Appendix H

Northern Long-eared Bat Habitat Assessment

Northern Long-Eared Bat
Desktop Habitat Assessment

Tatanka Ridge Wind Project
Deuel County, South Dakota

Prepared for:

Tatanka Ridge Wind, LLC

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May 1, 2019

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REPORT REFERENCE

Hyzy, B. and J. Rieland. 2019. Northern Long-Eared Bat Desktop Habitat Assessment, Tatanka Ridge Wind Project, Deuel County, South Dakota. Prepared for Tatanka Ridge, LLC, Portland, Oregon. Prepared by Western EcoSystems Technology, Inc. (WEST), Golden Valley, Minnesota. May 1, 2019.

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INTRODUCTION

Tatanka Ridge Wind, LLC (Tatanka Ridge), a subsidiary of Avangrid Renewables, LLC, has proposed development of the Tatanka Ridge Wind Project (Project) located in Deuel County, South Dakota. The Project is approximately six miles (mi) west of the South Dakota/Minnesota border, and directly north of the town of Toronto, South Dakota (Figure 1). The proposed Project will have a nameplate capacity of up to 155 megawatts, consisting of up to 62 wind turbines and associated infrastructure such as access roads, electrical collection system, substation, operations and maintenance building, and a permanent meteorological tower.

The northern long-eared bat (NLEB; *Myotis septentrionalis*) is listed as a threatened species throughout its range under the federal Endangered Species Act. To better understand potential use of the Project by the NLEB, Western EcoSystems Technology, Inc. (WEST) conducted a desktop habitat assessment in 2018 (WEST 2018b). The Project expanded; therefore, Tatanka Ridge requested that WEST conduct a desktop habitat assessment using the revised and expanded Project boundary.

The desktop assessment was completed in accordance with the Phase 1 survey recommendations found in the US Fish and Wildlife Service (USFWS) *Northern Long-eared Bat Interim Conference and Planning Guidance* (USFWS 2014) and *2019 Range-Wide Indiana Bat Summer Survey Guidelines* (2019 Survey Guidelines; USFWS 2019). USFWS guidance calls for NLEB surveys to adhere to Indiana bat (*Myotis sodalis*) survey guidelines. Because the Project location is well north of the known range of the Indiana bat, this assessment focused on the NLEB.

NORTHERN LONG-EARED BAT SUMMER HABITAT REQUIREMENTS

The NLEB is a forest-dependent species, generally relying on forest features for both foraging and roosting during the summer months (USFWS 2013). In particular, the NLEB appears to be a forest interior species that requires adequate canopy closure for both roosting and foraging habitat (Lausen 2009). The wing morphology of the NLEB makes it ideally suited for the high maneuverability required for gleaning-type foraging within a cluttered forest interior (Henderson and Broders 2008).

NLEBs roost singly, or in colonies, underneath bark, in cavities, or in crevices of both live and dead trees (USFWS 2014). Cooler roost locations such as caves and mines may be used by non-reproductive females and males. In general, NLEB are opportunistic in selecting roosts and using tree species that retain bark, provide cavities, or crevices. Rarely, NLEB have been found roosting in structures such as barns and sheds; however, structures that may be used for roosting are likely located close to wooded habitat that would be used for foraging. Additionally, riparian areas are considered critical resource areas for many species of bats because they support higher concentrations of prey, provide drinking areas, and act as unobstructed commuting corridors (Grindal et al. 1999).

A study of nine female NLEBs, using an intensively managed forest in West Virginia, found this species forages in areas with forest patch sizes between 114 and 161 acres (Owen et al. 2003). Abundance of NLEB prey items, particularly beetles and moths, are typically higher in more closed forest stands than in forest openings, which supports studies that have found NLEBs tend to avoid open habitats (Owen et al. 2003). Based on current knowledge, it is unlikely that the NLEB would cross over large open lands (e.g., land lacking suitable habitat) to search for foraging and roosting habitats.

While NLEB are typically associated with forest habitats, they also have been documented in agricultural settings where forest habitats are highly fragmented. Studies in landscapes dominated by agricultural activities have also found that NLEB may use woodlots and riparian zones with very few acres of actual forest cover as traveling and commuting habitat (Henderson and Broders 2008, Foster and Kurta 1999). During recent coordination between WEST biologists and the USFWS Michigan Ecological Services Field Office, USFWS staff suggested that they will be using 10 acres as the minimum forested patch size for suitable summer habitat moving forward (WEST 2018a). To facilitate a consistent approach for NLEB habitat review across the species range, this habitat assessment uses 10 acres as the minimum forested patch size considered suitable summer habitat for the NLEB.

