Appendix M

Wildlife Survey Reports

1. Eagle and Raptor Nest Survey Reports
2. Sharp-tailed Grouse Lek Survey Reports
3. Avian Use Surveys
4. Grassland Assessment
5. Whooping Crane Desktop Assessment
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Appendix M.1
Eagle and Raptor Nest Survey Reports

Raptor Nest Surveys Report
for the Proposed Homestead Wind Project
Williams County, North Dakota

Final Report

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January 16, 2024

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Confidential Business Information

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REPORT REFERENCE

Shelley, K. and C. LeBeau. 2024. Raptor Nest Surveys Report for the Proposed Homestead Wind Project, Williams County, North Dakota. Final Report. Prepared for Homestead Wind, LLC. Prepared by Western EcoSystems Technology, Inc. (WEST), Albuquerque, New Mexico. January 16, 2024.

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INTRODUCTION

Homestead Wind, LLC is considering development of the proposed Homestead Wind Project (Project) located in Williams County, North Dakota. Western EcoSystems Technology, Inc. (WEST) completed raptor nest surveys in spring 2023 for the proposed Project (Figure 1). The objectives of the raptor nest surveys were two-fold: to determine the locations, condition, and status of all historical eagle nest structures, and to search for new nests of both golden eagles (*Aquila chrysaetos*) and bald eagles (*Haliaeetus leucocephalus*) within the Project area and a 2.0-mile (mi; 3.2-kilometer [km]) buffer (collectively, Survey Area). No federally-listed threatened or endangered raptor species are known to occur in North Dakota nor are likely to nest within the Survey Area.

The purpose of the surveys was to inform Project siting and/or timing of construction activities. The surveys were completed in accordance with the US Fish and Wildlife Service's (USFWS) *Land-Based Wind Energy Guidelines* (WEG; 2012), the USFWS *Eagle Conservation Plan Guidance (*ECPG; 2013), the USFWS *Revisions to Regulations for Eagle Incidental Take and Take of Eagle Nests* (USFWS 2016), the USFWS *Updated Eagle Nest Survey Protocol* (USFWS 2020), *USFWS Region 6 Recommended Protocol for Conducting Pre-construction Eagle Nest Surveys at Wind Energy Projects* (USFWS 2021), and the recommendations provided by the North Dakota Game and Fish Department (NDGFD; E. Mueller and J. Kolar, pers. comm., March 21, 2023) pursuant to *Wind Energy Development in North Dakota, Best Management Practices* (NDGFD 2021).

PROJECT AREA

The Project area (61,454 acres [26,084 hectares]) is located within the Northwestern Glaciated Plains Level III Ecoregion (US Environmental Protection Agency [USEPA] 2013). The ecoregion is juxtaposed between the Northern Glaciated Plains Level III Ecoregion (generally more level, moister, and agriculturally dominated) to the east and the Northwestern Great Plains Level III Ecoregion (more irregular, drier, and less intensively cultivated) to the west and southwest periphery. The western and southwestern boundaries roughly coincide with the local limits of continental glaciation. The ecoregion features a moderately high concentration of semi-permanent and seasonal wetlands (USEPA 2013).

The main land cover type within the Project area is cultivated crops (80.2%), followed by herbaceous (15.0%; National Land Cover Database [NLCD] 2019, Esri 2023; Table 1, Figure 1). Deciduous forests, woody wetlands, mixed forest, and evergreen forest provide the most common nesting substrate for eagles and other raptors with potential to occur in the Project area (NLCD 2019; Table 1, Figure 1).

Table 1. Land cover types, coverage, and percent (%) composition within the Survey Area of the proposed Homestead Wind Project in Williams County, North Dakota.

Land Cover Type	Coverage (Acres)	% Composition
Cultivated Crops	49,242	80.2
Herbaceous	9,203	15.0
Developed[1]	1,971	3.2
Emergent Herbaceous Wetlands	433	0.7
Hay/Pasture	304	0.5
Shrub/Scrub	169	0.2
Open Water	95	0.1
Woody Wetlands	20	<0.1
Deciduous Forest	11	<0.1
Barren Land	3	<0.1
Mixed Forest	2	<0.1
Evergreen Forest	<1	<0.1
Total[2]	**61,454**	**100**

1. Includes developed, open space; developed, low intensity; developed, medium intensity; and developed, high intensity.

2. Sums of values may not add to the total value shown due to rounding.

Source: National Land Cover Database 2019.

