Active Bald Eagle Nest Monitoring
Near the Prevailing Wind Park
Bon Homme, Hutchinson and Charles Mix Counties, South Dakota

Final Draft Report

Prepared for:

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INTRODUCTION

Prevailing Wind Park, LLC contracted with Western EcoSystems Technology, Inc. (WEST) to conduct field surveys in accordance with agency recommendations to quantify wildlife resources within the Prevailing Wind Park project (Project) in Bon Homme, Hutchinson, and Charles Mix counties, South Dakota (Figure 1). Surveys were conducted by WEST in 2015 – 2016 and 2016 – 2017 to address the issues posed under Tier 3 within the Project area, following guidance in the United States Fish and Wildlife Service (USFWS) *Final Land-Based Wind Energy Guidelines* (USFWS 2012) and *Eagle Conservation Plan Guidance* (ECPG; USFWS 2013).

The focus of the eagle nest monitoring survey was to document flight paths and use within the vicinity of an active bald eagle (*Haliaeetus leucocephalus*) nest located during aerial raptor nest surveys conducted for the Project in 2015 and 2016 (Derby 2015, 2016). The nest was located east of the Project (Figure 1). A fixed point survey location was established to allow documentation of the activity of bald eagles utilizing the nest.

STUDY AREA

The Project is located near the town of Avon in southern South Dakota and is characterized by a generally flat topography that is primarily used for crop production and livestock grazing (US Environmental Protection Agency 2016). Trees and woodlands are found mainly in planted shelterbelts and within draws and on hillslopes.

The active bald eagle nest of interest was documented during aerial nest surveys in 2015 and 2016 (Derby 2015 and 2016). The nest was located within one mile (mi; 1.6 kilometer [km]) of the Project boundary (Figure 1). The nest tree was located at the western edge of a USFWS Waterfowl Production Area that contains freshwater emergent wetland (Figures 3 and 4; USFWS NWI 2017).

METHODS

Eagle Nest Monitoring

Eagle nest monitoring was conducted at a survey point overlooking a known bald eagle nest. The survey point was selected to allow good visibility of the eagle nest and was about 500 m (about 1,640 ft) from the nest on a public road (Figures 3 and 4). Surveys were conducted for 60 minutes (min) each time the biologist was onsite for eagle/avian use surveys during the nesting season (see Derby et al. 2018a and 2018b for description of eagle/avian use surveys). Each eagle observed during the survey was recorded by a unique observation number and flight path or perch location. The date, start, and end time of the survey period were recorded for each survey. Number of individuals, sex and age class (if possible), distance from plot center when first observed, closest distance, altitude above ground, activity (behavior), and habitat(s) were recorded for each observation. Bird behavior and habitat type used were recorded based on the

point of first observation. Approximate flight height and distance from plot center at first observation were recorded to the nearest 5.0-m (16.4-ft) interval.

Observation Schedule

Surveys commenced when adult eagles were incubating eggs and ended when eaglets fledged from the nest or the nest failed or otherwise was determined to be no longer occupied. Dates of survey were March 31 – July 21, 2015 and May 4 – September 7, 2016.

RESULTS

Twelve 60-min surveys were completed from March 31 – July 21, 2015 and 10 60-min surveys were completed from May 4 – September 7, 2016.

In 2015, bald eagles were observed during all but one survey; the first bald eagle observation occurred on March 31, 2015 and the last bald eagle was observed on July 7, 2015. Twenty-seven eagle observations were made during the 12 hr of surveys (Table 1); individual eagles, both adults and young-of-year birds, were observed multiple times. Of the bald eagles observed, most were perched on or near the nest. Eagles were observed flying for only 11 min (Table 1). Flight paths were generally to the west of the nest, in a northern and northwesterly direction (Figure 3).

