

Raptor Nest Survey for Spring 2012

Grande Prairie Wind Energy Project, Holt County, Nebraska

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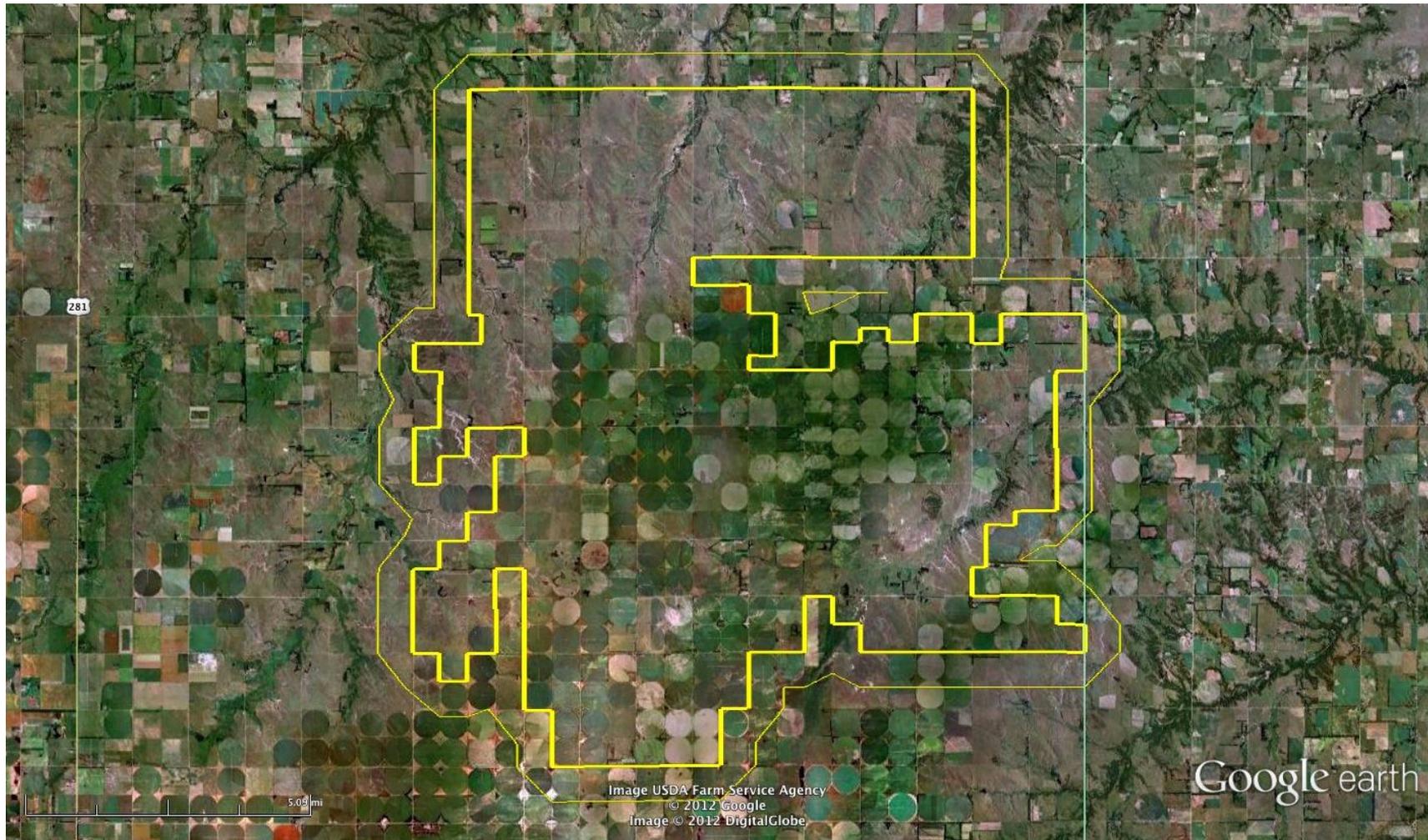
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Figure 1-1. Boundary (dark yellow polygon) of Grande Prairie Wind Energy Project with surrounding buffer zone 1 km wide (light yellow polygon).



1 INTRODUCTION

The Nebraska Game and Parks Commission (NGPC) has issued draft voluntary guidelines (NGPC 2012) for evaluating the risk of impacts of wind energy facilities on Nebraska's birds. Among various recommended studies is a Nesting Raptor Survey (hereafter the Survey). As stated in the guidelines (page 24), the purpose of the Survey is to determine raptor nest locations within an area proposed for a wind farm.

