RARE SPECIES AND NATURAL COMMUNITY ASSESSMENT

Border Winds Energy Project

Rolette County, North Dakota
October 23, 2009

Prepared For:

Sequoia Energy U.S. Inc.
259 Portage Avenue, Suite 210
Winnipeg, MB R3B 2A9 Canada

Prepared By:

Westwood

This page is intentionally blank

Rare Species and Natural Community Assessment

Border Winds Energy Project

Rolette County, North Dakota

Prepared for:

Sequoia Energy U.S. Inc.
259 Portage Avenue, Suite 210
Winnipeg, Manitoba R3B 2A9, Canada
(204) 523-0216

Prepared by:

Westwood Professional Services
7699 Anagram Drive
Eden Prairie, MN 55344
(952) 937-5150

Project Number: 20071163.00

October 23, 2009

This page is intentionally blank

CONTENTS

TABLES

EXHIBITS

APPENDICES

This page is intentionally blank

1.0 INTRODUCTION

Sequoia Energy U.S. Inc. (Sequoia) is planning to develop a wind energy conversion facility in Rolette County, North Dakota. The Border Winds Energy Project will be located in a project area that covers 52.5 square miles and is located in northeast Rolette County, North Dakota, east of the City of Saint John, north of the City of Rolla, and immediately south of the U.S.-Canadian border (Exhibit 1). The project will consist of approximately 66 turbines, each with a nameplate capacity of 2.3 or 2.4 MW. Additional facilities include a collection system consisting of buried electrical cables, access roads, an operations and maintenance (O&M) facility, and a substation that will connect the system to an existing Xcel Energy transmission line located two miles east of Rolla, North Dakota.

This report provides an assessment of rare natural communities in and immediately adjacent to the project area in response to a request from North Dakota Public Service Commission staff. The project area includes a limited number of prairie remnants, woodlands, and documented occurrences of rare species. The U.S. Fish and Wildlife Service (USFWS) indicated that the Dakota skipper and the endangered whooping crane may occur in the project area. The Dakota skipper is a rare butterfly and a candidate for the federal endangered species list. The North Dakota Parks and Recreation Department (NDPRD) has identified historical occurrences of aspen woodland, tallgrass prairie, calcareous fen, Indianpipe, and few-flowered spikerush within one mile of proposed wind turbine locations in the northwest portion of the project area. These resources were most recently recorded by the NDPRD 22 years ago, and it was not known whether habitat still exist for these rare natural resources. Consequently, Westwood reviewed the project area to identify rare natural resources and communities that may still be present. This report provides a summary of the methods and results of the rare natural community inventory.

1.1 Study Area

The project is proposed on approximately 52.5 square miles of land located in the northeast portion of Rolette County, North Dakota, east of the Turtle Mountains. The predominant land cover in the project area is agricultural cropland consisting mostly of small grains (Exhibit 2). Grasslands and pastures are present in certain areas. Woodlands are mainly limited to farmsteads and shelterbelts that are scattered throughout the area. Wetlands are abundant and exist primarily as seasonally flooded prairie potholes, ranging in size from less than an acre to 90 acres.

The 52.5-square-mile study area is located near federal lands designated for avian use and contains some federal farm program lands that are retired from crop production (Exhibit 2). The lands designated for avian use include USFWS Waterfowl Production Areas (WPAs). WPAs are public lands managed by the USFWS that preserve wetlands and grasslands critical to waterfowl and other wildlife. The nearest WPAs are located about 1.5 miles south of the southeastern tip of the project area. The USFWS also holds wetland protection easements on certain private lands within the project area. Wetland easement lands provide breeding, loafing, and migratory habitat for birds by protecting wetlands through perpetual agreements. The easements prevent conversion of wetlands to upland through fill or drainage. The federal farm program lands are private lands enrolled in the Conservation Reserve Program (CRP) through the U.S. Department of Agriculture Farm Service Agency

(USDA FSA). CRP lands are maintained in perennial vegetative cover for the duration of enrollment, which is typically 10 years unless the enrollment is renewed.

The study area is also located near state-owned lands and state program lands (Exhibit 2). These areas consist of North Dakota State Land Department lands and a Waterfowl Rest Area (WRA). North Dakota State Land Department lands include school trust lands and other state property. Two parcels of such land are located approximately one mile east of the study area and consist of vacant properties covered primarily by grassland and wetlands. One WRA is located about 1 mile south of the southeastern tip of the project area. WRAs are designated by proclamation of the State of North Dakota and are closed to hunting during the regular waterfowl season for the purpose of attracting and holding waterfowl. The WRA within the Border Winds study area, and most WRAs statewide, are privately owned.

2.0 METHODS

Westwood reviewed agency comments, background information on rare species and natural communities, and GIS mapping for the project area and surrounding landscape. Westwood then conducted surveys for rare species and significant ecological communities.

Prior to conducting the field survey, Westwood staff contacted the NDPRD and USFWS regarding biological resources that may occur in the area. Correspondence from the USFWS and the NDPRD is provided in Appendix A. In addition, base mapping and digital land cover mapping of the study area were also reviewed.

Westwood completed a preliminary field review of the project area during June 10-12, 2008 and reviewed the proposed project construction area and locations of rare communities and species identified by the NDPRD in the field during July 13-17, 2009. The project construction area Survey Corridor included a 400-foot buffer around each proposed turbine, access road and cable routes. This Survey Corridor covered 4,192 acres within the study area. The project construction area was examined for the presence or absence of rare natural resources. Plant species were recorded and a list of species identified during the July 2009 field survey is provided in Appendix B. Representative photographs are presented in Appendix C.

3.0 RESULTS

3.1 USFWS Rare Species

Dakota Skipper

The Dakota skipper (*Hesperia dacotae*) is a rare butterfly that is a candidate for the federal endangered species list and is known to occur in Rolette County. The only known population of Dakota skippers in Rolette County is associated with the Holywater Spring site, which is located approximately 13 miles southeast of the Border Winds project area. Because the Dakota skipper requires high quality native prairie, it is unlikely to occur in the study area. The only native prairie identified in the study area is situated in the north-central portion of the study area (Exhibit 2). This predominantly wet prairie area will not

be affected by project construction except possibly for some very minor encroachment that may occur in association with improvement of roadways that adjoin the prairie area. The predominant cover type in the project area is small grains, which mostly consist of wheat, canola, and barley. There are few areas of native prairie associated with unplowed areas and pastures in around the project area. Based on the multiple field reviews and the scarcity of native prairie, the study area is not likely to support Dakota skippers. Because the project will avoid the single occurrence of native prairie within the study area, the project is very unlikely to affect Dakota skippers.

Whooping Crane

The whooping crane (*Grus americana*) is a prominent federally endangered bird species known to occur in Rolette County. Whooping cranes nest and spend summers in Canada's Wood Buffalo National Park. Their wintering range centers on the Aransas National Wildlife Refuge (NWR) on the Gulf Coast of Texas.

Recent surveys by U.S. Fish and Wildlife Service (USFWS) indicate approximately 266 cranes exist in the "Aransas-Wood Buffalo" (AWB) population. USFWS biologists believe that a single catastrophic event, such as a hurricane, could decimate the entire population. The population is most vulnerable during their 2,400-mile twice annual migration between the Aransas NWR and Wood Buffalo National Park. Collisions with power lines and other structures pose the greatest mortality risk during migration. Whooping cranes migrate during the day and use thermals to rise to and migrate at high altitudes.

