Appendix J
Rare Bat Work Plan

Rare Bat Acoustic Survey Work Plan

Eight Point Wind Energy Center,
Steuben County, New York

Prepared for:
Eight Point Wind, LLC

Prepared by:
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30 Park Drive
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July 20, 2016

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1.0 INTRODUCTION

1.1 PROJECT DESCRIPTION

Eight Point Wind, LLC (EPW), is proposing the Eight Point Wind Energy Center (Project) located in Steuben County, New York. The Project, as currently planned, would have a generating capacity of up to 103 megawatts (MW). Project facilities will include commercial-scale wind turbines, access roads, buried (and possibly overhead) electric collection lines, a collection substation, meteorological towers, an operation and maintenance building, and electrical interconnection facilities, in part including a 115-kilovolt (kV) interconnection line approximately 27 kilometers (km) long.

EPW retained TRC Companies, Inc. (TRC) to complete Project permitting and TRC retained Stantec Consulting Services Inc. (Stantec) to conduct pre-construction avian and bat surveys supporting the Project permitting.

1.2 PURPOSE AND OBJECTIVES

This Work Plan is for 2016 rare bat acoustic surveys and is based on the Standard Pre-Construction Studies detailed in the New York State Department of Environmental Conservation's (NYSDEC) Guidelines for Conducting Bird and Bat Studies at Commercial Wind Energy Projects (NYSDEC Guidelines; NYSDEC 2016[1]) and the U.S. Fish and Wildlife Service (USFWS) 2016 Range-wide Indiana Bat Summer Survey Guidelines (2016 Bat Guidelines; USFWS 2016[2]). The development of this work plan is also based on feedback from the USFWS and NYSDEC during a meeting on 29 June 2016 between the NYSDEC, USFWS, and the Project team partners; as well as subsequent communications with USFWS.

The northern long-eared bat (*Myotis septentrionalis*) is state-listed as threatened and was listed as federally threatened on 2 April 2015 under the Endangered Species Act with a final 4(d) Rule effective on 14 January 2016. The species' range encompasses Steuben County where the Project is located. The study objective is to investigate the presence or probable absence of breeding populations of northern long-eared bats in suitable summer habitats of the Project area. Primary land cover types within the Project area consist of approximately 11,840 acres of grassland/pasture/hayfield and 24,700 acres of forested communities (Figure 1). For the purposes

[1] NYSDEC. 2016. Guidelines for Conducting Bird and Bat Studies at Commercial Wind Energy Projects. < http://www.dec.ny.gov/docs/fish_marine_pdf/dwinguide16.pdf>
[2] USFWS. 2016. Range-wide Indiana Bat Summer Survey Guidelines, 11 April. <http://www.fws.gov/midwest/Endangered/mammals/inba/inbasummersurveyguidance.html>

of this Work Plan, we assume that all forested habitats available provide potential roost habitat, or suitable summer habitat, for northern long-eared bats.

Impacts to habitat due to development of the Project will result from the construction of access roads, turbine pads, and the electrical interconnection facilities. This infrastructure will represent linear features on the landscape; therefore, we propose to follow the 2016 Bat Guidelines for acoustic effort at linear projects. Per the 2016 Bat Guidelines, there will be two detector nights per one km of proposed project infrastructure in suitable summer habitat.

2.0 SURVEY METHODS

There are approximately 11 km of proposed collector line, 15 km of proposed transmission line, and 9 km of proposed access roads (35 km of total proposed infrastructure within suitable habitat), which equates to 70 detector nights and 35 detector sites using the 2016 Bat Guidelines at linear projects. Up to seven additional detector sites will be sampled to increase survey effort and coverage within the Project area. Stantec will place up to 42 detectors across up to 84 calendar nights with one or two teams of two biologists to achieve this effort. Biologists conducting the acoustic surveys will have previous experience conducting acoustic surveys according to the 2016 Bat Guidelines, as well as knowledge of bat ecology. The survey will be conducted in July and/or August 2016 within the USFWS-approved survey dates.

