

Appendix N: Avian and Bat Studies

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Appendix N-1: Indiana Bat Survey Report



INDIANA BAT (*Myotis sodalis*) SURVEY REPORT

**SENECA WIND FARM
SENECA COUNTY, OHIO**

Prepared for:

**RMT, INC.
3754 RANCHERO DRIVE
ANN ARBOR, MICHIGAN 48108**

Prepared by:

**CIVIL & ENVIRONMENTAL CONSULTANTS, INC.
333 BALDWIN ROAD
PITTSBURGH, PA 15205**

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1.0 INTRODUCTION

This report presents the findings of an Indiana bat (*Myotis sodalis*) presence/probable absence mist net survey conducted for RMT, Inc. (RMT) by Civil & Environmental Consultants, Inc. (CEC). The survey was completed for the proposed Seneca Wind Farm project located within Seneca County, Ohio (Figure 1).

The proposed project site is located on the Watson, Fireside, Flat Rock, Tiffin South, Bloomville, Attica, Centerton, Sycamore, Lykens, and Chatfield, Ohio 7.5' U.S.G.S. Quadrangle maps in the southeastern portion of Seneca County, OH. The proposed project site consists of an approximate 200 mile² land tract (Figure 1). The approximate 200 mile² project site consists of agricultural fields, and approximately 2,000 acres of forested habitat. For the most part, the forested habitat is located along the creeks and streams within the project area as well as isolated woodlots. Figure 2 provides an aerial view of the project area and also shows the location of the mist-net sites.

The purpose of the study was to confirm the presence or probable absence of the Indiana bat within the project area and to determine species composition. The survey was based on CEC's professional judgment and interpretation of the technical criteria outlined in the U.S. Fish and Wildlife Service (USF&WS) (Region 3) agency draft document titled *Indiana bat (Myotis sodalis) Draft Revised Recovery Plan: First Revision*, dated April 2007. CEC also adhered to the guidance provided in the Ohio Department of Natural Resources (Ohio DNR) *On-Shore Bird and Bat Pre- and Post-Construction Monitoring Protocol for Commercial Wind Energy Facilities in Ohio*.

2.0 METHODOLOGY

CEC biologists traversed the project area by vehicle and on foot to identify potential bat habitat (roosting areas, feeding areas, drinking pools, and flight corridors). Initially field reconnaissance trips were completed in order to establish mist net sites that would maximize the success of the mist net survey. In addition, CEC conducted the reconnaissance in order to determine if there were any open portals within the project area. Given the size, shape, and amount of forested habitat within the project area, a total of 15 mist net sites were completed for the site. Refer to Appendix A for USF&WS and Ohio DNR correspondence relating to the number of proposed mist net sites and proposed net nights.

CEC identified 15 mist net sites within the project area that contained at least two of the following bat habitats: roosting areas, feeding areas, drinking pools, and/or flight corridors. The sites identified during the reconnaissance had the highest potential to capture an Indiana bat (Figure 2).

The mist net sites selected by CEC included at least four mist net sets, placed a minimum of 30 meters apart. All mist nets used during the survey were brand new Avinet - USA made 75/2 38mm mesh, polyester, reduced "bag" for bats (Avinet Inc. - Dryden, New York). The mist nets measure 2.6 meters high, contain four shelves, and are various lengths ranging from 3 meters to 18 meters. CEC used Avinet stackable poles for single high net sets and custom built net poles that allow up to three nets to be stacked on top of each other (triple high). These custom-built net poles reach a maximum of 30 feet into the canopy. The custom-built net poles and CEC mist net surveying techniques are based upon Gardner, et al. 1989, and Nagorsen, et al. 1980.

The Indiana bat mist net survey was completed under strict adherence to the USF&WS *Indiana bat (Myotis sodalis) Draft Revised Recovery Plan: First Revision*, dated April 2007, and the Ohio DNR *On-Shore Bird and Bat Pre- and Post-Construction Monitoring Protocol for Commercial Wind Energy Facilities in Ohio*. The survey was authorized by the USF&WS under Federal Fish and Wildlife Permit - TE118259 and by the Ohio Department of Natural Resources,

Wildlife Division, Wild Animal Permit – 12-44 (Appendix B). All captured bats were identified by an authorized Collection Permit holder. All collections made during the survey were recorded on field data sheets, which are presented in Appendix C. Photographs of each mist net site and representative species of bats captured during the survey are presented in Appendix D.

For bat telemetry work, CEC used Holohil System radio transmitters within the 172 MHz range (Holohil Systems Ltd. – Carp, Ontario Canada). The Holohil LB-2N transmitter weighs 0.35 grams and has a 12-day battery life. These transmitters are activated by twisting two small external power leads and then soldering them together. Lastly, the protective wax used to encase the radio transmitter is softened with a soldering iron and the soldered power leads are embedded in the wax to ensure the transmitter remains active and has a weatherproof seal. Once the transmitter was activated, the telemetry receivers, antennae, and transmitter were tested from a distance of at least 500 meters. This test was performed to ensure that the activated transmitter was working properly and that the radio receivers and antennas were receiving the signal properly.

Prior to the affixing the activated transmitter to the bat, a small amount of hair was trimmed from the mid-dorsal region of the bat. This was done to ensure that the transmitter was securely attached to the hair and skin of the bat. The transmitter was then affixed to the bat using surgical glue as specified by the manufacture. The transmitter was located on the bats' mid-dorsal region to minimize disturbance to the bat during flight and roosting activities.

Tracking of the bats was accomplished by using up to three tracking crews and public access points. During the tracking, several different receivers/antenna set-ups were utilized. Model TRX-1000S telemetry receivers with 3-element Yagi directional antennas (Wildlife Materials, Inc., Murphysboro, Illinois), Model LA12-Q telemetry receivers with 3-element Yagi directional antennas (AVM Instrument Company Ltd., Colfax, California – Wildlife Materials, Inc., Murphysboro, Illinois). These receiver and antenna combinations were used as hand-held units. The telemetry crews were equipped with GPS units with real-time feed into laptop computers



loaded with digital topographic maps for location information or handheld GPS units with mapping backgrounds and hard copy field maps.

3.0 RESULTS

3.1 Mist Net Survey Results

CEC sampled a total of 120 net nights (15 locations x 4 nights per survey site x 2 net sets per site = 120 net nights) from July 6 to July 29, 2009. The survey sites were sampled starting at sunset and lasted for a minimum of five hours. No severe weather (precipitation, strong winds, and/or temperatures below 50 degrees Fahrenheit) was encountered during the surveys.

The following section provides a detailed description of the mist net sites and presents the results of the trapping effort at each site. A table summarizing the survey results follows the site descriptions.

Site 1

Mist net Site 1 was sampled over a 2 day period from July 6 to July 8, 2009. On the initial survey night, one mist net set (one 18-meter long, triple high net) was erected in a flight corridor over a stream, one mist net set (one 6-meter long, single high net) was erected in a flight corridor over a stream, one mist net set (one 6-meter long, double high net) was erected in a flight corridor over an unimproved road, and one mist net set (one 9-meter long, double high net) was erected in a foraging area in a pasture field. A total of 17 Little Brown bats (*Myotis lucifugus*) and three Big Brown bats (*Eptesicus fuscus*) were collected during the first survey night.

On the second survey night, one mist net set (one 18-meter long, triple high net) was erected in a flight corridor over a stream, one mist net set (one 6-meter long, single high net) was erected in a flight corridor over a stream, one mist net set (one 6-meter long, double high net) was erected in a flight corridor over an unimproved road, and one mist net set (one 12-meter long, single high net) was erected in a foraging area in a pasture field. One Eastern Red bat (*Lasiurus borealis*), two Northern Myotis bats (*Myotis septentrionalis*), two Big Brown bats, and eight Little Brown bats were collected during the second survey night at Site 1.

Site 2

Mist net Site 2 was sampled over a 2 day period from July 6 to July 8, 2009. On the initial survey night, one mist net set (one 9-meter long, single high net) was erected in a flight corridor over a logging road, one mist net set (one 18-meter long, triple high net) was erected in a foraging/drinking area over a stream, one mist net set (one 6-meter long, single high net) was erected in a flight corridor over a logging road, and one mist net set (one 12-meter long, double high net) was erected in a foraging/drinking area over a stream. A total of 15 Little Brown bats and five Big Brown bats were collected during the first survey night.

On the second survey night, one mist net set (one 9-meter long, single high net) was erected in a flight corridor over a logging road, one mist net set (one 18-meter long, triple high net) was erected in a foraging/drinking area over a stream, one mist net set (one 6-meter long, single high net) was erected in a flight corridor over a logging road, and one mist net set (one 12-meter long, double high net) was erected in a foraging/drinking area over a stream. One Eastern Red bat and 10 Little Brown bats were collected during the second survey night at Site 2.

Site 3

Mist net Site 3 was sampled over a 2 day period from July 6 to July 8, 2009. On the initial survey night, one mist net set (one 9-meter long, triple high net) was erected in a flight corridor over a logging road, one mist net set (one 12-meter long, double high net) was erected in a flight corridor over a walking trail, one mist net set (one 6-meter long, single high net) was erected over a drinking area above a vernal pool, and one mist net set (one 6-meter long, single high net) was erected over a drinking area above a vernal pool. One Northern Myotis bat was collected during the first survey night.

On the second survey night, one mist net set (one 9-meter long, triple high net) was erected in a flight corridor over a logging road, one mist net set (one 12-meter long, double high net) was

erected in a flight corridor over a walking trail, one mist net set (one 6-meter long, single high net) was erected over a drinking area above a vernal pool, and one mist net set (one 6-meter long, single high net) was erected over a drinking area above a vernal pool. One Northern Myotis bat was collected during the second survey night at Site 3.

Site 4

Mist net Site 4 was sampled over a 2 day period from July 7 to July 9, 2009. On the initial survey night, one mist net set (one 12-meter long, triple high net) was erected in a flight corridor over a stream, one mist net set (one 6-meter long, single high net) was erected in a flight corridor over a logging road, one mist net set (one 9-meter long, single high net) was erected in a flight corridor over a logging road, and one mist net set (one 12-meter long, single high net) was erected in a flight corridor over a logging road. A total of 38 Little Brown bats, two Big Brown bats, and one Tri-colored bat (*Perimyotis subflavus*) were collected during the first survey night. A total of 26 reproductively active female Little Brown bats were captured during the first night at Site 4. As required by the Ohio DNR protocol, one Little Brown bat was affix with a radio transmitter and released. Details of the radio telemetry are provided in Section 3.2 of this report.

On the second survey night, one mist net set (one 12-meter long, triple high net) was erected in a flight corridor over a stream, one mist net set (one 6-meter long, single high net) was erected in a flight corridor over a logging road, one mist net set (one 9-meter long, single high net) was erected in a flight corridor over a logging road, and one mist net set (one 12-meter long, single high net) was erected in a flight corridor over a logging road. One Eastern Red bat, one Tri-colored bat, one Northern Myotis bat, four Big Brown bats, and seven Little Brown bats were collected during the second survey night at Site 4. A total of four reproductively active female Little Brown bats were captured during the second night at Site 4, resulting in a total of 30 reproductively active females captured at this site. As required by the Ohio DNR protocol a second Little Brown bat was affix with a radio transmitter and released.

Site 5

Mist net Site 5 was sampled over a 2 day period from July 7 to July 9, 2009. On the initial survey night, one mist net set (one 12-meter long, triple high net) was erected in a flight corridor over a logging road, one mist net set (one 9-meter long, double high net) was erected in a flight corridor over a logging road, one mist net set (one 6-meter long, double high net) was erected in a flight corridor over a logging road, and one mist net set (one 6-meter long, single high net) was erected in a flight corridor over a dry stream. Nine Big Brown bats, six Northern Myotis bats, two Eastern Red bats, and one Little Brown bat were collected during the first survey night.

On the second survey night, one mist net set (one 12-meter long, triple high net) was erected in a flight corridor over a logging road, one mist net set (one 9-meter long, double high net) was erected in a flight corridor over a logging road, one mist net set (one 6-meter long, double high net) was erected in a flight corridor over a logging road, and one mist net set (one 6-meter long, single high net) was erected in a flight corridor over a dry stream. One Eastern Red bat and one Big Brown bat were collected during the second survey night at Site 5.

Site 6

Mist net Site 6 was sampled over a 2 day period from July 7 to July 9, 2009. On the initial survey night, one mist net set (one 6-meter long, single high net) was erected in a flight corridor over a logging road, one mist net set (one 6-meter long, double high net) was erected in a flight corridor over a logging road, one mist net set (one 6-meter long, single high net) was erected in a flight corridor over a walking trail, and one mist net set (one 9-meter long, triple high net) was erected in a flight corridor over a logging road. Two Big Brown bats, two Eastern red bats, and one Northern Myotis bat were collected during the first survey night.

On the second survey night, one mist net set (one 6-meter long, single high net) was erected in a flight corridor over a logging road, one mist net set (one 6-meter long, double high net) was erected in a flight corridor over a logging road, one mist net set (one 6-meter long, single high

net) was erected in a flight corridor over a walking trail, and one mist net set (one 9-meter long, triple high net) was erected in a flight corridor over a logging road. One Northern Myotis bat and five Big Brown bats were collected during the second survey night at Site 6.

Site 7

Mist net Site 7 was sampled over a 2 day period from July 10 to July 12, 2009. On the initial survey night, one mist net set (one 9-meter long, triple high net) was erected in a flight corridor over a logging road, one mist net set (one 6-meter long, single high net) was erected over a drinking area along a stream, one mist net set (one 6-meter long, single high net) was erected in a flight corridor over a logging road, and one mist net set (one 6-meter long, single high net) was erected in a flight corridor over a logging road. Two Big Brown bats and one Northern Myotis bat were collected during the first survey night.

On the second survey night, one mist net set (one 9-meter long, triple high net) was erected in a flight corridor over a logging road, one mist net set (one 6-meter long, single high net) was erected over a drinking area along a stream, one mist net set (one 6-meter long, single high net) was erected in a flight corridor over a logging road, and one mist net set (one 6-meter long, single high net) was erected over a drinking area along a stream. No bats were collected during the second survey night at Site 7.

Site 8

Mist net Site 8 was sampled over a 2 day period from July 10 to July 14, 2009. On the initial survey night, one mist net set (one 9-meter long, single high net) was erected in a flight corridor over a logging road, one mist net set (one 9-meter long, triple high net) was erected in a flight corridor over a logging road, one mist net set (one 6-meter long, double high net) was erected in a flight corridor over a logging road, and one mist net set (one 6-meter long, single high net) was erected in a flight corridor over a logging road. One Big Brown bat and four Northern Myotis bat were collected during the first survey night.

On the second survey night, one mist net set (one 9-meter long, single high net) was erected in a flight corridor over a logging road, one mist net set (one 9-meter long, triple high net) was erected in a flight corridor over a logging road, one mist net set (one 6-meter long, double high net) was erected in a flight corridor over a logging road, and one mist net set (one 6-meter long, single high net) was erected in a flight corridor over a logging road. No bats were collected during the second survey night at Site 8.

Site 9

Mist net Site 9 was sampled over a 2 day period from July 10 to July 12, 2009. On the initial survey night, one mist net set (one 12-meter long, double high net) was erected in a flight corridor over a logging road, one mist net set (one 6-meter long, triple high net) was erected in a flight corridor over a logging road, one mist net set (one 6-meter long, single high net) was erected in a flight corridor over a walking trail, and one mist net set (one 9-meter long, double high net) was erected in a flight corridor over a walking trail. Nine Northern Myotis bats, two Big Brown bats and one Eastern Red bat were collected during the first survey night.

