



2015 Piping Plover Survey Report

**Big Stone South to Ellendale
345 kV Transmission Line**

Otter Tail Power Company and Montana-Dakota
Utilities Co.

Prepared by HDR Engineering, Inc.

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Executive Summary

Piping plover (*Charadrius melodus*) are listed as a threatened species under the Endangered Species Act (ESA). An endangered status was given to the population within the Great Lakes Region and threatened status was established for the northern Great Plains and Northeast Region populations, which include portions of North Dakota, South Dakota, Montana, Minnesota, Kansas, and Nebraska. HDR Engineering, Inc. (HDR) was retained by Otter Tail Power Company and Montana-Dakota Utilities Co. (jointly, the Owners) to evaluate piping plover presence and its habitat along the Big Stone South to Ellendale (BSSE) 345 kV Transmission Line Project (Project). The U.S. Fish and Wildlife Service (USFWS) reviewed the survey methodology. The survey area included a 0.5 mile buffer of the approximately 163-mile-long route (Project Route).

Montana-Dakota Utilities Co. is headquartered in Bismarck, North Dakota, and provides natural gas and/or electric service to parts of Montana, North Dakota, South Dakota, and Wyoming. Its service area covers about 168,000 square miles and includes approximately 312,000 customers. Otter Tail Power Company is headquartered in Fergus Falls, Minnesota, and provides electric service to parts of Minnesota, North Dakota, and South Dakota. Its service area covers about 70,000 square miles and includes approximately 129,400 customers.

The Project Route consists of approximately 162 miles of single-circuit 345-kV transmission line. The North Dakota portion of the Project consists of approximately 9 miles of transmission line and the new Ellendale 345-kV Substation, all located in Dickey County, North Dakota. The South Dakota portion of the Project consists of approximately 153 miles of transmission line in Brown, Day, and Grant counties, South Dakota.

The objective of conducting the piping plover surveys was to establish its presence/absence at suitable wetlands along the Project Route during the nesting season. HDR conducted piping plover surveys in wetland areas that are located within a 0.5 mile or are crossed by the Project Route.

Wetlands along the Project Route most likely to support the presence of nesting piping plovers include alkaline wetlands with shoreline habitat. One suitable wetland with saline shoreline habitat was identified along the Project Area near the James River in Brown County, South Dakota.

HDR biologists conducted their ground survey on July 1, 2015. No piping plovers or suitable nest substrate were identified along the Project Route.

Table of Contents

Executive Summary	i
Introduction	1
<i>Regulatory Framework</i>	3
<i>Piping Plover Biology</i>	3
Survey Area	4
Methods	5
Results.....	5
Conclusions	7
Literature Cited	9

Introduction

The Owners propose to construct, operate, and maintain the Big Stone South to Ellendale Project which consists of approximately 163 miles of 345 kilovolt (kV) transmission line traversing through North Dakota and South Dakota, and the Ellendale 345 kV Substation located near Ellendale, North Dakota. See Figure 1 for a project overview.

Montana-Dakota Utilities Co. is headquartered in Bismarck, North Dakota, and provides natural gas and/or electric service to parts of Montana, North Dakota, South Dakota, and Wyoming and will be the sole owner of the Ellendale Substation. Its service area covers about 168,000 square miles and includes approximately 312,000 customers. Otter Tail Power Company is headquartered in Fergus Falls, Minnesota, and provides electric service to parts of Minnesota, North Dakota, and South Dakota. Its service area covers about 70,000 square miles and includes approximately 129,400 customers.

To address regulatory agency concerns about the Project's potential to impact on the piping plover during construction, HDR was retained to conduct piping plover presence/absence and habitat surveys. HDR developed survey methods with USFWS oversight to identify the extent of risk posed to species protected by the Endangered Species Act (ESA). Presence/absence surveys were conducted within a survey area, which is a 0.5-mile-wide buffer of the Project centerline. The centerline is a two-dimensional line that lies at the center of the 150-foot right-of-way (ROW).

