

Appendix K
Avian Work Plan

**Revised Eagle and Raptor
Point Count, Breeding Bird
Survey, and Fall Migrating Bird
Survey Work Plan**

Eight Point Wind Energy Center,
Steuben County, New York



Prepared for:
Eight Point Wind, LLC

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September 30, 2016

REVISED EAGLE AND RAPTOR POINT COUNT, BREEDING BIRD SURVEY, AND FALL MIGRATING BIRD SURVEY WORK PLAN

Table of Contents

1.0 INTRODUCTION 1

2.0 EAGLE AND RAPTOR POINT COUNT SURVEYS..... 1

2.1 OBJECTIVES..... 1

2.2 SURVEY METHODS 2

2.3 ANALYSIS AND REPORTING..... 3

3.0 BREEDING BIRD SURVEYS 3

3.1 OBJECTIVES..... 3

3.2 SURVEY METHODS 3

3.3 REPORTING 5

4.0 FALL MIGRATING BIRD SURVEYS..... 6

4.1 OBJECTIVES..... 6

4.2 SURVEY METHODS 6

4.3 REPORTING 7

LIST OF FIGURES

- Figure 2-1. Eagle and Raptor Point Count Location Map
- Figure 3-1. Breeding Bird Survey Location Map
- Figure 4-1. Fall Migratory Bird Survey Location Map

REVISED EAGLE AND RAPTOR POINT COUNT, BREEDING BIRD SURVEY, AND FALL MIGRATING BIRD SURVEY WORK PLAN

September 30, 2016

1.0 INTRODUCTION

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.

This Revised Work Plan is for raptor and eagle point count surveys, breeding bird surveys (BBS), and fall migrating bird 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)¹ and the U.S. Fish and Wildlife Service's (USFWS) Eagle Conservation Plan Guidance (ECP Guidance)². This Work Plan represents an update to the Eagle and Raptor Point Count Survey Work Plan dated 8 March 2016 that was emailed the same day to the NYSDEC and the USFWS. This Work Plan also incorporates comments from the USFWS Cortland New York Field Office and the NYSDEC which were communicated during a Project introductory meeting between EPW, TRC, Stantec, and the agencies on 11 February 2016 and a conference call between state and federal resource agencies and Project team partners on 6 April and 29 June 2016.

This Revised Work Plan includes minor revisions suggested by the NYSDEC and New York State Department of Public Services (NYSDPS) following their respective reviews of the Work Plan dated 25 August 2016. Additional pre-construction avian and bat surveys will be detailed in subsequent Work Plans as Project planning and agency consultations continue.

2.0 EAGLE AND RAPTOR POINT COUNT SURVEYS

2.1 OBJECTIVES

Point count surveys will be used to assess activity during baseline conditions at the Project for bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*), and other raptor species occurring in the eastern US. The surveys are designed to investigate the

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 U.S. Fish and Wildlife Service. 2013. Eagle Conservation Plan Guidance: Module 1 – Land-based Wind Energy: Version 2.

REVISED EAGLE AND RAPTOR POINT COUNT, BREEDING BIRD SURVEY, AND FALL MIGRATING BIRD SURVEY WORK PLAN

September 30, 2016

distribution, relative abundance, behavior, and site use of raptors during migratory, breeding, and wintering periods.

2.2 SURVEY METHODS

Methods are based on a combination of those in the USFWS ECP Guidance and the NYSDEC Guidelines. Eagle and raptor point count surveys will be conducted year-round, consistent with the ECP Guidance; however, survey effort will be increased to weekly during the spring and fall migratory periods when bald and golden eagles and raptors are known to migrate through the region. Specifically, weekly spring and fall migration surveys will be conducted from 1 March – 31 May 2016 and 15 August – 1 December 2016, and monthly summer and winter surveys will be conducted from 1 June – 14 August 2016 and 2 December 2016 – 28 February 2017.

