

Appendix I

Northern Long-eared Bat Survey Report

**Northern Long-Eared Bat
Presence/Probable Absence Acoustic Survey Report
Tatanka Ridge Wind Project
Deuel County, South Dakota**

July 12 – 15, 2018



Prepared for:

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November 8, 2018



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NOTES ON UNITS

Imperial units are used throughout this document, with the exception of the use of meters when describing survey methodology, where metric is used to be consistent with agency guidelines. Conversions are provided below.

Unit Conversions

Imperial	Metric
1 foot	0.3048 meter
3.28 feet	1 meter
1 mile	1.61 kilometer
0.621 mile	1 kilometer
1 acre	0.40 hectare
2.47 acres	1 hectare

Common Conversions

Imperial	Metric
0.12 mile	200 meters
0.5 mile	800 meters
10 miles	16.1 kilometers

INTRODUCTION

Buffalo Ridge III, LLC (Buffalo Ridge III), a subsidiary of Avangrid Renewables, LLC, has proposed development of the Tatanka Ridge Wind Project (Project) located approximately five miles (mi) west of the South Dakota-Minnesota border, and directly north of the town of Toronto in Deuel County, South Dakota (Figure 1). Buffalo Ridge III contracted Western EcoSystems Technology, Inc. (WEST) to conduct acoustic surveys to determine the presence/probable absence¹ of the federally threatened northern long-eared bat (NLEB; *Myotis septentrionalis*) in the Project area during the summer months. Surveys were conducted in accordance with procedures specified in the US Fish and Wildlife Service (USFWS) *Northern Long-Eared Bat Interim Conference and Planning Guidance* (USFWS 2014) and the *2018 Range-Wide Indiana Bat Summer Survey Guidelines* (USFWS Guidelines; USFWS 2018). This report summarizes the results of the NLEB acoustic presence/probable absence surveys completed for the Project during summer 2018.

BACKGROUND

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 them ideally suited for the high maneuverability required for gleaning-type foraging within a cluttered forest interior (Henderson and Broders 2008).

Although 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 found NLEB may use woodlots and riparian zones with as few as 15 to 49 acres of forest cover (Henderson and Broders 2008, Foster and Kurta 1999). Individual trees may also be considered suitable summer habitat when they exhibit the characteristics of a potential roost tree (defined by the USFWS as a tree with a 5-inch diameter at breast height) and are located within 1,000 feet (ft) of other forested/wooded habitat (USFWS 2018).

¹ Although surveys can prove that a species is present within an area, surveys cannot definitively prove absence of a species. Consistent with the USFWS Guidelines, as used in this report, the term probable absence indicates that surveys were conducted in accordance with agency requirements (USFWS 2018), and that the survey results were negative; therefore, surveys determined the probable absence of the NLEB.