Whooping crane migration stopover habitat represents the most critical habitat resource for whooping cranes in North Dakota. The Border Winds project lies at the eastern edge of a 200-mile-wide whooping crane migration corridor that was mapped in 2005. When evaluated more precisely based on more recent data, the Border Winds project lies about 12 miles outside the 180-mile-wide migration corridor that includes 95% of validated whooping crane observations, and approximately 100 miles outside the central portion of the migrations corridor, which includes 50% of the validated whooping crane sightings since 1943.

No whooping cranes or other federally listed avian species were observed during the Pre-construction Avian Survey and Risk Assessment completed for the project (Westwood Professional Services 2009). Sandhill cranes, which are sometimes used as a "surrogate" for whooping cranes because of their similar flight patterns and habitat preferences, were observed during the avian survey. Some of these observations consisted of groups of sandhill cranes flying well above the rotor-swept height at the typically high altitude of migrating cranes. Others were observed foraging in upland agricultural areas.

Given the project location and the project design that minimizes wetland impacts, adverse effects on whooping cranes are considered unlikely to occur. However, considering the wide migration path of whooping cranes, the potential for whooping crane collisions with wind turbines and transmission lines at Border Winds and other wind projects in North Dakota cannot be ruled out.

3.2 Other Plant and Animal Species of Concern

Four species of concern were identified by the NDPRD in a comment letter dated October 7, 2008 (Appendix A). These species have been previously recorded along the eastern side of the Turtle Mountains, in the northwestern portion of the Project. However, habitats for these rare species have the potential to occur elsewhere in the project area. The species of concern identified by the NDPRD are listed in Table 3-1 below.

Table 3-1: ND Parks and Recreation Species of Concern

Common Name	Scientific Name	Present within Survey Corridor
Few-flowered Spikerush	*Eleocharis pauciflora*	No
Indianpipe	*Monotropa uniflora*	No
Sheathed Pondweed	*Potamogeton vaginatus*	No
Chestnut-sided Warbler	*Dendroica pensylvanica*	No

Few-Flowered Spikerush

Few-flowered spikerush (*Eleocharis pauciflora*) has a status of 'S2S3' in North Dakota, indicating that it is imperiled or vulnerable in the state and there are factors, including rarity, restricted range, etc., that make it vulnerable to extinction. This species is found in sandy, moist meadows (Barkley et al. 1986). The NDPRD has a record of this species near a calcareous fen (see Section 3.3 below) approximately one mile north of St. John (Exhibit 2). Hydrology within this area has apparently changed since this species was most recently identified by the NDPRD in 1987 (see Appendix A). This area is apparently much drier than 22 years ago when few-flowered spikerush was recorded. It currently supports a community that is dominated by smooth brome (*Bromus inermis*), Kentucky bluegrass (*Poa pratensis*), timothy (*Phleum pratense*), and harebell (*Campanula rotundifolia*) with slow encroachment of shrubby vegetation including snowberry (*Symphoricarpos orbiculatus*). It is presumably due to changes in hydrologic regime that few-flowered spikerush and its habitat was not observed at this location. This species was also not observed within the Survey Corridor and it is unlikely that the project will impact this species.

Indianpipe

Indianpipe (*Monotropa uniflora*) is a species of concern in North Dakota with an 'S3' status indicating that it is vulnerable to extirpation within the state. It flowers from July through September and occurs in rich woods in the eastern Great Plains (Barkley et al. 1986). The NDPRD shows an occurrence of this species approximately 0.5 mile east of the City of St. John (Exhibit 2). No occurrences of Indianpipe plants were identified during the field survey at this location or within the Survey Corridor. Furthermore, appropriate habitat for this species was also not present within the Survey Corridor. Therefore, no impacts to Indianpipe are anticipated from the project.

Sheathed Pondweed

Sheathed pondweed (*Potamogeton vaginatus*) occurs in deep water of cold, clear lakes and is recorded in Bottineau and Rolette Counties in North Dakota (Barkley et al. 1986).

NDPRD lists the status of this species as 'S3,' indicating it is vulnerable to extirpation within North Dakota. There is a record of this species occurring approximately 0.5 mile west of the project within the Turtle Mountains, south of the City of St. John (Exhibit 2). This species may occur within the vicinity of the Survey Corridor, but the project is not likely to affect this pondweed due to the design that will avoid wetlands to the extent practicable and implement erosion control measures to protect water quality.

Chestnut-sided Warbler

The chestnut-sided warbler (*Dendroica pensylvanica*) has an 'S3' status according to NDPRD, indicating vulnerability to extirpation within the state. Habitat includes early-successional forests with deciduous tree species such as hazel, raspberry, maples, or alder for nest sites (NatureServe 2009). Fall migration to Central America begins from mid-August to late September with the birds returning to their northern breeding grounds beginning in mid-May. There is some indication from the literature that this species prefers large tracts of undisturbed habitat (NatureServe 2009). Indeed, NDPRD records show the chestnut-sided warbler within the heavily forested area of the Turtle Mountains, west of the project (Exhibit 2). This habitat, however, is not present within the Survey Corridor.

3.3 Significant Ecological Communities

In addition to the species of concern listed above, the NDPRD identified three significant ecological communities as historically occurring within or in the vicinity of the study area. These are presented in Table 3-2 and have occurred near or in association with the permanently flooded water body that flows into Gimby Creek, north of the City of St. John.

Table 3-2: ND Parks and Recreation Significant Ecological Communities

Community Name	Dominant Species	Present within Survey Corridor
Quaking Aspen/Choke Cherry Woodlands	quaking aspen, green ash, paper birch, bur oak, big tooth aspen choke cherry , golden currant, Saskatoon serviceberry, western snowberry, hazelnut, and rose, starry false lily of the valley, northern bedstraw, and wild sarsaparilla	Yes
Calcareous Fen	few-flowered spikerush, needle beaksedge, Ontario lobelia, fen grass of Parnassus, algae, moss, prairie sedge, common threesquare, and water sedge	No
Central Mesic Tallgrass Prairie	big bluestem, Kentucky bluegrass, needleleaf sedge, blue lettuce, sideoats grama, and little bluestem	No

Quaking Aspen/Choke Cherry Woodland

Woodlands are a limited resource in North Dakota and as with any unique community, have the potential to contain rare and unique flora and fauna. NDPRD has given the quaking aspen/choke cherry woodland community an indicator of 'S3,'indicating that it is vulnerable in North Dakota because of its rarity, restricted range, and other factors that make it vulnerable to extirpation. As reported in Faber-Langendoen (2001), this

community is found in the north-central Great Plains and extends from southwestern North Dakota north into Manitoba and Saskatchewan. In the eastern edge of its range, where the project is located, the quaking aspen/choke cherry woodland occurs on flat to rolling topography with dry-mesic to wet-mesic hydrology. The dominant species in the canopy is quaking aspen (*Populus tremuloides*) with green ash (*Fraxinus pensylvanica*), paper birch (*Betula papyrifera*), bur oak (*Quercus macrocarpa*), and big tooth aspen (*Populus grandidentata*) also present. A substantial shrub layer in this community contains choke cherry (*Prunus virginiana*), golden currant (*Ribes aureum* var. *villosum*), Saskatoon serviceberry (*Amelanchier alnifolia*), western snowberry (*Symphoricarpos occidentalis*), hazelnut (*Corylus* spp.), and rose (*Rosa* spp.). The herbaceous layer is vegetated with starry false lily of the valley (*Maianthemum stellatum*), northern bedstraw (*Galium boreale*), and wild sarsaparilla (*Aralia nudicaulis*).