Eagle and raptor point count surveys will be conducted at 14 points³ within the Project area and transmission line currently proposed (Figure 2-1). Surveys will occur in all weather conditions except when visibility is poor. Each plot will consist of an 800-meter (m) radius covering an area of 2 square km. Plots will be distributed throughout the Project area during a desktop review, where there are anticipated to be suitable viewsheds of the sky and where landowner lease agreements have been retained. Plots will not be placed in forested areas unless there is a suitable viewshed. Point locations will be finalized after the first site visit. Point count locations will be mapped using a Global Positioning Systems (GPS).

During spring and fall migratory periods, weekly visits will be made to the Project to conduct point count surveys consisting of 2-hour observation periods between 8 am and 2 hours before sunset⁴. The number of survey hours per week during the migratory periods will be a sliding scale based on the local sunset calendar (with a minimum of 7 survey hours per week) to meet the level of effort described in the NYSDEC Guidelines. All 14 points will be sampled at least once per month. The starting plot will change each survey cycle to enable sampling of each plot during a range of daylight hours.

During the summer and winter periods, point count surveys will consist of monthly 1-hour observation periods. Surveys will target the hours of 9 am – 4 pm, the daytime hours in which eagles and raptors tend to be more active. All 14 points will be surveyed once per month during the summer and winter periods.

Though the species targeted during point count surveys are bald and golden eagles, all raptors observed will be recorded. In addition, Stantec will record incidental observations of other species (i.e., waterbirds and songbirds) observed during surveys. During surveys, observers will

³ Per the April 2013 ECP Guidelines, the number of point count locations was determined by calculating the turbine area including a 1-km buffer around turbines, calculating 30% of the area, and dividing by 2 to derive the number of 2 square-kilometer plots. The original Project area resulted in 25 survey locations; however, the number of plots was reduced to 14 when the Project area was reduced by approximately one half in late June 2016.

⁴ Surveys conducted prior to the date of this Work Plan occurred between 9 am – 4 pm consistent with the prior Work Plan dated 8 March 2016, which predates the 2016 NYSDEC Guidelines.

REVISED EAGLE AND RAPTOR POINT COUNT, BREEDING BIRD SURVEY, AND FALL MIGRATING BIRD SURVEY WORK PLAN

September 30, 2016

record the horizontal distance of each eagle from the observer and the duration of observation of each eagle flying within plots – recorded as the duration of the observation within 800 m and flight height equal to or less than 200 m (the hazard zone), per the ECP Guidance. In addition to distance and flight height data, each eagle's flight path will be drawn on a map of the 800-m radius count circles. Each bird's behavior and activity (prevalent behavior during each 1-minute interval of observation), age class, as well as weather data at the time of observation will be recorded (wind direction and speed, cloud cover, precipitation, and temperature). Other species of raptor will be recorded on separate datasheets. The species, number of individuals, location, flight height, and behavior will be recorded for each raptor observed.

2.3 ANALYSIS AND REPORTING

After completion of the seasonal eagle point counts, data collected will be summarized by season. For eagles and raptors, the number of species and individuals will be summarized, as well as the flight locations and behaviors. For eagles, the number of eagle minutes within the hazard zone will be calculated, consistent with the EPC Guidance. For the purposes of analysis, the number of minutes of observation within plots (eagle minutes) will be rounded to the next highest integer (e.g., an eagle seen for 30 seconds is rounded to 1 eagle minute). Seasonal results will be incorporated into a summary report. The report will include the eagle exposure rate per season, calculated as eagle minutes per number of survey hours within the Project area. The report will be submitted to EPW and the NYSDEC; and to the NYDPS as they have requested, and to the USFWS based upon recommendation from the NYSDEC.

3.0 BREEDING BIRD SURVEYS

Stantec conducted a Breeding Bird Survey (BBS) in 2016 at the Project to assess baseline conditions. The following sections outline the objectives, survey methodology, and reporting for these surveys.

3.1 OBJECTIVES

The BBS assessed the following within forested and non-forested habitats at the Project:

- Species observed by sight and sound, including behavior;
- Relative abundance; and
- Distribution.