**Tatanka Ridge Wind Project
Northern Long-Eared Bat Presence/Probable Absence Acoustic Survey Report**

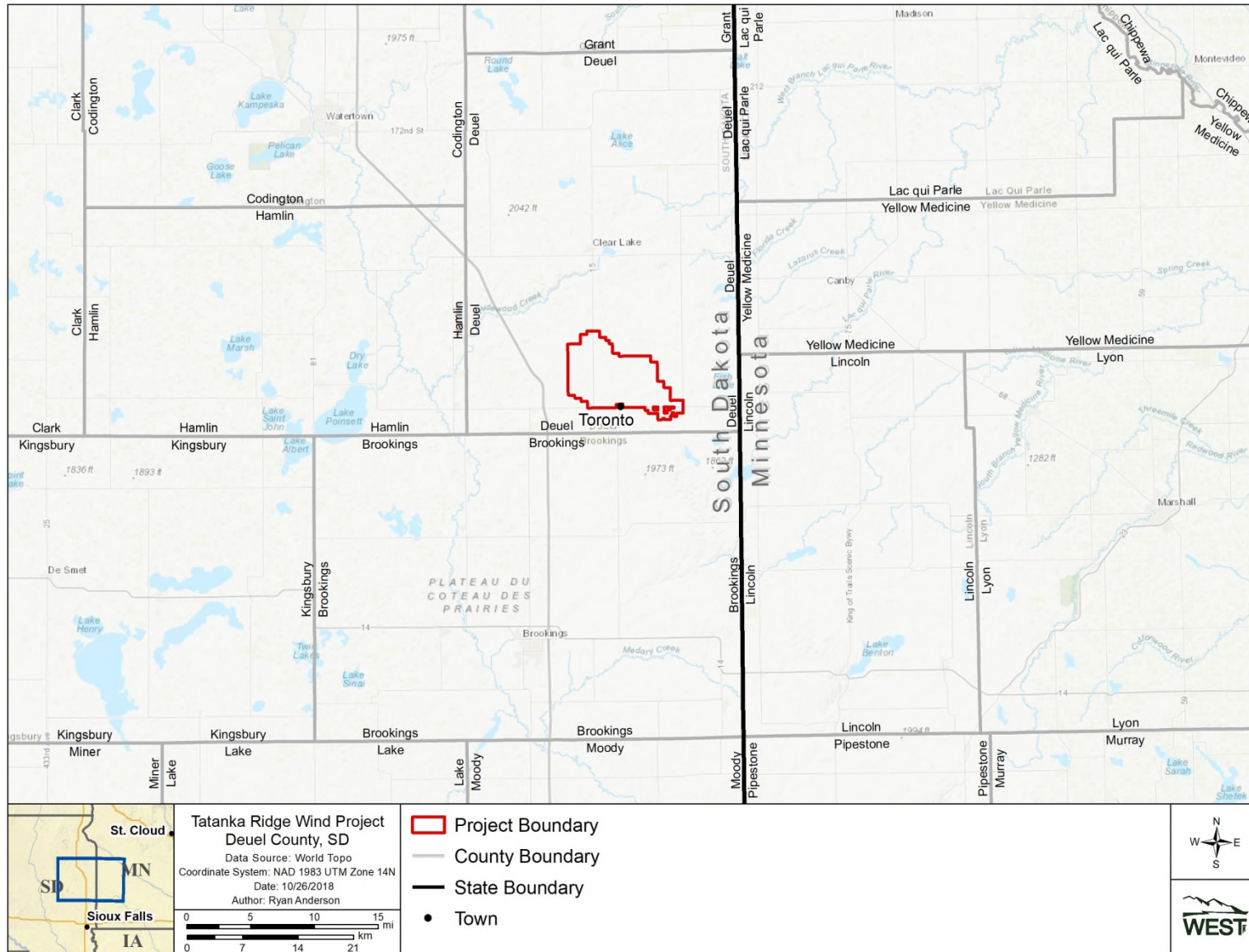


Figure 1. Location of the Tatanka Ridge Wind Project in Deuel County, South Dakota.

Desktop Habitat Assessment

In accordance with the USFWS Guidelines (Phase 1 – Initial Project Screening), which are also applicable to NLEB, a desktop habitat assessment was completed by WEST for the Project in May 2018. The assessment, which is summarized below, identified a total of approximately 60 acres of suitable summer habitat for the NLEB within the Project (WEST 2018).

The assessment derived potential NLEB summer habitat 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 patches for NLEB based on the USFWS's *Indiana Bat Section 7 and Section 10 Guidance for Wind Energy Projects* (2011) and the USFWS Guidelines (USFWS 2018). According to the USFWS, both of these documents and the protocols therein can be used for NLEB presence/probable absence summer surveys (USFWS 2018). WEST categorized potentially suitable summer habitat for NLEB into the following:

- Greater than 50 acres – Medium-large roost/foraging areas (larger areas of contiguous forests and/or riparian corridors).
- Between 15 and 50 acres – Small roost/foraging areas (smaller areas of forest comprised of woodlots and riparian corridors).
- Less than 15 acres – Commuting/travel corridors (typically include shelterbelts and small woodlots).
- Connected habitat buffer – A 1,000-ft connected habitat buffer was placed around forested patches to conservatively identify non-forested areas NLEB may utilize for movement. .

WEST's desktop habitat assessment identified potentially suitable summer habitat for NLEB within two areas, which are depicted in Figure 2:

- Habitat Area #1 was primarily located southwest of the Project, although a portion of this habitat area extended into the southern portion of the Project. The portion of Habitat Area #1 within the Project boundary contained a total of approximately 23 acres of forested patches that could be used by NLEB for commuting/travel corridors.
- Habitat Area #2 was located in the south-central portion of the Project, and contained a total of approximately 37 acres of forested patches that could be used by NLEB. This included one small roost/foraging area comprised of several connected windbreaks and small woodlots that could function as commuting/travel corridors.

