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**Luverne Wind Farm  
Generation Outlet Project**

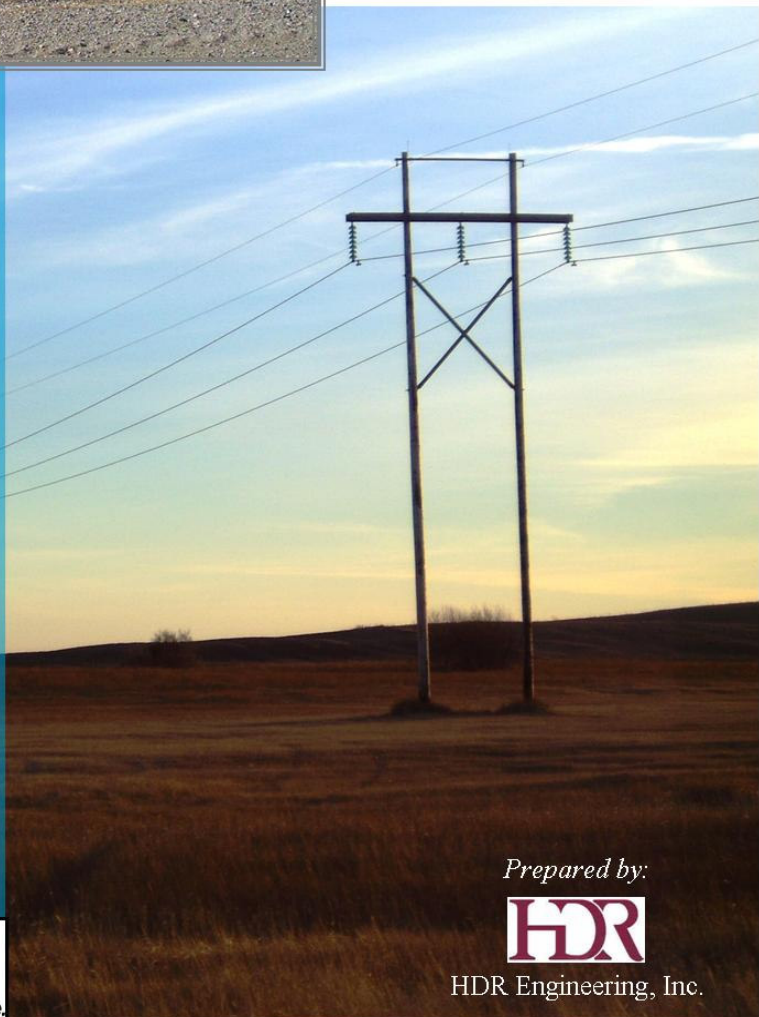
## M-Power Luverne Wind Farm Generation Outlet



**Application for a  
Waiver of  
Procedures and  
Timelines,  
and  
Consolidated  
Certificate of  
Corridor  
Compatibility and  
Route Permit  
Docket # PU-08-107**

May 20, 2008

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*Prepared by:*



HDR Engineering, Inc.



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# **M-Power Luverne Wind Farm Generation Outlet**

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## **Application to the North Dakota Public Service Commission for a**

**WAIVER OF PROCEDURES AND TIMELINES, AND  
CONSOLIDATED CERTIFICATE OF CORRIDOR  
COMPATIBILITY AND ROUTE PERMIT**

DOCKET # PU-08-107

*May 20, 2008*

*Prepared for:*



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## **Luverne Wind Farm Generation Outlet Project**

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- Appendix B M-Power, LLC Landowner and Local Utilities Relation Policy
- Appendix C M-Power, LLC Ten-Year Plan
- Appendix D Design Data Report
- Appendix E Class I Cultural Resources Inventory Data
- Appendix F Agency Correspondence
- Appendix G Existing Environment Photos



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## **1.0 INTRODUCTION**

M-Power, LLC (M-Power), submits this application for a Waiver of Procedures and Time Schedules, and a Consolidated Certificate of Corridor Compatibility (Corridor Certificate) and Route Permit to construct the Luverne Wind Farm Generation Outlet.

The Luverne Wind Farm Generation Outlet is located in Steele and Barnes Counties, North Dakota (Figure 1), and will consist of approximately 13 miles of 230,000 volt (230-kV) transmission line between the proposed M-Power Luverne Wind Farm in Steele and Griggs Counties and a proposed substation located in Township 143N, Range 56W, Section 7, northwest of Pillsbury, Barnes County, North Dakota. The high voltage transmission line would serve as a generation outline line from the Luverne Wind Farm to markets served through the proposed Pillsbury substation.

M-Power, headquartered in Finley, North Dakota, was formed in 2006 with the intent of developing approximately 500 megawatts (MW's) of community-owned wind projects located in Griggs and Steele Counties, North Dakota. The M-Power Energy Center will be developed in several phases. The main objectives of M-Power are to promote income diversification for local landowners/farmers and to retain a substantial amount of the projects economic benefits for the community and its local investors.