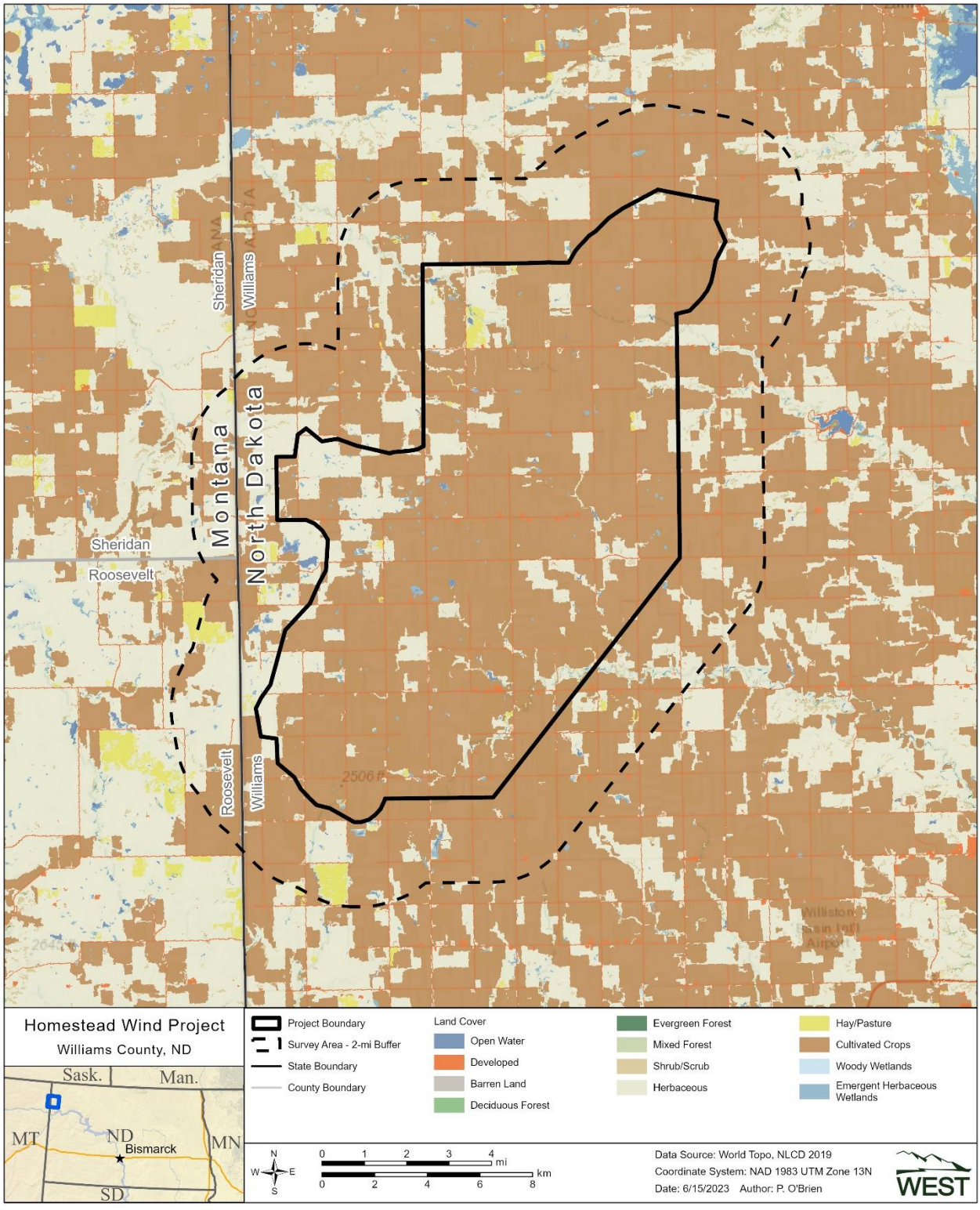

Figure 1. Land cover types within the Survey Area of the proposed Homestead Wind Project.

METHODS

The raptor nest surveys consisted of a series of aerial and ground-based visits conducted between March 13 and April 24, 2023, following the eagle nest survey schedule outlined in the USFWS Region 6 recommendations (USFWS 2021). According to the Region 6 recommendations, the first four visits are to determine nest occupancy, while Visit 5 and Visit 6 are conducted for only active eagle nests to collect success and productivity information. A summary of the recommended visitation schedule is provided below and was generally followed during the study except that the first visit did not occur due to project development timing.

- **Visit 1**: Ground-based to check historic eagle nest locations for four hours or until occupancy could be determined; January 15 through 3rd week of February.
- **Visit 2**: Aerial survey to check known eagle nest locations and to search for new eagle (and non-eagle raptor) nests; last week of February through 3rd week of March.
- **Visit 3**: Four-hour ground-based survey to check historic or potential eagle nests that had not been previously documented as occupied; last week of March through end of April.
- **Visit 4**: Aerial survey to check known eagle nest locations and to search for new eagle nests; 3rd week of April through end of May (at least 60 days after Visit 2).
- **Visit 5**: Ground-based survey to check productivity of active eagle nest locations from Visit 4; June 1 through first week of July.
- **Visit 6**: Ground-based survey to check productivity of active eagle nest locations from Visit 5; 2nd week of July through end of August.

Historic nest data was requested from the NDGFD on March 21, 2023, prior to the onset of surveys. No historic nests were provided thus, Visit 1 was not conducted.