A quaking aspen/choke cherry woodland is recorded by NDPRD approximately one mile north of the City of St. John (Exhibit 2). This community is dominated by quaking aspen and white oak (*Quercus alba*) with western snowberry, Saskatoon serviceberry, hawthorn (*Crataegus succulent*), hazelnut (*Corylus cornuta*), and rose (*Rosa acicularis* and *R. arkansana*) also occurring. Stands of woodlands dominated by aspen were found within the study area and occur as natural wooded areas and as shelterbelts near farmsteads. These are shown on Exhibit 2. These woodlands also provide nesting habitat for raptors, which is discussed in more detail under a separate cover (Westwood Professional Services 2009).

Quaking aspen/choke cherry woodlands must be 40 acres in size before they are recorded and tracked by NDPRD (Parks 2009). The project area does not contain quaking aspen/chock cherry stands that cover at least 40 contiguous acres. All woodlands within the project area are smaller than 40 acres and many are associated with shelterbelts. Woodlands and field shelterbelts will be avoided by project facilities wherever practicable. Although it is anticipated that turbines will be sited to avoid woodlands, the linear interconnected design of access roads and electrical collection cables will necessitate woodland and shelterbelt disturbance in a small number of locations during project construction.

Calcareous Fen

According to Faber-Langendoen (2001), calcareous fens are found where mineral-rich groundwater flow emerges from porous, glacial till. They can be found on slopes adjacent to wetlands and can be identified by shallow, interconnected pools lined with marl (a mixture of calcium carbonate, organic matter, and other minerals). The flora is typically comprised of fine-textured, short-statured species including few-flowered spikerush (*E. pauciflora*), needle beaksedge (*Rhynchospora scapillacea*), Ontario lobelia (*Lobelia kalmii*), and fen grass of Parnassus (*Parnassia glauca*). Algae such as *Chara* spp. and moss such as *Drepanocladus* spp. may be associated with open marl ponds. Certain species of taller monocots are also characteristic of these fens, including prairie sedge (*Carex prairea*), common threesquare (*Schoenoplectus pungens*), and water sedge (*Carex aquatilis*). This community type is found in seepage areas in the mixedgrass prairie regions of the northeastern and north-central Great Plains, particularly in the western Dakotas.

NDPRD has given calcareous fens an'S1' indicator, signifying that these fens are rare and critically imperiled.

A calcareous fen is mapped approximately one mile north of the City of St. John (Exhibit 2). As stated previously, the hydrology within this area has undergone changes since this community most recently identified in 1987 (see Appendix A). The fen is no longer present and this area is much drier than it apparently was in 1987. It now supports a vegetation community adapted to drier conditions, as described under the few-flowered spikerush heading in Section 3.2 of this report. The study area was also surveyed to identify locations of calcareous fens. However, no calcareous fens were observed within the study area and it is unlikely that the project will impact this resource.

Central Mesic Tallgrass Prairie

As described by Faber-Langendoen (2001), the central mesic tallgrass prairie is found on glaciated terrain throughout the Great Plains, extending from the Dakotas into Manitoba and Saskatchewan. It is found on crests and upper slopes of knolls in areas of gently rolling topography. It also occurs on north-facing and south-facing slopes with inclinations ranging from 10 to 20 degrees. This community is characterized by mid and tall grasses including big bluestem (*Andropogon gerardii*), Kentucky bluegrass (*Poa pratensis*), needleleaf sedge (*Carex duriuscula*), blue lettuce (*Lactuca tatarica*), sideoats grama (*Bouteloua curtipendula*), and little bluestem (*Schizachyrium scoparium*). NDPRD has given this community an indicator of 'S1,' denoting it is critically imperiled due to extreme rarity.

NDPRD has a record of this prairie type along 45th Ave NE, approximately one mile north of the City of St. John (Exhibit 2). This prairie was recorded in 1987, and due to agriculture and other land use practices, prairie no longer exists at this location. Instead, areas that are not under cultivation in the vicinity of the mapped prairie are dominated by smooth brome, a non-native grass. Additionally, the Survey Corridor was examined for characteristic species identified with the mesic tallgrass prairie. Except for the single prairie remnant discussed under the Dakota skipper heading in Section 3.1 of this report, no remnant species of mesic tallgrass prairies were observed within the Survey Corridor during the July 2009 field review. The single prairie remnant is a wet to wet-mesic prairie and no impacts to central mesic tallgrass prairies are anticipated as a result of the proposed project.

4.0 CONCLUSIONS

The Dakota skipper is a rare butterfly and a candidate for the federal endangered species list that is known to occur approximately 13 miles southeast of the Border Winds project area in Rolette County. Because the Dakota skipper requires high quality native prairie, it is unlikely to occur in the study area. The only native prairie identified in the study area will not be affected by project construction except possibly for some very minor encroachment that may occur in association with improvement of roadways that adjoin the prairie.

The whooping crane is a federally endangered bird species known to occur in Rolette County. No whooping cranes or other federally listed avian species were observed during the Pre-construction Avian Survey and Risk Assessment completed for the project. However, sandhill cranes have been used as surrogates for whooping crane observations because of similar habitat use patterns and sandhill cranes were observed during the avian survey. Given the project location at the eastern edge of the whooping crane migration corridor and the project design that minimizes wetland impacts, adverse effects on whooping cranes are considered unlikely to occur.

The Border Winds project is not expected to affect four species of concern identified by the NDPRD. Few-flowered spikerush, Indianpipe, sheathed pondweed, and the chestnut-sided warbler were not identified to occur within the study area during the July 2009 field survey. Habitat for the few-flowered spikerush, Indianpipe, and chestnut-sided warbler is generally lacking in the project Survey Corridor. Sheathed pondweed may occur in the vicinity of the Survey Corridor, but the project is not likely to affect this species because the project design will avoid wetlands to the extent practicable and implement erosion control measures to protect water quality.

The project is not expected to adversely affect significant ecological communities identified by the NDPRD. No calcareous fens were identified within the study area. The only prairie remnant identified in the project area will be avoided except for potential peripheral encroachment associated with possible improvement of existing roadways that adjoin the prairie. Although woodlands containing quaking aspen occur in the study area, none of the woodlands cover at least 40 contiguous acres. Woodlands will be avoided by project facilities to the extent practicable. However, the linear interconnected design of access roads and electrical collection cables will necessitate woodland or shelterbelt disturbance in a small number of locations during project construction. Risks to raptors will be minimized by providing an 0.25-mile buffer between wind turbines and identified raptor nests.

5.0 LITERATURE CITED

Barkley, T.M., R.E., Brooks, R.L. McGregor, and E.K. Schofield, eds. 1986. Flora of the Great Plains. University Press of Kansas. 1392 pp.