M-Power expects to be allocated transmission rights for 157 MW of capacity on transmission facilities being developed by regional utilities. These transmission rights will be available to M-Power at the Pillsbury substation.

### **1.1 COMPLIANCE WITH THE ENERGY CONVERSION AND TRANSMISSION FACILITY SITING ACT CHAPTER 49-22**

The North Dakota Energy Conversion and Transmission Facility Siting Act (Siting Act) requires applications for a Corridor Certificate and a Route Permit to meet the criteria set forth in North Dakota Century Code (NDCC) Chapter 49-22.

To the extent available, M-Power has presented information herein required by the North Dakota Siting Act. M-Power considered exclusion areas, avoidance areas, selection criteria and policy criteria in the selection and design of the proposed route (Figure 2). In addition, sufficient generation outlet design and technical information have been provided for a thorough evaluation of the reasonableness of the corridor studied and proposed route. In accordance with the M-Power Transmission Facility Site Selection Policy (Appendix A), a corridor and route are proposed that follow section quarter lines and existing transportation corridors, which thereby helps to minimize environmental and landowner impacts (Figures 3 and 4).

Tables 1 and 2 outline the information required to fulfill the requirements for a Corridor Certificate and



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Route Permit with the North Dakota Public Service Commission (Commission or PSC) using the PSC Guidelines and identifying where these requirements are addressed in this document.

**1.1.1 Waiver of Procedures and Time Schedules**

M-Power submits this Application for a Waiver of Procedures and Time Schedules and consolidated applications for a Corridor Certificate and Route Permit (collectively, application) for purposes of siting and constructing an approximately 13-mile-long 230-kV transmission facility. By this application, M-Power requests that the Commission, pursuant to NDCC Section 49-22-07.2, waive the following requirements:

1. That the Commission hold a separate hearing as may be required by NDCC Sections 49-22-08 and 49-22-08.1, 49-22-13 and North Dakota Administrative Code (NDAC) Chapter 69-06-01-02. M-Power requests that the Commission hold a single consolidated hearing on this waiver request and application for a Certificate of Corridor Compatibility and Route Permit. M-Power also requests that the Commission shorten the three-month period specified in NDCC Section 49-22-08(5) and the six-month period specified in NDCC Section 49-22-08.1(5).
2. That the Commission waive the requirements of NDCC Section 49-22-08 and NDCC Section 49-22-08.1 insofar as these sections may require the separate filing of applications for a Corridor Certificate and a Route Permit, and insofar as they require separate publication of notices of filing applications.
3. That the Commission waive requirements for mylar maps and stereo-pair aerial photographs as set forth in the Commission's Application Guidelines for a Corridor Certificate and a Route Permit. Geographic Information System (GIS) maps that meet the intent of the Commission requirements are provided in the application.

The Commission's Application Guidelines for Waiver of Procedures and Time Schedules require a facility description, need for, cost of and justification for the request for waiver, together with evidence that the project will produce minimal adverse effects. As demonstrated in the application, and as summarized below, M-Power's Waiver Request and the issuance of a Corridor Certificate and Route Permit is justified, as the proposed facility is of such design, location and purpose that it will produce minimal adverse effects.

**Description**

M-Power proposes to construct, own, and operate a 13-mile-long, 230-kV, three-phase alternating current electric transmission line from the proposed Luverne Wind Farm in Griggs and Steele Counties, North Dakota to a proposed substation in Township 143N, Range 56W, Section 7, northwest of Pillsbury, Barnes County, North Dakota (Figure 1). The purpose of the generation outlet is to transmit 157 MW of electricity from the Luverne Wind Farm to the Pillsbury substation.



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Additionally, the proposed facility offers North Dakota and the Mid-Continent Area Power Pool/Midwest Independent System Operator (MAPP/MISO) region the opportunity to ensure adequate capacity exists, to stabilize and perhaps even lower wholesale power prices, and to provide added reliability through transmitting the electricity generated by a clean, cost-effective renewable energy facility.

A description of the project is described in greater detail throughout the application.

**Need**

The need for the proposed facility and how it will further the public interest is described in greater detail in Section 2.0 of the application.

**Cost**

The estimated total cost of construction is \$4,550,000.

**Justification for Waiver**

Waivers of timelines and procedures are needed in order to prevent potentially significant delays in this project. M-Power is currently negotiating wind energy transactions with two regional utilities. Given the long lead times associated with acquisition of equipment, one of these utilities is requiring a permitted project by September 1, 2008. The other utility needs wind energy generation by mid-year 2009, and construction of their project needs to begin mid-summer 2008 in order to meet its schedule. Therefore, in order to meet the expectations of the utilities, M-Power needs to receive all pre-construction permits and approvals so that construction can begin in the summer of 2008.