This report describes a pre-construction Survey conducted in April 2012 at the site of the Grande Prairie Wind Energy Project (hereafter the Project), located in Holt County, Nebraska (Figure 1-1). Biologists from Olsson Associates in Mullen, Nebraska, collected the data, which was analyzed by Curry & Kerlinger, LLC, for the client, Midwest Wind Energy.

2 METHODS

Methods followed the draft voluntary guidelines of the NGPC (2012).

The site of the Grande Prairie Wind Energy Project measured 257.6 km², but NPGC guidelines called for searching 1 km beyond the boundary, which added another 112.0 km² to be searched (total search area of 369.6 km²; see Figure 1-1).

Olsson Associates' strategy to survey such a large area thoroughly was twofold: (1) fly transects over the entire study area to locate raptor nests, then (2) visit each nest from the ground to evaluate the status, condition, and other attributes of the nest.

Olsson Associates assigned four qualified field ornithologists to conduct the Survey. They were Senior Scientist Tim Andersen, who oversaw the field team, and Heather Darrow, Dane Peterson, and Parker Maners. Their qualifications are described in Appendix A.

Flights were scheduled for three mornings (dawn to 2.5 hours after sunrise) in early April, but they could only be conducted on two mornings (3 and 5 April) because of adverse weather conditions. As stated in a protocol sent to NGPC for comment, north-south transects were flown 800 meters apart (0.5 miles), not 400 meters (0.25 miles) as specified in the NPGC guidelines. This was because the purpose of the flights was to locate nests for later checking on the ground, not to survey the site only from the air. Two field ornithologists, one on each side of the aircraft, observed the entire study area at altitudes of 50-100 m at an approximate speed of 140 km/hr.

Observers paid particular attention to treelines, where the nests of Swainson's Hawk, Red-tailed Hawk, American Kestrel, Great Horned Owl, and other arboreal-nesting raptors would be located. They were also attentive for courtship and territorial display flights of ground-nesting species, such as Northern Harrier, as well as for prairie-dog colonies that would attract Burrowing Owl.

When a nest was discovered, it was closely approached and the following information was collected (summarized in Table 3-1):

- Nest location: Recorded in decimal degrees in NAD83.
- Nesting status: Codes included OCC: Occupied, one or two adults present; UNOCC: Unoccupied, adults absent; ACT: Active, pair of adults actively engaged in breeding and contains eggs, young, recently fledged young, or incubating adult; PRO: Productive, fledged young present; FAIL: Failed; UNKNOWN: Nest present, but because of location, status cannot be determined.
- Nest condition: Codes included GONE: Nest was present but now no longer present; REMNANTS: Scant materials remaining, but now unusable; UNUSABLE: Nest not occupied and in need of repair; USABLE: Nest occupied or active and in good condition; UNKNOWN: Nest present, but because of location, status cannot be determined.
- Nest substrate: This described the substrate in which the nest was located, such as burrow, artificial nest structure, deciduous tree, cliff, rock cavity, ground, etc.
- Number of eggs
- Number of young
- Date observed
- Observer name
- Date

Surveys were only conducted during favorable weather, which was defined as lacking precipitation, with winds <24 kph, and with visibility at least to 0.75 km. Weather information was recorded daily on the data sheet.

Figure 3-1. Flight transects flows to survey study area.