In 2016, bald eagle nest monitoring began May 4 when other eagle/avian use surveys were initiated, missing the initial eagle activity at the nest. Once surveys began, bald eagles were observed in six of the 10 surveys (Table 1); no eagles were observed at the nest on July 1, July 27, August 9, and August 25, 2016, although visibility was good during those survey times; the last bald eagle was observed on September 7, 2016. Eleven eagle observations were made during the 10 hr of surveys (Table 1). As in 2015, individual eagles, both adults and young of year birds, were observed multiple times. Eagles were observed flying for 10 min. Most eagles were observed perched on or near the nest. The few flight paths were generally to the southwest of the nest and showed no apparent pattern (Figure 4).

Table 1. Number of bald eagle observations and flight minutes observed at the Prevailing Wind Park Project in Bon Homme, Hutchinson, and Charles Mix counties, South Dakota, from March 31 – July 21, 2015, and from May 4 – September 7, 2016.

Year	Eagle Age	Number of Eagle Observations	Total Minutes of Eagle Flight Observations
2015	Adults and Juveniles	27	11
2015	Adults Only	21	11
2016	Adults and Juveniles	11	10
2016	Adults Only	9	10

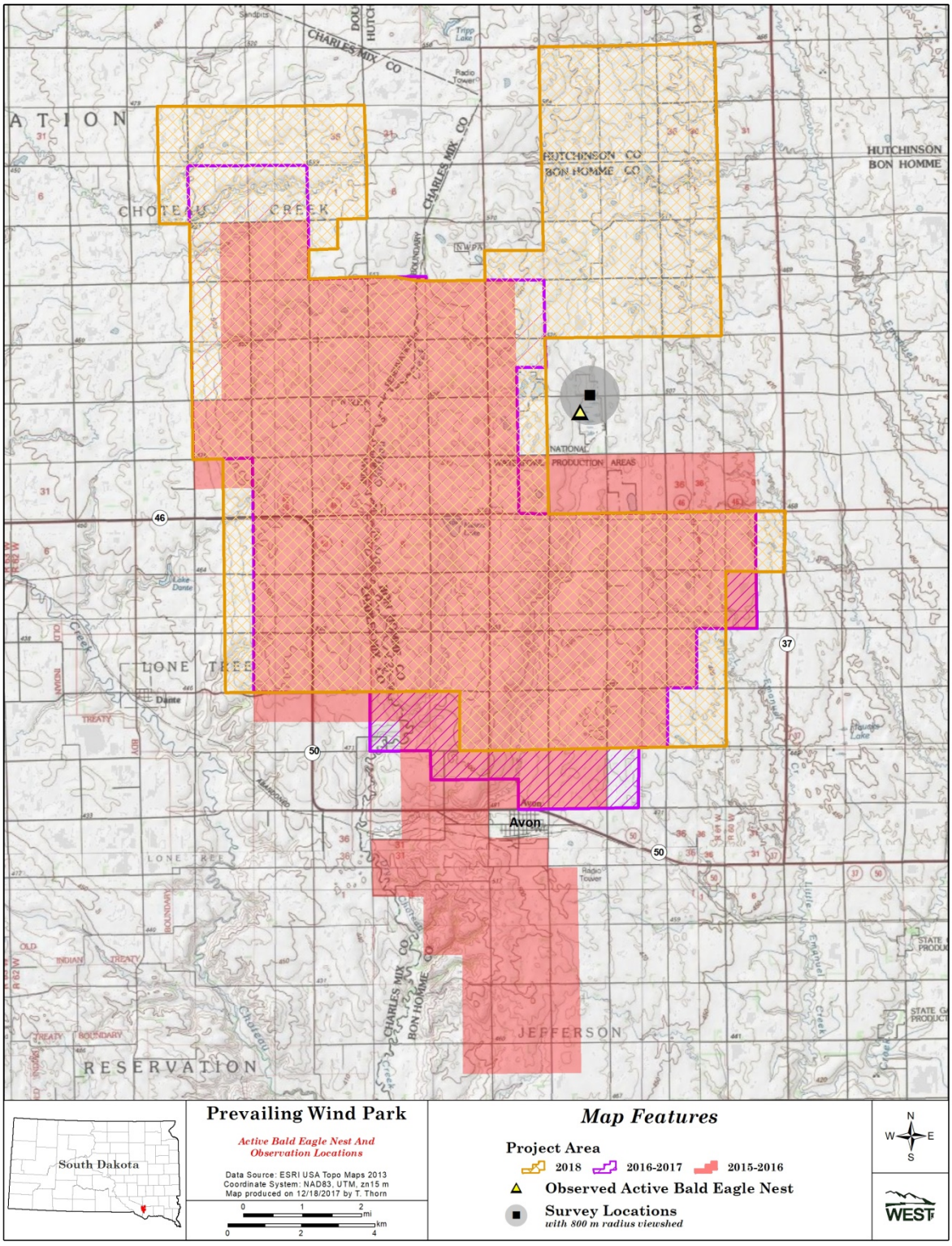

Figure 1. Location of the Prevailing Wind Park Project, eagle nest (PW-EN3), and the survey point used for eagle nest monitoring surveys in 2015 and 2016.