Faber-Langendoen, D., ed. 2001. Plant Communities of the Midwest: Classification in an Ecological Context. Association for Biodiversity Information, Arlington, VA. 61 pp. + appendix (705 pp.).

NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life, *Dendroica pensylvanica*. Version 7.1. NatureServe, Arlington, Virginia. Available http://www.natureserve.org/explorer. (accessed July 24, 2009).

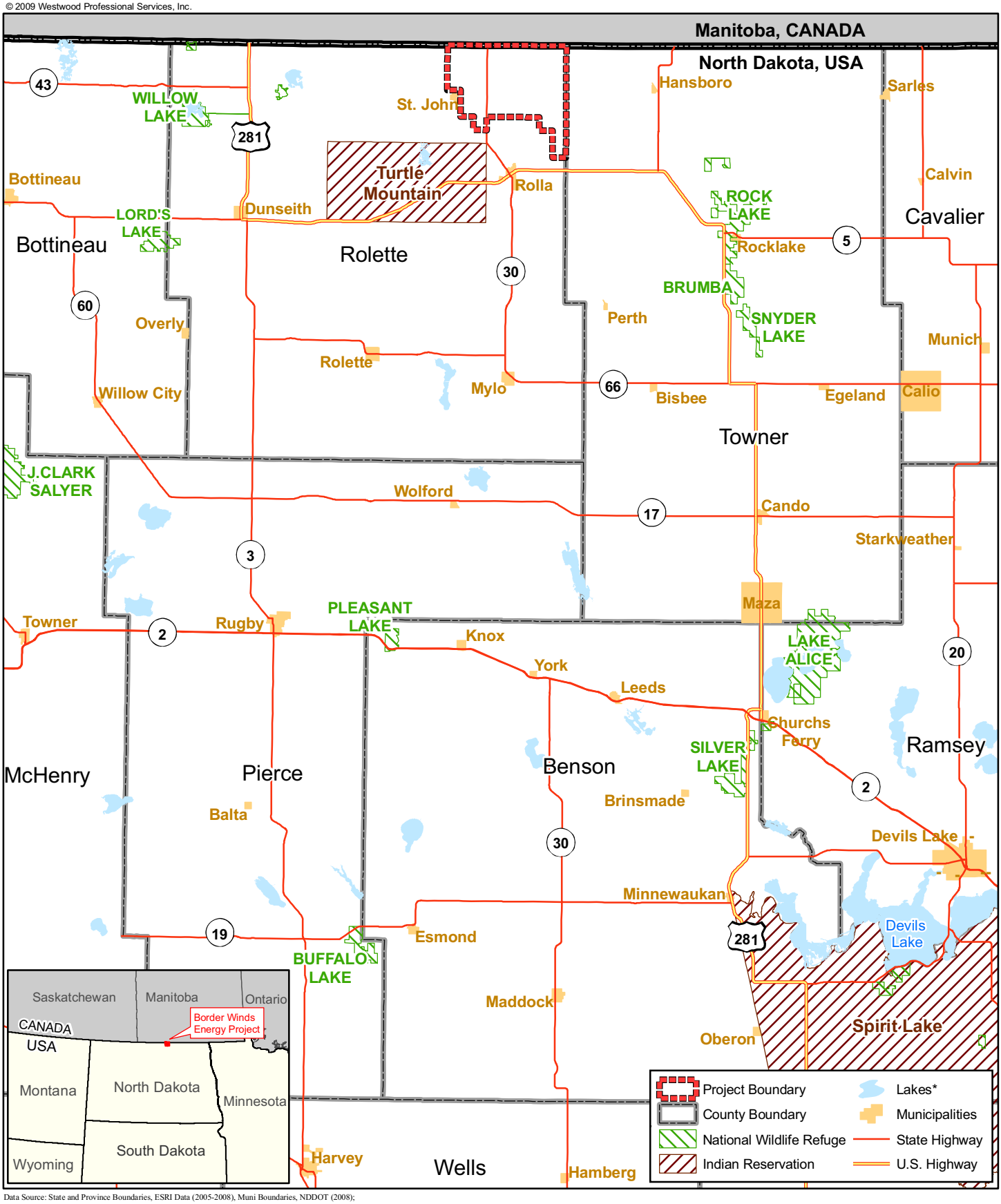
Parks, Justin. 2009. Biologist, North Dakota Parks and Recreation Department. Personal communication with Amy Linnerooth, Westwood Professional Services. August 10, 2009.

Westwood Professional Services. 2009. Pre-Construction Avian Survey and Risk Assessment. Prepared for Sequoia Energy U.S. Inc. September 2009.

Exhibits

Border Winds Energy Project
Rolette County, North Dakota

This page is intentionally blank



Data Source: State and Province Boundaries, ESRI Data (2005-2008), Muni Boundaries, NDDOT (2008); North Dakota Geologic Survey US PLS System (1994), Roads, NDDOT (2008); County Boundaries, North Dakota State Water Commission (2002); Westwood (2009); Tribal Lands, NDDOT (2003); USFWS Region 6, National Wildlife Refuge, USFWS Region 6, Division of Planning (2006); USGS and US EPA NHD (various dates).

