REPORT

Certificate of Corridor Compatibility and Route Permit Application

Application to the North Dakota Public Service Commission

November 1, 2006

Submitted to:

Tatanka Wind Power LLC
A wholly-owned subsidiary of
Acciona Wind Energy USA LLC
Attn: Marcus V. da Cunha
Senior Project Manager
101 North Wacker Drive, Suite 610
Chicago, IL 60606
Phone: 312-673-3003
Fax: 773-326-4056
Email: mdacunha@ehn-usa.com

Submitted by:

Westwood Professional Services, Inc.
Attn: Ronald P. Peterson
Director of Environmental Services
7699 Anagram Drive
Eden Prairie, MN 55344
Phone: 952-937-5150
Fax: 952-937-5822
Email: ron.peterson@westwoodps.com

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1. INTRODUCTION

1.1 Compliance with Chapter 49-22

This is an Application for a Certificate of Corridor Compatibility filed by Tatanka Wind Power, LLC ("Tatanka"), a Delaware limited liability company whose sole member is Acciona Wind Energy USA ("Acciona"). Although separate and apart from, it is intended to be considered in conjunction with Tatanka's Route Permit Application. In these Applications, Tatanka is seeking siting approval for a 230,000 Volt (230 kV) transmission line and associated interconnection substation in North Dakota.

Chapter 49-22 of the North Dakota Energy Conversion and Transmission Facility Siting Act requires that an application for a Certificate of Corridor Compatibility be completed for any transmission facility that is located, constructed, and operated within North Dakota.

Application guidance has been prepared by the North Dakota Public Service Commission (PSC) to assist Utilities in the application for a Certificate of Corridor Compatibility in accordance with Chapter 49-22 of the North Dakota Century Code (NDCC) and Chapter 69-06-08-02 (Transmission Facility Corridor and Route Criteria) of the North Dakota Administrative Code (NDAC, amended July 1, 2006). This application has been prepared in accordance with these statutes and rules and in the format suggested by the guidelines prepared by the PSC.

Application guidance is shown in *italics* throughout this document.

The following table outlines the information needed to complete the Certificate of Corridor Compatibility Application and the location of that information within this document.

Table 1
PSC Required Information and Corresponding Sections

PSC Guidelines	Description of Guidelines	Corresponding Chapter
	PSC Guidelines for Energy Conversion and Transmission Facility Siting	
Section A	Description	2
1	Type: Describe the type of transmission facility addressed in this application. The description shall include the purpose of the facility and the technology to be employed.	1.2, 2.1
2	Product: Describe the type, source, and final destination of the product to be transmitted by the proposed facility.	2.2
3a	Size and Design: Provide the following description of the size and design of the ELECTRICAL, but not limited to:	2.3
3a(1)	Width of Right-of-Way;	2.3.1
3a(2)	Estimated Span Lengths;	2.3.2
3a(3)	Anticipated Type of Structure;	2.3.3
3a(4)	Approximate Length of Facility;	2.3.4
3a(5)	Voltage; and	2.3.5
3a(6)	The Requirement for and General Location of any New Associated Facilities.	2.3.6
3b	Provide a description of the size and design of the PIPELINE facility including, but not limited to, the following:	N/A
4	Time Schedule: Provide the anticipated time schedule for the accomplishment of the following events:	2.4
4a	Certificate of Corridor Compatibility;	Table 1
4b	Route Application;	Table 1
4c	Route Permit;	Table 1
4d	Construction Start Date;	Table 1
4e	Construction End Date; and	Table 1
4f	In-Service Date.	Table 1
Section B	Studies	3
	Provide a copy of any evaluative studies or assessments of the environmental impact of the proposed facility submitted to any federal, regional, state, or local agency.	Appendix B
Section C	Need for Facility	4
1	An analysis of the need for the proposed facility based on present and projected demand for the product transmitted by the facility, including the most recent system studies supporting the analysis of the need.	4.1
2	A description of any feasible alternative methods of serving the need.	4.2
3	A statement justifying any deviations from the most recent Ten-Year Plan which the proposed facility may present.	4.3
Section D	Location	5
1	Select a study area, which includes the proposed corridor, of sufficient width to enable the Commission to evaluate the factors addressed in Chapter 49-22-09.	5.1, 5.2

PSC Guidelines	Description of Guidelines	Corresponding Chapter
Factor 1	Available research and investigations relating to the effects of the location, construction, and operation of the proposed facility on public health and welfare, natural resources, and the environment.	5.1.1
Factor 2	The effects of new energy conversion and transmission technologies and systems designed to minimize adverse environmental effects.	5.1.2
Factor 3	The potential for beneficial uses of waste energy from a proposed energy conversion facility.	5.1.3
Factor 4	Adverse direct and indirect environmental effects which cannot be avoided should the proposed site or route be designated.	5.1.4
Factor 5	Alternatives to the proposed site, corridor, or route that are developed during the hearing process and that minimize adverse effects.	5.1.5
Factor 6	Irreversible and irretrievable commitments of natural resources should the proposed site, corridor, or route be designated.	5.1.6
Factor 7	The direct and indirect economic impacts of the proposed facility.	5.1.7
Factor 8	Existing plans of the state, local government, and private entities for other developments at or in the vicinity of the proposed site, corridor, or route.	5.1.8
Factor 9	The effect of the proposed site or route on existing scenic areas, historic sites and structures, and paleontological or archaeological sites.	5.1.9
Factor 10	The effect of the proposed site or route on areas that are unique because of biological wealth or because they are habitats for rare and endangered species.	5.1.10
Factor 11	Problems raised by federal agencies, other state agencies, and local entities.	5.1.11
2	Identify and map the criteria that led to the proposed corridor location within the study area.	5.3
3	Discuss the relative value of each criteria and how the proposed corridor location was selected giving consideration to all criteria.	5.4
4	The criteria to be evaluated shall include at a minimum all of the following which are within the study area:	5.5
4a	Exclusion areas;	5.5.1
4b	Avoidance areas;	5.5.2
4c	Selection criteria;	5.5.3
4d	Policy criteria;	5.5.4
4e	Design and construction limitations; and	5.5.5
4f	Economic considerations.	5.5.6
5	Discuss the general mitigative measures that will be taken to minimize adverse impacts that result from a route location in the proposed corridor.	5.6
6	List the qualifications of the people in the various disciplines that contributed to the corridor study.	5.7
7	Maps	5.8

PSC Guidelines	Description of Guidelines	Corresponding Chapter
7a	Map the criteria within the study area showing the proposed corridor. Several different criteria may be shown on each map, depending on the map scale and the density and nature of the criteria. Minimum map scale shall be one-half inch = 1 mile. All maps shall be at the same scale unless otherwise specified.	5.8.1
7b	Furnish one (1) set of mylar maps, separate from the application, of the same scale as the criteria maps and showing the same basic features as the criteria maps, including the study area, but not the proposed route or location of any new associated facilities.	5.8.2

1.2 Project Summary

The Applicant (Tatanka) proposes locating, constructing, and operating a 230 kV electric transmission line in North Dakota. The proposed radial electric transmission line is located approximately 22 miles west of Ellendale, North Dakota and extends approximately 12 miles north between the North Dakota/South Dakota border and the existing Montana-Dakota Utilities Wishek-Ellendale 230 kV transmission line (MDU line), approximately 1.5 miles west of State Highway 56 in Dickey County (Exhibit 1). The transmission line will be sited in lightly populated, rural portions of Albertha and Spring Valley Townships of Dickey County, and Cold Water and Beresina Townships in McIntosh County.

The proposed transmission line will extend through Dickey and McIntosh counties and connect to the MDU transmission line on the north end, and a collection substation within the Tatanka Wind Farm on the south end in South Dakota. MDU is a member of the Midwest Independent System Operator, which is a member of the National Electric Reliability Council. A proposed tap substation will occupy up to 5 acres and be built at the point of interconnection between the proposed 230 kV Tatanka transmission line and the MDU 230kV system.

A corridor area was studied to find the most appropriate transmission line route and tap location. The corridor area is referred to as the "transmission corridor". The transmission corridor is approximately 10,610 acres in size and spans 17 sections in two counties (Exhibit 2). Most of the corridor is located in western Dickey County on a landscape feature referred to as the Missouri Coteau. The Missouri Coteau is characterized by end moraine hills, non-integrated drainage, numerous sloughs, and lakes. Unlike other areas of the state, the Missouri Coteau has been slow to transition to cultivated agriculture due to the predominance of rocky soils, poor drainage in depressions, and higher than normal density of wetlands (USFWS 2003). The most dominant land uses on the Missouri Coteau include cattle ranching and farming, which is consistent with the land uses observed within the transmission corridor. The development of the transmission facility is not anticipated to result in a significant change in land use, and the land will retain its remote, rural characteristics following the installation of the project.

Table 2 shows the Township, Range, and Sections of the transmission corridor.

Table 2
Tatanka Transmission Line
Corridor Location

County Name	Township	Range	Sections
Dickey	129N	R66W	6, 7, 18, 19, 30, and 31
Dickey	130N	R66W	5, 8, 17, 18, 19, 30, and 31
McIntosh	129N	R67W	1 and 12
McIntosh	130N	R67W	25 and 36

2. DESCRIPTION (SECTION A)

2.1 Type

Guidance: Describe the type of transmission facility addressed in this application. The description shall include the purpose of the facility and the technology to be employed.

The proposed transmission facility consists of a 230,000 volt (230 kV) electric transmission line, approximately 12 miles long and an interconnection tap. The tap will be located at the northern terminus of the transmission line where it will connect with the MDU facility. The proposed transmission line will supply a maximum of 180 megawatts (MW) of renewable energy to the power grid, and provide additional reliability and regulation to the system. The conductors and shield wires will be supported above ground by wooden H-frame tangent structures, as further described throughout this Application (Appendix A).

2.2 Product

Guidance: Describe the type, source, and final destination of the product to be transmitted by the proposed facility.

The proposed facility is designed to have a capacity of 200,000 Kilovolt-amperes (KVA) of renewable electrical energy, and an operating voltage level of 230,000 Volts (230 kV).

The source of the energy is the proposed Tatanka Wind Farm (Exhibit 3). Tatanka Wind Farm will consist of up to 120 wind-powered generators to yield a net capacity of up to 180 MWs. The generators will be 1.5MW turbines built by Acciona. The proposed generators and associated facilities will be sited on portions of Wacker Township in McPherson County, South Dakota, and Albertha Township in Dickey County, North Dakota. Approximately 60 of the generators, with a maximum generating capacity of approximately 90 MWs would be located within the State of North Dakota. These wind turbines are 270 feet high and 15 feet in diameter at the base, and are mounted on a single steel tower secured to a concrete foundation. Energy is converted as the wind passes over the blades creating lift and causing the rotor to turn. The turbines are interconnected by both a fiber communication system and an underground 34.5kV electrical power collection system within the wind farm. A collection substation will be built within the South Dakota portion of the wind farm to step up the 34.5kV voltage of the underground electrical power collection system to that of the proposed 230kV transmission line.

The proposed transmission line will supply up to 180 MW of affordable, predictable, renewable energy to the power grids of Montana, North Dakota, South Dakota, Minnesota and Wyoming. The project will also provide additional reliability and regulation to the system.

2.3 Size and Design

Guidance: Provide a description of the size and design of the ELECTRICAL facility including, but not limited to the following:

Final designs for the proposed facility will not be completed until January 2007. Preliminary size and design information is described below.

2.3.1 Width of Right-of-Way

The new transmission line will be sited along existing roads, to the extent possible, to minimize impacts to farming and ranching operations and natural resources within the transmission line corridor. The right-of-way (ROW) will be approximately 150 feet wide, with 75 feet of ROW on each side of the proposed transmission line support structures. This ROW will be obtained along the 12 mile length of the proposed facility. Additional temporary staging areas outside of the 150-foot corridor may be necessary during construction and installation of the support structures, conductors and shield wire. These areas would not be graded or otherwise disturbed, but would be used for temporary laydown and cribbing operations.

2.3.2 Estimated Span Lengths

The proposed facility will have an average span length of approximately 700 feet between the wooden 2-Pole, H-frame tangent structures. The conductor ground clearance will vary depending on terrain, but a minimum ground clearance of 26.2 feet will be maintained, at a conductor temperature of 90 degrees Centigrade, over cultivated or range land.

2.3.3 Anticipated Type of Structure

The structure type will be an H-frame tangent variety with an average height of 70 feet and a pole diameter of 2.5 to 3 feet. Poles will be set into the ground roughly 9.5 to 11.5 feet with a direct embedment foundation. The structures will support three, Aluminum Core Steel Reinforced (ACSR) phase conductors, with a minimum size of 795 kcmil, and two, 3/8-inch diameter overhead shield wires. Diagram TH-230 in Appendix A illustrates the H-frame tangent structure that will be used to support the 230-kV transmission line.

A typical tangent structure will consist of two wood poles spaced 19.5' apart with two cross arms mounted horizontally. Polymer suspension insulators will be attached at the ends and center of the arms and will hang vertically with the phase conductor attached to the bottom of the insulator (see diagram drawing TH-230). Full length treated Douglas fir wood poles for all structures will be 30" in diameter and will be directly embedded in a 48" hole and backfilled with an engineered select backfill material. For small angles from 3 degrees to approximately 15 degrees, the structure will be TH-231. This type of structure requires guy leads to support the angle. For larger angles, and full tension dead-ends, the structure will be similar to diagrams TH-232, TH-233, TH-234 and TH-235, respectively. These structures will require guying.

Estimated number of full tension dead-ends - 5
Estimated number of running angles - 8
Estimated number of tangents - 85

Structure poles are typically buried 10 percent of the pole length plus 2 feet (i.e., an 80 foot pole would be embedded approximately 10 feet) and the structures are spaced approximately 700 feet apart. Using these spacing guidelines, the project will result in 7.5 structures per mile, or a total of approximately 98 structures. Temporary construction disturbance at each pole site

is anticipated to average 5,000 square feet (a 50 X 100-foot area), although actual excavation will be confined to 4' diameter holes for the poles and/or guy anchors. All activities will be confined to the 150-foot ROW.

Electrical conductors provide the medium for flow of electrical energy. The conductor consists of strands of steel cable encased by aluminum strands. The steel cable provides the tensile strength to support the conductor; the aluminum conducts the electrical current. The line will be strung with three 795 kcmil ACSR 26/7 "Drake" phase wires or equivalent and two overhead galvanized 3/8" steel ground wires, one of which will have an enclosed 24 fiber optic wire. Fiber optics will be used for utility data communications.

Insulators and hardware used on the line would be standard design to provide nearly corona-free operation, as well as reduce audible noise and radio and television interference. The typical suspension structure would be configured with three vertical polymer insulators attached to the cross arm and spaced horizontally 19.5' apart.

The North Dakota portion of the line will start in the southwest corner of section 31, emanating from a horizontal dead-end structure just inside the collection substation fence in South Dakota. The line will be situated several feet from the 33-foot township ROW with span lengths of approximately 700 feet. The line will travel north from the collection substation on the east or west side of range line between R66W and R67W approximately ten miles. From here, it will turn east approximately 1.5 miles. The line will then turn north for 2 miles where it will terminate in a new interconnection tap to an existing MDU transmission line.