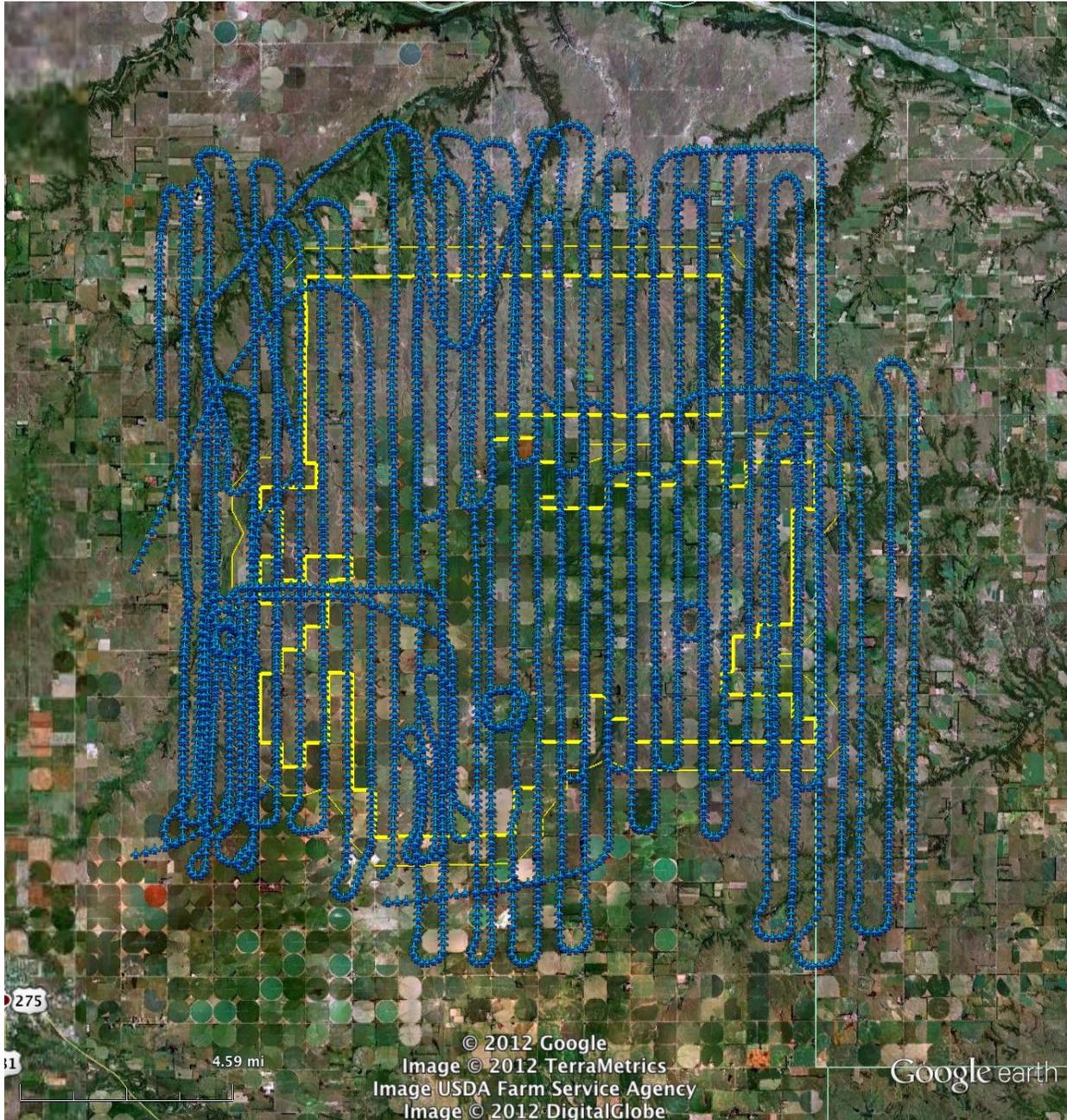


Figure 3-2. Raptor nests discovered during Survey.

