APPENDIX E – RAPTOR NEST SURVEY

Raptor Nest Survey Results for the Dakota Range III Wind Project Roberts and Grant Counties, South Dakota

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INTRODUCTION

Western EcoSystems Technology, Inc. (WEST) completed an aerial raptor nest survey at the proposed Dakota Range III Wind Project (Project) in Roberts and Grant Counties, South Dakota. The purpose of this survey was to locate bald eagle (*Haliaeetus leucocephalus*) nests in or within 10.0 miles (mi) of the Project, and other large raptor nests in or within 1.0 mi of the Project, so the Project can be designed to avoid or minimize risk of impact to these species. Surveys were completed in accordance with the guidance provided in the U.S. Fish and Wildlife Service (USFWS) *Eagle Conservation Plan Guidance: Module 1 – Land-based Wind Energy, Version 2* (ECPG; USFWS 2013), the USFWS *Interim Golden Eagle Inventory and Monitoring Protocols;*, and direction received during an October 2017 meeting with the South Dakota Game, Fish and Parks Department and USFWS.

PROJECT AREA

The Project area consists of approximately 18,601 acres located in the Big Sioux Basin Level IV Ecoregion, which is within the Northern Glaciated Plains Level III Ecoregion (US Environmental Protection Agency 2016). The predominant land cover/use types within the Project consists of approximately 55.8% cultivated crops and 34.6% herbaceous (grassland; US Geological Survey, National Land Cover Database 2011; Figure 1). The remaining land cover/use types account for less than 6.0% of the Project and include developed areas (5.3%), emergent herbaceous wetlands (1.4%), hay/pasture (1.2%), open water (0.8), deciduous forest (0.6), barren land (0.3%), and shrub scrub (<0.1). The most common cultivated croplands in 2017 were corn (*Zea mays*) and soybeans (*Glycine max*; US Department of Agriculture National Agricultural Statistics Service 2017).

METHODS

Aerial raptor nest surveys were completed from an R-44 helicopter between April 6 and 15, 2018, before leaf-out and when most raptors would be actively tending to a nest or incubating eggs. Surveys focused on locating large, stick nest structures in suitable raptor nesting substrate (trees, cliffs, etc.). The survey area included the proposed Project plus a 1.0-mi buffer for all raptor species and a 10.0-mi buffer for eagles (Figure 1). All suitable eagle and raptor nest habitat was surveyed by flying transects spaced approximately 0.5 mi apart at speeds of 60-75 mi per hour throughout the survey area.

All potential nest sites were classified to species, or as unknown species if undeterminable. Locations of each nest were collected during the survey using a Global Positioning System unit. These locations were incorporated into a Geographical Information System (Universal Transverse Mercator, North American Datum 83, Zone 14). Species, nest status, nest condition, nest height, size, and substrate of each nest were recorded. Status was classified as occupied, unoccupied, or unknown, and nest condition was categorized as good, fair, or poor. Nests were classified as occupied if any of the following were observed at the nest structure: (1) an adult in

an incubating position, (2) eggs, (3) nestlings or fledglings, (4) occurrence of a pair of adults (or sometimes sub-adults), (5) freshly molted feathers or plucked down or (6) current year's mutes. Occupied nests for bald eagles were further classified as active if any eggs or nestlings were observed, or inactive if no eggs or chicks were present. A nest that did not meet the above criteria for occupied was classified as unoccupied. Additional follow-up visits were completed to confirm the status of potential or unoccupied known eagle nests identified prior to or during the raptor nest surveys.

RESULTS

Eagles

No eagle nests were located within the Project area. Five occupied active eagle nests, one occupied inactive bald eagle nest, two unoccupied potential eagle nests, and one nest (8) occupied by a great horned owl (*Bubo virginianus*) that was previously occupied by bald eagles in 2017, were located within the survey area, all greater than 2.5 mi from the Project boundary (Table 1, Figure 1). Two eagle nests were located outside the survey area: nest 4 was an occupied-active eagle nest located approximately 11 mi southeast of the Project and nest 7 was an unoccupied bald eagle nest located just over 10 miles west of the Project.