Stantec will use full-spectrum (e.g., Wildlife Acoustics© SM3 or SM4) acoustic bat detectors for the surveys. Each detector will be fitted with a SMM-U1 ultrasonic omnidirectional microphone. We will deploy detectors according to the criteria in the 2016 Bat Guidelines, positioning detectors in potential flight corridors that could provide suitable northern long-eared bat foraging habitat. USFWS Guidelines recommend that microphones be located in areas without vegetation or with minimal vegetation within 10 meters (m) of the microphone and that any obstructions be located at least 3 m away from microphones in any direction. USFWS Guidelines also recommend that detectors be placed at least 200 m apart.

Based on review of aerial imagery during a desktop analysis, Stantec identified 48 potential detector locations, but sampling will occur at up to 42 of these locations where EPW obtains access permission from landowners (Figure 1). Stantec will assess these locations during deployment and will select final detector locations based on on-the-ground conditions and criteria in the 2016 Bat Guidelines. We will record coordinates of the final detector locations using Global Positioning System (GPS), document the approximate accuracy of the GPS unit, and photograph each detector with something for scale (e.g., vehicle or person), showing the surrounding habitat and the "detector-view." For each detector site, we will document relevant deployment and habitat information on a Stantec field datasheet (Appendix A) and on the 2016 Bat Guidelines Phase 1 Summer Habitat Assessment datasheet (Appendix B). Personnel responsible for deploying and downloading detectors will be noted on each field datasheet.

We will mount each detector so that the microphone is approximately 3 m above ground level and oriented horizontally to the ground to sample an optimal volume of air space in accordance with the 2016 Bat Guidelines. We will set the audio and data storage settings on each detector according to defaults recommended by the manufacturer (e.g., detectors will operate in "triggered .wav" mode using default trigger threshold settings recommended by the manufacturer). We will program each detector to record from 30 minutes before sunset until 30 minutes after sunrise and will power each detector with alkaline batteries.

We will leave detectors in place at each survey site until two calendar nights have been successfully surveyed during weather conditions that meet the parameters outlined in the 2016 Bat Guidelines (temperatures do not drop below 50° F during the first five hours of each survey night, precipitation/fog persists for no more than 30 minutes during the first five hours of each survey night, and sustained wind speeds do not exceed nine miles/hour for 30 minutes or more during the first five hours of each survey night). We will verify weather conditions by reviewing hourly data recorded by the nearest weather station. Following the first two weather-appropriate nights of data collection, we will inspect each detector in the field to confirm that each operated for two nights (i.e., we will conduct a microphone "calibration test," check battery voltage, and view system status log files). Once confirmed, we will remove the detectors from the field. We will retain and analyze only those data from the first two nights that meet the weather criteria.

Stantec will perform a coarse visual analysis of the data to confirm that high frequency bats[3] were recorded, and if so, we will then analyze data using two automated acoustic software programs as required by the 2016 NYSDEC Guidance. We will use Kaleidoscope Pro Software version 3.1.7 (classifier version 3.1.0; Kaleidoscope) and Bat Call Identification (BCID) Software version 2.7d, which have been approved by the USFWS as suitable for analyzing full-spectrum bat data collected by SM3 or SM4 units once the data have been converted to zero-crossing format. We will base presence or probable absence of northern long-eared bats on the maximum likelihood estimates (MLE) generated by Kaleidoscope and BCID for each night. An MLE of less than 0.05 indicates probable presence and an MLE greater than 0.05 indicates probable absence[4]. Data files will be archived electronically and made available upon request.

Stantec will also visually review all call sequences recorded at a detector location on nights when northern long-eared bat presence is determined likely thereby manually vetting all call identification determinations (or lack of identification) made by Kaleidoscope or BCID on those nights and at those locations. Stantec biologists with relevant experience and training in acoustic bat identification will conduct the manual vetting.

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[3] High frequency bat calls have a minimum frequency above 35 kilohertz (kHz) and are likely produced by Indiana bat (*Myotis sodalis*), little brown bat (*M. lucifugus*), eastern small-footed bat (*M. leibii*), and northern long-eared bat.