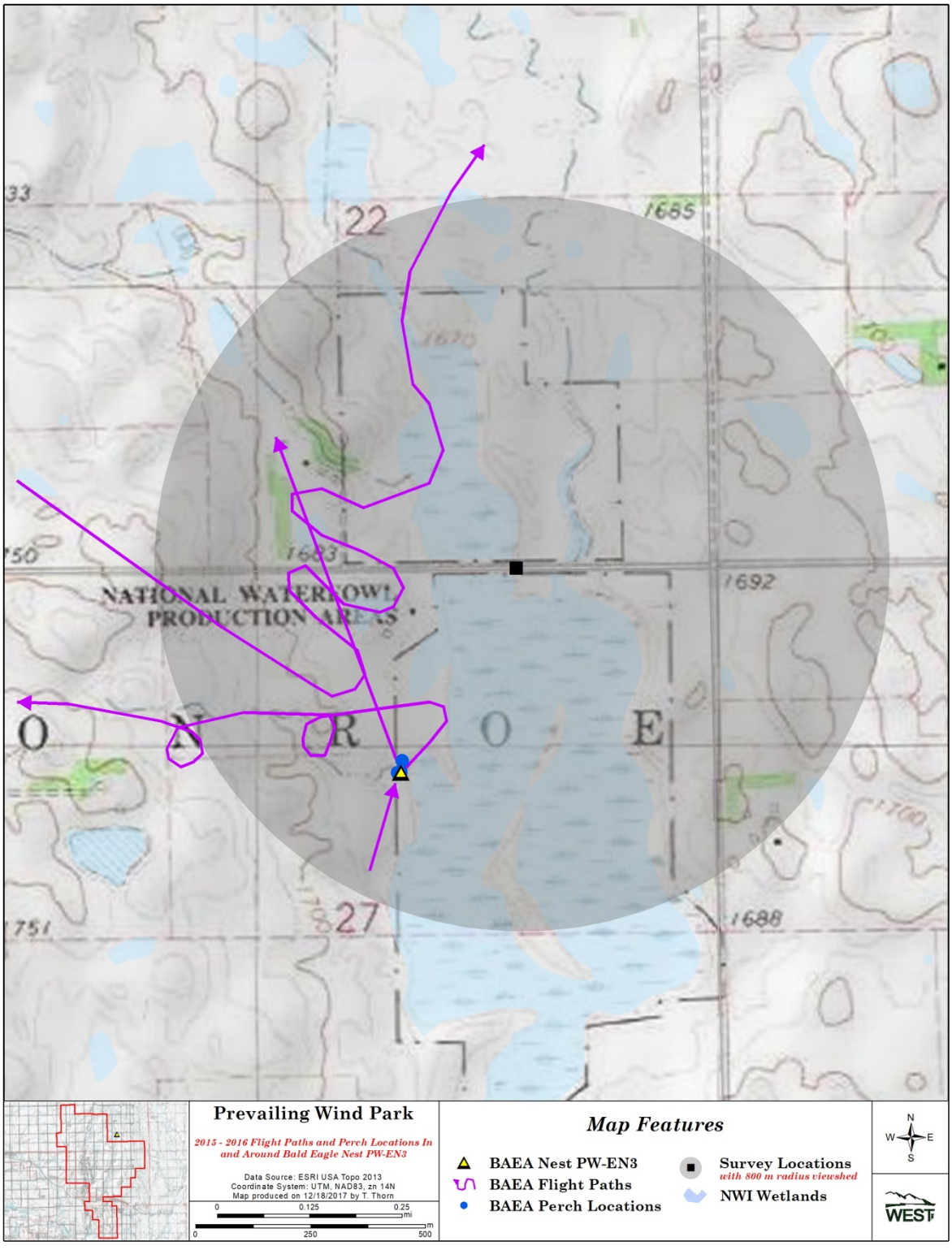

Figure 2. Bald eagle flight paths and perch locations observed during 2015 eagle nest monitoring surveys conducted at the Prevailing Wind Park Project in Bon Homme, Hutchinson, and Charles Mix counties, South Dakota.