HABITAT ASSESSMENT METHODS

The NLEB interim guidance document (USFWS 2014) provides a home range estimate of 1.5 mi for NLEB and 2.5 mi for Indiana bats. This desktop habitat assessment utilizes a 2.5-mi buffer around the Project boundary, referred to as the Assessment Area, in order to provide a conservative estimate of the potential foraging range of NLEB and to identify potential corridors of connected habitat in the vicinity of the Project.

WEST derived potential NLEB summer habitat in the Assessment Area using a machine learning classification algorithm to delineate forest patches. The classifier was built using imagery from the Landsat 8 and Sentinel-2 satellites (US Geological Survey [USGS] 2016, European Space Agency 2017), as well as aerial imagery from the National Agriculture Imagery Program (USGS 2018) and used in a Random Forests model (Breiman 2001). The results from the model were filtered and visually assessed for accuracy, whereby false positives (areas mistakenly identified as forest) were removed, and forest boundaries were adjusted, as necessary.

WEST biologists determined the potential suitability of forested habitat within the Assessment Area for NLEB based on the USFWS's *Indiana Bat Section 7 and Section 10 Guidance for Wind Energy Projects* (2011), the 2019 Survey Guidelines (USFWS 2019), and the recent USFWS recommendation to use 10 acres as the minimum forested patch size for suitable summer habitat (WEST 2018a). For the purposes of this assessment, WEST categorized potentially suitable forest patches for NLEB within the Assessment Area into the following categories:

- Greater than 10 acres – Suitable roost/foraging/commuting areas (larger areas of contiguous forests and/or riparian corridors).

- Less than 10 acres – Unsuitable roost-foraging/commuting (typically include small isolated shelterbelts and individual trees).

Although NLEB are a forest-dependent species, the species will use open areas that are proximate to occupied habitat. Studies of Indiana and NLEB behavior using telemetry data on foraging activity have indicated that isolated trees or small forest patches might only be suitable as habitat when they are less than 1,000 feet from other forested/wooded habitats (USFWS 2014, USFWS 2011). Therefore, a 1,000-foot connected habitat buffer was placed around suitable forested patches to conservatively identify non-forested areas within the Assessment Area that could be utilized by NLEB moving between roosting and foraging areas.

RESULTS

Within the Assessment Area, wooded habitat is almost exclusively confined to small woodlots and windbreak treerows, with the majority of wooded areas consisting of small, scattered patches. The desktop habitat assessment identified approximately 195 acres of potentially suitable NLEB habitat within the Project boundary; a total of 12 forested patches within or overlapping with the Project were identified that are large enough to provide suitable summer habitat for the NLEB (at least 10 acres; Figure 1). The three largest forested patches are described below.

- Area A – The largest patch of suitable forested habitat is a 15.1-acre forested patch in the southeastern portion of the Project (depicted in orange on Figure 1). Several smaller forested patches are present within the connected habitat buffer (depicted in green on Figure 1), resulting in a total of approximately 21 acres of forested habitat within Area A.

- Area B – Area B is along the northern boundary of the Project and contains two distinct forest patches large enough to support NLEB. In total, Area B contains 27 acres of forested habitat, comprised of a 14.2-acre forested patch and a 12.8-acre forested patch (depicted in orange on Figure 1).

- Area C – Area C is along the southern boundary of the Project and contains two distinct forest patches large enough to support NLEB. In total, Area C contains 31.7 acres of forested habitat, including two 13.9-acre forested patches (depicted in orange on Figure 1), and several smaller forested patches (depicted in green on Figure 1).

DISCUSSION

The 2019 USFWS Guidelines describe the minimum survey effort for acoustic surveys associated with non-linear projects to be one survey site per 123 acres of suitable summer habitat. Because approximately 195 acres of suitable summer habitat is present with the Project, WEST recommends that surveys be conducted at two sites, as described below and depicted on Figure 1.

- 2018 Acoustic Survey Location - Acoustic presence/probable absence surveys were conducted at one location within the Project (depicted on Figure 1) during the 2018 field season in accordance with the *2018 Range-Wide Indiana Bat Summer Survey Guidelines*

(USFWS 2018), which had negative results indicating probable absence of NLEB (Hyzy and Rieland 2018). Survey results are valid for 5 years (USFWS 2018); therefore, additional surveys will not be required at this survey site in 2019.