2.3.4 Approximate Length of Facility

The proposed 230kV transmission line will connect to the MDU transmission line and extend approximately 12 miles through Dickey and McIntosh Counties in North Dakota.

2.3.5 Voltage

The proposed facility is intended to energize to a level of 230,000 volts, phase to phase, or approximately 133,000 volts from any phase to ground.

2.3.6 The Requirement for and General Location of any New Associated Facilities

The project will require that a tap be constructed at the point of interconnection between the proposed 230 kV transmission line and the existing MDU 230kV system. This tap will be located just south of the connection point of the two lines within Section 5 of Township 130N, Dickey County. The proposed tap will require up to 5 acres of area for construction of supporting electrical equipment.

Construction Details

Tatanka is planning to construct a 230kV tap to accommodate the interconnection of the Tatanka Wind Farm to the MDU 230kV transmission line. An area of land approximately 470 feet by 750 feet will be disturbed to construct a fenced yard, switching station, and a control building. A fenced area of approximately 300 feet by 600 feet will contain the proposed tap equipment. The 230kV equipment within the yard will consist of power circuit breakers and associated disconnect switches and instrument transformers. A bus system on steel structures will link the 230kV equipment and the existing transmission line.

After the ROW is prepared, structures will be framed and erected at each structure site, and each structure will need to be accessed several times prior to operation. This access will include construction crews and equipment, such as material transporting trucks, digger/derrick trucks to auger holes for the structures, a crane for structure setting, and crew vehicles and bucket trucks for wire stringing and clipping operations.

In addition to the ROW along the route, temporary construction easements will be obtained from landowners for the duration of construction. These construction easements will be limited to any additional staging or laydown areas required outside of the transmission line ROW. Where possible, staging and laydown areas will be located within the ROW and limited to previously disturbed or developed areas. The Tatanka Wind Farm collection substation site (located in South Dakota) may be used for a temporary laydown area with no site work or grading, just temporary cribbing. This area totals approximately 17 acres. Two acres will be used for the collection substation and the remaining area will be used as a laydown area.

After structures have been erected, conductors will be installed by establishing stringing setup areas within the ROW. These stringing setup areas will be located approximately every two miles along the route. Conductors will be installed between setup areas using a "controlled tension method," which ensures that the cable comes off the reel at a constant tension without backlashes. Conductor stringing operations will also require brief access to each structure to secure the conductor wires to the insulators or shield wire clamps once final line sag is established.

Stringing equipment generally consists of wire pullers, tensioners, conductor reels, shield wire reels, and sheave blocks. Stringing operations consist of pulling lightweight cables through the stringing sheaves located at every structure site. This cable will be used to pull the conductors through the sheaves under sufficient tension to keep the conductor from coming into contact with the ground. Temporary guard or clearance poles will be installed over existing distribution or communication lines, streets, roads, highways, railways, or other obstructions after any necessary notifications are made and or permits obtained. This ensures that conductors will not obstruct traffic or come into contact with existing energized conductors or other cables, and protects the conductors from damage. Once a section of a line has been installed, temporary structures will be removed, holes backfilled and the area of disturbance reseeded to produce the same cover that was removed. Spoil removed during boring activities will be reused where possible.

2.4 Time Schedule

Guidance: Provide the anticipated time schedule for the accomplishment of the following events: Certificate of Corridor Compatibility, Route Application, Route Permit, Construction Start Date, Construction Completion, In-Service Date.

Tatanka anticipates the In-Service Date for the transmission line will be about one year after obtaining the Certificate of Corridor Compatibility and Route Permit from the PSC, but no later than December 1, 2007. Table 3 below outlines the major events in the permitting, design, and construction of the transmission facility. Tatanka hopes to receive the Certificate of Corridor Compatibility and Route Permit by the end of December 2006, with construction completion and the In Service Date of the facility being late in 2007. While the actual retirement date is unknown, the life of the facility is anticipated to be a minimum of 20 years.

Table 3
Schedule of Major Events

Major Event	Estimated Month of Completion
Easement Acquisition	October 2006
Certificate of Corridor Compatibility Filed	November 2006
Route Permit Application Filed	November 2006
Corridor and Certificate of Route Permit Obtained from PSC	December 2006
Complete Line Design	January 2007
Begin Staking Structures	April 2007
Begin Vegetation Clearing	May 2007
Construction Start Date	May 2007
Complete Clearing	July 2007
Construction Complete	November 2007
Test Operations	November 2007
In Service Date	December 1, 2007
Retirement of Facility	Unknown

3. STUDIES (SECTION B)

Guidance: Provide a copy of any evaluative studies or assessments of the environmental impact of the proposed facility submitted to any federal, regional, state, or local agency.

Evaluative studies were conducted to assess the potential impact of the proposed project on natural and cultural resources, microwave interference, and environmental conditions. Appendix B provides information on Natural Resource Studies (birds and vegetation). The Microwave Interference Study that was completed by Comsearch to address potential microwave interference is provided in Appendix C.

A Phase I Environmental Site Assessment was also completed by Great Plains Environmental to identify recognized environmental conditions (RECs) within the transmission corridor. In addition to the factors listed in Sections 5.1, 5.2, and 5.3, Tatanka conducted a review of topography, location of existing transmission facilities (lines and substations), location of communities and airfields, land ownership, and economics. Further evaluation of these factors is discussed in the following sections.

4. NEED FOR FACILITY (SECTION C)

4.1 Need Analysis

Guidance: Provide an analysis of the need for the proposed facility based on present and projected demand for the product transmitted by the facility, including the most recent system studies supporting the analysis of the need.

The Certification of Corridor Compatibility and Route Permit would authorize the construction of a 230kV radial electric transmission line that would service the 120 wind power generators proposed at the Tatanka Wind Farm in McPherson County, South Dakota and Dickey County, North Dakota. The project would allow the supply of a maximum of 180 MW of affordable, reliable, and renewable energy to the power grid via the existing MDU 230 kV transmission line, which currently services four states.

Wind turbines provide a viable alternative to combustible fuels such as coal and natural gas and avoid the waste issues often associated with coal ash or spent nuclear fuel. Wind energy is renewable and lacks the emissions produced by conventional energy production. Demand for clean, renewable energy is increasing throughout the United States. Overall, U.S. wind-generating capacity expanded by 36 percent in 2005, reaching 9,149MW, and could increase by an additional 50 percent this year

(Brown 2006). According to the American Wind Energy Association (AWEA), North Dakota ranks No. 1 in the United States for potential wind energy in terms of average Megawatts of capacity.

The State of North Dakota recognizes the demand for renewable energy is increasing. Governor John Hoeven signed a comprehensive package of legislation on April 22, 2005 designed to accelerate production of wind energy and biofuels, as well as enhance the transmission of infrastructure necessary to get both renewable and conventional energy to market. The legislation created a North Dakota Transmission Authority charged with promoting new and substantial investment in transmission lines. Several provisions such as trading renewable energy credits, raising the jurisdictional threshold for siting facilities, and reducing the maximum siting fee were also included to encourage development of renewable energy.

4.2 Alternatives

Guidance: Describe any feasible alternative methods of serving the need.

The need for energy in these four states could potentially continue to be met by traditional sources of energy such as coal and natural gas. However, as discussed in Section 4.1, North Dakota is interested in pursuing alternative sources of energy such as wind. Part of that effort is the advancement of new transmission facility projects, which would allow energy developed by wind farms to be transported to end users.

Alternative routes for the transmission line were assessed; however, the proposed route was determined to represent the optimal location because it minimizes environmental impacts while providing a relatively direct connection to the existing MDU transmission line. The location of the transmission line was largely driven by the property easements held for the Tatanka Wind Farm. The general corridor for the transmission line was identified between the proposed Tatanka Wind Farm and the nearest connecting 230 kV transmission line (MDU T-Line). Tatanka further narrowed the potential route by using the North Dakota Public Service Commission Guidelines for Transmission Facility Siting. Criteria evaluated included: exclusion and avoidance areas, selection and policy criteria, design and construction limitations and economic considerations. The analysis of these criteria were used to determine the most reasonable and prudent route. The evaluation of alternatives was a fluid operation that occurred throughout the planning process, culminating in the proposed route. The proposed route is shown on (Exhibit 2).

4.3 Ten-Year Plan

Guidance: Provide a statement justifying any deviations from the most recent Ten-Year Plan which the proposed facility may present.

Tatanka A will file a 10-year plan with the Commission by December 2007.

5. LOCATION (SECTION D)

This section addresses how the transmission corridor and route were selected, and highlights the factors considered important from an environmental and human health perspective. General impacts and mitigation measures are covered, as well as the PSC's Corridor Application Criteria.

5.1 Factors Considered

Guidance: Select a study area, which includes the proposed corridor, of sufficient width to enable the Commission to evaluate the factors addressed in NDCC Chapter 49-22-09, which lists 11 factors designed to aid the Commission in its evaluation and designation of corridors and routes.

This section discusses the actions Tatanka has taken or will take to address the 11 factors addressed in NDCC Chapter 49-22-09.

5.1.1 Available research and investigations relating to the effects of the location, construction, and operation of the proposed facility on public health and welfare, natural resources, and the environment.

Research and investigations relating to the effects of the location, construction and operation of the proposed facility are referenced throughout this document and Appendix B and C.

5.1.2 The effects of new energy conversion and transmission technologies and systems designed to minimize adverse environmental effects.

The 230kV transmission line will provide grid connection for the proposed Tatanka Wind Farm that will consist of up to 120 wind-powered generators to yield a net capacity of up to 180 MWs. Wind generators provide affordable renewable energy and generate no emissions. Wind turbines provide a viable alternative to combustion of fuels such as coal and natural gas and avoid the waste issues that might be associated with coal ash or spent nuclear fuel. Unlike traditional power plants with relatively small and contained footprints (usually less than 100 acres including a buffer zone) Tatanka will require a much larger area; in this case over 10,000 acres. However, the majority of the land is required to allow for the spacing between the wind turbines. Each individual turbine and its access road will occupy less than 3/4 of an acre, making the wind farm less disruptive to the natural environment than other types of power plants.

Acciona has a strong commitment to the communities in which they operate, and they demonstrate this through creating projects that produce clean energy in those communities. Acciona aims for their projects to be constructed with the greatest possible care for the environment, creating added value in the regions where they operate and winning public support for their facilities.

5.1.3 The potential for beneficial uses of waste energy from a proposed energy conversion facility.

This factor is not applicable to this transmission facility project.

5.1.4 Adverse direct and indirect environmental effects which cannot be avoided should the proposed site or route be designated.

Development of the transmission line will not result in significant adverse direct and indirect effects on the environment. The potential for indirect and direct environmental effects to wetlands, woodlands, wildlife, and residences were considered during the siting of the transmission line within the route corridor. Environmental effects may include temporary displacement of wildlife and a minor loss of habitat due to construction activities. Displacement effects would be temporary because wildlife would have surrounding habitat available, and could return once construction is complete. The amount of habitat loss would be limited to the physical area needed for the transmission poles, guy anchors, and substations. In the event jurisdictional wetland habitat would be impacted, Tatanka will obtain all necessary federal, state, and local permits to authorize wetland alterations prior to project construction. Permanent impacts to jurisdictional wetland will be mitigated according to the applicable requirements.

Direct and indirect environmental effects are detailed in the appropriate sections of this document.

5.1.5 Alternatives to the proposed site, corridor, or route that are developed during the hearing process and that minimize adverse effects.

Alternatives to the proposed route, while not in plan form, have been analyzed during the planning process. The route in this application is considered to be the most sensitive to the surrounding environment, economically favorable, and the one that best complies with the criteria specified in the North Dakota Public Service Commission's guidelines for transmission facility siting.

5.1.6 Irreversible and irretrievable commitments of natural resources should the proposed site, corridor, or route be designated.

Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects the uses of these resources have on future generations. Irreversible commitments are those resources that cannot be reversed (e.g. mining for ore, extinct species). Irretrievable commitments are resources lost for a period of time but can be reversed.

The irreversible or irretrievable commitments of natural resources created by the siting of the proposed facility, corridor, or route are primarily associated with construction of the facilities. Construction of the facilities will require the use of wood, aggregate resources, and metals. Environmental protection measures will be employed as agreed to with local governments and agencies as necessary.

5.1.7 The direct and indirect economic impacts of the proposed facility.

Direct economic effects include the short-term impacts associated with removing land within the transmission corridor from agricultural and ranching production to build the transmission line. This, however, is anticipated to be relatively short-term as these operations will remain viable once the support structures for the transmission line have been installed. Because landowners will be compensated through easement payments for any reduction of production within these areas by Tatanka, construction and installation should not have longstanding repercussions on these industries.

Tatanka will provide jobs and other sources of income. Local economies will benefit from the income to landowners, the income to local businesses during construction, the additional jobs and associated personnel required for long term operations, and the additional tax base for the counties and school districts. Wages and salaries paid to local contractors will contribute to the total personal income of the region. Additional personal income will be generated for state and county residents by circulation and recirculation of dollars paid out by Tatanka. Construction materials and supplies for the proposed facility will be purchased from local suppliers whenever feasible, which will translate into a positive impact from construction activities along the route.

The transmission line will ultimately service the Tatanka Wind Farm, which will enhance the economy of this rural community, providing steady income through lease payments to farmers and other landowners. Similar to the transmission line, farmers can grow crops or raise cattle next to the support structures. While the proposed wind farm and transmission facility extend over a large geographical area, the actual footprint of these facilities covers only a very small portion of the land, making them an ideal way for farmers to earn additional income.

5.1.8 Existing plans of the state, local government, and private entities for other developments at or in the vicinity of the proposed site, corridor, or route.

Tatanka is not aware of any existing development plans in the vicinity of the corridor. Land use surrounding the project corridor consists of private farms, and there are no municipalities in the immediate vicinity of the project corridor. The cities of Kulm, Forbes, and Leola are 10-15 miles away and do not appear to be expanding or developing at this time. The nearest sizeable development to the project corridor is occurring in Ellendale, roughly 22 miles east of the project corridor. The Ellendale City Council recently approved the purchase of 40 acres of land and has secured an option to buy an additional 28.6 acres adjacent to the initial purchase. Initially, lots of approximately one acre in size will be available for sale for housing construction. This land is located more than 20 miles east of the transmission corridor and will not be impacted by the project.

5.1.9 The effect of the proposed site or route on existing scenic areas, historic sites and structures, and paleontological or archaeological sites.

Tatanka has initiated cultural resources investigations along the proposed project transmission line and substation locations. Tatanka's consultant has completed a Class I review of historic and archeological records through the North Dakota State Historical Preservation Office (NDSHPO) and local historic societies. No recorded sensitive areas were found in the transmission corridor. A copy of the Class I correspondence letter to the NDSHPO, and the agencies' response, is included in Appendix D. A Class III intensive survey of the proposed transmission route and substation location is underway and the results will be used to determine if any areas should be avoided. To date, no obvious issues have been identified. Once this survey is complete, a report will be submitted to the NDSHPO for approval.