3.2 SURVEY METHODS

Stantec conducted a BBS at the Project weekly between 16 May and 15 July 2016 (9 weeks) consistent with proposed survey methodology discussed during interagency teleconferences on 11 February and 6 April 2016 as referenced above and changes to that methodology based on

REVISED EAGLE AND RAPTOR POINT COUNT, BREEDING BIRD SURVEY, AND FALL MIGRATING BIRD SURVEY WORK PLAN

September 30, 2016

project layout changes discussed on the 29 June teleconference referenced above and further discussed below. A qualified biologist familiar with New York state birds by sight and sound walked transects between sunrise and no later than 10 am. Surveys were conducted on those days when weather conditions were conducive to auditory and visual detection and identification of birds (excessively windy, rainy, foggy, or cold days were not surveyed). The focus was on songbirds, including observations of active nests and recently fledged young, but observations of soaring raptors, waterfowl, and flyovers were also be recorded. Stantec also noted any disruption and/or distraction that occurred during a survey period that may have precluded an appropriate survey.

Stantec sampled 14 transects⁵ 300 m in length (Figure 3-1).⁶ There were 7 point count locations at 50-m intervals established along each transect. Point counts were surveyed for 10 minutes to record all avian species heard and seen after a 1–2 minute pause before beginning the survey to offset potential disruption to bird behavior while the biologist traveled to each survey location. The 50-m interval spacing created the potential for a data bias by double counting individuals along each transect, so Stantec noted if individual observations at adjacent survey locations are suspected to be the same individual previously recorded. Stantec surveyed each transect 4 times, once each during mid- to late May, early to mid-June, mid- to late June, and early to mid-July.

Survey points along transects were sited generally proportionately between forested and non-forested habitat within the Project area and transmission line, as currently proposed, where landowner permission was received by EPW. Fifty-four percent of the Project area is forested and 46% is non-forested. As such, 57% of survey points were in forested habitats and 43% of points were in non-forested habitats. Further,

- 6 transects extended 300 m from or in proximity to proposed turbine locations;
- 2 transects within the proposed 115 kV interconnection line corridor; and
- 6 control transects located more than 800 m from potential turbine locations.

The following data was recorded during surveys:

- Start and end time of the observation period;
- Weather including temperature, wind speed, wind direction, and cloud cover;
- Species identification and number of individual(s) per species at each point count;
- Distance from observer;
- Mode of species detection (visual or auditory);

⁵ The general location of each survey transect was determined using aerial imagery of the Project and plotted with a GPS. The final location of each transect will be confirmed during the first visit to each transect and recorded with GPS.

⁶ For the original Project area, Stantec selected 22 survey transects; however, the Project area was reduced by approximately one half in late June 2016 and Stantec retained 14 transects.

REVISED EAGLE AND RAPTOR POINT COUNT, BREEDING BIRD SURVEY, AND FALL MIGRATING BIRD SURVEY WORK PLAN

September 30, 2016

- Behavior (nesting, flying, perching, singing, etc.); and
- Any possible distractions to the observer (e.g., tree-cutting, mowing, vehicle) which may have limited the detection of birds during the survey period.

3.3 REPORTING

Stantec will create a technical report discussing results of the survey effort described above. The report will follow typical scientific reporting standards and will include Introduction, Methods, Results, and Discussion sections. The report will include appropriate photographs, tables, and figures. The report will address the following items identified in the current NYSDEC Guidelines:

- Number, location, and length of each turbine, electric line, and control transect;
- Overall survey period, and date, time, and duration of surveys conducted at each point;
- Description of the habitat surrounding each transect;
- Number of species observed overall;
- Total number of individuals of each species observed overall;
- The number of individuals of each species observed at each transect point;
- Summary of the number and behavior of birds seen (e.g., individual, moving in a small flock, feeding, resting, carrying nesting material, food, or fecal sac), and whether any active nests or recently fledged young were observed;
- How birds were identified (i.e., visually or auditory);
- Point(s) and transect(s) with the highest and lowest: number of species, species diversity, frequency, and abundance;
- Habitat type(s) with the highest and lowest number of species, species diversity, frequency, and abundance;
- Description of the weather conditions during and immediately prior to survey days;
- List of all species with the dates and points where they were observed;
- Number and identification of the observer(s) conducting each survey;
- Description of any disruptions and/or distractions that occurred during each sampling period that may have precluded an adequate survey;
- Appropriate tables and graphs, depicting the above information, as well as all species with the dates and points where they were observed, the location proposed or existing turbines and other project components;
- Appropriate maps to display observations of state and federally listed species, species of concern, Species of Greatest Conservation Concern (SGCN), and other bird species targeted at the Project. Information on the location, method of detection, behavior, flight paths, and other relevant data will be provided in the report; and