Section 49-22-07.2 of the Act provides that the Commission may waive procedures and time schedules upon a finding that “the proposed facility is of such length, design, location or purpose that it will produce minimal adverse effects.” Based upon the thorough investigation and analysis set forth in the application, waivers are appropriate because the proposed facility will produce minimal adverse effects.

In determining whether the proposed facility will result in adverse impacts on the environment, M-Power evaluated the project using the criteria set forth in the Act, the Rules, and the Commission’s Guidelines for Energy Conversion and Transmission Facility Siting (Guidelines). M-Power evaluated the impacts of the project considering the siting criteria laid out in NDAC Section 69-06-08 (Section 3.0 of the application) and the factors to be considered in NDCC Section 49-22-09 (Section 8.0 of the application). Impacts associated with the project are summarized in Section 5.17 of the application. Based upon this evaluation and the factors set forth in the Siting Act and Guidelines, the proposed facility will have minimal adverse effects.

State and federal agencies were consulted to provide input on potential impacts of the proposed corridor and route and, in general, concluded that the proposed facility would produce minimal adverse effects.



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Their findings are summarized in Section 8.11 of this application.

Also, this M-Power proposal takes into consideration federal and state agency concerns and thereby further mitigates any adverse effects associated with the project. The designated state agencies and officers listed in NDAC Section 69-06-01-05 were notified about the proposed project in March of 2008 and M-Power will continue to work with the agencies to implement conditions that may be imposed.

In short, M-Power submits and believes the evidence demonstrates that it has taken all feasible and prudent actions to minimize and mitigate to the greatest extent possible all known or potential adverse impacts. As a result, the proposed project will produce minimal adverse effects. Accordingly, M-Power respectfully requests that the Commission grant the requested waivers and render an expeditious decision.

### **1.1.2 Certificate of Corridor Compatibility**

Table 1 outlines the information required in the PSC Guidelines dated November 1979 for a Corridor Certificate.

**Table 1  
Corridor Certificate Completion Checklist**

<b>State Authority</b>	<b>Description</b>	<b>Section</b>
Chapter 49-22	PSC Guidelines: Energy Conversion and Transmission Facility Siting	1.1.1
Section A	Description	1.2
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	1.0, 1.2.1
2.	Product: Describe the type, source, and final destination of the product to be transmitted by the proposed facility.	1.2.3
3.	Size and Design:	4.0
a.	Provide a description of the size and design of the ELECTRICAL facility including, but not limited to, the following:	4.1, 4.2.1, 4.2.4
1.	Width of right of way;	4.2.1
2.	Estimated span lengths;	4.2.1



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State Authority	Description	Section
3.	Anticipated type of structure;	4.2.1
4.	Approximate length of facility	Figures, 1.2, 4.1
5.	Voltage; and	4.2.1
6.	The requirement for a general location of any new associated facilities.	4.2.4
b.	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:	1.3
a.	Certificate of Corridor Compatibility;	1.3
b.	Route Application;	1.3
c.	Route Permit;	1.3
d.	Construction start date;	1.3
e.	Construction complete; and	1.3
f.	In-service date.	1.3



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State Authority	Description	Section
Section B	Studies	
	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.	Studies completed: 1. Class I Cultural Resources Inventory (Appendix E) 2. M-Power will conduct a Class III cultural resources survey and wetland delineation prior to construction.
Section C	Need for Facility	2.0
1.	An analysis of the need for the proposed facility based on present and projected demand for the product to be transmitted by the facility, including the most recent system studies supporting the analysis of the need.	2.1
2.	A description of any feasible alternative methods of serving the need.	2.2
3.	A statement justifying any deviations from the most recent Ten-Year Plan which the proposed facility may present.	2.3
Section D	Location	1.0, 1.2
1.	Select a study area, which includes the proposed corridor, of sufficient width to enable the Commission to evaluate the factors addressed in Section 49-22-09, NDCC.	1.2.1, 6.0
2.	Identify and map the criteria that led to the proposed corridor location within the study area.	Figure 2, 1.2.1, 3.0
3.	Discuss the relative value of each criteria and how the proposed corridor location was selected giving consideration to all criteria.	1.2.1, 3.0