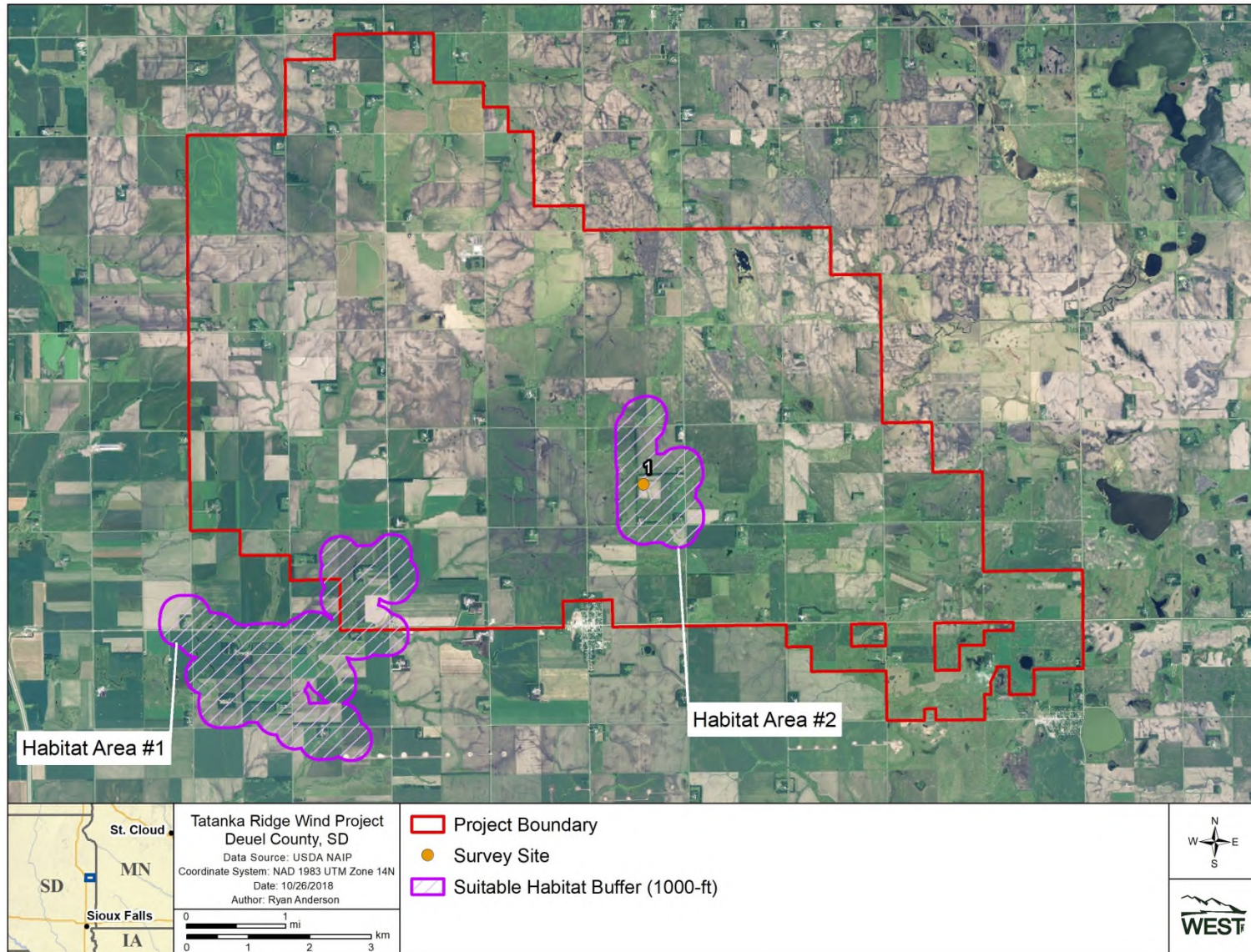


Figure 2. Suitable northern long-eared bat summer habitat and acoustic survey site within the Tatanka Ridge Wind Project in Deuel County, South Dakota.

METHODS

The USFWS Guidelines (USFWS 2018) describe the minimum survey effort for acoustic surveys associated with non-linear projects to be a minimum of eight detector nights per 123 acres of suitable summer habitat. The Project contains 60 acres of suitable habitat; therefore, one acoustic survey site was selected within the Project. The survey site was a small roost/foraging area within Habitat Area #2 (described above; Figure 2). Four detector locations were established within the survey site (Figure 3), each of which was surveyed for at least two calendar nights between July 12–15, 2018, resulting in a total of eight valid detector nights.

The survey site was located in a 15.1-acre roost/foraging area in the vicinity of water sources. Because the forested area was primarily comprised of wind breaks, each of the four detectors was placed along a field edge where canopy heights were greater than 33 ft (10 meters [m]); detectors were spaced approximately 656 ft (200 m) apart when possible and elevated at least 9.8 ft (3.0 m) above the ground level to minimize acoustic interference from vegetation. Bats were surveyed using full spectrum Song Meter SM4 acoustic recorders (Wildlife Acoustics, Inc.).

Acoustic monitoring began before sunset and continued until after sunrise (6:00 pm through 8:00 am). Weather was monitored using an online weather system; if weather conditions such as persistent rain (more than 30 minutes), strong sustained winds (greater than nine miles per hour average for more than 30 minutes), or cold temperatures (below 10° Celsius [50° Fahrenheit] for more than 30 minutes) occurred during the first five hours of a survey night, then that location was surveyed for an additional night unless target species were detected or bat activity was unaffected by weather conditions (USFWS 2018). For each acoustic survey location, the date, start and end time, site description, site coordinates, and weather data were recorded. Representative photographs of each acoustic detector location were taken.