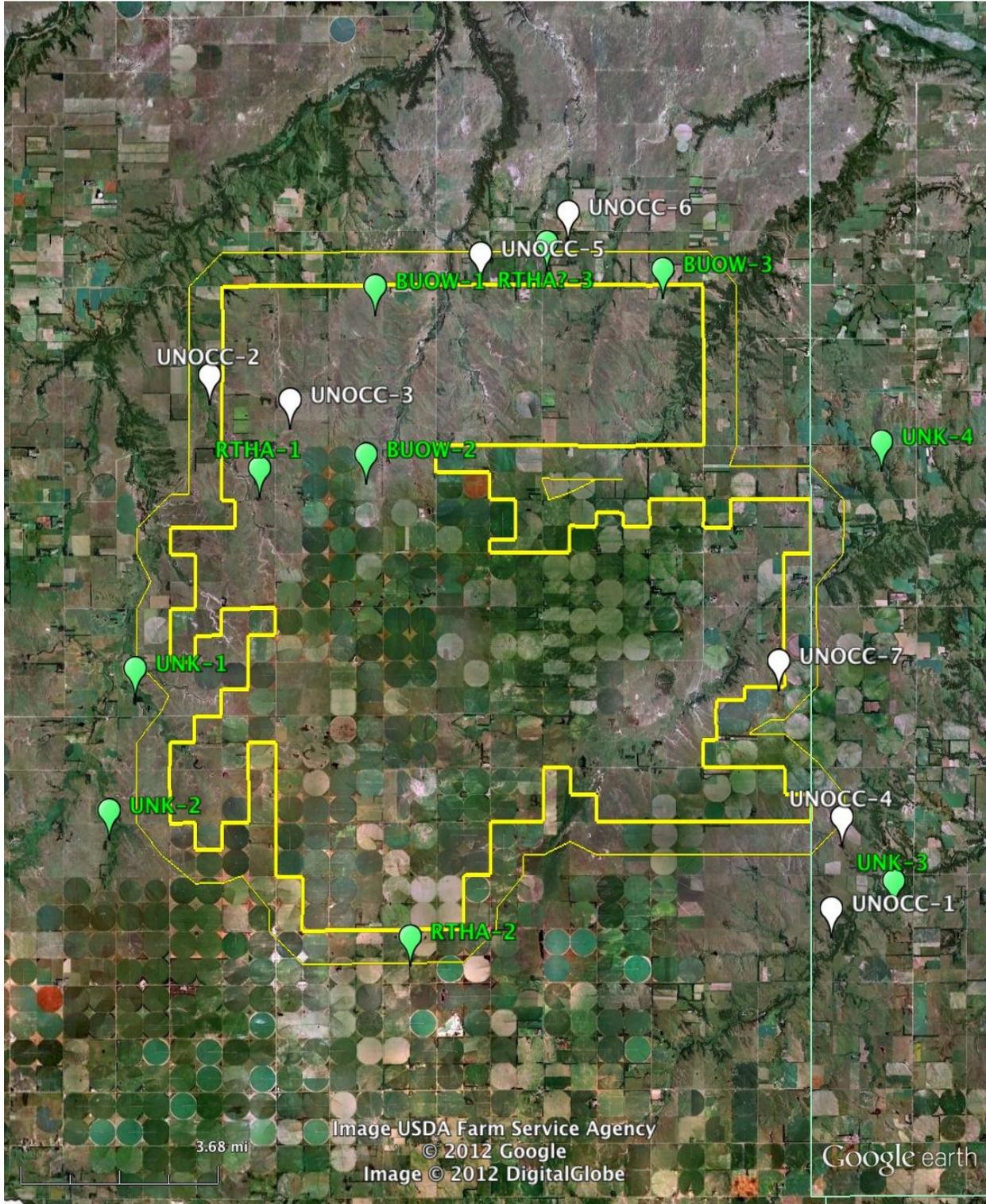


Table 3-1. Raptor nests discovered during Survey

Species	Nest#	Olsson identifier	Latitude	Longitude	Status	Nest condition	Nest substrate	# eggs	# young	Observer	Date	Notes
BUOW	BUOW-1	BUOW 1	42.675148	-98.464947	Occupied?	?	Burrow	?	?	DEP	4/10/12	In prairie-dog town; one owl observed.
BUOW	BUOW-2	BUOW 2	42.629638	-98.468272	Occupied?	?	Burrow	?	?	DEP	4/10/12	In prairie-dog town; two owls observed.
BUOW	BUOW-3	BUOW 3	42.679664	-98.359404	Occupied?	?	Burrow	?	?	DEP	4/11/12	In prairie-dog town; two owls observed.
RTHA	RTHA-1	DEP6	42.625984	-98.507355	Active	Usable	Cottonwood	?	?	DEP/PGM	4/5/12	Two adults present, one on nest, the other nearby, when revisited on 4/11/12
RTHA	RTHA-2	PGM1	42.499371	-98.452136	Active	Usable	Cottonwood	?	?	PGM	4/6/12	Two adults soaring, with one visiting nest
RTHA?	RTHA?-3	DEP2	42.686970	-98.401934	Active	Usable	Hardwood	?	?	DEP	4/4/12	Soaring RTHA present, but species on nest uncertain; revisited on 4/11/12

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Unknown	UNK-1	DEP1	42.571818	-98.552878	Active	Usable	Cottonwood	?	?	DEP	4/3/12	Difficult to discern species from vantage points; revisited on 4/11/12
Unknown	UNK-2	DEP3	42.533443	-98.562371	Occupied?	Usable?	Cottonwood	?	?	DEP	4/5/12	On inaccessible property outside of project footprint; revisited on 4/11/12
Unknown	UNK-3	TPA2	42.514281	-98.275064	Occupied?	Usable	Cottonwood	?	?	TPA	4/5/12	Large nest 3 feet in diameter and 3 feet deep; could not see well with spotting scope
Unknown	UNK-4	TPA4	42.632969	-98.279303	Occupied?	Usable?	Tree	?	?	TPA	4/5/12	Seen during flight survey but could not be located on ground
N/A	UNOCC-1	TPA1	42.506846	-98.297951	Unoccupied	Usable	Cottonwood			TPA	4/1/12	RTHA heard and seen nearby; revisited 4/18/12
N/A	UNOCC-2	DEP4	42.651090	-98.525637	Unoccupied	Usable?	Cottonwood			DEP/PGM	4/4/12	Nest 3 feet in diameter; also unoccupied