Aerial Surveys

A WEST biologist conducted aerial surveys on March 13 (Visit 2) and April 24, 2023 (Visit 4). Aerial helicopter surveys were conducted by a pilot experienced in conducting low-altitude wildlife surveys, with one biologist to observe and record nest locations and associated data. Surveys were concentrated over likely eagle and other raptor nesting habitat (e.g., large trees, human structures such as power poles, wooded areas, riparian corridors, forested margins of waterbodies, and any cliffs or rocky outcrops). In general, all potential nest habitat (outside of no-fly zones) was surveyed by flying meandering transects spaced approximately 0.5 mi (0.8 km) apart at speeds of 60–75 mi per hour (97–121 km per hour) throughout the Study Area. The biologist searched for stick nests with a large bowl or flat platform-shape, made of intertwined large sticks. When a nest was observed, the helicopter approached slowly and was positioned such that the nest could be clearly seen.

The biologist recorded the following data for each nest location: unique identification number, species occupying nest (if known), nest status, nest substrate, nest condition, nest height, nest size, number of adults, behavior of adults at the nest, visible number of eggs or nestlings, and approximate age of nestlings. Nest locations of stick nests detected within the Survey Area were digitized into geographic information systems using ArcGIS (Esri 2023).

Ground-Based Surveys

The purpose of ground-based surveys is to check the status of historic or potential eagle nest locations. No historic nest locations were provided nor were any potential eagle nests observed during the aerial surveys (Visits 2 and 4) thus, Visits 3, 5, and 6 were not conducted.

Nest Classification

For nest classifications, WEST recorded all stick nests based on the relative dimensions of the nest (small, medium, large, and giant), but particular attention was given to large and giant stick nest structures due to their suitability for large birds of prey. Large and giant nest structures were defined by the following criteria:

- giant: bald eagle nests that are 2.0–4.0 feet (ft; 0.6–1.2 meters [m]) high and 3.0–6.0 ft (0.9–1.8 m) in diameter, and are located high in the tree canopy, which offers good flight access (Buehler 2022). Golden eagle nests are 2–3 ft (0.6–0.9 m) tall and approximately 3–5 ft (0.9–1.5 m) in diameter, and are comprised of a few large, several medium, and an abundant number of small sticks (Watson 2010).
- large: nests 2.0–3.0 ft in diameter that could support eagles but can also be used by species such as the great horned owl (*Bubo virginianus*), osprey (*Pandion haliaetus*), and red-tailed hawk (*Buteo jamaicensis*).

All stick nests were assigned a nest condition classification according to the following characteristics:

- poor: a nest that appeared dilapidated (e.g., in disrepair, sloughing, or sagging heavily) and required major repair to be suitable for successful nesting.
- fair: a nest with a fairly well-defined bowl, minor sagging, and may require some repair in order to be used.
- good: a nest with a well-defined bowl, no sagging or sloughing, and was considered suitable for nesting.
- unknown: nest condition was unknown based on visibility conditions.

All observed raptor nests were assigned a nest status depending on the species present or nesting activity observed. Eagle nests were categorized using definitions originally proposed by Postupalsky (1974) and these definitions follow those of the USFWS ECPG (USFWS 2013). Eagle nests were classified as “occupied” if any of the following were observed at the nest structure:

- an adult in an incubating position
- eggs
- nestlings or fledglings
- occurrence of a pair of adult eagles (or, sometimes sub-adults) at or near a nest through at least the time incubation normally occurs
- a newly constructed or refurbished stick nest in the area where territorial behavior of an eagle had been observed earlier in the breeding season
- a recently repaired nest with fresh sticks (clean breaks) or fresh boughs on top, and/or droppings and/or molted feathers on its rim or underneath

"Occupied" eagle nests were further classified as "occupied active" if the biologist observed an egg or eggs, or an incubating or brooding adult indicating the presence of eggs or nestlings; or "occupied inactive" if evidence of recent tending was observed, but no eggs, chicks, or incubating adults were present.

Potential eagle nests were classified as "undetermined" if only one aerial survey was completed and the stick nest did not satisfy the definition of "occupied." An eagle nest was considered "unoccupied" if the nest did not meet the definition of "occupied" after two, 4-hour aerial surveys conducted at least 30 days apart.

All potential eagle nests with "occupied inactive" or "undetermined" status were scheduled to be resurveyed at least 30 days after the initial survey round to confirm the nest status and species if still occupied (USFWS 2013). A follow-up ground-based survey was planned for all potential or occupied eagle nests. Ground-based nest surveys included a minimum of four hours of observation by a raptor biologist using binoculars and/or spotting scopes, using up to four vantage points that provided a direct line of sight to the nest. The status of all known eagle nests (prior to these surveys), if present, were updated according to the criteria above.

All other raptor (non-eagle) nests were classified as "active" if eggs, nestlings, or adults were observed tending to or sitting in the nest. Raptor nests were classified as "inactive" if no eggs or nestlings were observed in the nest, or if no adults were observed tending to or sitting in the nest during a single observation of the nest. In the event a species identification or nest occupancy status could not be confirmed, the nest was designated as "unknown" (e.g., a nest that was too far away to gather sufficient species or status information).