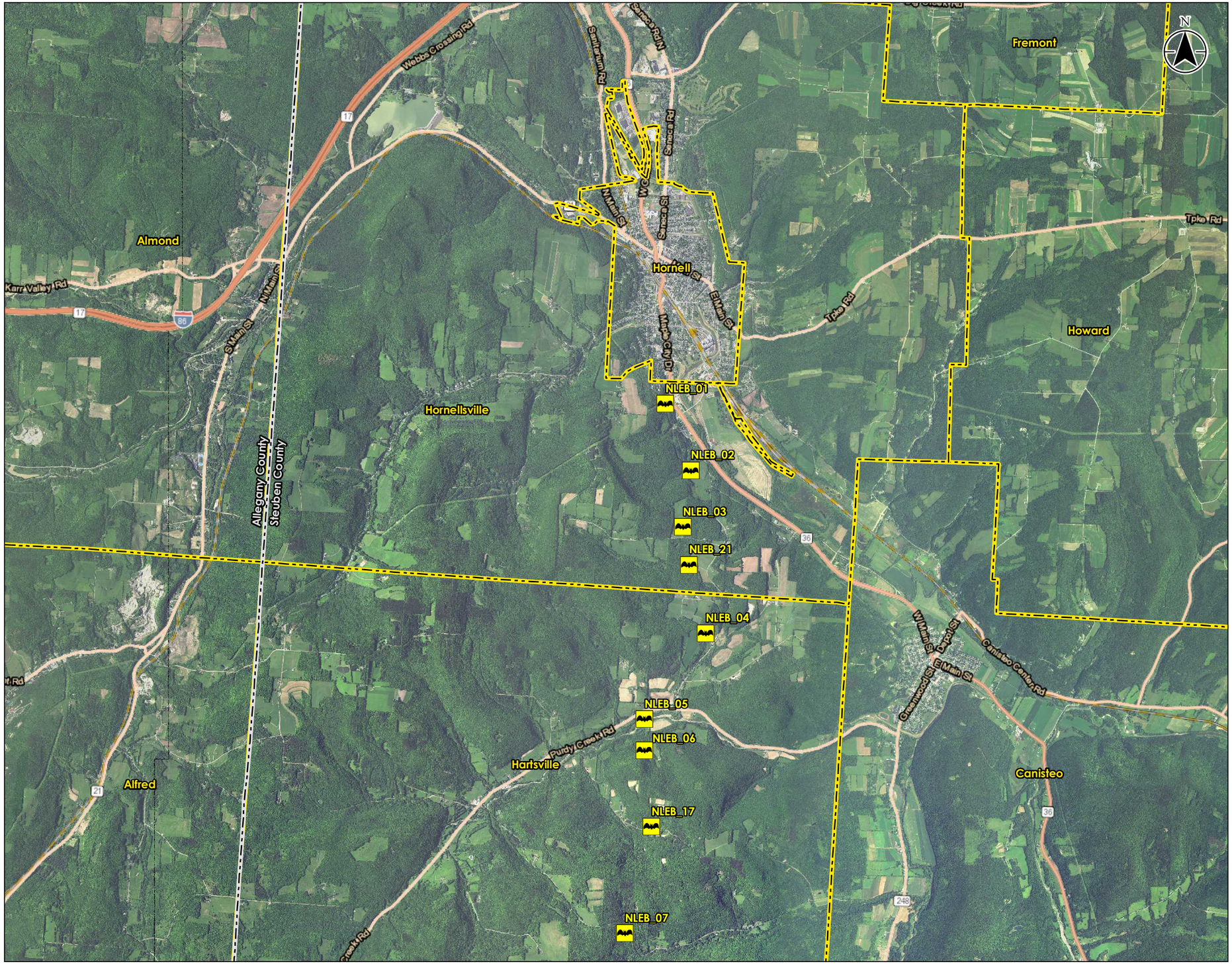
[4] According to the 2016 Bat Guidelines, an MLE created by any of the approved acoustic identification programs at a given site on a given night resulting in less than 0.05 indicates probable presence of the species.