REVISED EAGLE AND RAPTOR POINT COUNT, BREEDING BIRD SURVEY, AND FALL MIGRATING BIRD SURVEY WORK PLAN

September 30, 2016

- Shapefiles depicting the date, location, and behavior of each individual of all state and federally listed species observed on site, and shapefiles of all transects and point locations.

The report will be submitted to EPW and the NYSDEC; and to the NYDPS as they have requested, and to the USFWS based upon recommendation from the NYSDEC.

4.0 FALL MIGRATING BIRD SURVEYS

Stantec will conduct a fall migrating bird survey at the Project to assess baseline conditions. The following sections outline the objectives, survey methodology, and reporting for these surveys. The Revised Work Plan dated 25 August 2016 submitted to the agencies that same day, included the fall migrating bird surveys. While the fall migrating bird surveys were initiated on 23 August prior to submittal of the Revised Work Plan, Stantec discussed the general approach for these surveys at New York wind projects based on the current NYSDEC Guidelines with the NYSDEC on 8 August 2016.

4.1 OBJECTIVES

The purpose of the fall migrating bird survey will be to document the occurrence of migrating species through the Project area, including species that might not normally be documented during more traditional surveys, such as raptor and eagle point count or summer breeding bird surveys. The fall migrating bird survey will assess the following within forested and non-forested habitats at the Project:

- Species observed by sight and sound;
- Timing of occurrence;
- Relative abundance; and
- Distribution.

4.2 SURVEY METHODS

Stantec will conduct weekly visits between 22 August and 31 October 2016 (10 weeks). A qualified biologist familiar with New York state birds by sight and sound will walk transects between early morning and approximately 2 pm (or later⁷) on days when weather conditions are conducive to auditory and visual detection and identification of birds (excessively windy, rainy, foggy, or cold days will not be surveyed). Stantec will also note any disruption and/or distraction that occurred during a survey period that may have precluded the detection of birds.

⁷ Unlike the BBS when auditory detection of breeding birds on their territories is greatest in the morning, individuals and mixed flocks of fall migrants may be active and detected throughout the day (NYSDEC, B. Denoncour, personal communication).

REVISED EAGLE AND RAPTOR POINT COUNT, BREEDING BIRD SURVEY, AND FALL MIGRATING BIRD SURVEY WORK PLAN

September 30, 2016

Stantec will sample 14 transects⁸ 300 m in length (Figure 4-1). There will be 7 point count locations at 50-m intervals established along each transect. The 50-m interval spacing creates the potential for a data bias by double counting individuals along each transect, so Stantec will note if individual observations at adjacent survey locations are suspected to be the same individual previously recorded. During each weekly visit, Stantec will sample 3-4 different transects each week in September and October and 5-6 different transects each week in August since surveys are starting the week of 22 August, such that each transect will be surveyed approximately 3 times during the fall migration period.

Survey points along transects were sited generally proportionately between forested and non-forested habitat within the Project area and transmission line, as currently proposed, where landowner permission was received by EPW. Fifty-four percent of the Project area is forested and 46% is non-forested. Approximately 60% of survey points were in forested habitats and 40% of points were in non-forested habitats. Further,

- 6 transects extended 300 m from or in proximity to proposed turbine locations;
- 2 transects within the proposed 115 kV interconnection line corridor; and
- 6 control transects located more than 800 m from potential turbine locations.

