the impact type. These seed mixes are typically native species. Owners plan to follow the WCA Notice of Decision conditions when revegetating. This ABPP will be revised once a seed mix for the projects has been designated by the Local Governmental Unit.
6	To reduce avian collisions, place low and medium voltage connecting power lines associated with the wind energy development underground to the extent possible, unless burial of the lines is prohibitively expensive (e.g., where shallow bedrock exists) or where greater adverse impacts to biological resources would result.	6.5.5 Collection and Transmission Lines	

BMP Number	FWS Guideline BMP	Discussed in Section	Other Notes
6a	Overhead lines may be acceptable if sited away from high bird crossing locations, to the extent practicable, such as between roosting and feeding areas or between lakes, rivers, prairie grouse and sage grouse leks, and nesting habitats. To the extent practicable, the lines should be marked in accordance with Avian Power Line Interaction Committee (APLIC) collision guidelines.	6.5.5 Collection and Transmission Lines	
6b	Overhead lines may be used when the lines parallel tree lines, employ bird flight diverters, or are otherwise screened so that collision risk is reduced.	6.5.5 Collection and Transmission Lines	
6c	Above-ground low and medium voltage lines, transformers and conductors should follow the 2006 or most recent APLIC “Suggested Practices for Avian Protection on Power Lines.”	6.5.5 Collection and Transmission Lines; References	

BMP Number	FWS Guideline BMP	Discussed in Section	Other Notes
7	Avoid guyed communication towers and permanent met towers at wind energy project sites. If guy wires are necessary, bird flight diverters or high visibility marking devices should be used.	Not discussed at this time	The avoidance of guyed structures is not explicitly addressed in the ABPP because it is a condition of the Projects' Minnesota site permits, and standard practice for wind energy projects in Minnesota. Permanent meteorological towers will be marked with high visibility marking devices per the FAA Guidance, which, the owners note, is currently being revised to be more bird safe.
8	Where permanent meteorological towers must be maintained on a project site, use the minimum number necessary.	Not discussed at this time	The Projects will maintain the minimum number of permanent meteorological towers necessary for both economic and environmental reasons.
9	Use construction and management practices to minimize activities that may attract prey and predators to the wind energy facility.	6.2 Site Maintenance; 6.5.4 Traffic Plan; 7.3.4 Adaptive Management; 7.2.1 Minimize Lighting	
10	Employ only red, or dual red and white strobe, strobe-like, or flashing lights, not steady burning lights, to meet federal Aviation Administration (FAA) requirements for visibility lighting of wind turbines, permanent met towers, and communication towers. Only a portion of the turbines within the wind project should be lighted, and all pilot warning lights should	7.2.1 Minimize Lighting	

BMP Number	FWS Guideline BMP	Discussed in Section	Other Notes
	fire synchronously.		
11	Keep lighting at both operation and maintenance facilities and substations located within half a mile of the turbines to the minimum required.	7.2.1 Minimize Lighting	
11a	Use lights with motion or heat sensors and switches to keep lights off when not required.	7.2.1 Minimize Lighting	
11b	Lights should be hooded downward and directed to minimize horizontal and skyward illumination.	Not discussed at this time	
11c	Minimize use of high intensity lighting, steady-burning, or bright lights such as sodium vapor, quartz, halogen, or other bright spotlights.	7.2.1 Minimize Lighting	
11d	All internal turbine nacelle and tower lighting should be extinguished when unoccupied.	7.2.1 Minimize Lighting	

BMP Number	FWS Guideline BMP	Discussed in Section	Other Notes
12	<p>Establish non-disturbance buffer zones to protect sensitive habitats or areas of high risk for species of concern identified in pre-construction studies.</p> <p>Determine the extent of the buffer zone in consultation with the Service and state, local and tribal wildlife biologists, and land management agencies (e.g., U.S. Bureau of Land Management (BLM) and U.S. Forest Service (USFS)), or other credible experts as appropriate.</p>	2.2 Project Design; Table 2: Project Setback Requirements	
13	<p>Locate turbines to avoid separating bird and bat species of concern from their daily roosting, feeding, or nesting sites if documented that the turbines' presence poses a risk to species.</p>	2.2 Project Design; Table 2: Project Setback Requirements	
14	<p>Avoid impacts to hydrology and stream morphology, especially where federal or state-listed aquatic or riparian species may be involved. Use appropriate erosion control measures in construction and operation to eliminate or minimize runoff into water bodies.</p>	3.4 Local Regulations and Zoning; 6.1 Minimize Disturbance; 6.5.7 SWPPP	
15	<p>When practical use tubular towers or best available technology to reduce ability</p>	5.1 Risk Assessment Methodology;	

BMP Number	FWS Guideline BMP	Discussed in Section	Other Notes
	of birds to perch and to reduce risk of collision.	7.2.2 Nest Management	
16	After project construction, close roads not needed for site operations and restore these roadbeds to native vegetation, consistent with landowner agreements.	6.5.6 Minimization of Roads	
17	Minimize the number and length of access roads; use existing roads when feasible.	6.5.6 Minimization of Roads	
18	Minimize impacts to wetlands and water resources by following all applicable provisions of the Clean Water Act (33 USC 1251-1387) and the Rivers and Harbors Act (33 USC 301 et seq.); for instance, by developing and implementing a storm water management plan and taking measures to reduce erosion and avoid delivery of road-generated sediment into streams and waters.	6.5.7 SWPPP	
19	Reduce vehicle collision risk to wildlife by instructing project personnel to drive at appropriate speeds, be alert for wildlife, and use additional caution in low visibility conditions.	6.3 Training; 6.5.4 Traffic Plan	
20	Instruct employees, contractors, and site visitors to avoid harassing or	6.3 Training	

BMP Number	FWS Guideline BMP	Discussed in Section	Other Notes
	disturbing wildlife, particularly during reproductive seasons.		
21	Reduce fire hazard from vehicles and human activities (instruct employees to use spark arrestors on power equipment, ensure that no metal parts are dragging from vehicles, use caution with open flame, cigarettes, etc.). Site development and operation plans should specifically address the risk of wildfire and provide appropriate cautions and measures to be taken in the event of a wildfire.	6.2 Site Maintenance; 6.3 Training	
22	Follow federal and state measures for handling toxic substances to minimize danger to water and wildlife resources from spills. Facility operators should maintain Hazardous Materials Spill Kits on site and train personnel in the use of these.	6.3 Training; 6.5.7 SWPPP	
23	Reduce the introduction and spread of invasive species by following applicable local policies for invasive species prevention, containment, and control, such as cleaning vehicles and equipment arriving from areas with known invasive species issues, using locally sourced	6.2 Site Maintenance; 6.3 Training	On-site personnel will be trained and will follow practices to prevent, contain and control invasive species. The Projects will follow any applicable local policies relating to the management and prevention of invasive species.

BMP Number	FWS Guideline BMP	Discussed in Section	Other Notes
	topsoil, and monitoring for and rapidly removing invasive species at least annually.		
24	Use invasive species prevention and control measures as specified by county or state requirements, or by applicable federal agency requirements (such as Integrated Pest Management) when federal policies apply.	6.2 Site Maintenance; 6.3 Training	
25	Properly manage garbage and waste disposal on project sites to avoid creating attractive nuisances for wildlife by providing them with supplemental food.	6.2 Site Maintenance; 6.3 Training	
26	Promptly remove large animal carcasses (e.g., big game, domestic livestock, or feral animal).	Not specifically discussed outside of vehicle collisions	The removal of animal carcasses resulting from vehicle collisions are discussed specifically in this ABPP. Outside of vehicle collisions, the Owners are developing procedures and educational materials to address the removal of other large animal carcasses. These educational materials will be specifically provided to landowners with livestock at or near the Projects' sites. Once developed these materials will be included in the ABPP.

BMP Number	FWS Guideline BMP	Discussed in Section	Other Notes
27	Wildlife habitat enhancements or improvements such as ponds, guzzlers, rock or brush piles for small mammals, bird nest boxes, nesting platforms, wildlife food plots, etc. should not be created or added to wind energy facilities. These wildlife habitat enhancements are often desirable but when added to a wind energy facility result in increased wildlife use of the facility which may result in increased levels of injury or mortality to them.	Not specifically discussed at this time	This BMP, although not specifically discussed in this ABPP, is assumed under Section 6.5.3, General Wildlife Resources. This BMP will be practiced as a part of the general wildlife awareness and sensitivity training for construction and operation staff. The Projects will not create or add wildlife habitat enhancements because of the potential for associated negative impacts. Owners are developing educational materials for landowners within the project boundary to discourage them from performing any of these practices.

Appendix B: Wildlife Incident Reporting System

(This example form is to be completed by onsite personnel with limited biological knowledge. Onsite personnel are not to handle wildlife unless they have received a MN DNR and USFWS permit.)

SECTION NO. 1 - DISCOVERY DATA

Report Date: _____

(Date on which the animal(s) was found and the report completed)

Injury or **Fatality**
(Circle appropriate choice)

Animal Status: **Complete** / **Dismembered** / **Feathers**

(Circle appropriate description. Complete would indicate a complete and intact carcass or injured animal. Dismembered would indicate a missing or amputated wing or other appendage. Feathers would indicate that only feathers were found.)

Notification to _____ **Date/Time** _____

For Injured Animals, Notify Rehabilitation Center. If the injured animal is found after normal weekday office hours, protect the animal and report it the Rehabilitation Center on the next available working day. Complete this form.

For Fatalities, Notify Site Supervisor and/or Local Wildlife Agency and EPGNA Environmental

Eagle or protected species carcass call _____ Site Supervisor, Wildlife Agency and EGPNA

5 carcasses or more call _____ Site Supervisor, Wildlife Agency and EGPNA

Non-protected carcass call _____ Site Supervisor

Complete this form for all fatalities and injuries

SECTION NO. 2 – LOCATION OF FIND

Structure: _____

(Include turbine number, Pole number, or other landmark feature if nothing is nearby)

Location Remarks:

-

-

-

(Include closest turbine number, distance from turbine, and general direction [for ex, 50 feet south of turbine A-1]. Include any other details, such as –found on the road, power lines overhead, etc.)

SECTION NO. 3 - WILDLIFE IDENTIFICATION

Species: _____

(If known, write the species. If not sure, write “Unidentified” and contact EGPNA Environmental with photos for identification, update form with corrected species once/if identification is complete.)

Field marks used: _____

(Identification marks that helped you determine the species of the bird, if you are not sure and have an educated guess, put it here. For example, red tail and white chest)

Number of Photos Attached: _____

(At least one photo must be taken. Print digital photos and attach to Wildlife Incident Reporting Form)

SECTION NO. 4 – OBSERVATIONAL DATA

Physical condition: _____

(Describe the physical condition at the time of discovery, including broken wings, all appendages attached?, all pieces found?, skeleton visible?, infested with anything?, etc)

Estimated Time since Death or Injury (days): _____ (<1, <4, <7, <14, <30, >30) (Use your best judgment. Carcasses less than a few days old will have round, fluid filled eyes and will lack insect infestation. Carcasses with maggots are probably one to two weeks old. If bones are visible, the carcass is probably over 30 days old. Bones visible indicate over 30 days. Keep in mind that in cold weather carcasses will look fresh for much longer than in warmer weather.)

Other **Field** **Notes:**

(Note anything else relevant to incident such as presence of other fatalities in the area, evidence of electrocution details, extreme weather conditions, or other details).

Ultimate Disposition of the Bird:

(Taken to rehab center, Left in the field, or Placed in avian freezer)

SECTION NO. 5 - RESPONDENT

Name of Respondent: _____

Signature: _____ Date: _____

A Wildlife Incident Reporting Summary should be sent to EPGNA Environmental Department at the end of each calendar year prior to March 15 of the following year.

SECTION NO. 6 – CONTACT INFORMATION

Rehabilitation

Sioux Falls Humane Society
3720 East Benson Road
Sioux Falls, SD 57104
Phone: (605) 338-4441

Raptor Center
College of Vet. Med.
University of MN
1920 Fitch Avenue
St. Paul, MN 55108
Phone: (612) 624-4745

Agencies

USFWS
Minnesota – Twin Cities Field Office
4101 American Boulevard East
Bloomington, MN 55425
Phone (612) 725-3548
Email: TwinCities@fws.gov

MN DNR
500 Lafayette Road
St. Paul, MN 55155-4040
Phone: (888) 646-6367
Email: Info.dnr@state.mn.us

Minnesota Department of Commerce
Energy Facilities Permitting
121 7th Place East, Suite 350
St. Paul, MN 55101-2147
Phone: (651) 296-7124
Fax: (651) 297-7073

Appendix C: Avian Report, Bat Report

**Avian Use Assessment Report on the
Black Oak/Getty Wind Development Sites**

**Stearns County, Minnesota
August 2011**

**Prepared by
HDR Engineering, Inc.**



Summary

The proposed Black Oak and Getty Wind Farms Projects (collectively, the Projects) occupy approximately 20 square miles of cropland, grassland, isolated wetland, and small woodlots. Within the boundaries of the Projects (collectively, the Sites) are numerous lakes, wetlands, and ditches that attract waterfowl and waterbirds. Several Waterfowl Production Areas (WPAs) and Waterfowl Management Areas (WMAs) also occur near or within the project boundaries. Many Project area wetlands are ephemeral in nature and express surface water only early in the spring or after a heavy rain. In order to facilitate row cropping, some ephemeral basins within the Sites have been ditched or tiled to remove surface water quickly.

Avian issues with wind projects have increasingly drawn concern from agencies and interest groups. Under the guidance of the US Fish and Wildlife Service (USFWS), the Minnesota Department of Commerce Energy Facility Permitting (EFP), and the Minnesota Department of Natural Resources (DNR), HDR Engineering, Inc., (HDR) developed biological survey protocols to address concerns about avian/wind turbine collisions, the disruption of avian flights, and wind project site use by bald eagles, marbled godwits, waterfowl, and other avian species of concern. These protocols characterize risks to avian species at wind development sites.

For the Projects, specific issues of concern included the present and historic use by bald eagles, marbled godwits, trumpeter swans, loons, and other selected Species of Greatest Conservation Need (SGCN). HDR was retained to evaluate avian use within a study area comprising the Sites and adjacent lands (Figure 1). The resulting surveys included a spring Avian Use/Flight Path survey, an Avian Wetland Utilization survey, Marbled Godwit nesting surveys, and a Bald Eagle Nest monitoring effort.

HDR biologists conducted Avian Use/Flight Path surveys to document all avian species and their associated flight paths at 11 survey points from April 1 through June 29, 2011. HDR estimated flight height, flight direction, distance from the survey point, and flight behavior of more than 106 different species during these surveys. An additional 10 species were observed during the three other surveys. HDR plotted flight paths on aerial photographs then digitized them using ArcGIS software to analyze flight information. No distinct flight corridors were identified for any particular species within the Project boundaries. However, grouping the data according to broad categories (i.e. waterfowl, waterbirds, raptors, passerines, etc.) may facilitate planning, micro-siting, minimizing impacts to sensitive species, and avoiding impacts to avian concentration areas or other high use areas that occur on the site during certain times of the year.

HDR biologists documented 22,863 individual birds made up of 116 different species during 23 separate monitoring dates. Four species identified by the DNR as endangered, threatened, or special concern (ETSC), and 22 species designated as a SGCN were documented within the

study area during the spring of 2011. An additional three ETSC species were observed outside Sites but within the study area. The seven ETSC species and the SGCN species together are referred to as sensitive species throughout the remainder of the document. Flight heights varied between species and individuals but biologists assessed flight trends by establishing a Mean Flight Height for each species observed. HDR also analyzed observation and flight data for four sensitive species avian groupings that included waterfowl, waterbirds, raptors, and passerines. The percentage of observed flights within the Rotor Swept Zone (RSZ, between 28 and 150 m above ground level (AGL)) was 24.0 percent for raptors, 33.1 percent for waterbirds, 37.6 percent for waterfowl, and 3.3 percent for passerines. However, a bias does exist toward birds that fly closer to the ground as they are more easily detected by observers.

HDR staff also monitored four wetlands near or within the project boundaries for waterfowl and waterbird use on nine separate occasions from April 1 through May 26, 2011. Use by 36 species and 1,472 individuals was documented in the four selected wetland complexes. The most commonly observed species were the American coot (50 percent of all observations) and ring-necked duck (8 percent of all observations). These surveys also documented the presence of breeding marbled godwits adjacent to the Projects' southern boundaries.

Biologists conducted marbled godwit surveys on April 19, May 10, and June 9, 2011, at the Kenna WPA, Trisko WPA, and Behnen WPA. The three WPAs are located immediately adjacent to or within the Sites. The purpose of this survey was to detect the presence or absence of breeding marbled godwits within the Black Oak/Getty Wind Farms. The DNR and USFWS requested the surveys based on historic records for this species on grassland habitats in the Project vicinity. No marbled godwits were detected during these surveys.

An active Bald Eagle nest discovered during the first week of Avian Use/Flight Path surveys was monitored weekly from April 7 through July 12, 2011. Raptors were present in low numbers at the site throughout the survey period. However, six different raptor species were observed using land on or adjacent to the Black Oak/Getty Wind Farms. Of the six raptor species observed, the red-tailed hawk and American kestrel are known to be susceptible to increased mortality rates from wind development due to flight behavior. Horned larks and vesper sparrows were abundant and are considered potentially sensitive to habitat displacement and higher mortality rates from wind development. During the breeding season, the vesper sparrow occurred in cropland habitat. Horned larks were present at all Avian Use/Flight Path observation points throughout the survey period.

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Introduction

Geronimo Wind Energy, LLC, is developing the Black Oak Wind Farm, a 42 megawatt wind energy project located on a site of approximately 7,064 acres in northwestern Stearns County. Getty Wind, LLC, is developing the Getty Wind Farm on a site of approximately 7,630 acres immediately west of the Black Oak Wind Farm (Figure 1). Because of the proximity of the Black Oak and Getty Wind Farms (collectively, the Sites) Geronimo Wind, LLC and Getty Wind, LLC, retained HDR to conduct biological surveys for the Projects. During the spring of 2011, HDR biologists conducted Avian Use/Flight Path surveys, Wetland Utilization surveys, Marbled Godwit surveys, and large bird/raptor nest surveys that later became an Eagle Nest Monitoring effort. This report summarizes the methods employed and results obtained during the spring season surveys, evaluates avian risk and implications of these surveys, and summarizes avian risks from the development of the Black Oak/Getty Wind Farms Project.

The Projects will be built on lands dominated by agricultural uses southwest of the city of Sauk Centre. While the turbine models have not yet been selected, they are expected to fall in the range of 1.5 to 3.0 Megawatts (MW), with tower heights of 80-100 meters (m) and rotor diameters between 82.5 and 112 m. Given these general specifications, the upper and lower limits of the rotor sweep zone (RSZ) would be between 28 and 150 m above ground level (AGL).

Habitats and Land Types

The Sites are located at the transition between the Minnesota River Prairie Ecological Subsection of the Prairie Parkland Province and the Hardwood Hills Ecological Subsection of the Eastern Broadleaf Forest Province (MDNR 2005). Historically, the predominant land cover in these sections and subsections was treeless, fire-dependent grassland and brushland types interrupted by lakes, streams, marshes, and pothole wetlands. Current land uses at the Sites are primarily croplands with numerous drained and undrained wetlands, along with pasture, homesteads, small woodlots, and fencerows to a lesser extent. Just outside the Site, several WPAs and WMAs harbor restored prairie, grassland, and lake habitats.

The Minnesota River Prairie Subsection of the North-Central Glaciated Plains of Stearns County is considered to be the heart of the Minnesota Cornbelt and the prairie pothole region, which hosts the most productive breeding habitat for North American waterfowl and other waterbird species.

The Hardwood Hills Subsection lies within the heart of the Mississippi flyway and harbors a large number of wetlands. Despite drainage of many of the historic wetland habitat, this part of Minnesota is also part of the prairie pothole region. This ecological subsection formed along the historic shores of Glacial Lake Agassiz, and rolling moraines deposited during the last

glaciations characterize the landscape. Level farmland, rivers, lakes, and wetlands of various sizes characterize the project area and glacial outwash land features. Land use within this subsection is predominantly agricultural, including corn and soybean production. Other land uses include pastured land, single-family homes, farmsteads, and WMAs or WPAs.

Regulatory Framework

Endangered Species Act

The federal Endangered Species Act (ESA) protects listed endangered and threatened species and their habitats. The ESA provides a mechanism to grant permission for incidental takings of listed species. At the state level, Minnesota Statutes, Section 84.0895, requires the Minnesota Department of Natural Resources (DNR) to adopt rules designating species meeting statutory definitions of endangered, threatened, and special concern (ETSC). The resulting list of ETSC species is codified as Minnesota Rules, Chapter 6134. The Endangered Species Statute also authorizes the DNR to adopt rules that regulate treatment of species designated as endangered and threatened. These regulations are further codified as Minnesota Rules, Parts 6212.1800 to 6212.2300. ETSC species are defined by the DNR as:

- **Minnesota Endangered Species:** A plant or animal species that is threatened with extinction throughout all or a significant portion of its range in Minnesota.
- **Minnesota Threatened Species:** A plant or animal species that is likely to become endangered within the foreseeable future throughout all or a significant portion of its range in Minnesota.
- **Minnesota Special Concern Species:** Species that are not endangered or threatened, but are extremely uncommon in Minnesota, or have unique or highly specific habitat requirements and deserve careful monitoring of their status. Species on the periphery of their range that are not listed as threatened may be included in this category along with those species that were once threatened or endangered but now have increasing or protected, stable populations.

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (BGEPA) was established in 1940 and assigns legal authority to USFWS to protect bald and golden eagles from takings and disturbance. Rules published on September 11, 2009, and finalized on November 10, 2009 (USFWS 2009), outline the issuance of take permits under the BGEPA. Permitted activities do not distinguish between lethal and non-lethal takes. Regulated activities also include those that disturb individual eagles by causing injury, decreasing eagle productivity, or by substantially interfering with normal breeding, feeding, or sheltering behavior.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) assigns legal authority to the USFWS Office of Law Enforcement to protect migratory birds from takings. The MBTA protects 1,006 species of birds, including waterfowl, shorebirds, songbirds, raptors, wading birds, and seabirds. Unlike the ESA and the BGEPA, MBTA regulates direct takings or nest destruction, and not habitat modifications. The level of direct take by a wind energy production facility that would invoke prosecution under the MBTA has not been established. There is currently no permitting process to protect a project developer from prosecution for incidental takings under the MBTA. The USFWS is actively developing a process similar to the BGEPA's under the MBTA that is specific to migratory birds other than bald and golden eagles (USFWS 2011).

Wind Advisory Committee Guidelines

The USFWS Wind Turbine Guidelines Advisory Committee (WTGAC) completed its recommended guidelines to mitigate impact to wildlife and their habitats related to land-based wind energy facilities on March 4, 2010. The WTGAC outline a tiered approach to evaluating and quantifying the affects of wind development on resident wildlife resources. This document recommends voluntary compliance with the guidelines and development of communication with USFWS personnel as part of due diligence to avoid and minimize effects to species regulated under the ESA, BGEPA, and MBTA. The WTGAC also recommends the adoption of best management practices during the development and construction of wind energy production sites. The WTGAC recommendations identifying species of concern to include those protected under the ESA, BGEPA, MBTA, or any that “(i) is designated by law, regulation or other formal process for protection and/or management by the relevant agency or other authority, or that has been shown to be significantly adversely affected by wind energy development, and ii) is determined to be possibly affected by the project.”