Tatanka's consultant provided notification regarding the wind farm and transmission line project to 12 native tribes from North and South Dakota, and Minnesota. The tribes were asked to comment on the overall proposed project. They were also asked for information on unrecorded archaeological sites or Traditional Cultural Properties (Appendix D). The following 12 tribes were contacted:

- Three Affiliated Tribes
- Standing Rock Sioux Tribe
- Spirit Lake Sioux Tribe
- Turtle Mountain Band of Chippewa
- Sisseton Wahpeton Oyate
- Cheyenne River Sioux Tribe
- Crow Creek Sioux Tribe
- Lower Sioux Tribe
- Flandreau-Santee Sioux Tribe
- Lower Brule Sioux Tribe
- Oglala Sioux Tribe
- Rosebud Sioux Tribe
- Shakopee-Mdewakantan Sioux
- Prairie Island Sioux
- Upper Sioux Tribe

The Sisseton Wahpeton Oyate chose to send a tribal member to observe and assist with the cultural resource work. He is currently working closely with the cultural resource crew as the Class III intensive survey continues.

Consistent with the Act and the Guidelines, archaeological, cultural, and historic resources will be avoided by Tatanka's construction team to the maximum extent practical.

5.1.10 The effect of the proposed site or route on areas that are unique because of biological wealth or because they are habitats for rare and endangered species.

As part of the site review process, Tatanka contacted the North Dakota Parks and Recreation Department (NDPRD) to conduct a formal review of the sections in the transmission corridor for rare plants and ecological communities. The NDPRD manages the Natural Heritage Inventory, and is charged with identifying North Dakota's natural features and establishing priorities for their protection. The NDPRD manages a database of over 4,000 records of important species and habitats identified and catalogued in the state. The NDPRD also searches records from the Natural Areas Registry which is a listing 50 private land sites that are worthy of preservation. This is a voluntary program for landowners who may enroll in the program and receives recognition and management advice from program staff.

The NDPRD responded by letter and indicated that no threatened and endangered species or unique habitats were identified within the transmission corridor; however, they did indicate there is limited survey data for the area. The NDPRD recommended that any impacted areas be revegetated with species native to the project area (Appendix F).

The NDPRD was also asked to respond to a request for information on the North Dakota portion of the proposed Tatanka Wind Farm. The inquiry resulted in a response letter from NDPRD indicating the wind farm portion of the project does not affect state park lands that they manage or Land and Water Conservation Fund recreation projects the agency coordinates. This letter identified three significant ecological communities and one animal species of concern. However, these records are located approximately 3 to 5 miles east of the identified transmission corridor.

The U.S. Fish and Wildlife Service Ecological Services office in Bismarck, North Dakota was also contacted by email, letter, and telephone regarding known, unique, rare, and endangered species or communities within the transmission corridor. A response letter addressing the project was received on October 24, 2006, and is included in Appendix F. The letter emphasized the importance of considering the potential effects of the project on migratory birds; wetland, prairie, and woodland habitats; and threatened and endangered species.

Tatanka has completed a bird and vegetation study which considers impacts to migratory birds, raptors, and native grasslands (Appendix B). A summary of the methods and findings of this report is provided in Section 5.2.4 of this report.

The USFWS letter addresses the importance of wetland, native grassland, and woodland resources. As discussed in greater detail in Section 5.5.3.8 of this report, it is the intent of Tatanka to avoid impacts to wetlands, native prairies, and woodlands to the extent practicable. Should it be necessary to impact any of these areas during the course project construction, Tatanka is committed to replacing these areas in cooperation with the U.S. Fish and Wildlife Agency, the U.S. Army Corps of Engineers, and the North Dakota Game and Fish Department.

While USFWS records did not specifically identify federally threatened and endangered species within the project corridor, a list of species that may occur within the proposed project area was provided for both Dickey and McIntosh Counties. The following species were listed in the letter: Whooping crane, gray wolf, bald eagle, and piping plover (including critical habitat).

Whooping cranes are known to migrate through North Dakota, and the USFWS letter indicates the estimated population in the state is between 140 to 150 individuals. Whooping cranes may be found within the proposed transmission corridor; however, their numbers are small and the path of migration is primarily within the western and central counties of the state. Given the proposed transmission corridor is on the extreme eastern edge of the typical flyway for this species, the typical heights at which cranes fly, and the north/south orientation of the proposed transmission line, it is unlikely the proposed facility will present a significant issue for this species.

Gray wolf is only an occasional visitor to North Dakota and is most frequently observed in the Turtle Mountain area of the state. The Turtle Mountain region is located along the North Dakota/Manitoba border near the towns of Bottineau and Dunseith. Given the distance of the proposed transmission corridor from typical Gray wolf habitat, it does not appear likely the project would affect this species.

Bald eagles migrate statewide, but primarily along major river courses. According to the USFWS, eagles concentrate along the Missouri River during winter and are known to nest in floodplain forests. The transmission corridor is located nearly 80 miles east of the Missouri River where the majority of bald eagle activity is observed in the state. The transmission corridor is primarily located in agricultural cropland and ranching areas on the Missouri Coteau. There is no known floodplain forest and limited roosting habitat adjacent to large bodies of open water within the transmission corridor. Consequently, it is unlikely the proposed transmission will affect habitats heavily used by bald eagle.

Piping plover nests on midstream sandbars of the Missouri and Yellowstone Rivers and along shorelines of saline wetlands. Critical habitat for this species has not been identified by the USFWS within the transmission line corridor, but has been identified west of the proposed project. Given that suitable saline wetland habitat does not exist in the transmission corridor, and the relative proximity of the Missouri and Yellowstone Rivers to the project, it appears unlikely that the transmission line will affect the habitat of the species.

5.1.11 Problems raised by federal agencies, other state agencies, and local entities.

NDAC § 69-06-01-05 lists 21 state agencies that are entitled to notice of Tatanka's proposed action. Notifications were sent to state and federal agencies that have a material interest in the proposed project. Notifications were sent via email on October 2, 2006 and hardcopies were mailed on October 3, 2006. The agency letters sent are compiled in Appendix E. Agency response letters are organized by the date received in Appendix F. Regulatory agencies did not raise any significant concerns with the proposed transmission corridor.

The following agencies listed in Table 4 were contacted for comment on the proposed project.

Table 4
Agencies Contacted for Comment

State and Federal Agencies and Officers	Email
Mr. Gary R. Ness, Director Aeronautics Commission P.O. Box 5020, Bismarck, ND 58502-5020	GNESS@nd.gov
Mr. Wayne Stenehjem Attorney General , State Capitol 600 East Boulevard Avenue, Department 125, Bismarck, ND 58505	wstenehjem@nd.gov
Mr. Roger Johnson, Agricultural Commissioner North Dakota Department of Agriculture 600 East Boulevard Avenue, Department 602, Bismarck, ND 58505-0020	ndda@nd.gov
Dr. Terry Dwelle, M.D., State Health Officer North Dakota Department of Health 600 East Boulevard Avenue, Bismarck, ND 58505-0200	tdwelle@nd.gov
Ms. Carol K. Olson, Executive Director North Dakota Department of Human Services 600 East Boulevard Avenue, Dept 325, Bismarck, N.D. 58505-0250	socols@nd.gov
Ms. Lisa Fair McEvers Commissioner of Labor North Dakota Department of Labor 600 East Boulevard Avenue, Dept 406, Bismarck, ND 58505-0340	labor@nd.gov
Mr. Wayne Kutzer, Director North Dakota Department of Career and Technical Education State Capitol 15th Floor 600 East Boulevard Avenue, Dept 270, Bismarck, ND 58505-0610	wkutzer@nd.gov
Mr. Shane Goettle, Commissioner North Dakota Department of Commerce, Economic Development & Finance Division, Century Center 1600 East Century Avenue, Suite 2, PO Box 2057, Bismarck, ND 58503	sgoettle@nd.gov
Ms. Kim Christianson, Energy Program Manager Division of Community Services, Century Center 1600 East Century Avenue, Suite 2, PO Box 2057, Bismarck, ND 58503	kchristianson@state.nd.us
Mr. Michael McKenna, Division Chief North Dakota Game and Fish, Conservation and Communications Division 100 N. Bismarck Expressway, Bismarck, ND 58501-5095	mmckenna@nd.gov
Mr. Randy Kreil, Division Chief North Dakota Game and Fish, Wildlife Division 100 N. Bismarck Expressway, Bismarck, ND 58501-5095	rkreil@nd.gov
Mr. Edward C. Murphy, State Geologist North Dakota Geological Survey 600 East Boulevard Avenue, Bismarck, ND 58505-0840	emurphy@nd.gov
Ms. Jill A. Shaffer, Ecologist United States Geological Survey, Northern Prairie Wildlife Research Center 8711 37th St. Southeast, Jamestown, ND 58401-7317	jshaffer@usgs.gov

State and Federal Agencies and Officers	Email
Governor John Hoeven Governor's Office, Dept. 101 600 E. Boulevard Avenue, Bismarck, ND 58505-0001	jhoeven@nd.gov
Mr. John Thompson, District Engineer North Dakota Highway Department, District 2 - Valley City 1524 Eighth Avenue SW, Valley City, ND 58072-4200	jthompso@nd.gov
Mr. Merlan E. Paaverud, Jr., Director State Historical Society of North Dakota 612 East Boulevard Avenue, Bismarck, ND 58505-0830	mpaaverud@state.nd.us
Ms. Cheryl Kulas, ND Indian Affairs Commission Executive Director North Dakota Indian Affairs Commission, 1st Floor - Judicial Wing 600 East Boulevard Avenue, Bismarck, ND 58505-0300	ckulas@state.nd.us
Job Service North Dakota PO Box 5507, Bismarck, ND 58506-5507	jsndweb@nd.gov
Mr. Rick Larson, Director of Minerals Management North Dakota Land Department, Energy Development Impact Office PO Box 5523, Bismarck, ND 58506-5523	rdlarson@nd.gov
Mr. Rick Larson, Director of Minerals Management Energy Development Impact Office, c/o North Dakota State Land Department PO Box 5523, Bismarck, ND 58506-5523	rdlarson@nd.gov
Mr. Douglass A. Prchal, Director North Dakota Parks and Recreation Department 1600 E. Century Avenue, Suite 3, Bismarck, ND 58503-0649	parkrec@nd.gov
Ms. Pam Sharp, Director North Dakota Office of Management and Budget 600 East Blvd. Ave., Dept. 110, Bismarck, ND 58505-0400	psharp@nd.gov
Mr. Scott Hochhalter, Director North Dakota State Soil Conservation Committee 2718 Gateway Avenue, Unit #104, Bismarck, ND 58503	shochhal@ndsuext.nodak.edu
Mr. Dale Frink, State Engineer North Dakota State Water Commission 900 East Boulevard Avenue, Dept 770, Bismarck, ND 58505-0850	dfrink@state.nd.us
Mr. Jeffrey Towner, Field Office Supervisor U.S. Fish and Wildlife Service, Ecological Services, North Dakota Field Office 3425 Miriam Avenue, Bismarck, North Dakota 58501-7926	jeffrey_towner@fws.gov
Mr. J.R. Flores, State Conservationist Natural Resources Conservation Service, North Dakota State Office 220 East Rosser Avenue, PO Box 1458, Bismarck, ND 58502-1458	jr.flores@nd.usda.gov
Mr. Dan Cimarosti, Regulatory State Program Manager U.S. Army Corps of Engineers, North Dakota Regulatory Office-Omaha District 1513 South 12th Street, Bismarck, ND 58504	daniel.e.cimarosti@usace.army.mil

5.2 Additional Factors Considered

This section describes how Tatanka chose the general study area and the more refined corridor for the transmission line. The general study area length (12 miles) was defined by the distance between the MDU 230 kV transmission line connection, and the North Dakota/South Dakota state line. Within the study area, Tatanka has generally used the North Dakota Public Service Commission criteria to select the most appropriate corridor and sites for the transmission line and substation facilities. Some of these considerations include: wind resource in the area, proximity to communities, land ownership and existing leases, and ecologically sensitive areas.

5.2.1 Location of existing transmission facilities

The proposed facility is a 230 kV transmission line that will extend approximately 12 miles between the North Dakota state line and the MDU 230 kV T-Line. MDU currently provides electrical energy to the power grids of Montana, North Dakota, South Dakota and Wyoming through this existing 230 kV line.

5.2.2 Location of communities

There are two small North Dakota communities within proximity of the proposed transmission line. The largest of these is Ellendale, with an estimated population of 1,500, located approximately 22 miles east of the transmission facility. The second community is Ashley located approximately 16 miles west of the transmission corridor. Ashley has a population of approximately 783 based on 2005 Census data (U.S. Census Bureau 2005).

5.2.3 Land ownership

A majority of land within the corridor is privately owned. Parcels where Tatanka obtained lease agreements from private landowners within the corridor are shown on Exhibit 4. Areas outside the leased areas represent non-leased private land, and state and federal lands. Two additional overhead transmission lines cross the proposed transmission line corridor. The first crosses Section 12, T129N, R67W in McIntosh County and Section 18, T129N, R66W in Dickey County and the second crosses portions of Sections 6 and 31, T129N, R66W in Dickey County. Leases and or easements are likely associated with these crossings.

5.2.4 Ecologically sensitive areas

There are no known rare or endangered species (state or federal) located within the transmission line corridor as discussed in Section 5.1.10. The North Dakota Parks and Recreation Department (NDPRD) did not identify any rare species, ecological communities, or properties in the Natural Heritage Database, or the Natural Areas Registry. The U.S. Fish and Wildlife Service (USFWS) searched their databases and determined the site is free of federally listed species, although it is plausible that some species such as whooping crane and bald eagle could migrate through this area.

The USFWS was contacted regarding the location of grassland and wetland easements on public and private lands located within the transmission line corridor. The USFWS established the Grassland Easement Program and the Small Wetland Acquisition Program to provide breeding and nesting habitat for migratory birds by protecting native grassland and wetlands through purchases of easements on privately owned native prairie and wetlands. The easements prevent conversion of native prairie and wetlands to land uses incompatible with the ability of the land to provide breeding habitat for birds and to maintain avian reproductive success (Schaeffer 2004). Mapping of these easements indicates there are both grassland and wetland

easements located within the transmission corridor. However, the planned route of the transmission line will largely avoid these resources. Of the 3,337 acres of federal grassland and wetland easements identified within the project corridor, only 76 acres fall within the 150-foot wide transmission line route.

Any direct impacts to wetlands or grasslands within USFWS easement areas will result in the need for a compatibility assessment by local USFWS staff. If the impacts are determined not to compromise the purposes for which the easements were acquired, a ROW permit will be issued for the impacts. Wetland and native grasslands within the easement areas will be avoided by transmission line structures and supporting facilities to the extent practicable. If impacts are determined necessary in the final design stage of the project, Tatanka will further coordinate with the USFWS for the necessary permits and approvals.

Natural Resource Survey Activities

Three special natural resource surveys were conducted as supporting documentation for the PSC Application and future wind farm project including bird, bat, and vegetation surveys.

Bat Surveys

Bat surveys focused on the turbine locations and are not directly applicable to transmission corridor. Bats navigate by echolocation and are generally able to avoid collisions with stationary structures. Consequently, this document discusses bats only briefly. Acoustic monitoring of bats was conducted at eight locations within the proposed wind farm during September and early October 2006. Bat monitoring locations were selected based on bat roosting and foraging habitat requirements, combined with results of previous bat mortality studies at wind energy facilities.