On the second survey night, one mist net set (one 12-meter long, double high net) was erected in a flight corridor over a logging road, one mist net set (one 6-meter long, triple high net) was erected in a flight corridor over a logging road, one mist net set (one 6-meter long, single high net) was erected in a flight corridor over a walking trail, and one mist net set (one 9-meter long, double high net) was erected in a flight corridor over a walking trail. Two Northern Myotis bats and two Little Brown bats were collected during the second survey night at Site 9.

Site 10

Mist net Site 10 was sampled over a 3 day period from July 20 to July 29, 2009. The additional survey night was agreed to by the USF&WS in lieu of a second night at Site 13, where access was denied (see correspondence in Appendix A). On the initial survey night, one mist net set (one 9-meter long, triple high net) was erected in a flight corridor over an unimproved road, one

mist net set (one 6-meter long, single high net) was erected in a flight corridor over a logging road, one mist net set (one 12-meter long, single high net) was erected over a drinking pool within a stream channel, and one mist net set (one 9-meter long, single high net) was erected in a flight corridor over a logging road. One Hoary bat (*Lasiurus cinereus*), one tri-colored bat, three Northern Myotis bats, four Little Brown bats, four Eastern Red bats, and 21 Big Brown bats were collected during the first survey night.

On the second survey night, one mist net set (one 9-meter long, triple high net) was erected in a flight corridor over an unimproved road, one mist net set (one 6-meter long, single high net) was erected in a flight corridor over a logging road, one mist net set (one 12-meter long, single high net) was erected over a drinking pool within a stream channel, and one mist net set (one 9-meter long, single high net) was erected in a flight corridor over a logging road. Two Hoary bats, three Eastern Red bats, four Little Brown bats, five Northern Myotis bats, and 31 Big Brown bats were collected during the second survey night at Site 10.

A third survey night was complete at Site 10 instead of the second night at mist net site 13. On this night one mist net set (one 9-meter long, triple high net) was erected in a flight corridor over an unimproved road, one mist net set (one 6-meter long, single high net) was erected in a flight corridor over a logging road, one mist net set (one 12-meter long, single high net) was erected over a drinking pool within a stream channel, and one mist net set (one 9-meter long, single high net) was erected in a flight corridor over a logging road. Two Hoary bats, three Eastern Red bats, seven Little Brown bats, and 25 Big Brown bats were collected during the third survey night.

Site 11

Mist net Site 11 was sampled over a 2 day period from July 11 to July 14, 2009. On the initial survey night, one mist net set (one 6-meter long, single high net) was erected over a drinking area along an intermittent stream channel, one mist net set (one 6-meter long, single high net) was erected over a drinking area along an intermittent stream channel, one mist net set (one 6-

meter long, double high net) was erected over a drinking area along an intermittent stream channel, and one mist net set (one 18-meter long, triple high net) was erected in a foraging area perpendicular to the tree line within a cultivated field. Two Northern Myotis bats, three Eastern Red bats, and 16 Big Brown bats were collected during the first survey night.

On the second survey night, one mist net set (one 6-meter long, single high net) was erected over a drinking area along an intermittent stream channel, one mist net set (one 6-meter long, single high net) was erected over a drinking area along an intermittent stream channel, one mist net set (one 6-meter long, double high net) was erected over a drinking area along an intermittent stream channel, and one mist net set (one 18-meter long, triple high net) was erected in a foraging area perpendicular to the tree line within a cultivated field. Two Northern Myotis bats, two Eastern Red bats, and 15 Big Brown bats were collected during the second survey night at Site 11.

Site 12

Mist net Site 12 was sampled over a 2 day period from July 11 to July 13, 2009. On the initial survey night, one mist net set (one 18-meter long, triple high net) was erected in a foraging area perpendicular to the tree line within a cultivated field, one mist net set (one 6-meter long, double high net) was erected over a drinking area along a stream channel, one mist net set (one 6-meter long, single high net) was erected over a drinking area along a stream channel, and one mist net set (one 3-meter long, single high net) was erected over a drinking area along a stream channel. One Little Brown bat, two Eastern Red bats, three Hoary bats, and three Big Brown bats were collected during the first survey night.

On the second survey night, one mist net set (one 18-meter long, triple high net) was erected in a foraging area perpendicular to the tree line within a cultivated field, one mist net set (one 6-meter long, double high net) was erected over a drinking area along a stream channel, one mist net set (one 6-meter long, single high net) was erected over a drinking area along a stream channel, and one mist net set (one 3-meter long, single high net) was erected over a drinking area along a

stream channel. One Eastern Red bat, two Hoary bats, and six Big Brown bats were collected during the second survey night at Site 12.

Site 13

Mist net Site 13 was sampled on July 15, 2009. On the initial survey night, one mist net set (one 12-meter long, triple high net) was erected in a flight corridor along an unimproved road, one mist net set (one 3-meter long, single high net) was erected over a drinking area above a vernal pool, one mist net set (one 6-meter long, double high net) was erected in a forested flight corridor between two pasture fields, and one mist net set (one 6-meter long, single high net) was erected in a forested flight corridor between two pasture fields. One Little Brown bat, two Northern Myotis bats, and three Big Brown bats were collected during the first survey night.

On the second survey night, the landowner denied CEC access to the property. After consultation with both the USF&WS and the Ohio DNR (see Appendix A) one additional night of netting was completed at mist net site 10. Mist net site 10 presented the highest likelihood of capturing an Indiana bat based both upon the surrounding habitat and the diversity of bat species previously captured at that site.

Site 14

Mist net Site 14 was sampled over a 2 day period from July 15 to July 25, 2009. On the initial survey night, one mist net set (one 12-meter long, single high net) was erected in a flight corridor within a mature forested area, one mist net set (one 12-meter long, triple high net) was erected in a flight corridor within a mature forested area, one mist net set (one 6-meter long, single high net) was erected in a foraging area over a wetland complex, and one mist net set (one 9-meter long, double high net) was erected in a flight corridor within a mature forested area. A total of eight Northern Myotis bats and one Big Brown bat were collected during the first survey night.

On the second survey night, one mist net set (one 12-meter long, single high net) was erected in a flight corridor within a mature forested area, one mist net set (one 12-meter long, triple high net) was erected in a flight corridor within a mature forested area, one mist net set (one 6-meter long, single high net) was erected in a foraging area over a wetland complex, and one mist net set (one 9-meter long, double high net) was erected in a flight corridor within a mature forested area. Seven Northern Myotis bats, one Eastern Red bat, and one Big Brown bat were collected during the second survey night at Site 14.

Site 15

Mist net Site 15 was sampled over a 2 day period from July 11 to July 13, 2009. On the initial survey night, one mist net set (one 12-meter long, triple high net) was erected in a flight corridor over an unimproved road, one mist net set (one 6-meter long, double high net) was erected in a flight corridor over a logging road, one mist net set (one 6-meter long, single high net) was erected in a flight corridor over a logging road, and one mist net set (one 6-meter long, single high net) was erected in a flight corridor over a logging road. A total of two Northern Myotis bats, two Big Brown bats, and six Little Brown bats were collected during the first survey night.

On the second survey night, one mist net set (one 12-meter long, triple high net) was erected in a flight corridor over an unimproved road, one mist net set (one 6-meter long, double high net) was erected in a flight corridor over a logging road, one mist net set (one 6-meter long, single high net) was erected in a flight corridor over a logging road, and one mist net set (one 6-meter long, single high net) was erected in a flight corridor over a logging road. A total of one Eastern Red bat, two Northern Myotis bats, and 12 Little Brown bats were collected during the second survey night at Site 15.

TABLE 1
MIST NET SURVEY SUMMARY

Common Name	Scientific Name	Site 1	Site 2	Site 3	Site 4	Site 5	Site 6	Site 7	Site 8	Site 9	Site 10	Site 11	Site 12	Site 13	Site 14	Site 15	Total Per Species
Eastern Red bat	<i>Lasiurus borealis</i>	1	1		1	3	2			1	10	5	3		1	1	29
Hoary bat	<i>Lasiurus cinereus</i>										5		5				10
Little Brown bat	<i>Myotis lucifugus</i>	25	25		45	1				2	15		1	1		18	133
Northern Myotis bat	<i>Myotis septentrionalis</i>	2		2	1	6	2	1	4	11	8	4		2	15	4	62
Big Brown bat	<i>Eptesicus fuscus</i>	5	5		6	10	7	2	1	2	77	31	9	3	2	2	162
Tri-colored bat	<i>Perimyotis subflavus</i>				2						1						3
<i>Total Per Site</i>		33	31	2	55	20	11	3	5	16	116	40	18	6	18	25	399

3.2 Common Bat Telemetry Results

As required by the Ohio DNR in their *On-Shore Bird and Bat Pre- and Post-Construction Monitoring Protocol for Commercial Wind Energy Facilities in Ohio*, two reproductively active bats were radio tagged at mist net site 04. The first bat, tagged during the night of July 7, 2009 was a lactating Little Brown bat. As specified in the Ohio DNR protocol, radio telemetry was completed during the following 8 days in order to identify the location of the maternity colony. On July 8, the day after the bat was radio tagged and released, the female Little Brown bat was located approximately 100 feet from mist net Site 4 in a large sycamore tree (*Platanus occidentalis*). Refer to the photo pages in Appendix D for a picture of the roost tree. An emergence count was attempted on the night of July 8, 2009 but due to thick tree foliage and lack of access to the adjacent field, no bats were observed emerging from the tree.

On July 9, 2009 the Little Brown bat was located 0.92 miles from Site 04 in the direction of an old barn and several sheds. Refer to Figure 3 for a detailed map of mist net Site 04 and the identified roosts.

Additionally, on the night of July 9, 2009 a second lactating Little Brown bat was radio tagged at mist net Site 04 and released. On July 10, 2009 both bats were located in the direction of the previously identified roost in the vicinity of the old barn complex. CEC did not have access to the property where the radio signals were coming from. Based upon the radio signals, the bats were roosting in one of the far sheds. For the next seven days, both bats were located roosting back in the barn/shed complex area during the day. On several occasions the day roost was checked from the road during the night to see if the bats had left for foraging. On July 11, no signal was found in the area of the barn complex. On July 14 one signal was found. Figure 3 shows a detailed map of mist net site 04 and the barn/shed complex. Photographs of the identified roost tree and barn/shed complex are included in Appendix D.

3.3 Potential Winter Bat Habitat Results

CEC completed an office review of potential winter bat habitat within the proposed project site prior to completing the field reconnaissance and mist net survey. CEC reviewed available public information including USGS mapping, abandoned mine maps, and karst area mapping. Figure 4 shows the mapped potential karst areas within the project site. Based upon the "Preliminary Map of Potentially Karstic Carbonate Rocks in the Central and Southern Appalachian States", a large portion of the project site consists of gently folded and flat-lying carbonates rocks. Carbonate rocks can produce large complex cave systems when strongly deformed. The two potential karst areas mapped within the project site GC (gently folded and flat laying carbonate rocks) and GCG (gently folded and flat laying carbonate rocks with glacial cover) have not been strongly deformed. Surface karst features (cave openings) within the project site and surrounding area are typically not present or are only visible as sinkholes. This can be attributed to the overburden of glacial sediments which covers the carbonate rock layers.

CEC investigated properties where access granted during the field reconnaissance. CEC also spoke with properties owners to identify potential caves on their properties of known caves on adjacent properties. During the field reconnaissance and mist netting, no potential winter bat habitat areas or cave entrances were observed or noted by landowners we talked too.

4.0 CONCLUSIONS

From July 6 to July 29, 2009, CEC conducted an Indiana bat (*Myotis sodalis*) presence/probable absence mist net survey within the approximate 200 mile² Seneca Wind Farm Project area located in Seneca County, Ohio. A total of 399 bats representing six species were captured and identified at 15 mist net sites within the project area. The mist net survey effort at the 15 sites consisted of a total of 120 net nights. All bats captured were identified, weighed, measured, and released alive. No Indiana bats were captured during the survey.

Lastly, no open portals/caves were identified during the office data review and no open portals/caves were observed within the project site during the field reconnaissance. Additionally, based on conversations with RMT representatives and local landowners; none are known to exist within the site.



5.0 LEVEL OF CARE

The Indiana bat survey services performed by CEC were conducted in a manner consistent with the criteria outlined in the USF&WS, Region 3 agency draft document titled *Indiana bat (Myotis sodalis) Draft Revised Recovery Plan: First Revision*, dated April 2007, and with the level of care and skill ordinarily exercised by members of the environmental consulting profession practicing contemporaneously under similar conditions in the locality of the project.

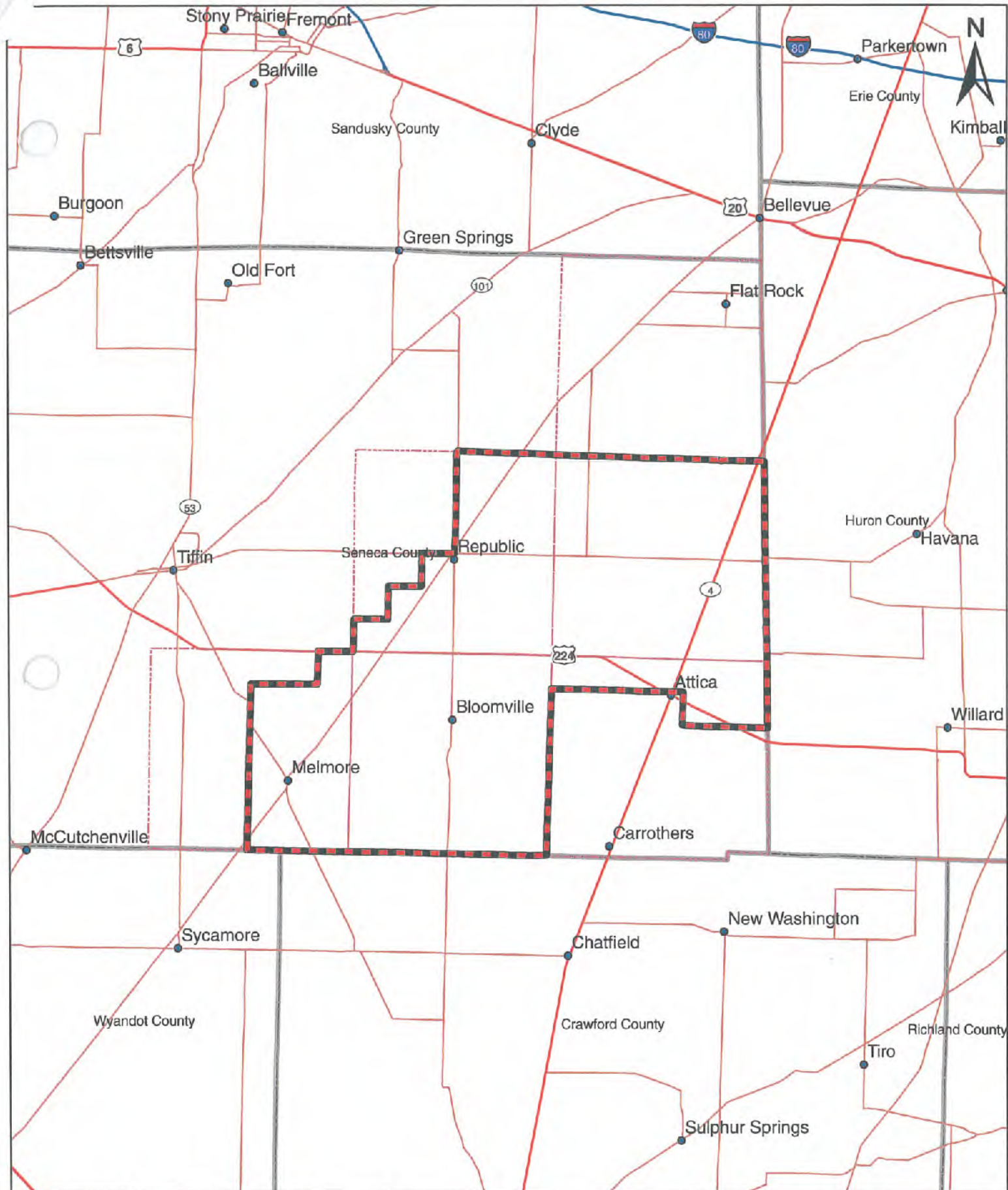
6.0 REFERENCES

Gardner, J. E., J. D. Garner, and J. E. Hofmann. 1989. A Portable Mist-Netting System for Capturing Bats with Emphasis on *Myotis sodalis* (Indiana bat). Bat Research News 30:1-8.