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State Authority	Description	Section
4.	The criteria to be evaluated shall include at a minimum all of the following which are within the study area:	3.0
a.	Exclusion areas;	3.1.1
b.	Avoidance areas;	3.1.2
c.	Selection criteria;	3.1.3
d.	Policy criteria;	3.1.4
e.	Design and construction limitations; and	3.1.5
f.	Economic considerations.	3.1.6
5.	Discuss the general mitigation measures that will be taken to minimize adverse impacts that result from a route location in the proposed corridor.	5.1.3, 5.2.3, 5.3.3, 5.4.3, 5.5.3, 5.6.3, 5.7.3, 5.8.3, 5.9.3, 5.10.3, 5.11.3, 5.12.3, 5.13.3, 5.14.3, 5.15.3, 5.16.3
6.	List the qualifications of the people in the various disciplines that contributed to the corridor location study	9.0
7.	Maps	Figures
a.	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 ½ inch = 1 mile. All maps shall be at the same scale unless otherwise specified.	Figures
b.	Furnish one 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 facility location.	Figures
Chapter 49-22-09	Factors to be considered in evaluating applications and designation of sites, corridors, and routes.	8.0
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	8.1



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State Authority	Description	Section
	the environment.	
2.	The effects of new energy conversion and transmission technologies and systems designed to minimize adverse environmental effects.	8.2
3.	The potential for beneficial uses of waste energy from a proposed energy conversion facility	8.3
4.	Adverse direct and indirect environmental effects which cannot be avoided should the proposed site or route be designated.	8.4
5.	Alternatives to the proposed site, corridor, or route which are developed during the hearing process and which minimize adverse effects.	8.5
6.	Irreversible and irretrievable commitments of natural resources should the proposed site, corridor, or route be designated.	8.6
7.	The direct and indirect economic impacts of the proposed facility	8.7
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.	8.8
9.	The effect of the proposed site or route on existing scenic areas, historic sites and structures, and paleontological or archaeological sites.	8.9
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	8.10
11.	Problems raised by federal agencies, other state agencies, and local entities	8.11

### 1.1.3 Route Permit Application

Table 2 below outlines the information required in the PSC Guidelines dated November 1979 for a Route Permit. Information regarding easements for transmission lines per NDCC Section 49-22-08.1(f) is also included in the application in Section 3.1.5.



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**Table 2  
Route Permit Completion Checklist**

State Authority	Description	Section
Chapter 49-22	PSC Guidelines: Energy Conversion and Transmission Facility Siting	1.1.2
Section A	Description	1.2
1.	Type: Describe the type of transmission facility proposed.	1.0, 1.2.2
2.	Product: Describe the product or products to be transmitted.	1.2.3
3.	Size and Design: Provide a general description of the proposed size and design, and any alternate size or design, which was considered. Provide one (1) copy of the design data report, separate from the application, for the proposed facility and any associated facilities.	4.0
4.	Time Schedule: Provide the anticipated time schedule for the accomplishment of major events including, at a minimum, the following:	1.3
a.	Route Permit;	1.3
b.	Right-of-way acquisition complete;	1.3
c.	Construction start date;	1.3
d.	Construction complete;	1.3
e.	Test operations; and	1.3
h.	In-service date.	1.3
Section B	Studies	
	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.	Studies completed: 1. Class I Cultural Resources Inventory (Appendix E) 2. M-Power will conduct a Class III cultural resources survey and wetland delineation prior to construction.



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State Authority	Description	Section
Section C	Need for Facility	2.0
1.	An analysis of the need for the proposed facility based on present and projected demand for the product to be transmitted by the facility, including the most recent system studies supporting the analysis of the need.	2.1
2.	A description of any feasible alternative methods of serving the need.	2.2
3.	A statement justifying any deviations from the most recent Ten-Year Plan which the proposed facility may present.	2.3
Section D	Location	1.0, 1.2
1.	Discuss the utility's policies and commitments to limit the environmental impact of its facilities, including copies of board resolutions and management directives.	Appendices A, B and C
2.	Discuss the factors listed in Section 49-22-09, NDCC to aid the Commission's evaluation of the proposed route.	All 6.0
3.	Identify and map the criteria that led to the proposed route location within the designated corridor.	Figure 2, 1.2.2, 3.0
4.	Discuss in detail the relative value of each criteria and how the location, construction, and operation of the facility will affect each criteria.	3.0, 5.0-5.16
5.	The criteria to be evaluated shall include at a minimum all of the following which are within the designated corridor:	3.0
a.	Exclusion areas;	3.1.1
b.	Avoidance areas;	3.1.2
c.	Selection criteria;	3.1.3
d.	Policy criteria;	3.1.4
e.	Design and construction limitations; and	3.1.5
f.	Economic considerations.	3.1.6