Point counts will be surveyed for 10 minutes to record all avian species heard and seen after a 1–2 minute pause before beginning the survey to offset potential disruption to bird behavior while the biologist is traveling to each survey location. The following data will be recorded during surveys:

- Start and end time of the observation period;
- Weather including temperature, wind speed, wind direction, and cloud cover;
- Species identification and number of individual(s) per species at each point count;
- Distance from observer;
- Mode of species detection (visual or auditory);
- Behavior (flying, perching, singing, foraging, etc.); and
- Any possible distractions to the observer (e.g., tree-cutting, mowing, vehicle) which may have limited the detection of birds during the survey period.

4.3 REPORTING

Stantec will create a technical report discussing results of the survey effort described above. The report will follow typical scientific reporting standards and will include Introduction, Methods,

⁸ Fall migrating bird transects will essentially be the same as those used during the BBS with 2 adjustments to account for the Project layout as of 2 August 2016. The general location of each survey transect was determined using aerial imagery of the Project and plotted with a GPS. The final location of each transect will be confirmed during the first visit to each transect and recorded with GPS.

REVISED EAGLE AND RAPTOR POINT COUNT, BREEDING BIRD SURVEY, AND FALL MIGRATING BIRD SURVEY WORK PLAN

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Results, and Discussion sections. The report will include appropriate photographs, tables, and figures. The report will address the following items identified in the current NYSDEC Guidelines:

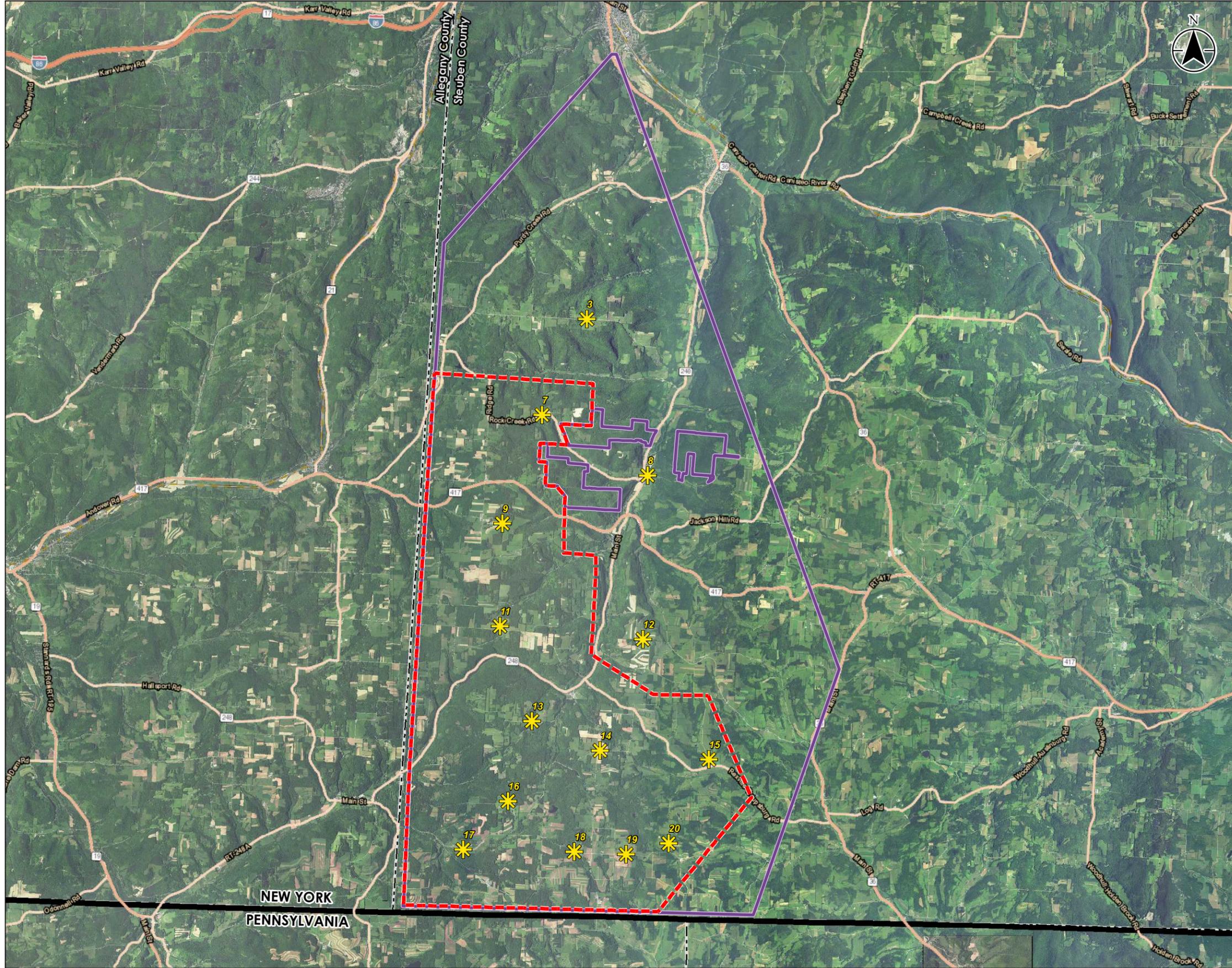
- Number, location, and length of each turbine, electric line, and control transect;