Several WPAs and WMAs also occur adjacent to, or within 1 mile of the Sites. The USFWS established guidelines for considering wind turbine siting on WPA lands that may directly influence development of wind energy at this site. One of the guidelines directs USFWS refuge managers and district managers to avoid obvious “duck passes” between large, semi-permanent wetlands or sloughs and known migratory bird corridors or flight paths, especially in areas such as colonial bird nesting areas.

At the state level, the DNR has developed post-construction monitoring recommendations for wind developments. Additional state guidelines exist for setbacks from WMAs, Conservation Reserve Program, Board of Water and Soil Resources conservation easements, Conservation Reserve Enhancement Programs, Reinvest in Minnesota-Wetland Reserve Programs, Shoreland, and Public Waters.

Study Methods

Combining guidance provided by the DNR in their January 13, 2011, draft survey methodology, and information provided in direct consultations with the DNR, USFWS, and EFP, HDR developed a survey protocol for spring 2011 avian surveys. Survey methodologies for avian use implemented on the Project site included the following analyses: (1) Preconstruction Avian Use/Flight Paths, (2) Bald Eagle Nesting Activity, (3) Wetland Utilization and, (4) Marbled Godwit Surveys. The objectives of these surveys was to sample avian use of the site during the spring migratory period, identify breeding species within the site, develop data on habitat use patterns, and document flight paths used. USFWS, EFP, and DNR staff reviewed and approved the survey methods prior to implementation.

Preconstruction Avian Use/Flight Path Surveys

HDR conducted fixed-radius point counts to provide baseline data regarding the temporal and spatial use of the Sites by birds. Staff conducted point count surveys once per week for 13 weeks beginning April 1, 2011, and continuing through June 29, 2011. Standardized point count techniques were used to reduce methodological variance between observers or points (Ralph et al. 1995). The spring survey incorporated 11 fixed points in the study area (Figure 2) to address habitat use and document flight paths of migratory and breeding species. Points were established at locations that provided unobstructed sight lines to potential avian concentration areas such as wetlands, grasslands, and agricultural land. USFWS and DNR provided comment and suggestions on survey point selection. HDR staff monitored survey points within the study area for 30 minutes each monitoring period. Sometimes all eleven survey points could not be completed in one day and were monitored during consecutive days. In these instances, each day was counted as a separate survey.

Biologists documented information on species observed, flight height, flight direction, and behaviors within 200 meters beginning one-half hour before sunrise to 11 a.m., or for three hours before sunset. In addition, aerial photographs, landmarks, and standardized objects were measured using a laser rangefinder to standardize flight height estimates and to document the distance of flights taken by raptors and other large birds within 1 mile of each point. Avian flight height, flight direction, behavior, species, and time of day were recorded for each species observed during monitoring periods on data sheets and on aerial photographs. Surveys were conducted during all weather conditions and points were established with GPS technology capable of sub-meter accuracy to standardize sampling locations.

HDR used existing information prepared by the DNR and USFWS to compare data and to place observed data in context with trends detected by the Breeding Bird Survey (BBS), Minnesota Breeding Bird Atlas project, and historic records of sensitive species use. The BBS route at New London provided information about species composition in a similar habitat type and provided

an index of population trends in the same region of the state. Species richness was calculated for each observation point and for the site as a whole.

Bald Eagle Nest Activity Surveys

Recent developments involving the BGEPA in relationship to wind energy projects are creating a need for detailed information on bald eagle nests and eagle activity on and near wind energy project sites. Based on comments received from the USFWS and the proximity to known nest locations and potential habitat, HDR conducted an Eagle Nest Activity survey to identify nest locations and use areas in the Project vicinity. Experienced avian biologists conducted eagle and other stick-nest activity surveys within 5 miles of the Sites to identify current bald eagle and other raptor breeding use at current and historic nest sites. The biologists conducted searches for new nests from public roads by scanning forested areas and woodlots for stick nests and eagle activity. They observed raptor nests, and documented all raptor observations, and behavioral information.

Wetland Utilization Surveys

HDR biologists conducted wetland utilization surveys at open water wetlands within 1 mile of the project site to document waterfowl and waterbird use (Figure 2). They documented observations of waterfowl and waterbirds from publicly accessible sites at four wetland locations within or near the Sites, recording the number and species of waterfowl and waterbirds present at each site during a stay of 10-15 minutes. Wetland observations occurred weekly from April 7 through May 20, 2011.

Marbled Godwit Surveys

HDR biologists conducted transect surveys on the adjacent publicly owned Behnen, Trisko, and Kenna WPAs (Figure 2). The Behnen WPA contains historic breeding season records of marbled godwits and the WPAs in aggregate contain most of the suitable grassland habitat within the Project boundaries for this species.

Field investigations focused on the presence of marbled godwits but also documented the presence and behavior of other species at these sites. HDR used two different survey methods: pedestrian transect surveys and observation point surveys. Transects were established at each of the three WPAs and surveys were conducted once each in April, May, and early June. An HDR biologist walked each transect (starting from approximately 30 to 120 meters from adjacent roads and continuing as far into the WPA as practicable) stopping to listen for 3 minutes every 50 m for the presence of marbled godwits. A 30-minute point count occurred from one centrally located point at each WPA. HDR biologists used binoculars and spotting scopes to observe bird activity at each site. Information on all species observed, flight directions, behaviors, flight heights, weather information and time of day were recorded. When marbled godwits were seen,

notes on behavioral information, habitat use, and location were collected using a hand-held GPS capable of sub-meter accuracy.

Data Analysis

Data were analyzed to determine which species utilize airspace within the RSZ, where flight paths occurred, and where birds were concentrated. Relative abundance (the number of birds of a particular species as a percentage of the total observations in a given area) was calculated for each species. Flight frequency within the RSZ was also calculated for each of the four species groups observed during the Avian Use/Flight Path Surveys based upon the number of times a species was observed per 30 minutes of observation. Those species with the highest relative abundance occurring within the RSZ theoretically have a higher chance of experiencing mortality as a result of collisions with turbine blades. However, recent studies suggest that exposure in the RSZ is not always a good predictor of bird mortality because bird behavior also affects mortality (e.g., Erickson et al. 2002, Smallwood et al. 2009). Sensitive species flight data were further evaluated by species to assess risk and utilization of flights within the RSZ.

Waterfowl data were divided into Migratory (April 7 to May 5, 2011) and Breeding (May 5 to June 29, 2011) periods in order to evaluate utilization. Those species that breed on the site are expected to incur higher utilization rates due to their presence throughout the survey period than species that are present for a few days or weeks at a time during spring migration.

Literature Review

HDR conducted a literature review to assess potential impacts to waterfowl, grassland birds, or birds of conservation concern at the Project site. Literature referring to avian impacts due to collisions, habitat fragmentation, and behavioral avoidance was reviewed for relevance to the proposed Project. HDR reviewed several peer-reviewed studies, consultant studies for wind energy developers, and government agency studies, and incorporated the relevant conclusions into the study design, data review, and resulting conclusions.

Results and Discussion

Habitat and Land Use

According to GAP land cover data (Figure 3), the Sites are primarily cropland with scattered patches of grassland. Table 1 estimates the acreages of each land cover type based on GAP data.

Table 1: GAP Land Cover Data within Sites

Cover Type	Study Area (Ac)	Percent of Study Area
Aquatic	22	0.2
Cropland	12,130	82.5
Grassland	2,340	15.9
Forested	9	<0.1
Marsh	121	0.8
Shrubland	76	0.5
Total	14,699	100

Based on HDR's site observations, most of the mapped grassland areas are cropped, plowed, or converted to cropland. The few parcels of grassland that exist within the Sites consist of pasture or wetlands. Substantially less grassland exists within the Study Area than suggested by the GAP land cover.

Observation Effort

HDR conducted 22 Avian Use/Flight Path surveys at 11 stations on the Sites between April 1, 2011, and June 29, 2011. Each station was surveyed for 30 minutes every week for a total preconstruction Avian Use/Flight Path survey time of 4,290 minutes (71.5 hours total observation time or 6.5 hours of observation per station). Three additional 30-minute point counts were conducted three times during the Marbled Godwit Surveys. Additional observation time was logged during Bald Eagle Nest Activity surveys and Wetland Utilization surveys for a total of 180 additional minutes (3 hours) of observation at the Project site.

Detection Data

A total of 22,863 individual birds, representing 106 different species, were documented during the spring visits to the 11 point count stations. An additional 4,880 individual birds were documented that were either too far away to identify to species level, too abundant to identify individually, or were only observed for a moment and critical identification characteristics were missed. An additional 1,897 individual birds were counted during Wetland Utilization (Appendix A) and Marbled Godwit (Appendix B) surveys, adding 10 more species to the overall species richness of the site.

The observation point with the highest species richness (60) was observation point 161027-4, situated on the eastern boundary of the Trisko WPA. Habitat associated with point 161027-4 included a large grassland/wetland complex to the west of the point and a mixture of cropland, wetland, and planted trees to the east, north, and south. Avian use in this area reflected species associated with wetland nesting and foraging as well as grassland species and some woodland species utilizing the patchy woodlands. Observation points 113816-3 and 113816-4 had the next highest richness totals with 54 and 52, respectively. Both of these points likely had higher species richness due to the presence of trees, which harbored many woodland species that were not present at most of the remaining observation points. Both points are also situated north of a wetland complex that harbored marbled godwits and a variety of waterbirds and waterfowl.

Survey points with the lowest richness totals (29, 34, and 35) were located in areas that were predominantly cropland with little habitat diversity and that were relatively isolated from larger waterbodies associated with WMAs and WPAs.

The Project Snapshot (Appendix C) provides a list of species documented at the Sites site along with a summary of species richness by point, species richness by habitat, mean abundance by point, mean abundance by habitat, mean flight-height, mean flight-height by point, mean flight-height by species, overall mean abundance, mean abundance by point, total abundance, and a list of sensitive species and their abundance. Species richness is the number of different species observed at a given point. The mean abundance is the average abundance at a given point and was also calculated for each species' flight heights.

Comparison of Use Data

Comparisons of avian use data between the Black Oak/Getty Project study area and other wind projects were conducted by calculating mean use. Mean-use rates were measured by dividing the number of birds observed within 800 m from each point during 20 minutes of survey (i.e. birds/plot/20 min. survey/800 m). Although surveys were conducted for 30 minutes at each point in the study area, observations were recorded in 10-minute intervals that allow a comparison between projects with shorter survey periods. HDR eliminated the last ten minutes of the 30-minute survey period to compare the Black Oak/Getty Wind Farms with 20-minute surveys at other sites. Eliminating the last 10-minute interval resulted in 14,575 birds being counted as one of 93 species at the Black Oak/Getty Wind Farms study area. HDR calculated use-rates by combining species into the following groups: waterfowl (all ducks, geese, and swans), waterbirds (loons, herons, terns, pelicans, bitterns, and cranes), and raptors (hawks, eagles, falcons, and harriers). Mean-use rates for passerine (all songbirds, perching birds, or landbirds) were not widely available so only general abundance and flight data information was calculated for the Project. Additionally, species listed as ETSC/SGCN were also grouped to analyze flight paths and assess risk.

HDR analyzed flight data for each species and for waterfowl, waterbirds, raptors, and passerines. Flight height was analyzed to assess the relative collision risk for each species considered sensitive (i.e. species designated as ETSC and those considered SGCN) and species groups that were detected during the spring surveys. Relative risk was calculated by estimating the number of individuals of each species group that flew through the likely RSZ (Table 2). Four turbine designs are currently being considered for the Projects. The RSZ for project turbines ranges from approximately 28 meters to 150 meters. Those species whose mean flight-height was below or above the RSZ would incur relatively lower risk than those species whose mean flight-height was within the RSZ.

**Table 2: Relative Risk by Species Groups Observed
During Avian Use/Flight Path Surveys**

Species Group	Number of Flights Observed	Percentage of Flights Observed in RSZ
Waterfowl	379	37.6
Waterbirds	181	33.1
Raptors	129	24.0
Passerines	1792	3.3

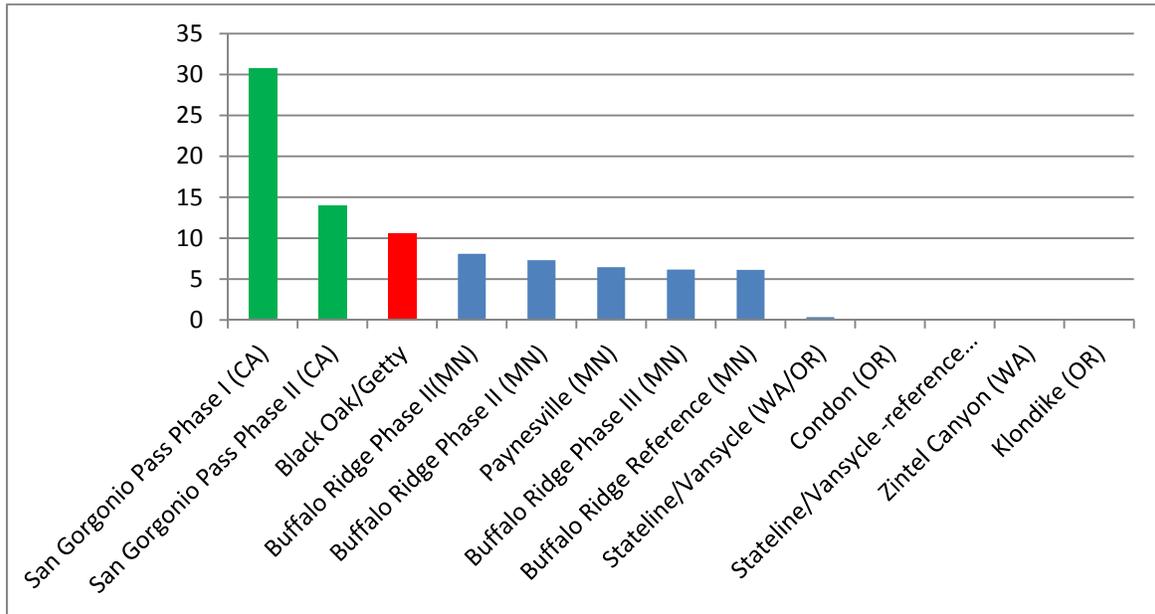
Waterfowl/Waterbird Use Comparison

Waterfowl/waterbird use at the Black Oak/Getty Wind Farms study area was compared to the Paynesville Wind Resource Area (6.46 birds/survey) also located in Stearns County, Minnesota (Hamer Environmental, 2010). The higher waterfowl/waterbird use at the Black Oak/Getty Wind Farms study area (10.59 birds/survey) is likely due to the presence of numerous large waterbodies associated with Padua WMA, Trisko WPA, Kenna WPA, and Raymond Lake, as well as other nearby marsh systems that harbor suitable nest habitat associated with the wetlands. The avian use report for an additional Stearns County wind farm, Lake Country Wind Farm, was also reviewed for comparison (Malcolm Pirnie, 2010). The study revealed similar species composition and migration timing, but mean use numbers were calculated based upon a different sample period. Therefore, dissimilar use results were reported and could not be directly compared. Erickson et al. (2002) analyzed overall avian use and compared it to observed mortality at several wind farm sites throughout the country. This study concluded that for waterfowl, mortality appear to be very low compared to use of the site. It also concluded that those sites with year-round use have exhibited the highest levels of mortality.

Avian use rates at the Black Oak/Getty Wind Farms study area were compared to other agricultural wind resource areas across the country based on data from the Erickson report. However, it was necessary to modify the data analysis to make the use-data comparable (e.g. using only 20 minutes of data instead of the full 30-minute data set). Mean use by waterfowl and

waterbirds was higher at the Black Oak/Getty Wind Farm study area than at any of the other 10 wind resource areas evaluated by Erickson in an agricultural landscape. However, two other wind resource areas located in a natural landscape with significant water resources had higher rates (San Gorgonio Pass Phase I and II, with 30.771 and 13.973 birds/survey, respectively).

Chart 1. Mean Waterfowl/Waterbird Use



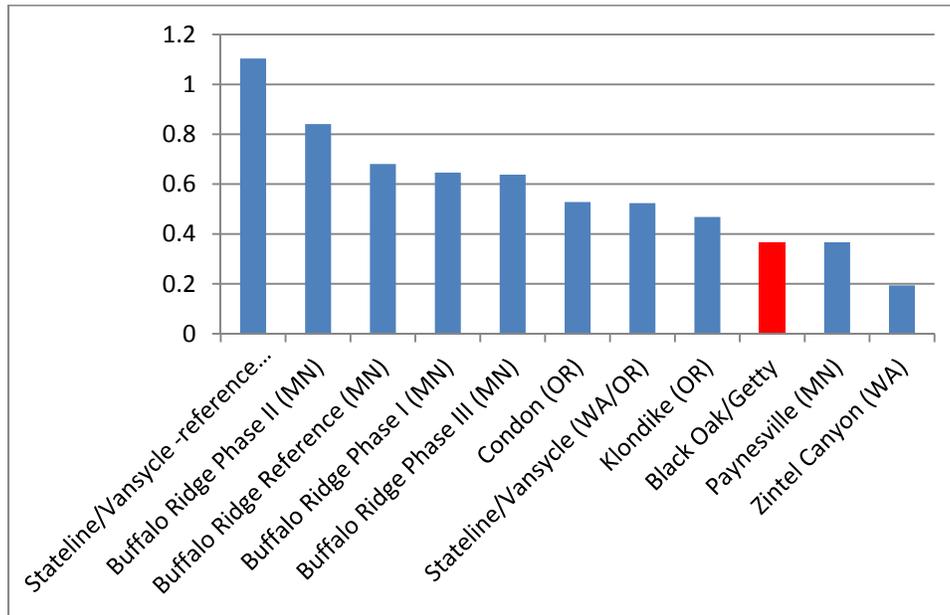
Note:

Mean Use was compared to ten wind resource areas located in agricultural landscapes (Blue) and two located in native landscapes with significant water features (Green). Mean Use was calculated using (Birds/20 Minute Survey/under 800 meters)

Raptor Use Comparison

Raptor use at the Black Oak/Getty Wind Farms study area was 0.36 birds/survey which is similar to the Paynesville Wind Resource Area (0.36 birds/survey) in Stearns County, Minnesota. HDR also used Erickson et al. (2002) who analyzed overall raptor use and compared it to observed raptor mortality at several wind farm sites throughout the country. This study concluded that for raptors, use may not be a good predictor for mortality when considering newer generation wind turbines. Raptor use rates at the Black Oak/Getty Wind Farms study area were compared to other agricultural wind resource areas across the country based on data from the Erickson report. However, some data analysis modifications were necessary to make the use-data comparable (e.g. using only 20 minutes of data instead of the full 30-minute data set). Mean use by raptors at the Black Oak/Getty Wind Farms study area was in the lowest quartile (0.36 birds/survey) of the other 10 wind resource areas evaluated by Erickson in an agricultural landscape (Chart 2).

Chart 2. Raptor Utilization at Black Oak/Getty Wind Farms



Note:

Mean Use was compared to ten wind resource areas located in agricultural landscapes (Blue). Black Oak/Getty use is depicted in red. Mean Use was calculated using (Birds/20 Minute Survey/under 800 meters)

Passerine Comparison

A comparison of the most frequently recorded Passerine species at the New London BBS routes in Stearns County, and those observed at the Black Oak/Getty Wind Farms study area, indicate the species most frequently observed are very similar. As a comparison, Table 3 lists the 10 most commonly observed species along the New London BBS route and at the Black Oak/Getty Wind Farm study area.

Table 3: Ten Most Frequently Observed Passerine Species at the New London BBS Route and Black Oak/Getty Wind Farms Study Area

New London BBS Route	Common Name	Scientific Name	Black Oak/Getty	Common Name	Scientific Name
1	Red-winged blackbird	<i>Agelaius phoeniceus</i>	1	Red-winged blackbird	<i>Agelaius phoeniceus</i>
2	Common grackle	<i>Quiscalus quiscula</i>	2	Common grackle	<i>Quiscalus quiscula</i>
3	Common yellowthroat	<i>Geothypis trichas</i>	3	Lapland longspur	<i>Calcarius lapponicus</i>
4	Mourning dove	<i>Zenaida macroura</i>	4	Brown-headed cowbird	<i>Molothrus ater</i>
5	European starling	<i>Stunus vulgaris</i>	5	Horned lark	<i>Eremophila alpestris</i>

New London BBS Route	Common Name	Scientific Name	Black Oak/Getty	Common Name	Scientific Name
6	Horned lark	<i>Eremophila alpestris</i>	6	American crow	<i>Corvus brachyrhynchos</i>
7	American robin	<i>Turdus migratorius</i>	7	Brewer's blackbird	<i>Dolichonyx aryzivorus</i>
8	Cliff swallow	<i>Petrochelidon pyrrhonota</i>	8	Barn swallow	<i>Hirundo rustica</i>
9	Grasshopper sparrow	<i>Ammodramus savannarum</i>	9	American Robin	<i>Turdus migratorius</i>
10	Ring-necked pheasant	<i>Phasianus colchicus</i>	10	American goldfinch	<i>Spinus tristis</i>

Conservation Priority Species

No species currently listed under the federal ESA was detected during the spring 2011 surveys. However, seven species listed by the State of Minnesota as endangered, threatened, or special concern were detected at the Sites during spring 2011 surveys. Observations of state-listed sensitive species include; marbled godwit (*Limosa fedoa*, SPC), Wilson's phalarope (*Phalaropus tricolor*, T), trumpeter swan (*Cygnus buccinator*, T), horned grebe (*Podiceps auritus*, T), Forster's Tern (*Sterna forsteri*, SPC), American white pelican (*Pelecanus erythrorhynchos*, SPC), and bald eagle (*Haliaeetus leucocephalus*, SPC). Special concern species are not provided the same statutory protection as endangered or threatened species, but are protected from indiscriminant taking by the MBTA and state wildlife laws (i.e. hunting regulations). The bald eagle is also protected from taking and disturbance by the BGEPA.

Additionally, species that are experiencing population declines or are considered to be particularly susceptible to wind development (i.e. species listed as ETSC or SGCN that are cited in research reports such as Erickson et; al.) were also noted during the spring 2011 survey period. Species designated as SGCN or that are experiencing local or regional declines by the BBS were documented on the Sites. While neither an SGCN or BBS declining-species designation confers legally protected status, they are protected from indiscriminate taking by the MBTA and were noted as a concern by the DNR or USFWS during review of survey methods or preconstruction meetings.

State Listed Species

Trumpeter Swan

The trumpeter swan is currently a state-listed threatened species. A forthcoming update of the endangered species list will downgrade this species to special concern due to the success of restoration efforts exceeding population goals. During the breeding season, trumpeter swans

typically select small ponds, lakes, or bays within larger lakes with extensive beds of cattails, bulrush, sedges, and/or horsetail. Coffin and Pfanmuller (1988) state that “Muskrat houses and beaver lodges are frequently used for nesting platforms.” They are known to protect large territories during the nesting period and are intolerant of crowding by other species. They have been known to kill perceived competitors such as pelicans while protecting breeding territories (Mathisen pers. com.). Trumpeter swan nesting territories range from 6 to 150 acres. They use large, shallow wetlands 1-3 ft deep where a diverse mix of emergent vegetation and open water offer ideal habitat. Such locations support a rich variety of submerging (underwater) plants used for food, such as pondweed and water milfoil.

Trumpeter swans were observed during the Wetland Utilization Survey on May 19, 2011. Two feeding adult swans were observed at Wetland Point #3 in a wetland south of County Road 22 adjacent to the southern limit of the Sites. Numerous lakes and wetlands in this area display suitable nesting characteristics. However, no additional trumpeter swan observations were noted during Avian Use/Flight Path surveys and no nests were found within or near the Project on subsequent visits to this same wetland or surrounding waterbodies.