3.0 REPORTING

Stantec will prepare a report describing the methods and results of the surveys. The report will include:

- completed datasheets for the detector sites;
- a map showing the location of each detector site;
- photos of the detector setups;
- screenshots of representative species of bat calls identified during analysis, tables summarizing the output from the Kaleidoscope identification software and results of manual vetting;
- the resume of the biologist who conducted the manual vetting; and
- other information required by the 2016 Bat Guidelines.

Associated GIS data, original acoustic data, status or log files, and software output will be retained and made available upon request.



Stantec

Legend

Acoustic Bat Detector Site (2016-07-19)

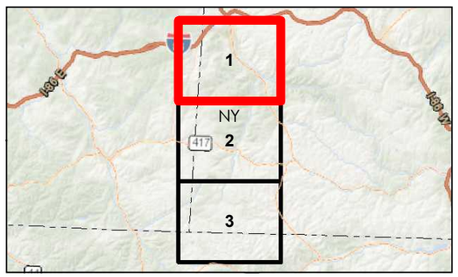
- Primary Detector Site
- Town Boundary

0 1 Mile

1 inch = 1 mile (At original document size of 11x17)

Notes

1. Coordinate System: NAD 1983 UTM Zone 18N
2. 2015 National Agriculture Imagery Program (NAIP) aerial orthoimagery provided by USDA's Farm Service Agency.



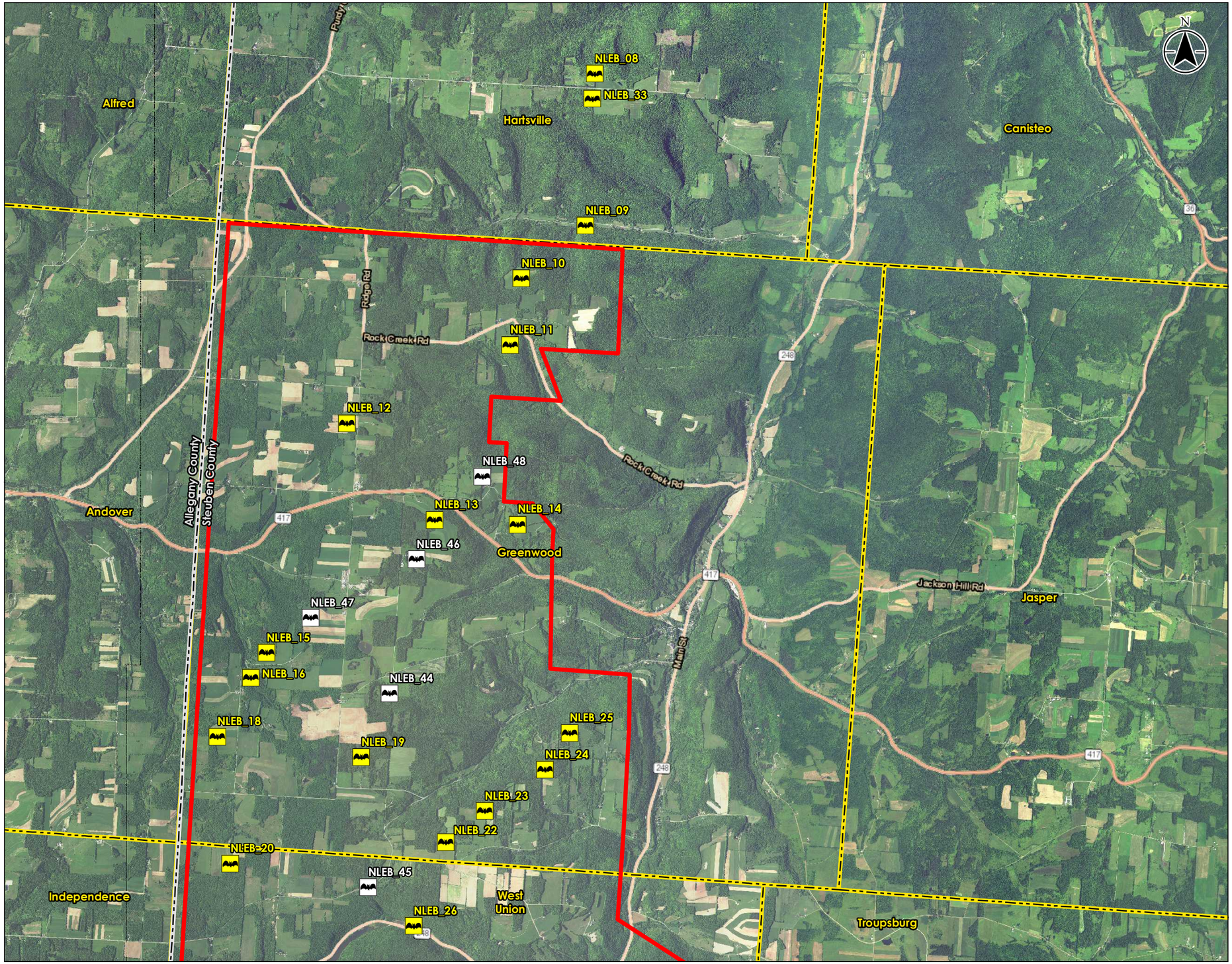
Project Location
Steuben County
New York