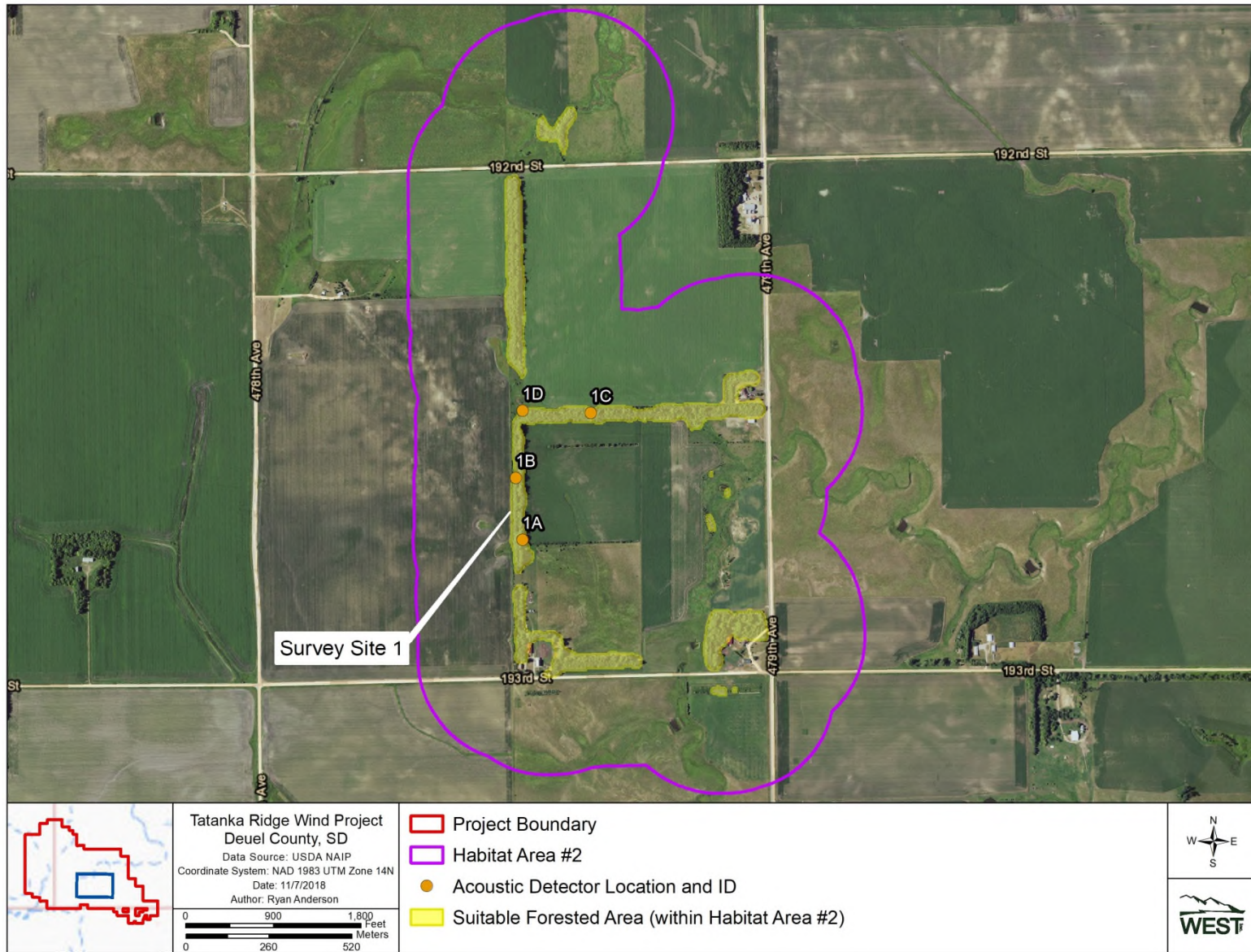


Figure 1. Acoustic detector locations within the Tatanka Ridge Wind Project in Deuel County, South Dakota.

WEST used a two-step approach to determine if NLEB calls were present in data collected at the Project.

- Bat calls were quantitatively identified using the USFWS-approved automated identification software program (Kaleidoscope Pro, version 4.2.0, Wildlife Acoustics, Inc.). Kaleidoscope generates a list of maximum likelihood estimator (MLE) p-values for each survey night for each bat species with the potential to occur within the Project. The MLE determines the most likely distribution of different species for the observed classifications given the estimated classifier error rate. To do this, Kaleidoscope provides the number of calls classified as each bat species. Presence/probable absence is determined using a likelihood ratio test to calculate the p-value corresponding to a null hypothesis of absence. To calculate p-values, the species of interest is clamped as absent and the likelihood of this result given the data is calculated. The numerator of the likelihood ratio is the clamped likelihood (i.e., likelihood of species absence given the data). The denominator is the original estimated likelihood (i.e., likelihood of species presence given the data). A high p-value (>0.05) fails to reject the null hypothesis and indicates probable absence. A low p-value (<0.05) rejects the null hypothesis of absence and indicates species presence.
- For each night where Kaleidoscope indicated that the presence of NLEB was likely (i.e., MLE p-value <0.05), a subsequent qualitative echolocation analysis of all calls from that night was conducted by a biologist experienced with acoustic identification and who met required USFWS qualifications (Ashley Matteson, M.S. and Dr. Kevin Murray of WEST). If the subsequent analysis indicated that each probable call was not characteristic of NLEB, contained distinct a call produced by species other than NLEB, or was of insufficient quality, the call was reclassified as another species, an unknown *Myotis*, or an unknown high frequency call.

Per USFWS Guidelines (USFWS 2018), NLEB were considered present at the survey site if at least one probable call identified by Kaleidoscope was verified by qualitative analysis. Probable absence of NLEB was determined at the survey site if Kaleidoscope did not identify any probable NLEB calls, or if subsequent qualitative analysis of probable NLEB calls (as identified by Kaleidoscope) were not verified by qualitative analysis.

RESULTS

Acoustic surveys were completed at one survey site (four detector locations) from July 12–15, 2018, for a total of eight valid detector nights that met weather and other criteria. Rain persisted for more than 30 minutes on the night of July 12; therefore, the night did not meet the required weather conditions and was considered invalid for all four detector locations. Valid detector nights for all units occurred the nights of July 13 and July 14. Universal Transverse Mercator coordinates and site descriptions for each detector location are listed in Table 1. Photographs and datasheets with location descriptions are included in Appendix A.

Table 1. Site description of acoustic detector locations at the Tatanka Ridge Wind Project in Deuel County, South Dakota.