Surveys were conducted on July 1, 2015 and focused on alkaline wetland habitats within Brown County, South Dakota and to identify suitable shoreline habitat, observe and document piping plover presence/absence, and document the presence of sympatric nesters at sites within 0.5 mile of the Project Route. Surveyors followed methodologies that involved point surveys from the ground at sites where the Project crosses suitable wetland, lake, or shoreline habitat. Survey methods were designed to document piping plover occurrences and to evaluate habitat crossed by the Project that may be important to this species.

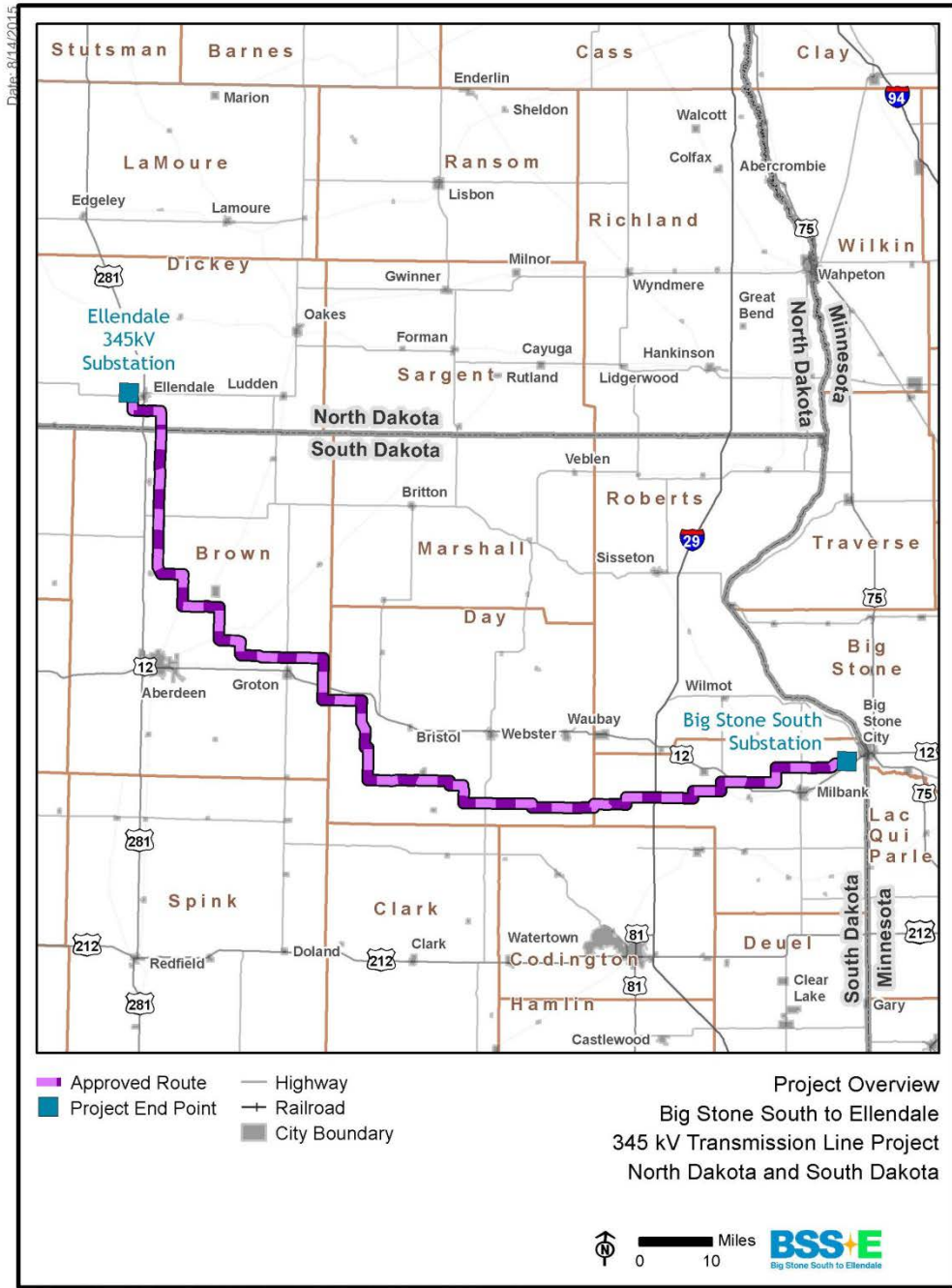


Figure 1: Project Overview

Regulatory Framework

The ESA of 1973 provides protection for rare and migratory wildlife, using three types of species designations: *endangered*, *threatened* and *candidate*. Under the *endangered* and *threatened* designations, it is unlawful for anyone to *take* an endangered species. *Take* includes, but is not limited to, harassing, harming, pursuing, hunting, shooting, wounding, trapping, killing, capturing or collecting protected species within the United States and its territorial seas. *Take* also extends to threatened species per 50 C.F.R. §§ 17.31 and 17.21. More specifically, *harm* in the definition of *take* means,

“...an act which actually kills or injures wildlife [including] habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering.” (50 C.F.R. 17.3).

The northern Great Plains population of the piping plover (*Charadrius melodus circumcinctus*) was listed as a threatened species on December 11, 1985. An endangered status was given to the population within the Great Lakes Region (*C.m.melodus*) and threatened status was established for the northern Great Plains and Northeast Region populations (USFWS 2009). Both populations are protected as threatened species on their wintering grounds along the southern U.S. coast. North Dakota and South Dakota piping plovers are part of the Great Plains population.

Piping Plover Biology

The U.S. range of the northern Great Plains population includes Iowa, Minnesota, Montana, Nebraska, North Dakota, and South Dakota (Federal Register, Sept 11, 2002). Most of South Dakota's piping plover populations occur along the unrestricted stretches of the Missouri River below the Gavins Point and Fort Randall dams. Some birds also nest along the Oahe Reservoir and on shorelines of alkaline wetlands in northeastern South Dakota (South Dakota Department of Game, Fish and Parks, 1996).