Table 1. Spring 2018 raptor nest survey results, eagles only, for the proposed Dakota Range III Wind Project in Roberts and Grant Counties, South Dakota.

Nest ID	Species	Nest Status	Nest Condition	Distance to Project (Miles)	UTM X	UTM Y
2	Bald Eagle	Occupied Active	Good	2.9	656683	5015347
4	Bald Eagle	Occupied Active	Good	11.5	664183	4998090
6	Bald Eagle	Occupied Active	Good	4.9	657338	5026118
7	Bald Eagle	Occupied Inactive	Good	10.0	627074	5012564
8	Previously Bald Eagle/Currently Great Horned Owl	Occupied Inactive	Good	7.8	645704	4997073
42	Potential Bald Eagle[1]	Unoccupied	Fair	4.8	645104	5028856
43	Potential Bald Eagle[1]	Unoccupied	Fair	7.2	636224	5029941
44	Bald Eagle	Occupied Active	Good	7.9	635726	5031146
45	Bald Eagle	Occupied Active	Good	9.1	629165	5024234

UTM = Universal Transverse Mercator, NAD (North American Datum) 83, Zone 14, units = meters

[1] consistent in size and structure of bald eagle nest

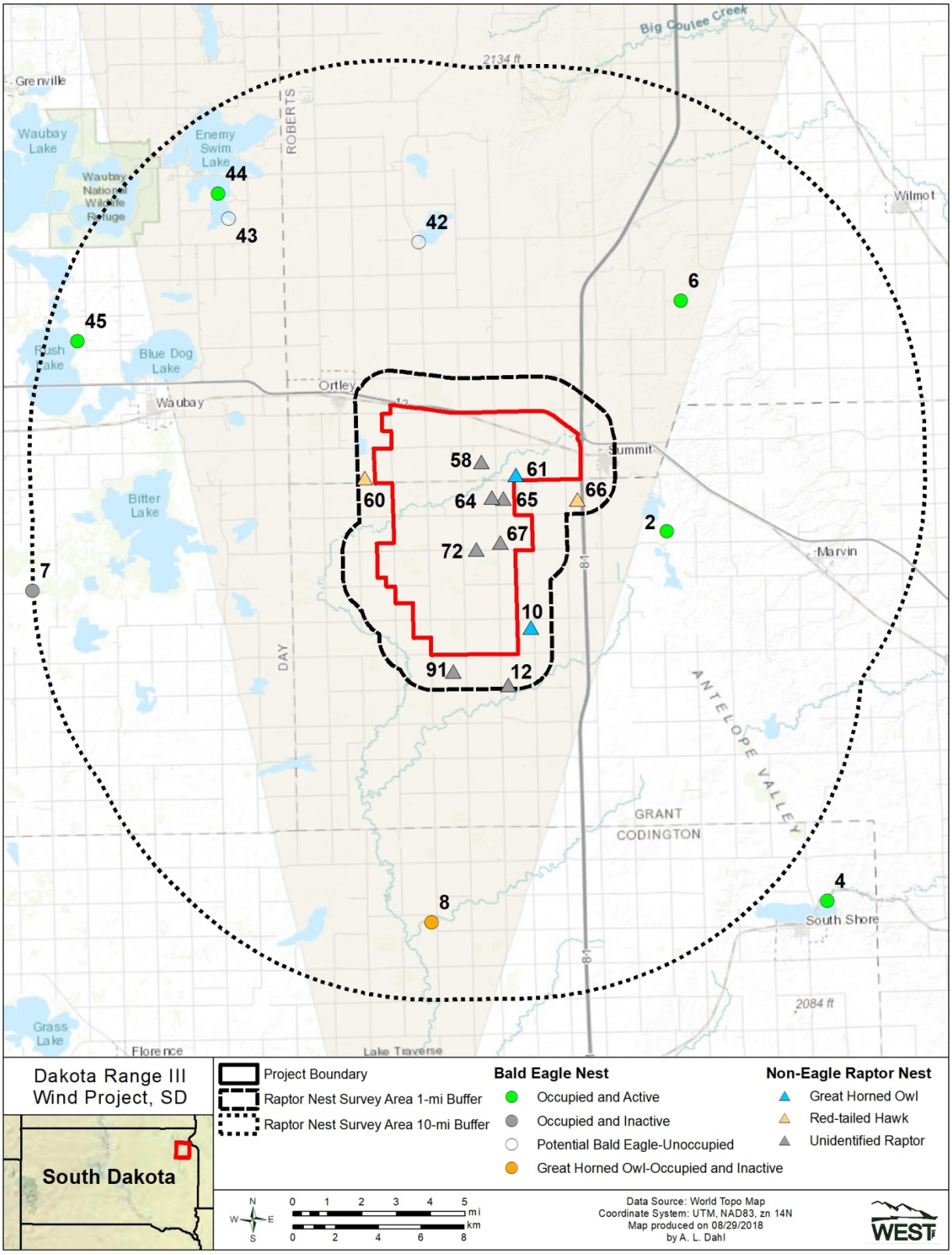

Figure 1. Spring 2018 raptor nest survey results for the proposed Dakota Range III Wind Project in Roberts and Grant Counties, South Dakota.

Other Raptors

Four active raptor nests (two great horned owl and two red-tailed hawk [*Buteo jamaicensis*]) and seven inactive non-eagle raptor nests of undetermined species were located within the raptor nest 1.0 mi survey area (Table 1, Figure 1). One of the active nests (great horned owl) and five of the inactive nests were within the Project.

Table 2. Spring 2018 non-eagle raptor nest survey results for the proposed Dakota Range III Wind Project in Roberts and Grant Counties, South Dakota.

Nest ID	Species	Nest Status	Nest Condition	Distance to Project (Miles)	UTM X	UTM Y