Survey Site and Location ID	Easting†	Northing†	Site Description
1A	687953	4940265	Field edge
1B	687928	4940458	Field edge
1C	688159	4940666	Field edge
1D	687945	4940669	Field edge

† = North American Datum of 1983, Zone 14

To assess study conditions for compliance with USFWS Guidelines (USFWS 2018), weather was monitored using the Brandt weather station (KSDBRAND7) on Weather Underground’s online weather system (<http://www.wunderground.com>). Weather conditions met the criteria for all four detector locations on the nights of July 13 and July 14. Together, these four detector locations collected eight nights of valid data, meeting the requirement of at least eight detector nights per site.

Kaleidoscope identified a total of 3,148 bat call files, of which 2,800 files (88.9%) were identified to species. The average number of bat calls per detector night was 393.5. Table 2 summarizes the number of detector nights, number of bat call files, and number of bat calls identified to species at each detector location. Table 3 provides information on species identifications for each of the four detector locations.

Table 2. Number of bat calls recorded at each acoustic detector location, as determined by Kaleidoscope, for the Tatanka Ridge Wind Project in Deuel County, South Dakota.

Survey Site and Location ID	ID Program	Total Bat Calls	Calls Identified to Species	Valid Detector Nights	Average # Calls/Detector Night
1A	Kaleidoscope	700	610	2	350.0
1B	Kaleidoscope	709	608	2	354.5
1C	Kaleidoscope	389	334	2	194.5
1D	Kaleidoscope	1,350	1,248	2	675.0
Total		3,148	2,800	8	393.5

Table 3. Summary of Kaleidoscope echolocation call identifications for the Tatanka Ridge Wind Project in Deuel County, South Dakota.

Survey Site and Location ID	EPFU	LABO	LACI	LANO	MYLU	MYSE	PESU	UNK	Total
1A	431	45	112	16	5	0	1	90	700
1B	437	74	70	19	6	0	2	101	709
1C	231	15	39	49	0	0	0	55	389
1D	1,067	80	78	19	3	0	1	102	1,350
Total	2,166	214	299	103	14	0	4	348	3,148

EPFU = big brown bat (*Eptesicus fuscus*); LABO = eastern red bat (*Lasiurus borealis*); LACI = hoary bat (*L. cinereus*); LANO = silver-haired bat (*Lasionycteris noctivagans*); MYLU = little brown bat (*Myotis lucifugus*); MYSE = northern long-eared bat (*M. septentrionalis*); PESU = tri-colored bat (*Perimyotis subflavus*); UNK = unknown.

Kaleidoscope identified no probable NLEB calls at any of the four detector locations surveyed. Qualitative analysis was not required due to the lack of probable NLEB calls detected by Kaleidoscope. Therefore, surveys have determined the probable absence of the NLEB from the Project area (Table 4).

Table 4. Summary of actions at each acoustic detector location for the Tatanka Ridge Wind Project in Deuel County, South Dakota.

Survey Site and Location ID	Kaleidoscope Identified NLEB Calls (yes/no)	Maximum Likelihood Estimator (p < 0.05) NLEB Calls (yes/no)	NLEB Qualitatively Verified	Recommended Action ¹
1A	No	No	No	No further action
1B	No	No	No	No further action
1C	No	No	No	No further action
1D	No	No	No	No further action

NLEB = Northern long-eared bat (*Myotis septentrionalis*)

¹ Per Step 6 (Conduct Automated Acoustic Analyses) of the US Fish and Wildlife Service's *2018 Range-Wide Indiana Bat Summer Survey Guidelines*, because NLEB presence was considered unlikely by the approved program (Kaleidoscope), no further summer surveys are necessary.

CONCLUSIONS

No NLEB calls were detected by the automated acoustic identification software or qualitatively verified at any detector locations during surveys in 2018. Therefore, the conclusion of probable absence of NLEB from the proposed Project is supported by the survey results. Surveys are considered complete for all four detector locations at the single survey site, and no further action is recommended to confirm NLEB absence pursuant to USFWS *Northern Long-eared Bat Interim Conference and Planning Guidance* (USFWS 2014) and USFWS Guidelines (USFWS 2018). These survey results are valid for a minimum of five years² from the completion of the survey unless new information (e.g., other nearby surveys) suggest otherwise (USFWS 2018).

² The timeframe may be reduced if significant habitat changes have occurred in the area or increased based on local information.

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**Appendix A. Tatanka Ridge Wind Project Acoustic Detector Location
Photographs and Datasheets**