- Overall survey period, and date, time, and duration of surveys conducted at each point;
- Description of the habitat surrounding each transect;
- Number of species observed overall;
- Total number of individuals of each species observed overall;
- The number of individuals of each species observed at each transect point;
- Summary of the number and behavior of birds seen (e.g., individual, moving in a small flock, feeding, or resting);
- How birds were identified (i.e., visually or auditory);
- Point(s) and transect(s) with the highest and lowest: number of species, species diversity, frequency, and abundance;
- Habitat type(s) with the highest and lowest number of species, species diversity, frequency, and abundance;
- Description of the weather conditions during and immediately prior to survey days;
- List of all species with the dates and points where they were observed;
- Number and identification of the observer(s) conducting each survey;
- Description of any disruptions and/or distractions that occurred during each sampling period that may have precluded an adequate survey;
- Appropriate tables and graphs, depicting the above information, as well as all species with the dates and points where they were observed, the location proposed or existing turbines and other project components;
- Appropriate maps to display observations of state and federally listed species, species of concern, Species of Greatest Conservation Concern (SGCN), and other bird species targeted at the Project. Information on the location, method of detection, behavior, flight paths, and other relevant data will be provided in the report; and
- Shapefiles depicting the date, location, and behavior of each individual of all state and federally listed species observed on site, and shapefiles of all transects and point locations.