Horned Grebe

Horned grebes are a state- listed threatened species. Historically this species has bred throughout the Prairie Parkland Province of Minnesota. Horned grebes inhabit lakes with a mix of open water and wetland vegetation during the breeding season. Nests are built over water on large water bodies (over 10 hectares (ha.)) where bays and inlets provide protection from wind action (Coffin and Pfanmuller 1988). Nests are constructed in shallow water, usually within emergent vegetation. Coffin and Pfanmuller state that “On larger wetlands and water bodies, they tend to lose out in competition with other grebes and probably also with loons. As a result, they are usually found on small water bodies that often have little emergent vegetation.” The horned grebe is a summer resident that is now primarily restricted to Roseau, Marshall, and Pennington Counties in northwestern Minnesota (Janssen 1987).

The one observation of a horned grebe occurred on April 14 during Wetland Utilization surveys at Wetland Point #1 and was recorded during the migratory period for this species. No additional observations of any kind were documented in subsequent surveys. Although suitable habitat does occur within the Padua WMA and other WPAs near the Sites, an isolated observation of this species during the migratory period seems to indicate that this species is a migrant and not a breeding species at this location.

Wilson’s Phalarope

Wilson’s phalaropes are listed as a threatened species by the State of Minnesota. Recent breeding records for this species occur throughout the Prairie Parkland Province in wet meadows or grasslands associated with shallow wetlands (Coffin and Pfanmuller, 1988). This species is

highly aquatic and forages for dipterans and crustaceans while swimming (O'Brien et al. 2006). DeGraaf and Rappole (1995) state that "The primary breeding habitat of Wilson's phalarope is shallow water bodies in disturbed mixed grass prairies and agricultural areas." The species may breed semi-colonially and nests in a variety of wetland types that range from shallow ponds to lakes. Several authors note that it has also been found nesting in shallow swales along streams, in shallow sloughs fringed with short grasses, and in hay meadows or pastures (Colwell and Jehl 1994, DeGraaf and Rappole 1995).

Several areas within and near the Sites provide some of the preferred habitat characteristics of the species. One flock of 16 Wilson's phalaropes was recorded during Avian Use/Flight Path Surveys on May 20, 2011, and up to eight individuals were recorded during Wetland Utilization surveys. Wilson's phalaropes occurred during three consecutive weeks beginning on May 10, 2011, with the last observation occurring on May 27, 2011 (Figure 4).

On May 10, eight birds were observed within a wetland/pasture complex in the NW ¼ of Section 25 Raymond Township. Three males and five females foraged in several small, shallow-water wetlands with grassy edges at Wetland Point #3 within 400 m of the Sites. The following week one male and one female were observed engaging in low circling flights around the same wetland/pasture complex in the SW ¼ of Section 24 Raymond Township. Additionally, 16 Wilson's phalaropes were recorded at 113816-3, 1 mile north of the same wetland/pasture complex flying to the northwest during point count surveys. The last observation of this species was recorded at Wetland Point #3 on May 27, 2011 in a flooded grassland one-quarter mile west of the same wetland/pasture complex in the SE ¼ Section 23, Raymond Township.

The multiple observations of Wilson's phalaropes within the same wetland/pasture complex indicate the area is important as a migratory use area but all observations of this species are outside of what is considered a "safe date" for breeding. The Minnesota Breeding Bird Atlas (MBBA) establishes the "safe date" for probable evidence of breeding to begin on June 1 and end on August 1 of a given year. No subsequent Avian Use/Flight Path or Wetland Utilization surveys detected the presence of this species. However, this species has been recorded breeding in Stearns County and the presence of abundant suitable habitat on and near the Sites indicates the species may be a breeding species in some years.

Marbled Godwit

Marbled godwits are listed as a special concern species by the State of Minnesota. Recent breeding records for this species occur in two regions of the Prairie Parkland Province within the state. The primary breeding areas within Minnesota occur along the Glacial Lake Agassiz Beach Ridge of the Red River Valley and northwestern portion of the state. Two smaller populations are centered along the Minnesota River and wet prairie areas of central Minnesota (Melcher et al. 2006). Melcher et al. also suggests that the Minnesota population nests preferentially in sparsely

vegetated native grassland habitats that are often grazed or recently idled from grazing. However, other studies indicate that they will use tame grass habitats, including hayfields and idle pastures if the vegetative structure is similar to native grassland habitats (Ryan et al. 1984). Marbled godwits require large contiguous blocks of grassland/wetland complexes that represent a broad range of sizes and types to breed successfully (Ryan et al. 1984). Records of historic use near the Sites by this species are also recorded in the DNR Natural Heritage Inventory System (NHIS) database.

Areas that exhibit these habitat characteristics are located in Sections 23, 24, and 25 of Raymond Township at the southern end of the Sites (Figure 4). Godwits were documented at Wetland Point #3 in this area every week from April 19 through June 24, 2011, during Wetland Utilization surveys. On several occasions, two male-female pairs could be seen on the north and south sides of a wetland/pasture complex in Sections 24 and 25. Up to three males were seen engaging in aerial displays over this same wetland/pasture complex on April 19 and 29, and May 10, 20, and 26. Observations at Wetland Point #3 continued to note marbled godwit behaviors and to assess breeding evidence beyond May 20. Additionally, marbled godwits were noted during Avian Use/Flight Path counts at Points 1, 2, 3, 4, and 6 from the end of April through June. Most observations were associated with grasslands or pastures. However, three observations were associated with flooded cropland where the birds were seen foraging.

Marbled godwits engaged in two distinct flight types during the spring 2011 surveys. The display/courtship flights consisted of birds observed circling suitable nesting habitat while calling or chasing other godwits. In these flights, the birds were noted flying as high as 70 meters AGL and activity occurred for periods of 3 to 20 minutes. Biologists observed these display flights on five different days and display flights occurred multiple times during some observation periods.

The second flight type was a directional flight, which was noted on two occasions. Flight heights during directional flights ranged from 2 to 20 m. In both instances flights originated in areas north or west of the presumed breeding area at the south end of the Sites. The MBBA establishes the “safe date” for evidence of probable breeding marbled godwits to begin on May 10 and end on July 20 of a given year. The presence of territorial godwits of both sexes in suitable habitat throughout the spring indicate that this species likely breeds on or near the Sites. No godwits were observed during any of the marbled godwit surveys conducted at the Behnen, Trisko, or Kenna WPAs. These WPAs contain abundant grassland/wetland complexes of suitable size, but during the 2011 surveys were characterized by monotypic late season grass species and forbs that did not provide the short stature grassland/wetland interface preferred by this species. The observations of godwits at other locations throughout the project area may indicate that, in addition to using the site for foraging, this species utilizes grasslands throughout the project site

when they provide habitat with the proper structure and vegetative composition in any given year.

Forster's Tern

Forster's terns are listed as a special concern species by the State of Minnesota. Historically this colonial species has bred throughout the western third of the state in the Prairie Parkland Province eastward into the Eastern Hardwood Forest Province. Although this species is known to occupy traditional nesting locations throughout the state, water levels appear to dictate whether a given nest site is occupied during a given year. Nesting colonies are located on the floating vegetation at the interior of marshes or lakes (Scharf 1991). In Minnesota, some studies of Forster's Tern have found that reproductive success was below levels needed to maintain this species at its current size (Cuthbert and Louis, 1986). Habitat utilized by this species consists of extensive areas of emergent vegetation where nests are constructed on emergent vegetation or muskrat houses.

Forster's terns were observed during Wetland Utilization surveys at Wetland Point #4 twice during migration on May 10 and 19, 2011, at the wetland located adjacent to U.S. Highway 71 on the northeast boundary of the Project site (Figure 4). This species was not observed during the Avian Use/Flight Path surveys and no active breeding colonies were found on wetlands within or adjacent to Sites.

American White Pelican

The Minnesota DNR currently lists this species as of special concern and several studies have shown this species' abundance is increasing across its range over the past 20 to 25 years (Wires et al. 2005; Evans and Knopf 1993). This species is a colonial nesting species that selects large, shallow bodies of water that are rich in prey fish. Usually the nesting site is a flat, bare island that is isolated from human disturbance (Coffin and Pfannmuller, 1988).

American white pelicans were observed frequently during both the Avian Use/Flight Path and Wetland Utilization Surveys. They were observed feeding at waterbodies associated with the Kenna, Trisko, and Behnen WPAs and at the Padua WMA adjacent to Raymond Lake. Observations were also documented while this species was flying to other lakes and rivers near the Project. Most of the flight observations were of birds travelling between wetlands, rivers, and the larger lakes and waterbodies to the west and northeast of the Sites (Figure 4). Raymond Lake at the south end of the site was also used frequently by this species.

Bald Eagle

The DNR currently lists the bald eagle as of Special Concern but is proposing to upgrade the species to "no status." The bald eagle breeds across much of North America and is known to have a presence in every U. S. state except Hawaii. Bald Eagles that reside in the northern U. S. and Canada migrate to the warmer southern climates of the U.S. during the winter. However,

nesting pairs have been known to reside near nest sites throughout the winter. Bald eagle characteristic breeding habitat includes super-canopy trees such as red and white pine near lakes and rivers that support an abundant supply of fish. While most nest sites are located in areas with minimal human activity, some eagles have adapted to human presence and nest near human dwellings and other features such as railroads, highways, and boat landings. The annual life of bald eagles can be broadly categorized into nesting and non-nesting periods. The nesting period varies by latitude; in the Midwest, it begins with courtship and nest building in late January and early February and ends when the young fledge by late July. The non-nesting period is thus from August through mid-January.

One nesting pair of eagles occurs in the NW ¼ of Section 18 of Getty Township (Figure 4). Nest observations of this pair throughout the breeding season indicated the pair successfully raised at least one young from this site. A total of 18 bald eagles were observed throughout the migratory season from April 1 through May 5, 2011. These observations were primarily of the resident adults tending to their nest and young, or engaged in foraging forays. Two juvenile birds and a sub-adult bird were also observed perching or following the northward migration of waterfowl. On one occasion, a single adult from the Getty nest shadowed the flight of a sub-adult eagle while it was within 1.5 miles of the active nest. Juvenile eagles were seen conducting feeding forays that originated near waterfowl concentrations or were seen soaring from the northeast to the west end of the Sites. The presence of an active nest, eagle foraging, and migration through the Sites will require further analysis under provisions of the BGEPA. The Draft Eagle Conservation Plan Guidance (USFWS January 2011) indicate that further assessment of eagle use within 10 miles of wind farm projects may be required to identify and quantify risk associated with wind development at this site.

Colonial Nesting Species

Although the species in this group are not protected by federal or state endangered species regulations, their nesting sites are identified and tracked by the DNR NHIS and takings are regulated by the MBTA.

Black Tern

Black terns are a neotropical migratory species that are semi-colonial breeders. Black terns reach their breeding territories in Minnesota in late-April through the beginning of May (Janssen, 1987). Breeding occurs in shallow freshwater marshes with emergent vegetation found along lake margins and occasionally in rivers (Dunn and Argo 1995). Vegetation used for nest platforms can vary, but cattails or bulrushes are characteristically dominant in black tern colonies (Dunn 1979). Vegetation cover can also vary between dense and sparse but nests are usually protected from direct open water to avoid dangers such as wind and wave action (Currier 2000). Nesting locations of 5 ha. or more are thought to be necessary for establishment of nesting colonies. The black tern is found throughout most of the state during the breeding season and

Minnesota is thought to harbor the largest population in the north central United States (Baker and Hines, 1996). Population declines have been noted by National Biological Service's BBS and this decline has resulted in the species being protected in nearby states such as Ohio, Indiana, Illinois, Iowa, and Wisconsin.

A black tern nesting colony was observed at a wetland adjacent to U.S. Highway 71 by Minnesota Breeding Bird atlas volunteers in 2010 and one was noted northwest of observation point 161027-2 during the 2011 surveys. The 2011 colony was located in a large emergent wetland complex north of County Route 28 in Getty Township (Figure 4). Breeding generally occurs in shallow freshwater marshes with emergent vegetation found along lake margins and occasionally in rivers (Dunn and Argo, 1995). Terns from this colony were observed landing in a dense stand of cattails (*Typha* sp.) and giant reed grass (*Phragmites australis*) with areas of open water surrounding the colony. Upland areas around the wetland are used to produce corn, soybeans, and silage. Terns from this colony were also seen flying between the nesting colony and Padua WMA to the south or to Trisko WPA north of the nesting location. The colony observed at this location is estimated to be between 19 and 30 birds based upon numbers of birds seen flying during any one given observation period.

Red-Necked Grebe

Red-necked grebes were observed nesting at Padua WMA during the spring of 2011. Up to five red-necked grebes were observed conducting courtship displays, pair bonding, and nest platform construction on the southeastern portion of the wetland. Breeding for this species generally occurs in shallow, freshwater marshes or protected bays of larger lakes. Nests at this location were constructed of cattails and bulrushes (*Scirpus* sp.) along the eastern edge of the lake where emergent vegetation juts out into the open water portion of the lake.

This species becomes relatively sedentary once arriving on the breeding grounds. The total number of resident red-necked grebes at the Padua WMA appears to be four. Only one nest platform was detected along the east side of the Raymond Lake (Figure 4).

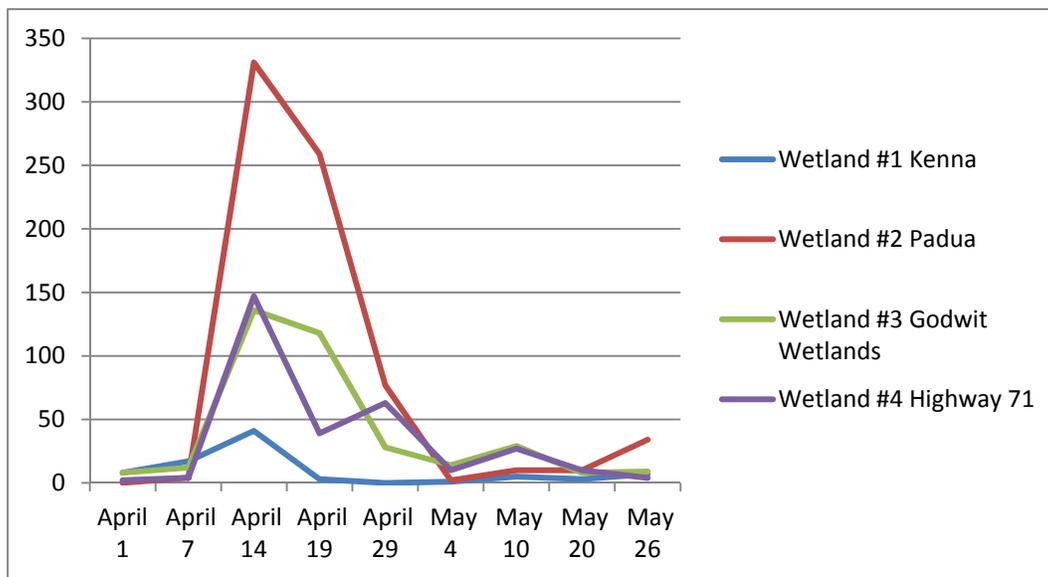
Waterfowl and Waterbirds

The intent of HDR's avian research was to describe the general flight patterns and habitat utilization by migratory waterfowl, water birds, raptors, passerines, and sensitive species across the site. Since wind turbines will be sited on lands currently planted in crops, the analyses focused on identifying flight patterns of target species between concentration areas such as WPAs, WMAs, wetland areas, and other grassland habitats within the study area. Wetland areas are abundant during the spring thaw and waterfowl occur in large numbers where water ponds over a frost layer in the soil on agricultural lands. Waterfowl use of these flooded fields generally subsides once the frost leaves the soil and surface waters recede. WPAs and WMAs such as Padua, Trisko, and Kenna provide more permanent water sources used by waterfowl and water

birds during migration, breeding, and rearing seasons. Waterfowl and other water birds generally concentrate at wetlands or waterbodies for roosting or loafing during the evening hours. Conducting surveys in the early morning or late evening when these species travel to feeding areas is the best way to identify the elevation, duration, and direction of flights so that turbines can be sited to avoid impacts. Scheduling surveys from April to June allowed HDR to assess use patterns during migratory and breeding periods.

A total of 23 species of waterfowl were observed between April and June 2011, during either the Avian Use/Flight Path or Wetland Utilization Surveys. Utilization of the site can be divided into two distinct categories. Many birds utilize the abundant wetlands and lakes in this region as migration stopover points or as staging areas to refuel depleted energy reserves before continuing their migration north. Others utilize the uplands and wetlands in this area for breeding and feeding. For purposes of analysis and risk assessment, the surveys were broken into a migration period running from April 1 to May 5, 2011, and a breeding period from May 5 through June 29, 2011. These categories are based upon observations of the number of waterfowl in the area documented during Waterfowl Utilization Surveys (Chart 3). Of the 23 species observed, 14 were observed flying at one time or another. The remaining species apparently are flying after sunset or before sunrise.

Chart 3. Waterfowl Utilization at Area Wetlands



Raptors

Raptors were found utilizing the study area in relatively low numbers. A total of seven species of raptors/vultures were observed between April and June 2011, during the Avian Use/Flight Path, Eagle Nest Monitoring, or Wetland Utilization Surveys. Utilization of the study area can be divided into two distinct categories. A single sharp-shinned hawk (*Accipiter striatus*) was the

only raptor species observed solely during migration. The remaining observations are presumed to be of breeding individuals because there were repeated observations in the same general areas throughout the spring surveys. Of the seven species observed, six were observed flying at one time or another (Figure 6). The great horned owl (*Bubo virginianus*) was only observed perching near its nest in the Behnen WPA during Marbled Godwit Surveys.

Passerines

Red-winged blackbirds, common grackles, unidentified species of blackbirds, and Lapland longspurs were the most abundant species observed during the Avian Use/Point Count Surveys in the spring of 2011 (Appendix C). These species made up 16,201 of the 22,863 individuals counted, or 71 percent of all observations. Passerines as a group made up 18,807 (82 percent) of all individuals observed. This group also made up 55 percent of the species listed as ETSC or SGCN observed on the Sites. Despite the large numbers of passerine species observed, only 3.3 percent of all flights for this group occurred within the RSZ and the only species within this group with a mean flight-height within the RSZ was a single flock of Smith's longspurs that was first observed at 35 meters AGL. This flock of longspurs was originally detected at this height but quickly dropped to land in a grassy field and then flew away at an elevation below the RSZ at 10 meters. Horned larks were the only passerine species observed regularly utilizing airspace within the RSZ throughout the spring season. Erickson et al. (2001) found that passerines are the most common group of birds killed at new generation wind farms and make up as much as 80 percent of all fatalities reported.

Collision Risk

The most apparent risk to native and sensitive birds from wind energy facilities is collision with turbine blades. Recent studies suggest that bird behavior is a stronger predictor of collision risk than other factors, such as observed flight height or local abundance (de Lucas et al. 2008, Smallwood et al. 2009). However, habitat is important in predicting the location of species. As a result, avoiding habitats supporting concentrations of native birds, especially sensitive species, reduces collision risk for birds that are susceptible due to their behavior.

Members of the family *Icteridae* (blackbirds) were the most abundant group with over 10,000 individuals counted during the spring 2011 Avian Use/Flight Path surveys. *Emberizidae* (sparrows, particularly members of the Genus *Calcarius* (longspurs)) were the second most abundant group of birds with more than 2,700 individuals counted. Observed flight heights for both of these families of birds were generally below the RSZ and daytime flights would likely not be affected by the construction of wind turbines in this area. The third most abundant group was made up of waterfowl species. All species of waterfowl totaled 3,695 individuals or only 16.1 percent of the individuals observed in surveys across the site during the Avian Use/Flight Path Surveys. Although mortality among waterfowl was found to be low when compared to waterfowl/waterbird use (Erickson et. al.,2001), some individual species may be more

susceptible to collision due to the kinds of behaviors they engage in near wind farm sites. Mortality is predicted to be highest in species such as the mallard, which historically experience higher than average mortality at wind farms (Johnson et al,2000). The higher mortality associated with Mallards may be due to behavioral attributes such as “chase flights” that are engaged in during the breeding season by this species.

Sensitive Bird Species Collision Risk

Turbines would primarily be placed in croplands at the Black Oak/Getty Wind Farms. Collision risk to sensitive species and long-distance migrants is thought to be low in cropland, given the low abundance of these species in point counts. However, the behavior of individual species affects the risk. For instance, Johnson et al. (2000) found that two of 55 avian mortalities at Buffalo Ridge, Minnesota, were vesper sparrows despite observation information indicating that the species did not fly through the RSZ. Of the species considered sensitive to wind farm development at the Project, the horned lark may have the greatest potential for collision fatality due to its higher abundance in croplands, higher documented mortality, and propensity to engage in territorial displays that occur within the RSZ. Other sensitive species of note that occurred within the RSZ included American white pelican (SPC/SGCN), bald eagle (SPC/SGCN), upland sandpiper (SGCN), American bittern (SGCN), black tern (SGCN), marbled godwit (SPC/SGCN), and northern harrier (SGCN). Flights of these sensitive species were associated with waterbodies as flight origination or destination and existing grassland habitats (Figure 4).

Table 4: ETSC/SGCN Species Observed Within the Rotor Sweep Zone (RSZ)

Common Name	Scientific Name	Abundance	% below RSZ (<30 m)	% within RSZ (30-150 m)	% above RSZ (>150 m)
American Bittern	<i>Botaurus lentiginosus</i>	1	0.00	100.00	0.00
Common Loon	<i>Gavia immer</i>	14	57.14	42.86	0.00
American White Pelican	<i>Pelecanus erythrorhynchos</i>	125	6.89	79.32	13.79
Lesser Scaup	<i>Aythya affinis</i>	42	66.66	33.33	0.00
Bald Eagle	<i>Haliaeetus leucocephalus</i>	18	33.33	66.66	0.00
Northern Harrier	<i>Circus cyaneus</i>	60	91.08	8.92	0.00
Marbled Godwit*	<i>Limosa fedoa</i>	11	27.27	72.73	0.00
Upland Sandpiper	<i>Bartramia longicauda</i>	13	57.15	42.85	0.00
Wilson's Phalarope	<i>Phalaropus tricolor</i>	17	50.00	50.00	0.00
Black Tern	<i>Chlidonias niger</i>	48	28.58	71.42	0.00
Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>	1	100.00	0.00	0.00
Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>	1	100.00	0.00	0.00
Least Flycatcher	<i>Empidonax minimus</i>	1	100.00	0.00	0.00

Common Name	Scientific Name	Abundance	% below RSZ (<30 m)	% within RSZ (30-150 m)	% above RSZ (>150 m)
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>	12	100.00	0.00	0.00
Sedge Wren	<i>Cistothorus platensis</i>	4	100.00	0.00	0.00
Marsh Wren	<i>Cistothorus palustris</i>	1	100.00	0.00	0.00
Brown Thrasher	<i>Toxostoma rufum</i>	5	100.00	0.00	0.00
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>	3	100.00	0.00	0.00
Bobolink	<i>Dolichonyx oryzivorus</i>	86	100.00	0.00	0.00
Rusty Blackbird	<i>Euphagus carolinus</i>	56	100.00	0.00	0.00

* Display flights observations noted at breeding location south of the Project on April 19, May 10, 20, and 26. These displays did not occur at established points.