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State Authority	Description	Section
6.	Discuss the mitigative measures that will be taken to minimize adverse impacts which result from the location, construction, and operation of the proposed facility.	5.1.3, 5.2.3, 5.3.3, 5.4.3, 5.5.3, 5.6.3, 5.7.3, 5.8.3, 5.9.3, 5.10.3, 5.11.3, 5.12.3, 5.13.3, 5.14.3, 5.15.3, 5.16.3
7.	List the qualifications of the people in the various disciplines that contributed to the facility route location study.	9.0
8.	Maps	Figures
a.	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 ½ inch = 1 mile. All maps shall be at the same scale unless otherwise specified.	Figures
b.	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.	Figures
c.	Furnish one (1) set of uncontrolled 9x9 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 ½ 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.	Figures
Chapter 49-22-09	Factors to be considered in evaluating applications and designation of sites, corridors, and routes.	8.0
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.	8.1
2.	The effects of new energy conversion and transmission technologies and systems designed to minimize adverse environmental effects.	8.2



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State Authority	Description	Section
3.	The potential for beneficial uses of waste energy from a proposed energy conversion facility	8.3
4.	Adverse direct and indirect environmental effects which cannot be avoided should the proposed site or route be designated.	8.4
5.	Alternatives to the proposed site, corridor, or route which are developed during the hearing process and which minimize adverse effects.	8.5
6.	Irreversible and irremediable commitments of natural resources should the proposed site, corridor, or route be designated.	8.6
7.	The direct and indirect economic impacts of the proposed facility	8.7
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.	8.8
9.	The effect of the proposed site or route on existing scenic areas, historic sites and structures, and paleontological or archaeological sites.	8.9
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	8.10
11.	Problems raised by federal agencies, other state agencies, and local entities	8.11

## 1.2 PROJECT SUMMARY

M-Power proposes to construct a 230-kV generation outlet on single circuit 230-kV wooden H-frame structures (Figures 5 and 6) within the corridor identified in Section 1.2.1. A description of the proposed facility is provided in Section 4.2. A route was selected after addressing the factors identified in NDCC Section 49-22-09 and evaluating the criteria in NDAC Section 69-06-08-02. Below is a description of the study area, the proposed corridor, and the proposed route for the new 230-kV generation outlet. The new

line will be approximately 13 miles in length and will transmit energy from the proposed Luverne Wind Farm to a proposed substation near Pillsbury, North Dakota.

### **1.2.1 Study Area and Proposed Corridor**

The general study area, as depicted in Figure 1, is bounded to the north by Hwy 200, to the east by Hwy 32, to the south by State Highway 26 and to the west by the Steele/Griggs County Line. A corridor was selected within this area and studied in detail to select the proposed route, as also shown in Figure 1 and described below.

The northern terminus of the corridor is located to be easily accessible to a collector station associated with the planned Luverne Wind Farm in Griggs and Steele Counties. The southern terminus of the corridor is located to access the proposed substation just northwest of Pillsbury, North Dakota. The energy transmitted along the generation outlet will help other utilities meet Minnesota's 25-by-25 renewable energy standard and the 10 percent renewable energy objectives initiated in North Dakota and South Dakota.

The proposed corridor was selected within the study area after considering the exclusion and avoidance criteria outlined in NDAC Section 69-06-08-02. Figure 2 presents exclusion and avoidance areas within the corridor that were analyzed to select the proposed route. In reviewing the proposed study area vicinity, no major transmission facilities occur. Existing roadways and distribution lines are significant facilities that exist in the study area. The general area is rural and intensively farmed land interspersed by rural homesteads, open land, wind breaks, and the distribution lines and roadways described above.

The proposed corridor is two miles wide. The corridor legal location descriptions (townships, ranges and sections) are provided in Table 3 and the corridor is represented in the figures included with this application. The selected corridor complies with NDCC Section 69-06-04-02 which states that the width of the corridor must be 10 percent of the length of the line, not less than one mile and not more than six miles in width.

The factors addressed in NDCC Section 49-22-09 were considered in evaluating the corridor for a 230-kV transmission line and are discussed in Section 8.0. All exclusion and avoidance criteria within the area were considered in selecting the proposed corridor. M-Power sought to avoid residential areas, irrigated land, recreational areas, U.S. Fish and Wildlife Service (USFWS) wetland easements and waterfowl production areas (WPAs) to the extent practicable. M-Power also considered utilizing existing infrastructure where possible. This is consistent with NDAC Policy Criteria for transmission corridors and routes (Sections 69-06-08-02-2e; 69-06-08-02-4i; 69-06-08-02-4g) which encourages applicants to avoid places of residence, maximize benefits by utilizing existing and proposed route corridors and coordinating facilities.



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**Table 3  
Corridor Legal Descriptions**

Township Name	Township	Range	Sections
Baldwin	143N	57W	1, 12, 13
Carpenter	144N	56W	5, 6, 7, 8, 17, 18, 19, 20, 29, 30, 31, 32
Ellsbury	143N	56W	5, 6, 7, 8, 17, 18
Melrose	145N	56W	28, 29, 30, 31, 32, 33
Riverside	145N	57W	25, 26, 27, 34, 35, 36
Willow Lake	144N	57W	1, 2, 3, 4, 12, 13, 24, 25, 36

**1.2.2 Proposed Route**

Within the corridor, M-Power identified a proposed route after considering the exclusion and avoidance criteria outlined in NDAC Section 69-06-08, as outlined in Section 3.0 of this application, and the M-Power Transmission Facility Site Selection Policy (Appendix A). Figure 2 identifies the proposed route relative to the corridor and exclusion and avoidance criteria. Legal descriptions of the route location are provided in Table 4.