10	Great Horned Owl	Occupied Active	Good	0.4	650370	5010854
12	Unidentified Raptor	Unoccupied	Good	0.9	649315	5008180
58	Unidentified Raptor	Unoccupied	Good	0	648042	5018585
60	Red-tailed Hawk	Occupied Active	Good	0.3	642584	5017847
61	Great Horned Owl	Occupied Active	Good	0	649667	5017989
64	Unidentified Raptor	Unoccupied	Good	0	648527	5016934
65	Unidentified Raptor	Unoccupied	Good	0	649071	5016883
66	Red-tailed Hawk	Occupied Active	Good	0.6	652533	5016843
67	Unidentified Raptor	Unoccupied	Good	0	648932	5014831
72	Unidentified Raptor	Unoccupied	Good	0	647823	5014524
91	Unidentified Raptor	Unoccupied	Good	0.5	646734	5008799

UTM = Universal Transverse Mercator, NAD (North American Datum) 83, Zone 14, units = meters

CONCLUSION

The nearest occupied bald eagle nests are approximately 2.9 miles east and 4.9 miles northeast of the Project and the nearest unoccupied bald eagle nest is approximately 4.8 mi north. These nests are unlikely to be disturbed during construction or operation of the Project due to this distance. The majority of the eagle nests found in the 10-mi survey area were located along larger bodies of water or river, a habitat type which is not present within or immediately adjacent to the Project. The occupied non-eagle nests were occupied by red-tailed hawks and great horned owls, both common raptor species that breed in relatively high densities in South Dakota. Many of the unoccupied-inactive non-eagle raptor nests are likely red-tailed hawk nests from past years. Based on the survey results, there is minimal potential for significant impact to nesting raptor populations from the Project.

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