Nagorsen, D. W.; Peterson, R. L., 1980: Mammal Collectors Manual. A Guide for Collecting, Documenting, and Preparing Mammal Specimens For Scientific Research. Belonging to the unnumbered series: Life Sciences Miscellaneous Publications. Royal Ontario Museum, Toronto. ISBN: 0-88854-255-0 pa.

U.S. Fish and Wildlife Service. 2007. *Indiana bat (Myotis sodalis) Draft Revised Recovery Plan: First Revision*. U.S. Fish and Wildlife Service, Fort Snelling, MN. 258 pp.

FIGURES



DATE: 06/24/09

CHECKED BY: NRB

APPROVED BY: DAM

SCALE: 1" = 20,000'

DATE: 06/24/09

Legend

- PROJECT AREA
- TOWNSHIP LINE
- CITY
- COUNTY LINE

0 10,000 20,000 Feet

ISSUED FOR: RMT, INC.

ISSUED BY:



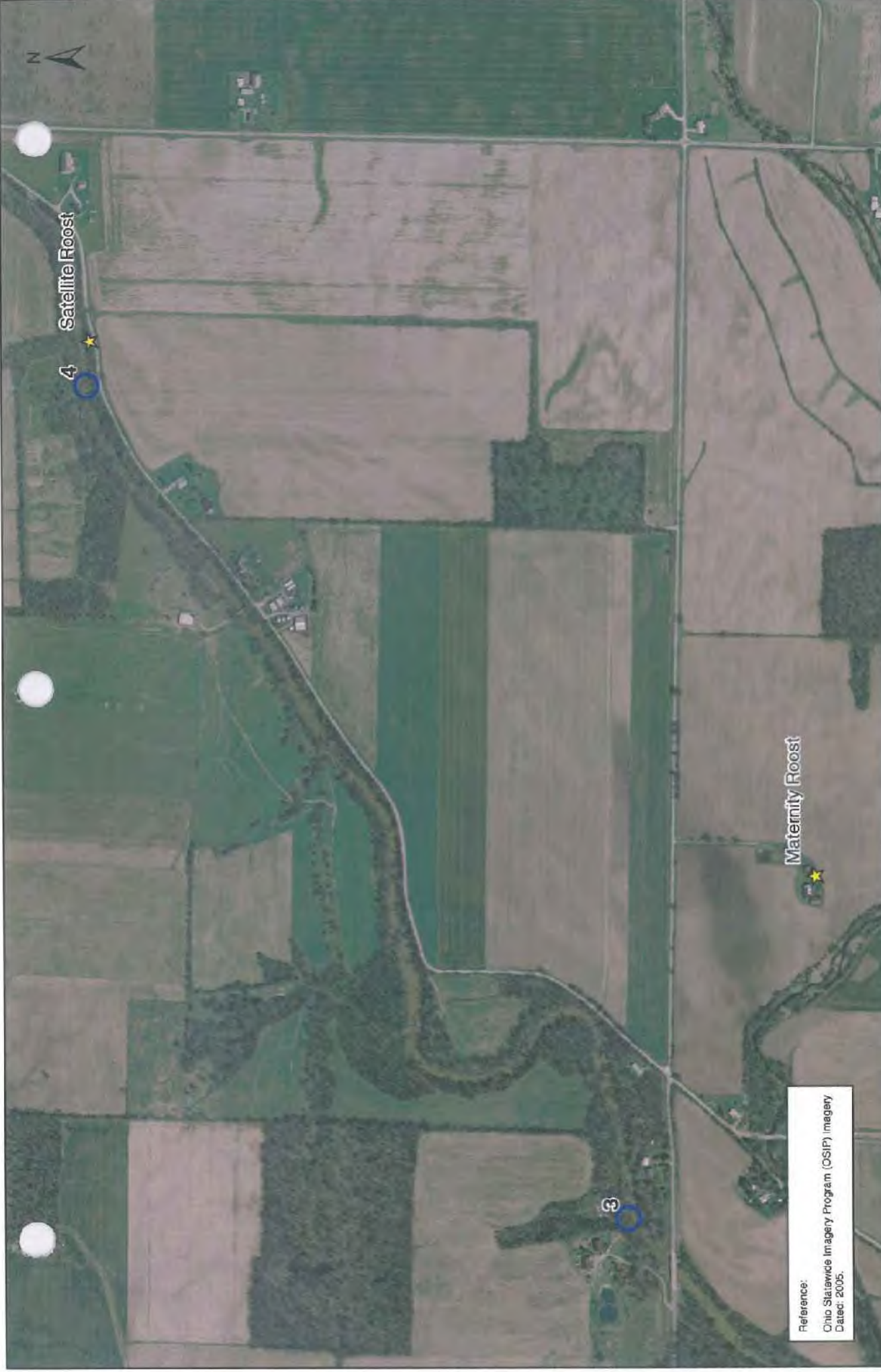
CIVIL & ENVIRONMENTAL CONSULTANTS, INC.

333 Baldwin Road
Pittsburgh, PA 15205-9702
1-800-365-2324
www.cecinc.com

**SITE LOCATION MAP
SENECA WIND FARM PROJECT
RMT, INC.
SENECA COUNTY, OHIO**

PROJECT NO.: 090-568

FIGURE: 1

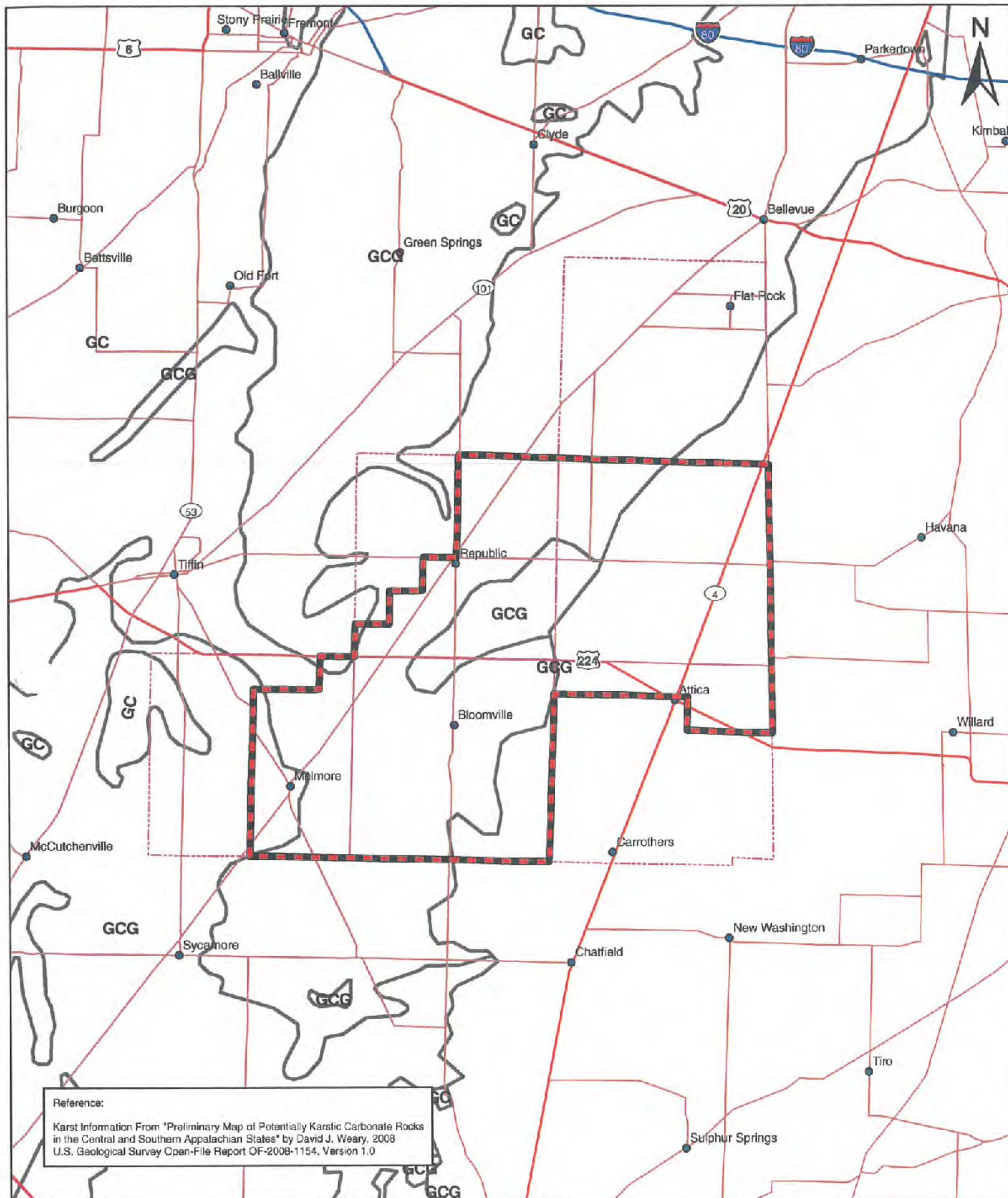


Reference:
Ohio Statewide Imagery Program (OSIP) Imagery
Date: 2005.

DRAWN BY: CLC	0 350 700 1,050 1,400 Feet
CHECKED BY: NRB	Legend Project Area (79,868 acres) Mist Net Site Roost
APPROVED BY: DAM*	
SCALE: 1" = 700'	
DATE: 9/27/2009	
*Hand signature on file.	

ISSUED FOR:	RMT, INC.
ISSUED BY:	 CIVIL & ENVIRONMENTAL CONSULTANTS, INC. 333 Baldwin Road Pittsburgh, PA 15205-9702 1-800-365-2324 www.celine.com

LITTLE BROWN TELEMETRY RESULTS SENECA WIND FARM PROJECT RMT, INC. SENECA COUNTY, OHIO	
PROJECT NO.: 090-568	FIGURE: 3



Reference:

Karst Information From "Preliminary Map of Potentially Karstic Carbonate Rocks in the Central and Southern Appalachian States" by David J. Weary, 2008
U.S. Geological Survey Open-File Report OF-2008-1154, Version 1.0

D' BY: LKC

0 10,000 20,000
Feet

ISSUED FOR:

RMT, INC.

CHECKED BY: NRB

Legend

- Project Area
- Township Line
- City
- Potential Karst Areas

APPROVED BY: DAM*

SCALE: 1" = 20,000'

DATE: 9/3/2009

*Hand signature on file.

ISSUED BY:



CIVIL & ENVIRONMENTAL CONSULTANTS, INC.

333 Baldwin Road
Pittsburgh, PA 15205-9702
1-800-365-2324
www.ceeinc.com

**POTENTIAL KARST AREAS
SENECA WIND FARM PROJECT
RMT, INC.
SENECA COUNTY, OHIO**

PROJECT NO.: C90-588

FIGURE: 4

APPENDIX A
AGENCY CORRESPONDENCE

Bossart, Neil

From: Megan_Seymour@fws.gov
Sent: Wednesday, July 29, 2009 9:47 AM
To: Bossart, Neil
Cc: Keith.Lott@dnr.state.oh.us
Subject: RE: Neil Bossart Permit Amendment request Seneca Wind Farm.pdf - Adobe Acrobat Standard
Attachments: pic06483.gif; graycol.gif; ecblank.gif

Neil,
Your proposed modifications are acceptable to the U.S. Fish and Wildlife Service.
Sincerely,
Megan Seymour
Wildlife Biologist
U.S. Fish & Wildlife Service
4625 Morse Rd.
Suite 104
Columbus, OH 43230
(614) 416-8993 ext. 16
(614) 416-8994 fax
"Bossart, Neil" <nbossart@cecinc.com>

"Bossart, Neil"
<nbossart@cecinc.com>

To<Megan_Seymour@fws.gov>

07/28/2009 08:44 PM

cc<Keith.Lott@dnr.state.oh.us>

Subject: RE: Neil Bossart Permit Amendment request Seneca Wind Farm.pdf - Adobe Acrobat Standard

Hi Megan,

Would like to request a minor amendment to our approved study plan for the ongoing bat survey at the proposed Seneca Wind Farm located in Seneca County, Ohio. We have been denied access to the second night of sampling at one of our mist net sites by the landowner. In order to adhere to the USF&WS and ODNR protocols we would like to sample a third night at one of our other mist net sites. The site that is chosen for this third night would possess the highest probability of catching an Indiana bat based upon the surround habitat and the results of our previous trapping.

Please let me know if this will be sufficient.

Regards,

Neil Bossart

Civil & Environmental Consultants, Inc.
33 Baldwin Road
Pittsburgh, PA 15205

Tel: 412-249-2372 Toll Free: 800-365-2324
Fax: 412-429-2114 Email: nbossart@cecinc.com
Cell: 717-860-7679 Web: www.cecinc.com

This message contains information that is confidential or privileged. The information is intended for the use of the individual or entity named above. If you are not the intended recipient, be aware that any disclosure, copying, distribution or use of the contents of this information is prohibited. If you have received this electronic transmission in error, please notify the sender and delete this message and any attachments.

From: Angela_Boyer@fws.gov [mailto:Angela_Boyer@fws.gov]

Sent: Monday, July 06, 2009 9:31 AM

To: Bossart, Neil

Cc: Megan_Seymour@fws.gov; Keith.Lott@dnr.state.oh.us

Subject: Re: Neil Bossart Permit Amendment request Seneca Wind Farm.pdf - Adobe Acrobat Standard

Dear Mr. Bossart:

This is in response to your request for an amendment to Civil and Environmental Consultant's Federal Fish and Wildlife Permit No. TE118259-2 to conduct a mist net survey for the Indiana bat (*Myotis sodalis*) at the proposed Seneca Wind Farm site located on ~200 square miles in Watson, Fireside, Flat Rock, Tiffin South, Bloomville, Attica, Centerton, Sycamore, Lykens, and Chatfield Townships in Seneca County, Ohio.