Acoustic Detector Location 1A



Location 1A - Detection Cone

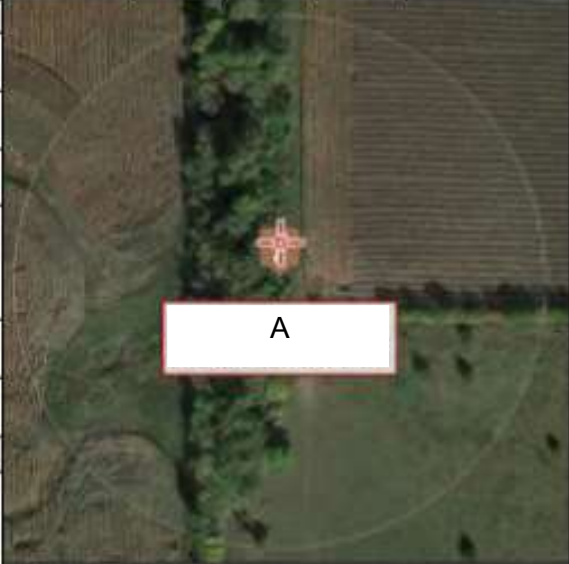


Location 1A – Detector Location



Location 1A – Orientation

Location 1A Datasheet

Site Information												
Site ID: A		Project: Tatanka					State: South Dakota					
		Surveyors: S. Neumann					County: Deuel					
Start Date: 2018-07-12		End Date:			Datum: NAD83			UTM Zone: 14				
Start Time: 1105		End Time:			Easting: 687953			Northing: 4940265				
<small>*Use 24 hour time format</small>		<small>*Use yyyy-mm-dd date format</small>			<small>*Easting should be 6 digits</small>			<small>*Northing should be 7 digits</small>				
Detector Information							Microphone Information				Anabat Only	
Detector Model: SM4							Sound Reception: None				Audio Div <small>(Should be 26)</small>	
Detector Serial: S4U02894							Mic Serial: MU101228		Mic Height (m): 3		Data Div <small>(Should be 16)</small>	
Detector Housing: None							Mic Horizontal Orientation (0-360°): 350					
Battery Source: Internal							Mic Vertical Orientation (°): 0					
All Detector Checklist									Anabat Only			
Date <small>(yyyy-mm-dd)</small>	Time <small>(24 Hour)</small>	Battery Voltage <small>(V)</small>	Perform Mic Check	Inspect Cables; Mic; Holder; Housing	Replace Data Card(s)	Change Battery	Comments <small>(Detector set up, plied up, moved, knocked over, vandalized, etc.)</small>	Sensitivity Setting <small>(Normally 6)</small>	Test Indicators <small>"Data" lit and static heard</small>	Set Volume <small>(Sweet Spot)</small>	LED Indicator Lights <small>(Should be Standby, unless between 1600 and 2:00)</small>	
2018-07-12	1105	6.3	✓	✓	✓	✓	Detector set up				Record Status Data	Standby Error
2018-07-15	1200	5.6	✓	✓			Detector pick up 5Gb				Record Status Data	Standby Error
											Record Status Data	Standby Error
											Record Status Data	Standby Error
Habitat Composition <small>within 100m (i.e. the sketched area)</small>												
Primary Habitat: Field Edge				% Forest: 20								
Forest Type: Deciduous				% Open/Ag: 80								
Dominant Tree Species: Populus deltoides				% Water: 0								
Stand Age (DBH): Late-successional (25 - 38 cm)												
Preferred Roost Tree Species Present:												
Topography: Flat												
Habitat Description <small>within 100m (i.e. the sketched area)</small>												
Detector between tree line and cornfield edge.												
Photo Checklist												
Detector Location: <input checked="" type="checkbox"/>			Detector Orientation: <input checked="" type="checkbox"/>			Detection Cone: <input checked="" type="checkbox"/>						
<small>(Detector + All Surrounding Habitat)</small>			<small>(Detector + Set Feature Zoomed)</small>			<small>(Air Zoom Sample)</small>						

¹ Choices: Edge, Bottomland Forest, Cave Entrance, Creek/Riparian, Field Edge, Mine Pits, Open Field, Pond, Structure, Upland Forest, or Other (Give Brief Description)
² Map out habitat features within a 100 m radius of the detector (s). Indicate direction of microphone using an arrow. Include any features of interest (water, buildings, rocky outcrops, etc.)
³ Provide a written description of the surrounding habitat within a 100m radius of the detector, including details on width of the road/trail/outline, size of pond/lake, distance to nearest water, etc.)

Acoustic Detector Location 1B



Location 1B – Detection Cone



Location 1B – Location



Location 1B – Orientation

Location 1B Datasheet

Site Information			
Site ID: B	Project: Tatanka		State: South Dakota
	Surveyors: S. Neumann		County: Deuel
Start Date: 2018-07-12	End Date:	Datum: NAD83	UTM Zone: 14
Start Time: 1140	End Time:	Easting: 687928	Northing: 4940458

*Use 24 hour time format

*Use yyyy-mm-dd date format

*Easting should be 6 digits

*Northing should be 7 digits

Detector Information		Microphone Information		Anabat Only
Detector Model: SM4		Sound Reception: None		Audio Div <i>(Should be 16)</i>
Detector Serial: S4U02785				
Detector Housing: None		Mic Serial: MU106730	Mic Height (m): 3	Data Div <i>(Should be 16)</i>
		Mic Horizontal Orientation (0-360°): 0		
Battery Source: Internal		Mic Vertical Orientation (°): 0		

All Detector Checklist									Anabat Only			
Date <i>(yyyy-mm-dd)</i>	Time <i>(24 Hour)</i>	Battery Voltage <i>(V)</i>	Perform Mic Check	Inspect Cables; Mic Holder; Housing	Replace Data Card(s)	Change Battery	Comments <i>(Detector set up, picked up, moved, knocked over, vandalized, etc.)</i>	Sensitivity Setting <i>(Normally 0)</i>	Test Indicators <i>"Det" lit and status heard</i>	Set Volume <i>(lowest setting)</i>	LED Indicator Lights <i>(Should be Standby, unless between 1600 and 2000)</i>	
2018-07-12	1140	6.3	✓	✓	✓	✓	Detector set up				Record Status Data	Standby Error Data
											Record Status Data	Standby Error Data
											Record Status Data	Standby Error Data
											Record Status Data	Standby Error Data

