South Dakota
Wildlife Division
Department of Game, Fish and Parks

Foss Building
523 East Capitol
Pierre, South Dakota 57501-3182

14 March 2016

Heather Wayne, Permitting Associate
Geronimo Wind Energy, LLC
7650 Edinborough Way; Suite 725
Edina, MN 55435

RE: Crocker wind farm in northwestern Clark County, South Dakota.

Dear Heather:

This is in response to your request for information on potential effects to wildlife and their associated habitats from the proposed Crocker wind farm in northwestern Clark County, South Dakota.

The proposed siting and operation of a wind farm has the potential to directly and indirectly impact area wildlife. This may occur by altering habitats, influencing behavior and directly killing individuals. The South Dakota Game, Fish and Parks (SDGFP), in coordination with the South Dakota Bat Working Group (SDBWG), developed *Siting Guidelines for Wind Power Projects in South Dakota*. This document addresses many of the environmental concerns involved with siting wind farms in South Dakota (http://gfp.sd.gov/wildlife/docs/wind-power-siting-guidelines.pdf).

Part of responsible energy development includes conducting appropriately-timed pre-construction wildlife surveys to document current conditions and help assess any potential impacts to wildlife. At least two years of the pre-construction surveys should be conducted. This baseline information should be used to evaluate any potential impacts to wildlife. If major impacts are predicted, avoid development in this area. If less serious impacts are anticipated, we recommend mitigation to reduce these impacts. Post-construction studies should be conducted to assess actual impacts, evaluate mitigation effectiveness and evaluate predictions. Bird and bat mortality surveys should be conducted at least two years post-construction. Survey protocols should allow data to be comparable to data collected at other wind farms in the region. Example survey protocols can be found in (Anderson et al. 1999), (Erickson et al. 2007), and (Kunz et al. 2007).
Our agency respectfully requests a written summary of these surveys.

The following contains information on wildlife habitats and associated species that contribute to South Dakota's natural heritage and may be impacted by this proposed wind farm.

Phone: (605) 773-4193 FAX: (605) 773-6245

HABITAT

Grasslands

The majority of the proposed project area lies within the Prairie Coteau ecoregion. This ecoregion is unique to South Dakota. Created by glaciers and lacking a drainage pattern, the hilly landscape has abundant seasonal, semi-permanent and permanent wetlands. The latter were formed in areas with little ice shear; many of these wetlands form a dense chain of lakes in this ecoregion. Precipitation levels (20-22 inches average annual) allow for woody (oak) growth around wetland margins increasing habitat and wildlife species diversity in the area. Potential natural vegetation includes big and little bluestem, switchgrass, Indian grass, and blue grama. Many remaining native prairie tracts are found in the Prairie Coteau ecoregion.

Remnant prairie tracts have high conservation value, especially those that contain a high diversity of both plant and animal species with non-native, invasive plant species being rare or absent. The proposed project area should be surveyed for untilled tracts of native prairie. Every effort should be made to avoid placement of turbines and new roads in untilled native prairie. Turbines should be placed in areas currently disturbed by cultivation. Any loss of native prairie should be avoided or mitigated.

Contiguous blocks of grassland (including native prairie, pasture, hayland, etc.) regardless of cropping history, quality or current management also have conservation value. Many grassland wildlife species are sensitive to habitat fragmentation. The separation of habitat into smaller blocks (by roads or vertical structures) reduces habitat quality in that a species may be affected by lower survival or reproduction rates and/or decreased distribution or use of an area. Effort should be made to avoid placement of turbines and new roads in contiguous blocks of grassland. Turbines should be placed in areas currently disturbed by cultivation. Fragmentation of contiguous blocks of grassland should be avoided or mitigated.

Ground disturbance and increased road access increases the opportunity for introduction and establishment of non-native, invasive plant species and can also increase human access to areas. Any ground disturbance should be limited as much possible by reducing the length and width of both temporary and permanent access roads. Use native seed sources to stabilize any soil disturbance to reduce non-native, invasive plant species encroachment. The Natural Resource Conservation Service Plant Materials Center in Bismarck, ND may serve as a good source of information on native plantings. Additional information on sources of native seed can be found at the following links:

- Conservation Seed/Plant Vendors List
  - http://plant-materials.nrcs.usda.gov/pubs/ndpmcmt8152.pdf
- Prairie Landscaping Seed/Plant Vendors List
  - http://plant-materials.nrcs.usda.gov/pubs/ndpmcmt8151.pdf
- Origins of Native Grass and Forb Releases
  - http://www.plant-materials.nrcs.usda.gov/pubs/ndpmctn6786.pdf

Wetlands

The proposed project area is located within the Prairie Pothole region. This glaciated region, characterized by high densities of wetland basins of various depths and sizes, is the major waterfowl production area in North America. Wetland losses in the Prairie Pothole region are staggering and range from 99% in Iowa to 35% in South Dakota (Johnson and Higgins 1997). Wetland basins are found throughout most of the proposed project area. Turbines should not be placed in or near wetland basins and special care should be made to avoid areas with high concentrations of wetlands.

Public Land

Public lands owned by the SDGFP are located both with the proposed project area or adjacent to it. Placement of public lands is done in areas with existing and potential wildlife habitat. Management of these lands is for wildlife and conducted in the public interest. Wildlife use of these areas may be negatively affected by the placement of a wind farm in the area. The location of these and other public lands can be found on line at http://gfp.sd.gov/images/WebMaps/Viewer/WILMA/ . Establishing a buffer between public land boundaries and turbine locations is recommended.