Waterfowl, and Waterbird Collision Risk

Several studies have evaluated whether utilization of flights within the RSZ correlate to higher mortality rates at wind farms (Strickland et al. 2001, Hunt 2002, Smallwood et al. 2008). Some of these studies have shown that although general mortality increases across all species, behaviors or visual acuity differentiate a species susceptibility to collisions at wind farms (Smallwood 2008). The Smallwood study indicated that mortality rates did not correlate with utilization rates for most species but did correlate with species such as mallards, American kestrel, and red-tailed hawk. The results of the Smallwood study and others (Strickland et al. 2001, Smallwood and Thelander 2004) indicate that behavior may play a vital role in determining mortality associated with collisions with wind turbines. Mallards have among the highest utilization rates of the waterfowl observed during the breeding season at the study area. The results of several studies indicate that mallards, in particular, exhibit behaviors that may increase the likelihood of collisions with wind turbines. Chase flights by mallards were observed throughout the migration and breeding season during the spring of 2011. These flights may increase mortality rates because birds involved in the chase flight are concentrating on courtship or evasion of courting males and may not be aware of the presence of moving turbine blades. This inattention may result in higher mortality rates at wind farms.

Three different flight behaviors were noted for the 14 waterfowl species observed during the Avian Use/Flight Path Surveys conducted at the study area (Figure 5). The first category observed was migration flights. These flights occurred at higher elevations and involved from 10 to 30 individuals engaging in linear flights that bypassed wetlands, lakes, or potential foraging sites. These groups of waterfowl were observed for long distances and appeared to pass through

the survey area without taking off, landing, turning or stopping. The second category appeared to be foraging flights and was characterized by individual birds or flocks flying at lower altitudes. Biologists at any one of the survey points generally observed the origin or termination of the flight. Several individuals engaging in chase flights characterized a third category. The origins and termination of these flights were generally observed by the biologist at a given survey point and occurred at varying altitudes. Chase flights were never linear but involved looping, diving, or zigzagging flight paths that may have started with at least two individuals and gained or lost individuals as the flight continued.

In summary, waterfowl used agricultural fields extensively during the spring migration, and foraging flights occurred between WPAs, WMAs, and flooded fields where waterfowl congregated to feed (Figure 5). The mean observed flight-height for waterfowl was 19 meters. Once migration ceased, waterfowl use was characterized by fewer flights between wetlands or lakes, and an absence of flights to agricultural fields to feed. Flight paths during both periods generally originated or terminated at Padua WMA, or Trisko and Kenna WPAs. The largest percentage of flights occurred along a broad corridor that connects Padua to Trisko and then on to the Sauk River northeast of the Sites. Large flocks of tundra swans were noted roosting and feeding in flooded fields in Sections 6 and 7 of Getty Township and in Sections 1, 2, 3, 11, 12, and 14 of Raymond Township within the Sites during early April. April and May surveys documented large numbers of waterfowl migrating, and trading between concentration waterbodies and feeding areas.

Raptor Collision Risk

Northern harriers and red-tailed hawks were the two raptors species that occurred with the highest frequency. These two species were often observed soaring over agricultural lands or grassland while foraging. Flight paths recorded during the spring of 2011 show no definite use patterns that would allow micro-siting to reduce potential impacts. The Black Oak/Getty Wind Farms raptor mean-use rates are among the lowest reported at ten sites reporting this metric across the U.S. (Chart 2). Six bald eagles flights were documented during the spring 2011 surveys and consist of four flights for foraging or territorial defense by the resident eagle pair and two by migratory eagles that were present only during April and May. Due to the low use of the Sites and the low frequency of mortality reported from other U.S. wind farms with similar use rates, impacts to raptors are expected to be minimal. Only 30 percent of the red-tailed hawk flights observed within the Sites occur within the RSZ. Total observations of red-tailed hawks were also in the bottom quartile of wind farms with recorded raptor use. The low relative use and reduced percentage of flights within the RSZ indicate that there will be a lower likelihood of red-tailed hawk mortality at this site than on other sites where this index was studied.

Passerine Collision Risk

Passerines were the most abundant group of species observed during the Avian Use/Point Count Surveys in the spring of 2011. These species make up 16,201 of the 22,863 individuals counted, or 71 percent of all observations. Passerines as a group make up 18,807 (82 percent) of all individuals observed. Despite the large numbers of passerine species observed, only 3.3 percent of all flights for this group occurred within the RSZ and the only species within this group with a mean flight-height within the RSZ was a single flock of Smith's longspurs that was first observed at 35 m AGL. Horned larks were the only passerine species observed regularly utilizing airspace within the RSZ throughout the spring season. The skylarking behavior included flights that sometimes lifted horned larks as high as 50 or 60 m. These skylarking flights often occurred while facing into prevailing winds that allowed horned larks to hang in the air for up to 15 minutes of a given survey period. Passerine observations from spring 2011 provide an index of daytime flights at select locations within the Sites. The relative abundance of passerines and mean flight-height assessed for this group during daytime flights, indicate that passerines have a relatively low risk for collision during daytime flights at the Sites. However, most migratory flights from this group occur at night (Richardson 1990) and these flights are not represented in this analysis.

Habitat Displacement Risk

Bird species sensitive to changes to habitat size, composition, or construction of various kinds of infrastructure are thought to be most at risk of habitat displacement. Recent studies to detect habitat effects caused by wind turbines have focused on grassland birds since these seem more sensitive to habitat displacement than forest or water birds and appear to be experiencing greater declines as a group in North America than forest birds (Leddy et al. 1999; Herkert et al. 2003; CEIWEF 2007; Mabey and Paul 2007).

Sensitive Species (ETSC/SGCN) Habitat Displacement Risk

Sensitive species can be used as an indicator of displacement risk because they are often more susceptible to habitat alteration or fragmentation. Species in this group may include species that are area-sensitive, require unique habitat parameters to breed successfully, or are at risk due to habitat availability. Habitats that contain more sensitive species and individuals may be at greater risk of habitat displacement than those with few of these species.

Bird species at Sites that are considered sensitive to habitat displacement include marbled godwit, upland sandpiper, bobolink, and sedge wren. During the breeding season, bobolinks were found at every Avian Use/Flight Path Survey point and were associated with grasslands of various sizes and hay fields, or were observed flying over cropland with little-to-no vegetation. Grasshopper sparrows, bobolinks, and sedge wrens are all examples of species noted as declining in the BBS region and are also considered SGCN species.

In summary, habitat displacement is most likely to occur for grasslands breeders occurring ≤ 100 m from turbine sites (Johnson et al. 2002) due to the response of grassland birds to tall structures, noise, or human disturbance. The proposed perimeter setbacks per the Stearns County wind ordinance from grassland habitats at the Padua WMA and Trisko, Kenna, Behnen WPAs will be more than adequate to avoid habitat displacement for the majority of grassland habitats on the Sites. The level of displacement assumed on the remaining grassland habitat is thought to pose a low risk to the populations of affected species mainly because turbine placement is expected to be associated with cropland areas and not grassland habitat.

Waterfowl and Waterbird Habitat Displacement Risk

Habitat displacement associated with waterfowl and wind development has not been evaluated in the U.S. However, some European studies have shown disturbance effects to breeding birds is variable, and in some instances, negligible (Peterson and Poulsen 1991). Despite the variety and large numbers of waterfowl utilizing the Sites during the migratory period, relatively low species richness for waterfowl was recorded during the breeding period. The two most abundant species observed during the breeding period were Canada goose and mallard. These species use grasslands and wetlands for nesting but have been known to use croplands adjacent to wetland complexes. The proposed setbacks from wetland/grassland complexes at the Padua WMA and Trisko, Kenna, Behnen WPAs will be more than adequate to avoid habitat displacement for the majority of wetland/grassland habitats on Sites. The level of displacement is assumed on the remaining grassland habitat is thought to pose a low risk to the populations of affected species mainly because turbine placement is expected to be associated with cropland areas and not wetland or grassland habitat.

Raptor Habitat Displacement Risk

Nest displacement may be a factor for raptor species when wind farm development occurs very close to existing nests. Species that nest within one-half mile of wind development sites may be at a higher risk due to disturbance created by wind development, operation, and maintenance. However, Erickson et al. (2002) found that few raptor species targeted in nest surveys were found as fatalities when nests are within 2 miles. Northern harriers and red-tailed hawks are the two most abundant raptors on the Sites. Approximately four different pairs of red-tailed hawks nest throughout the project boundaries and may occur within 2 miles of any project design developed for the site. The northern harriers observed within the project boundaries may represent only one nesting pair and are likely nesting within the Trisko WPA. Nest displacement could be mitigated by the proposed setback requirements relative to the WPA. Despite the relatively proximity of nests to future turbine locations, Erickson et al. (2002) found that although use rates for these two species were relatively high in an agricultural setting, few mortalities were reported at U.S. wind plants.

Passerine Habitat Displacement Risk

The risk of habitat displacement in birds is poorly understood. Some studies have shown that some grassland species appear to nest at lower densities near wind turbines and other tall structures (Johnson et al. 2000). Species such as savannah sparrow, sedge wren, and bobolink exhibited lower than expected use of grassland habitats after wind turbines were in operation. These grassland species may respond negatively to the presence of wind turbines because turbines are vertical structures that may represent potential predator perches and therefore are avoided. Noise also may be an issue because territorial birds, which use song to defend territories, may avoid habitats where wind turbine noise interferes with territorial singing.

Conclusions

Surveys conducted between April 1, 2011, and June 29, 2011, documented sightings of 22,863 individual birds, representing 106 different species. An additional 1,473 individual birds were counted during Wetland Utilization and Marbled Godwit surveys and added 10 more species to the species richness of the site. Members of the Passerine group were the most abundant group observed during the 2011 surveys. No federally listed species were observed during the surveys. Seven species considered state-endangered, threatened, or of special concern were documented using the site for breeding or migration. One active bald eagle nest site is located in the NW ¼ of Section 18 of Getty Township. This nest site produced at least one juvenile eagle during the spring of 2011. Marbled godwits occupied pastured grasslands at the south end of the Sites and at least one nesting pair was present throughout the survey period. Additionally, nesting black terns and red-necked grebes were located at a wetland north of County Road 28 in Section 7 of Getty Township and Section 24 of Raymond Township, respectively.

Twenty-two SGCN species were observed at the Sites. Breeding was also observed or presumed for upland sandpiper, bobolink, sedge wren, marsh wren, northern harrier, common loon, brown thrasher, black-billed cuckoo, rose-breasted grosbeak, and swamp sparrow. Several SGCN are relatively sedentary once they arrive at their breeding grounds while others conduct frequent foraging flights between nests and feeding areas. Collision risk at this site was analyzed due to the location of the proposed wind farm and its relation to abundant wetlands and lakes in the area. The abundance of lakes and wetlands concentrate waterfowl, waterbirds, and other sensitive species and act as an attractant during migration. Several of these species already are experiencing problems that make them a focus of conservation. For this reason, waterfowl, waterbirds, and sensitive bird species are of the greatest interest in risk assessment at this site.

Analysis of flight path data identified significant movement and concentration areas within the Sites. These areas lie in a broad corridor stretching from the Padua WMA south of the Sites, northward through Trisko WPA then northeast or northwest to the Sauk River. Waterbodies associated with the Raymond Lake/Padua WMA are the source or destination of many of the flights that were observed during the spring 2011 studies.

This area also harbors a perennial nest location for bald eagles, nesting red-necked grebes, a black tern colony, occasional use by sandhill cranes, and frequent common loon use. Since collision risk is related to local abundance at some level, and to flight physiology (i.e. wing loading characteristics), with behavior an important additional factor, ETSC, SGCN, waterfowl, and other sensitive species that utilize flight paths between wetland and lake areas should be considered when designing turbine arrays and associated infrastructure. Areas southwest of the Raymond Lake area also harbored probable breeding marbled godwits and potential Wilson's phalarope habitat, and foraging flights of these species were documented during the 2011 Avian Use/Flight Path surveys.

Numerous seasonal and permanent wetlands that occur throughout this broad corridor contributed to additional bird concentration sites that provided seasonal stopover habitat or breeding habitat in the case of the black terns observed at Point 161027-2. A large number of grasslands also occur within the same broad corridor stretching from the Raymond Lakes/Padua WMA area northward through the Trisko WPA, but also included several pastured areas that provided suitable breeding habitat for additional grassland dependant species such as bobolinks, savannah sparrows, western meadowlarks, and a variety of other songbirds and shorebirds.

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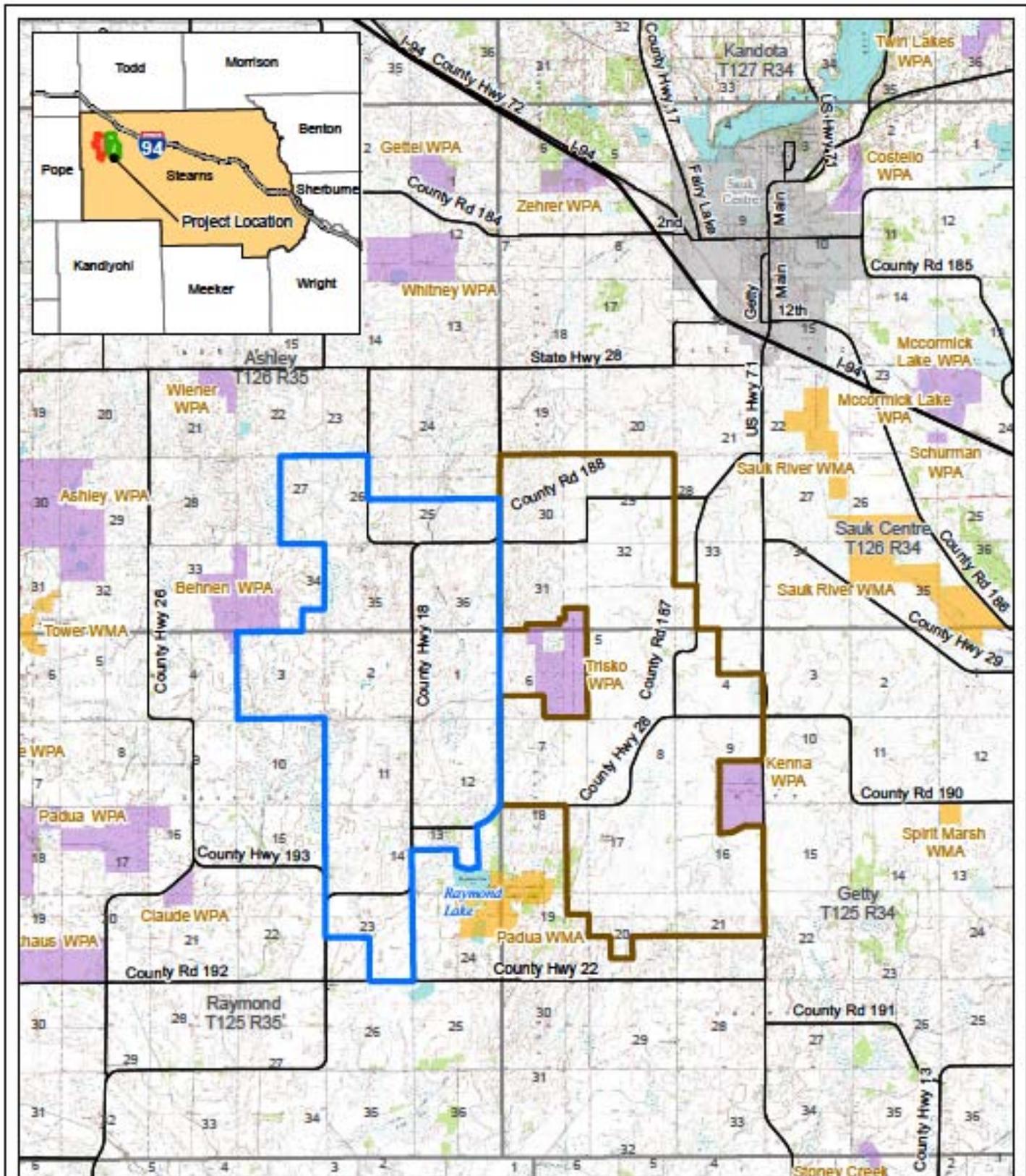


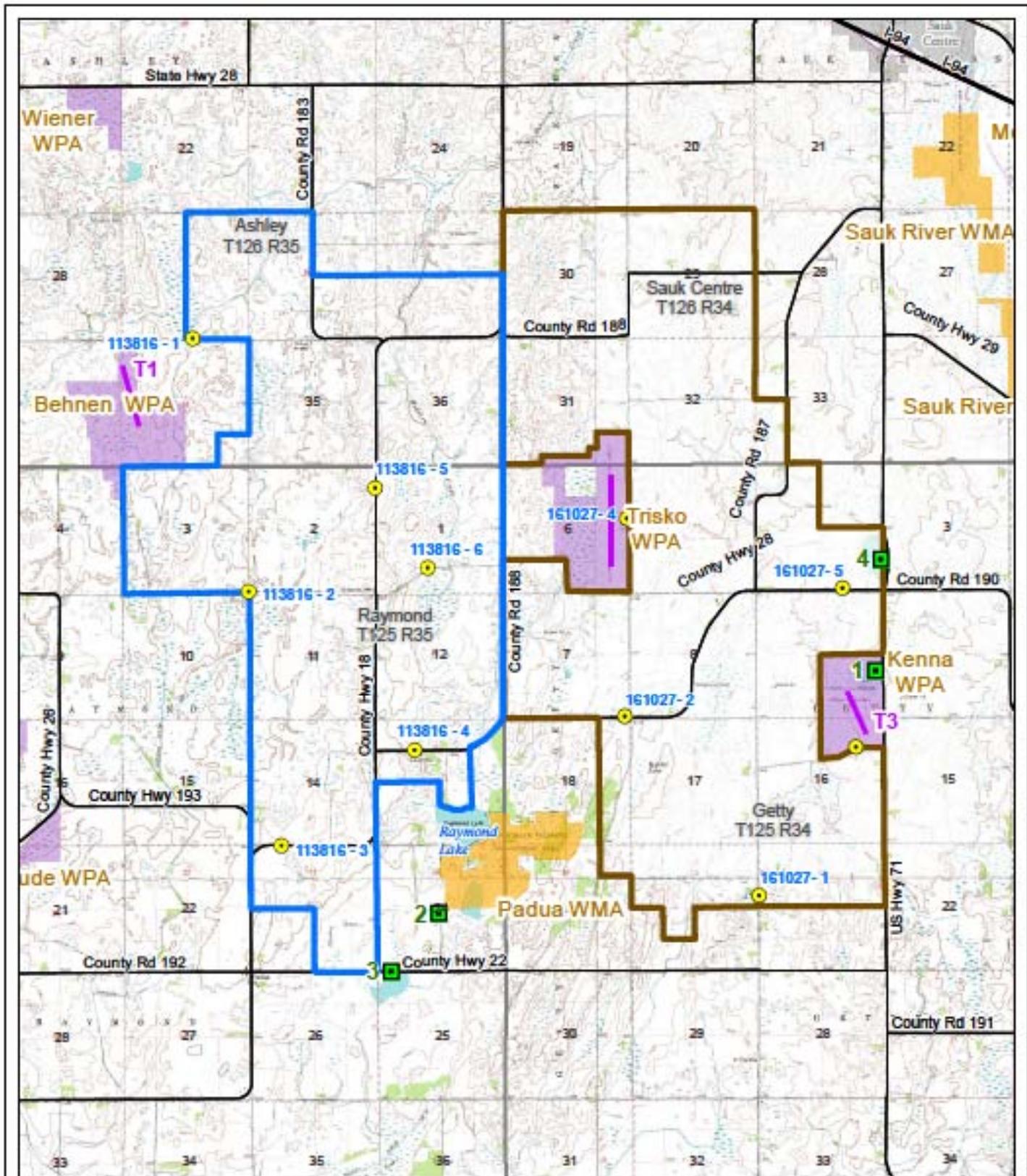
Figure 1
Project Location Map

-  North
-  Black Oak Boundary
-  Getty Boundary
-  PLSS Section Boundary
-  PLSS Township Boundary

-  Wildlife Management Area (WMA)
-  Waterfowl Production Area (WPA)

 Miles
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Black Oak/Getty Wind Farm
Geronimo & Getty Wind



**Figure 2
Transect Map**

- ▬ Black Oak Boundary
- ▬ Getty Boundary
- Wildlife Management Area (WMA)
- Waterfowl Production Area (WPA)
- Wetland Points
- Point Count
- ▬ Godwit Transects



**Black Oak/Getty Wind Farm
Geronimo & Getty Wind**

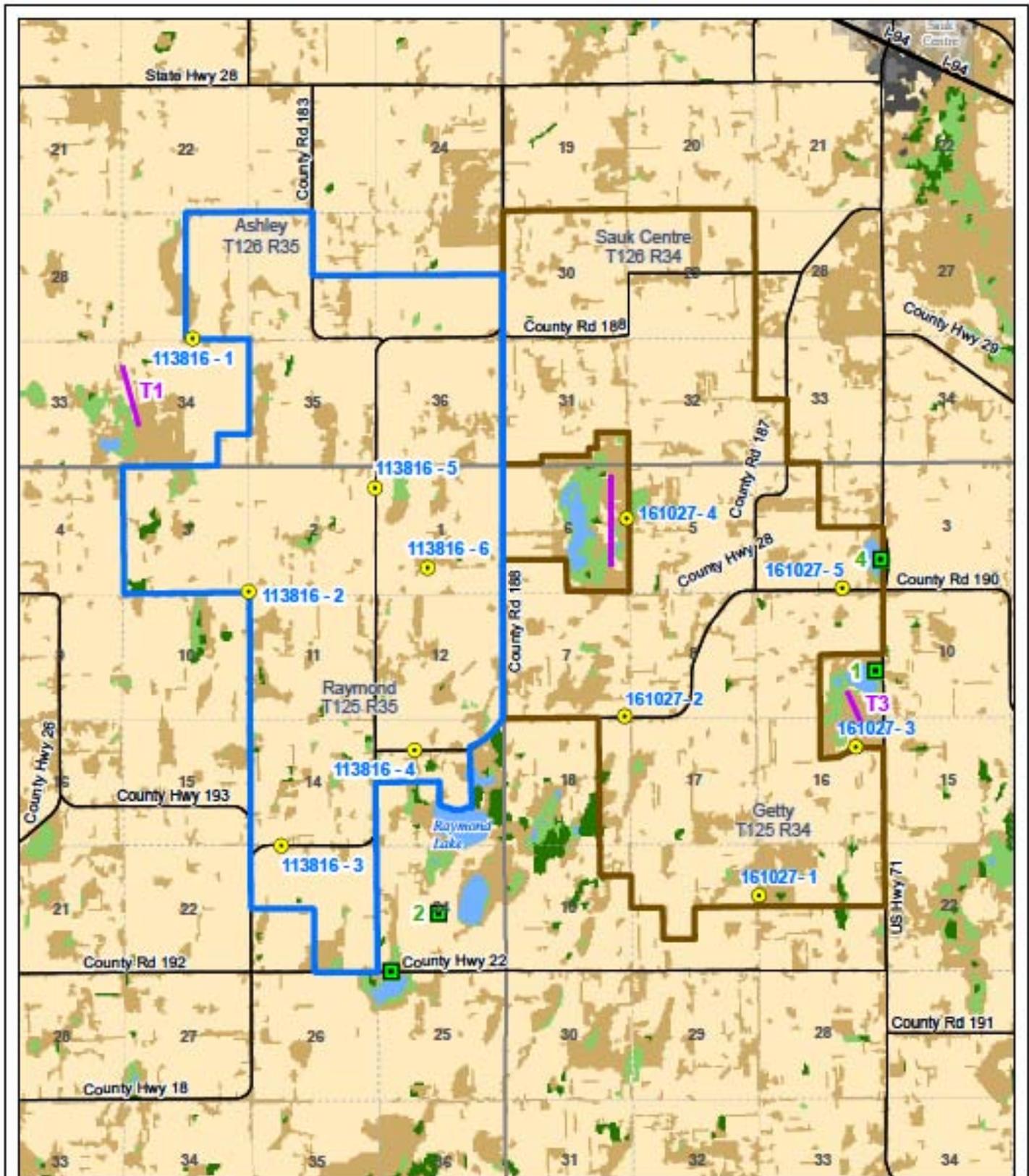


Figure 3
Land Use (GAP) Map

- | | |
|--------------------|------------------|
| Black Oak Boundary | Land Cover (GAP) |
| Getty Boundary | Aquatic |
| Wetland Points | Cropland |
| Point Count | Developed |
| Godwit Transects | Grassland |
| | Marsh |
| | Forested |