Due to concerns over White Nose Syndrome, we are now requiring that the Disinfection Protocol for Bat Field Studies be followed for all bat survey work in conducted in Ohio. We request that you periodically consult the following link for possible updates on the protocol:

<http://www.fws.gov/midwest/Endangered/mammals/BatDisinfectionProtocol.html>

We request that all Indiana bats be banded utilizing the Ohio Department of Natural Resources, Division of Wildlife (DOW) bands. Please contact Keith Lott (DOW) for questions and to request bands (419) 433-4601 or keith.lott@dnr.state.oh.us

This notification serves as written concurrence that Civil and Environmental Consultants, Inc. is authorized to proceed with the Indiana bat survey as described in your request. Upon completion of the survey, we request that you submit a copy of the survey results to this office for review. Please include the latitude and longitude coordinates for each survey site in the report. **If any Indiana bats are found during the surveys, please notify this office within 48 hours and please include the latitude/longitude of the capture site(s) in your notification.**

Please carry a copy of this site specific authorization and your Federal permit while conducting the survey. If you have questions, or if we may be of further assistance in this matter, please contact me.

Sincerely,
Angela Boyer
Endangered Species Coordinator for Ohio

U.S. Fish and Wildlife Service
4625 Morse Road, Suite 104
Columbus, OH 43230
(614) 416-8993, ext. 22
(614) 416-8994 FAX
angela_boyer@fws.gov

"Bossart, Neil" <nbossart@cecinc.com>

"Bossart, Neil"

<nbossart@cecinc.com>

07/01/2009 10:12 PM

To

<Angela_Boyer@fws.gov>

cc

<Megan_seymour@fws.gov>

Subject

Neil Bossart Permit
Amendment request Ser
Wind Farm.pdf - Adobe
Acrobat Standard

Hi Angela,



Please find attached our permit amendment request, bat study plan, and request for authorization to proceed. If you have any questions or require any additional information please let me know.



Regards,

Neil Bossart

Civil & Environmental Consultants, Inc.
333 Baldwin Road
Pittsburgh, PA 15205

 Tel: 412-249-2372  Toll Free: 800-365-2324

 Fax: 412-429-2114  Email: nbossart@cecinc.com

 Cell: 717-860-7679  Web: www.cecinc.com

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[attachment "Neil Bossart Permit Amendment request Seneca Wind Farm.pdf" deleted by Angela Boyer/R3/FWS/DOI]

Bossart, Neil

From: Lott, Keith [Keith.Lott@dnr.state.oh.us]
Sent: Tuesday, July 28, 2009 8:48 PM
To: Bossart, Neil; Megan_Seymour@fws.gov
Cc: Keith.Lott@dnr.state.oh.us
Subject: RE: Neil Bossart Permit Amendment request Seneca Wind Farm.pdf - Adobe Acrobat Standard

Neil,

The ODNR has no objection to this change study plan.

Keith

-----Original Message-----

From: Bossart, Neil <nbossart@cecinc.com>
Sent: Tuesday, July 28, 2009 8:44 PM
To: Megan_Seymour@fws.gov <Megan_Seymour@fws.gov>
Cc: Keith.Lott@dnr.state.oh.us <Keith.Lott@dnr.state.oh.us>
Subject: RE: Neil Bossart Permit Amendment request Seneca Wind Farm.pdf - Adobe Acrobat Standard

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E Tel: 412-249-2372

E Toll Free: 800-365-2324

Fax: 412-429-2114

Email: nbossart@cecinc.com

Cell: 717-860-7679

Web: www.cecinc.com <blocked::http://www.cecinc.com/>

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From: Angela_Boyer@fws.gov [mailto:Angela_Boyer@fws.gov]
Sent: Monday, July 06, 2009 9:31 AM
To: Bossart, Neil
Cc: Megan_Seymour@fws.gov; Keith.Lott@dnr.state.oh.us
Subject: Re: Neil Bossart Permit Amendment request Seneca Wind Farm.pdf - Adobe Acrobat Standard

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Please carry a copy of this site specific authorization and your Federal permit while conducting the survey. If you have questions, or if we may be of further assistance in this matter, please contact me.

Sincerely,
Angela Boyer
Endangered Species Coordinator for Ohio
U.S. Fish and Wildlife Service
4625 Morse Road, Suite 104
Columbus, OH 43230
(614) 416-8993, ext. 22
(614) 416-8994 FAX
angela_boyer@fws.gov

"Bossart, Neil" <nbossart@cecinc.com>

"Bossart, Neil" <nbossart@cecinc.com>

07/01/2009 10:12 PM

To

<Angela_Boyer@fws.gov>

cc

<Megan_seymour@fws.gov>

Subject

Neil Bossart Permit Amendment request Seneca Wind Farm.pdf - Adobe Acrobat Standard

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Regards,

Neil Bossart
Civil & Environmental Consultants, Inc.
13 Baldwin Road
Pittsburgh, PA 15205

É Tel: 412-249-2372

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Bossart, Neil

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Sent: Monday, July 06, 2009 9:31 AM
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Subject: Re: Neil Bossart Permit Amendment request Seneca Wind Farm.pdf - Adobe Acrobat Standard
Attachments: pic01869.gif; graycol.gif; ecblank.gif

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Sincerely,
Angela Boyer
Endangered Species Coordinator for Ohio
U.S. Fish and Wildlife Service
4625 Morse Road, Suite 104
Columbus, OH 43230
(614) 416-8993, ext. 22
(614) 416-8994 FAX
angela_boyer@fws.gov

"Bossart, Neil" <nbossart@cecinc.com>

"Bossart, Neil"
<nbossart@cecinc.com>

To: <Angela_Boyer@fws.gov>

07/01/2009 10:12 PM

cc<Megan_seymour@fws.gov>

SubjectNeil Bossart Permit Amendment request Seneca Wind Farm.pdf - Adobe Acrobat Standard

Hi Angela,

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Regards,

Neil Bossart

Civil & Environmental Consultants, Inc.

333 Baldwin Road

Pittsburgh, PA 15205

☎ Tel: 412-249-

2372

☎ Toll Free: 800-365-2324

☎ Fax: 412-429-

2114

✉ Email:

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7679

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[attachment "Neil Bossart Permit Amendment request Seneca Wind Farm.pdf" deleted by Angela Boyer/R3/FWS/DOI]

2009



June 26, 2009

Ms. Angela Boyer
U.S. Fish & Wildlife Service
Reynoldsburg Ohio Field Office
4625 Morse Road, Suite 104
Columbus, Ohio 43230

Dear Ms. Boyer:

Subject: Request for Concurrence and Permit Amendment (TE 118259)
Indiana Bat Mist Net Survey/Pre-Construction Bat Survey
Seneca Wind Farm, Seneca County, Ohio
CEC Project 090-568

Civil & Environmental Consultants, Inc. (CEC) is requesting concurrence relating to Indiana bat (*Myotis sodalis*) mist net surveys, a permit amendment to CEC's USF&WS Permit (# TE 118259), and authorization to proceed. RMT, Inc has contracted CEC to perform presence/probable absence and pre-construction mist net surveys for the following project area.

The Seneca Wind Farm, proposed by John Deere, is located in Seneca County, Ohio. The proposed project site is located on the Watson, Fireside, Flat Rock, Tiffin South, Bloomville, Attica, Centeron, Sycamore, Lykens, and Chatfield, Ohio 7.5' U.S.G.S. Quadrangles approximately 10 miles north east of Jackson, OH (41°02'30.6" 83°06'55.4"). The proposed project site consists of an approximate 200 square mile land tract (Figure 1). The project area consists of agricultural fields and several small forested woodlots and stream corridors (Figure 2). Figure 2 also shows the approximate location of possible mist-net sites within the study area.

The mist-net survey is scheduled to start in late July and will be completed by CEC under USF&WS Permit # TE 118259. The mist-net survey will strictly follow the technical criteria outlined in the USF&WS (Region 3) agency draft document titled Indiana Bat (*Myotis sodalis*) Draft Recovery Plan: First Revision dated April 2007 as well as any additional recommendations by the USF&WS.

At this time, CEC proposes to complete 15 mist net sites within the proposed Seneca Wind Farm study area boundary. The mist-net survey will consist of a minimum of 120 net nights (15 locations x 2 nights per survey site x 4 nets per night). The mist-net survey sites will include at least 4 mist nets, placed a minimum of 30 meters apart. The survey sites will be sampled for two non-consecutive nights which will begin at sunset and last for a minimum of 5 hours. In the case of severe weather including precipitation, strong winds, and/or temperatures dropping below 50 degrees Fahrenheit during the initial survey effort, surveys will be terminated and the site will be resurveyed under suitable conditions.

At this time, we respectfully request concurrence for the number of mist net sites proposed, amendment to USF&WS Permit # TE 118259, and authorization to initiate the mist net surveys.

Civil & Environmental Consultants, Inc.

Pittsburgh
333 Baldwin Road
Pittsburgh, Pennsylvania 15205
Phone 412/429-2324
Fax 412/429-2114
Toll Free 800/365-2324
E-mail info@cecinc.com



Chicago
Cincinnati
Cleveland
Columbus
Detroit
877/963-6026
800/759-5614
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866/360-2324

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St. Louis
800/899-3610
877/746-0749
800/763-2328
877/231-2324
866/250-3679

Corporate Web Site <http://www.cecinc.com>

Ms. Angela Boyer
CEC Project 090-568
Page 2
June 26, 2009



Please sign and return this letter along with any additional requests or guidelines if necessary. If you have any questions or require additional information, please contact me at (412) 429-2324.

Very truly yours,

CIVIL & ENVIRONMENTAL CONSULTANTS, INC.

A handwritten signature in dark ink, appearing to read "Neil Bossart", is written over the printed name.

Neil Bossart
Project Manager

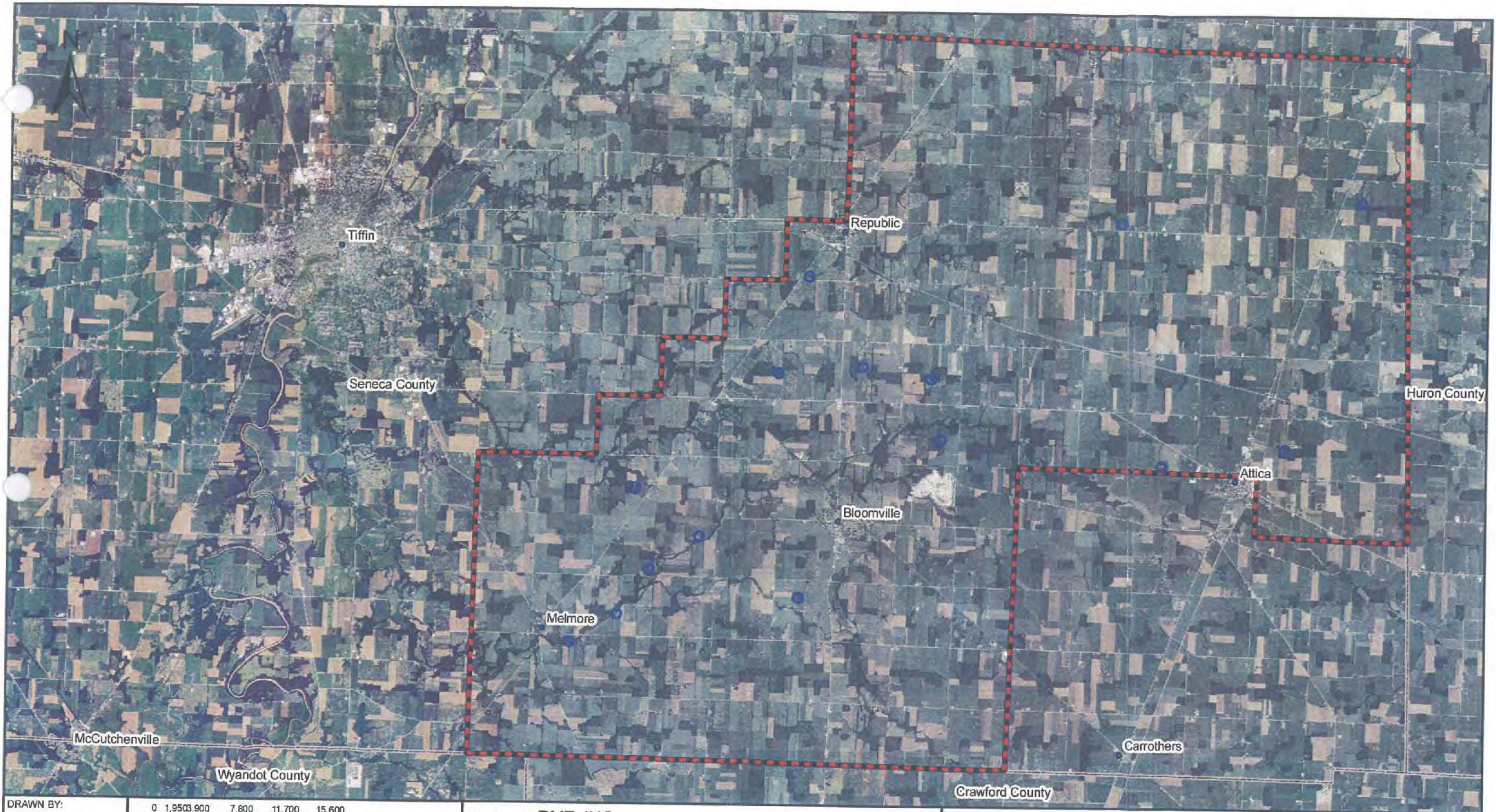
cc: Timothy Gehring – RMT
Megan Seymour – USF&WS

CONCURRENCE:

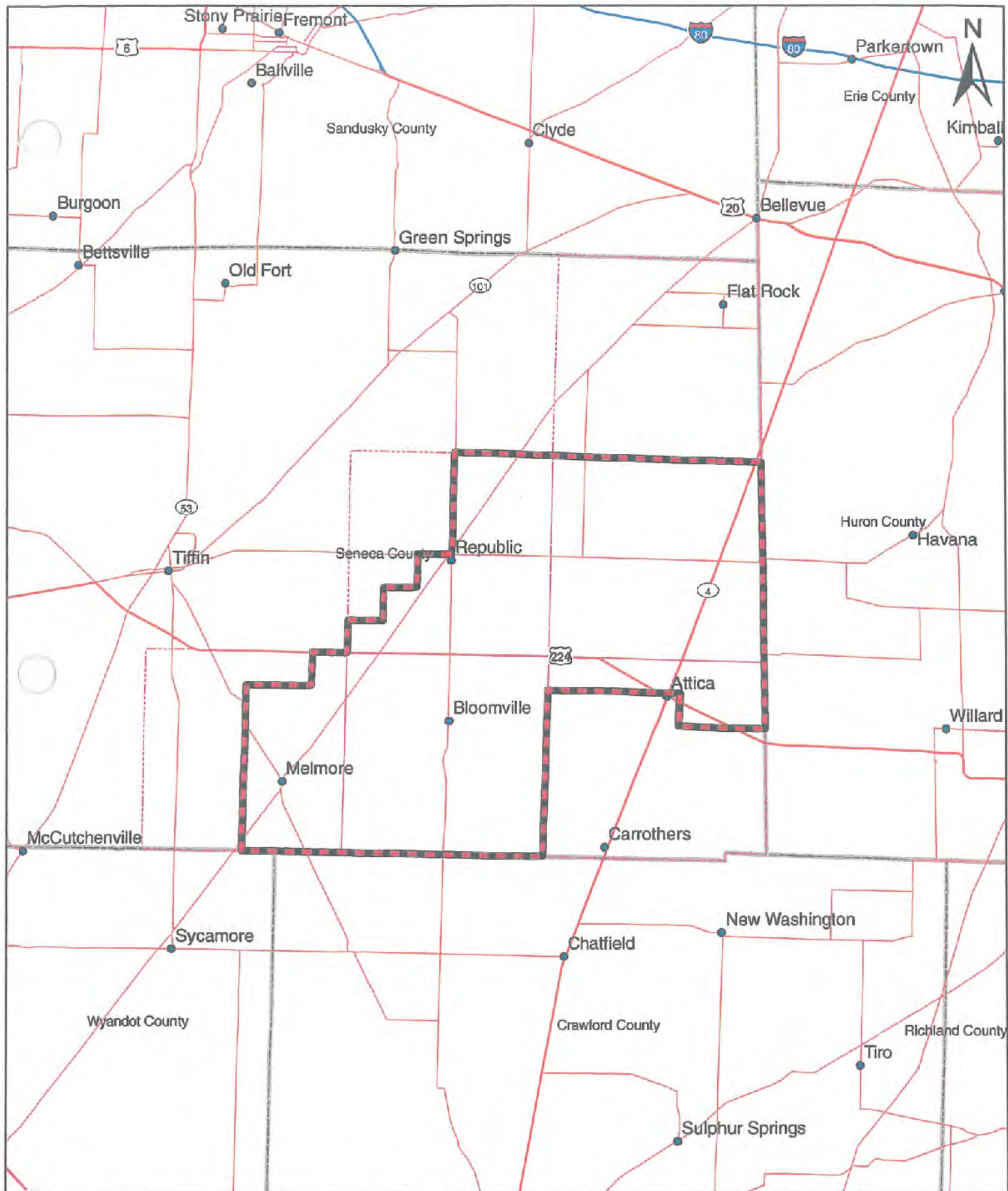
Date: _____

Angela Boyer
U.S. Fish and Wildlife Service

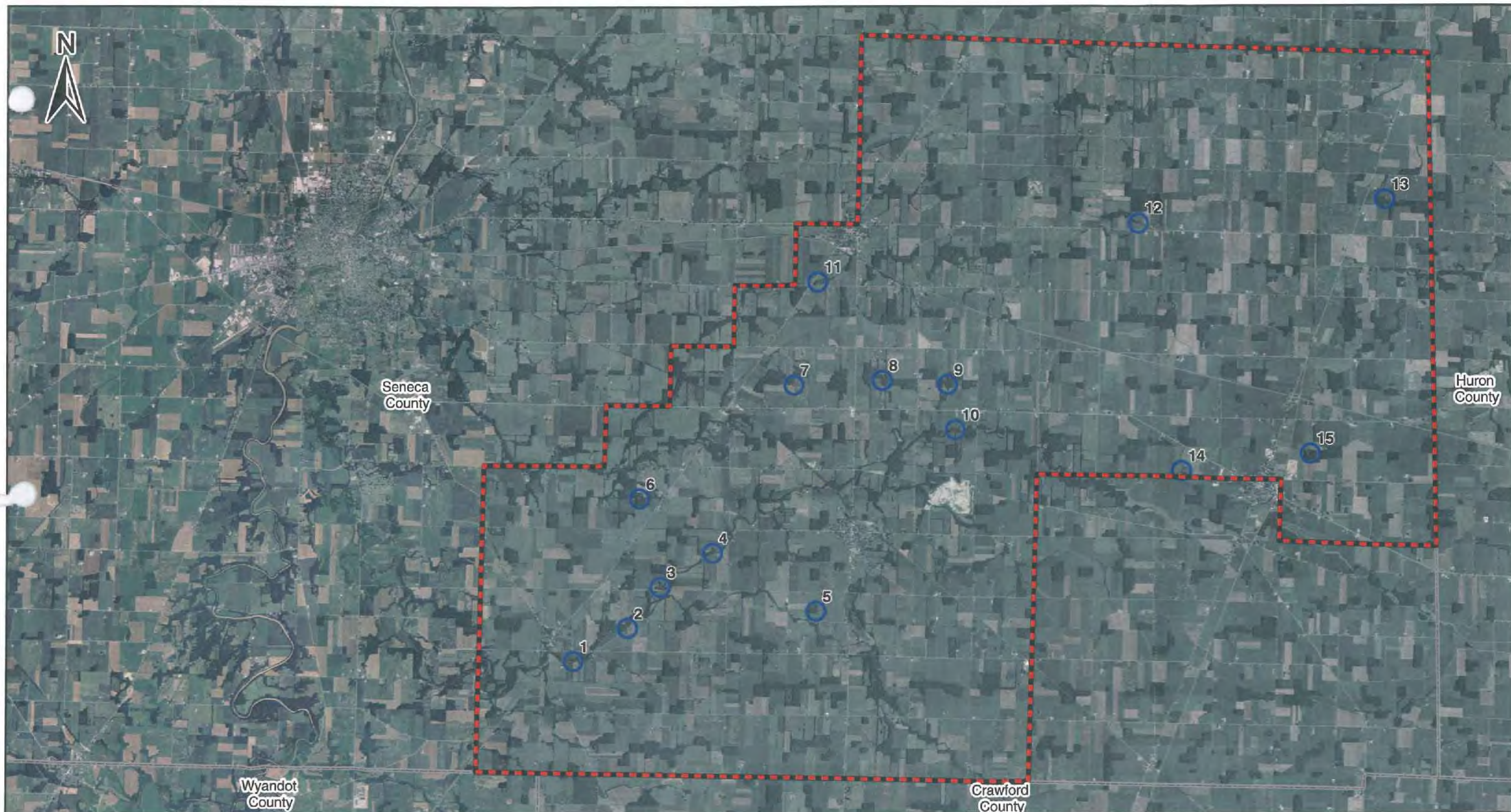
090-568-USFWS-Permit Request Ltr-JN26-09/P



DRAWN BY: LKC	0 1,950 3,900 7,800 11,700 15,600  Feet	ISSUED FOR: RMT, INC.	POTENTIAL MIST NET LOCATION MAP SENECA WIND FARM PROJECT RMT, INC. SENECA COUNTY, OHIO	
CHECKED BY: NRB	Legend  Potential Mist Net Site  Project Area (79,868 acres)  County Line	ISSUED BY:  CIVIL & ENVIRONMENTAL CONSULTANTS, INC. 333 Baldwin Road Pittsburgh, PA 15205-9702 1-800-365-2324 www.cecinc.com		
APPROVED BY: DAM <i>DAM</i>				
SCALE: 1" = 8,000'				
DATE: 6/26/09			PROJECT NO.: 090-568	FIGURE: 2



DRAWN BY: LKC	0 10,000 20,000 Feet	ISSUED FOR: RMT, INC.	<div style="text-align: center;"> SITE LOCATION MAP SENECA WIND FARM PROJECT RMT, INC. SENECA COUNTY, OHIO </div>	
CHECKED BY: NRB	Legend PROJECT AREA TOWNSHIP LINE CITY COUNTY LINE	ISSUED BY:		
APPROVED BY:				
SCALE: 1" = 20,000' DATE: 06/24/09		CIVIL & ENVIRONMENTAL CONSULTANTS, INC. 333 Baldwin Road Pittsburgh, PA 15205-9702 1-800-365-2324 www.cecinc.com	PROJECT NO.: 090-568 FIGURE: 1	



DRAWN BY: LKC	0 2,000 4,000 8,000 12,000 16,000 Feet	ISSUED FOR: RMT, INC.	MIST NET LOCATION MAP SENECA WIND FARM PROJECT RMT, INC. SENECA COUNTY, OHIO	
CHECKED BY: NRB	Legend Project Area (79,868 acres) Mist Net Site	ISSUED BY: CIVIL & ENVIRONMENTAL CONSULTANTS, INC. 333 Baldwin Road Pittsburgh, PA 15205-9702 1-800-365-2324 www.cecinc.com		
DESIGNED BY: DAM			PROJECT NO.:	090-568
SCALE: 1" = 8,000'			FIGURE:	2
DATE: 6/26/09				



Ohio Department of Natural Resources

TED STRICKLAND, GOVERNOR

SEAN D. LOGAN, DIRECTOR

Division of Wildlife
David M. Graham, Chief
2045 Morse Rd., Bldg. G
Columbus, OH 43229-6693
Phone: (614) 265-6300

February 25, 2009

To all interested parties,

Though this project area encompasses both portions of Honey Creek, which has previously been identified as a potential migratory corridor, and part of Sandusky River Audubon Important Bird Area, the habitat within the proposed project would not be what the Ohio Department of Natural Resources Division of Wildlife (DOW) considers high quality stopover habitat. Based upon the project area map provided and the site visit conducted on 2/17/09, the DOW has determined that this proposed facility would be classified as a "moderate" site under the current monitoring protocols.

The table below was created based upon the project maps provided and summarizes the types and level of effort recommended by the DOW. Results from these studies will help the Department of Natural Resources assess the potential impact these turbines may pose, and influence our recommendations to the Ohio Power Siting Board. Monitoring should follow those criteria listed within the "On-shore Bird and Bat Pre-Construction Monitoring Protocol for Commercial Wind Energy Facilities in Ohio."

Project	
Survey type	Seneca County
Breeding bird	Breeding bird surveys should be conducted at all sites. The number of survey points may be based on the amount of available habitat, or twice the maximum number of turbines proposed for the site. Because agricultural land is not considered to be suitable nesting habitat for most species of bird, turbines placed within these types of habitat are exempt of this recommendation.
Raptor nest searches	Nest searches should occur on, and within a 1-mile buffer of the proposed facility.
Raptor nest monitoring	Based upon the revised project boundaries (updated 2/25/09) there are 5 eagle nests located within 2 miles of the proposed project. One nest was found to be active during the site visit; the status of the remaining 4 is unknown. These pairs should be monitored to assess their daily movement patterns.
Bat acoustic monitoring	Acoustic monitoring should be conducted at all

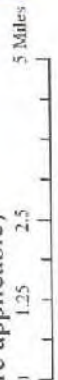
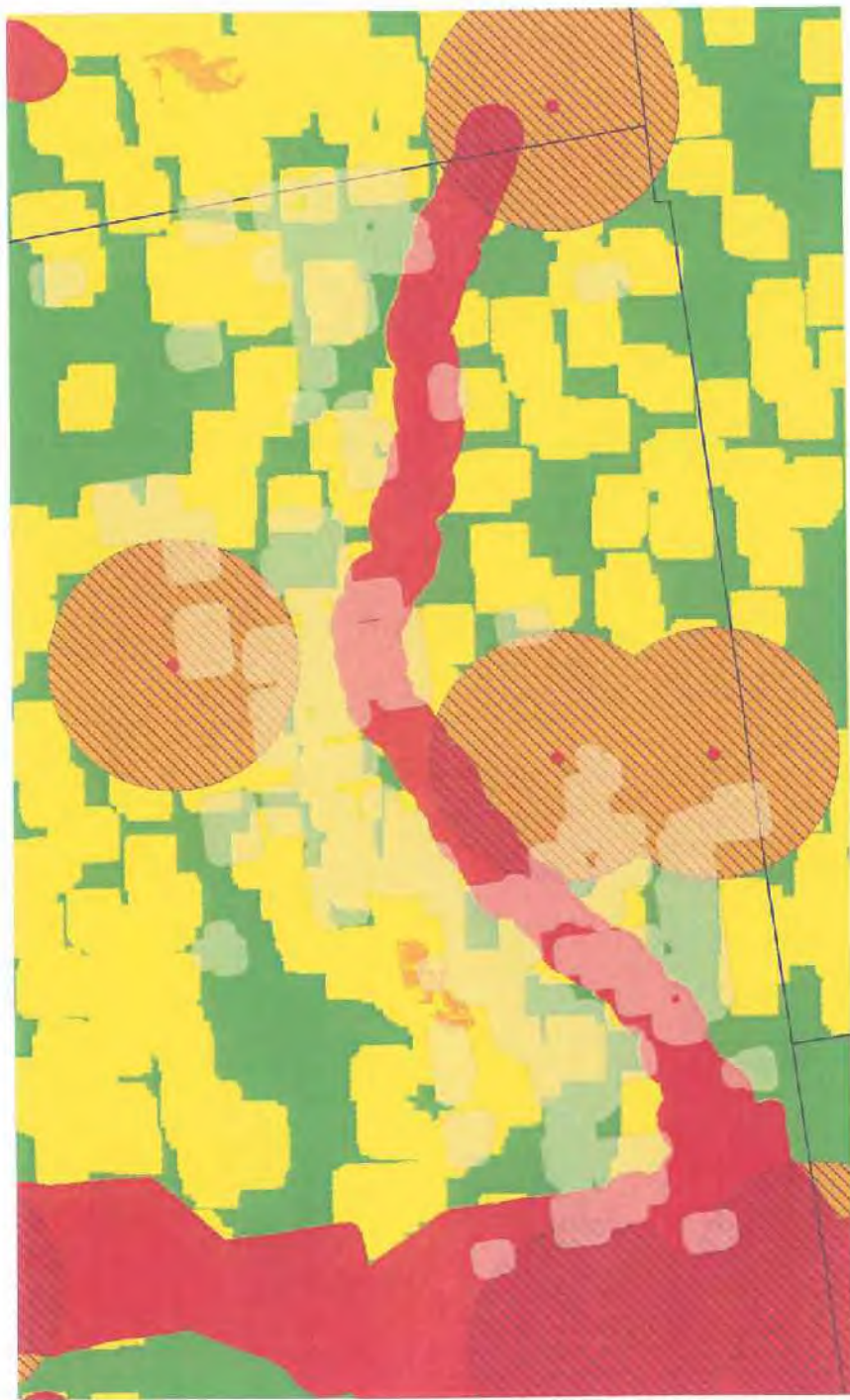
	meteorological towers.
Passerine migration (# of survey points)	15
Diurnal bird/raptor migration (# of survey point)	2
Sandhill crane migration (same points as raptor migration)	NS
Owl playback survey points	NS
Barn owl surveys	NS
Bat mist-netting (# of survey points)	15
Nocturnal marsh bird survey points	NS
Waterfowl survey points	NS
Shorebird migration points	NS
Radar monitoring locations	NS

NS = Not required based on the lack of suitable habitat.

The DNR looks forward to working with you in the future, and thanks you for contacting us early in the process. If you have any questions, please feel free to contact me.

Keith

cc: Mr. Stuart Siegfried, Ohio Power Siting Board
Ms. Megan Seymour, United States Fish and Wildlife Service



- Minimum
- Moderate
- Moderate (where applicable)
- Extensive

RMT/John Deere Project

Bald eagle nest

2 mile buffer of eagle nests



APPENDIX D

PHOTOGRAPHS



Photo 1: View of forested stream corridor at mist net site 01.



Photo 2: View of forested stream corridor at mist net site 02.



Photo 3: View of forested flight corridor at mist net site 03.



Photo 4: View of forested stream corridor at mist net site 04.



Photo 5: View of forested flight corridor at mist net site 05.



Photo 6: View of forested flight corridor at mist net site 06.



Photo 7: View of forested stream corridor at mist net site 07.



Photo 8: View of forested flight corridor at mist net site 08.



Photo 9: View of forested flight corridor at mist net site 09.



Photo 10: View of forested stream corridor at mist net site 10.



Photo 11: View of forested stream corridor at mist net site 11.



Photo 12: View of stream corridor at Mist Net Site 12.

Photo 13: Access was denied at mist net site 13 on the second night – no photo available.



Photo 14: View of forested flight corridor at mist net site 14.



Photo 15: View of forested flight corridor at mist net site 15.



Photo 16: View of Northern Myotis bat (*Myotis septentrionalis*) captured at mist net site 11.



Photo 17: View of Eastern Red bat (*Lasiurus borealis*) captured at mist net site 14.