RESULTS

No golden eagle or bald eagle nests were observed within the Survey Area. Two active great horned owl nests (AB2 and AB3) and one active unidentified raptor species nest (AB9) were identified within the Project area; an additional active great horned owl nest (AB8) was identified within the Survey Area (Table 2, Figure 2). All nine raptor nests were located in deciduous trees and were of a size and structure that would not likely support golden or bald eagles (Table 2, Figure 2).

Table 2. Raptor nests observed during the aerial-based raptor nest surveys within the Survey Area of the proposed Homestead Wind Project in Williams County, North Dakota, March 13 and April 24, 2023.

Nest ID	Species[1]	Nest Size	Nest Status	Nest Condition	Distance to Project Area (miles)
AB1	UNRA	small	inactive	fair	within
AB2	GHOW	medium	active	good	within
AB3	GHOW	medium	active	good	within
AB4	UNRA	medium	inactive	fair	within
AB5	UNRA	small	inactive	poor	1.5
AB6	UNRA	medium	inactive	good	within
AB7	UNRA	medium	inactive	good	1.0
AB8	GHOW	medium	active	good	0.1
AB9	UNRA	small	active	good	within

1. UNRA = unidentified raptor; GHOW = great horned owl.

ID = identification.

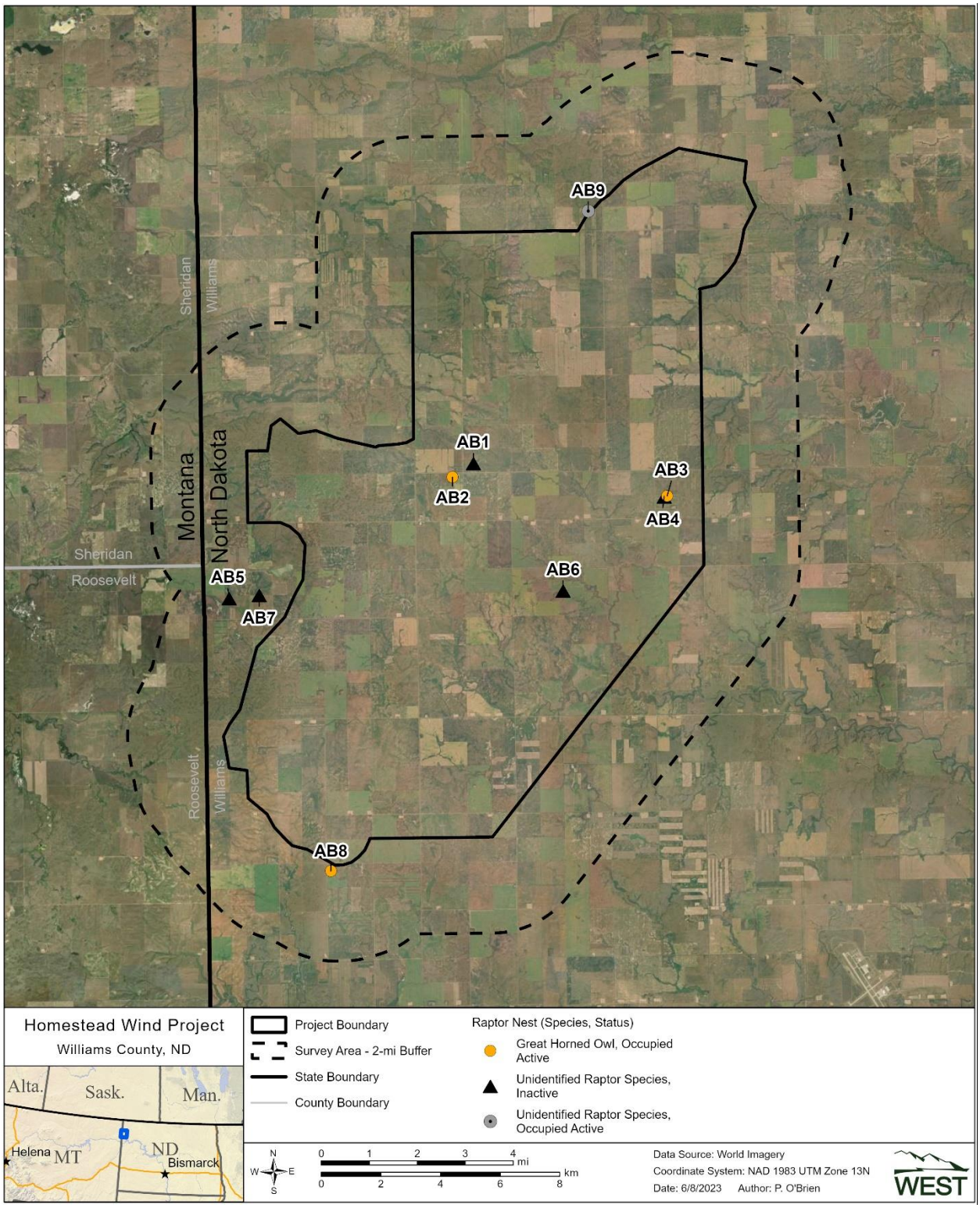

Figure 2. Raptor nests detected during the spring 2023 raptor nest surveys (March 13 and April 24) at the proposed Homestead Wind Project.