Black Oak/Getty Wind Farm
Geronimo & Getty Wind



Each Flight Path represents one observed flight event within the RSZ

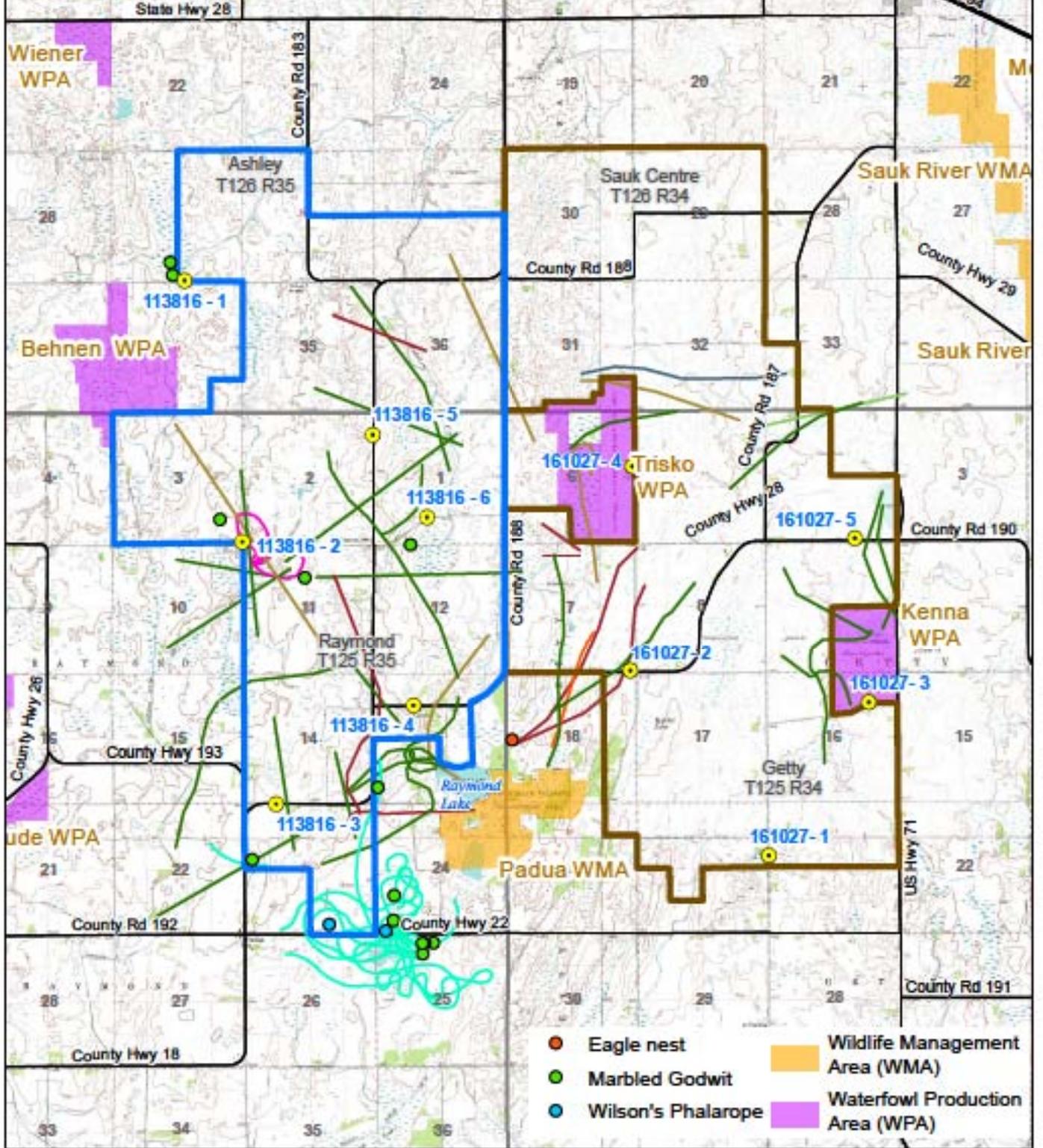


Figure 4
Sensitive Species
Flight Paths Map



Black Oak Boundary

Getty Boundary

Point Count

Avian Flight Path - Species

American Bittern (AMBI)

American White Pelican (AWPE)

Bald Eagle (BAEA)

Black Tern (BLTE)

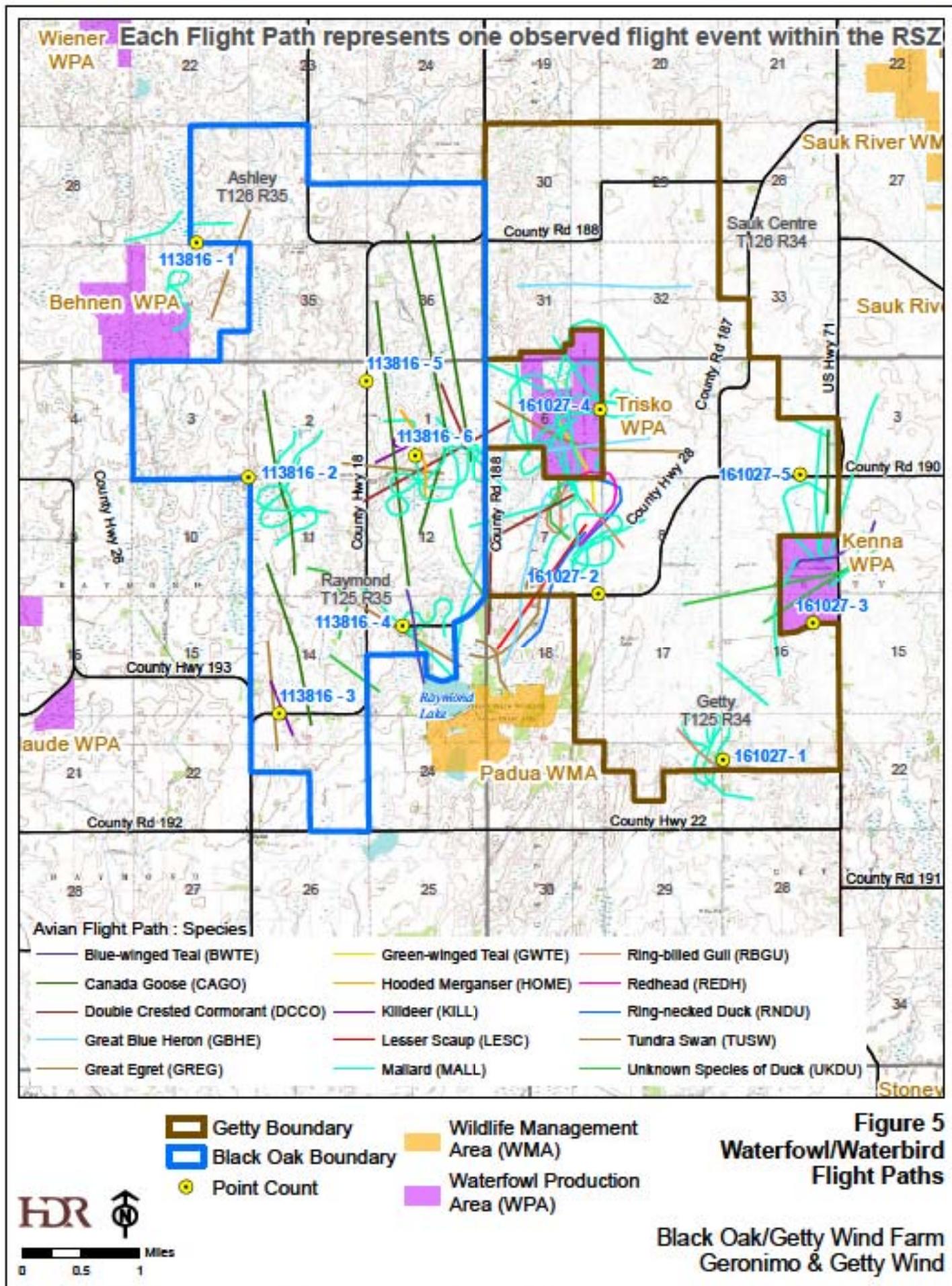
Common Loon (COLO)

Marbled Godwit (MAGO)

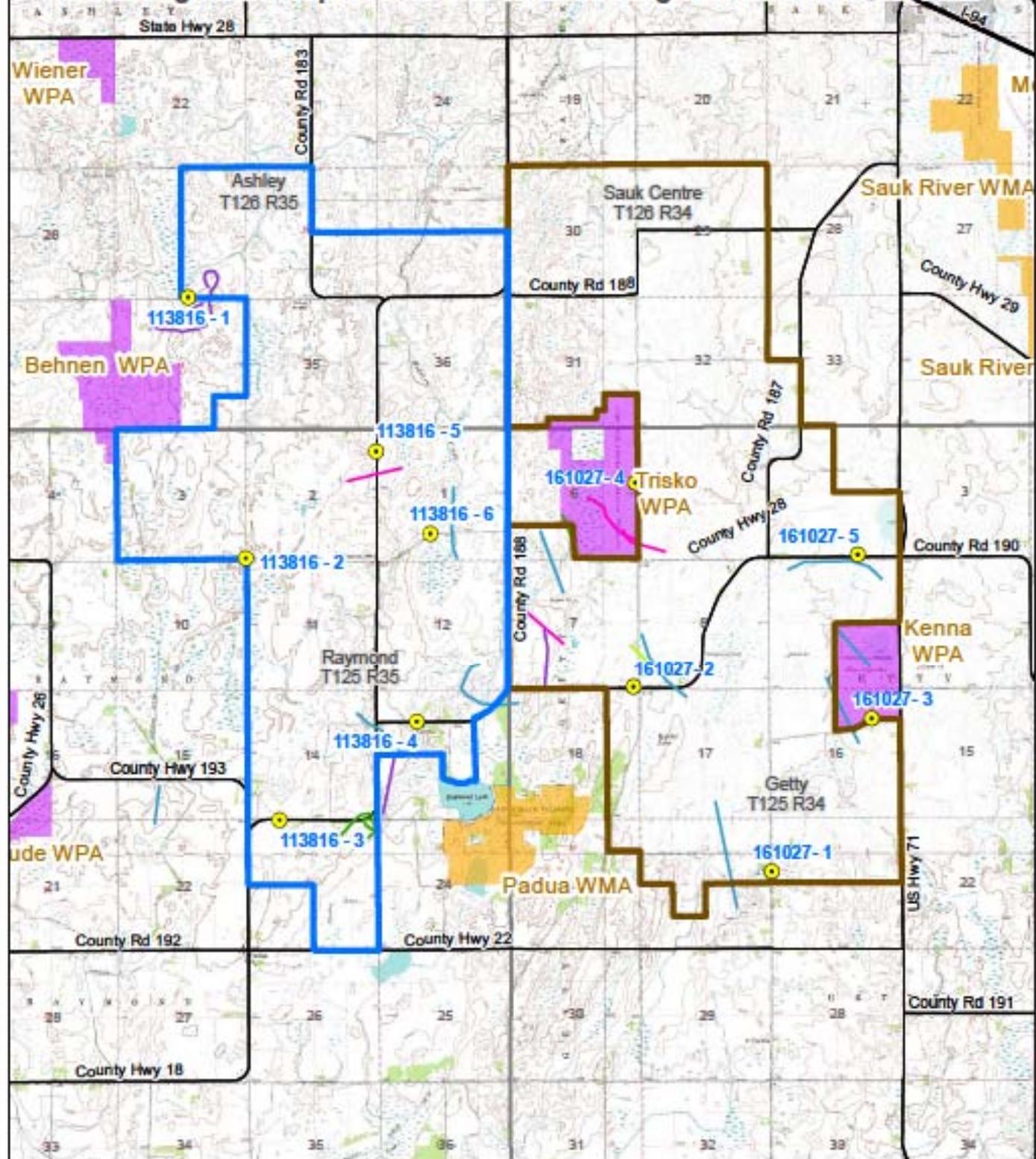
Sandhill Crane (SACR)

Upland Sandpiper (UPSA)

Black Oak/Getty Wind Farm
Geronimo & Getty Wind



Each Flight Path represents one observed flight event within the RSZ



- | | |
|---------------------------------|------------------------------------|
| Black Oak Boundary | Avian Flight Paths: Species |
| Getty Boundary | American Kestrel (AMKE) |
| Point Count | Coopers Hawk (COHA) |
| Wildlife Management Area (WMA) | Northern Harrier (NOHA) |
| Waterfowl Production Area (WPA) | Red-tailed Hawk (RTHA) |
| | Turkey Vulture (TUVU) |

Figure 6
Raptor Flight Paths Map

Black Oak/Getty Wind Farm
Geronimo & Getty Wind



Appendix A. Species Abundance During Wetland Utilization Surveys

Species	Wetland #1 Kenna									Wetland #2 Padua									Wetland #3 (Godwit Wetlands)									Wetland #4 (Highway 71)									Total s																			
	T#1 (Apr il 1)	T#2 (Apr il 7)	T#3 (Apr il 14)	T#4 (Apr il 19)	T#5 (Apr il 29)	T#6 (May 4)	T#7 (May 10)	T#8 (May 20)	T#9 (May 26)	T#1 (Apr il 1)	T#2 (Apr il 7)	T#3 (Apr il 14)	T#4 (Apr il 19)	T#5 (Apr il 29)	T#6 (May 4)	T#7 (May 10)	T#8 (May 20)	T#9 (May 26)	T#1 (Apr il 1)	T#2 (Apr il 7)	T#3 (Apr il 14)	T#4 (Apr il 19)	T#5 (Apr il 29)	T#6 (May 4)	T#7 (May 10)	T#8 (May 20)	T#9 (May 26)	T#1 (Apr il 1)	T#2 (Apr il 7)	T#3 (Apr il 14)	T#4 (Apr il 19)	T#5 (Apr il 29)	T#6 (May 4)	T#7 (May 10)	T#8 (May 20)	T#9 (May 26)																				
American Coot			33									188	217	36							47	67	21			6													104	3	19															741
American White Pelican						5		7								7																							5	17	3	2	46													
American Wigeon																						6																	6																	
Bald Eagle												2										1																	1	3																
Black Tern															4	6	3									1													14																	
Blue-winged Teal												11														1													19																	
Bufflehead													4	8							8		3																31																	
Canada Goose	8	11	2	2		1		2			4	6	6	6					6	12		11	4		4			2	4	2		2						87																		
Canvasback												10		2																									49																	
Common Goldeneye													1																										1																	
Common Merganser													6																										6																	
Common Loon												2				1																							3																	
Double-crested Cormorant															1		1	2																					4																	
Forster's Tern																																							2																	
Gadwall				1								14													1														16																	
Great Blue Heron								1									1																						2																	
Great Egret																	2	5							1		2						5	2	1	2		20																		
Green-winged Teal												8		16																									24																	
Hooded Merganser																						5																	16																	
Horned Grebe			1																																				1																	
Lesser Scaup												30	17								8	5																	73																	
Mallard		6	2									4	6								12			4	4														41																	
Marbled Godwit																			2			2	1	4	3	4	4											20																		
Northern Pintail																							3																3																	
Northern Shoveler			2									5																								6			13																	
Pied-billed Grebe			1																																				5																	
Red-breasted																					5																		5																	

Appendix A. Species Abundance During Wetland Utilization Surveys

Species	Wetland #1 Kenna							Wetland #2 Padua							Wetland #3 (Godwit Wetlands)							Wetland #4 (Highway 71)							Total s								
Merganser																																					
Redhead								19		3								3												7							
Red-necked Grebe								4	2	2	1	5																		1							
Ring-necked Duck								28										56	18											5	7	11	125				
Ruddy Duck														16																6							
Sandhill Crane																				2											2						
Sora													1											2						2							
Trumpeter Swan																				2										2							
Wilson's Phalarope																				8	2	2								12							
Wood Duck												4																		5							
Total Observations	8	17	41	3	0	1	5	3	7	0	4	331	259	77	2	10	10	34	8	12	136	118	29	15	29	8	8	2	4	147	39	63	10	27	10	4	1473

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Appendix B. Species Abundance During Marbled Godwit Surveys

Species	Transect #1 Kenna			Transect #2 Trisko			Transect #3 Behnen			Totals
	(April 19)	(May 10)	(June 9)	(April 19)	(May 10)	(June 9)	(April 19)	(May 10)	(June 9)	
American Crow				4				3		7
American Goldfinch			3							3
American Robin		4			3	1		2		10
American Kestrel	1						1			1
American White Pelican					7					7
American Tree Sparrow	4									4
Barn Swallow		3	7		4	7		5	1	27
Black-billed Cuckoo									1	1
Blue-winged Teal				2	3					5
Blue Jay				2	5					7
Bobolink		2	3		6	15			3	29
Brown-headed Cowbird		3						2		5
Brown Thrasher						1				1
Canada Goose	2				4			6		10
Clay-colored Sparrow		4	1		1	3		2	5	16
Common Grackle	16	6	5	16		7	2	8	9	53
Cooper's Hawk		1								1
Common Yellowthroat			4			5			15	24
European Starling						2				2
Great-horned Owl							3	3		6
House Wren									1	1
Horned Lark								2		2
Indigo Bunting									1	1
Killdeer		1			2					3
Lapland Longspur		3								3

Appendix B. Species Abundance During Marbled Godwit Surveys

Species	Transect #1 Kenna		Transect #2 Trisko			Transect #3 Behnen			Totals	
Marsh Wren						3		8	11	
Mallard	7	3	5	6		3	3	3	20	
Mourning Dove	1	3				2	2	3	10	
Northern Harrier	2	1				2		1	4	
Northern Flicker							1		1	
Red-tailed Hawk	1							1	1	
Red-winged Blackbird	15	8	8	8	7	13	12	5	28	
Ring-necked Duck					7				7	
Ring-necked Pheasant	2	1			1		1		3	
Ruddy Duck								1	1	
Red-eyed Vireo								1	1	
Savannah Sparrow	1	2					2		4	
Sandhill Crane							2		2	
Sedge Wren		2			3	5		4	14	
Sora							1		1	
Song Sparrow		2	2	3	1	2		2	12	
Swamp Sparrow		2	2	3	5		3	5	20	
Tree Swallow		2							2	
Vesper Sparrow							2		2	
Western Meadowlark							2		2	
White-throated Sparrow								3	3	
Yellow-headed Blackbird				4	3				7	
Yellow Warbler								4	4	
Total Observations	52	49	32	33	66	74	30	48	94	426

Project Snapshot

113816 Black Oak

SPECIES DATA

Overall Species Richness		Species Richness By Point		Species Richness By Habitat	
111		Point Number	Species Richness	Habitat Type	Species Richness
Species List		113816-001	34	Agriculture - Cropland	111
Species	Abundance	113816-002	39	Grassland-Non-native	31
Red-winged Blackbird	4958	113816-003	54		
Common Grackle	4754	113816-004	52		
Unidentified Blackbird	3750	113816-005	29		
Lapland Longspur	2739	113816-006	45		
Unidentified Duck	1056	161027-001	35		
Canada Goose	1013	161027-002	49		
Mallard	694	161027-003	37		
Tundra Swan	452	161027-004	60		
Brown-headed Cowbird	293	161027-005	40		
Horned Lark	177	Sensitive Species			
American Crow	174	Species	Abundance		
Brewer's Blackbird	157	American Bittern	1		
Barn Swallow	156	Bald Eagle	18		
American Robin	148	Black Tern	48		
American Goldfinch	127	Black-billed Cuckoo	1		
American White Pelican	125	Bobolink	86		
European Starling	122	Brown Thrasher	6		
Yellow-headed Blackbird	112	Common Loon	14		
Mourning Dove	107	Least Flycatcher	1		
Bobolink	86	Lesser Scaup	65		
Blue-winged Teal	77	Marbled Godwit	7		
Ring-billed Gull	76	Marsh Wren	1		
Vesper Sparrow	75	Northern Harrier	60		
Killdeer	73	Northern Rough-winged Swallow	12		
Ring-necked Duck	66	Rose-breasted Grosbeak	3		
Lesser Scaup	65				
Unidentified Longspur	65				
Northern Harrier	60				

Species List		Sensitive Species	
Rusty Blackbird	56	Rusty Blackbird	56
Snow Goose	55	Savannah Sparrow	41
Ring-necked Pheasant	52	Sedge Wren	4
Common Yellowthroat	49	Semipalmated Sandpiper	1
Tree Swallow	48	Swamp Sparrow	19
Black Tern	48	Upland Sandpiper	13
Blue Jay	47	Wilson's Phalarope	17
Red-tailed Hawk	42	Yellow-bellied Sapsucker	1
Redhead	42		
Savannah Sparrow	41		
Green-winged Teal	40		
Song Sparrow	37		
Greater White-fronted Goose	35		
Smith's Longspur	30		
Rock Pigeon	26		
American Tree Sparrow	25		
Gadwall	24		
Canvasback	24		
Swamp Sparrow	19		
House Sparrow	18		
Bald Eagle	18		
Wilson's Phalarope	17		
Common Loon	14		
Upland Sandpiper	13		
Northern Shoveler	13		
Northern Rough-winged Swall	12		
Sandhill Crane	12		
Wood Duck	12		
American Kestrel	12		
Double-crested Cormorant	11		
Great Egret	11		
Chipping Sparrow	10		
Cooper's Hawk	9		
Great Blue Heron	8		
Turkey Vulture	7		
Clay-colored Sparrow	7		
Hooded Merganser	7		
Marbled Godwit	7		

ABUNDANCE DATA

Overall Mean Abundance	Mean Abundance By Point		Mean Abundance By Habitat	
9	Point Number	Mean Abundance	Habitat Type	Mean Abundance
Total Abundance	113816-001	3	Agriculture - Cropland	10
	113816-002	7	Grassland-Non-native	4
22863	113816-003	10		
	113816-004	25		
	113816-005	5		
	113816-006	11		
	161027-001	11		
	161027-002	16		
	161027-003	7		
	161027-004	3		
	161027-005	3		