**Table 4  
Route Location Legal Descriptions**

County	Township Name	Township	Range	Sections
Barnes	Ellsbury	143N	56W	6, 7
Steele	Carpenter	144N	56W	7, 18, 19, 30, 31
Steele	Willow Lake	144N	57W	1, 12
Steele	Melrose	145N	56W	31
Steele	Riverside	145N	57W	35, 36



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In accordance with the M-Power Transmission Facility Site Selection Policy (Appendix A), the route generally follows section quarter lines (half mile lines) for the majority of its length. The route was established to minimize impacts to residences, the environment, in particular wetlands, landowners and farmers. The proposed route is not located within 500 feet of any residence. Untilled rangeland was preferred over cultivated fields to avoid impacts to local farmers.

The average span length would be between 600 and 900 feet, using H-frame structures. Longer span lengths—up to approximately 1,000 feet—and shorter span lengths will be possible in select locations where practicable to avoid or minimize impact to; wetlands and water bodies; sensitive areas such as native prairie and windbreaks or other areas identified to minimize impacts to farming operations; or to span railroads and roadways.

### **1.2.3 Product**

The generation outlet will transmit the energy generated by the proposed Luverne Wind Farm in Griggs, and Steele Counties to the proposed substation just northwest of Pillsbury, North Dakota. The line is intended to carry 230-kV, three-phase, alternating current, electrical energy, and is expected to normally operate at 157 MW. The energy transmitted on the generation outlet will be used to serve electric customers in North Dakota, South Dakota, and Minnesota.

## **1.3 PROJECT SCHEDULE**

M-Power's construction schedule will be set by satisfactorily reaching a number of milestone agreements and approvals. The in-service date is dependent upon board approvals, permitting and development activities. M-Power is currently negotiating wind energy transactions with two regional utilities. Given the long lead times associated with acquisition of equipment, one of these utilities is requiring a permitted project by September 1, 2008. The other utility needs wind energy generation by mid-year 2009, and construction of their project needs to begin mid-summer 2008 in order to meet its schedule. Therefore, in order to meet the expectations of the utilities, M-Power needs to receive all pre-construction permits and approvals so that construction can begin in the summer of 2008.

1. **Certificate of Corridor Compatibility:** M-Power anticipates the Corridor Certificate will be approved by September 1, 2008.
2. **Route Permit Application:** The route permit application is included herein.
3. **Route Permit:** M-Power anticipates the Route Permit will be approved concurrent with the Corridor Certificate by September 1, 2008. It is critical for M-Power to receive the Route Permit and Corridor Certificate as soon as possible, as completing this step will allow the Utilities to move forward with other commitments associated with the project, including ordering long-lead time equipment and beginning construction in September/October, 2008.



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4. **Right-of-Way Acquisition:** M-Power is responsible for all right-of-way acquisition and is in the process of obtaining the necessary easements from landowners. M-Power has secured survey permission for the proposed route and has begun securing options for easements of the route. The land acquisition is expected to be complete in July 2008.
5. **Equipment Procurement, Manufacture and Delivery:** M-Power will order the transmission and substation components as soon as practicable. Once the components have been ordered, delivery is anticipated to occur to allow construction to begin in September/October, 2008.
6. **Construction:** If the project proceeds in 2008, project construction is expected to begin in September/October, 2008, subject to road restrictions and weather. The construction will take approximately four months to complete.
7. **Test and Operations:** M-Power expects system testing will occur in the second quarter of 2009.
8. **In-Service Date:** The expected in-service date will be July 2009.

No expansions or additions are anticipated at this time for the project.

## 2.0 NEED FOR FACILITY

### 2.1 NEEDS ANALYSIS

M-Power has proposed a 157 MW wind generation project in Griggs, and Steele Counties in east central North Dakota. This generation outlet is needed to accommodate the electricity this project would produce. There is value in this wind energy project to other utilities because of their desire to get more energy from renewable resources. Regional utilities within the study area have committed to economically meeting the North Dakota Renewable Energy Objective of 10% by 2025. This generation outlet will help other regional utilities meet their goals.

M-Power elected to propose a 230-kV line to optimize the efficiency with which the project can deliver the proposed power to the point of interconnection. The 230-kV line also allows M-Power to tie directly into the proposed 230-kV substation located just northwest of Pillsbury.