DISCUSSION

There was a limited amount of suitable nesting substrate in the Survey Area which may have contributed to the absence of eagle nests and the low incidence of raptor nests observed. The great horned owl, the only raptor species identified to be nesting within the Survey Area, is common to the geographic region of the Project area. One additional small stick nest was determined to be occupied and active (AB9; Table 2) but species identification was not possible from the air.

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Eagle Environmental, Inc.

Expertise in Natural Resource Science

RAPTOR NEST REPORT
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Introduction

Eagle Environmental, Inc. (EEI) completed raptor nest surveys for the proposed Homestead Wind Project (Project) on February 21, February 23 and April 21, 2025 (Figure 1). The Project as currently proposed is centered 22 miles northwest of the town of Williston, Williams County, North Dakota. The purpose of the surveys was to a) identify bald eagle (*Haliaeetus leucocephalus*) and golden eagle (*Aquila chrysaetos*) nests in or within 2 miles of the Project (Eagle Nest Survey Area) (Figure 2) and b) identify other non-eagle raptor nests within one mile of the Project. The survey was completed in accordance with North Dakota Game and Fish Department (NDGFD) and U.S. Fish and Wildlife Service (USFWS) recommendations, the USFWS *Region 6 Recommended Protocol for Conducting Pre-construction Eagle Nest Surveys at Wind Energy Projects* (USFWS 2021b), *Eagle Conservation Plan Guidance* (USFWS 2013, 2016) and the most recent Eagle Rule (USFWS 2024).

Survey Area Habitat

The Raptor and Eagle Nest Survey Areas are largely agricultural fields; they also included many pastures for domesticated livestock and natural wetlands, particularly at two National Wildlife Refuges (Lake Zahn NWR, ND and Medicine Lake NWR, MT) within the Eagle Nest Survey Area. Trees, mostly green ash (*Fraxinus pennsylvanica*) and eastern cottonwoods (*Populus deltoides*), occur naturally along drainages and are also planted, along with Siberian elm (*Ulmus pumila*), in rows of trees in agricultural areas. These trees were available to nesting raptors within the Survey Areas. There were no cliffs for golden eagle or other raptor nests in the Project Area or the Eagle Nest Survey Area. Pastures and fields were possible sites for prey species, which may attract eagles.

Methods

EEI biologists Dale Stahlecker and Megan Ruehmann conducted one ground and two aerial surveys between February 21 and April 21, 2025. The ground survey was conducted from publicly accessible roads within the Survey Areas. The aerial surveys were conducted using a Robinson R-44 helicopter between the hours of 0730 and 1500. The sky was clear and wind was light to moderate throughout the surveys. The Survey Areas were pre-established in ArcGIS software and loaded into the aircraft's global positioning system (GPS) unit for guidance during the survey. All potentially suitable eagle nesting habitat was identified within the Eagle Nest Survey Area and used to inform survey efforts. Potential eagle nesting habitat was defined as including wooded riparian corridors, utility structures, and stands of large trees capable of supporting the weight of an eagle nest. Locations of these features were used for guidance during the aerial survey. Eagle and raptor nests, if present, were identified and marked with a GPS unit within the Eagle Survey Area and Raptor Survey Area, which covered approximately 130,866 acres and 94,326 acres, respectively

Eagle Nest Survey

The ground and aerial eagle nest surveys were conducted following the survey schedule outlined in the Region 6 recommendations (USFWS 2021b; Table 1). The aerial eagle nest survey occurred within the Eagle Nest Survey Area by flying a generalized pattern at

an altitude of approximately 300 feet above ground level, depending on terrain and flight safety conditions. If potential or historical eagle nesting habitat (i.e., as previously described) was observed, the helicopter was piloted closer to the structure until it could be determined that the structure was unoccupied.