195601170
Prepared by DLJ on 2016-07-13
Quality Review by GAC on 2016-07-13
Independent Review by DGN on 2016-07-13

Client/Project
TRC Engineering LLC
Pre-Construction Avian & Bat Surveys
Proposed 8 Point Wind Project

Figure No.
1 of 3

Title
Acoustic Bat Detector Survey Sites Map



Stantec

Legend

Acoustic Bat Detector Site (2016-07-19)

- Primary Detector Site
- Alternative Detector Site
- Project Boundary
- Town Boundary

0 1 Mile

1 inch = 1 mile (At original document size of 11x17)

Notes

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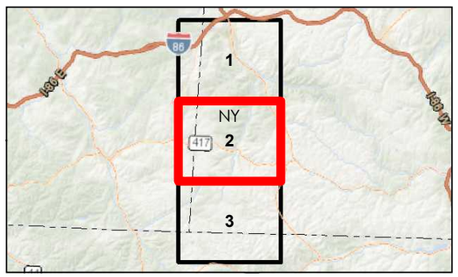

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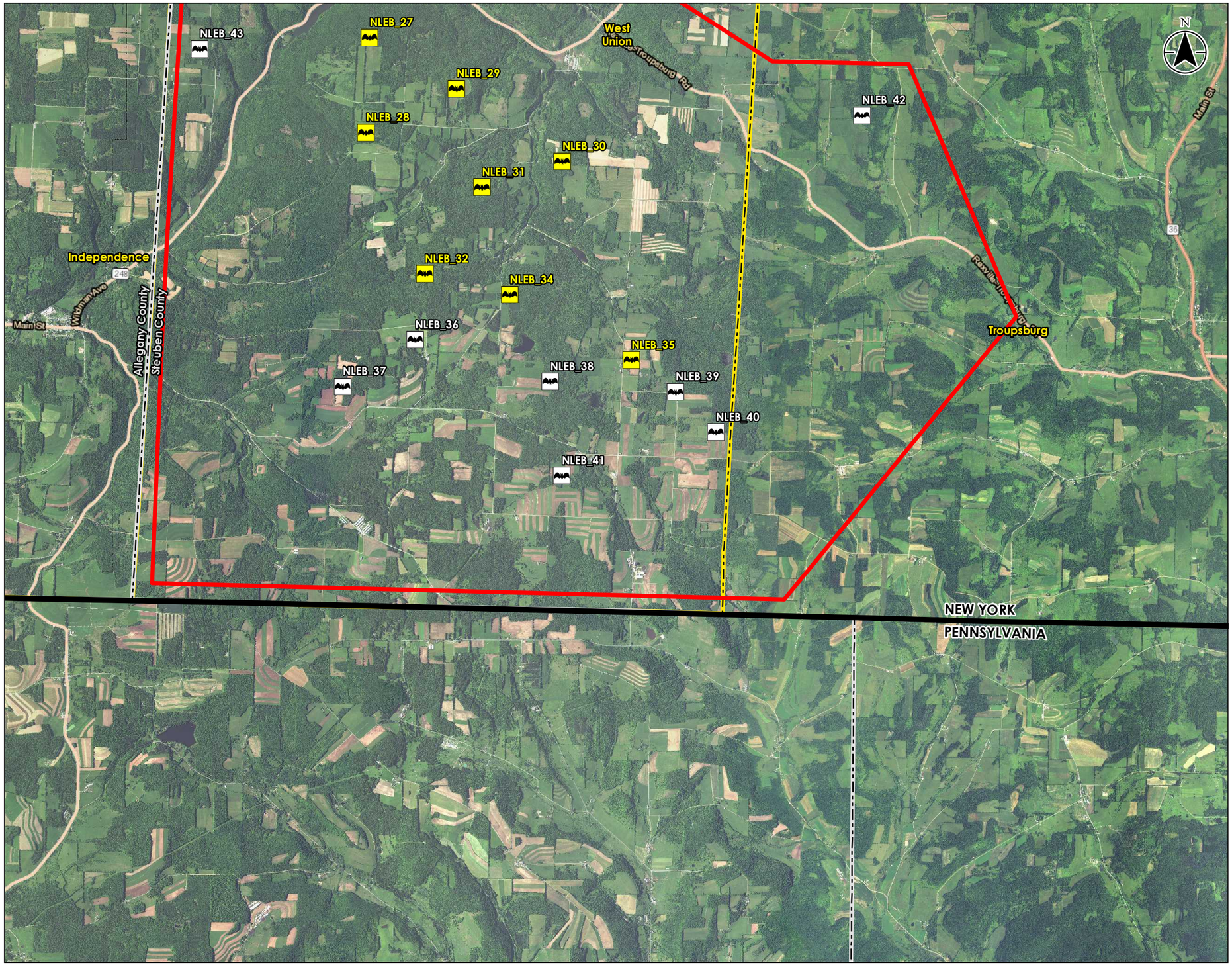
Figure No.
2 of 3

Title
Acoustic Bat Detector Survey Sites Map



Stantec

Legend

Acoustic Bat Detector Site (2016-07-19)

- Primary Detector Site
- Alternative Detector Site
- Project Boundary
- Town Boundary

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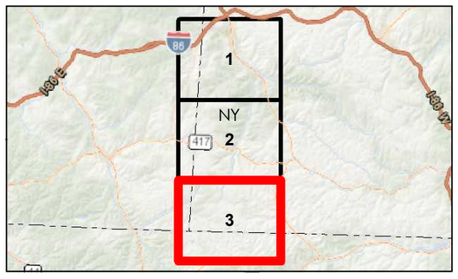

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Figure No.
3 of 3

Title
Acoustic Bat Detector Survey Sites Map

Appendix A STANTEC NLEB PRESENCE/ABSENCE

NLEB Presence/Absence Acoustic Survey Datasheet - Stantec

Project Name _____ Site ID _____ Weather Station Provider _____

Surveyor Initials _____ Latitude _____ Weather Station ID _____

Deployment Date _____ Longitude _____

Sampling Location Specific Characteristics - Check all that apply

- ☐ Forest Canopy Opening
- ☐ Near water
- ☐ Recently logged with remaining potential roost trees
- ☐ Road and/or stream corridor with open tree canopy or canopy height > 10m
- ☐ Woodland edge
- ☐ Other - Describe _____

Additional Habitat Notes

Unit Specific Deployment Characteristics - Must meet all criteria

If any criteria are answered 'NO' justification is required

Y	N	
☐	☐	>1.5m in any direction from vegetation or other obstructions
☐	☐	Minimal or no vegetation within 10m in front of microphone
☐	☐	Parallel to woodland edge
☐	☐	>15m from known or suitable roosts
☐	☐	>1.5m above ground level
☐	☐	>200m from adjacent acoustic sampling location
☐	☐	Below expected flight height