- 2019 Acoustic Survey Location - Acoustic presence/probable absence surveys will be conducted at one of the two potential survey locations identified on Figure 1; surveys will be conducted in accordance with the 2019 Survey Guidelines (USFWS 2019).

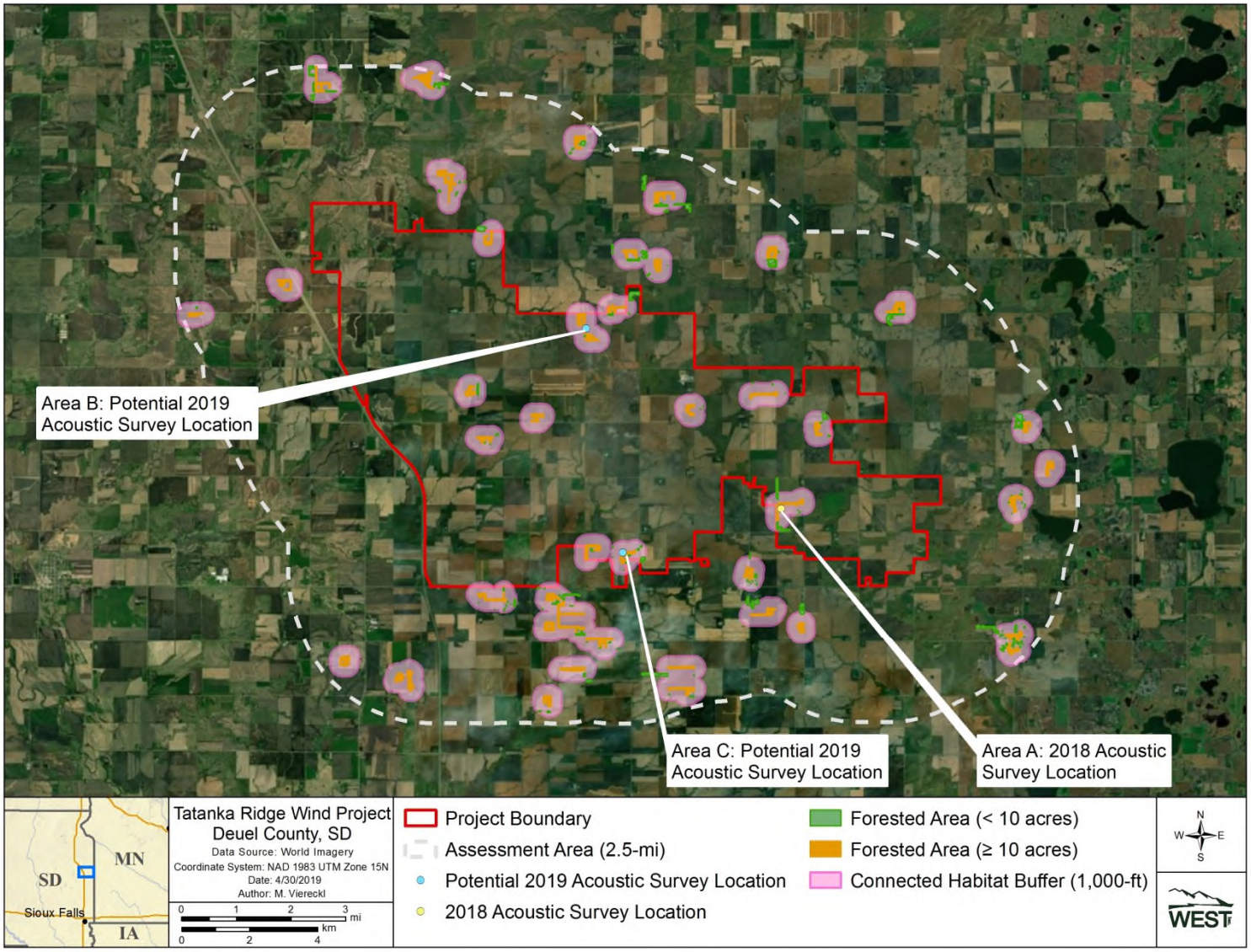

Figure 1. Potential northern long-eared bat summer habitat within the Project and within 2.5 miles of the Tatanka Ridge Wind Project, Deuel County, South Dakota.

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