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N/A	UNOCC-3	DEP5	42.644417	-98.496118	Unoccupied	Usable?	Cottonwood	DEP	4/5/12	when revisited on 4/11/12 Nest nearly 3 feet in diameter; revisited on 4/11/12
N/A	UNOCC-4	TPA3	42.531555	-98.294001	Unoccupied	Usable	Cottonwood	TPA	4/5/12	revisited on 4/7 and 4/18/12; no activity
N/A	UNOCC-5	DEP7	42.683884	-98.426220	Unoccupied	Unusable	Cottonwood	DEP	4/6/12	No birds present when revisited on 4/10/12 and 4/11/12
N/A	UNOCC-6	DEP8	42.695130	-98.394137	Unoccupied	Usable?	Cottonwood	DEP	4/6/12	Large nest 4-5 feet in diameter; revisited on 4/10/12 and 4/11/12
N/A	UNOCC-7	PGM3	42.573758	-98.317089	Unoccupied	Usable	Willow	PGM	4/9/12	Revisited on 4/10 and 4/18/12; two BAEAs seen 2.4 km north and one BAEA seen <0.8 km north on 4/9; RTHA seen nearby on 4/18

3 RESULTS

Flight transects flown on 3 and 5 April 2012 (Figure 3-1) and subsequent ground surveys discovered three probable Burrowing Owl (BUOW in Table 3-1) nests in prairie-dog towns, two confirmed Red-tailed Hawk (RTHA in Table 3-1) nests, on probable Red-tailed Hawk nest, four active or probably occupied nests of unknown species, and seven unoccupied nests (Table 3-1). Of the 17 nests discovered, six nests were found within the Project footprint: the three probable Burrowing Owl nests, one of the confirmed Red-tailed Hawk nests, and two unoccupied nests (Figure 3-2).

Two Bald Eagles were seen in the vicinity of one of the unoccupied nests (UNOCC-7) on the eastern side of the Project site, and it was suspected that those birds were territorial. During a breeding bird survey conducted during 4-11 June 2012, no nests of Swainson's Hawk were discovered, but Swainson's Hawk was present at the site. Raptor species recorded at the site during spring fieldwork were Turkey Vulture, Northern Harrier, Bald Eagle, Swainson's Hawk, Red-tailed Hawk, and American Kestrel.

4 DISCUSSION

Burrowing Owl was the most common raptor found to nest within the Project footprint, with three probable nests in prairie/grassland. Two adults were present at two of the likely nests; at the other, one adult was present. Grassland habitat within the Project footprint was measured at 115.8 km². Thus, the density of potentially breeding Burrowing Owls at the site was found to be 0.03 pairs/km². This density is very low when compared with high densities reported by Poulin et al. (2011), for example, in the Imperial Valley of California, where density is ~2 pairs/km².

Preston and Bean (2009) report that estimates of breeding densities for Red-tailed Hawks range 1.3 to 50.0 km²/pair with no clear geographic trend. The nests (two confirmed and one probable) found within the Project footprint and buffer zone yielded a density of 132.2 km²/pair.

On the afternoon of 9 April 2012, one mature and one subadult Bald Eagle were observed together in the vicinity of nest UNOCC-7, on the eastern side of the Project site. They were first observed 2.4 km north of the nest site perched together in a tree along the North Branch of Verdigre Creek. Eight minutes later they were observed flying together within 0.8-1.6 km northeast of the nest site. Later in the afternoon, a single Bald Eagle was observed gliding <0.8 km north of the nest site. Viewing the nest was difficult, and it was eventually concluded that the nest was unoccupied, although well built and usable. On two subsequent visits, no Bald Eagles were seen, but a Red-tailed Hawk was seen soaring in the general area.

Sharpe et al. (2001) report that, by 1998, Holt County was known to have active Bald Eagle nests, as the number of nest sites in Nebraska had grown considerably since the first 20th Century nesting attempt in Cedar County in 1973. Given the presence of the Missouri and Niobara Rivers to the north of Grande Prairie and numerous tributary creeks of the Niobara penetrating the site, the Bald Eagle sightings during the Survey are not surprising.