On September 11, 2002, the USFWS approved designation of critical habitat for the *Northern Great Plains Breeding Population of the Piping Plover* (Federal Register, 2002). This designation includes 19 critical habitat units totaling 183,422 acres and portions of four rivers totaling 1,208 river miles in Minnesota, Montana, Nebraska, North Dakota, and South Dakota (Federal Register, 2002). There is no designated critical habitat in the Project. The nearest designated critical habitat is located approximately 90 miles west of the Project. Plovers from the Great Plains population inhabit barren sand and gravel shores of rivers and lakes. In South Dakota, piping plovers occupy large reservoir beaches, river islands and sandbars associated with the Missouri River. Beach width may affect use by breeding piping plovers. Haig and Oring (1988) cite beaches wider than 20 meters (m) with 5 percent vegetative cover occurring in clumps and/or with extensive gravel provide critical characteristics of piping plover habitat. Whyte (1985) reported a minimum nest-to-water distance of 40 m in Saskatchewan and suggested that beaches less than 20-30 m wide were less likely to be used by nesting plovers. Other researchers found plovers using beaches as narrow as 11.7 m for nesting, but noted that nesting plovers occupied the widest available beaches (Weseloh and Weseloh 1983). At alkaline lakes in North Dakota, studies indicate that piping plovers established territories on

beaches greater than 25 m wide. Piping plovers also use barren river sandbars and beaches on large rivers and reservoirs. In South Dakota, these habitat types are found on the Missouri River (USFWS 2015). Plovers usually place nests on open gravel patches and tend to avoid areas dominated by mud, large stones, or dense vegetation (Whyte 1985, Prindville Gaines and Ryan, 1988). However, plovers are known to nest in sub-optimal habitats when suitable habitat is limited. Nearly all natural lakes used by plovers in South and North Dakota are alkaline in nature and have salt-encrusted edges that inhibit plant growth. Such alkali lakes may be selected due to their sparse vegetation. Wemmer (2000) found that the most successful plover nests occurred where vegetative cover was 5.5 percent. Piping plovers are known to nest in association with other species the same habitats, such as common terns (*Sterna hirundo*), least terns (*S. antillarum*) and American avocets (*Recurvirostra americana*).