Border Winds Energy Project

Rolette County, North Dakota

Project Vicinity

EXHIBIT 1

Westwood Professional Services, Inc.
7699 Anagram Drive
Eden Prairie, MN 55344

PHONE 952-937-5150
FAX 952-937-5822
TOLL FREE 1-888-937-5150

www.westwoodps.com

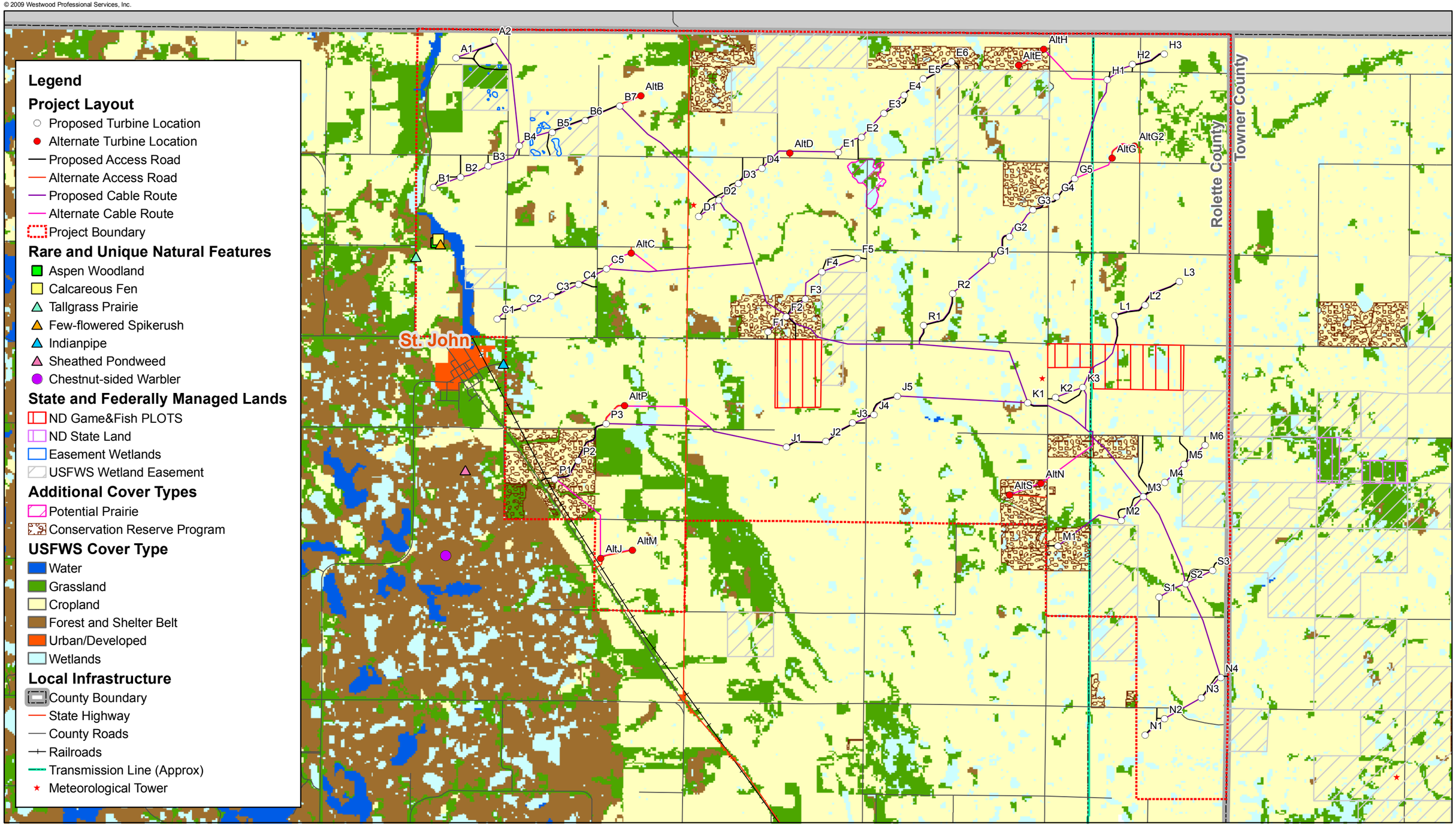
*Note: Lakes shown have an area greater than 2.5 sq. km.

N

0 10 Miles

Map Document: (P:\20071163\gis\psc2\20071163loc01A_fig1.mxd)
9/25/2009 -- 1:06:10 PM

This page is intentionally blank



Data Source(s): State of North Dakota (2008), North Dakota Parks and Recreation, ESRI data (2006), USFWS Land Class (2001), USFWS (2007), Westwood (2009).

Border Winds Energy Project

Rolette County, North Dakota

Land Cover, Natural Resource Lands, and Rare Natural Resources

EXHIBIT 2

Westwood Professional Services, Inc.
7699 Anagram Drive
Eden Prairie, MN 55344

PHONE 952-937-5150
FAX 952-937-5822
TOLL FREE 1-888-937-5150

www.westwoodps.com

N

0 1 Miles

Map Document: (P:\20071163\gis\20071163rte01B.mxd)
9/24/2009 – 3:33:53 PM

This page is intentionally blank.

Appendix A

U.S. Fish and Wildlife Service and North Dakota Parks and Recreation Correspondence

Border Winds Energy Project

Rolette County, North Dakota

This page is intentionally blank

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
3425 Miriam Avenue
Bismarck, North Dakota 58501

JUN 18 2008

Mr. Robin P. Bouta
Westwood Professional Services
7699 Anagram Drive
Eden Prairie, Minnesota 55344

Dear Mr. Bouta:

This is in response to your May 13, 2008, request for environmental information in relation to the proposed Border Winds Renewable Energy Project in Rolette and Towner Counties, North Dakota. The proposed 100 megawatt (MW) project includes 42 wind turbines, each with a capacity of 2.4-MW and associated infrastructure. At this time, it is not known if this project will entail funding or permitting by a Federal agency. We offer the following comments under the authority of and in accordance with the Migratory Bird Treaty Act (16 U.S.C. 703 et seq.), Bald and Golden Eagle Protection Act (BGEPA) (16 U.S.C. 668-668d, 54 Stat. 250), the Endangered Species Act (ESA) (16 U.S.C. 1531 et seq.), the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57), and the National Environmental Policy Act (NEPA) (Pub. L. 91-190, 42 U.S.C. 4321-4347, January 1, 1970, as amended.

The U.S. Fish and Wildlife Service (Service) holds certain resources in trust and manages them for the benefit of the American people. These resources include migratory birds, inter-jurisdictional fish, federally-listed threatened and endangered species of plants and animals and their habitats, and units of the National Wildlife Refuge system. When planning an activity, project proponents should give careful consideration to potential impacts to these trust resources and compliance with the laws mentioned above. Additional information is provided below.

Migratory Birds

Adequate consideration for avian resources early in the site evaluation process can help to minimize impacts and facilitate project review. Although current wind turbine technology and proper siting can help to minimize the incidence of avian deaths due to blade, aerial line, and tower strikes, the potential for direct mortality of some migratory birds will remain. Wind power developers, in concert with the Service, can help to ensure that projects proceed with as little impact to migratory birds as possible. This can be accomplished by gathering information on avian resources as they relate to project siting and by implementing measures to minimize impacts to migratory birds from the construction and operation of the wind facility. The Service's Interim Wind Turbine Siting Guidelines are enclosed to assist in project planning

(enclosure 1). We encourage project proponents to conduct a Potential Impact Index (PII) analysis to assist in the selection of a wind power site that minimizes the potential to impact migratory birds. Please inform this office whether or not you plan to use the Service's interim guidelines in selecting your site and if not, whether you intend to use a different method to assess avian resources and impacts to migratory birds.

To minimize the electrocution hazard to birds, the Service, with support from the Rural Utilities Service, recommends that new or updated overhead power lines be constructed in accordance with the current guidelines for preventing raptor electrocutions. The recommended guidelines can be found in "Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 1996". To increase power line visibility and reduce bird fatalities resulting from collisions with power lines, the Service recommends new power lines that cross or run adjacent to rivers or large wetlands be modified according to "Mitigating Bird Collisions with Power Lines: The State of the Art in 1994". Both publications can be obtained by writing or calling the Edison Electric Institute, P.O. Box 266, Waldorf, Maryland 20604-0266, (1-800-334-5453) or visiting their website at www.eei.org.

Threatened and Endangered Species

A list of federally threatened and endangered species that may occur within the proposed project's area of influence is enclosed (enclosure 2). This list fulfills requirements of the Fish and Wildlife Service under Section 7 of the Endangered Species Act.

If a Federal agency authorizes, funds, or carries out a proposed action, the responsible Federal agency, or its delegated agent, is required to evaluate whether the action "may affect" listed species or critical habitat. If the Federal agency or its designated agent determines the action "is likely to adversely affect" listed species or modify critical habitat, the responsible Federal agency shall request formal section 7 consultation with this office. If the evaluation shows a "no effect" determination on listed species or critical habitat, further consultation is not necessary. If a private entity receives Federal funding for a construction project, or if any Federal permit or license is required, the Federal agency may designate the fund recipient or permit applicant as its agent for purposes of section 7 consultation.