Photo 18: View of Big Brown bat (*Eptesicus fuscus*) captured at mist net site 04.



Photo 19: View of Tri-colored bat (*Perimyotis subflavus*) captured at mist net site 04.



Photo 20: View of Little Brown bat (*Myotis lucifugus*) captured at mist net site 10.



Photo 21: View of Hoary bat (*Lasiurus cinereus*) captured at mist net site 12.



Photo 22: View of Little Brown bat maternity roost area.



Photo23: View of Little Brown bat satellite roost tree.

Appendix N-2: Bat Mist-Net & Telemetry Surveys

**Bat Mist-Net & Telemetry Surveys
Seneca Wind Energy Project
Seneca County, Ohio
Reference Number: 16-029**

**Final Report
July 2 – July 29, 2016**



Prepared for:

Exelon Power

200 Exelon Way
Kennett Square, Pennsylvania 19348

Prepared by:

Jason P. Ritzert, Scott Conover, Michelle Ritzert, and Grant Gardner

Western EcoSystems Technology, Inc.
1017 Mumma Road, Suite 103
Lemoyne, Pennsylvania 17043

October 25, 2016



EXECUTIVE SUMMARY

Exelon Power (Exelon) is considering the development of a wind project in Seneca County, Ohio known as the Seneca Wind Energy Project (the Project). The final number, size, and location of turbines and associated infrastructure have not been finalized. Western EcoSystems Technology, Inc. completed a presence/probable absence mist-net surveys for federally or state-listed bat species at the Project in accordance with the Ohio Department of Natural Resources (ODNR) On-Shore Bird and Bat Pre- and Post-Construction Monitoring Guidelines, the U.S. Fish and Wildlife Service (USFWS) *2016 Range-Wide Indiana Bat Summer Survey Guidelines*, which is also approved by the USFWS to determine presence/probable absence of northern long-eared bats (MYSE).

WEST submitted a study plan to the ODNR and USFWS which was approved prior to the start of surveys (Reference number 16-029). The survey effort was based on the acreage of potential bat habitat within the Project (6,354 acres [ac; 2,571 hectares {ha}]). Current ODNR guidelines require eight net-nights per 123 ac (50 ha) and USFWS guidelines require nine net-nights per 123 ac (50 ha) of forested area to determine presence or probable absence; 468 net-nights at 52 sites were surveyed to meet ODNR and USFWS standards.

Mist-net surveys were completed in the Project between July 2 and June 24, 2016. A total of 651 bats were captured at 50 sites, including 483 big brown bats, 144 eastern red bats, 19 hoary bats, two little brown bats, and one MYSE. The single non-reproductive female MYSE was fitted with a transmitter and foraging areas were documented each night for the life of the transmitter: six full nights and one partial night of telemetry surveys were completed before transmitter failure. Seven roost locations were located on inaccessible parcels.

STUDY PARTICIPANTS

Western EcoSystems Technology

Jason P. Ritzert	Project Manager
Rhett Good	Senior Manager
Scott Conover	Federally Permitted Bat Biologist/Report Writer
Larisa Bishop-Boros	Federally Permitted Bat Biologist
Shannon Romeling	Federally Permitted Bat Biologist
Hannah Hayes	Mist-net Technician
Virginia Jaquish	Mist-net Technician
Curtis Hart	Mist-net Technician
Lindsay Gedacht	Mist-net Technician
Michael McKenzie	Data Coordinator
Rebecca Schmidt	Data Manager
Michelle Ritzert	Technical Editor

Sanders Environmental

Chris Sanders	Federally Permitted Bat Biologist
Aaron Covalt	Federally Permitted Bat Biologist
Elise Merrill	Federally Permitted Bat Biologist
Sarah Dewees	Federally Permitted Bat Biologist
Jennifer Dreibelbis	Federally Permitted Bat Biologist
Kodie Smith	Telemetry Crew Leader
Vance Nepomuceno	Telemetry Crew Leader
Ameila Goebel	Telemetry Crew Leader
Lauren Frankel	Mist-net Technician
Devin Hoffer	Mist-net Technician
Rosemary Trahan	Mist-net Technician
Leah McKay	Mist-net Technician

REPORT REFERENCE

Ritzert, J. P., S. Conover, M. Ritzert, and G. Gardner. 2016. Bat Mist-Net and Telemetry Surveys Seneca Wind Energy Project, Seneca County, Ohio. Reference Number: 16-029. Final Report: July 2 to July 29, 2016. Prepared for Exelon Power, Kennett Square, Pennsylvania. Prepared by Western EcoSystems Technology, Inc. (WEST), Lemoyne, Pennsylvania.

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SC52-MYSE01	Error! Bookmark not defined.
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Appendix C. Photographs of Representative Bat Captures in the Seneca Wind Energy Project, July 2 – 24, 2016

Appendix D. Details of Bat Captures at Mist-net Sites in the Seneca Wind Energy Project, July 2 – 24, 2016

Appendix E. Foraging Telemetry Figures for the Seneca Wind Energy Project, July 23 – 29, 2016

BACKGROUND AND PROJECT OVERVIEW

Exelon Power (Exelon) is considering the development of a wind project in Seneca County, Ohio known as the Seneca Wind Energy Project (the Project; Figure 1). The final number, size, and location of turbines and associated infrastructure have not been finalized. Western EcoSystems Technology, Inc. (WEST) completed presence/probable absence mist-net surveys for federally and state-listed bat species in accordance with the Ohio Department of Natural Resources (ODNR) On-Shore Bird and Bat Pre- and Post-Construction Monitoring Guidelines (ODNR 2009) and the U.S. Fish and Wildlife Service (USFWS) *2016 Range-Wide Indiana Bat Summer Survey Guidelines* (USFWS 2016) that is also approved by the USFWS to determine presence/probable absence of northern long-eared bat (MYSE; *Myotis septentrionalis*).

TECHNICAL APPROACH

WEST prepared and submitted a study plan for mist-netting surveys and proposed netting locations to the ODNR and USFWS which was approved on June 28, 2016 and June 20, 2016, respectively. The survey effort was assigned the reference number 16-029. The survey effort was based on the acreage of potential bat habitat within the Project (6,354 acres [ac; 2,571 hectares [ha]; U.S. Geological Survey National Land Cover Database, Homer et al. 2015). Current ODNR guidelines require eight net-nights per 123 ac (50 ha) and USFWS guidelines require nine net-nights per 123 ac (50 ha) of forested area to determine presence or probable absence; 468 net-nights at 52 sites were surveyed to meet ODNR and USFWS standards (Figures 2a – 2c). One or more ODNR and USFWS-permitted biologists from WEST¹ or sub-contractor Sanders Environmental² were present during all mist-netting, roost telemetry, and foraging telemetry efforts and verified the identification of all bat species.

¹ West USFWS permit: TE234121-8; ODNR permit: 18-30

² Sanders Environmental USFWS permit: TE38842A-3 ; ODNR permit: 18-92 and 17-171

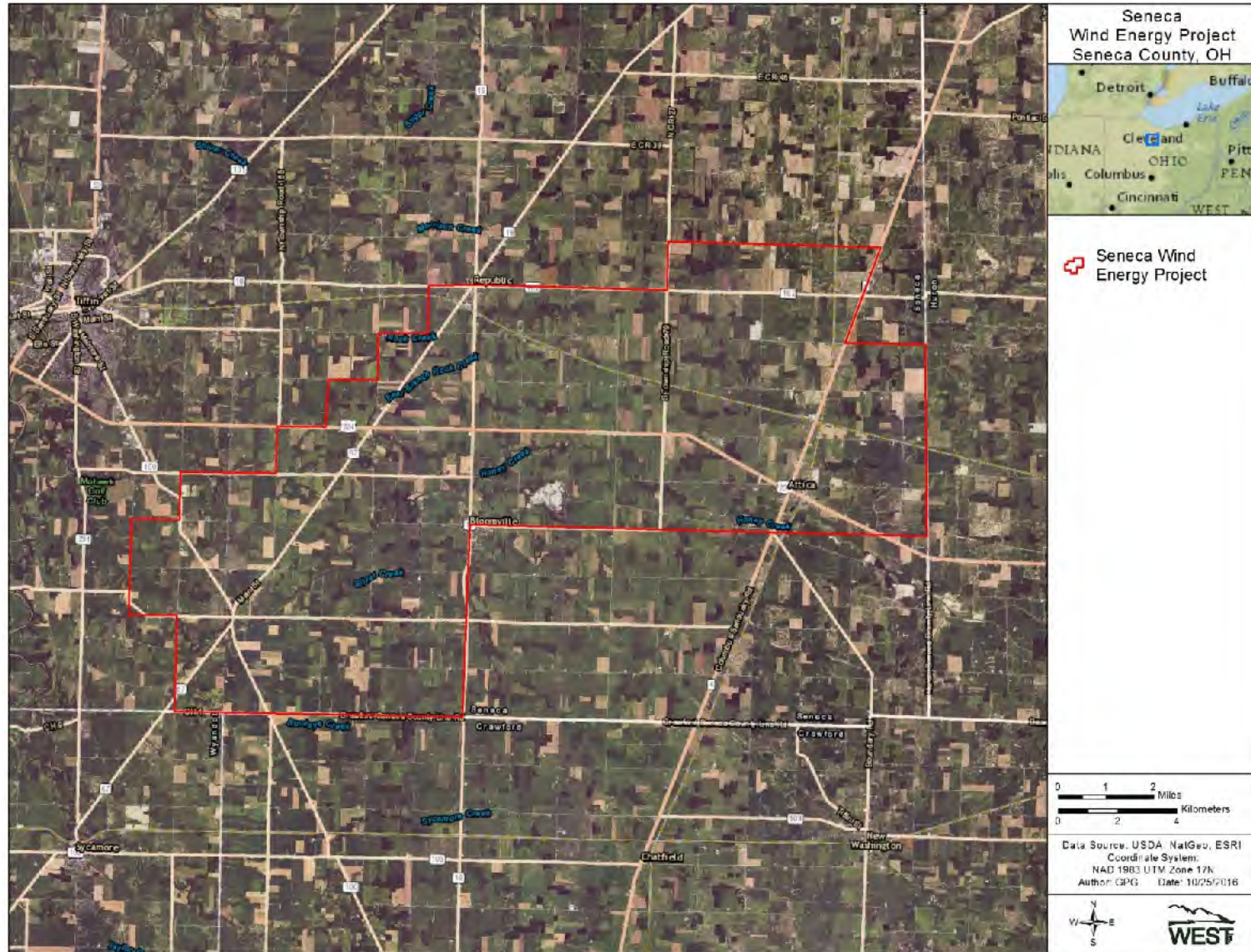


Figure 1. Map of the Seneca Wind Energy Project

Mist-Net Surveys

At each site a total of 9 net-nights were completed. Five net sets were used on the first survey night and four net sets were used on the second night with at least one net set 24.6 feet (ft; 7.5 meters [m]) tall. Each mist-net site was surveyed twice on non-consecutive nights. Standard two-ply, 50 denier, nylon mist-nets with a mesh size of 1.3 inches (in; 38 millimeters [mm]) were used at all mist-net sites.

Mist-nets were placed in suitable bat habitat and positioned perpendicularly across flight corridors, filling the corridor from side-to-side and extending from ground-level up to the overhanging canopy. Net locations were established at least 98.4 ft (30 m) apart within each mist-net site. Surveys began at sunset and continued for 5 hours. Nets were checked every 10 minutes (min). Disturbance in the form of noise and movement were minimized at all net locations. If weather conditions such as persistent rain, drizzle, or fog (more than 30 min), strong winds (greater than 9 miles per hour [15 kilometers per hour] for more than 30 min), or cold temperature (below 10°C [50°F]) occurred during the netting period, then those net nights were resurveyed.

For each mist-net night, the date, start and end time, site description (i.e., forest corridor, forest edge, stream, etc.), site coordinates, mist-net specifics (width and height), and weather data (temperature, cloud cover, wind speed, precipitation, and moon phase) were recorded. Species, sex, age, voucher photographs, reproductive condition, body mass (grams), forearm length (mm), and capture status (recapture/new) were recorded for each captured bat. A Reichard Index score (0-3) was recorded for all captured bats (Reichard 2009) to assess exposure to white nose syndrome (WNS). The USFWS WNS decontamination protocols were followed for all mist-netting efforts (USFWS 2016b). Captured bats other than listed species were measured and processed immediately and released within 15 minutes. Captured listed species were held up to 45 min while radio transmitters were attached.

Each species of bat captured was photo-documented with voucher photographs. Forearm bands were attached to captured *Myotis* species.. Bats of other species were banded at the discretion of the ODNr and USFWS permitted bat biologist on site. Captured bats that were not transmittered were marked with nail polish on their back in the location transmitters would be applied to determine if bats were recaptures.

Telemetry Surveys and Emergence Counts

The purpose of the telemetry study and emergence counts was to determine if transmittered bats occupy maternity roosts in or near the Project. Per the study plan, up to six female or juvenile Indiana bat (MYSO; *Myotis sodalis*), four female or juvenile MYSE, and all Rafinesque's big-eared bats (*Corynorhinus rafinesquii*) or eastern small-footed bat (*Myotis liebigi*) were transmittered to locate maternity roosts. In addition, radio telemetry was completed if greater than 15 lactating females of a common colonial species (e.g., big brown bat [*Eptesicus fuscus*] or little brown bat [*Myotis lucifugus*]) were captured in one night at one mist-net site. Radio-transmitters and adhesives did not exceed 6% of the bats total body weight.

Transmitter signals were followed during daylight hours to find roost and maternity sites. Roosts located on accessible parcels had exit counts completed to determine the number of bats in the roost and to confirm the specific roost type and location. The following was recorded for each roost documented: photographs, Global Positioning System (GPS) coordinates, roost type (tree, building, etc.), tree species (or best possible identification), tree type (live, snag), tree diameter at breast height, approximate roost height (m), and roost location (cavity, crevice, bark, etc.) were recorded. Bats were tracked to roosts for seven days or for the active life of the transmitter. If a bat was tracked to an inaccessible parcel, the biologist would take at minimum of three bearings from public roads to triangulate the bat roost.

Foraging locations were recorded by taking simultaneous bearings on radio-tagged bats by three mobile tracking crews at night while the bat was on the wing. Each mobile tracking unit consisted of one or two ODNR and USFWS-permitted biologists equipped with one handheld receiver, one three-element Yagi directional antenna, a compass, GPS unit, and radio. Bearings were recorded simultaneously by all three crews at 5 minute intervals for the entire night for the life of the transmitter or until the signal was lost.