Habitat Composition <i>within 100m (i.e. the sketched area)</i>	
¹ Primary Habitat: Field Edge	% Forest: 20
Forest Type: Deciduous	% Open/Ag: 80
Dominant Tree Species: <i>Fraxinus pennsylvanica</i> <i>Populus deltoides</i>	% Water: 0
Stand Age (DBH): Mature (38 cm or greater)	
Preferred Roost Tree Species Present:	
Topography: Flat	
² Habitat Description <i>within 100m (i.e. the sketched area)</i>	
Tree corridor between ag fields.	

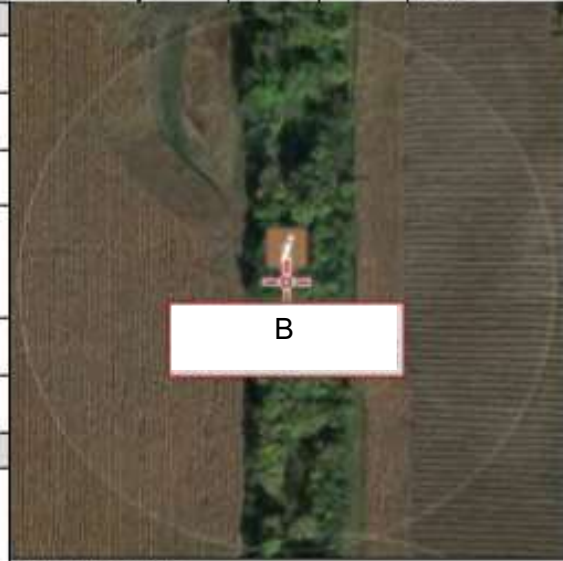


Photo Checklist		
Detector Location: <input checked="" type="checkbox"/>	Detector Orientation: <input checked="" type="checkbox"/>	Detection Cone: <input checked="" type="checkbox"/>
<i>(Detector = All Surrounding Habitat)</i>	<i>(Detector = Set Feature Samples)</i>	<i>(All Specie Samples)</i>

¹ Choices: Bridge, Bottomland Forest, Cave Entrance, Creek/Riparian, Field Edge, Mine Portal, Open Field, Pond, Structure, Upland Forest, or Other (Give Brief Description)
² Map out habitat features within a 100 m radius of the detector (s). Indicate direction of microphone using an arrow. Include any features of interest (water, buildings, rocky outcrops, etc.).
³ Provide a written description of the surrounding habitat within a 100m radius of the detector, including details on width of the road/trail/outline, size of pond/lake, distance to nearest water, etc.

Acoustic Detector Location 1C



Location 1C – Detection Cone



Location 1C – Location



Location 1C – Orientation

Location 1C Datasheet

Site Information											
Site ID: C		Project: Tatanka					State: South Dakota				
		Surveyors: S. Neumann					County: Deuel				
Start Date: 2018-07-12		End Date:		Datum: NAD83			UTM Zone: 14				
Start Time: 1245		End Time:		Easting: 688159			Northing: 4940666				
*Use 24 hour time format			*Use yyyy-mm-dd date format			*Easting should be 6 digits			*Northing should be 7 digits		
Detector Information						Microphone Information				Anabat Only	
Detector Model: SM4						Sound Reception:				Audio Div <i>(Should be 16)</i>	
Detector Serial: S4U00588										Mic Serial: MU106392	
Detector Housing: None						Mic Horizontal Orientation (0-360°): 90				Data Div <i>(Should be 16)</i>	
Battery Source: Internal						Mic Vertical Orientation (°): 0					
All Detector Checklist									Anabat Only		
Date (yyyy-mm-dd)	Time (24 Hour)	Battery Voltage (V)	Perform Mic Check	Inspect Cables, Mic Holder, Housing	Replace Data Card(s)	Change Battery	Comments (Detector set up, plied up, moved, knocked over, vandalized, etc.)	Sensitivity Setting (Normally 6)	Test Indicators ("Data" lit and static noise)	Set Volume (Largest Setting)	LED Indicator Lights <i>(Should be Standby, unless between 1600 and 8:00)</i>
2018-07-12	1240	6.4	✓	✓	✓	✓	Detector set up				Record Status Date Standby Error
											Record Status Date Standby Error
											Record Status Date Standby Error
											Record Status Date Standby Error
Habitat Composition within 100m (i.e. the sketched area)											
Primary Habitat: Field Edge			% Forest: 20								
Forest Type: Deciduous			% Open/Ag: 80								
Dominant Tree Species: Populus deltoides Fraxinus pennsylvanica			% Water: 0								
Stand Age (DBH): Late-successional (25 - 38 cm)											
Preferred Roost Tree Species Present: Populus deltoides (snag)											
Topography: Flat											
Habitat Description within 100m (i.e. the sketched area)						Photo Checklist					
Tree corridor between ag fields.						Detector Location: <input checked="" type="checkbox"/>		Detector Orientation: <input checked="" type="checkbox"/>		Detection Cone: <input checked="" type="checkbox"/>	
						<i>(Detector = All Surrounding Habitat)</i>		<i>(Detector = Bat Feature Sampled)</i>		<i>(All Space Sampled)</i>	