Section 10(a)(1)(B) of the ESA allows non-Federal parties planning activities that have no Federal nexus, but which could result in the incidental taking of listed animals, to apply for an incidental take permit. (A Federal nexus exists whenever an activity is conducted, funded, or licensed or permitted by a Federal agency). The application must include a habitat conservation plan (HCP) laying out the proposed actions, determining the effects of those actions on affected federally-listed fish and wildlife species and their habitats (often including proposed or candidate species), and defining measures to minimize and mitigate adverse effects.

The Aransas Wood Buffalo Population (AWBP) of whooping cranes is the only self-sustaining migratory population of whooping cranes remaining in the wild. These birds breed in the

wetlands of Wood Buffalo National Park in Alberta and the Northwest Territories of northern Canada, and overwinter on the Texas coast. Whooping cranes in the AWBP annually migrate through North Dakota during their spring and fall migrations.

Endangered whooping cranes have been documented using roosting habitat in the vicinity of the proposed wind resource area. The proposed site is located outside the primary 180 mile-wide migration corridor that includes 95% of all confirmed whooping crane sightings in North Dakota (enclosure 3). The presence of suitable roosting and feeding habitat for whooping cranes in the wind resource area and confirmed whooping crane sightings, document the potential for whooping crane presence in the proposed wind resource area. A wind energy project in this wind resource area has the potential to affect whooping cranes during their annual spring and fall migration through North Dakota. Potential effects may be direct (e.g. collision mortality) or indirect (e.g. avoidance of the site resulting in cranes seeking alternate habitat). The interactions of whooping cranes with wind turbines and wind farms are currently not fully known, although it is expected that these large birds with relatively low maneuverability are susceptible to mortality via collisions with turbines. Currently, collisions with power lines are the greatest known source of mortality for fledged whooping cranes, and have accounted for the death or serious injury of at least 46 whooping cranes since 1956.

The Service does not believe that a determination of "no effect" is appropriate for this wind resource area because of, but not limited to, the presence of migrating whooping cranes in this area. However, due to the project location outside of the main migration corridor with only 5% of all confirmed whooping crane sightings in North Dakota, the Service believes that with suitable conservation measures included as part of the project, a determination of "may effect, not likely to adversely affect" for the whooping crane may be appropriate. Effective conservation measures to avoid or reduce potential impacts to whooping cranes include, but are not limited to: burying all new electrical transmission lines; if new lines cannot be buried, marking all new overhead transmission lines with visual marking devices such as aviation marker balls, swinging plates, spiral vibration dampeners, or swan flight diverters.

Fish and Wildlife Service Property Interests

The Service administers Waterfowl Production Areas owned in fee title as well as wetland and grassland easements throughout North Dakota. A review of Service realty records indicate Service property interests are located in the planning area. In your letter, you state that you are currently coordinating with David Bolin, J. Clark Salyer National Wildlife Refuge, and Neil Shook, Devils Lake Wetland Management District, regarding the proposed project's potential impacts to Service property interests. If Service lands are proposed to be impacted, the Service will be required to conduct an analysis of impacts and examine alternatives, pursuant to NEPA.

High Value Habitat Avoidance

The proposed project area is located in the Drift Prairie region of North Dakota and includes areas of native mixed-grass prairie. Since the 1800s, North Dakota has lost over 70 percent of its native grasslands, primarily due to crop production. The Service recommends avoiding construction or disturbance to native prairie areas.

Native prairie has significant natural resource values including:

1. Provides habitat for a number of migratory and resident grassland birds whose populations are declining.
2. Provides nesting habitat for millions of waterfowl.
3. Contains 200-300 plant species, which provide genetic diversity important to agriculture and medicine.
4. Provides habitat for thousands of insects including the Dakota skipper, a candidate species for listing under the ESA, and other butterflies (Ex: Regal fritillary, Tawny crescent).
5. Crucial for soil and water conservation.
6. Provides recreational opportunities (hunting, bird watching/wildlife observation, hiking).
7. Living laboratories for scientific research.

Our review of NWI maps indicate that wetland areas are located within the project area. NWI data can be accessed directly by visiting their website at (wetlands.fws.gov). Section 404 of the Clean Water Act regulates placement of fill materials in certain wetlands. A Corps of Engineers' (Corps) 404 permit may be required if fill material will be placed in aquatic sites, including wetlands. Contact Mr. Dan Cimarosti, Regulatory Office, Corps of Engineers, 1513 South 12th Street, Bismarck, North Dakota 58504 (701-255-0015), to determine their permit requirements. If a 404 permit is required, the Service will provide recommendations on this project to the Corps.

Other high value wildlife habitat types in North Dakota include wooded draws and riparian forests. We recommend that you avoid construction of wind towers and appurtenant facilities in the above habitat types whenever possible.

Construction activities should be conducted in a manner that will minimize impacts to the wildlife and the existing habitat in the project area. To help avoid impacts, we recommend that you:

- Schedule construction for late summer or fall/early winter so as not to disrupt waterfowl or other wildlife during the breeding season (February 1 to July 15). If work is proposed to take place during the breeding season or at any other time which may result in the take of migratory birds or active nests, the Service recommends that the project proponent arrange to have a qualified biologist conduct a field survey of the affected habitats to determine the absence or presence of nesting migratory birds. If nesting migratory birds are found, we request you contact this office, suspend construction, or take other

measures, such as maintaining adequate buffers, to protect the birds until the young have fledged. The Service further recommends that field surveys for nesting birds, along with information regarding the qualification of the biologist(s) performing the surveys, and any avoidance measures implemented at the project site, be throughly documented and that such documentation be shared with the Service and maintained on file by the project proponent at least until such time as construction on the proposed project has been completed.

- Avoid construction in native prairie, if possible, and reseed disturbed native prairie with a comparable native grass/forb seed mixture. Obtain seed stock from nurseries within 250 miles of the project area to insure the particular cultivars are well adapted to the local climate.
- Minimize grassland disturbance by using fewer, larger turbines and limiting new road construction.
- Use underground transmission lines between turbines, as well as to the primary substation.
- Locate appurtenant facilities to avoid placement of fill in wetlands along the route.
- Install and maintain appropriate erosion control measures to reduce sedimentation and water quality degradation of wetlands and streams near the project area.
- Replace unavoidable wetland losses with functionally equivalent wetlands.

Research, Monitoring, and Assessment

We encourage project proponents to conduct collision monitoring studies designed to determine the effect of several factors, such as site selection, turbine designs, the layout of wind plants, wind plant operations, habitat alteration, and changes in available perching and nesting sites, on bird deaths. The Avian Subcommittee of the National Wind Coordinating Committee (NWCC) has developed a guidance document to assist wind energy developers in designing studies that will produce credible and comparable results of avian interaction with wind power plants. The NWCC document, "Studying Wind Energy/Bird Interactions: A Guidance Document. Metrics and methods for determining or monitoring potential impacts on birds at existing and proposed wind energy sites," can be obtained by contacting the National Wind Coordination Committee, c/o RESOLVE, 1255 23rd Street, Suite 275, Washington, D.C. 20037, or by visiting their website at (www.nationalwind.org).

Given the Service requirements and recommendations above, as well as possible unforeseen issues that may arise, we encourage you to build sufficient planning time for coordination with the Service into your project time line. Thank you for the opportunity to comment. If you require further information as project planning proceeds, please contact Terry Ellsworth of my staff, or contact me directly, at (701) 250-4481, or at the letterhead address.