Documented bat mortality at previously developed wind farms has been associated almost exclusively with turbines (Johnson 2004). Studies conducted over 4 years at the Buffalo Ridge Wind Farm in Minnesota and the Foote Creek Wind Farm in Wyoming both reported that all dead bats were recovered from turbine locations; none were located at met towers or transmission lines (Johnson et al. 2000; Young et al. 2003). A review of pertinent literature suggests bat collisions with transmission lines are quite rare. Although bats have been known to collide with television and communication towers, light houses, wind turbines, buildings, and powerlines, only one published study documents bat mortality at powerlines (Erickson et al. 2002). In comparison, much more documentation has focused on bird mortality at transmission corridors. Some studies have suggested bats are not prone to colliding with stationary objects such as tangent structures and electrical lines because of their ability to echolocate (Bonneville Power Administration 2006).

Habitat within the transmission corridor is predominantly grassland and wetland and suitable bat roosting habitat is relatively limited. Consequently, the potential for bat mortality due to collisions with transmission lines and poles is considered quite low, and the detailed assessment of the risk of bat mortality on the Tatanka project is restricted to the wind farm proper and turbine locations.

Bird Surveys

Bird surveys took place in the vicinity of the transmission line between September 5 and October 11, 2006, timed to coincide with the fall migration period. Survey methods focused on raptors (Orders Falconiformes and Strigiformes) and on waterfowl (Family Anatidae), and

involved a combination of point counts conducted along roadside transects and recording of flightlines at stationary observation points. These methods, and the specific location of transects and observation points, were selected to provide comprehensive coverage of habitats throughout the study area and to maximize visibility of birds in flight within high priority areas of the site. Detailed descriptions of the study methods are provided in Appendix B.

The abundance of birds was tallied by grouping species according to taxonomic relationships and then calculating the number of birds in each grouping observed per hour of field effort. Flightline direction and altitude were summarized, and mean compass directions were calculated for taxonomic groups. Flightline descriptions (for Medium and High altitudes only) were then mapped into ArcView 9.1 in order to conduct a spatial analysis of flight patterns according to bird group and survey location.

A total of 240 raptors were observed in 65 hours of field observations. The raptor community was dominated by buteos, specifically red-tailed hawks (*Buteo jamaicensis*), with northern harriers (*Circus cyaneus*) the next most commonly observed raptor. The number of Buteos counted during the weeks of September 4th and 11th (Weeks 1 and 2) was substantially lower than in subsequent weeks, with a peak of almost 60 individuals during the week of September 25th (Week 3) The difference in Buteo abundance between early and late September, combined with observation of a kettle of 15 red-tail hawks soaring on thermals during Week 3, suggests at least for this group of raptors, some migration was occurring through the study area during the survey period.

An overall southeasterly flight direction for all raptors combined, as well as for raptors grouped by westernmost or easternmost survey locations, indicates migratory movement was more parallel to the transmission line corridor than perpendicular. The highest rate of raptor flight (1.6 flights/hour) occurring in the altitude range encompassing the proposed transmission line (i.e., between 30 and 400 feet) was observed at stationary point #6, approximately two miles east of the north end of the proposed transmission line. Most of the raptor flightlines surrounding point #6 were oriented toward the southwest, south, or southeast.

A total of 4,345 ducks and geese were observed in 65 hours of field observations. The waterfowl community was dominated each survey week by dabbling, or "puddle," ducks. The most common dabblers, in order of abundance, were mallards (*Anas platyrhynchos*), gadwall (*Anas strepera*), and blue-winged teal (*Anas discors*). Redheads (*Aythya americana*) were by far the most common diving duck, and also occurred in the largest flocks (up to 400 individuals). As with raptors, total numbers of both dabbling and diving ducks increased markedly between Weeks 2 and 3.

The overall flight direction for all waterfowl combined was to the south. For waterfowl grouped by westernmost survey locations the directional trend was toward the southwest, while for those grouped by easternmost survey locations the trend was toward the southeast. These mean directions suggest that migratory movement overall was more parallel to the proposed transmission line than perpendicular. The highest rate of waterfowl flight (1.6 flights/hour) occurring in the altitude range encompassing the proposed transmission line (i.e., between 30 and 400 feet) was observed at stationary point #6, as with raptors. Most of the waterfowl flightlines surrounding point #6 were oriented toward the southwest, south, or southeast.

Taken together, the data on abundance, flight direction, and flight altitude suggest that during the survey period, raptors and waterfowl were common and that movement was in a general southerly direction and roughly parallel to the proposed transmission line. Project proposers

will consider implementing guidelines for the minimization of avian collision and electrocution risk. These guidelines are discussed in detail in Appendix B.

Vegetation Surveys

An extensive ground reconnaissance and vegetation assessment was conducted in the transmission line corridor in conjunction with equivalent studies conducted on the overall Tatanka Wind Farm project site between September 23 and 27, 2006. A vegetation assessment report details the plant species identified, their relative percent composition, types of plant communities, their percent native plant species composition, and the similarity of each plant community to the Historic Climax Plant Community (HCPC). The methodology for the vegetation assessment was based on the rangeland similarity index and related methods developed by the Natural Resources Conservation Service (NRCS). Species lists were developed for a total of 49 plant communities distributed throughout the Tatanka Wind Farm and transmission corridor. Vegetation at these 49 sample points was representative of the grasslands throughout the wind farm project area and transmission corridor. Tilled cropland and farmstead yards were excluded from the vegetation sampling.

The transmission corridor includes equal proportions of native grassland and previously tilled cropland. These community types each account for 34.5 percent of the acreage of leased lands within the transmission corridor. Previously tilled grassland and farmstead yards account for 28.9 and 2.0 percent of the inventoried lands, respectively.

The transmission line route avoids and minimizes impacts to native grassland and high quality plant communities to the extent practicable. In most locations where the route is associated with native grassland, it flanks the periphery of the inventoried native grassland. The transmission corridor route crosses inventoried native grassland only in two locations where the crossing is necessary to avoid encroachment upon farmsteads and wetlands. Two plant communities within the transmission line corridor were determined to have a high level of ecological integrity based on their similarity to the HCPC and the sensitivity of component plant species to disturbance. Neither of these areas will be affected by transmission tower or substation construction. Detailed species lists and findings are provided in the Vegetation Assessment Report in Appendix B.

5.3 Criteria Maps

Guidance: Identify and map the criteria that led to the proposed corridor location within the study area.

Tatanka identified and mapped the available criteria listed in Section 5.5 to determine the best location for the route and corridor. Web sites, published maps, field surveys, and agency personnel provided the GIS data used to map the criteria. The maps are organized as follows:

- General Site Location—Shows the general location of project.
- Extent of the Transmission Line Corridor and Wind Farm—Shows the extent of the transmission line corridor and boundary of the wind farm.
- Proposed Transmission Line Route—Shows the proposed centerline of the transmission line.
- Leased Lands—Shows parcels where leases have been obtained.
- Exclusion and Avoidance Areas – See Sections 5.5.1 and 5.5.2 for a list of the Exclusion and Avoidance Areas.
- Selection areas—See Section 5.5.3 for a list of the Selection Criteria.

Tatanka selected a general study area that follows the proposed route and is approximately 12 miles in length. Tatanka used a number of criteria, in addition to the ones mentioned above, including the topographic layout of the area, location of the existing MDU 230kV transmission line, other existing substations, location of adjacent communities, location of large lakes, land ownership, and general economics. Further evaluation of the factors addressed in N.D.C.C. § 49-22-09 are set forth in Section 5.5 below.

5.4 Relative Value of Selected Criteria

Guidance: Discuss the relative value of each criteria and how the proposed corridor location was selected giving consideration to all criteria.

The Public Service Commission has established criteria that guides and governs the siting of a transmission line corridor and route, N.D.A.C. § 69-06-08-02. These criteria are divided into four general areas: exclusion areas, avoidance areas, selection criteria, and policy criteria. All were given weight in selection of the proposed corridor. Criteria listed by the North Dakota PSC guidelines as exclusion, avoidance, selection and policy were used to select the most prudent route within the proposed corridor from an environmental, social, and economic perspective.

5.5 Evaluated Criteria

Guidance: Chapter 69-06-08-02 (Transmission Facility Corridor and Route Criteria) of the North Dakota Administrative Code lists the following criteria that shall guide and govern the preparation of the inventory of exclusion and avoidance areas, and the corridor and route suitability evaluation process. Exclusion and avoidance areas may be located within a corridor, but at no given point shall such an area or areas encompass more than fifty percent of the corridor width unless there is no reasonable alternative.

North Dakota Administrative Code § 69-06-08-02 sets forth certain transmission facility corridor and route criteria an applicant must present. They include exclusion, avoidance, selection, and policy criteria. Exclusion and avoidance criteria encompass specific land designations (such as parks and historic sties), human dwellings, water developments, and habitat for state or federal threatened and rare species. Selection criteria relate to the effects from construction on agriculture, noise, and other general environmental conditions. Policy criteria relate to the applicant's policies regarding health, safety, labor relations, and coordination with other interests.

Data were gathered from several sources to identify criteria and to determine the potential impact of its proposed facility on selection criteria. A computerized geographic information system (GIS) was utilized to compile, analyze, and map most of these data. Specific sources of criteria data can be found in Section 7 (References). Table 5 lists the criteria that were found to be within the corridor.

Table 5
Summary of Criteria within the Proposed Corridor

Criteria	Acres or Number within Corridor	Acres or Number within Route	% of Corridor occupied by Criteria	% of Route occupied by Criteria
Exclusion Areas				
No areas were found within the corridor or the route.	0	0	0	0
Avoidance Areas				
Federal Wetland Easement Lands	2,349	68	22.1	29
Federal Waterfowl Production Areas	694	0	6.5	0
State Wildlife Management Areas (ND Game and Fish)	515	0	4.9	0

Federal Grassland Easement Lands	294	8	2.8	3.4
Selection Areas				
Agricultural Land (previously tilled lands)	4583	0	43.2	0
Active Farmsteads	7	0	0	0
NWI Wetlands	2,479	28	23.4	11.9
Woodlands	*	*	*	*
Extractive Resources-Gravel Pit	1	0	Unknown	0

* It is not anticipated that significant woodland areas will be disturbed by the project.
Corridor area is estimated at 10,610 acres.
Route area is estimated at 235 acres (~150 feet X 12 miles).
Route width = 150 feet.

5.5.1 Exclusion Areas

Guidance: The following geographical areas shall be excluded in the consideration of a route for a transmission facility. A buffer zone of reasonable width to protect the integrity of the area shall be included. Natural screening may be considered in determining the width of the buffer zone.

5.5.1.1 Designated or registered national: parks; memorial parks; historic sites and landmarks; natural landmarks; monuments; and wilderness areas.

Analyzed GIS layers indicated no national parks; memorial parks; historic sites and landmarks; natural landmarks; monuments; or wilderness areas within the study area (Exhibit 5).

5.5.1.2 Designated or registered state: parks; historic sites; monuments; historical markers; archaeological sites; and nature preserves.

Tatanka contacted the North Dakota Parks and Recreation Department (NDPRD) regarding parks in the vicinity of the proposed transmission corridor. The NDPRD responded by letter and indicated "the project does not affect state park lands that they manage or Land and Water Conservation Fund recreation projects that NDPRD coordinates."

Tatanka has initiated cultural resources investigations along the proposed project transmission line and tap locations. Tatanka's consultant has completed a Class I review of historic and archeological records through the North Dakota State Historic Preservation Office (SHPO) and local historic societies. No recorded sensitive areas are recorded in the proposed transmission corridor. The SHPO provided a letter indicating the Class I CRI (file search) and the associated proposed work plan are acceptable (Appendix D). A Class III intensive survey of the proposed transmission route and tap locations is underway and the results will be used to determine if any areas should be avoided. To date, no obvious issues have been identified. Once this survey is complete, a report will be submitted, and subsequently a concurrence letter from SHPO. These will be submitted under a separate cover.

5.5.1.3 County parks and recreational areas; municipal parks; and parks owned or administered by other governmental subdivisions.

Analyzed GIS layers indicated no county parks and recreational areas; municipal parks; and parks owned or administered by other governmental subdivisions within the study area.

5.5.1.4 Areas critical to the life stages of threatened or endangered animal or plant species.

The North Dakota Natural Heritage Program (NDNHP) and USFWS databases did not identify state or federally listed threatened or endangered species within the corridor, or any known areas critical to the life stages of threatened or endangered animal or plant species.

5.5.1.5 Areas where animal or plant species that are unique or rare to this state would be irreversibly damaged.

According to responses from both state and federal agencies, the proposed transmission corridor and route will not affect, or irreversibly damage, areas unique or rare to the State of North Dakota. It is Tatanka's intent to avoid, to the extent possible, habitats such as wetlands, native grasslands, and woodlands that have the potential to provide habitat for sensitive species.

5.5.2 Avoidance Areas

Guidance: The following geographical areas shall not be considered in the routing of a transmission facility unless the applicant shows that under the circumstances there is no reasonable alternative. In determining whether an avoidance area should be designated for a facility, the commission may consider, among other things, the proposed management of adverse impacts; the orderly siting of facilities; system reliability and integrity; the efficient use of resources; and alternative routes. Economic considerations alone shall not justify approval of these areas. A buffer zone of a reasonable width to protect the integrity of the area shall be included unless a distance is specified in the criteria. Natural screening may be considered in determining the width of the buffer zone.

5.5.2.1 Designated or registered national: historic districts; wildlife areas; wild, scenic, or recreational rivers; wildlife refuges; and grasslands.

Analyzed GIS layers indicate no national historic districts or wild, scenic, or recreational rivers within the corridor. However, the project corridor does contain private lands with federal grassland and wetland easements as well as several federally owned and Waterfowl Production Areas (WPA). These lands total 3,337 acres within the transmission corridor (Exhibit 5 and see Table 5). WPAs are owned in fee by the USFWS. On private lands subject to wetland easements, the USFWS has easement rights over only the wetlands themselves. On private lands subject to grassland easements, the USFWS has easement rights over the entire parcel. Encroachments into WPAs and easement wetlands are being avoided by the proposed transmission line route. Physical encroachments into grassland easement lands are being avoided where possible. Where unavoidable, impacts to grassland easement lands are being minimized as much as possible. As discussed in Section 5.2.4, if impacts are determined necessary in the final design stages of the project, Tatanka will further coordinate with the USFWS for the necessary permits and approvals.

5.5.2.2 Designated or registered state: wild, scenic, or recreational rivers; game refuges; game management areas; management areas; forests; forest management lands; and grasslands.

Analyzed GIS layers indicate the project corridor contains roughly 515 acres of State Wildlife Management Areas, or 4.9 percent of the proposed corridor. The proposed

transmission route is not anticipated to disturb any of these state management areas (Exhibit 5). If disturbance becomes necessary during the final design stages of the project, Tatanka will coordinate with the North Dakota Game and Fish Department.