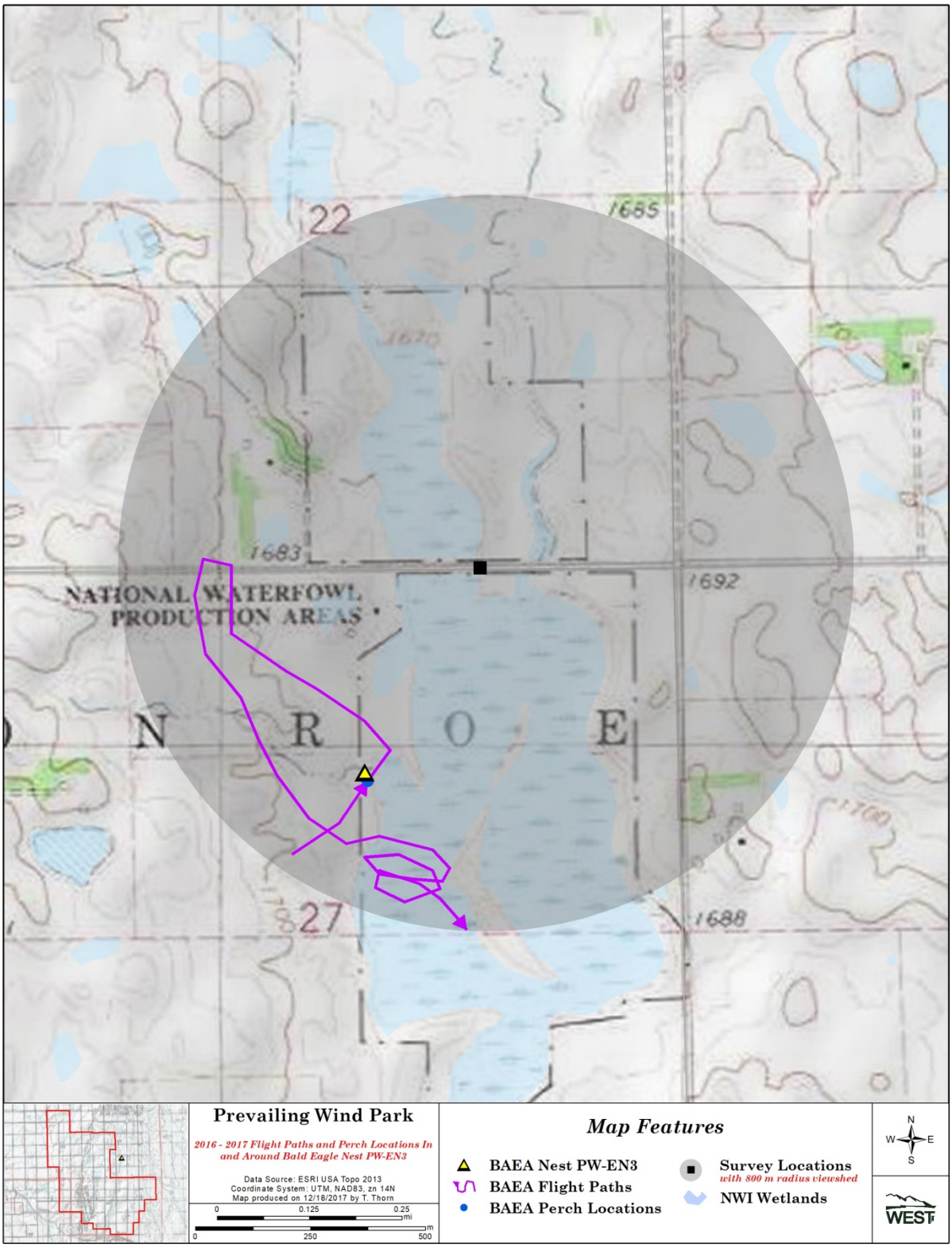

Figure 3. Bald eagle flight paths and perch locations observed during 2016 eagle nest monitoring surveys conducted at the Prevailing Wind Park Project in Bon Homme, Hutchinson, and Charles Mix counties, South Dakota.

REFERENCES

Derby, C. 2016. Memorandum: Prevailing Winds Raptor Nest Survey. From Clayton Derby, Western EcoSystems Technology, Inc. (WEST), Bismarck, North Dakota, to Roland Jurgens III, Prevailing Winds, LLC, Chokio, Minnesota. June 29, 2016.

Derby, C. 2015. Prevailing Winds Wind Project 2015 Raptor Nest Survey. Prepared for Prevailing Winds, LLC, Chokio, Minnesota. Prepared by Western Ecosystems Technology, Inc. (WEST), Bismarck, North Dakota. May 2015.

Derby, C., S. Agudelo, and T. Thorn. 2018a. Avian Use Surveys for the Prevailing Winds Wind Project, Bon Homme and Charles Mix Counties, South Dakota. Year One Final Report: March 2015 – February 2016. Prepared for Prevailing Winds, LLC. Prepared by Western EcoSystems Technology, Inc. (WEST), Bismarck, North Dakota. 34 pages + appendices.

Derby, C., S. Agudelo, and T. Thorn. 2018b. Avian Use Surveys for the Prevailing Winds Wind Project, Bon Homme and Charles Mix Counties, South Dakota. Year Two Final Report: March 3, 2016 – April 19, 2017. Prepared for Prevailing Winds, LLC. Prepared by Western EcoSystems Technology, Inc. (WEST), Bismarck, North Dakota. 36 pages + appendices.

North American Datum (NAD). 1983. Nad83 Geodetic Datum.