FLIGHT HEIGHT DATA

Mean Flight Height	Mean Flight Height By Point		Mean Flight Height By Species	
13 meters	Point Number	Mean Flight Height	Species	Mean Flight Height
	113816-001	9 meters	American Bittern	100 meters
	113816-002	16 meters	American Crow	7 meters
	113816-003	18 meters	American Goldfinch	13 meters
	113816-004	16 meters	American Kestrel	14 meters
	113816-005	13 meters	American Pipit	20 meters
	113816-006	18 meters	American Robin	6 meters
	161027-001	9 meters	American Tree Sparrow	2 meters
	161027-002	18 meters	American White Pelican	75 meters
	161027-003	8 meters	American Wigeon	20 meters
	161027-004	12 meters	Baird's Sandpiper	8 meters
	161027-005	14 meters	Bald Eagle	62 meters
			Baltimore Oriole	15 meters
			Bank Swallow	14 meters
			Barn Swallow	5 meters
			Black Tern	41 meters
			Black-and-white Warbler	2 meters
			Black-billed Cuckoo	1 meters
			Black-capped Chickadee	meters
			Blue Jay	14 meters
			Blue-winged Teal	11 meters
			Bobolink	9 meters
			Brewer's Blackbird	9 meters
			Brown Thrasher	2 meters
			Brown-headed Cowbird	6 meters
			Bufflehead	meters
			Canada Goose	13 meters
			Canvasback	10 meters
			Cedar Waxwing	15 meters
			Chimney Swift	11 meters
			Chipping Sparrow	meters
			Clay-colored Sparrow	meters
			Cliff Swallow	18 meters
			Common Grackle	8 meters
			Common Loon	23 meters
			Common Snipe	50 meters
			Common Yellowthroat	meters
			Cooper's Hawk	25 meters

Mean Flight Height by Species

Double-crested Cormorant	31 meters
Downy Woodpecker	20 meters
Eastern Phoebe	6 meters
European Starling	10 meters
Gadwall	18 meters
Great Blue Heron	27 meters
Great Crested Flycatcher	meters
Great Egret	22 meters
Greater White-fronted Goose	meters
Green Heron	10 meters
Green-winged Teal	50 meters
Hooded Merganser	17 meters
Horned Lark	25 meters
House Finch	10 meters
House Sparrow	12 meters
House Wren	meters
Indigo Bunting	10 meters
Killdeer	14 meters
Lapland Longspur	16 meters
Least Flycatcher	meters
Lesser Scaup	22 meters
Mallard	18 meters
Marbled Godwit	10 meters
Marsh Wren	meters
Mourning Dove	8 meters
Northern Cardinal	5 meters
Northern Flicker	7 meters
Northern Harrier	9 meters
Northern Rough-winged Swallow	14 meters
Northern Shoveler	8 meters
Pine Warbler	meters
Red-bellied Woodpecker	10 meters
Redhead	30 meters
Red-tailed Hawk	24 meters
Red-winged Blackbird	8 meters
Ring-billed Gull	24 meters
Ring-necked Duck	18 meters
Ring-necked Pheasant	2 meters
Rock Pigeon	16 meters
Rose-breasted Grosbeak	meters
Ruby-throated Hummingbird	1 meters

Mean Flight Height by Species

Rusty Blackbird	8 meters
Sandhill Crane	17 meters
Savannah Sparrow	8 meters
Sedge Wren	meters
Semipalmated Sandpiper	5 meters
Sharp-shinned Hawk	9 meters
Smith's Longspur	35 meters
Snow Goose	20 meters
Solitary Sandpiper	30 meters
Song Sparrow	3 meters
Sora	meters
Swamp Sparrow	meters
Tree Swallow	9 meters
Tundra Swan	17 meters
Turkey Vulture	43 meters
Unidentified Blackbird	12 meters
Unidentified Diver	40 meters
Unidentified Duck	22 meters
Unidentified Longspur	17 meters
Unidentified Teal	25 meters
Unidentified Warbler	25 meters
Upland Sandpiper	31 meters
Vesper Sparrow	5 meters
Warbling Vireo	meters
Western Meadowlark	0 meters
Wild Turkey	meters
Wilson's Phalarope	20 meters
Wood Duck	15 meters
Yellow Warbler	meters
Yellow-bellied Sapsucker	9 meters
Yellow-headed Blackbird	10 meters
Yellow-rumped Warbler	meters
Yellow-throated Vireo	meters

Appendix D: Key Agency Communications



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May 24, 2012

Mr. Patrick Smith
Geronimo Wind Energy
7650 Edinborough Way, Suite 725
Edina MN 55435

RE: Department of Commerce, EFP Staff comments on Black Oak/Getty Draft Avian and Bat Protection Plan

Dear Mr. Jurgens:

The Minnesota Department of Commerce Energy Facility Permitting (EFP) staff has reviewed the Draft Avian and Bat Protection Plan (ABPP) developed jointly for the Black Oak and Getty Wind Projects in Stearns County.

Based on our review, I would like to provide you with the following comments on the Draft ABPP. The EFP staff comments are intended to provide you with guidance to developing an ABPP that provides the framework for ongoing monitoring, mitigation, and evaluation of operational impacts to avian and bat species.

General Comments:

Several general housekeeping measures could enhance the readability and utility of the document:

- include a list of abbreviations;
- proof and check for spelling and formatting errors;
- remove references to Prairie Rose Wind Farm;
- ensure that references to the most current information are provided, most especially true for the new USFWS guidance of March 2012;
- ensure that the description of both projects (acreage, number of turbines, etc) is consistent with information contained in the siting documents for those projects;

- use active("will" rather than "may") voice to the extent possible. The document should be clear about what is known of impacts and mitigation at this time.

Although the ABPP references the USFWS tiered system, the document lacks an introduction to the USFWS tiered assessment. In its draft form the ABPP does not clearly communicate what the results of the tiered assessment have shown, how the results have informed the siting of the project, and how they will inform ongoing monitoring and mitigation efforts.

The ABPP provides the framework for ongoing monitoring, mitigation, and evaluation of operational impacts to avian and bat species. The document is a permit condition; references to the document as guidance could be misconstrued.

Although several at risk avian species were identified adjacent to the project area, and could reasonably be expected to use a portion of the project area, no species specific plans are included.

The document does not include information on formal monitoring although the draft site permit specifies formal monitoring.

The informal monitoring section is unclear and needs to provide more specifics on how monitoring and evaluation will be implemented and communicated, who will conduct the informal monitoring, and how the information collected will be communicated internally and externally.

Section Specific Comments:

Section 3.0, Project Description: Sections 3.1 and 3.2 are repetitive and could be combined and shortened. Include only the information necessary and relevant to the purpose of the ABPP.

Section 4.0, Regulatory Framework: Monitoring (Section 4.3) could be informal or formal, not "information or formal." Ensure that links and references are current.

Section 5.0, Agency Consultation: More information is needed regarding ongoing agency consultation and review processes. Describe the process through which the permittee will keep informed of changing regulatory conditions and make appropriate changes to the ABPP.

Section 6.0, Project Design and Development: Consider moving this section to later in the document, since the Project design and development has been informed by preconstruction surveys. Setback requirements, Section 6.2, should be included only if they inform or apply to the ABPP. Setbacks to comply with noise standards were not designed to address avian or bat impacts and do not appear to have relevance to the ABPP.

May 24, 2012

Section 7.0, Wildlife Risk Assessment: What is the risk to wildlife? This section does not answer that question. An assessment of risk to wildlife should be based on what you know about the project and the site, which is informed by the preconstruction surveys. Much of the information in this section is related to the Tiered Risk assessment and should be introduced earlier. This section contains redundant information (See section 6 comments); greater focus on the purpose and relevant information to the ABPP will improve many sections and reduce confusion.

- Define what is meant by "formal" and "informal" monitoring.
- The last sentence in the initial paragraph of Section 7.1 is confusing, "The Black Oak/Getty risk assessment procedure... remedial actions and other factors that can increase avian and contacts with project facilities."
- In Section 7.1 define "higher than anticipated" turbine fatalities for birds and bats. Is there a range? How will this be determined?
- Formal monitoring of some type is likely to be required. Reports will be made to the Commission, with USFWS, DNR, and DOC reviewing the reports. Upon review of the required reports, agencies may recommend additional study or action to address issues. This currently reads as though the decision will be made solely the permittee(s).
- Several species of concern, threatened species, and species of greatest conservation need were observed during field surveys, Section 8.1.4, and likely utilize the project area and surrounding areas. How will these species continue to be protected during the construction and operation of the project?

Section 8.0, Preconstruction Surveys: Consider moving this section to earlier in the document, before Project Design and Development and Wildlife Risk Assessment, and introducing the concept of the tiered risk analyses, which informed the preconstruction surveys. References to studies or surveys conducted outside or adjacent to the "projects' sites" should be restated to say project boundary for clarification.

- 8.1.2. Please provide an update of eagle monitoring. EFP understands that the resulting report should be sent to the USFWS, as they are the responsible agency if a take permit is necessary. The report should also be filed with the Commission with a copy sent to DNR.
- 8.2. Please update this section to include the acoustic surveys done for THIS project. It's not clear why detailed information on the Paynesville survey is included in this section, perhaps it is better moved to a discussion of the Wildlife Risk Assessment. Please clarify whether the Paynesville Project is 12 miles away, as stated here, or 20 miles away, as stated in Section 5.0.

Section 9.0, Construction Phase: Efforts to minimize disturbance or impacts should read “to the maximum extent achievable” rather than “practicable.”

- 9.1. 6th bullet, clean up of "track out" from vehicles, is unclear
- 9.3. Nest management appears to be more of an operational issue, than a construction issue. If nest management is to be implemented, how will determinations be made? How will consultation with wildlife agencies and the Commission occur? How will operational staff know if nest management is the appropriate action or response?
- 9.4. Who will be responsible for informal and formal training of operations staff? Who will train the lead contractor on site specific wildlife concerns? Will training be conducted by a biologist?
- 9.5. This section is very general. Any monitoring plan will be informed by wildlife agency comments and recommendations. As written, this section does not appear to incorporate those comments. Has project been determined to be of low-moderate risk? Moderate risk carries with it certain monitoring protocols (see DNR comments) that are not in the ABPP. How will “awareness training” be conducted? Additional information is needed on the training and procedures mentioned for the site representative.
- 9.8. FDs are flight diverters?
- 9.10. List general BMP practices to be implemented during construction from SWPP

Section 10.0, Operational Phase: Review the use of fatality and mortality; in this case fatality is more appropriate, as monitoring is for individuals, not populations. Overall this section is lacking in specifics. The Project will require some level of formal monitoring; it would be helpful to differentiate formal monitoring protocols from informal or incident monitoring.

- 10.1. What is the predicted range of fatalities expected for the Project? How will an “acceptable level?” of fatalities be determined?
- 10.2. Operational standards are vague and do not provide information on the "maintenance practices that would avoid and minimize drawing birds and bats near wind turbines." What actions will be taken and how will they be implemented?
- 10.2.1. Lighting minimization is really more of a project design issue. Consider moving this information to the Project Design section.
- 10.3 When will the WIRS system be in place? Please remove references to Prairie Rose Wind Farm. Differentiate between formal and informal monitoring.
- 10.3.1 Considering the moderate to high risk assessment of wildlife agencies, formal monitoring protocol are needed (see DNR comments).
- 10.3.2 Include process for providing annual report summarizing fatalities to the Commission, DNR, and USFWS. Agencies will review reports and recommend whether or not operational changes are necessary.

May 24, 2012

- 10.3.4. What is the “decision-making” process referred to here and how will it be utilized and by whom?
- 10.3.5. Is it anticipated that an eagle take permit will be required for the Project? Update resources and provide the guidelines in an appendix or as a link.
- 10.4 Provide a process for amending and updating ABPP. What is a "WIRS Plan," and what function does it serve? Although earlier sections referenced a Wildlife Incident Reporting System (WIRS) and WIRS form, this is the first reference to a "WIRS plan" as something that must be adhered to in addition to the ABPP. Corrective action plan must include the Commission as well as DNR and USFWS.

WIRS Reporting Form: Information regarding meteorological conditions and turbine operations would be useful to correlate system conditions with observed fatalities. It's not clear from the last page whether individual reports are intended to be filed annually, or whether they will be summarized and appended to the report. Please note that the Draft Site Permit for the Getty Wind Project anticipates quarterly avian and bat reports describing the potential cause of the occurrence and steps taken to avoid future occurrences.

I appreciate the opportunity to provide comments on the Draft ABPP. Please do not hesitate to contact me if you have further questions.

Sincerely,

A handwritten signature in cursive script that reads "Suzanne Steinhauer".

Suzanne Steinhauer

State Permitting Manager
Minnesota Department of Commerce
Energy Facility Permitting
85 7th Place East, Suite 500
St. Paul, MN 55101



December 8, 2011

Suzanne Steinhauer, State Permit Manager
Energy Facility Permitting
Department of Commerce
85 7th Place East, Suite 500
St. Paul, MN 55101-2198

Re: Getty Wind Project and Black Oak Wind Project – Draft Avian Use Assessment Report

Dear Ms. Steinhauer:

The Minnesota Department of Natural Resources (DNR) has reviewed the Draft Avian Use Assessment Report for the Black Oak and Getty Wind Projects, dated August 2011. During a meeting regarding the report on August 30, 2011, the DNR agreed to provide initial comments immediately to address some time-sensitive questions, then to follow with more detailed comments. The attached September 2, 2011 memo was sent after the meeting. This comment letter contains additional comments regarding the Draft Avian Use Assessment Report as planned. Please consider both comment letters in development of the Avian and Bat Protection Plan(s) (ABPP) for the Getty Wind Project and Black Oak Wind Project.

The Draft Avian Use Assessment Report is generally a detailed and well-documented description of avian use surveys conducted for the Black Oak and Getty Wind Projects. The DNR appreciates that this report was submitted early in the Public Utilities Commission (PUC) permitting process for the Getty Wind Project. The following comments identify some corrections to the report and include DNR input regarding how the information gained from pre-construction surveys could be used for development of the Avian and Bat Protection Plan(s) for the Getty and Black Oak Wind Projects. An estimated risk level is also provided in this letter.

Though the pre-construction survey methods used for this joint report were based on previous DNR recommendations, the project developer did not submit survey plans prior to conducting surveys for these projects. We caution that every site has unique features and encourage project developers in the future to submit survey plans to DNR reviewers prior to spending considerable resources and sometimes limited timeframes to conduct surveys. This could help avoid the risk of conducting inadequate analyses than what the Department of Commerce Energy Facility Permitting (EFP) unit or DNR recommend, and could help avoid any project delays that might occur as a result.

It would be helpful to clarify whether Black Oak and Getty Wind Projects will be submitting a joint ABPP. Submitting a joint ABPP may help address the possible cumulative effects of two projects sited adjacent to each other. Also, this would likely utilize information in the Draft Avian Use Assessment Report in the most efficient way.

If the ABPP is submitted jointly for both projects, we request that a preliminary site layout map(s), including any exclusion areas based on information from the Avian Use Assessment Report, be provided that depict turbine layouts for both projects so that turbine layout can be viewed in relation to avian use for the entire area.

DNR reviewers visited the project area on October 5, 2011. Using the preliminary turbine layout maps, we visited the estimated location of a turbine located in a Central Region Regionally Ecological Significant Area (CRRESA) that was discussed during previous meetings with the company. It appears that the area where the turbine is located is within a field used for agricultural purposes and is not located in an area of concern considering the ranking of CRRESA. Modeling for identification of regionally ecological significant areas was completed at a landscape level and has not been fully field verified in outstate counties. The field observation could be verified if the company was to submit a map with turbine locations and CRRESAs layered together or were to provide the DNR with a shapefile with turbine locations.

The preliminary site layout maps do not include turbine numbers. Turbine numbers would be helpful for future discussions of individual turbines. Please note that turbine numbering can become confusing as project changes occur. It is helpful for turbine numbering to remain consistent and for turbine numbers not to be re-used if locations change. It may be worthwhile to consider consistent numbering between projects if the two projects combine.

Preliminary site layout figures layered with proposed exclusion areas in yellow (Fig. 1,2 and 3 provided August 30, 2011) were reviewed. These generally show exclusion areas correlated roughly with identified flight paths. This seems to be a particularly effective approach between the Trisko WPA and Padua WMA. There is some concern that for turbine layouts other than the Vesta 112 turbine layout, there may not be adequate spacing near the flight path area identified near Sections 32, Township 126, Range 34 and Section 5, Township 125, Range 34. If these exclusion areas are used as an avoidance and minimization measure, please further discuss proposed exclusion areas that do not overlap directly with flight paths in this area.

The Vesta 112 layout appears to better avoid flightpaths and has less of a footprint. The DNR generally encourages use of larger turbines for the same overall megawatt plan to reduce the footprint of turbines and associated infrastructure and reduce possible flyway impacts. Maps showing various turbine types, exclusion areas, and flight paths are helpful and should also be included and discussed in the same manner for the Black Oak Wind Project in the ABPP, preferably combined with the Getty Wind Project maps.

Page 13 of the Draft Avian Use Assessment states that the trumpeter swan “will be” downgraded. All of the proposed changes to the state list are draft and are subject to change.

Getty Wind and Black Oak Wind Combined Risk Analysis

Based on the Tier 1, 2 and 3 assessments of the Getty and Black Oak Wind Projects, the DNR considers the cumulative impact of these sites to have an estimated high risk of avian fatalities without avoidance and minimization measures and a moderate risk of avian fatalities with the proper use of avoidance and minimization measures. This assessment is due to the verified presence in the Draft Avian Use Assessment of 7 state-listed species and 22 Species of Greatest Conservation Need (SGCN), in the project vicinity, as well as project locations in a surrounding area containing eighteen WMAs, thirty-four Waterfowl Production Areas (WPA) and one Scientific and Natural Area (SNA) within approximately ten miles. The projects also surround the Trisko WPA and the Getty Wind Farm is adjacent to the Kenna WPA and near the Padua WMA. The Getty Wind Farm is also near a known flyway associated with the Sauk River and Sauk River WMA. A river corridor and nearby wetlands may also attract bats, which are known to be at risk to colliding with turbines. Considering the location of these sites geographically, post-construction fatality monitoring is appropriate. Draft fatality survey

protocols recommended by the DNR are enclosed and include information specific to high risk and moderate risk sites.

It is very important to note, however, that both projects have made substantial efforts avoid avian and bat habitat during their preliminary project development. The Getty Wind project has demonstrated avoidance of most survey-identified flyways within their project boundary based on preliminary maps of turbine layouts. If final turbine layouts for both projects are designed in similar manners to preliminary turbine layouts presented by Getty Wind during the August 30, 2011 meeting and are based on information gathered from the Draft Avian Use Assessment considering above comments, the resulting avoidance of possible impacts would likely result in an estimated risk level of moderate. It would also be important for the PUC Site Permit to clearly require all proposed avoidance measures.

If adequate avoidance measures were included in finalized project plans and required by the PUC Site Permit, then the DNR would recommend that the project developer conduct fatality surveys according to the moderate level of effort included in DNR fatality survey protocols. The DNR recommends that post construction fatality monitoring protocols are included in the ABPP. The ABPP should also include steps that the proposers will be taking if a state-listed species is injured or killed.

Thank you for your consideration of these comments regarding the Draft Avian Use Assessment for both the Black Oak and Getty Wind Projects. Please note that the DNR is currently conducting a review of the Application for a Site Permit by Getty Wind and will provide separate comments within the public comment period.

Sincerely,



Jamie Schrenzel
Planner Principal
Environmental Review Unit
(651) 259-5115

Enclosures: 2

Minnesota Department of Natural Resources

500 Lafayette Road • St. Paul, MN • 55155-40



April 4, 2012

Suzanne Steinhauer, State Permit Manager
Department of Commerce
85 7th Place East, Suite 500
St. Paul, Minnesota 55101-2198

Re: Draft Site Permit and Draft Avian and Bat Protection Plan (ABPP) for the Getty Wind Project in Stearns County [PUC Docket Number: IP-6866/WS-11-831]

Dear Ms. Steinhauer:

The Minnesota Department of Natural Resources (DNR) has reviewed the Draft Site Permit and Avian and Bat Protection Plan (ABPP) for the Getty Wind Project in Stearns County. The following comments are included regarding each document.

Draft Site Permit

Condition 7.11 includes an Invasive Species Prevention Plan. The DNR is available to assist with review of this plan if needed. Also, Operational Order 113 has recently been issued by the DNR for invasive species prevention on state lands. This order could be used as a resource for the development of the Invasive Species Prevention Plan and may be appropriate for native plant communities on private lands.

7.12 Restoration – This condition allows for up to 12 months for restoration activities. This may be a maximum for other purposes, but it should be considered that waiting 12 months to restore and re-vegetate may allow for the introduction of invasive species and may not be compatible with the intent of the Invasive Species Prevention Plan. This should be addressed in the Invasive Species Prevention Plan.

Permit Condition 13.2 regarding bird flight diverters states that Permittees would be required to use bird flight diverters to markers on overhead lines located within or adjacent to delineated wetlands or surface waters. Though the requirement for bird diverters in these locations would likely help reduce impacts to birds, the DNR often recommends bird diverters in areas near wetlands or where there is a known flyway based on site specific review. This language could limit the opportunity to recommend diverters in a likely flyway if the area was not within or directly adjacent to a wetland. DNR reviewers would prefer the opportunity to review a map of overhead line locations and provide recommendations.

It appears that the language for “feeder” and “collector” lines is possibly inadvertently switched in one of either Condition 13.2 or 4.15.

The maps provided in the permit have a different turbine layout than those previously reviewed by the DNR dated August 30, 2011. This is significant to DNR recommendations because previous DNR review based wildlife impact risk estimates on avoidance efforts depicted in turbine layouts. DNR reviewers will re-review these maps and update the Department of Commerce Energy Facility Permitting (EFP) unit as soon as possible if there are any changes in a risk estimate or survey protocol recommendations.

Attachment 1C (G11) to the Draft Site Permit appears to depict a turbine located within a lake or wetland. Is this turbine location correct? If so, there would be concerns regarding impacts to habitat and wildlife.

Attachment 4 contains customary language regarding filing documents 14 days prior to a pre-construction meeting. This timeline is somewhat challenging for detailed review of biological documents and also may not fit with a schedule for submitting other biological documents such as the ABPP. Possibly, this language should be revisited considering other changes to customary permit language. Even if it is not revised, the DNR requests earlier coordination than 14 days, such as 30 days as practical.

Avian and Bat Protection Plan

1.0 Introduction – The United States Fish and Wildlife Service (USFWS) released the Final Land-Based Wind Energy Guidelines on March 23, 2012. The ABPP should be updated to reflect or reference the final guidelines.

It is notable that Sections 3.1 and 3.2 are partially repetitive.

Section 4.6 – It is notable that revisions are currently under review for the state list of special concern, threatened, and endangered species. Updates to the ABPP may be necessary in the future to reflect list revisions. Consideration by the project developer of species under review for listing is also generally recommended for long term projects such as wind projects.

Section 6.2 Setback Requirements – in EFP comments and recommendations for Feb 16, 2012 hearing, it is stated that Getty has agreed to a 1,800 foot setback (which is approximately 5 ½ rotor diameters) from all WPAs and WMAs. However, the ABPP table references the commonly used 3 by 5 rotor diameter distance. The ABPP should reflect the previous agreement of 5 ½ rotor diameters from these conservation lands.

Section 7 – Update to USFWS Land Based Wind Energy Guidelines is also notable in this section.

Section 8.1.1 – Mapping flight paths is recommended by the DNR and inclusion is appreciated. It should, however, be noted that flight paths and heights are likely approximated from ground observation and not exact.

Maps included in the ABPP contain different turbine layouts than those previously reviewed by the DNR. As stated above, previous recommendations based in part on turbine locations will be re-considered and any updates provided as soon as possible.

9.4 Training – The training should include both state and federal Threatened and Endangered species. The ABPP should elaborate on training details for “avian and bat issues.” Specific training activities should be explained and any available training material should be provided. Also, invasive species training should be included in accordance with required plans.

Section 9.6.1 mentions eagle and marbled godwit nests. This is a good addition to the ABPP. Adding a discussion of other nests protected by the Migratory Bird Treaty Act administered by the USFWS, to this section, is also recommended.