5.5.2.3 Historical resources which are not specifically designated as exclusion or avoidance areas.

The Class I review of historic and archaeological records showed no recorded historical resources in the proposed transmission corridor. The SHPO provided a letter indicating the Class I CRI (file search) and the associated proposed work plan are acceptable (Appendix D). A Class III intensive survey of the proposed transmission route and substation locations is underway and the results will be used to determine if areas should be avoided. To date, no obvious issues have been identified. Once this survey is complete, a report will be submitted to the SHPO requesting concurrence.

5.5.2.4 Areas which are geologically unstable.

No areas along the proposed transmission route appear to meet this criterion. A geotechnical investigation will be completed prior to the start of construction. Measures required to avoid or mitigate unstable areas will be incorporated into the engineering design.

5.5.2.5 Within 500 feet of a residence, school, or place of business. This criterion shall not apply to a water pipeline transmission facility.

Based on observations made during the Phase I ESA and field work conducted by Tatanka's consultant, there are 16 farmsteads within the transmission corridor. Seven farmsteads are listed as active and the remaining are vacant. Of the seven active farmsteads, only one is located within 500 feet of the proposed route. There are no schools or places of business within the transmission corridor. There is one vacant town hall building within the corridor.

5.5.2.6 Reservoirs and municipal water supplies.

There are no reservoirs or municipal water supplies within the corridor.

5.5.2.7 Water sources or organized rural water districts.

According to the North Dakota State Water Commission’s Regional Water System Map (May 2006), the transmission corridor is located within two Water Resource Districts: (1) Southeast Water District in Dickey County, and (2) the South Central Regional Water District in McIntosh County (currently listed as being "under development").

5.5.2.8 Irrigated land. This criterion shall not apply to an underground transmission facility.

The North Dakota State Water Commission’s Water Permit database was accessed to determine if any parcels of land within the corridor have been granted an irrigation permit. No active permits were found within the corridor. Also, no irrigation facilities were observed in the corridor during field investigations.

5.5.2.9 Areas of recreational significance which are not designated as exclusion areas.

There are no areas of recreational significance which are not designated as exclusion within the project corridor.

5.5.3 Selection Criteria

Guidance: A corridor or route shall be designated only when it is demonstrated to the commission by the applicant that any significant adverse effects resulting from the location, construction, and maintenance of the facility in that area as they relate to the following, will be at an acceptable minimum, or that those effects will be managed and maintained at an acceptable minimum.

The impact upon agriculture:

5.5.3.1 Agricultural production

Impacts to agriculture as a result of the transmission line project are anticipated to be minimal and, for the most part, short term. Small, temporary impacts to some agricultural areas will occur as a result of the physical installation of the structures and power lines along the route. There may be other staging locations along the route that will disturb agricultural areas as well. However, to the extent practicable, staging areas will be placed in previously disturbed locations to minimize the impact to agricultural production. Landowners will be fully compensated by Tatanka through an easement payment for potential loss of vegetation and crop production.

Some ranching operations and pasture land may be temporarily affected during the installation of the transmission line. Tatanka will keep landowners informed about work being completed on their property, and contractors will ensure fenced pastureland remains secure for cattle.

Once the transmission line is completed, Tatanka will restore vegetation within disturbed areas as close as practicable to its original condition. While native rangeland vegetation is expected to return naturally over the course of a growing season or two, other areas will require native seeding, or planting in crops. Post construction restoration will largely depend upon the amount of disturbance occurred on the site and the soil types at each location. Sites used for material staging, and sustain significant amounts of truck traffic, will likely require tilling prior to seeding to loosen compacted soils.

Agricultural production will generally be unrestricted throughout the majority of the ROW; however, the project will result in a small amount of cropland and rangeland being completely taken out of production by the placement of transmission line structures and associated infrastructure. Because agricultural machinery will not be capable of adequately maneuvering directly beneath these structures, a small area will likely be taken out of agricultural production. On occasion, it may be necessary for Tatanka to complete repairs, or clear vegetation along the proposed route, which could result in additional short-term impacts to agricultural operations. These interruptions are anticipated to be few and short term in nature.

Aside from the area where the transmission line structures are physically anchored to the ground, or covered by other supporting facilities, the entire width of the

transmission corridor will be available for grazing. The transmission line will have little, if any, long-term affects on the ability if the land to be productive for cattle ranching.

5.5.3.2 Family farms and ranches.

Sixteen farmsteads were identified within the transmission corridor. Seven of the farmsteads are active and the remainder are abandoned and no longer operational. As discussed in the impacts to agriculture section above, impacts on farming and ranching are anticipated to be relatively small and short term. Families with cropland and ranch land within the proposed transmission line corridor will be adequately compensated through easement payments for any losses they incur to their land, crop production, or cattle.

5.5.3.3 Land which the owner can demonstrate has soil, topography, drainage, and an available water supply that cause the land to be economically suitable for irrigation.

Tatanka is not currently aware of land planned for irrigation, but anticipates discussing irrigation plans with landowners while making easement arrangements on properties within the transmission corridor.

5.5.3.4 Surface drainage patterns and ground water flow patterns.

Once the land beneath the structures is restored with native vegetation or crops, the footprint of the project will consist of the H-frame tangent structures, which will be directly imbedded into the ground. There will be no impervious foundation to speak of associated with the transmission line support structures, and existing land contours in the vicinity of these structures will be only minimally affected during installation. The tap located at the northern end of the project will be situated on a pervious gravel base. Consequently, the project is anticipated to have little to no effect on surface water drainage patterns, groundwater flow patterns, or groundwater recharge potential within the transmission corridor. An NPDES permit application will be prepared by Tatanka and submitted the North Dakota Department of Health prior to the construction of the transmission facility. Best management practices for erosion control will be implemented following construction to ensure erosion and sedimentation to adjacent waterbodies and wetlands does not occur while vegetation is becoming reestablished.

The impact upon:

5.5.3.5 Noise-sensitive land uses.

There are no known noise-sensitive land uses such as national or state parks, memorial parks, historic sites and landmarks, natural landmarks, monuments, or wilderness areas within the study area that could potentially be adversely affected by noise. There are a few private residences within the proposed power line corridor. However, only one of these is located within 500 feet and is not expected to experience levels exceeding those considered safe within agricultural areas.

Noise generated from the transmission line would be from two general sources. The first source is construction noise and the second is noise associated with the long term operation of the facility. Construction noise will be short term, and typical of construction noise associated with installation of utility poles and electrical wiring.

These construction noises will be temporary and last only 4 to 5 months while the transmission line is being installed. Given the project is linear in nature, and 12 miles long, noises will be concentrated in one area for a relatively short period of time before advancing to a different location.
Typical background noise levels in rural residential areas and agricultural cropland areas range from 35 dBA to roughly 45 dBA (USEPA 1974). Typical construction equipment such as trucks, bulldozers, cranes, front-end loaders, and graders used on construction jobs of this type generally produce noise in the range of 80 to 90 dBA at a distance of 50 feet (HMMH 1995). When construction machines are not operating, noise levels within 50 feet of the transmission line will be well below 80 dBA. By comparison, most modern tractors, without cabs, produce noise in the range of 91dBA. Noise levels of 85 dBA or higher are generally experience inside tractors with protective soundproof cabs. Other farm machinery such as self-propelled combines, corn pickers, hammermills, and dryers can produce sound levels exceeding 100 dBA. The National Safety Council recommends 85 dBA for 8 hours of exposure as the safe limit for farm operations (Bean 2006). Consequently, construction noise at 50 feet is not expected to exceed the safe levels normally found within agricultural areas.

To minimize noise impacts, all construction equipment will be equipped with a muffler in good working order, and construction activities near residences and businesses will be limited to normal farming/ranching working hours.

There will also be noise associated with the long term operation of the transmission facility. Electrical transmission lines have the potential to produce noise from corona effects. Corona is a type of localized discharge that results from non-uniform electrical fields. These discharges produce audible noise, radio noise, small amounts of ozone, and corona-related energy loss. The audible noises are generally described as crackling or hissing, and are most noticeable when electrical conductors are wet. Insulators and hardware used on the transmission line will be designed to reduce the effects of corona.

5.5.3.6 The visual effect on the adjacent area.

The proposed transmission line is proposed in a very rural portion of North Dakota with a relatively low population density, but will affect the rural visual quality of the landscape and the experience for those living in the area. The visual effects of the project will, for the most part, be limited to landowners in the immediate vicinity of the proposed route. The H-frame tangent structures will be in average 70 feet tall, and will predominately be visible from surrounding county roads. A portion of the transmission line corridor will be visible from State Highway 1 between Ashley and Ellendale, but will not likely be visible from State Highway 56 given the corridor will be at least 2 miles west of this transportation corridor. Consequently, visual effects of the transmission corridor are anticipated to be localized, and will affect the viewshed of a relatively small population of people. Efforts have been made to locate structures away from biologically sensitive areas, to the extent possible, and away from major thoroughfares and residences where they would significantly affect the viewshed and experience of those living in the region.

5.5.3.7 Extractive and storage resources.

Tatanka searched the North Dakota Geological Survey's mining records for the transmission corridor for extractive and storage resources. According to these databases, there are no sand and gravel mines, or coal mines, located within the project

corridor. However, the General Highway Map of Dickey County, 2002 shows a gravel mine in the SE¼ of Section 8, Township 130N, Range 33, Dickey County. Tatanka avoided this gravel mine when siting the route.

5.5.3.8 Wetlands, woodlands, and wooded areas.

The transmission line is located in the Kulm Wetland Management District of the U.S. Fish and Wildlife Service, which is dominated by marshes, sloughs, potholes, and ponds. The proposed transmission corridor contains approximately 2,479 acres of wetlands as depicted on the National Wetlands Inventory. On September 12, 2006, Tatanka conducted a review of the transmission corridor center-line to determine where the support structures should be placed in the field in order to avoid wetlands and other natural features. Where necessary to ensure wetland avoidance, wetlands in close proximity to proposed transmission structures will be delineated in accordance with methods set forth in the 1987 USACE Wetlands Delineation Manual and surveyed.

It is the intent of the project to avoid wetland areas to the extent practicable with transmission line facilities, regardless of whether they are protected by USFWS easements or fall within USACE Section 404 jurisdiction. However, if impacts to USACE jurisdictional wetland become necessary, Section 404 and 401 permit applications will be submitted to the USACE and the State of North Dakota, respectively. Any permanent impacts to USACE-jurisdictional wetlands and waters will be replaced according to USACE requirements. Wetlands observed within the transmission corridor during field investigations appeared to be isolated and non-navigable, suggesting they would not be regulated by the USACE. The USACE confirmed these findings in a letter dated October 24, 2006 (Appendix F). The letter indicates that the USACE has made a preliminary determination, which found no jurisdictional waters of the U.S. within the transmission line corridor. To the degree any wetlands within the corridor are found to be regulated by the USACE, existing Nationwide Permit 12 appears to cover any impacts that would likely occur.

Woodlands will be avoided to the extent possible during the construction of the transmission line, and significant tree removal is not anticipated. Some trees and limbs may occasionally need to be removed or trimmed after the transmission is installed to prevent damage to the lines from wind and ice, and to ensure reliable operation. Tatanka is committed to working with the North Dakota Game and Fish Department and the U.S. Fish and Wildlife Service to replace trees if the project should result in significant tree loss on public lands (though no such tree loss is anticipated). Trees lost on private property will be replaced in coordination with individual land owners.

5.5.3.9 Radio and television reception, and other communication or electronic control facilities.

There are no known communication or electronic control facilities within the transmission corridor. However, one communication tower was identified in Section 29 of Township 129N, Range 66W, Dickey County, just east of the proposed corridor (Exhibit 6). The communication tower is an FCC microwave tower, licensed by Basin Electric Power Cooperative (2005 FCC GIS Layer).

Comsearch completed a microwave interference study and worst-case Fresnel Zone calculations for the study area. The study considered 210 transmission line sites in the analysis. No microwave paths were identified to have a potential XY conflict with

respect to the proposed transmission line sites. These studies, and findings, are provided in Appendix C.

5.5.3.10 Human health and safety.

Construction and Operation Safety

Tatanka will employ proper construction methods to ensure the project will result in minimal impacts to worker health and safety. Human health and safety of transmission line workers will be a paramount concern during construction and operation of the proposed facility. Tatanka and its contractors will ensure the most current version of the National Electric Safety Code (NESC) is followed while the transmission line is being constructed in the field. The NESC sets the basic rules for keeping workers safe during the installation, operation, or maintenance of electric supply lines and associated equipment. The proposed facility will be designed and constructed to meet or exceed these standards. The NESC standards minimize adverse effects to the environment while ensuring the safety and health of the public, employees and contractors who construct, operate and maintain these facilities.

Regular maintenance and inspections will be performed during the life of the facility to ensure its continued integrity. Periodic inspections will be performed by ground personnel on snowmobile or ATV, or by aerial surveillance. If problems are identified during ROW inspections, repairs will be assigned to construction crews. Landowners will be reimbursed for potential damage to crops incurred during maintenance and repair operations in a manner consistent with the terms of the easement agreement.

Electromagnetic Fields

Once energized, the proposed transmission facility will generate electromagnetic fields (EMFs). The effect of EMF exposure on human health has been a matter of public interest and concern over the past several years. The National Institute of Environmental Health Sciences (NIEHS) studied the issue and submitted its final report on June 15, 1999, following six years of intensive research. The report concluded the scientific evidence that extra low frequency EMF exposures pose health risks to humans is weak (NIEHS 1999). There are no discernable health impacts from overhead power lines. The NIEHS was the lead government agency in directing and carrying out a congressionally mandated research program on EMFs. Tatanka will continue to closely monitor this issue and will respond to any new research on EMFs as circumstances require. In addition, only one residence will be within 500 feet of the proposed transmission line route. This residence will be roughly 450 feet away from the transmission line where EMFs should be near background levels.

Hazardous Materials and Waste

The project will not generate hazardous waste or materials. Stored fuels will be properly contained according to state and federal regulations. Equipment used in the construction process will be properly maintained to prevent spills and leaks of oil and hydraulic fluid to the extent possible.

Great Plains Environmental completed a Phase I Environmental Site Assessment for the proposed transmission corridor in September and October 2006. Of the operational farmsteads observed, four had aboveground storage tanks on the property, and two had

waste dumps. Two of the abandoned farmsteads were identified with dumps. Table 6 outlines the reviewed farms and the recognized environmental conditions on each of those farms. Given the transmission line will not be within 150 feet of any of the farmsteads (at least 500 feet from all but 1), the RECs are not anticipated to present a problem for the proposed project.

Table 6
Recognized Environmental Conditions (RECs)

Map No.	Number of Tanks	Number of Dumps	General Description
1	0	0	Operating Farm
2	2	0	Operating Farm with 1-gasoline and 1-diesel tank.
3	4	0	Operating Farm with 2-fuel oil, 1-gasoline, and 1-diesel tank.
4	0	0	Abandoned Farm
5	0	0	Abandoned Farm
6	0	0	Operating Farm
7	0	0	Abandoned Farm
8	0	0	Abandoned Farm
9	2	1	Operating Farm with 2-gasoline tanks and one dump.
10	3	0	Operating Farm with 2-diesel and 1-gasoline tank.
11	0	1	Abandoned Farm with dump containing garbage, metal, wood, and concrete.
12	0	1	Abandoned Farm with one dump containing metal cans.