### 2.2 ALTERNATIVES

There was a rigorous selection process performed resulting in a business and technical decision for this line to be 230-kV with 795(Bittern) kcmil Aluminum Core Steel Reinforced (ACSR). M-Power focused on providing efficient delivery of 157 MW of electricity from the proposed Luverne Wind Farm to the proposed Pillsbury Substation. The analysis determined that 230-kV was the appropriate voltage that would deliver the 157 MW of wind resources. M-Power then considered 345-kV and 230-kV conductor options. Table 5 provides an overview of the conductor options considered at each voltage level.

**Table 5**  
**Alternative Conductor and Voltage Options Considered**

Voltage	Conductor Type			
	795 ACSR	954 ACSR	1272 ACSR	1272 ACSR (bundled)
230kV	X	X	X	X

The following selection criteria were applied:

- 1.) The line capacity must be able to transfer 157 MW of wind generation.
- 2.) The voltage and conductor selected for the line should maximize the investment to be the most economical line given capacity.
- 3.) The design of the line must not degrade electric system performance (not become the regions largest single contingency or approach that level).
- 4.) The line should be sized to accommodate the maximum capability of the proposed Pillsbury substation.

Based on the above criteria, the proposed voltage and conductor were selected based on the following determinations for each option:

### **2.2.1 230-kV Analysis**

The analysis of the 230-kV option for each conductor type, and M-Power's findings, are summarized in the bullets below:

- 795 ACSR- This conductor became the base case conductor to compare to versus all other alternatives. This is a common conductor size that could readily handle the 157 MW of electric generation, it is the minimum corona-free conductor at 230 kV; ensure reliable operation of the electrical system, and was the conductor size that allowed for optimization of capital cost (expense).
- 954ACSR – The capacity of the conductor was determined to be excessive in terms of carrying the required capacity and capital cost to M-Power.
- 1272ACSR –The capacity of this conductor was determined to be excessive in terms of carrying the required capacity and capital cost to M-Power.
- 1272ACSR (Bundled)-The capacity of this conductor was determined to be excessive in terms of carrying the required capacity and capital cost to M-Power.

After considering these conductor options carefully, the analysis found that the 230-kV 795ACSR option had enough capacity, helped ensure stability of the electric system, provided the best loss savings, and was the most economical to serve the proposed Luverne Wind Farm. Therefore the 230-kV 795 (Bittern) ACSR configuration was determined to be the correct configuration for this generation outlet.

### **2.3 TEN-YEAR PLAN**

A copy of M-Power's Ten-Year Plan is included in Appendix C. This line is included in the Ten-Year-Plan. M-Power will update its Ten-Year Plan as necessary.



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### **3.0 TRANSMISSION FACILITY CORRIDOR AND ROUTE CRITERIA**

M-Power evaluated a study area to determine the best location for the 230-kV transmission line corridor and route. The proposed corridor was identified as the optimal location from an environmental, wind resources and economic perspective (Figure 2). Since the purpose of the generation outlet is to transmit energy from the proposed Luverne Wind Farm in Griggs and Steele Counties to the proposed substation just northwest of Pillsbury, the transmission line routing options were relatively limited. The corridor encompasses an area that has a width of at least 10 percent or more of the length of the transmission line, which begins at a collector station located along the eastern edge of the proposed Luverne Wind Farm and ends at the proposed Pillsbury substation approximately 13 miles to the southeast. The proposed corridor and route selection has included an inventory and suitability analysis of criteria listed in NDAC Section 69-06-08-02, including exclusion and avoidance area criteria; selection criteria that relate to minimizing potential land use and environmental impacts; policy criteria that relate to maximizing public benefits; and design and construction limitations. M-Power also included economic considerations. Based on this inventory and analysis, none of the exclusion and avoidance criteria identified in the corridor encompass greater than 50 percent of the corridor width. The specific criteria and considerations made by M-Power for this project are outlined in the following subsections.

#### **3.1.1 Exclusion Areas**

In accordance with Section 69-06-08-02(1), the following geographical areas (Table 6) shall be excluded in the consideration of a route for a transmission facility, and shall include a buffer zone of reasonable width to protect the integrity of the area. Exclusion areas are mapped for the corridor and route on Figure 2.