¹ Choose: Bridge, Bottomland Forest, Cave Entrance, Creek/Riparian, Field Edge, Mine Portal, Open Field, Pond, Structure, Upland Forest, or Other (Give Brief Description)
² Map out habitat features within a 100 m radius of the detector (x). Indicate direction of microphone using an arrow. Include any features of interest (water, buildings, rocky outcrops, etc.).
³ Provide a written description of the surrounding habitat within a 100m radius of the detector, including details on width of the road/trail/cutline, size of pond/lake, distance to nearest water, etc.).

Acoustic Detector Location 1D



Location 1D – Detection Cone

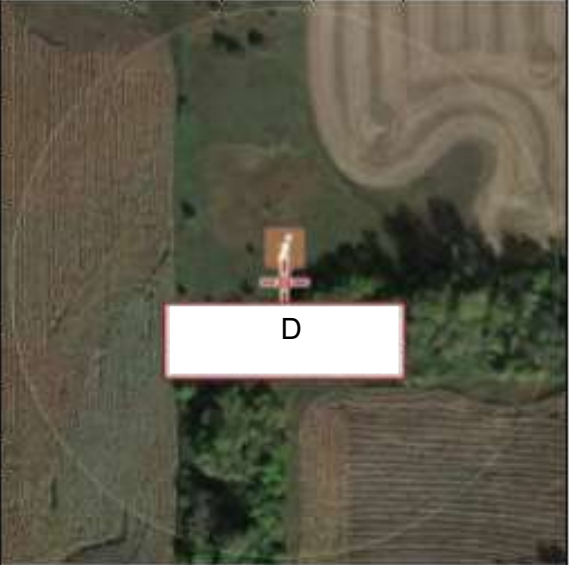


Location 1D – Location



Location 1D – Orientation

Location 1D Datasheet

Site Information													
Site ID: D		Project: Tatanka					State: South Dakota						
		Surveyors: S. Neumann					County: Deuel						
Start Date: 2018-07-12		End Date:			Datum: NAD83			UTM Zone: 14					
Start Time: 1220		End Time:			Easting: 687945			Northing: 4940669					
*Use 24 hour time format		*Use yyyy-mm-dd date format			*Easting should be 6 digits			*Northing should be 7 digits					
Detector Information							Microphone Information				Anabat Only		
Detector Model: SM4							Sound Reception: None				Audio Div <i>(Should be 16)</i>		
Detector Serial: S4U05101													
Detector Housing: None							Mic Serial: MU106486		Mic Height (m): 3			Data Div <i>(Should be 16)</i>	
							Mic Horizontal Orientation (0-360°): 195						
Battery Source: Internal							Mic Vertical Orientation (°): 0						
All Detector Checklist									Anabat Only				
Date <i>(yyyy-mm-dd)</i>	Time <i>(24 Hour)</i>	Battery Voltage <i>(V)</i>	Perform Mic Check	Inspect Cables; Mic Holder; Housing	Replace Data Card(s)	Change Battery	Comments <i>(Detector set up, picked up, moved, knocked over, vandalized, etc.)</i>	Sensitivity Setting <i>(Normally 6)</i>	Test Indicator <i>"Color" (Y and R) (None)</i>	Set Volume <i>(Sound Setting)</i>	LED Indicator Lights <i>(Should be Standby, unless between 1800 and 8:00)</i>		
2018-07-12	1220	6.4	✓	✓	✓	✓	Detector set up				Record Status Data	Standby Error	
											Record Status Data	Standby Error	
											Record Status Data	Standby Error	
											Record Status Data	Standby Error	
Habitat Composition <i>within 100m (i.e. the sketched area)</i>													
1 Primary Habitat: Field Edge				% Forest:									
Forest Type: Deciduous				% Open/Ag:									
Dominant Tree Species: Populus deltoides Fraxinus pennsylvanica				% Water:									
Stand Age (DBH): Late-successional (25 - 38 cm)													
Preferred Roost Tree Species Present:													
Topography: Flat													
3 Habitat Description <i>within 100m (i.e. the sketched area)</i>													
Detector place at meeting point between two tree lines.													
Photo Checklist													
Detector Location: <input checked="" type="checkbox"/>			Detector Orientation: <input checked="" type="checkbox"/>			Detection Cone: <input checked="" type="checkbox"/>							
<i>(Detector = All Surrounding Habitat)</i>			<i>(Detector = Set Feature Completed)</i>			<i>(All Space Covered)</i>							

¹ Choices: Bridge, Bottomland Forest, Cave Entrance, Creek/Riverine, Field Edge, Mine Portal, Open Field, Pond, Structure, Upland Forest, or Other (Give Brief Description)

² Map out habitat/features within a 100 m radius of the detector (x). Indicate direction of microphone using an arrow. Include any features of interest (water, buildings, rocky outcrops, etc.).

³ Provide a written description of the surrounding habitat within a 100m radius of the detector, including details on width of the road/trail/outline, size of pond/lake, distance to nearest water, etc.)