Sincerely,

Jeffrey K. Towner

Jeffrey K. Towner
Field Supervisor
North Dakota Field Office

Enclosures (3)

cc: Project Leader, Devils Lake WMD
(Attn: N. Shook)
Refuge Manager, J. Clark Salyer NWR
(Attn: D. Bolin)
Regulatory Office, Army Corps of Engineers, Bismarck
(Attn: D. Cimarosti)
ND Public Service Commission, Bismarck
Director, ND Game & Fish Department, Bismarck
(Attn: M. McKenna)

FEDERAL ENDANGERED AND CANDIDATE SPECIES
FOUND IN
ROLETTE COUNTY, NORTH DAKOTA
June 2008

ENDANGERED SPECIES

Birds

Whooping crane (Grus Americana): Migrates through west and central counties during spring and fall. Prefers to roost on wetlands and stockdams with good visibility. Young adult summered in North Dakota in 1989, 1990, and 1993. Total population 140-150 birds.

CANDIDATE SPECIES

Invertebrates

Dakota skipper (Hesperia dacotae): Found in native prairie containing a high diversity of wildflowers and grasses. Habitat includes two prairie types: 1) low (wet) prairie dominated by bluestem grasses, wood lily, harebell, and smooth camas; 2) upland (dry) prairie on ridges and hillsides dominated by bluestem grasses, needlegrass, pale purple and upright coneflowers and blanketflower.

FEDERAL ENDANGERED CANDIDATE SPECIES
FOUND IN
TOWNER COUNTY, NORTH DAKOTA
June 2008

ENDANGERED SPECIES

Birds

Whooping crane (Grus Americana): Migrates through west and central counties during spring and fall. Prefers to roost on wetlands and stockdams with good visibility. Young adult summered in North Dakota in 1989, 1990, and 1993. Total population 140-150 birds.

John Hoeven, Governor
Douglass A. Prchal, Director

1600 East Century Avenue, Suite 3
Bismarck, ND 58503-0649
Phone 701-328-5357
Fax 701-328-5363
E-mail parkrec@nd.gov
www.parkrec.nd.gov

October 7, 2008

Amy Linnerooth
Westwood Professional Services
7699 Anagram Drive
Eden Prairie, MN 55344

Re: Border Winds Wind Energy Project

Dear Ms. Linnerooth:

The North Dakota Parks and Recreation Department (the Department) has reviewed the above referenced project proposal to construct the Border Winds Wind Energy Project located near the City of Rolla in Rolette and Towner Counties.

Our agency scope of authority and expertise covers recreation and biological resources (in particular rare plants and ecological communities). The project as defined does not affect state park lands that we manage. We do have some concerns regarding Land and Water Conservation Fund sites possibly within or adjacent to the project area. Projects in Rolla (project numbers 38-00018 and 38-00388) and Towner County (project number 38-00070) have received assistance from the federal Land and Water Conservation Funds and are under protection of section 6(f) of the LWCF Act. Any property taken from within the 6f boundaries of these areas must be replaced with property of equal market value. Should any public or private utilities need to be added or relocated on the LWCF recreational lands, the NDPRD must be consulted prior to any action taken. Please contact Michelle Vetter (701-328-5364 or mvetter@nd.gov) if additional LWCF information is needed.

The North Dakota Natural Heritage biological conservation database has been reviewed to determine if any plant or animal species of concern or other significant ecological communities are known to occur within an approximate one-mile radius of the project area. Based on this review, several historical occurrences have been identified within or adjacent to the project area including: *Populus tremuloides/Prunus virginiana woodland* (aspen woodland), *Carex spp. – Triglochin maritime – Eleocharis pauciflora fen* (calcareous fen), *Eleocharis pauciflora* (few-flowered spikerush), *Andropogon gerardii – Schizachyrium scoparium transition tallgrass prairie* (Central mesic tallgrass prairie), *Momotropa uniflora* (indianpipe), *Potamogeton vaginatus* (sheathed pondweed), and *Dendroica pensylvanica* (chestnut-sided warbler). Historical occurrences indicate that habitat may still exist for these species and communities or other rare, threatened, sensitive or endangered species. Please see attached spreadsheet and map for more specific information on these species. We defer further comments regarding animal species to the North Dakota Game and Fish Department and the United States Fish and Wildlife Service.

Because this information is not based on a comprehensive inventory, there may be species of concern or otherwise significant ecological communities in the area that are not represented in the database. The lack of data for any project area cannot be construed to mean that no significant features are present. The absence of data may indicate that the project area has not been surveyed, rather than confirm that the area lacks natural heritage resources.

Given the potential for not only habitat disturbance and disruption but threat to nesting, feeding and migratory bird and bats in the area we suggest that all efforts be made to avoid impacts to wildlife species and their habitats. In an effort to avoid or minimize impacts to wildlife and their habitats we encourage proper evaluation of all potential wind energy sites. To identify and assess adverse impacts to wildlife we suggest pre and post construction avian and bat monitoring studies be conducted.

The Department recommends that the project be accomplished with minimal impacts and that all efforts be made to ensure that critical habitats not be disturbed in the project area to help secure rare species conservation in North Dakota. Regarding any reclamation efforts, we recommend that any impacted areas be revegetated with species native to the project area.

It is our policy to charge out-of-state requests for data services including data retrieval, data analysis, manual and computer searches, packaging and collection of data. An invoice for services provided has been enclosed.

Thank you for the opportunity to comment on this project. Please contact Kathy Duttenhefner (701-328-5370 or kgduttenhefner@nd.gov) of our staff if additional information is needed.