RESULTS

Mist-Net Surveys

Mist-net surveys were completed at 52 sites (Figures 2a – 2c) from July 2 to July 24, 2016. A total of 651 bats were captured at 50 sites, including 483 big brown bats, 144 eastern red bats (*Lasiurus borealis*), 19 hoary bats (*Lasiurus cinereus*), two little brown bats, and one MYSE. No bats were captured at two sites (SC16 or SC19; (Table 1). One adult non-reproductive female MYSE was captured at mist-net site SC52 (Table 2). Appendix A contains locations and site descriptions of mist-net surveys, Appendix B contains photographs of mist-net sites, Appendix C contains photographs of representative bat species captured and Appendix D contains capture details for all bats

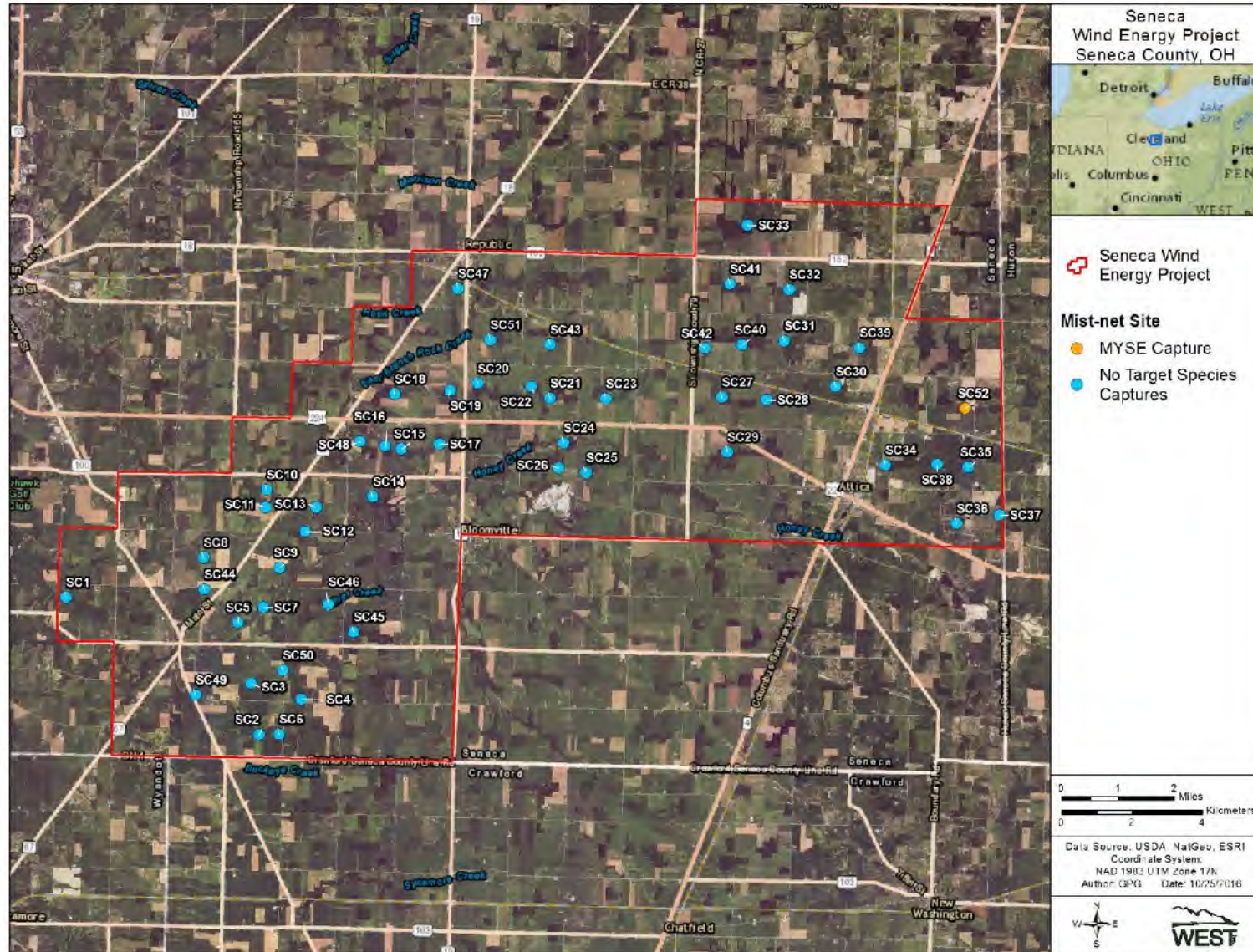


Figure 2a. Mist-net sites in the Seneca Wind Energy Project with the northern long-eared bat (MYSE) capture location, July 2 – July 24, 2016 (overview).

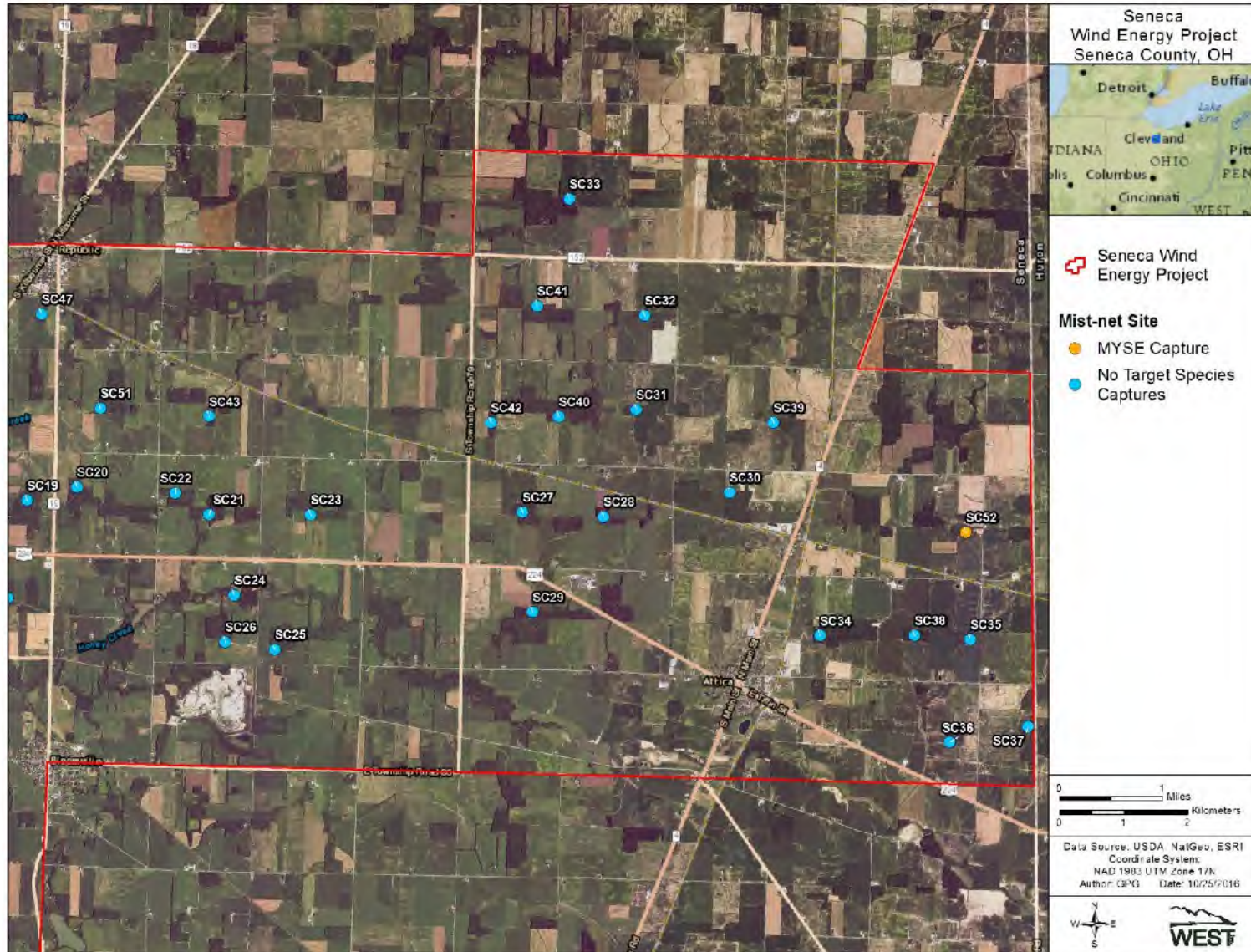


Figure 2b. Mist-net sites in the Seneca Wind Energy Project with the northern long-eared bat (MYSE) capture location, July 2 – July 24, 2016 (east).

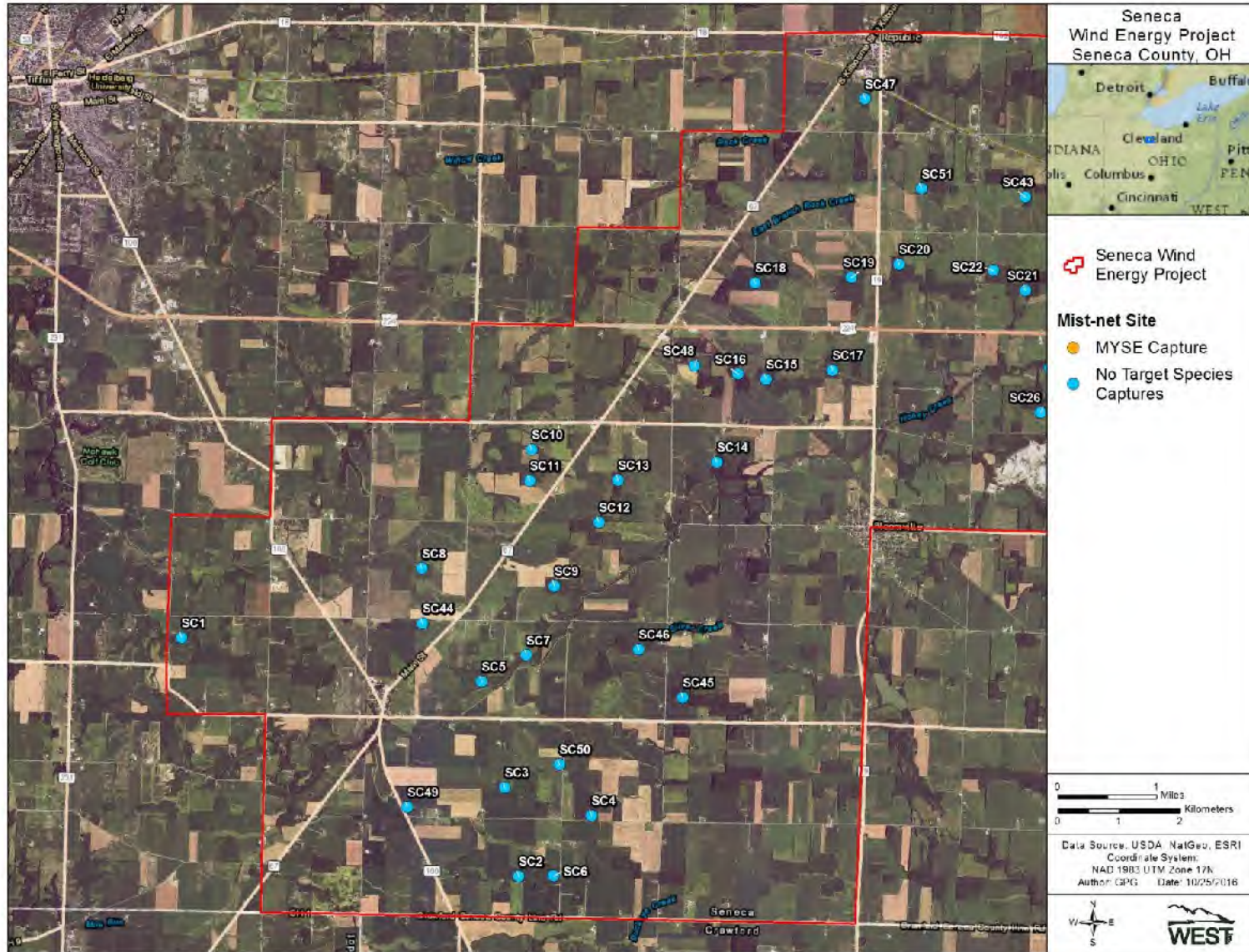


Figure 2c. Mist-net sites in the Seneca Wind Energy Project, July 2 – July 24, 2016 (west).

Table 1. Summary of bat captures in the Seneca Wind Energy Project, July 2 – July 24, 2016.

Site ID	Big brown bat	Eastern red bat	Hoary bat	Evening bat	Little brown bat	Northern long-eared bat	Total
SC1	3	1	0	0	0	0	4
SC2	6	0	0	0	0	0	6
SC3	4	0	1	0	0	0	5
SC4	7	4	0	0	0	0	11
SC5	5	3	2	0	1	0	11
SC6	1	0	0	0	0	0	1
SC7	4	1	0	1	1	0	7
SC8	2	0	0	0	0	0	2
SC9	5	0	1	0	0	0	6
SC10	12	3	0	0	0	0	15
SC11	12	2	0	0	0	0	14
SC12	42	5	0	0	0	0	47
SC13	10	1	0	0	0	0	11
SC14	5	7	0	0	0	0	12
SC15	12	2	0	0	0	0	14
SC16	0	0	0	0	0	0	0
SC17	15	1	1	0	0	0	17
SC18	5	0	0	0	0	0	5
SC19	0	0	0	0	0	0	0
SC20	0	1	0	0	0	0	1
SC21	2	1	0	0	0	0	3
SC22	5	0	0	0	0	0	5
SC23	1	2	0	0	0	0	3
SC24	10	0	3	0	0	0	13
SC25	14	0	0	0	0	0	14
SC26	6	1	1	0	0	0	8
SC27	9	28	2	0	0	0	39
SC28	2	7	0	0	0	0	9
SC29	16	0	0	0	0	0	16
SC30	26	9	0	0	0	0	35
SC31	9	5	1	0	0	0	15
SC32	3	2	0	0	0	0	5
SC33	3	8	1	0	0	0	12
SC34	4	0	0	0	0	0	4
SC35	35	11	0	0	0	0	46
SC36	10	1	0	0	0	0	11
SC37	20	2	0	0	0	0	22
SC38	0	1	0	0	0	0	1
SC39	2	1	0	0	0	0	3
SC40	2	4	1	0	0	0	7
SC41	33	3	2	0	0	0	38
SC42	8	0	0	0	0	0	8
SC43	6	1	0	0	0	0	7
SC44	0	1	0	0	0	0	1

Table 1. Summary of bat captures in the Seneca Wind Energy Project, July 2 – July 24, 2016.

Site ID	Big brown bat	Eastern red bat	Hoary bat	Evening bat	Little brown bat	Northern long-eared bat	Total
SC45	13	4	0	0	0	0	17
SC46	9	3	1	0	0	0	13
SC47	17	3	0	0	0	0	20
SC48	3	4	0	0	0	0	7
SC49	45	1	1	1	0	0	48
SC50	6	1	1	0	0	0	8
SC51	3	8	0	0	0	0	11
SC52	11	1	0	0	0	1	13
Total	483	144	19	2	2	1	651

Table 2. Details of the northern long-eared bat (MYSE) captured during summer 2016 in the Seneca Wind Energy Project.

Band Number	Bat ID	Site	Date	Bat Information	UTM*
ODNR25631	SC52-MYSE01	SC52	7/22/2016	Adult; non-reproductive female	344861 4550120

*Zone 17T, North American Datum 1983

Telemetry Surveys and Emergence Counts

Roost Telemetry

One non-reproductive female MYSE was radio-tracked to determine day roost and foraging locations (Table 3). Seven roosts were located on inaccessible land within the Project (Figure 3). All seven roosts were located approximately 0.8 mi (1.3 kilometers [km]) north-northwest of the capture site. All roosts were estimated to be located within 1,772 ft (540 m) of each other.

Table 3. Northern long-eared bat (MYSE) roost locations documented on inaccessible parcels in the Seneca Wind Energy Project, July 23 – July 29, 2016.