The breeding season in South Dakota extends from mid-April through August. Pairs remain mated for nearly all of the breeding season. Pairs are territorial, which means they defend their nest area from other piping plovers. A four-egg clutch is laid in a shallow depression in the open, sand/gravel substrate. Both sexes share in incubation, which lasts about 28 days (Prindville Gains & Ryan, 1988). Plover chicks are able to walk and feed within hours of hatching and can fly in about 21 days. Piping plovers feed at open beaches on insects and crustaceans (USFWS 2010). The South Dakota population spends fall to early spring primarily in the Gulf of Mexico, especially along the Texas coast.

Piping plover chicks are precocial and leave the nest within hours of hatching. Both parents share brooding responsibilities for the first week according to a Manitoba study (Haig 1992). The young generally remain on the defended nesting territories, but may expand their movements as they mature or are disturbed. Both parents actively defend the territory during the time before young are able to fly which is usually between 21 and 28 days (Prindville *et al.* 1988).

Breeding piping plovers may depart nesting grounds as early as mid-July with the majority leaving by early August (Wiens 1986). Juveniles depart later than adults and most had left breeding grounds by late August.

Survey Area

The route from west to east starts at the proposed Ellendale 345 kV Substation in Dickey County, North Dakota to the Big Stone South Substation in Grant County, South Dakota (Figure 1). The Project Route is approximately 162 miles long.

Piping plover surveys focused on evaluating wetlands crossed by the Project Route in Brown, Day and Grant Counties, South Dakota. The James River is the dominant geographic feature in Brown County. This geographic feature transitions to the regionally significant glacial landform called the Coteau des Prairies (Coteau) which extends from Day County into Grant County, South Dakota. This glacial geologic feature is characterized by steep hillsides, rocky terrain, and abundant pothole wetlands that have made cultivation difficult.

Only one wetland area along the Project Route was identified to potentially provide suitable shoreline habitat under the right climatic conditions for the piping plover. The potential habitat is

an isolated wetland located east of the Elm River (a subsidiary to the James River) near the Town of Westport in Brown County, South Dakota. However, shoreline habitats at this site were inundated late in 2014 and remained underwater during surveys conducted in 2015.

Farmsteads and rural residential development are widely dispersed throughout the study area and common crops include flax, winter wheat, barley, soybeans and corn in addition to pasture lands used for grazing animals. Most roads within in the study area are secondary highways, rural gravel roads, or section roads.

Methods

Standardized piping plover survey techniques that follow *A Draft Protocol for assessing Piping Plover Reproductive Success on Great Plains Alkali Lakes* (Murphy et al. 1999) were used to evaluate wetland habitats along the Project. Surveys for occupied habitat followed USFWS standards and were conducted July 1, 2015 which coincides with early to mid-incubation for pairs that maintain their original territory and those that are making a second nesting attempt.

HDR reviewed historic information on the location of piping plover observations, critical habitat, wetlands, alkali lakes, and nest records to note their proximity to landscape features and the Project Alignment using GIS technologies. This information was used to identify areas that could harbor suitable nesting habitat for piping plovers. Survey sites included alkali lakes, wetlands, and freshwater lakes from Brown County at the northwest end of the Project to Grant County in the east.

HDR conducted field surveys within the survey area by scanning suitable wetland and shoreline habitats from public rights-of-way. HDR used spotting scopes and binoculars to conduct surveys without disturbing wildlife. Biologists used auditory and visual queues to evaluate habitat and identify species present at wetlands evaluated for piping plover presence within 0.5 mile of the Project.