Unit Information

Make/Model _____ Data Division Ratio _____ Recording Schedule START _____

Serial Number _____ Sensitivity _____ Detection Range (m) _____ STOP _____

Housing/Weatherproofing description _____

Site Sketch

Daily Survey Data

Sampling Night # _____ Survey Date _____

Y	N	
☐	☐	Microphone operating normally
☐	☐	Other unit operations normal
☐	☐	Nightly temperatures >50F for first 5 hours
☐	☐	No fog/rain that exceeds 30 minutes or continues intermittently for first 5 hours
☐	☐	Sustained wind speeds <9mph for first 5 hours

Additional Survey Notes

Daily Survey Data

Sampling Night # _____ Survey Date _____

Y	N	
☐	☐	Microphone operating normally
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Daily Survey Data

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☐	☐	Sustained wind speeds <9mph for first 5 hours

Additional Survey Notes

Coarse Analysis

Biologist Initials _____

Y	N	
☐	☐	Bats recorded
☐	☐	High frequency calls exist >35kHz

Additional Coarse Analysis Notes

Automated Analysis

Application Name _____ Version _____

Output File Name _____

Biologist Initials _____

Night #	# of Calls	MLE	Additional Automated Analysis Notes

Application Name _____ Version _____

Output File Name _____

Biologist Initials _____

Night #	# of Calls	MLE	Additional Automated Analysis Notes

Appendix B ACOUSTIC SURVEY DATASHEET AND USFWS PHASE 1 SUMMER HABITAT ASSESSMENTS DATASHEET

APPENDIX A
PHASE 1 SUMMER HABITAT ASSESSMENTS

INDIANA BAT HABITAT ASSESSMENT DATASHEET

Project Name:_____ Date:_____

Township/Range/Section:_____

Lat Long/UTM/ Zone:_____ Surveyor:_____

Brief Project Description

Project Area				
Project	Total Acres	Forest Acres		Open Acres
Proposed Tree Removal (ac)	Completely cleared	Partially cleared (will leave trees)	Preserve acres- no clearing	

Vegetation Cover Types	
Pre-Project	**Post-Project**

Landscape within 5 mile radius
Flight corridors to other forested areas?
Describe Adjacent Properties (e.g. forested, grassland, commercial or residencial development, water sources)

Proximity to Public Land
What is the distance (mi.) from the project area to forested public lands (e.g., national or state forests, national or state parks, conservation areas, wildlife management areas)?

Use additional sheets to assess discrete habitat types at multiple sites in a project area

Include a map depicting locations of sample sites if assessing discrete habitats at multiple sites in a project area
A single sheet can be used for multiple sample sites if habitat is the same

Sample Site Description
Sample Site No.(s): _____

Water Resources at Sample Site				
Stream Type (# and length)	Ephemeral	Intermittent	Perennial	Describe existing condition of water sources:
Pools/Ponds (# and size)		Open and accessible to bats?		
Wetlands (approx. ac.)	Permanent	Seasonal		

Forest Resources at Sample Site				
Closure/Density	Canopy (> 50 ')	Midstory (20-50')	Understory (<20')	1=1-10%, 2=11-20%, 3=21-40%, 4=41-60%, 5=61-80%, 6=81=100%
Dominant Species of Mature Trees				
% Trees w/ Exfoliating Bark				
Size Composition of Live Trees (%)	Small (3-8 in)	Med (9-15 in)	Large (>15 in)	
No. of Suitable Snags				

Standing dead trees with exfoliating bark, cracks, crevices, or hollows. Snags without these characteristics are not considered suitable.

IS THE HABITAT SUITABLE FOR INDIANA BATS? _____

Additional Comments:

Attach aerial photo of project site with all forested areas labeled and a general description of the habitat

Photographic Documentation: habitat shots at edge and interior from multiple locations; understory/midstory/canopy; examples of potential suitable snags and live trees; water sources