Table 1 – Region 6 Survey Recommendations and 2025 Project Survey Methods

Visit #	Region 6 Survey Recommendations	2025 Project Survey
1	Complete from 1 January to the end of the 3rd week of February via ground-based nest checks with emphasis on, but not limited to, known/historic eagle nests within the survey area.	February 21 - Ground survey to check status of known/historic eagle nest locations. Nest location recorded during 2019 raptor nest surveys was used to inform search and observations.
2	Beginning of the last week of February through the 3rd week of March via an aerial survey for eagle nests. Key survey data during this period is when occupancy/in-use status of nests by eagle pairs should be at a peak by encompassing the mean egg–laying dates for these pairs.	February 23 - Aerial survey to check for new eagle nests.
3	Beginning of the last full week of March and through the end of April via ground-based nest checks with emphasis on updating the status of all occupied/in-use nests being tracked for the current nesting season.	Visit not conducted because no eagle nests were observed during previous surveys for Visit 1 or Visit 2.
4	Beginning of the third week of April to the end of May via an aerial survey for eagle nests during the peak of eagle nesting activity for the nesting season. This visit attempts to confirm which nests are occupied/in-use and yield information about productivity for these nests.	April 21 - Aerial survey to identify any new eagle nests.
5	Beginning of June to the end of the first week of July via ground-based nest checks with an emphasis on determining if nests are successful or whether they have failed.	Visit not conducted because no eagle nests were observed during previous surveys for Visits 1, 2, or 4.
6	Beginning of the second week of July through the end of August via ground-based nest checks. These visits also have increased importance for	Visit was not conducted because no eagle nests were observed during previous surveys for Visits 1, 2, or 4.

	determining productivity parameters for eagle pairs that either nested late or that failed in their first nesting attempt and then re-nested during this same nesting season.	

Raptor Nest Survey

The aerial raptor survey was conducted by flying at an altitude of approximately 300 feet above ground level, depending on terrain and flight safety conditions. Depending on available habitat, transects were flown at approximately half-mile intervals, allowing an observer on each side to visually search for eagle nests out to one quarter mile from the aircraft. The pilot used the on-board GPS system to maintain proper distance between transects. In areas of no nesting structures, the helicopter was flown to the next available habitat.

Data

Data recorded at each nest location included nest substrate (e.g., tree, cliff or human-made structure), status (e.g., occupied or unoccupied), raptor species using occupied nests, number of adults, eggs, and/or nestlings, if observed, and GPS location. The following criteria were used to label a nest as occupied: 1) an adult observed in an incubating posture (lying rather than standing), 2) eggs, 3) nestlings (including fledglings near a nest with obvious recent use, 4) a raptor pair, which could include subadults, at or near a nest through at least the time period when incubation normally occurs, 5) a newly constructed or refurbished stick nest in the area where territorial behavior of a raptor has been seen early during the breeding season, or 6) a recently repaired nest with fresh sticks (clean breaks) or fresh boughs (greenery) on top, and/or droppings and/or molted feathers on its rim or underneath (Postupalsky 1974, U. S. Fish and Wildlife Service 2013, U.S. Fish and Wildlife Service 2016, Steenhof et al. 2017).

Results

<u>Eagle Nest Survey – Project Area and 2-mile Survey Buffer</u>

No occupied bald or golden eagle nests were found within the Eagle Nest Survey Area in 2025.

<u>Raptor Nest Survey – Project Area and 1-mile Survey Buffer</u>

Two occupied ferruginous hawk (*Buteo regalis*) nests, four occupied great horned owl (*Bubo virginianus*) nests, and three occupied red-tailed hawk (*Buteo jamaicensis*) nests were documented within the Raptor Nest Survey Area (Figure 3).

Conclusions

No eagle nests were identified in the Eagle Nest Survey Area in 2025. No federally listed raptor species nests were found during surveys. Two ferruginous hawk nests were found, which is a Level I Species of Conservation Priority in the state of North Dakota (North Dakota Game and Fish Department 2025).