Reynolds, R. T., J. M. Scott, and R. A. Nussbaum. 1980. A Variable Circular-Plot Method for Estimating Bird Numbers. Condor 82(3): 309-313.

US Environmental Protection Agency (USEPA). 2016. Level Iii and Level Iv Ecoregions of the Continental United States. Last updated on March 22, 2016. Available online at: https://www.epa.gov/eco-research/level-iii-and-iv-ecoregions-continental-united-states

US Fish and Wildlife Service (USFWS). 2012. Land-Based Wind Energy Guidelines. March 23, 2012. 82 pp. Available online: http://www.fws.gov/cno/pdf/Energy/2012_Wind_Energy_Guidelines_final.pdf

US Fish and Wildlife Service (USFWS). 2013. Eagle Conservation Plan Guidance: Module 1 - Land-Based Wind Energy, Version 2. US Department of the Interior, Fish and Wildlife Service, Division of Migratory Bird Management. April 2013. Executive Summary and frontmatter + 103 pp. Available online: https://www.fws.gov/migratorybirds/pdf/management/eagleconservationplanguidance.pdf

US Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI). 2017. Seamless Wetlands Data by State. Geodatabase and Shapefile data. National Wetlands Inventory website, Washington, D. C. Last updated September 2017. Information online: http://www.fws.gov/wetlands/data/State-Downloads.html

USA Topo. 2013. USA Topo Maps. US Geological Survey (USGS) topographical maps for the United States. ArcGIS. ESRI, producers of ArcGIS software. Redlands, California.