Surveys were conducted:

- Between ½ hour prior to sunrise until 5:00 p.m. (Central Standard Time)
- When winds were lower than 20 mph and no precipitation was occurring

Results

Biologists searched suitable habitat for nesting piping plovers under suitable weather conditions (i.e. clear or overcast skies with no precipitation). During grassland and migratory bird habitat reviews, HDR identified potentially suitable habitat that exhibited characteristics consistent with the presence of piping plovers. Due to high groundwater and precipitation levels in the Project area during 2013-2015, water levels inundated shoreline habitats.

No piping plovers were observed within 0.5 mile of the Project. HDR documented no American avocets or sympatric nesters at the identified potential habitat survey area near Elm River.

Wetlands reviewed for piping plover presence can be categorized according to habitat types present. The following are potential habitat types:

- “Exposed Shoreline” are habitats exhibit shoreline habitats suitable for piping plover use
- “Cattail Fringe” are heavily vegetated shoreline habitat
- “Cattail Choked” are monotypic stands of emergent species that eliminated open water and beach habitat
- “Farmed” indicates the wetland is currently being cultivated

The wetland where habitat was noted during previous years’ surveys was inundated during 2015 and characterized as Cattail Fringe wetland (see Figure 2) which exhibited unsuitable habitat for piping plovers. Bird species associated with these habitats included; red-winged blackbirds (*Agelaius phoeniceus*), yellow-headed blackbirds (*Xanthocephalus xanthocephalus*), common yellowthroat (*Geothlypis trichas*), and a variety of waterfowl.



Figure 2: Typical Cattail Fringe wetland observed during survey

One wetland displayed beach habitat or alkali conditions during habitat reviews conducted in 2013 and 2014. This site was thoroughly evaluated by conducting an observational search from public rights-of-way for the presence of piping plovers. Alkaline wetlands typically exhibit an alkaline fringe or soils that appear light colored or white. These basins range from very small depressions to large alkaline marshes or lakes. Fringes of these alkaline basins typically have limited or stunted vegetation growth and are dominated by plants such as foxtail barley (*Hordeum jubatum*), Nuttals’ alkali grass (*Puccinellia nuttallii*), saltwort (*Salicornia rubra*) or saltgrass (*Distichlis stricta*). Avian species most often associated with this wetland type included American avocet, Wilson’s phalarope (*Phalaropus tricolor*), eared grebes (*Podiceps nigricollis*), marbled godwit (*Limosa fedoa*), blue-winged teal (*Anas discors*), and northern shoveler (*Anas clypeata*). See figures 3, 4 and 5 for typical alkaline shore habitat associated with piping plovers. Alkaline wetlands with appropriate beach habitat were not found within 0.5 miles of the Project Route during surveys. The wetland surveyed is an alkaline wetland, but exhibited dense vegetation at the shoreline/upland edge and no beach habitat that could be used by plovers to nest.



Figure 3: Typical alkaline shore habitat observed more than 0.5 miles outside of the Project



(left) Figure 4: Saline tolerant vegetation associated with alkali wetlands



(right) Figure 5: American avocet, a species often observed with nesting piping plovers

Conclusions

Surveys conducted on July 1, 2015 documented the absence of piping plovers and lack of suitable habitat within the survey area (0.5 mile of either side of the Project Route). One wetland was reviewed for the presence/absence of piping plovers, associated species, and potential habitat. Many wetlands did not meet habitat criteria and were too small to provide adequate forage or nesting habitat for piping plovers. Figure 2 displays the wetland habitat type observed in the vicinity of the Project.

Five (5) species of birds were documented at the wetland site within the survey area. No sympatric nesting species, were observed at this wetland site during the July 1, 2015 survey. Other species present at alkali wetlands along the Project Route included: Killdeer, lesser yellowlegs, blue-winged teal, pectoral sandpiper, and northern shoveler.

