

Memorandum



Date: February 11, 2019

To: Andrea Giampoli, Invenergy LLC

From: Bryan Gasper, Burns & McDonnell Engineering Company, Inc.

Subject: Eagle Nest Monitoring near Lake Alice, South Dakota for the Deuel Harvest North Wind Farm, Deuel County, South Dakota

Invenergy LLC and Deuel Harvest Wind Energy LLC (Deuel Harvest) requested Burns & McDonnell Engineering Company, Inc. (Burns & McDonnell) conduct a field survey of a potential bald eagle (*Haliaeetus leucocephalus*) nest located north of Lake Alice in Deuel County, South Dakota for the Deuel Harvest North Wind Farm (Project). The purpose of the survey was to attempt to determine the location and activity status by monitoring from public rights-of-way (ROW).

Survey Methods

Existing information indicated the nest was estimated to be located in a shelterbelt/wind row of trees on the north side of 172nd Street, approximately 0.5 miles east of 478th Avenue in Deuel County, South Dakota. The coordinates provided for the nest were 44.893 degrees latitude, -96.631 degrees longitude, in T117N, R48W, S31 (southwest quarter).

On February 5 and 6, 2019, two biologists from Burns & McDonnell conducted a presence/absence survey for the bald eagle nest at the previously indicated location and in the nearby vicinity (Survey Area) from public ROWs. The Survey Area is comprised mainly of row crop agriculture with trees forming a shelterbelt that extends north to south.

Activity surveys were completed on February 6, 2019 and included three 2-hour periods (dawn, midday, and dusk) from the same survey location (Figure 1). Observations of activity included any eagle seen and their associated activity (i.e., sitting on the nest, perched on adjacent limbs or nearby trees, flying near the nest, flying in the general area).

Survey Results

The bald eagle nest was able to be seen from 172nd Street and is located in a mature elm tree (*Ulmus* sp.) (Appendix A, Photographs A-1, A-2, A-6, A-8; Figure 1). The survey location was chosen due the close proximity (approximately 0.25 miles/0.39 kilometers) and the clear visibility to the bald eagle nest.

Recent tree cutting activity was noted in the south portion of the shelterbelt (Appendix A, Photographs A-6 and A-7).

During the survey, two mature bald eagle observations were noted and recorded.

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Bald Eagle Observation Number One

One mature bald eagle was observed during the dusk survey period at 15:03, February 6, 2019 for a total of one minute (Table 1). The bald eagle was first seen approximately 250 meters northeast of the survey location. It flew south by southwest until no longer visible at an estimated height of 100 meters (Figure 1). The bald eagle did not land within view, and the shortest proximity to the nest during its flight path was estimated to be 0.36 miles/0.58 kilometers.

Bald Eagle Observation Number Two

One mature bald eagle was observed during the dusk survey period at 15:16, February 6, 2019 for a total of two minutes (Table 1). The bald eagle was first seen approximately 400 meters southwest of the survey location. It flew north and then northwest until no longer visible at an estimated height of 50 meters (Figure 1). The bald eagle did not land, and the shortest proximity to the nest during its flight path was 0.19 miles/0.30 kilometers.

It was unknown if the two bald eagle sightings are the same individual.

Table 1 Bald Eagle Observations

Survey Time	Weather	Bald Eagle Observation	Age Class	Length of Time of Observation	Closest Bald Eagle Proximity to the Nest
Dawn 07:36 – 09:36	0° F, 10-15 MPH, cloudy, light snow	None			
Midday 11:00 – 13:00	2° F, 15-20 MPH, cloudy, light snow	None			
Dusk 14:10 – 16:10	2° F, 20-25 MPH, cloudy, light snow	2	1: Adult 2: Adult	1: 15:03 – 15:04 2: 15:16 – 15:18	1: 0.58 km 2: 0.30 km

Sincerely,

A handwritten signature in black ink that reads "Bryan R. Gasper".

Bryan R. Gasper
 Project Manager/Senior Environmental Scientist
 Burns & McDonnell Engineering Company, Inc.

Memorandum *(cont'd)*






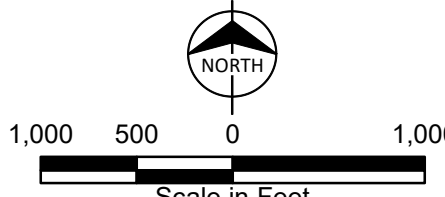

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ENCLOSURE

cc: Michael Svedeman – Invenergy



<ul style="list-style-type: none"> Survey Location Bald Eagle Nest Bald Eagle Sighting	 <p style="text-align: center;">Scale in Feet</p>		<p style="text-align: center;">Figure 1 Bald Eagle Nest Survey Deuel Harvest North Wind Farm Deuel Harvest Wind Energy LLC Deuel County, South Dakota</p>
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Photograph A-1: View of bald eagle nest from 172nd Street, facing northwest.



Photograph A-2: View of bald eagle nest from 172nd Street, facing northwest.



Photograph A-3: Bald eagle siting #1. View from 172nd Street, facing southeast.



Photograph A-4: Bald eagle siting #1. View from 172nd Street, facing southeast.



Photograph A-5: View of shelterbelt from 172nd Street, facing north. Photographed area is immediately east of eagle nest location.



Photograph A-6: View of shelterbelt from 172nd Street, facing northeast. Bald eagle nest is within red circle but not visible in photograph.



Photograph A-7: View of shelterbelt, excavator, and tree removal along south end of shelterbelt from 172nd Street, facing north.



Photograph A-8: View of shelterbelt and bald eagle nest from 172nd Street, facing northwest. Bald eagle nest is within red circle.

Eagle Nest Survey
Deuel Harvest North Wind Farm
Deuel Harvest Wind Energy
LLC



Site Photographs
February 5 - 6, 2019
Deuel County, South Dakota