Literature Cited

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Poulin, Ray, L. Danielle Todd, E. A. Haug, B. A. Millsap and M. S. Martell. 2011. Burrowing Owl (*Athene cunicularia*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: <http://bna.birds.cornell.edu/bna/species/061> (accessed 24 August 2012).

Preston, C. R. and R. D. Beane. 2009. Red-tailed Hawk (*Buteo jamaicensis*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved on 31 May 2011 from the Birds of North America Online: <http://bna.birds.cornell.edu/bna/species/052> (accessed 24 August 2012).

Sharpe, R. S., W. R. Silcock, and J. G. Jorgensen. 2001. Birds of Nebraska: Their Distribution and Temporal Occurrence. University of Nebraska Press, Lincoln, Nebraska.

APPENDIX A. Qualifications of field biologists who conducted the 2012 Survey.

Tim Andersen

Senior Scientist

Bachelor of Arts, Biology, Environmental Studies; Dana College, 2001

Olsson Professional Experience, 2005 to Present

Total Professional Experience, 1999 to Present

Tim is an experienced field biologist and project manager with relevant project experience that emphasizes on biological assessments for avifauna and flora supporting renewable energy, land development, and transportation projects located in the Midwest. In support of wind energy development, floral assessments have included habitat surveys for rare and threatened and endangered species or vegetative communities, whooping crane stopover risk assessments, wetland delineations, grassland suitability surveys, and floristic quality assessments. Avian studies include breeding bird and avian use surveys using various methodologies including line transects, distance sampling, and point/plot counts. Additional avian studies include Migratory Bird Treaty Act nesting surveys, sharp-tailed grouse and greater prairie chicken lek surveys, and nesting raptor surveys. Tim is proficient in visual and aural bird identification for species prevalent in the Midwest. He is also an active member of the Nebraska Wind and Wildlife Working Group.

Heather Darrow

Assistant Scientist

Bachelor of Science, Biology; Beloit College, 2003

Olsson Professional Experience, 2011 to Present

Total Professional Experience, 2003 to Present

As a field biologist, Heather's experience includes a range of field surveys pertaining to threatened and endangered species, Migratory Bird Treaty Act, and Bald and Golden Eagle Protection Act. She has provided support for projects that have included wind energy development, oil/gas exploration and development, logging, U.S. Air Force, Army National Guard, and commercial infrastructure projects. Her background has included extensive avian surveys for projects involving lek counts for sharp-tailed grouse, greater prairie chickens and lesser prairie chickens, raptor nest surveys, fixed-point bird use surveys, spotted owl presence/absence, whooping crane monitoring, bald eagle winter roost surveys, and greater sage grouse brood counts. At her previous employ with Western EcoSystems Technology, Inc., Heather performed numerous point-count migration surveys and line-transect surveys for raptor species, and is well-versed in playback methods for attracting raptors and habitat and nest characterization. Heather provides statistical analysis and prepares a range of pre- and post-construction reports for wind energy development projects.

Dane Peterson

Associate Scientist

Bachelor of Science, Wildlife and Fisheries; University of Nebraska-Lincoln, 2008

Olsson Professional Experience, 2010 to Present

Total Professional Experience, 2008 to Present

Dane is a field biologist specializing in avian and bat surveys for wind energy projects. Avian studies have included ground and aerial raptor nest and sharp-tailed grouse/greater prairie chicken lek surveys, breeding bird and avian use surveys, habitat assessments, and Migratory Bird Treaty Act nesting surveys. He is proficient in visual and aural bird identification for species prevalent in the Midwest. Surveys for bats have included habitat assessments and passive acoustical monitoring and analysis using Wildlife Acoustics SM2BAT and Titley Electronics AnaBat detectors. In addition, Dane has conducted habitat surveys for rare and threatened and endangered species or vegetative communities, wetland delineations, and floristic quality assessments.

Parker Maners

Assistant Scientist

Bachelor of Science, Biology; Southeast Missouri State University, 2011

Olsson Professional Experience, 2012 to Present

Total Professional Experience, 2011 to Present

Parker is a biologist that is relatively new to Olsson Associates. He supports field staff with conducting wildlife and habitat surveys for wind energy projects. Field surveys have included surveys for prairie grouse and raptor nests, wetland delineations and orchid surveys. In his previous employment, Parker conducted post-construction mortality monitoring for a wind farm located in Indiana.