Section 9.8 should mention bird diverters on any overhead lines due to the discussion of this requirement in the Draft Permit. Maps should be included depicting the location of overhead lines and proposed diverter locations.

Section 10.3 references Prairie Rose, which may be a typo that could cause confusion in the record. This section also discusses reporting process and quarterly reports. The DNR would appreciate being copied on quarterly reports and/or periodically reviewing data with the Department of Commerce.

10.4 QC and Adaptive Management – Modification of wind turbine operations is discussed in this section. More detail on a specific adaptive management plan is recommended. For example, will there be periodic review of fatality data to identify if there are any problem turbines? What actions occur if there are problem turbines? Also, more detail on nest boxes would be helpful. Would nest boxes be placed in habitat away from turbines to try to coax species to other locations, or would nest boxes be used to enhance nearby habitat?

The key resources table on Page 37 is a helpful addition to this ABPP.

Thank you for your consideration of these comments. Please contact me with any questions.

Sincerely,

A handwritten signature in cursive script that reads "Jamie Schrenzel".

Jamie Schrenzel
Principal Planner
Environmental Review Unit
(651) 259-5115

Minnesota Department of Natural Resources

500 Lafayette Road • St. Paul, MN • 55155-40__



June 1, 2012

Suzanne Steinhauer, State Permit Manager
Energy Facility Permitting
Department of Commerce
85 7th Place East, Suite 500
St. Paul, MN 55101-2198

Re: Black Oak Wind - Updated Assessment of January 17, 2012 Revised Turbine Layouts

Dear Ms. Steinhauer:

The Minnesota Department of Natural Resources (DNR) has reviewed the revised turbine layouts submitted January 17, 2012 as attachments to the document titled "Updated Turbine Layout Based on Avian Report" for the Black Oak Wind Farm and provides the following comments.

In the attached DNR comment letter dated December 8, 2011 regarding the Avian Use Report, the DNR provided the an assessment based on the Tier 1, 2 and 3 assessments of the Getty and Black Oak Wind Projects concluding that the cumulatively these sites have an estimated overall high risk of avian and bat fatalities without avoidance and minimization measures, and a moderate risk of avian and bat fatalities with the proper use of avoidance and minimization measures.

In the attached DNR letter dated February 10, 2011, the DNR provided feedback regarding the turbine layout for the specifically the Black Oak Wind Project based on the Tier 1 and Tier 2 assessments completed at the time and DNR assessment of the site. The DNR estimated that the Black Oak site would have a moderate risk of avian and bat fatalities. This determination was based on the turbine layout at the time, which avoided high quality habitats such as the Regionally Significant Ecological Area located in the southeast portion of the project, Wildlife Management Areas (WMA) and prairie.

The Minnesota Department of Commerce, Energy Facility Permitting unit (EFP) requested an updated risk assessment for the Black Oak Wind Project specifically, considering updated turbine layouts submitted January 17, 2012. Overall, the layouts contain similar avoidance measures as layouts previously reviewed by the DNR and therefore would continue to be estimated to have a moderate risk to avian and bat species. Moderate risk fatality monitoring protocols are recommended, as described in the DNR document titled: "Draft Avian and Bat Survey Protocols for Large Wind Energy Conversion Systems in Minnesota." The EFP also requested a turbine specific analysis similar to an analysis provided for Getty Wind. The layout and turbine analysis below indicates turbines for which the DNR has some concern regarding possible higher impacts to avian and bat species. Improvements in project design should focus on adjustments to these turbines.

Figure 2 Turbine Layout GW87: Overall assessment = Fatality monitoring is recommended using DNR draft avian and bat fatality protocols for moderate risk sites. The GW87 layout contains the highest number of turbines located in lines that may block some of the flyways identified in the Avian Use Report for the Black Oak and Getty Wind Projects. Utilizing another layout may reduce the possibility of creating barriers to movement with continuous lines of turbines.



Turbine	Notes
Turbine B6	Turbine is located adjacent to a wetland and closer than other turbines to the Behnen Waterfowl Production Area (WPA).
Turbine B13	Turbine is located next to the "Unnamed" Public Water.
Turbine B20	Turbine is located next to the "Unnamed" Public Water.

Figure 3 Turbine Layout MM100: Overall assessment = Fatality monitoring is recommended using DNR draft avian and bat fatality protocols for moderate risk sites. The MM100 layout contains fewer turbines, possibly allowing for more avian flight paths than the GW87 layout.

Turbine	Notes
B5	Turbine is located adjacent to a wetland and closer than other turbines to the Behnen WPA.

Figure 4 Turbine Layout V112: Overall assessment = Fatality monitoring is recommended using DNR draft avian and bat fatality protocols for moderate risk sites. The DNR generally recommends using a project layout with fewer turbines, even if the rotor swept zone is larger, considering a balance between concerns regarding the rotor swept zone and overall flyway and habitat impact due to project infrastructure. The V112 layout appears to have a lower overall possible impact to habitat and flyways than the GW87 and MM100 layouts.

Turbine	Notes
B3	Turbine is located next to the "Unnamed" Public Water.

For all turbine layouts, the DNR recommends continued avoidance of wetlands and grasslands in Section 11 and avoidance of wetlands and public waters (Unnamed Public Water indicated above) in Section 14, without siting closer to public conservation lands.

Bird Diverters

Figure 5, included in the document "Updated Turbine Layout Based on Avian Report" dated January 17, 2012, indicates what appears to be an above ground transmission line. Any collector, feeder, distribution, or transmission lines that are not located underground for this project should utilize bird diverters, particularly because the line depicted in Figure 5 traverses areas where high amounts of avian flight activity were found in the Avian Use Report for the Black Oak and Getty Wind Projects.

Thank you for your consideration of these updated recommendations. Please contact me with any questions.

Sincerely,



Jamie Schrenzel
Principal Planner
Environmental Review Unit
(651) 259-5115

Enclosures: 2

Steinhauer 6/1/2012

Minnesota Department of Natural Resources

500 Lafayette Road • St. Paul, MN • 55155-40__



May 3, 2012

Suzanne Steinhauer
State Permit Manager
Minnesota Department of Commerce
85 7th Place East, Suite 500
St. Paul, Minnesota 55101

Re: Supplemental Comments Regarding the Draft Permit and Draft Avian and Bat Protection Plan Getty Wind Project in Stearns County [PUC Docket Number: IP-6866/WS-11-831]

Dear Ms. Steinhauer:

The Minnesota Department of Natural Resources (DNR) has reviewed the Draft Permit and Avian and Bat Protection Plan (ABPP) for the Getty Wind Project. The DNR sent the attached comment letter, dated April 4, 2012 regarding the Draft Site Permit and ABPP. During the review of the Draft Site Permit and ABPP, DNR reviewers noted changes in turbine locations from those previously provided to the DNR on maps dated August 23, 2011 and stated in the April 4, 2012 that additional assessment would be provided. Qualitatively assessing the risk of impacts to avian and bat species for commercial wind sites is an approach encouraged by the USFWS in their Land-Based Wind Energy Guidelines released March 23, 2012. The DNR previously assessed risk for the Getty Wind Project based on the August 23, 2011 maps. An updated risk assessment is provided based on currently proposed turbine locations.

The DNR previously reviewed these turbine locations and a Draft Avian Use Assessment Report on the Black Oak/Getty Wind Development Sites prepared in August 2011. The attached DNR comment letter, dated December 8, 2011, included a risk assessment for the Getty and Black Oak Wind Projects. As stated on pages two and three, the sites were cumulatively assessed as high risk due to the verified presence of seven state-listed species and 22 Species of Greatest Conservation Need (SGCN), in the projects vicinity; and numerous Wildlife Management Areas (WMA), Waterfowl Production Areas (WPA) and one Scientific and Natural Area (SNA) located within vicinity of the project areas. The projects also surround the Trisko WPA, and the Getty Wind Farm is adjacent to the Kenna WPA and near the Padua WMA. The WMAs, WPAs, the nearby Sauk River, and wetlands and public waters are known to be used by birds and bats. The risk assessment discussed in the December 8, 2011 letter also considered avoidance measures taken by Getty Wind in the form of turbine siting and avoiding an identified exclusion area with verified high avian flight use. Specifically due to the turbine siting depicted on maps dated August 23, 2011, the DNR recommended that the Getty Wind Farm use DNR draft fatality survey protocols for projects ranked as moderate if avoidance measures depicted were included in the design of the finally permitted project.

The DNR is providing updated input regarding risk and suggested post-construction fatality surveys for turbine layouts by turbine type as included in the ABPP and Draft Site Permit. The DNR compared the August 23, 2011 proposed layouts (resulting in a moderate risk assessment) to the updated layouts included in ABPP Figures 2a, 2b, and 2c and included in the Draft Site Permit as Figures 1a, 1b, and 1c. Note that the GE-1.6-100 layout turbine type has changed to Goldwind GE-87 turbines. The table below references turbine numbers included in the Draft Site Permit.



Figure 2a Goldwind GE-87 Layout: Overall assessment = High Risk due to the following new higher risk turbine locations and overall higher concentration of turbines in the portion of the project near public lands and water features than the previously reviewed layout. This turbine layout also has the highest number of turbines proposed. Fatality monitoring is recommended using DNR draft avian and bat fatality protocols for high risk sites.

Turbine	Notes
Turbine G23	New turbine closer to public water and blocking previously identified opening for flight between Trisko WPA and public water.
Turbine G16	New turbine adjacent to previously identified exclusion area and verified area of high avian activity.
Turbine G8	New turbine located in closer proximity to the Kenna WPA.
Turbine G2	New turbine location in closer proximity to public waters and the Padua WMA.
Turbine G24	New turbine location in closer proximity to public waters and the Padua WMA.

Figure 2b Repower MM100 Layout: Overall assessment = Moderate Risk. There are no apparent changes to turbine locations included in Draft Site Permit. The number of turbines was shown as reduced in the ABPP for this layout. Due to an observed flyway near the area where turbines were removed, as depicted in the ABPP, wildlife impacts would likely be lower for the ABPP layout. For either layout, fatality monitoring is recommended due to the project location, using DNR draft avian and bat fatality protocols for moderate risk sites.

Figure 2c Vestas V112 Layout: Overall assessment = High Risk due to the following new higher risk turbine locations. It is notable, however, that this layout has the fewest turbines and may be adjusted to moderate with relatively few turbine location modifications. Fatality monitoring is recommended using DNR draft avian and bat fatality protocols for high risk sites.

Turbine	Notes
Turbine G13	New turbine location appearing to be located adjacent or within previously identified exclusion area and verified area of high avian activity.
Turbine G11	New turbine location appearing to be located adjacent or within a public water.

The DNR recommends that the applicant relocate higher risk turbines to reduce project risk and that Draft Permit be updated to reflect a level of post-construction fatality monitoring effort appropriate for the permitted layout utilizing, at a minimum, the draft version of the DNR avian and bat fatality protocols. The DNR also encourages the developer to consider the recently finalized USFWS Land-Based Wind Energy Guidelines and to coordinate with the USFWS regarding the Migratory Bird Treaty Act and federally protected species. For clarity, the proposed fatality monitoring protocol should be specifically included with site specific plans, rather than referenced, in the ABPP.

Thank you for your consideration of this updated assessment of risk level analysis for the Getty Wind Project in Stearns County.

Sincerely,

A handwritten signature in cursive script that reads "Jamie Schrenzel".

Jamie Schrenzel
Principal Planner
Environmental Review Unit
(651) 259-5115

Enclosures: 2



Energy Facility Permitting
85 7th Place East, Suite 500
St. Paul, Minnesota 55101-2198
ph 651.296.4026 | fx 651.297.7891
<http://mn.gov/commerce/energyfacilities>

May 24, 2012

Mr. Roland Jurgens
Getty Wind Company, LLC
P.O. Box 321
Chokio, MN 56211

RE: Department of Commerce, EFP Staff comments on Black Oak/Getty Draft Avian and Bat Protection Plan

Dear Mr. Jurgens:

The Minnesota Department of Commerce Energy Facility Permitting (EFP) staff has reviewed the Draft Avian and Bat Protection Plan (ABPP) developed jointly for the Black Oak and Getty Wind Projects in Stearns County.

Based on our review, I would like to provide you with the following comments on the Draft ABPP. The EFP staff comments are intended to provide you with guidance to developing an ABPP that provides the framework for ongoing monitoring, mitigation, and evaluation of operational impacts to avian and bat species.

General Comments:

Several general housekeeping measures could enhance the readability and utility of the document:

- include a list of abbreviations;
- proof and check for spelling and formatting errors;
- remove references to Prairie Rose Wind Farm;
- ensure that references to the most current information are provided, most especially true for the new USFWS guidance of March 2012;
- ensure that the description of both projects (acreage, number of turbines, etc) is consistent with information contained in the siting documents for those projects;

May 24, 2012

- use active("will" rather than "may") voice to the extent possible. The document should be clear about what is known of impacts and mitigation at this time.

Although the ABPP references the USFWS tiered system, the document lacks an introduction to the USFWS tiered assessment. In its draft form the ABPP does not clearly communicate what the results of the tiered assessment have shown, how the results have informed the siting of the project, and how they will inform ongoing monitoring and mitigation efforts.

The ABPP provides the framework for ongoing monitoring, mitigation, and evaluation of operational impacts to avian and bat species. The document is a permit condition; references to the document as guidance could be misconstrued.

Although several at risk avian species were identified adjacent to the project area, and could reasonably be expected to use a portion of the project area, no species specific plans are included.

The document does not include information on formal monitoring although the draft site permit specifies formal monitoring.

The informal monitoring section is unclear and needs to provide more specifics on how monitoring and evaluation will be implemented and communicated, who will conduct the informal monitoring, and how the information collected will be communicated internally and externally.

Section Specific Comments:

Section 3.0, Project Description: Sections 3.1 and 3.2 are repetitive and could be combined and shortened. Include only the information necessary and relevant to the purpose of the ABPP.

Section 4.0, Regulatory Framework: Monitoring (Section 4.3) could be informal or formal, not "information or formal." Ensure that links and references are current.

Section 5.0, Agency Consultation: More information is needed regarding ongoing agency consultation and review processes. Describe the process through which the permittee will keep informed of changing regulatory conditions and make appropriate changes to the ABPP.

Section 6.0, Project Design and Development: Consider moving this section to later in the document, since the Project design and development has been informed by preconstruction surveys. Setback requirements, Section 6.2, should be included only if they inform or apply to the ABPP. Setbacks to comply with noise standards were not designed to address avian or bat impacts and do not appear to have relevance to the ABPP.

May 24, 2012

Section 7.0, Wildlife Risk Assessment: What is the risk to wildlife? This section does not answer that question. An assessment of risk to wildlife should be based on what you know about the project and the site, which is informed by the preconstruction surveys. Much of the information in this section is related to the Tiered Risk assessment and should be introduced earlier. This section contains redundant information (See section 6 comments); greater focus on the purpose and relevant information to the ABPP will improve many sections and reduce confusion.

- Define what is meant by "formal" and "informal" monitoring.
- The last sentence in the initial paragraph of Section 7.1 is confusing, "The Black Oak/Getty risk assessment procedure... remedial actions and other factors that can increase avian and contacts with project facilities."
- In Section 7.1 define "higher than anticipated" turbine fatalities for birds and bats. Is there a range? How will this be determined?
- Formal monitoring of some type is likely to be required. Reports will be made to the Commission, with USFWS, DNR, and DOC reviewing the reports. Upon review of the required reports, agencies may recommend additional study or action to address issues. This currently reads as though the decision will be made solely the permittee(s).
- Several species of concern, threatened species, and species of greatest conservation need were observed during field surveys, Section 8.1.4, and likely utilize the project area and surrounding areas. How will these species continue to be protected during the construction and operation of the project?

Section 8.0, Preconstruction Surveys: Consider moving this section to earlier in the document, before Project Design and Development and Wildlife Risk Assessment, and introducing the concept of the tiered risk analyses, which informed the preconstruction surveys. References to studies or surveys conducted outside or adjacent to the "projects' sites" should be restated to say project boundary for clarification.

- 8.1.2. Please provide an update of eagle monitoring. EFP understands that the resulting report should be sent to the USFWS, as they are the responsible agency if a take permit is necessary. The report should also be filed with the Commission with a copy sent to DNR.
- 8.2. Please update this section to include the acoustic surveys done for THIS project. It's not clear why detailed information on the Paynesville survey is included in this section, perhaps it is better moved to a discussion of the Wildlife Risk Assessment. Please clarify whether the Paynesville Project is 12 miles away, as stated here, or 20 miles away, as stated in Section 5.0.

Section 9.0, Construction Phase: Efforts to minimize disturbance or impacts should read “to the maximum extent achievable” rather than “practicable.”

- 9.1. 6th bullet, clean up of "track out" from vehicles, is unclear
- 9.3. Nest management appears to be more of an operational issue, than a construction issue. If nest management is to be implemented, how will determinations be made? How will consultation with wildlife agencies and the Commission occur? How will operational staff know if nest management is the appropriate action or response?
- 9.4. Who will be responsible for informal and formal training of operations staff? Who will train the lead contractor on site specific wildlife concerns? Will training be conducted by a biologist?
- 9.5. This section is very general. Any monitoring plan will be informed by wildlife agency comments and recommendations. As written, this section does not appear to incorporate those comments. Has project been determined to be of low-moderate risk? Moderate risk carries with it certain monitoring protocols (see DNR comments) that are not in the ABPP. How will “awareness training” be conducted? Additional information is needed on the training and procedures mentioned for the site representative.
- 9.8. FDs are flight diverters?
- 9.10. List general BMP practices to be implemented during construction from SWPP

Section 10.0, Operational Phase: Review the use of fatality and mortality; in this case fatality is more appropriate, as monitoring is for individuals, not populations. Overall this section is lacking in specifics. The Project will require some level of formal monitoring; it would be helpful to differentiate formal monitoring protocols from informal or incident monitoring.

- 10.1. What is the predicted range of fatalities expected for the Project? How will an “acceptable level?” of fatalities be determined?
- 10.2. Operational standards are vague and do not provide information on the "maintenance practices that would avoid and minimize drawing birds and bats near wind turbines." What actions will be taken and how will they be implemented?
- 10.2.1. Lighting minimization is really more of a project design issue. Consider moving this information to the Project Design section.
- 10.3 When will the WIRS system be in place? Please remove references to Prairie Rose Wind Farm. Differentiate between formal and informal monitoring.
- 10.3.1 Considering the moderate to high risk assessment of wildlife agencies, formal monitoring protocol are needed (see DNR comments).
- 10.3.2 Include process for providing annual report summarizing fatalities to the Commission, DNR, and USFWS. Agencies will review reports and recommend whether or not operational changes are necessary.

May 24, 2012

- 10.3.4. What is the “decision-making” process referred to here and how will it be utilized and by whom?
- 10.3.5. Is it anticipated that an eagle take permit will be required for the Project? Update resources and provide the guidelines in an appendix or as a link.
- 10.4 Provide a process for amending and updating ABPP. What is a "WIRS Plan," and what function does it serve? Although earlier sections referenced a Wildlife Incident Reporting System (WIRS) and WIRS form, this is the first reference to a "WIRS plan" as something that must be adhered to in addition to the ABPP. Corrective action plan must include the Commission as well as DNR and USFWS.

WIRS Reporting Form: Information regarding meteorological conditions and turbine operations would be useful to correlate system conditions with observed fatalities. It's not clear from the last page whether individual reports are intended to be filed annually, or whether they will be summarized and appended to the report. Please note that the Draft Site Permit for the Getty Wind Project anticipates quarterly avian and bat reports describing the potential cause of the occurrence and steps taken to avoid future occurrences.

I appreciate the opportunity to provide comments on the Draft ABPP. Please do not hesitate to contact me if you have further questions.

Sincerely,

A handwritten signature in cursive script that reads "Suzanne Steinhauer".

Suzanne Steinhauer

State Permitting Manager
Minnesota Department of Commerce
Energy Facility Permitting
85 7th Place East, Suite 500
St. Paul, MN 55101

Minnesota Department of Natural Resources

Division of Ecological Resources
940 Industrial Drive South, Suite 103
Sauk Rapids, Minnesota 56379



April 12, 2010

Mr. Bruce Jennings
DeWild Grant Reckert and Associates
Post Office Box 511
Rock Rapids, Iowa 51246

Dear Mr. Jennings:

The Minnesota Department of Natural Resources has received your letter of March 16, 2010 regarding the prospective Getty Wind Farm Large Wind Energy Conversion System in western Stearns County, Minnesota. We offer the following comments for your consideration.

The proposed windfarm is located in an area of rolling topography in prairie pothole country. Although the prairie has been converted to cropfields in the windfarm boundary, there are numerous seasonal and semipermanent wetlands scattered throughout the site, along with restored grasslands on wildlife management units.

The Padua Wildlife Management Area (WMA) is located at the southwest corner of the project boundary. We recommend a minimum ½ mile setback from all WMAs for all wind turbines. There are also two U.S. Fish and Wildlife Service (USFWS) Waterfowl Production Areas (WPAs) in the vicinity of the project area. If you have not done so already, I encourage you to contact the USFWS Twin Cities Field Office at 612-725-3548. One is the Kenna WPA located in Sections 9 and 16 of Getty Twp. adjacent to the eastern boundary of the proposed windfarm boundary. The other is the Trisco WPA located in Section 6 of Getty Twp. and section 31 of Sauk Center Twp. The USFWS also recommends a minimum ½ mile setback from all WMAs for all wind turbines.

I conducted a drive-by avian survey of the proposed windfarm site on March 26, 2010. I noted a few scattered pairs of Canada geese (*Branta canadensis*) and mallards (*Anas platyrhynchos*) and numerous pairs of horned larks (*Eremophila alpestris*) throughout the area, an apparent pair of red-tailed hawks (*Buteo jamaicensis*) in Sections 5 and 6 of Getty Twp., and a few killdeer (*Charadrius vociferus*) and a northern harrier (*Circus cyaneus*). The WMAs and WPAs in the vicinity provide habitat during the breeding season and during migration for many other species of birds, and waterbirds often migrate between wetland complexes. We understand that many of the proposed turbine locations are speculative at this point. However, several are located in or adjacent to wetlands or wetland complexes. The most problematic site is turbine #14, which is

located in or at the edge of a farmed wetland. On March 26th, I saw 110 tundra swans (*Cygnus columbianus*) sitting on or flying in and out of this wetland, along with 60 Canada geese and over 200 mallards and ring-necked ducks (*Aythya collaris*) sitting on the wetland. Other problematic turbines that are too close to either WMAs/WPAs, wetlands, or wetland complexes are #7, 16, 22, 23 and 27. In addition, turbines #1, 2, 3, 13, 15, and 25 appear to be within flyways related to the wetland complexes present.

Another high value wetland that is located on private property is in the SE1/4 of Section 4 of Getty Twp. Last year, during the first year of a 5-year effort to develop a breeding bird atlas for Minnesota, this wetland was discovered to support a breeding colony of black terns (*Chlidonias niger*) and red-necked grebes (*Podiceps grisegena*). So far, there have only been 10 confirmed breeding locales for black terns, and 15 for red-necked grebes (see www.mnbba.org).