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Literature Cited

- Bailey, R.G. 1994. National hierarchical framework of ecological units. ECOMAP Unpublished administrative paper. Washington, DC: U.S. Department of Agriculture, Forest Service. <http://www.fs.fed.us/land/pubs/ecoregions/toc.html>
- Brown, M.B. and J.G. Jorgensen. 2008. 2008 interior least tern and piping plover monitoring, research, management and outreach report for the Lower Platte River, Nebraska. Joint report of the Tern and Plover Conservation Partnership and the Nebraska Game and Parks Commission. Lincoln, NE. 60 pp.
- Elliott-Smith, Elise and Susan M. Haig. 2004. Piping Plover (*Charadrius melodus*), 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/002>. Accessed March 23, 2010.
- Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Great Plains Breeding Population of the Piping Plover. 67 Federal Register 57638. September 11, 2002. Pp. 57638 -57717
- Haig, S. M. 1992. Piping Plover. Pp 1-18 in: The birds of North America, No. 2 (A. Poole, P. Stettenheim, F. Gill, Eds.). American Ornithologists' Union, Philadelphia, PA.
- Haig, S. M., and J. H. Plissner. 1993. Distribution and abundance of piping plovers: results and implications of the 1991 international census. *Condor* 95:145-156.
- Haig, S. M., and L. W. Oring. 1988. Mate, site and territory fidelity in piping plovers. *Auk* 105:268-270.
- Mayer, M. M. and M. R. Ryan. 1991. Survival rates of artificial piping plover nests in American avocet colonies. *The Condor* 93:753-755.
- Murphy, R. K. , M. J. Rabenberg, M. L. Sondreal, B. R. Casler, and D. A. Guenther. 2000. Reproductive success of piping plovers on alkali lakes in North Dakota and Montana. *The Prairie Naturalist* 32 (4): December 2000.
- Murphy, R. K., B. G. Root, P. M. Mayer, J. p. Goossen, and K. a. Smith. 1999. A draft protocol for assessing piping plover reproductive success on Great Plains alkali lakes. pp. 90-107 *in* Proceedings of a symposium, piping plovers and least terns of the Great Plains and nearby (K. F. Higgins, M. R. Brashier and C. D. Kruse, eds.). South Dakota State University, Brookings, SD.
- Peyton, M.M. and G.T. Wilson. 2008. Least tern and piping plover nest monitoring final report 2008. The Central Nebraska Public Power and Irrigation District, Holdrege, Nebraska.
- Prindeville Gaines, E., M. R. Ryan. 1988. Piping Plover Habitat Use and Reproductive Success in North Dakota. *Journal of Wildlife Management*. Vol. 52, No. 2. pp 266-273

- USFWS. 2009, Piping Plover (*Charadrius melodus*) 5-year Review: Summary and Evaluation. USFWS Northeast Region, Hadley, Massachusetts and the Midwest Region's East Lansing Field Office, Michigan. 214 pp.
- U.S. National Archives and Records Administration. *Code of Federal Regulations*. Title 7 Part 1794. Environmental Policies and Procedures.
- Wiens, T. P. 1986. Nest-site tenacity and mate retention in the piping plover. M.S. Thesis, University of Minnesota. Duluth, MN.
- Weseloh, D. V. C., and M. K. Weseloh. 1983. Numbers and nest site characteristics of the Piping Plover in central Alberta, 1974-1977. *Blue Jay* 41:155-161.
- Wemmer, L. C. 2000. Conservation of the piping plover (*Charadrius melodus*) in the Great Lakes region: a landscape-ecosystem approach. Ph.D. dissertation, University of Minnesota. Twin Cities, MN.
- Whyte, A. J. 1985. Breeding ecology of the Piping Plover (*Charadrius melodus*) in Central Saskatchewan. M.S. thesis, University of Saskatchewan. Saskatoon, Saskatchewan.