Fugitive Dust

The construction process is expected to generate some fugitive dust, but is not anticipated to result in objectionable quantities. Consideration will be given to suppression of airborne dust by application of water if significant fugitive dust is generated during transmission structure installation. Any complaints that may arise regarding dust will be dealt with in an efficient and effective manner.

5.5.3.11 Animal health and safety.

Livestock impacts will be avoided as discussed in Section 5.5.3.1 above. If livestock is inadvertently harmed in any way, Tatanka will provide compensation to those owners.

5.5.3.12 Plant life.

Four land use categories were identified within the transmission corridor in the vegetation characterization study completed by KDK Consulting and Piper Land Resources Services, LLC. These land uses include: (1) Native areas not tilled in the past, (2) previously tilled cropland (currently in crop or hay production, (3) previously tilled grass (currently in grass production; idle or being utilized for beef production),

and (4) manicured yards. Sampling for of these various land uses types was completed in September 2006, resulting in these areas being mapped within the transmission corridor. Based on the results of the survey, the transmission corridor contains each of the four land uses mentioned above in various quantities. Land use within the proposed route is dominated by previously tilled cropland, with smaller amounts of previously tilled grassland and native vegetation areas. A very small amount of manicured yard/lawn falls within the route.

Impacts of the proposed facility on agricultural crops, native vegetation, and manicured lawn are anticipated to be minimal as discussed above, and landowners will be adequately compensated for any losses they may incur. Pre-tilled rangeland grasses are anticipated to return on their own over the course of a growing season or two. Croplands damaged will be replanted, or monetary compensation provided to the landowners depending upon time of year. Native prairie disturbed by construction will be reseeded with a native grass seed mixture approved by the North Dakota Game and Fish Department, and unavoidable losses of trees and shrubs will be restored as close as practicable to pre-existing conditions.

5.5.4 Policy Criteria

Guidance: The commission may give preference to an applicant that will maximize benefits that result from the adoption of the following policies and practices, and in a proper case may require the adoption of such policies and practices. The commission may also give preference to an applicant that will maximize interstate benefits.

Tatanka's proposed transmission facility has addressed PSC policy criteria as described in the transmission facility guidance document. Tatanka has demonstrated efforts to adopt the following policies and practices, resulting in maximized project benefits. Consequently, Tatanka requests the PSC give preference to Tatanka and the project.

5.5.4.1 Location and design.

Acciona strives to locate and design projects as environmentally sensitive to the natural resources of the region as possible. The availability of the resulting product to end users, the number of benefiting end users, and location also weighs heavily upon facility location. Acciona seeks to locate and design facilities that will produce the most energy and benefit the greatest number of people and economies while limiting environmental degradation. The proposed Tatanka transmission line will provide predictable renewable energy to four states, and bolster local economies with lease payments and local construction contracts while limiting environmental impacts to the extent practicable.

5.5.4.2 Training and utilization of available labor in this state for the general and specialized skills required.

Tatanka will use available and qualified contractors to construct the proposed facility. Contractors chosen to build the facility will be required to meet all applicable local, state and federal guidelines for safety and worker protection.

5.5.4.3 Economies of construction and operation.

Tatanka has acquired all easements necessary to construct the proposed transmission line from landowners within the corridor and route. Landowners will be compensated by Tatanka for the use of these easements. Tatanka will construct, own, and operate

the transmission line and the proposed interconnection tap when the project is completed.

5.5.4.4 Use of citizen coordinating committees.

Citizen coordinating committees were not used for siting the proposed route or corridor. However, Tatanka invited the public to a meeting on September 27, 2006 in Ellendale. The purpose of the meeting was to provide the pubic an opportunity to comment and express concerns regarding the project in general.

Tatanka will continue to meet with key stakeholders and interested citizens as the project moves forward.

5.5.4.5 A commitment of a portion of the transmitted product for use in this state.

The proposed radial electric transmission line will allow Tatanka to supply a maximum of 180 MW of renewable energy to the power grid serving several Midwest states, including the state of North Dakota. The transmission line project will benefit both state and local economies.

5.5.4.6 Labor relations.

Labor relations will not be affected by the project.

5.5.4.7 The coordination of facilities

As discussed throughout this document, the proposed transmission line will interconnect with the existing MDU 230 kV transmission line at its northern terminus. A proposed tap will be built at the point of interconnection between these two lines. MDU is a member of the Midwest Independent System Operator, which is a member of the National Electric Reliability Council. Tatanka will work closely with these organizations to coordinate facilities and to ensure service to end users is not unduly interrupted as a result of the connection of the Tatanka Wind Farm power plant to the grid. This will be accomplished by providing switching at the northern end of the line equipped with power circuit breakers and protection relays. Once the tap is in place, any potential fault on the wind farm line will be cleared by a breaker at the new tap, without interfering with the operation of the MDU line.

5.5.4.8 Monitoring of impacts.

The impacts of the construction and operation of the proposed facility are discussed in Section 5.1., above. Tatanka will closely monitor erosion control and stormwater management in graded areas where vegetation is temporarily removed to install the transmission structures and tap equipment. These areas will be monitored according to NPDES rules and approved Stormwater Pollution Prevention Plans for the site. Once the work is completed, these areas will be revegetated as quickly as possible and will be monitored for proper establishment. Concerns raised by agencies, adjacent landowners, or the Public Serve Commission will be addressed immediately. Impacts to wetland and woodlands will be avoided to the maximum extent possible. If wetland replacement is required by the project, wetlands will be replaced before or concurrently with impacts to the wetlands. Necessary tree removal and replacement will also be

closely monitored, and the necessary replacement completed within a reasonable timeframe following disturbance.

5.5.4.9 Utilization of existing and proposed right-of-ways and corridor.

Tatanka does not own or operate any existing facilities within the proposed corridor or route, but does plan to utilize existing right-of-ways and corridors when feasible. As discussed in Section 5.2.3, two other transmission lines owned and operated by other entities cross perpendicular (nearly) to the proposed route. The proposed route also passes through one existing Department of Transportation (DOT) ROW for State Highway 1.

5.5.4.10 Other existing or proposed transmission facilities.

Coordination of the proposed facility with existing and proposed transmission facilities is discussed above, and within Section 5.2.3.

5.5.5 Design and Construction Limitations

Because of the location of valuable wind resources on this portion of the Missouri Coteau, the proposed location of the Tatanka Wind Farm, and the existing location of the MDU T-line, alternative routes for the transmission facility were limited. The corridor and route was largely defined by determining the shortest route between the wind farm and the existing MDU line within easements controlled by Tatanka.

5.5.6 Economic Considerations

Tatanka considered economic factors such as locating the transmission line near existing roadways, to the extent possible, in order to minimize impacts to farming operations. As discussed throughout the report, cattle ranchers and farmers will be provided with easement payments for the use of their land, and will be compensated should adverse impacts to crops or livestock occur during installation or maintenance activities. Tatanka will make every effort to utilize local contractors for installation of the transmission line, and to use locally sold materials when feasible.

5.6 Mitigative Measures

Guidance: Discuss the general mitigative measures that will be taken to minimize adverse impacts that result from a route location in the proposed corridor.

Tatanka will avoid, minimize, rectify, reduce, and compensate for any potential adverse impacts to sensitive resources. Specific impacts that would be caused by the proposed facility and mitigation for those impacts are discussed throughout this document. Through the site selection and criteria exclusion and avoidance process described in this Application of Certificate of Corridor Compatibility, Tatanka has emphasized avoidance to sensitive resources to the extent practicable. When avoidance is not possible, efforts will be made to compensate or mitigate for those impacts. A brief summary of potential impacts and summary of the mitigation measure proposed by Tatanka is provided in Table 7.

Table 7
Summary of Potential Project Impacts
and Proposed Mitigation Measures

Potential Project Impacts	Proposed Mitigation Measures
Cropland Impacts	Landowners will be fully compensated by Tatanka through an easement payment for potential loss of vegetation and crop production.
Soil Erosion Impacts	Best management practices for erosion control will be implemented following construction to ensure that erosion and sedimentation to adjacent waterbodies and wetlands does not occur prior to vegetation becoming reestablished.
Noise Impacts	To minimize noise impacts, all construction equipment will be equipped with a muffler in good working order, and construction activities near residences and businesses will be limited to normal farming/ranching working hours. Insulators and hardware used on the transmission line will be designed to reduce the effects of corona noise.
Fugitive Dust Emissions	Consideration will be given to suppression of airborne dust by application of water if significant fugitive dust is generated during transmission structure installation.
Native Prairie Impacts	Native prairie disturbed by construction will be reseeded with a native grass seed mixture approved by the North Dakota Department of Game and Fish and the USFWS.
Visual Impacts	Efforts will be made to locate structures away from biologically sensitive areas, to the extent possible, and away from major thoroughfares and residences where they would significantly affect the viewshed and experience of those living in the region.
Wetland Impacts	Impacts to USACE jurisdictional wetlands will be permitted under Section 401 and 404 permitting requirements. Any permanent impacts to USACE-jurisdictional wetlands and waters will be mitigated according to USACE requirements. Wetland impacts on USFWS easement land will be replaced according to USFWS requirements.
Tree and Shrub Impacts	If trees are removed during the installation process, Tatanka is committed to working with the North Dakota Game and Fish Department to replace trees if the project should result in significant tree loss on public lands. Trees lost on private property will be replaced in coordination with individual land owners.

5.7 List of Contributors

Guidance: List the qualifications of the people in the various disciplines that contributed to the corridor location study.

Table 8 lists the qualifications of the people that contributed to the corridor location study.

Table 8
List of Contributors

Name / Title	Project Responsibility	Professional Experience and Education
Marcus V. da Cunha *Senior Project Manager* Acciona Wind Energy USA, LLC	Project developer representing Acciona Wind Energy (Applicant) in all commercial and regulatory aspects of the project.	Mr. da Cunha has extensive experience in structuring power sales, acquisitions, financial models, schedules and budgets, site selection, meteorological towers and data, land acquisition, interconnection and transmission agreements, water intake and discharge, air emission, prime movers, fuels, field surveys, taxes, and federal and local permitting. He has developed a 200MW wind farm in South Dakota; developed a 535MW combined-cycle project in Mississippi; and participated in the origination, development and divestiture of 300 MWs in Louisiana, 535 MWs in Texas, and the re-powering of a simple-cycle plant in California. Business Economics, University of Geneva, Switzerland
John W. Morrison, J.D. *Attorney* Fleck, Mather & Strutz, LTD	Applicant's counsel.	Practices in the areas of oil and gas law; utilities law, real property law; corporate financing law; and communications law. J.D. Univ. of North Dakota, 1978 B.S. Mary College, 1975
Dan J. Albano, Ph.D. *Ecologist/Project Manager* Global Winds Harvest, Inc.	Project manager representing Global Winds Harvest in biological and regulatory aspects of the project.	Mr. Albano ensures that all projects satisfy the environmental due diligence of Global Winds Harvest projects. He is an experienced environmental consultant, specializing in avian ecology. Dan leads development of Global Winds' projects in the Eastern U.S. and Ph.D. Behavioral Ecology, University of Massachusetts
Erich Bachmeyer, J.D. *Counsel/Project Manager* Global Winds Harvest, Inc.	Lead counsel for Global Winds Harvest.	Mr. Bachmeyer is in the legal department and leads the development of Global Winds Harvest projects in the Midwestern and Western United States. J.D. George Washington University, 1990
William Barnhart **Gary McWhorter** **John Larson** **Wayne Bauer** HDR Engineering, Inc.	Survey preliminary transmission line routing, final routing approval.	
Kevin Deters *Senior Project Manager* M.A. Mortenson Company	Provide overall responsibility for the construction, geotechnical, and engineering services.	Mr. Deters is experienced in the administration and coordination of all phases of project activity including setting project objectives and scheduling, cost control, safety, contract administration, quality assurance and ensuring client satisfaction. He is involved in the management of onsite project managers and their staff during the construction phase. Mr. Deters has provided preconstruction services for a wind farm in Tasmania and was involved in planning and cost estimating for several other Australian wind farm projects. B.S. Civil Engineering, Iowa State University, 1995

Name / Title	Project Responsibility	Professional Experience and Education
Bill Jackson, P.E. *Senior Project Manager* M.A. Mortenson Company	Responsible for the day to day operations during construction for the duration of the project.	Mr. Jackson has over 38 years of construction experience. He has extensive experience in the management of major heavy/industrial projects including wind power facilities and power plants. He is responsible during the design and construction phases of Mortenson projects, which include preparation of budget estimates, value engineering, systems cost analysis, design and construction scheduling activity, subcontract negotiation and award, project administration, and scheduling and cost control. B.S. Civil Engineering, University of Minnesota, 1967
Shannon Klundt *Land Survey Technician* Westwood Professional Services, Inc.	Coordinated with HDR Engineering to gather the survey field information needed to finalize the Transmission Line Route and will draw the topography over the route.	Mr. Klundt has 24 years of land surveying experience including ALTA/ACSM Land Title Surveys, section breakdowns, legal description writing, records research, boundary surveys, topographic surveys, photo control surveys, lot layout, and final plats. A.A.S. Civil Technology, North Dakota State School of Science, 1982
Aaron Tippie *Wind Services Manager* Westwood Professional Services, Inc.	Liaison between Acciona and Westwood's survey, environmental science, cultural resource management, and GIS departments.	Aaron is an experienced wind energy project developer with extensive knowledge in facility site selection, wind resource and topographical analysis, and land acquisition. B.S. Mechanical Engineering, Bucknell University, 1999 Certified Engineer in Training
Ron Peterson, PWS, WDC *Environmental Manager* Westwood Professional Services, Inc.	Provided overall management of the environmental aspects of the project, participated in micro-siting the transmission line.	Mr. Peterson has over 30 years of professional experience, 22 of which have been in environmental consulting. Prior to becoming a consultant, Mr. Peterson served as an agency wildlife biologist in Kansas and Minnesota. Ron is an attorney, a Certified Professional Wetland Scientist and a Minnesota Certified Wetland Delineator. J.D. William Mitchell College of Law M.S. Natural Resources, Univ. of Wisconsin-Stevens Point B.S. Wildlife Management, Univ. of Minnesota, 1975
Rob Bouta, WDC *Sr. Environmental Scientist* Westwood Professional Services, Inc.	Coordinated environmental sub-consultants, bird and bat survey methods, vegetation assessment and USFWS Grassland Easement Compatibility Statement.	Mr. Bouta has 22 years of professional experience as an environmental scientist. He has prepared numerous wetland inventories and assessments, environmental review documents, and federal, state, and local government permit applications. He pioneered the application of the *Minnesota Wetland Evaluation Methodology for the North Central States* for highway projects and commercial developments. M.S. Forest Biology, SUNY, 1991 B.S. Wildlife Management, Univ. of Wisconsin, 1984
David Weetman, PWS, WDC *Sr. Environmental Scientist* Westwood Professional Services, Inc.	Coordinated and prepared sections of the Certificate of Corridor Compatibility and Route Permit Application. Prepared Agency letters. Conducted acoustic monitoring.	Mr. Weetman has 15 years of professional and research experience conducting environmental assessments, wetland inventories, delineations, and permitting. He is accustomed to coordinating with local, state, and federal agencies and personnel to gain timely project approvals. David is a Certified Professional Wetland Scientist and a Minnesota Certified Wetland Delineator. M.S. Environmental Science, Miami Univ., 1995 B.A. Biology-Environmental Studies, Hanover College, 1991
Shannon Hansen, *Sr. Environmental Scientist*	Coordinated and prepared sections of the Certificate of Corridor Compatibility and Route Permit	Ms. Hansen has 7 years of professional experience as an environmental scientist and GIS specialist. She has performed natural resource cover type mapping, tree