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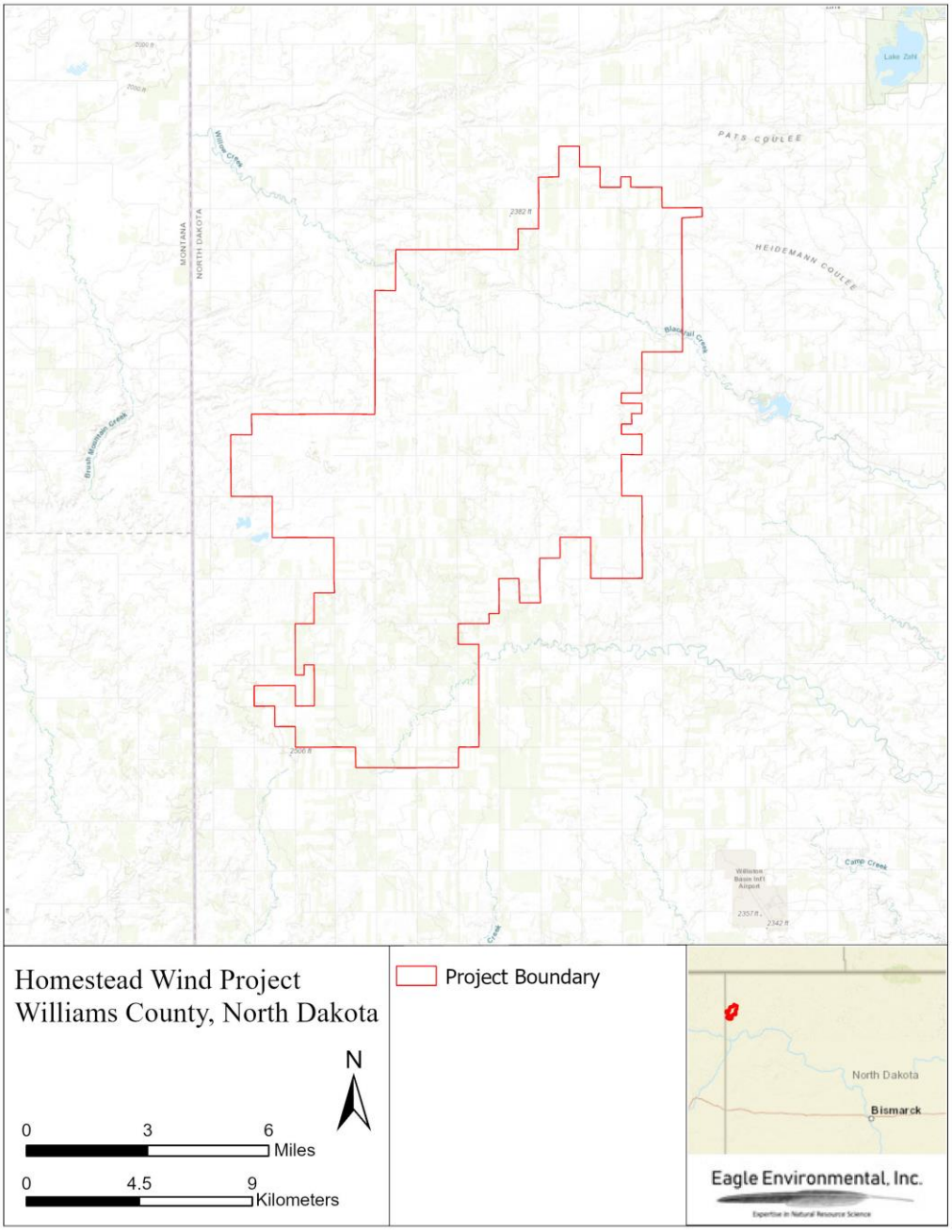

Figure 1. Proposed Homestead Wind Project, Williams County, North Dakota.