Sincerely,

Jesse Hanson

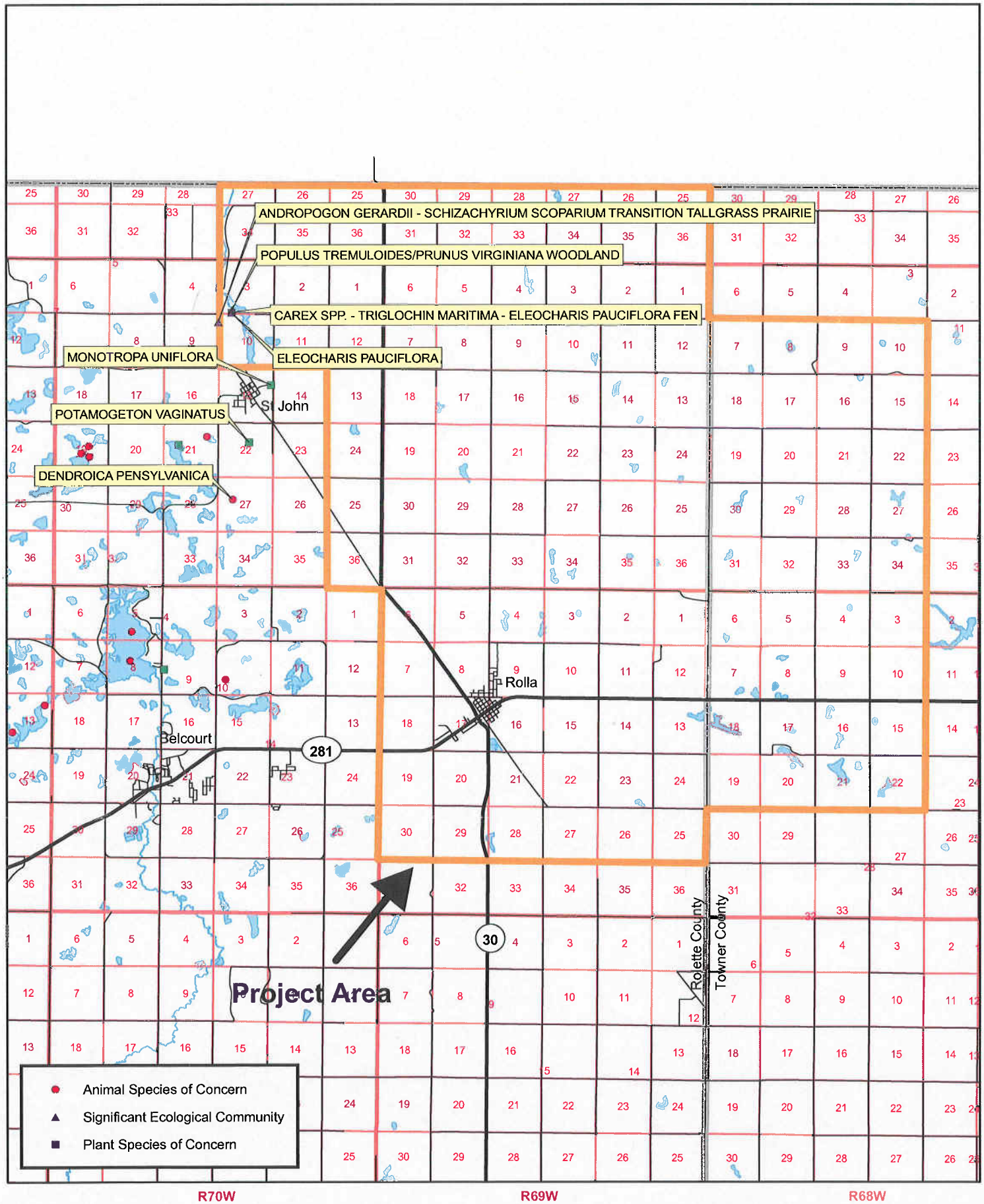
Jesse Hanson, Coordinator
Planning and Natural Resources Division

R.USNDNHI*2066

North Dakota Natural Heritage Inventory
Species of Concern and Significant Ecological Communities

State Scientific Name	State Common Name	Township & Range	Section	TRS Notes	State Rank	Global Rank	Federal Status	Last Observation
POPULUS TREMULOIDES/PRUNUS VIRGINIANA WOODLAND	ASPEN WOODLAND	163N070W	3	SW4	S3			1987-08-18
CAREX SPP. - TRIGLOCHIN MARITIMA - ELEOCHARIS PAUCIFLORA FEN	CALCAREOUS FEN	163N070W	3	SW4	S1			1987-08-18
ELEOCHARIS PAUCIFLORA	FEW-FLOWERED SPIKERUSH	163N070W	3	SW4	S2S3	G5		1987-08-18
ANDROPOGON GERARDII - SCHIZACHYRIUM SCOPARIUM TRANSITION TALLGRASS PRAIRIE	CENTRAL MESIC TALLGRASS PRAIRIE	163N070W	9	NE4NE4	S1			1987-08-18
MONOTROPA UNIFLORA	INDIANPIPE	163N070W	15		S3	G5		1902-08-24
POTAMOGETON VAGINATUS	SHEATHED PONDWEED	163N070W	22		S3	G5		1902-08-24
DENDROICA PENSYLVANICA	CHESTNUT-SIDED WARBLER	163N070W	27		S3	G5		

North Dakota Natural Heritage Inventory
Species of Concern and Significant Ecological Communities



North Dakota Parks & Recreation Department
North Dakota Natural Heritage Inventory
October 2008

Appendix B

Plant Species Observed in the Project Area during July 2009

Border Winds Energy Project

Rolette County, North Dakota

This page is intentionally blank

Plant Species Observed in the Project Area during July 2009		
Growth Form	**Common Name**	**Scientific Name**
Grasses and other Monocots	Creeping Bentgrass	*Agrostis stolonifera*
	American Sloughgrass	*Beckmannia syzigachne*
	Smooth Brome	*Bromus inermis*
	Water Sedge	*Carex aquatilis*
	Golden Sedge	*Carex aurea*
	Rosy Sedge	*Carex convoluta*
	Crested Sedge	*Carex cristatella*
	Knotsheath Sedge	*Carex retrorsa*
	Matted Spikerush	*Eleocharis intermedia*
	Daggerleaf Spikerush	*Eleocharis lanceolata*
	Blue Wildrye	*Elymus glaucus*
	American Mannagrass	*Glyceria grandis*
	Fowl Mannagrass	*Glyceria striata*
	Foxtail Barley	*Hordeum jubatum*
	Northern Green Rush	*Juncus alpinoarticulatus*
	Narrow Panicled Rush	*Juncus brevicaudatus*
	Common Rush	*Juncus effusus*
	Reed Canary Grass	*Phalaris arundinaceae*
	Timothy	*Phleum pratense*
	Kentucky Bluegrass	*Poa pratensis*
	Hardstem Bulrush	*Schoenoplectus acutus*
	Panicled Bulrush	*Scirpus microcarpus*
Forbs	Yarrow	*Achillea millefolium*
	Bluebell Bellflower	*Campanula rotundifolia*
	Northern Bedstraw	*Galium boreale*
	Wood Lily	*Lilium philadelphicum*
	Yellow Sweetclover	*Melilotus officinalis*
	Canada Goldenrod	*Solidago canadensis*
	Dandelion	*Taraxicum officinale*
	Field Pennycress	*Thlaspi arvense*
	Yellow Salsify	*Tragopogon dubius*
	Cattail	*Typha latifolia*
	American Vetch	*Vicia americana*
	Mountain Death Camas	*Zigadenus elegans*
	Golden Alexander	*Zizia aurea*
Trees and Shrubs	White Sagebrush	*Artemisia ludoviciana*
	Beaked Hazelnut	*Corylus cornuta*
	Hawthorn	*Crataegus succulenta*
	Quaking Aspen	*Populus tremuloides*
	White Oak	*Quecus alba*
	Smooth Sumac	*Rhus glabra*
	Currant	*Ribes sp.*
	Prickly Wild Rose	*Rosa acicularis*
	Prairie Rose	*Rosa arkansana*
	Bebb Willow	*Salix bebbiana*
	Western Snowberry	*Symphoricarpos occidentalis*

This page is intentionally blank

Appendix C

Representative Site Photographs from July 2009 Field Visit

Border Winds Energy Project

Rolette County, North Dakota

This page is intentionally blank

View of NDPRD record of quaking aspen/choke cherry woodland looking west.
This community is representative of other woodlands observed in and near the project area.

View of NDPRD record of calcareous fen looking north.
Site no longer supports fen; no other fens observed.

View of NDPRD location of Central Mesic Tallgrass Prairie looking north.
No species associated with this community type were observed at this location.

View of NDPRD location of Indianpipe record looking southwest.
This species was not observed at this location or within the study area.