WILDLIFE

Grassland Birds

In North America, grassland birds have experienced consistent and long term declines (Peterjohn and Sauer 1999). Placement of a wind farm in the proposed project area may reduce habitat suitability for grassland birds (increase habitat fragmentation and invasive species) and modify behavior (e.g. avoidance). Some grassland bird species have been shown to favor large grassland patches or are sensitive to habitat fragmentation, We recommend that properly timed, species-appropriate surveys for breeding grassland birds (songbirds and grouse) be conducted. Many privately-owned areas in South Dakota have not been surveyed for grassland songbirds or prairie grouse leks. Post-construction surveys should monitor lek presence and document the number of grouse attending each lek.

Raptors

Improperly sighted wind farms are known to cause significant mortality to raptors. Considering the soaring behavior of raptors, placement of turbines in areas of elevation (e.g. ridges) should be avoided. Pre-construction surveys should be conducted for high-raptor use areas as well as nest locations for these and other raptor species.

Whooping Crane

This proposed project location is within the 200-mile wide portion of the whooping crane migratory route. We are concerned about direct mortality of whooping cranes. The whooping crane is state and federally protected as an endangered species. Cranes begin to migrate into South Dakota as early as late March through mid- to late-May. In the fall they pass through South Dakota beginning in September and can be observed through early November.

Bats

Operating wind turbines are known to kill bats especially those that migrate in the fall. Hoary, silver-haired and Eastern red bat species occur in South Dakota. Because of limited, project-specific data we suggest pre-construction surveys of the area for potential bat habitat and species followed by post-construction mortality surveys.

POWER LINES

Strikes with above ground power lines are a known cause of bird mortality (Erickson et al. 2005). New power lines should be buried. If this is not possible, placement of above-ground transmission lines should avoid spanning large wetlands and they should not be placed between wetlands or wetland complexes. We also recommend placing new transmission lines along existing corridors such as within existing disturbed areas such as road right-of-ways that do not currently intersect wetlands or run between wetlands or wetland complexes.

Electrocution of birds that perch, roost, or nest on power lines continues to be a source of mortality especially for eagles, hawks, and owls (Avian Power Line Interaction Committee 2006). The Avian Power Line Interaction Committee (APLIC) has developed two documents that provide useful information on how to reduce power line strikes and electrocutions:

- *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006* and
- *Mitigating Bird Collisions with Power Lines.*

Both of these documents are available from the Edison Institute (http://www.aplic.org).

PERMIT REQUIREMENTS

State Threatened and Endangered Species

South Dakota codified law 34A-8-8 allows for only limited and specific authorized take of threatened and endangered species for scientific, zoological, or educational purposes. For more information, please visit https://gfp.sd.gov/licenses/other-permits/endangered-species-permit.aspx.

Facility Siting Permit

The South Dakota Public Utilities Commission (PUC) requires a siting permit for wind energy projects 100 MW and greater. Please contact the PUC by mail or phone at 500 E. Capitol Ave in Pierre, SD 57501-5070 or (605) 773-3201.

Scientific Collector's Permit

Please note that if survey and monitoring activities include live trapping or the collection of wildlife species, you must first obtain a collection permit from our agency. If these activities include bats, specific sampling and collection protocols must be followed for a collectors permit to be issued. More information can be found at the following websites:

- Scientific Collectors Permit
  - https://gfp.sd.gov/licenses/other-permits/scientific-collectors.aspx
- Bat Sampling and Collection Protocol Guidelines and Requirements
  - https://gfp.sd.gov/wildlife/docs/bat-protocol.pdf.

SUMMARY

Our agency has concerns regarding direct and indirect impacts to wildlife and habitats in association with the siting of the proposed project. If development of this project continues to be pursued, I recommend scheduling a meeting with SDGFP and U.S. Fish and Wildlife Service representatives to further discuss wildlife concerns as well as a site visit to assist with micrositing.

The SDGFP appreciates the opportunity to provide comments. If you have any questions on the above comments, please feel free to contact me at 605-773-2742 or Silka.Kempema@state.sd.us.

Regards,

Silka Kempema

Silka L. F. Kempema
Terrestrial Wildlife Biologist

CC: SD Game, Fish and Parks, Pierre, SD (Attention Casey Heimerl)
SD Game, Fish and Parks, Sioux Falls, SD (Attention Jacquie Ermer)
U.S. Fish and Wildlife Service, Pierre, SD (Attention Natalie Gates)

Literature Cited

Anderson, R., M. Morrison, K. Sinclair, and D. Strickland. 1999. Studying wind energy/bird interactions: A guidance document. National Wind Coordinating Committee.

Avian Power Line Interaction Committee. 2006. Suggested Practices for Avian Protections on Power Lines: The State of the Art in 2006. Edison Electric Institute, APLIC and the California energy Commission, Washington, D.C. and Sacramento, CA.

Erickson, W., D. Strickland, J. A. Shaffer, and D. H. Johnson. 2007. Protocol for investigating displacement effects of wind facilities on grassland songbirds. National Wind Coordinating Collaborative. Wind Wildlife Workgroup.

Erickson, W. P., G. D. Johnson, and D. P. Young Jr. 2005. A summary and comparison of bird mortality from anthropogenic causes with an emphasis on collisions. U.S. Department of Agriculture. General Technical Report General Technical Report PSW-GTR-191.

Johnson, R. R., and K. F. Higgins. 1997. Wetland resources of eastern South Dakota. South Dakota State University.

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