Name / Title	Project Responsibility	Professional Experience and Education
Westwood Professional Services, Inc.	Application. Prepared GIS mapping products for both documents.	inventories, forest mensuration, prepared environmental review documents, analyzed woodlands and forest cover, and mapped endangered species habitat. She also has experience working at the city, county, regional, and federal levels of government on projects involving Invasive Species Management, Land Use Plans, Park User Surveys, and Recreation Programs. B.S. Natural Resources and Environmental Studies, Univ. of Minnesota, 1999 ESRI Certified GIS Specialist, 2000 Certified Tree Inspector, MN Dept. of Agriculture, 2005
Sarah M. Stai, Ph.D. *Ecologist* Westwood Professional Services, Inc.	Coordinated avian surveys and prepared report describing potential avian impacts of project.	Dr. Stai has 12 years of experience as an ecologist and environmental educator. She has worked with a variety of systems, including aquatic plant biology, grassland and tropical forest biodiversity, and wetland and waterbird ecology. Her research has focused on the ecology of wading birds and waterfowl and has involved behavioral observations, a variety of avian survey methods, and analysis of behavioral and spatial use patterns. Ph.D. Ecology, University of Miami, 2004 B.S. Ecology, University of Minnesota, 1994
Allison Kampbell, WDC *Environmental Scientist* Westwood Professional Services, Inc.	Preformed windshield surveys for mapping land cover types within the project corridor. Organized initial GIS data collection and analysis. Conducted acoustic monitoring and mist netting.	Ms. Kampbell has 6 years of professional experience delineating wetlands, monitoring wetland replacement sites, and successfully permitting wetland fill and excavation, and wetland mitigation. She is a Minnesota Certified Wetland Delineator. Allison also works extensively with digital data to perform spatial data analysis for site suitability modeling, constraint mapping, wetland modeling, and surface modeling to support natural resource decision making. B.S. Zoology, Univ. of Wisconsin-Madison, 1999
Aaron Diehl *Environmental Scientist* Westwood Professional Services	Preformed windshield surveys for mapping land cover types within the project corridor.	Mr. Diehl has 4 years of experience delineating wetlands, monitoring wetland restoration sites, leading experiments, teaching ecology, restoring shorelines, and surveying and analyzing streams and ditches to determine water quality and discharge rates. MES Taylor University, 2005 B.S. Taylor University, 2004
Kari Block *GIS Specialist* Westwood Professional Services, Inc.	GIS data collection and mapping.	Ms. Block has 3 years of experience conducting lake and wetland surveys, evaluating biological and chemical control methods, and collecting, entering, and analyzing data using GIS and other software products. B.S. Environmental Studies, St. Cloud State University, 2004
Jennifer McLoughlin, WDC *GIS Specialist* Westwood Professional Services	GIS data collection and mapping.	Ms. McLoughlin has 10 years of experience preparing environmental review documents, delineating and monitoring wetlands, conducting tree inventories, and investigations related to wetlands, water resources, soils, and land use. She is proficient in the use of ESRI's suite of ArcGIS 9.x products for analysis of natural resource inventories and land use, spatial analysis, and relational database operations. Jennifer is a Minnesota Certified Wetland Delineator. M.S. Soil Science, Iowa State University B.S. Anthropology, Iowa State University, 1996

Name / Title	Project Responsibility	Professional Experience and Education
Genevieve Bolling, WDC *Environmental Scientist* Westwood Professional Services, Inc.	Coordinated ND and SD Natural Heritage data collection and agricultural compliance wetland mapping.	Ms. Bolling performs rare plant inventories, wetland delineations, wetland monitoring, and other services associated with vegetation, wetlands and water resources. She provides assistance preparing NEPA environmental documents, such as EAWs, EISs, EAs, wetland permit applications, and biological assessments involving onsite field evaluation of natural resources. Genevieve is a Minnesota Certified Wetland Delineator. B.S. Plant Biology, University of Minnesota, 1998
Steven Blondo *Cultural Resource Specialist* Westwood Professional Services, Inc.	Manage overall cultural resource efforts, supervise field crew, coordinate Phase I / II cultural resource assessment, evaluation, survey, excavations, and Tribal and ND SHPO consultation.	Mr. Blondo has nearly 10 years of experience as a field archaeologist and excavation crew member for various consulting firms throughout the United States. He has located, excavated and interpreted historic and prehistoric sites, researched site history, and conducted background literature searches using his extensive knowledge of cultural resources to assist in the preparation of environmental and cultural documentation. B.A. in Anthropology, Moorhead State University, 1998
Ryan Grohnke *Cultural Resource Specialist* Company Name Here	Crew chief, conduct background investigations and Phase I / II cultural resource surveys.	Mr. Grohnke is experienced in Phase I, II, and III field work including pedestrian surveys, shovel tests, formal unit excavations, creation of unit wall profiles, and conducting background research. He is trained in artifact cleaning, photography, and analysis. B.S. Anthropology, Moorhead State University, 1999
Amanda Gronhovd *Owner* 10,000 Lakes Archaeology	Principal Cultural Resource Investigator.	Ms. Gronhovd supervises all aspects of 10,000 Lakes Archaeology projects. She works on archaeological and architectural history projects, conducting and directing archival research, historic and prehistoric archaeological surveys, and testing. M.S. Industrial Archaeology, Michigan Technological University, 2001 B.S. Anthropology, Minnesota State University, 1991
Dan Tallman, Ph.D. *Bird Survey Subconsultant* Professor Emeritus, Northern State University	Conducted avian point counts and flightline surveys within project corridor during fall migration.	Dr. Tallman has over 30 years of experience as a researcher and educator in the fields of ornithology, ecology, and bird banding and band recovery studies. He co-authored *Birds of South Dakota* (2002) and has been an editor and frequent contributor to *South Dakota Bird Notes* since 1979. Ph.D. Zoology, Louisiana State University, 1979 M.S. Zoology, Louisiana State University, 1974 B.A. Biology, Antioch College, 1971
Jason A. Gelling *Project Manager* Great Plains Environmental	Completed the Phase I Environmental Site Assessment (ESA).	Mr. Gelling has 9 years of professional experience preparing environmental assessments, ASTM Phase I and II ESA's, asbestos sampling, groundwater monitoring, underground storage tank removals and lead detection, remedial site investigations, free product recovery systems, and emergency petroleum spill response. B.S. Environmental Geology and Technology, University of North Dakota, 1991
Cheryl Schmidt, Ph.D. *Bat Study Subconsultant* e^2M, Inc.	Conducted acoustic monitoring, sonogram analysis, and mist netting of bats.	Dr. Schmidt has conducted multi-taxonomic field work in a wide variety of localities ranging from throughout the coterminous United States to central South America, and Hawaii. Dr. Schmidt has experience in ecological resources, habitat management, and environmental planning. She has a

Name / Title	Project Responsibility	Professional Experience and Education
		background in molecular biology and veterinary pathology, which enables her to critically assess information relative to species in the field and to relate impacts on populations in the field to population genetic consequences. Ph.D. Biology, Texas Tech University, 1995 M.S. Biology, Angelo State University, 1988 B.S. Biology and Chemistry, Angelo State University , 1985
Kelly Krabbenhoft *President* KDK Consulting	Conducted ground reconnaissance of native grassland communities within the transmission line corridor. Prepared species list, identified threatened and endangered plant species, calculated the rangeland similarity index for various ecological sites within the project area, calculated the percent of native species within plant communities, and document plowing/tillage history.	Ms. Krabbenhoft is an experienced rangeland management specialist. She has created methods of evaluating plant diversity on reclaimed grasslands and designed a classification system for reclaimed grasslands called "topoedaphic unit analysis" that involves multivariate statistics to better define reclamation success. She also has 19 years of experience conducting breeding bird surveys using the spot mapping method. M.S. Range Science from North Dakota State University B.A. Biology, Moorhead State University Certified Professional of Range Management, 2000
Carl Piper *Owner* Piper Land Resource Services	Conducted ground reconnaissance of native grassland communities within the transmission line corridor. Prepared species list, identified threatened and endangered plant species, calculated the rangeland similarity index for various ecological sites within the project area, calculated the percent of native species within plant communities, and document plowing/tillage history.	Mr. Piper is a Certified Professional in Range Management and has extensive experience completing extensive natural resource and rangeland inventories for the Natural Resources Conservation Service throughout North Dakota. M.S. Range Science, North Dakota State University B.S. Animal and Range Sciences, North Dakota State Certified Professional in Range Management.

5.8 MAPS

5.8.1 Map the Criteria within the Study Area

Guidance: Map the criteria within the study area showing the proposed corridor. Several different criteria may be shown on each map, depending on the map scale and the density and nature of the criteria. Minimum map scale shall be one-half inch = 1 mile. All maps shall be at the same scale unless otherwise specified.

5.8.2 Mylar Maps

Guidance: Furnish one (1) set of mylar maps, separate from the application, of the same scale as the criteria maps and showing the same basic features as the criteria maps, including the study area, but not the proposed route or location of any new associated facilities.

Maps are provided in the Exhibit and Appendix sections of this document. PSC staff supports not providing mylar maps. A general map has been provided to the PSC for publication purposes.

6. PERMITS AND APPROVALS

Federal, state, and local permits or approvals were identified as potentially being required for the location, construction, and operation of the transmission line. Tatanka will obtain all required permits

and approvals. Any necessary permits or approvals not listed in Table 9 were unintentionally omitted.

Table 9
Potential Permits and Approvals

Agency	Type of Application	Status*	Need
Federal			
U.S Army Corps of Engineers	Section 404 Permit(s)	2	A Nationwide Permit Section 404 Permit may be required for structures placed within Waters of the U.S. However, the project may be eligible for a Letter of No Jurisdiction for isolated wetlands.
U.S. Fish and Wildlife Service	Compatibility Analysis of Disturbed Areas	2	Required if project is constructing on USFWS grassland easement land or within wetlands on USFWS wetland easement lands.
	Special Use Permit	2	Required for temporary disturbance in grassland or wetland easement areas.
	Right of Way Permit	2	Required for permanent disturbance in grassland or wetland easement areas.
Tribal Organizations	General Approval	2	Letters were sent to all tribes that have an interest in this portion of the state. The tribes were asked for their input and if they had concerns about the proposed project.
Environmental Protection Agency	Spill Prevention Control and Countermeasure (SPCC) Plan	2	The regulation applies to non-transportation-related facilities (e.g. substations) with a total aboveground oil storage capacity of greater than 1,320 gallons.
State			
North Dakota State Land Board	Easement Crossing Permit	2	To be applied for if crossing lands owned by the State Lands Board.
North Dakota and South Dakota Departments of Transportation	Utility Permit / Risk Management Documents	2	Permit required for accommodation of utility facilities on State Highway ROW.
ND and SD Highway Patrol	Overheight / Overweight Permit	2	Required for hauling construction equipment and materials on State Highways.
ND Public Service Commission	Application for a Certificate of Corridor Compatibility	1	Chapter 49-22 of the North Dakota Energy Conversion and Transmission Facility Siting Act requires that an application for a Certificate of Corridor Compatibility be completed for any transmission facility that is located, constructed, and operated within North Dakota.

Agency	Type of Application	Status*	Need
ND Public Service Commission	Route Permit Application	1	Chapter 49-22 of the North Dakota Energy Conversion and Transmission Facility Siting Act requires that an application for a Route Permit be completed for any transmission facility that is located, constructed, and operated within North Dakota.
ND Department of Health	401 Water Quality Certification	2	Required for fill in jurisdictional waters of the United States. Water quality certification ensures that federally permitted activities are in compliance with water quality standards.
	NPDES: General Construction Stormwater Permit	2	Required for disturbing greater than 1 acre of land area. A Stormwater Pollution Prevention Plan (SWPPP) must be prepared.
ND State Historic Preservation Office	Section 106 Compliance Approval	2	Required if there is federal involvement in the project (such as for wetland fill).
Local			
Dickey County	No Zoning; No Permits Required	2	No permit required for electrical transmission lines according to County Auditor. County does have a 200 foot setback requirement from state and county roads for structures and towers.
McIntosh County	No Zoning; No Permits Required	2	No permit required for electrical transmission lines according to County Auditor.

*Status of Approval:

1. Applied for
2. To be applied for if necessary
3. Complete

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TABLES
(SEE CORRIDOR COMPATABILITY REPORT)

EXHIBITS

APPENDICES

1. INTRODUCTION

1.1 Compliance with Chapter 49-22

This is an Application for a Route Permit filed by Tatanka Wind Power LLC ("Tatanka"), a Delaware limited liability company whose sole member is Acciona Wind Energy USA LLC ("Acciona"). Although separate and apart from, it is to be intended to be reviewed in conjunction with Tatanka's Certificate of Corridor Compatibility. In these Applications, Tatanka is seeking siting approval for a 230,000 Volt (230 kV) transmission line in North Dakota, and associated facilities. Because the two Applications have been consolidated for filing, and in order to avoid redundancies, many sections of this Route Permit Application refer back to the Certificate of Corridor Compatibility Application for analysis.

Chapter 49-22 of the North Dakota Energy Conversion and Transmission Facility Siting Act requires an application for a Route Permit be completed for any transmission facility located, constructed, and operated within North Dakota.

Application guidance has been prepared by the North Dakota Public Service Commission (PSC) to assist Utilities in the preparation of Route Permit Applications. It is based on Chapter 49-22-08.1 of the North Dakota Century Code (NDCC, November 1979) and Chapter 69-06-08-02 (Transmission Facility Corridor and Route Criteria) of the North Dakota Administrative Code (NDAC., amended July 1, 2006). This application has been prepared in accordance with these statutes and rules in the form suggested by the guidelines prepared by the PSC.

Application guidance is shown in *italics* throughout this document.

1.2 Project Summary

The Applicant (Tatanka) proposes locating, constructing, and operating a 230 kV electric transmission line in North Dakota. The proposed radial electric transmission line is located approximately 22 miles west of Ellendale, North Dakota and extends approximately 12 miles north between the North Dakota/South Dakota border and the existing Montana-Dakota Utilities (MDU) 230 kV system, approximately 1.5 miles west of State Highway 56 in Dickey County. The transmission line will be sited in lightly populated, rural portions of Albertha and Spring Valley Townships of Dickey County, and Cold Water and Beresina Townships in McIntosh County (Exhibit 1).