Triangulation ID	Tracking Date	Capture Site	Bat Information	UTM*
SC52-MYSE01-T1	7/23/2016	SC52	Adult; non-reproductive female	344342 4551304
SC52-MYSE01-T2	7/24/2016	SC52	Adult; non-reproductive female	344403 4551153
SC52-MYSE01-T3	7/25/2016	SC52	Adult; non-reproductive female	344377 4551211
SC52-MYSE01-T4	7/26/2016	SC52	Adult; non-reproductive female	344389 4551216
SC52-MYSE01-T5	7/27/2016	SC52	Adult; non-reproductive female	344385 4551214
SC52-MYSE01-T6	7/28/2016	SC52	Adult; non-reproductive female	344429 4551213
SC52-MYSE01-T7	7/29/2016	SC52	Adult; non-reproductive female	344411 4551227

*Zone 17 T, North American Datum 1983



Figure 3. Triangulated roosts in the Seneca Wind Energy Project, July 23 – July 29, 2016.

Foraging Telemetry

Foraging telemetry was conducted during six full nights (July 23 to 28, 2016) and one partial night (July 29, 2016) for the MYSE capture.. The transmitter failed during the seventh night of foraging telemetry. Nightly 95%, 70%, and 50% fixed kernel utilization distributions and minimum convex polygons were calculated and are presented in Appendix E.

Foraging occurred exclusively in the Project during all nights of foraging telemetry (Table 4; Appendix E). Minimum convex polygons ranged from 64 ac (34 ha) to 396 ac (160 ha). Foraging occurred primarily in three areas of fragmented forest spread among agricultural fields to the east and north of the capture site. Foraging occurred within 1.0 mi (1.6 km) of the capture site.

Table 4. Areas of minimum convex polygons of recorded foraging telemetry for the tracked bat in the Seneca Wind Energy Project, July 23 – July 29, 2016.

Bat ID	Date	Acres	Hectares
SC52-MYSE01	7/23/2015	396	160
SC52-MYSE01	7/24/2015	267	108
SC52-MYSE01	7/25/2015	303	123
SC52-MYSE01	7/26/2015	292	118
SC52-MYSE01	7/27/2015	267	108
SC52-MYSE01	7/28/2015	354	143
SC52-MYSE01	7/29/2015	64	34

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**Appendix A. Coordinates and Site Descriptions of Mist-net Survey Locations in the
Seneca Wind Energy Project, July 2 – 24, 2016**

**Appendix B. Photographs of Mist-net Survey Sites in the Seneca Wind Energy Project,
July 2 – 24, 2016**

**Appendix C. Photographs of Representative Bat Captures in the Seneca Wind Energy
Project, July 2 – 24, 2016**

**Appendix D. Details of Bat Captures at Mist-net Sites in the Seneca Wind Energy Project,
July 2 – 24, 2016**

**Appendix E. Foraging Telemetry Figures for the Seneca Wind Energy Project, July 23 –
29, 2016**

Appendix A. Coordinates and site descriptions of mist-net survey locations in the Seneca Wind Project, July 2 – July 24, 2016.

Mist-Net Site ID	Net	UTM*		Site Description
SC1	A	319327	4544590	Forest edge
	B	319417	4544605	Forest edge
	C	319381	4544675	Forested corridor
	D	319383	4544718	Forested corridor
	E	319435	4544715	Small pond within forest
SC2	A	324950	4540729	Forest edge
	B	324958	4540778	Forested corridor
	C	325036	4540868	Forested corridor
	D	324960	4650873	Forested corridor
	E	325002	4540970	Forested corridor
SC3	A	324511	4542239	Forest edge
	B	324545	4542294	Interior forest
	C	324634	4542292	Forest stream corridor
	D	324653	4542206	Forest edge
	E	324560	4542212	Forest edge
SC4	A	326158	4541769	Forest edge
	B	326120	4541766	Forest stream corridor
	C	326091	4541771	Forest stream corridor
	D	326071	4541793	Forest stream corridor
	E	326034	4541825	Forest stream corridor
SC5	A	324020	4543833	Riparian corridor
	B	324050	4543810	Riparian corridor
	C	324004	4543805	Riparian corridor
	D	323938	4543761	Riparian corridor
	E	323940	4543735	Riparian corridor
SC6	A	325530	4540840	Forested corridor
	B	325474	4540833	Interior forest
	C	325417	4540806	Forested corridor
	D	325443	4540796	Interior forest
	E	325459	4540777	Forested corridor
SC7	A	324831	4544239	Riparian corridor
	B	324913	4544407	Riparian corridor
	C	324963	4544405	Riparian corridor
	D	325032	4544390	Riparian corridor
	E	325062	4544355	Riparian corridor
SC8	A	323362	4545634	Forest edge
	B	323367	4545724	Interior forest
	C	323377	4545755	Interior forest
	D	323403	4545702	Interior forest
	E	323431	4545719	Interior forest

SC9	A	325330	4545655	Forested corridor
	B	325376	4545599	Forested corridor
	C	325452	4545594	Forested corridor
	D	325514	4545603	Forested corridor
	E	325539	4545592	Forested corridor
SC10	A	325082	4547808	Forested corridor
	B	325081	4547716	Forested corridor
	C	325124	4547699	Forest edge
	D	324941	4547525	Forested corridor
	E	324961	4547475	Streambed corridor
SC11	A	324956	4547187	Forest edge
	B	324961	4547246	Forested corridor
	C	324969	4547205	Forested corridor
	D	325039	4547288	Forested corridor
	E	325017	4547230	Interior forest
SC12	A	326196	4546587	Forest edge
	B	326131	454606	Forest edge gap
	C	326115	4546497	Cleared Forested corridor
	D	326051	4546450	Cleared Forested corridor
	E	326096	4546455	Interior forest
SC13	A	326535	4547210	Forested corridor
	B	326530	4547117	Forested corridor
	C	326556	4547081	Forested corridor
	D	326526	4547063	Forested corridor
	E	326489	4547037	Forested corridor
SC14	A	328126	4547693	Forest edge clearing
	B	328114	4547649	Forest edge gap
	C	328110	4547601	Forest clearing
	D	328073	4547562	Forest edge
	E	328099	4547514	Interior forest
SC15	A	329022	4549011	Forested corridor
	B	328930	4549080	Forest clearing
	C	328856	4549057	Forested corridor
	D	328855	4548953	Forested corridor
	E	328893	4548969	Forested pond
SC16	A	328370	4549134	Forested corridor
	B	328367	4549084	Forested corridor
	C	328448	4549042	Forested corridor
	D	328423	4549013	Forested corridor
	E	328331	4548976	Forested corridor
SC17	A	330091	4549031	Forest edge gap
	B	329905	4549095	Forest edge gap
	C	329986	4549060	Forest edge gap
	D	329949	4549109	Forest edge
	E	330038	4549088	Interior forest

SC18	A	328723	4550391	Forested corridor
	B	328730	4550457	Forested corridor
	C	328816	4550475	Forested corridor
	D	328892	4550447	Forested corridor
	E	329014	4550445	Interior forest
SC19	A	330188	4550616	Forest edge gap
	B	330212	4550675	Forested corridor
	C	330248	4550677	Interior forest
	D	330258	4550624	Interior forest
	E	330303	4550591	Interior forest
SC20	A	330985	4550907	Interior forest
	B	331064	4550849	Forested understory clearing
	C	331050	4550767	Interior forest
	D	330968	4550711	Forest edge
	E	331004	4550628	Interior forest
SC21	A	332980	4550210	Forested corridor
	B	332957	4550160	Forested corridor
	C	332993	4550086	Forested corridor
	D	332967	4550053	Forested corridor
	E	332975	4549977	Forested pond corridor
SC22	A	332580	4550673	Forest clearing
	B	332616	4550653	Interior forest
	C	332743	4550638	Interior forest
	D	332693	4550623	Forested corridor
	E	332637	4550606	Forested corridor
SC23	A	334704	4550314	Forested corridor
	B	334700	4550389	Interior forest
	C	334802	4550379	Forested corridor
	D	334735	4550451	Forest clearing
	E	334690	4550458	Interior forest
SC24	A	333561	4549082	Riparian corridor
	B	333533	4549112	Riparian corridor
	C	333517	4549156	Riparian corridor
	D	333548	4549140	Forest edge gap
	E	333619	4549064	Forested corridor
SC25	A	334206	4548237	Cleared Forested corridor
	B	334132	4548232	Forested corridor
	C	334128	4548293	Forest edge gap
	D	334134	4548380	Forested corridor
	E	334153	4548414	Forested corridor
SC26	A	333375	4548310	Forested corridor
	B	333377	4548374	Forest edge gap
	C	333085	4548181	Forested stream corridor
	D	333025	4548168	Forested stream corridor
	E	332971	4548168	Forested stream corridor

SC27	A	338119	4550474	Forested corridor
	B	338117	4550442	Forested pond
	C	338082	4550421	Forested corridor
	D	338220	4550467	Interior forest
	E	338276	4550520	Forest edge
SC28	A	339263	4550446	Interior forest
	B	339421	4550447	Forest edge
	C	339359	4550331	Interior forest
	D	339400	4550254	Forest understory clearing
	E	339288	4550306	Forest gap
SC29	A	338221	4548744	Forested stream corridor
	B	338203	4548770	Forested stream corridor
	C	338226	4548796	Forested stream corridor
	D	338179	4548875	Forest understory clearing
	E	338045	4548824	Forested corridor
SC30	A	341287	4550625	Forested corridor
	B	341298	4550722	Forested corridor
	C	341376	4550701	Forested corridor
	D	341412	4550661	Forested corridor
	E	341472	4550618	Forested corridor
SC31	A	340039	4552034	Forest edge corridor
	B	339951	4551959	Forest understory clearing
	C	339904	4552043	Forest edge corridor
	D	339830	4551911	Forest understory clearing
	E	339701	4551933	Forested corridor
SC32	A	340052	4553450	Forested corridor
	B	339982	4553484	Interior forest
	C	339956	4553432	Forested corridor
	D	339919	4553419	Forest edge understory clearing
	E	339868	4553445	Interior forest
SC33	A	338700	4555321	Interior forest
	B	338753	4555242	Forested corridor
	C	338773	4555186	Forested corridor
	D	338742	4555323	Forested corridor
	E	338849	4555234	Interior forest
SC34	A	342695	4548475	Forest clearing
	B	342718	4548474	Small pond near forest edge
	C	342733	4548447	Interior forest
	D	342703	4548393	Interior forest
	E	342774	4548422	Forested corridor
SC35	A	344886	4548555	Forest edge gap
	B	344933	4548499	Forest edge gap
	C	344978	4548462	Small pond within forest interior
	D	345033	4548415	Forest understory clearing
	E	345028	4548365	Forest edge

SC36	A	344922	4546892	Interior forest
	B	344834	4546808	Forest understory clearing
	C	344792	4546837	Forested corridor
	D	344745	4546782	Forested corridor
	E	344762	4546896	Interior forest
	F	344773	4546739	Forested pond
SC37	A	345829	4547025	Forest edge
	B	345866	4547036	Forest understory clearing
	C	345924	4547035	Forest Interior
	D	345954	4547063	Forested corridor
	E	346042	4547050	Forest clearing
SC38	A	344025	4548385	Forest edge
	B	344016	4548413	Forested corridor
	C	344075	4548504	Forested corridor
	D	344197	4548411	Forested corridor
	E	344239	4548384	Forest edge understory clearing
SC39	A	342032	4551735	Forest edge corridor
	B	341986	4551767	Interior forest
	C	341990	4551836	Interior forest
	D	341924	4551782	Forest edge
	E	341840	4551827	Forest edge
SC40	A	338524	4551848	Forested stream corridor
	B	338544	4551876	Forested stream corridor
	C	338612	4551938	Forested stream corridor
	D	338626	4551886	Forested corridor
	E	338711	4551898	Forested corridor
SC41	A	338297	4553639	Forest edge
	B	338248	4553582	Interior forest
	C	338224	4553632	Forest edge corridor
	D	338270	4553613	Interior forest
	E	338153	4553628	Forest edge corridor
SC42	A	337618	4551749	Forest edge gap
	B	337539	4551731	Forest understory clearing
	C	337596	4551601	Forest understory clearing
	D	337573	4551687	Forest understory clearing
	E	337614	4551848	Forested corridor
SC43	A	333258	4552050	Forest edge
	B	333227	4551974	Forest edge corridor
	C	333182	4551977	Forest edge
	D	333188	4551804	Pond adjacent to forested edge
	E	333149	4551810	Forest edge gap
SC44	A	323285	4544810	Forest understory clearing
	B	323305	4544852	Forested corridor
	C	323222	4544887	Forested corridor
	D	323202	4544934	Forested corridor
	E	323262	4544911	Interior forest

SC45	A	327518	4543758	Forested corridor
	B	327536	4543734	Forested corridor
	C	327564	4543739	Exposed rock face within forest clearing
	D	327633	4543736	Forest edge
	E	327613	4543771	Forest edge
SC46	A	327084	4544509	Forest edge
	B	326962	4544519	Riparian corridor
	C	326985	4544537	Riparian corridor
	D	327009	4544557	Riparian corridor
	E	327030	4544580	Riparian corridor
SC47	A	330629	4553584	Riparian corridor
	B	330558	4553517	Riparian corridor
	C	330475	4553434	Riparian corridor
	D	330555	4553437	Interior forest
	E	330598	4553347	Forest understory clearing
SC48	A	327654	4549153	Forest edge
	B	327738	4549142	Forest edge
	C	327752	4549108	Forested corridor
	D	327803	4549110	Forested corridor
	E	327810	4549055	Interior forest
SC49	A	323127	4541940	Sparsely forested stream
	B	323099	4541951	Stream adjacent to forest edge
	C	323045	4541952	Forested stream corridor
	D	323094	4541976	Forest understory clearing
	E	323074	4541858	Forest edge gap
SC50	A	325463	4542710	Forest Edge
	B	325460	4542639	Forest Edge
	C	325500	4542610	Interior forest
	D	325489	4542650	Forest understory clearing
	E	325539	4542716	Forest edge corridor
SC51	A	331664	4552006	Forested corridor
	B	331534	4551973	Forested corridor
	C	331438	4551949	Forested stream corridor
	D	331549	4551936	Pond adjacent to forest edge
	E	331495	4551934	Forested corridor
SC52	A	344861	4550120	Forested corridor
	B	344901	4550073	Interior forest
	C	345033	4550059	Interior forest
	D	344989	4550024	Forest edge gap
	E	344942	4550148	Forested corridor

*UTM Zone 17 T, North American Datum 1983

SC1 – NET A



SC1 – NET B



SC1 – NET C



SC1 – NET D



SC1 – Net E



SC2 – NET A



SC2 – NET B



SC2 – NET C



SC2 – Net D



SC2 – NET E



SC3 – NET A



SC3 – NET B



SC3 – NET C



SC3 – NET D



SC3 – NET E



SC4 – NET A



SC4 – NET B



SC4 – NET C



SC4 – NET D



SC4 – NET E



SC5 – NET A



SC5 – NET B



SC5 – NET C



SC5 – NET D



SC 5 – NET E



SC6 – NET A



SC6 -- NET B



SC6 -- NET C



SC6 – NET D



SC6 – NET E



SC7 – NET A



SC7 – NET B



SC7 – NET C



SC7 – NET D



SC7 – NET E



SC8 – NET A



SC8 – NET B



SC8 – NET C



SC8 – NET D



SC8 – NET E



SC9 – NET A



SC9 – NET B



SC9 – NET C



SC9 – NET D



SC9 – NET E



SC10 – Net A



SC10 – Net B



SC10 – Net C



SC10 – Net D



SC10 – Net E



SC11 – Net A



SC11 – Net B



SC11 – Net C



SC11 – Net D



SC11 – Net E



SC12 – Net A



SC12 – Net B



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