The report will be submitted to EPW and the NYSDEC; and to the NYDPS as they have requested, and to the USFWS based upon recommendation from the NYSDEC.

REVISED EAGLE AND RAPTOR POINT COUNT, BREEDING BIRD SURVEY, AND FALL MIGRATING BIRD SURVEY WORK PLAN

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FIGURES



Legend

- Revised Eagle Point Count/Raptor Migration Survey Location
- Project Boundary (2016-06-17)
- Project Boundary (2016-01-12)
- State Boundary
- County Boundary



- 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 GAC on 2016-08-02
Quality Review by JLC on 2016-08-03
Independent Review by DGN on 2016-08-03

Client/Project
TRC Companies, Inc.
Pre-Construction Avian & Bat Surveys
Proposed 8 Point Wind Project

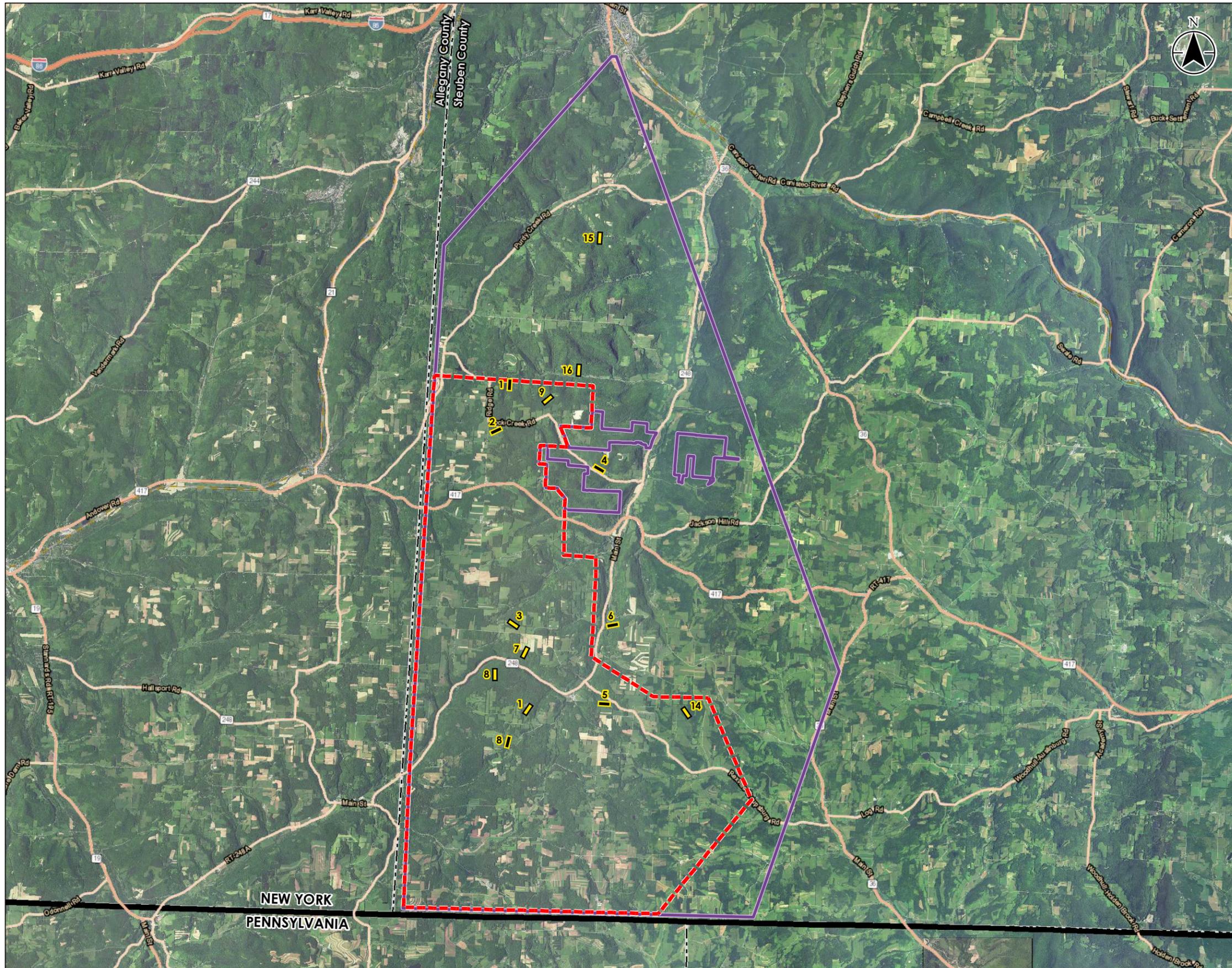
Figure No.

2-1

Title

**Eagle and Raptor Point
Count Location Map**

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Legend

- Revised Breeding Bird Survey Transect
- Control Transect
- BBS Transect
- Project Boundary (2016-06-17)
- Project Boundary (2016-01-12)
- State Boundary
- County Boundary



- 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.



