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116 North 4th Street, Suite 200
Bismarck, North Dakota 58501
Tel 701.258.6622 Fax 701.258.5957
www.swca.com

TECHNICAL MEMORANDUM

To: Tatanka Ridge Wind, LLC
1125 NW Couch Street
Portland, Oregon 97209

From: Jake Powell, Senior Ecologist

Date: August 15, 2019

Re: **Grassland Assessment for the Tatanka Ridge Wind Project**

SWCA Environmental Consultants (SWCA) was contracted by Tatanka Ridge Wind, LLC (Tatanka Ridge), a subsidiary of Avangrid Renewables, LLC, to conduct a grassland assessment for the Tatanka Ridge Wind Project (Project) in Deuel County, South Dakota. SWCA subcontracted Stantec Consulting Services Inc. (Stantec) to provide support on the Project, including assisting with the desktop analysis and providing field biologists. All work was overseen and reviewed by an SWCA senior biologist with expertise in prairie ecology. This technical memorandum represents a qualitative assessment of the publicly available vegetation, land use, and imagery datasets and pedestrian field verification surveys (field surveys) that were completed for the land parcels leased by Tatanka Ridge within the 2019 Project area (see maps in Attachments A and B).

The Project is located approximately 5 miles west of the South Dakota/Minnesota border, and directly north of the town of Toronto, South Dakota. The proposed Project will consist of up to 56 wind turbines and associated infrastructure such as access roads, electrical collection system, substation, operations and maintenance building, and a permanent meteorological tower.

METHODS

SWCA and Stantec completed a desktop analysis for the Project leased parcels (lease status layer dated March 28, 2019) to identify those areas that were potential grassland areas by excluding areas with evidence of cultivation, heavy equipment blading, or other concentrated anthropogenic disturbances. These disturbed areas included cropland, crown and ditch roads, homestead and residential areas, planted tree rows, livestock facilities, and industrial sites. Areas that could not be definitely identified as disturbed were included as potential grassland in the desktop analysis. The following publicly available spatial datasets were used to complete the desktop analysis.

- 2017 cropland data layer (National Agricultural Statistics Service 2018)
- 2010 National Gap Analysis Project (GAP) landcover (U.S. Geological Survey 2010)
- National Wetlands Inventory (U.S. Fish and Wildlife Service 2018)
- Quantifying Undisturbed (Native) Lands in Eastern South Dakota: 2013 (Bauman et al. 2016)

- 2016 National Agricultural Inventory Project (NAIP) aerial imagery (U.S. Department of Agriculture 2016)
- 2017 ArcGIS Digital Imagery

The areas identified as potential grassland during the desktop analysis were carried forward for field surveys. Field surveys were completed May 28 through June 2, 2019. The surveys were conducted by SWCA and Stantec biologists familiar with the plant communities and landscapes in eastern South Dakota. Quantitative vegetation sampling was not completed as part of the field survey. The grassland categories were determined by traversing the areas on foot and conducting a qualitative ocular survey. Quantitative vegetation sampling was not conducted as part of this assessment. Surveyors categorized whether potential grassland areas were native grassland, non-native grassland/wetlands, or disturbed.

Native grasslands included upland grassland dominated by 50% or more native plant species. Non-native grasslands included upland grassland dominated by 50% or more non-native plant species. There were a number of wetlands in the low areas of the coulees and swales within the larger non-native grassland polygons. This scope of work did not include delineating wetlands in these areas so because the wetlands were not native grasslands (as described herein), the wetland areas were combined with the non-native grassland areas to create the non-native grassland/wetland category. Wetland areas included aquatic or riparian areas that were dominated by either native or non-native plant species. Disturbed areas were the same as those used during the desktop analysis.

RESULTS

The grassland desktop assessment identified 1,920.07 acres of potential grassland present in the Project leased parcels. These potential grassland areas were carried forward for field surveys.

Field surveys were conducted on all potential grassland areas. The field survey resulted in categorizing the potential grassland areas into two categories: native grasslands and non-native grasslands/wetlands (see maps in Attachments A and B). The results of the grassland assessment are summarized as follows.

- Native grasslands: 14.11 acres (or 0.73% of the total grassland area)
- Non-native grasslands/wetlands: 1,905.96 acres (or 99.27% of the total grassland area)

The native grassland sites were dominated by little bluestem (*Schizachyrium scoparium*) and big bluestem (*Andropogon gerardii*), along with porcupine grass (*Hesperostipa spartea*) and western wheatgrass (*Pascopyrum smithii*). Prairie coneflower (*Ratibida columnifera*) and purple coneflower (*Echinacea angustifolia*) were some of the few native forbs present. The non-native grass species smooth brome (*Bromus inermis*) and Kentucky bluegrass (*Poa pratensis*) were prevalent in these areas as well. The native grasslands were concentrated in the southeastern portion of the Project area. A representative overview of the native grassland in the Project area is provided in Figure 1.

Figure 1. Native grassland, in foreground.

Non-native grasslands were primarily dominated by smooth brome and Kentucky bluegrass, but also included areas dominated by timothy (*Phleum pratense*) and orchardgrass (*Dactylis glomerata*). Invasive weeds such as Canada thistle (*Cirsium arvense*) and musk thistle (*Carduus nutans*) were present in some areas. Wetlands were dominated by both native and non-native species. Figures 2 and 3 provide an overview of representative areas of non-native grasslands.

Figure 2. Non-native grasslands and wetlands.

Figure 3. Non-native grasslands.

LITERATURE CITED

Bauman, P., B. Carlson, and T. Butler. 2016. *Quantifying Undisturbed (Native) Lands in Eastern South Dakota: 2013*. South Dakota State University Extension.

National Agricultural Statistics Service. 2018. Cropscape – Cropland Data Layer. U.S. Department of Agriculture. Available at: https://nassgeodata.gmu.edu/CropScape/. Accessed May 20, 2019.

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ATTACHMENT A

Overview Map

ATTACHMENT B

Results Maps