The southwest portion of the project boundary contains part of a Central Region Regionally Significant Ecological Area (RSEA). The DNR Central Region identified these ecologically significant terrestrial and wetland areas by conducting a landscape-scale assessment based on the size and shape of the ecological area, land cover within the ecological area, adjacent land cover/use, and connectivity to other ecological areas. The purpose of the data is to inform regional scale land use decisions, especially as it relates to balancing development and natural resource protection. A GIS shapefile of this data layer can be downloaded from the DNR Data Deli at <http://deli.dnr.state.mn.us>. For more information on RSEAs, or to view pdf versions of the final maps, please visit <http://www.dnr.state.mn.us/rsea/index.html>. If you would like help interpreting the RSEA data, contact Hannah Texler, Regional Plant Ecologist for DNR's Central Region, at 651-259-5811.

The map attached to your letter implied that there are no natural heritage elements within the proposed windfarm boundary. This is inaccurate. There are records of the Powesheik skipper (*Oarisma powesheik*), a state-listed species of special concern, in the project area. Additionally, in 1997, there were breeding season observations of the marbled godwit (*Limosa fedoa*), a state-listed bird of special concern, and the upland sandpiper (*Bartramia longicauda*) in the vicinity of the project. If you have not done so already, please contact Lisa Joyal, DNR Endangered Species Environmental Review Coordinator, at 651-259-5109 to arrange for a Natural Heritage Database element search. There is a fee for this search.

Also please be aware that any transmission line crossings of Wildlife Management Areas or public waters requires a License to Cross Public Lands or a License to Cross Public Waters from the DNR. There are numerous Public Waters in the windfarm boundary, including an unnamed tributary to the Sauk River along the eastern edge of the windfarm boundary. For applications to cross public lands or waters, please contact Trina Zieman at 651-259-5792.

In summary, given the number of state and federal wildlife management lands, the number of semipermanent and seasonal wetlands present, and the documented avian resources in the area, this does not seem like a viable location for a windfarm. However, if the project is proposed to proceed, we recommend 1 full year of pre-application and 2

full years of post-construction avian and bat surveys be conducted to adequately assess the year-around use of the site by these resources.

Thank you for the opportunity to review the preliminary information. If you have any questions, I may be reached at 320-255-4279, ext. 235.

Sincerely,



Michael R. North
Regional Environmental Assessment Ecologist

ERDB 20100605

Cc: Fred Bengtson, Tim Bremicker, Randall Doneen, Lisa Joyal, Joe Kurcinka, Nick Snavely, Hannah Texler, Jan Wolff, Trina Zieman (DNR)
Rich Davis, Tony Sullins (USFWS)



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Twin Cities Field Office
4101 American Blvd E.
Bloomington, Minnesota 55425-1665

May 11, 2010

Bruce Jennings, P.E.
Dewild Grant Reckert and Associates Co.
1302 South Union Street
P.O. Box 511
Rock Rapids, Iowa 51246-0511

Re: Getty Wind (LLC) Review, Stearns County, Minnesota
FWS TAILS #32410-2010-FA-0068

Dear Mr. Jennings:

This is in response to your March 18, 2010, letter requesting our review of the proposed Getty Wind Project in Stearns County, Minnesota. The proposed project includes the installation of 28 wind turbines, and associated infrastructure including roads, transmission lines, and staging areas. The macro-siting project boundary provided to our office covers a total area of approximately 5,440 acres located in all or parts of sections 31 – 33, Township 126 North, Range 34 West, and sections 4 – 9 and 16 – 18, Township 125 North, Range 34 West, Stearns County, Minnesota.

The following comments are being provided pursuant to the Endangered Species Act (ESA), Migratory Bird Treaty Act (MBTA), Bald and Golden Eagle Protection Act, and Fish and Wildlife Act of 1956. This information is being provided to assist you in making an informed decision regarding wildlife issues, site selection, project design, and compliance with applicable laws.

The Service has been in contact with the DNR as they have developed recommended survey protocols and site evaluations that will satisfy both state and federal wildlife statutes, and this letter describes these measures, in part. We appreciate your early coordination with both the Service and the DNR, and recommend continued collaboration on this project to ensure wildlife and habitat issues are fully and appropriately addressed.

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

renewable source of power, development sites with comparatively low bird, bat and other wildlife values would be preferable and would have relatively lower impacts on wildlife.

The Service recommends that impacts to streams and wetlands be avoided, and buffers surrounding these systems be preserved. Streams and wetlands provide valuable habitat for fish and wildlife resources, and the filtering capacity of wetlands helps to improve water quality. Naturally-vegetated buffers surrounding these systems are also important in preserving their wildlife-habitat and water quality-enhancement properties. Furthermore, forested riparian systems (wooded areas adjacent to streams) provide important stopover habitat for birds migrating through the region.

The proposed activities do not constitute a water-dependent activity, as described in the Section 404(b)(1) guidelines, 40 CFR 230.10. Therefore, practicable alternatives that do not impact aquatic sites are presumed to be available, unless clearly demonstrated otherwise. Therefore, before applying for a Section 404 permit, the client should closely evaluate all project alternatives that do not affect streams or wetlands, and if possible, select an alternative that avoids impacts to the aquatic resource. If water resources will be impacted, the St. Paul District of the Corps of Engineers should be contacted for possible need of a Section 404 permit.

Federally-listed Threatened, Endangered, and Candidate Species

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

Currently there are no federally-listed candidate, threatened, or endangered species present within Stearns County. At any point during project planning, construction, or operation should additional information on listed or proposed species become available, or new species are listed that may be affected by the project, consultation should be reinitiated with the Twin Cities Field Office.

The Poweshiek skipper has been identified within the Trisko Waterfowl Production Area (WPA), which is within the proposed project boundary. The Poweshiek skipper has experienced rapid population decline in Minnesota, and the Service is currently analyzing the possibility of listing the species as a candidate under ESA. To minimize any potential impacts to the species or its habitat, placement of turbines within grassland habitats should be avoided. Please contact Rich Davis of our office for assistance in identifying potential Poweshiek skipper habitats within or adjacent to the project boundary. Contact information is provided at the end of this letter.

Migratory Birds

The Migratory Bird Treaty Act (16 U.S.C. 703-712; MBTA) implements four treaties that provide for international protection of migratory birds. The MBTA prohibits taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests, except when specifically authorized by the Department of the Interior. Bald and golden eagles are afforded additional legal protection under the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d). Unlike the Endangered Species Act, neither the MBTA nor its implementing regulations at 50 CFR Part 21, provide for permitting of "incidental take" of migratory birds.

Monitoring should be conducted to assess the daily movement patterns of any species of raptor whose nest is located within the proposed project site or within two miles of the proposed project 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. These monitoring dates will be determined based upon identified species within two miles of the project boundary. Alternate monitoring strategies that assess the degree to which nesting birds utilize the proposed project site will be considered. Information collected will be used to document how frequently the birds enter the proposed project site, and this information can be utilized during micro-siting to minimize substantial risks to birds within close proximity of the project site. There is a record of a bald eagle nest approximately 4 miles northeast of the proposed project site. During other recommended survey work, the project proponent or their consultant should at a minimum take note of any bald eagles flying through or using habitat within the proposed project area, and note the direction of flight, frequency, and foraging areas being utilized.

Shoreland bird and waterfowl species may be prevalent within the proposed project area, as there are wetland complexes within and adjacent to the proposed project boundary. The proposed turbine siting map you provided to our office on March 18, 2010, indicated turbines would be located between the Trisko WPA (Sections 6 and 31) and the Kenna WPA (Sections 9 and 16). There are also turbines proposed to be placed between the aforementioned WPAs and a wetland complex located adjacent to the southwest corner of the proposed project boundary.

The Service recommends observational bird surveys for the Getty Wind Project site to document species, direction of flight, and height of flight. At a minimum, survey points should be selected between the Trisko and Kenna WPAs, and also between both WPAs and the wetland complex adjacent to the southwest corner of the proposed project boundary. There is concern that birds utilizing these WPAs may have an increased likelihood of being struck by a turbine as they move from one WPA to another. The Service would like the project proponent to utilize this flight survey data to assist them in micro-siting the individual turbines.

We also recommend a habitat survey throughout the proposed project site. There are a number of records of upland sandpiper and marbled godwit in the vicinity of the project. Should the habitat survey confirm habitat for any of these aforementioned species, breeding bird surveys may be necessary to determine the utilization of habitat areas within the proposed project site.

The Service's Office of Law Enforcement serves its mission to protect federal trust wildlife species in part by actively monitoring industries known to negatively impact wildlife, and assessing their compliance with Federal law. These industries include oil/gas production sites, cyanide heap/leach mining operations, industrial waste water sites, and wind power sites. There is no threshold as to the number of birds incidentally killed by wind power sites, or other industry, past which the Service will seek to initiate enforcement action. However, the Service is less likely to prioritize enforcement action against a site operator that is cooperative in seeking and implementing measures to mitigate take of protected wildlife.

Migratory Bird Concentration Areas and Conservation Lands

We recommend that no turbines be located within ¼ mile of Conservation Reserve Program, Wetland Reserve Program, or other similar federally- or state-funded restoration projects.

Service-owned Lands

The Trisko WPA is within the proposed project site (Sections 6 and 31). The Kenna WPA is located directly adjacent to the proposed project boundary of the Getty Wind Project (Sections 9 and 16). The Service recommends that during micro-siting no turbines be placed within ½ mile of any WPAs. If feasible, a one-mile setback from WPAs is preferred, which will reduce the potential for striking migratory birds utilizing the open water wetland and grassland habitats located in or associated with these areas.

If turbine locations are selected within 1 mile of any WPA, Getty Wind should complete point count surveys at these turbine locations prior to construction, and post-construction mortality surveys should be completed at these turbine locations.

Interim Service Guidelines

Research into the actual causes of bat and bird collisions with wind turbines is limited. To assist Service field staff in review of wind farm proposals, as well as aid wind energy companies in developing best practices for siting and monitoring of wind farms, the Service published *Interim Guidelines to Avoid and Minimize Wildlife Impacts from Wind Turbines* (2003). We encourage any company/licensee proposing a new wind farm to consider the following excerpted suggestions from the guidelines in an effort to minimize impacts to migratory birds and bats.

- 1) Pre-development evaluations of potential wind farm sites to be conducted by a team of Federal and/or State agency wildlife professionals with no vested interest in potential sites;
- 2) Rank potential sites by risk to wildlife;
- 3) Avoid placing turbines in documented locations of federally-listed species;
- 4) Avoid locating turbines in known bird flyways or migration pathways, or near areas of high bird concentrations (i.e., rookeries, leks, refuges, riparian corridors, etc.);

- 5) Avoid locating turbines near known bat hibernation, breeding, or maternity colonies, in migration corridors, or in flight paths between colonies and feeding areas;
- 6) Configure turbine arrays to avoid potential avian mortality where feasible. Implement storm water management practices that do not create attractions for birds, and maintain contiguous habitat for area-sensitive species;
- 7) Avoid fragmenting large, contiguous tracts of wildlife habitat;
- 8) Use tubular supports with pointed tops rather than lattice supports to minimize bird perching and nesting opportunities;
- 9) If taller turbines (top of rotor-swept area is greater than 199 feet above ground level) require lights for aviation safety, the minimum amount of lighting specified by the Federal Aviation Administration (FAA) should be used. Unless otherwise requested by the FAA, only white strobe lights should be used at night, and should be of the minimum intensity and frequency of flashes allowable. Red lights should not be used, as they appear to attract night-migrating birds at a higher rate than white lights;
- 10) Adjust tower height to reduce risk of strikes in areas of high risk for wildlife.

The full text of the guidelines is available at <http://www.fws.gov/habitatconservation/wind.pdf>. The Service believes that implementing these guidelines may help reduce mortality caused by wind turbines. We encourage you to consider these guidelines in the planning and design of the project. We particularly encourage placement of turbines away from any large wetland, stream corridor, or wooded areas, and avoiding placing turbines between nearby habitat blocks. If this proposal is to move forward, we strongly recommend that on-the-ground surveys using radar, infrared, and/or acoustic monitoring be conducted during the peak of spring and fall bird migrations and during the breeding season over a period of several years (consistent with the Service's *Interim Guidelines, op. cit.*) to identify breeding and feeding areas and migration stopover sites. Observations made from greater than ¼ mile of target areas are likely to be insufficient to accurately assess bird use of the landscape, particularly if the observer is moving. Generalized ground research survey protocols, such as those followed in the Waterfowl Breeding Population and Habitat Survey (Smith 1995) and the North American Breeding Bird Survey (Pardieck 2001), among others, often do not accept observations made at greater than ¼ mile from the observer due in part to high probabilities of missed detections (R. Russell, personal communication). Furthermore, spring and fall raptor migration surveys may be necessary, as will surveys to document movement patterns of bald eagles that may use the project area or surrounding habitat. We request that any on-the-ground survey protocols are consistent with the Service's *Interim Guidelines* (2003), and be coordinated with this office and with the Minnesota Department of Natural Resources prior to implementation.

Pre-construction Surveys

The Service recommends that Getty Wind and their consultants conduct rigorous assessments of bird and bat use of the area before proceeding with project design (i.e., preliminary siting of specific turbines). We strongly recommend development of a protocol for bird/bat surveys at this site, and specific consideration should be given to the potential for occurrence of marbled godwit and upland sandpiper within the proposed project area. We encourage Getty Wind to maintain consistency with other wind farm survey protocols, thus allowing us to compare results with other wind farm survey data. These comparisons will potentially provide valuable information that can be applied in future wind farm/turbine macro- and micro-siting.

In addition to on-the-ground (point or transect) surveys, we recommend that the assessments include the use of mobile, horizontally- and vertically-scanning radar to study the direction, altitude, and numbers of flying animals moving through and within the project area during the fall and spring migration of birds and bats, and the breeding period of birds in the area. We recommend that radar be employed 24 hours a day, 7 days a week during migration, and at a minimum from dawn to dusk during the breeding period. Radar studies are providing useful information in evaluating bird and bat activity at wind generation sites in Wisconsin, Vermont, Massachusetts and other locations. The use of radar coupled with ground-truthing (surveys) can provide a more complete assessment of bird and bat use of a potential wind project area than point counts or other traditional survey methods alone. Such information could inform project design and minimize potential mortality associated with the project.

We recommend installation of two AnaBat SDI detectors per meteorological tower to be used within the project area, and data should be collected from May 15 - November 15, 2010 and 2011. One AnaBat detector should be mounted at 5 meters above ground, and the other should be mounted as close to the rotor-swept area as possible. The AnaBat's sensitivity should be adjusted to detect a calibration tone at 20 meters. AnaBat units must monitor from 0.5 hour before sunset until 0.5 hour after sunrise. This will help to gauge bat activity and to some degree, to determine bat species/guild composition within the project area during spring and fall migration and the maternity season.

Post-construction Surveys

The Service recommends the project be monitored post-construction to determine impacts to migratory birds and bats. A specific post-construction monitoring plan should be prepared and reviewed by the Service and should include a scientifically robust, peer reviewed methodology of mortality surveys. Generally the Service recommends that surveys be conducted for a minimum of three years following construction to assess impacts to birds and bats. The duration of post-construction surveys is project specific and will be determined based upon pre-construction survey results. We also recommend that the post-construction mortality studies be conducted by an independent third party contractor with expertise in bird/bat mortality monitoring. Results of mortality surveys and other forms of monitoring should be used to adjust operations to reduce mortality if necessary and feasible, as well as improve design and siting of future wind generation facilities. **The Developer or its contractor should provide to this**

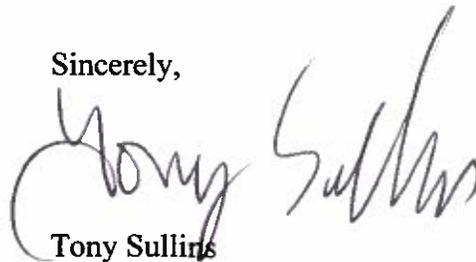
office each year, no later than December 31, copies of annual bird/bat mortality monitoring reports.

Infrastructure Considerations

Development of transmission infrastructure associated with wind facilities also poses risks to wildlife. These risks include potential avian mortality, particularly electrocution of raptors (hawks, eagles, kites, falcons, and owls), that could occur when they attempt to perch on uninsulated or unguarded power poles. Recently published information about which types of power line poles and associated hardware (e.g., wires, transformers and conductors) pose the greatest danger of electrocution to raptors and what modifications can be made to reduce this threat can be found on the internet at <http://www.aplic.org/>.

Thank you for the opportunity to provide comments on this proposed project. Please contact me at (612) 725-3548, ext. 2201, or Rich Davis, Fish and Wildlife Biologist, at (612) 725-3548, ext. 2214, if we can be of further assistance.

Sincerely,

A handwritten signature in black ink that reads "Tony Sullins". The signature is written in a cursive style with a large, looping initial "T".

Tony Sullins
Field Supervisor

cc: Beverly Meyer, USFWS Litchfield WMD
Kevin Mixon, MN DNR



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Twin Cities Field Office
4101 American Blvd E.
Bloomington, Minnesota 55425-1665

December 29, 2011

Suzanne Steinhauer
State Permit Manager
Minnesota Department of Commerce
85 7th Place East, Suite 500
St. Paul, MN 55101-2198

Re: Getty Wind Project Site Permit Application Review, Stearns County, Minnesota
PUC Docket No. IP6866/WS-11-831
FWS TAILS #32410-2010-FA-0068

Dear Ms. Steinhauer:

This is in response to the Department of Commerce (DOC) request for comments on the Site Permit Application for the proposed Getty Wind Project in Stearns County, Minnesota. The proposed project includes the installation of wind turbines, and associated infrastructure including roads, transmission lines, and staging areas. Representatives from the U.S. Fish and Wildlife Service (Service) and HDR have met on site during the summer and winter of 2011. The Service provided a letter regarding recommendations for the proposed Getty Wind Project to Bruce Jennings, P.E. with Dewild Grant Reckert, and Associates Company on May 11, 2010.

This letter is not intended to replace previous comments and recommendations the Service has provided regarding the Getty Wind Project. Our recommendations in this letter are intended to assist DOC staff in making informed decisions regarding recommendations they will carry forward to the Public Utility Commission (PUC).

Federally-listed Threatened, Endangered, and Candidate Species

Because of the potential for wind power projects to impact federally-listed species, they are subject to the Endangered Species Act (16 U.S.C. 1531-1544) section 9 provisions governing "take," similar to any other development project. "Take" incidental to a lawful activity may be authorized through the initiation of formal consultation, if a Federal agency is involved. If a federal agency, federal funding, or a federal permit are not involved in the project, an incidental take permit pursuant to section 10(a)(1)(B) of the ESA may be obtained upon completion of a satisfactory habitat conservation plan for the listed species.

Since our May 2010 correspondence with the project proponent the Poweshiek skipperling has been determined to be a candidate for listing under ESA, and is found within Stearns County, Minnesota. The Poweshiek skipperling has been identified within the Trisko Waterfowl

Production Area (WPA), adjacent to the Getty Wind Project boundary. The Poweshiek skipper has experienced rapid population decline in the State of Minnesota. To minimize any potential impacts to the species or its habitat, placement of turbines within grassland habitats should be avoided.

Migratory Birds

The Migratory Bird Treaty Act (16 U.S.C. 703-712; MBTA) implements four treaties that provide for international protection of migratory birds. The MBTA prohibits taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests, except when specifically authorized by the Department of the Interior. Bald and golden eagles are afforded additional legal protection under the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d). Unlike the Endangered Species Act, neither the MBTA nor its implementing regulations at 50 CFR Part 21, provide for permitting of “incidental take” of migratory birds.

The Service recommended observational bird surveys for the Getty Wind, LLC Project site to document species, direction of flight, and height of flight. To date, avian surveys have been completed within the proposed project site, and winter surveys specific to bald eagle movement are currently on-going. The Service is currently working with the project proponent as they develop an Avian and Bat Protection Plan (ABPP) to address migratory bird impact avoidance and minimization.

The Service recommends that proposed transmission lines be placed underground to the greatest extent possible. Transmission lines that must be placed above ground should be constructed in a location and fashion that will minimize impacts to migratory bird species. Due to the high waterfowl and shore bird use within the project area the Service recommends that bird diverters be placed on overhead transmission lines when they are adjacent to and/or bisect wetland and open water habitats.

Conservation Lands

We recommend that no turbines be located within ¼ mile of Conservation Reserve Program, Wetland Reserve Program, or other similar federally- or state-funded restoration projects.

Service Owned Lands

The Trisko and Kenna WPAs are adjacent to the proposed project site. The Service recommends that no turbines be placed within a ½ mile of any WPAs. If feasible a one mile setback from WPAs is preferred, which will reduce the potential for striking migratory birds utilizing the open water wetland and grassland habitats associated with these areas. **If turbine locations are selected within 1 mile of any WPA, the Service recommends post construction mortality surveys be completed at these turbine locations.**

Bat Acoustic Survey Recommendations

The Service recommends that the Getty Wind Project proponents and their consultants conduct rigorous assessments to determine bat use within the proposed Getty Wind Project site. We recommend installation of two AnaBat SDI detectors per meteorological tower to be used within the project area, and data should be collected from April 15 - November 15, 2012, and extending into the operational phase of the proposed project. One AnaBat detector should be mounted at 5 meters above ground, and the other should be mounted as close to the rotor-swept area as possible. The AnaBat's sensitivity should be adjusted to detect a calibration tone at 20 meters. AnaBat units must monitor from 0.5 hour before sunset until 0.5 hour after sunrise. This will help to gauge bat activity and to some degree, to determine bat species/guild composition within the project area during spring and fall migration and the maternity season.

Pre- and Post- Construction Survey Recommendations

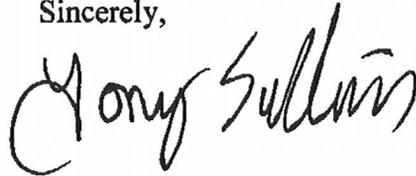
Due to the presence of an active bald eagle nest site in close proximity to the proposed turbine locations, and the presence of potential foraging habitat within the proposed project the Service recommends that the project proponent complete annual raptor nest surveys within the proposed project area and out two miles from the final turbine locations selected for construction. Raptor nest surveys should be completed prior to leaf-out in the spring of each year during construction and operation of the project. Monitoring should be conducted to assess the daily movement patterns of any raptors actively nesting within the proposed project site or within two miles of the proposed project site.

All bald or golden eagle use areas, including but not limited to; nesting areas, winter roost areas, and foraging areas, identified within or in close proximity to the proposed project should be reported to our office immediately. The information on bald or golden eagles and data gathered through these survey efforts will be utilized by our office to provide recommendations to assist the project proponent in reducing potential impacts to bald and golden eagles.

The Service recommends the project be monitored post-construction to determine impacts to migratory birds and bats. A specific post-construction monitoring plan should be prepared and reviewed by the Service and should include a scientifically robust, peer reviewed methodology of mortality surveys. The duration of post construction surveys is project specific, generally the Service recommends that post-construction surveys be conducted for a minimum of three years following construction to assess impacts to birds and bats. We also recommend that the post-construction mortality studies be conducted by an independent third party contractor with expertise in bird/bat mortality monitoring. Results of mortality surveys and other forms of monitoring should be used to adjust operations to reduce mortality if necessary and feasible, as well as improve design and siting of future wind generation facilities. The Developer or its contractor should provide to this office each year, no later than December 31, copies of annual bird/bat mortality monitoring reports.

Thank you for the opportunity to provide comments on this proposed project. Please contact Rich Davis, Fish and Wildlife Biologist, at (612) 725-3548, ext. 2214 if we can be of further assistance.

Sincerely,

A handwritten signature in black ink that reads "Tony Sullins". The signature is written in a cursive style with a large, looping initial "T".

Tony Sullins
Field Supervisor

cc: Jamie Schrenzel, MN DNR
Scott Glup, USFWS Litchfield WMD