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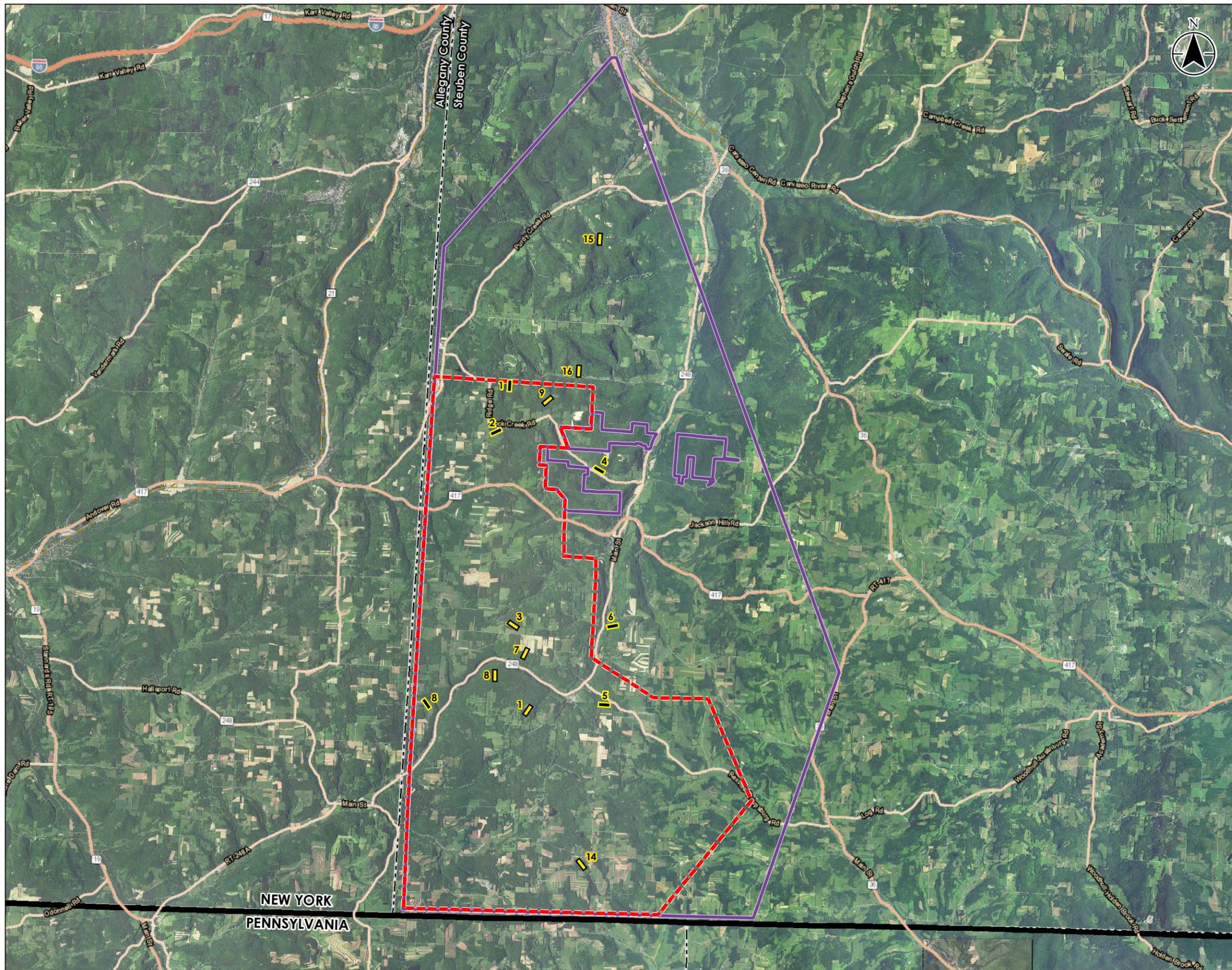
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3-1

Title

**Breeding Bird Survey
Location Map**

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Legend

- Revised Breeding Bird Survey Transect
- Control Transect
- BBS Transect
- Project Boundary (2016-06-17)
- Project Boundary (2016-01-12)
- State Boundary
- County Boundary



- 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
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 Prepared by GAC on 2016-08-10
 Quality Review by JLC on 2016-08-11
 Independent Review by DGN on 2016-08-11

Client/Project:
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 Pre-Construction Avian & Bat Surveys
 Proposed 8 Point Wind Project

Figure No.

4-1

Title

Fall Migrating Bird Location Map