The proposed transmission line will extend through Dickey and McIntosh counties and connect to the Montana-Dakota Wishek-Ellendale 230 kV transmission line at its northern terminus, and a collection substation at the Tatanka Wind Farm at its southern terminus in South Dakota. Montana-Dakota Utilities is a member of the Midwest Independent System Operator, which is a member of the National Electric Reliability Council. A proposed tap will be built at the point of interconnection between the proposed 230 kV transmission line and the Montana-Dakota Utilities 230kV system, and will occupy up to 5 acres.

The transmission corridor is approximately 10,610 acres in size and spans 17 sections in two counties (Exhibit 2). Most of the corridor is located in western Dickey County on a landform referred to as the Missouri Coteau. The Missouri Coteau is characterized by end moraine hills, non-integrated drainage, numerous sloughs, and lakes. Unlike other areas of the state, the Missouri Coteau has been slow to transition to cultivated agriculture due to the predominance of rocky soils, poor drainage in depressions, and higher than normal density of wetlands (USFWS 2003). The most dominant land

uses on the Missouri Coteau include cattle ranching and farming, which is consistent with the land uses observed within the study area. The development of the transmission facility is not anticipated to result in a significant change in land use, and will retain its remote, rural characteristics following the installation of the project.

Table 1 shows the Township, Range, and Sections of the proposed transmission line corridor.

Table 1
Tatanka Transmission Line
Corridor Location

County Name	Township	Range	Sections
Dickey	129N	R66W	6, 7, 18, 19, 30, and 31
Dickey	130N	R66W	5,8,17,18,19,30, and 31
McIntosh	129N	R67W	1 and 12
McIntosh	130N	R67W	25 and 36

2. DESCRIPTION (SECTION A)

2.1 Type

Guidance: Describe the type of transmission facility proposed.

Please see Section 2.1 of the Certificate of Corridor Compatibility Application.

2.2 Product

Guidance: Describe the product or products to be transmitted.

Please see Section 2.2 of the Certificate of Corridor Compatibility Application.

2.3 Size and Design

Guidance: Provide a general description of the proposed size and design, and any alternate size or design that was considered. Provide one copy of the design data report, separate from the application, for the proposed facility and any associated facilities.

Please see Section 2.3 of the Certificate of Corridor Compatibility Application.

2.4 Time Schedule

Guidance: Provide the anticipated time schedule for the accomplishment of major events including, at a minimum, the following: Route Permit, Right-of Way Acquisition Complete, Construction Start Date, Construction Completion Date, Test Operations, In-Service Date.

Please see Section 2.4 of the Certificate of Corridor Compatibility Application for the project time schedule.

3. LOCATION (SECTION B)

This section explains the considerations that contributed to Tatanka's selection of the proposed route, and describes the justification for Tatanka's location of the proposed route within the corridor. Tatanka's environmental policies are discussed in Section 3.1. The factors set forth in N.D.C.C. § 49-22-09 are examined in Section 3.2, and environmental and human health criteria are also discussed and analyzed. Specific impacts of the proposed facility and mitigation of those impacts are provided in Section 3.5.

3.1 Utility Polices and Commitments

Guidance: Discuss the utility's policies and commitments to limit the environmental impact of its facilities, including copies of Board resolutions and management directives.

Tatanka has a strong commitment to the environmental stewardship in the communities in which they operate, and they demonstrate this through creating projects that produce clean energy. Tatanka aims for their projects to be carried out with the greatest possible care for the environment, creating added value in the regions where they operate and winning public support for their facilities. This philosophy and commitment is explained further on their company website at http://www.acciona.com.au/site_I/.

Tatanka and their contractors will ensure the most current version of the National Electric Safety Code (NESC) is followed while the transmission line is being constructed in the field. The NESC sets the basic rules for keeping workers safe during the installation, operation, or maintenance of electric supply lines and associated equipment. The NESC standards minimize adverse effects to the environment while ensuring the safety and health of the public, employees and contractors who construct, operate and maintain these facilities.

3.2 Factors Considered

Guidance: Discuss the factors listed in Section 49-22-09, NDCC, to aid the Commission's evaluation of the proposed route. NDCC Section 49-22-09 lists 11 factors designed to aid the Commission in its evaluation and designation of corridors and routes.

This section discusses the actions Tatanka has taken, or will take, to address the 11 factors listed in NDCC Section 49-22-09. Specific information is also provided in later sections that describes the location and consideration of exclusion and avoidance areas, impacts to the environment, and mitigative measures.

3.2.1 Available research and investigations relating to the effects of the location, construction, and operation of the proposed facility on public health and welfare, natural resources, and the environment.

Research and investigations relating to the effects of the location, construction, and operation of the proposed facility on public health and welfare, natural resources, and the environment are referenced throughout this Route Application and the attached Certificate of Corridor Compatibility Application.

3.2.2 The effects of new energy conversion and transmission technologies and systems designed to minimize adverse environmental effects.

The transmission line will support the proposed Tatanka Wind Farm located in portions of Wacker Township in McPherson County, South Dakota, and Albertha Township in Dickey County, North Dakota. Wind generators provide affordable renewable energy. There are no emissions to speak of associated with the generation of renewable electricity. Wind turbines provide a viable alternative to combustion of fuels such as coal and natural gas and avoid the waste issues that might be associated with coal ash or spent nuclear fuel. As an economic source for electricity, wind energy depends on a free fuel source – the wind – and is relatively immune to inflation.

While these facilities produce clean and affordable energy, they require a relatively large geographic area, and may conflict with sensitive natural resources and public welfare. The

systems being employed are state of the art, and are designed to minimize impacts to the surrounding environmental and to the public. Potential impacts associated with the transmission line project are discussed in detail in portions of this Route Permit Application, and the Certificate of Corridor Compatibility Application. Potential project impacts and proposed mitigation measures for these impacts are discussed in detail in Section 5.6 of the Certificate of Corridor Compatibility Application.

3.2.3 The potential for beneficial uses of waste energy from a proposed energy conversion facility.

This factor is not applicable to this transmission facility project.

3.2.4 Adverse direct and indirect environmental effects which cannot be avoided should the proposed site or route be designated.

Adverse direct and indirect environmental effects which cannot be avoided are discussed throughout the Certificate of Corridor Compatibility Application. Proposed mitigation measures for these effects are discussed in detail in Section 5.6 of the Certificate of Corridor Compatibility Application.

3.2.5 Alternatives to the proposed site, corridor, or route which are developed during the hearing process and which minimize adverse effects.

The evaluation of alternatives for the proposed project has occurred throughout the planning process. While specific plans for various alternatives were not prepared, the evaluation of avoidance and exception areas in GIS provided a guide by which the proposed route was determined. Field observations and micro-siting efforts also aided in solidifying the proposed route. The route in this application is considered to be the most sensitive to the surrounding environment, economically favorable, and the one that most avoids the criteria specified in the North Dakota Public Service Commission's guidelines for transmission facility siting.

3.2.6 Irreversible and irretrievable commitments of natural resources should the proposed site, corridor, or route be designated.

There are no irreversible or irretrievable commitments of natural resources created by the siting of the proposed facility, corridor, or route. Environmental protection measures will be employed as they are agreed to with various regulatory agencies such as the U.S. Fish and Wildlife Service and North Dakota Game and Fish. Potential impacts to grasslands and wetlands will be restored or replaced according to state and federal requirements.

3.2.7 The direct and indirect economic impacts of the proposed facility.

Direct and indirect economic impacts of the proposed facility area discussed in detail in Section 5.1.7 of the Certificate of Corridor Compatibility Application.

3.2.8 Existing plans of the state, local government, and private entities for other developments at or in the vicinity of the proposed site, corridor, or route.

Tatanka is not aware of any existing plans for development in the vicinity of the proposed route and corridor. Land use surrounding the project corridor consists of private farms, and there are no municipalities in the immediate vicinity of the project corridor. The cities of Kulm, Forbes, and Leola are 10-15 miles away and do not appear to be expanding or developing at this time. The nearest sizeable development to the project corridor is occurring in Ellendale, roughly 22 miles east of the project corridor. The Ellendale City Council recently approved the purchase

of 40 acres of land and has secured an option to buy an additional 28.6 acres adjacent to the initial purchase. Initially, lots of approximately one acre in size will be available for sale for housing construction.

3.2.9 The effect of the proposed site or route on existing scenic areas, historic sites and structures, and paleontological or archaeological sites.

Section 5.1.9 of the Certificate of Corridor Compatibility Application addresses effects of the proposed site or route on existing scenic areas, historic sites and structures, and paleontological or archaeological sites.

3.2.10 The effect of the proposed site or route on areas which are unique because of biological wealth or because they are habitats for rare and endangered species.

Section 5.1.10 of the Certificate of Corridor Compatibility Application addresses effects of the proposed route on areas that are unique because of biological wealth or because they are habitats for rare and endangered species.

3.2.11 Problems raised by federal agencies, other state agencies, and local entities.

Tatanka sent letters to the 21 regulatory agencies entitled to notice under NDAC § 69-06-01-05. A list of contacted agencies is provided in Table 4 of the Certificate of Corridor Compatibility Application. The agency letters and responses can be found in Appendices E and F. Regulatory agencies did not raise any significant concerns with the proposed transmission corridor.

3.3 Study Area Selection Criteria

Guidance: Identify and map the criteria that led to the proposed route location within the designated corridor.

See Section 5.3 of the Certificate of Corridor Compatibility Application and Exhibit 5.

3.4 Relative Value of Selected Criteria

Guidance: Discuss in detail the relative value of each criteria and how the location, construction, and operation of the facility will affect each criteria.

The Public Service Commission has established criteria that guides and governs the siting of a transmission line corridor and route, N.D.A.C. § 69-06-08-02. These criteria are divided into four general areas: exclusion areas, avoidance areas, selection criteria, and policy criteria. All were given weight in selection of the proposed corridor. An overview map of the proposed corridor is provided in Exhibit 2. Criteria listed by the North Dakota PSC guidelines as exclusion, avoidance, selection and policy were used to select the most prudent route within the proposed corridor from an environmental, social, and economic perspective.

3.5 Evaluated Criteria

Guidance: Chapter 69-06-08-02 (Transmission Facility Corridor and Route Criteria) of the North Dakota Administrative Code lists the following criteria that shall guide and govern the preparation of the inventory of exclusion and avoidance areas, and the corridor and route suitability evaluation process. Exclusion and avoidance areas may be located within a corridor, but at no given point shall such an area or areas encompass more than 50 percent of the corridor width unless there is no reasonable alternative.

3.5.1 Exclusion Areas

Guidance: The following geographical areas shall be excluded in the consideration of a route for a transmission facility. A buffer zone of reasonable width to protect the integrity of the area shall be included. Natural screening may be considered in determining the width of the buffer zone.

A detailed discussion of exclusion areas is provided in Section 5.5.1 of the Certificate of Corridor Compatibility.

3.5.2 Avoidance Areas

Guidance: The following geographical areas shall not be considered in the routing of a transmission facility unless the applicant shows that under the circumstances there is no reasonable alternative. In determining whether an avoidance area should be designated for a facility, the commission may consider, among other things, the proposed management of adverse impacts; the orderly siting of facilities; system reliability and integrity; the efficient use of resources; and alternative routes. Economic considerations alone shall not justify approval of these areas. A buffer zone of a reasonable width to protect the integrity of the area shall be included unless a distance is specified in the criteria. Natural screening may be considered in determining the width of the buffer zone.

A detailed discussion of avoidance areas is provided in Section 5.5.2 of the Certificate of Corridor Compatibility.

3.5.3 Selection Criteria

Guidance: A corridor or route shall be designated only when it is demonstrated to the commission by the applicant that any significant adverse effects resulting from the location, construction, and maintenance of the facility in that area as they relate to the following, will be at an acceptable minimum, or that those effects will be managed and maintained at an acceptable minimum.

A detailed discussion of avoidance areas is provided in Section 5.5.3 of the Certificate of Corridor Compatibility.

3.5.4 Policy Criteria

Guidance: The commission may give preference to an applicant that will maximize benefits that result from the adoption of the following policies and practices, and in a proper case may require the adoption of such policies and practices. The commission may also give preference to an applicant that will maximize interstate benefits.

A detailed discussion of policy criteria is provided in Section 5.5.4 of the Certificate of Corridor Compatibility.

3.5.5 Design and Construction Limitations

A detailed discussion of the design and construction limitations is provided in Section 5.5.5 of the Certificate of Corridor Compatibility Application.

3.5.6 Economic Considerations

A detailed discussion of economic considerations is provided in Section 5.5.6 of the Certificate of Corridor Compatibility Application.

3.6 Mitigative Measures

Guidance: Discuss the mitigative measures that will be taken to minimize adverse impacts that result from the location, construction, and operation of the facility.

Tatanka will avoid, minimize, rectify, reduce, and compensate for any potential adverse impacts to sensitive resources. Specific impacts that would be caused by the proposed facility and mitigation for those impacts are discussed throughout this document and the Certificate of Corridor Compatibility Application. Through the site selection and criteria exclusion and avoidance process, Tatanka has emphasized avoidance to sensitive resources to the extent practicable. When avoidance is not possible, efforts will be made to compensate or mitigate for those impacts. A brief summary of potential impacts and summary of the mitigation measure proposed by Tatanka is provided in Table 7 of the Certificate of Corridor Compatibility Application.

3.7 List of Contributors

Guidance: List the qualifications of the people in the various disciplines that contributed to the facility route location study.

Table 8 of the Certificate of Corridor Compatibility Application lists the qualifications of the people that contributed to the route location study.

3.8 MAPS

3.8.1 Criteria Mapping

Guidance: Map the criteria within the designated corridor showing the proposed route and location of any new associated facilities. Several different criteria may be shown on each map, depending on the map scale and the density and nature of the criteria. Minimum map scale shall be one-half inch = 1 mile. All maps shall be at the same scale unless otherwise specified.

Exhibit 5 provides the necessary criteria mapping required by the North Dakota Public Service Commission Guidelines (Section D, 7a).

3.8.2 Mylar Maps

Guidance: Furnish one (1) set of Mylar maps, separate from the application, of the same scale as the criteria maps and showing the same basic features as the criteria maps, including the designated corridor, but not the proposed route or location of any new associated facilities.

Maps are provided in the Exhibit and Appendix sections of this document.

3.8.3 Aerial Photography

Guidance: Furnish one (1) set of uncontrolled 9 x 9 inch stereo-pair aerial photographs, separate from the application, with acceptable resolution showing the designated corridor, proposed route and location of any new associated facilities, and Section, Township and Range numbers, at a scale of 1 inch = 2000 feet, together with a flight map at a scale of one-half inch = 1 mile showing each flight line and the beginning and ending photo number of each flight line. Photo mosaic strip maps will also be acceptable. If the applicant can demonstrate that because of the limited size and scope of the project, aerial photographs would not be practical, this requirement may be waived.

Due to the length of the site, Tatanka has provided aerial photography at a scale of 1 inch = 8,000 feet with mapped section numbers. Aerial photography at a scale of 1 inch = 2,000 feet can be made available upon request.

4. PERMITS AND APPROVALS INCLUDE

Federal, state, and local permits or approvals were identified as potentially being required for the location, construction, and operation of the transmission line. These potential permits are provided in Table 9 of the Certificate of Corridor Compatibility Application. All required permits and approvals will be obtained. Any necessary permits or approvals not listed in Table 9 were unintentionally omitted.

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