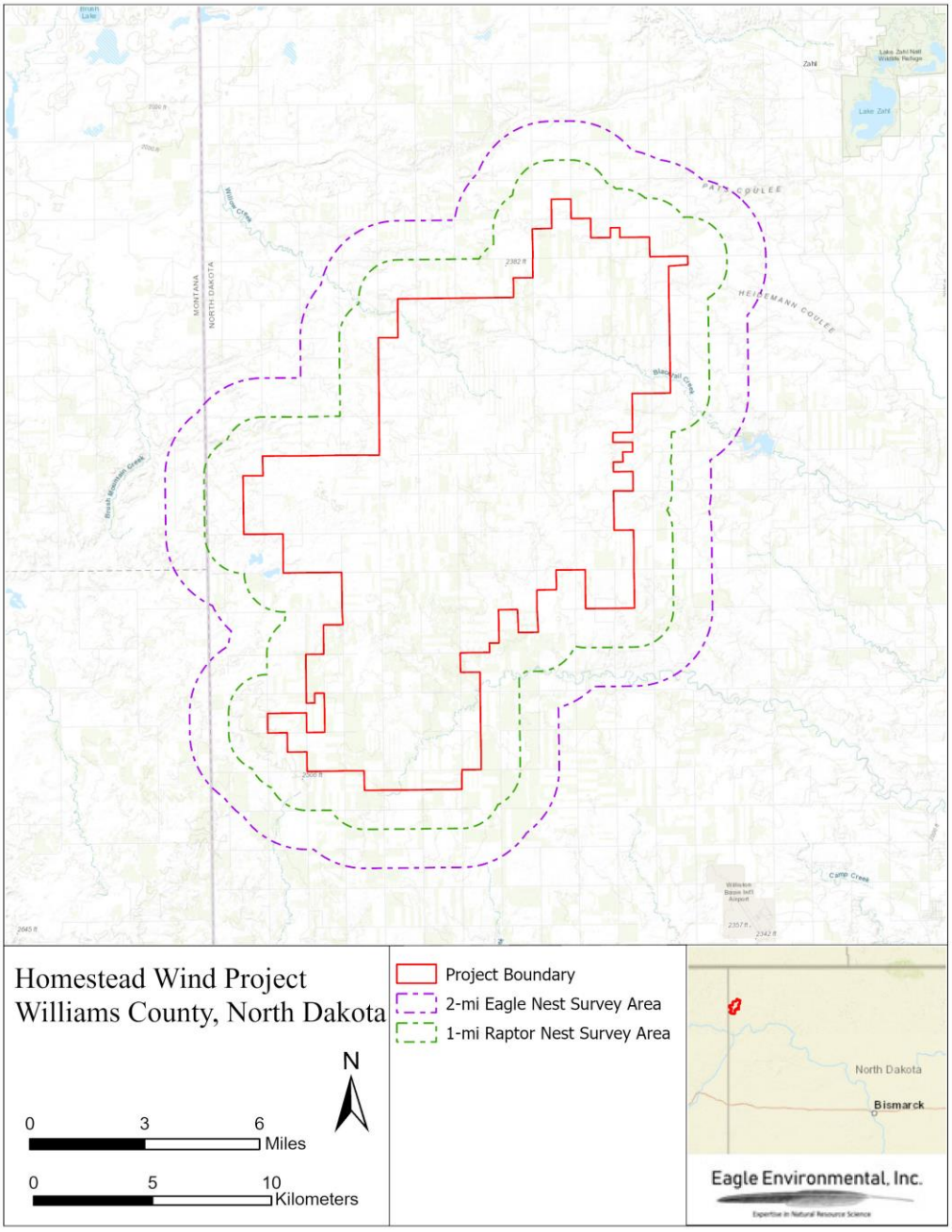

Figure 2. Raptor and Eagle Nest Survey Areas, Homestead Wind Project, Williams County, North Dakota.

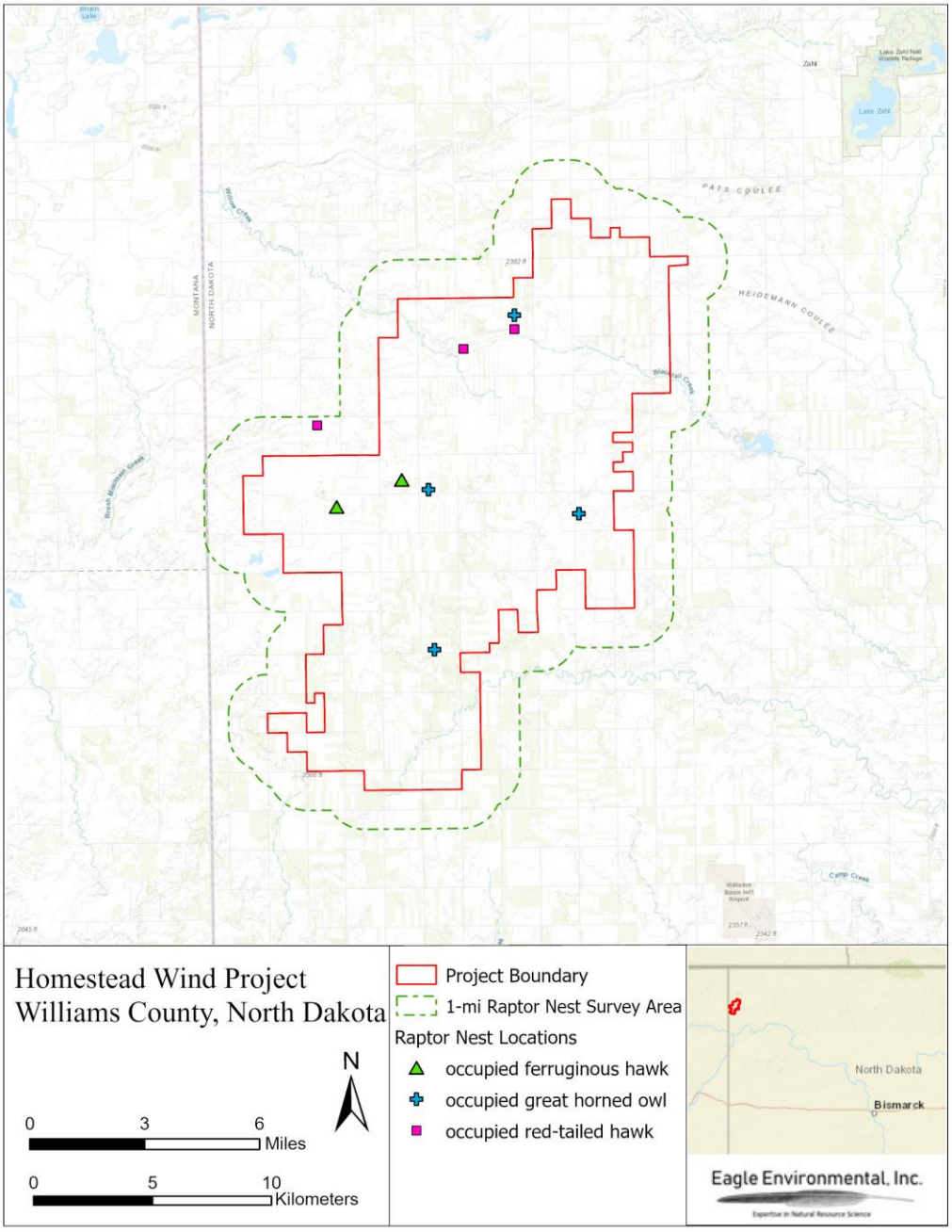

Figure 3. Occupied non-eagle raptor nests documented in the Raptor Nest Survey Area, Homestead Wind Project, Williams County, North Dakota, February 21, February 23 and April 21, 2025.