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**Table 6  
Exclusion Areas**

Geographic Area	Present within Project Vicinity?	Proposed Buffer		Section Addressed
		Corridor	Route	
Designated or registered national: parks; memorial parks; historic sites and landmarks; natural landmarks; monuments; and wilderness areas	None	None	None	5.7; 5.8; 5.14
Designated or registered state: parks; historic sites; monuments; historical markers; archaeological sites; and nature preserves	None	None	None	5.7; 5.8
County parks and recreational areas; municipal parks; and parks owned or administered by other governmental subdivisions	None	None	None	5.8
Areas critical to the life stages of threatened or endangered species	None	None	None	5.16
Areas where animal or plant species that are unique or rare to this state would be irreversibly damaged	One significant ecological community (Central mixed grass prairie) was identified within the study area.	Habitat surveys for this community and wetland delineations will be completed prior to construction.	No plant species or animal species of concern have been identified along the route. Habitat surveys and wetland delineation will be completed prior to construction.	5.16

**3.1.2 Avoidance Areas**

In accordance with Section 69-06-08-02(2), the following geographical areas (Table 7) 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, proposed management of



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adverse impacts; orderly siting of facilities; system reliability and integrity; efficient use of resources; and alternative routes. Avoidance areas are mapped for the corridor and route on Figure 2.

**Table 7  
Avoidance Areas**

Avoidance Areas	Present within Project Vicinity?	Proposed Buffer		Section Addressed
		Corridor	Route	
Designated or registered national: historic districts; wildlife areas; wild, scenic or recreational rivers; wildlife refuges; and grasslands	None	None	None	5.7; 5.12; 5.15
Designated or registered state: wild, scenic, or recreational rivers; game refuges; game management areas; management areas; forests, forest management lands; and grasslands	None	None	None	5.12; 5.14
Historical resources which are not specifically designated as exclusion or avoidance areas	None identified to date	No historical resources that were within the proposed corridor were on record with the North Dakota State Historic Preservation Office (SHPO). In consultation with the SHPO, a professional archaeologist would establish buffer appropriate to resources, if discovered during the Class III Survey.	No historical resources that were along the proposed route were on record with the SHPO. In consultation with the SHPO, a professional archaeologist would establish a buffer appropriate to resources if discovered during the Class III Survey.	5.7
Areas that are geologically unstable	None	None	None	5.11
Within 500 feet of a residence, school, or place of business	Present	There are 14 occupied residences within the corridor. None	None	5.9



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Avoidance Areas	Present within Project Vicinity?	Proposed Buffer		Section Addressed
		Corridor	Route	
		are within 500 feet of the proposed route.		
Reservoirs and municipal water supplies	None	None	None	5.11
Water sources for organized rural water districts	None	None	None	5.11
Irrigated land. This criterion shall not apply to an underground transmission facility.	None	None	None	5.9
Areas of recreational significance which are not designated as exclusion areas	None	None.	None	5.8

**3.1.3 Selection Criteria**

Per Section 69-06-08-02-3, 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, 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 (Table 8). Figures 7 through 9 identify the selection criteria for the project as well as other related resources.



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**Table 8  
Selection Criteria**

Selection Criteria	Potential Adverse Effects		Section Addressed
<b>The impact upon agriculture:</b>			
	<b>Corridor</b>	<b>Route</b>	
Agricultural production	Facility structures proposed will permanently impact approximately 300 ft <sup>2</sup> (H-frame structures), or 450 ft <sup>2</sup> (large angle double deadend structures). Less than 0.1 percent of the yearly production of the top five commodities will be impacted for the corridor.	Approximately 0.6 acres of land will be permanently impacted due to facility structure placement along the route. Less than 0.1 percent of the yearly production of the top five commodities will be impacted.	5.9
Family farms and ranches	Land area lost to the construction of the transmission line structures will have a minimal adverse effect to family farms. No family farms will be displaced due to construction in the corridor.	Land area lost to the construction of the transmission line structures will have a minimal adverse effect to family farms. No family farms will be displaced due to construction of the route.	5.9
Land which the owner demonstrates has soil, topography, drainage, and an available water supply that cause the land to be economically suitable for irrigation	Where impacts are expected, no owner has expressed concerns related to economically suitable irrigation on their land.	Where impacts are expected, no owner has expressed concerns related to economically suitable irrigation on their land.	5.9
Surface drainage patterns and groundwater flow patterns.	No impacts to surface drainage patterns or groundwater flow patterns are anticipated.	No impacts to surface drainage patterns or groundwater flow patterns are anticipated.	5.11, 5.12



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Selection Criteria	Potential Adverse Effects	Section Addressed	
<b>The impact upon:</b>			
Noise sensitive land uses	The noise sensitive land uses within the corridor are the residences near the transmission line. There are 14 occupied residences within the corridor. No impacts to noise sensitive land uses are anticipated.	Noise impacts are nominal. The nearest sensitive receptor to the proposed route is approximately 900 feet. No impacts to noise sensitive land uses are anticipated.	5.5
The visual effect on the adjacent area	The transmission line will be visible to landowners and residents who live near the line. M-Power will minimize visual impacts to the extent practicable.	Visual impacts will be most evident to landowners and residents in close proximity to the route and drivers traveling along adjacent roadways. M-Power will minimize impacts by utilizing section quarter lines and existing road corridors. Structures will also avoid sensitive areas to the extent practicable.	5.6
Extractive and storage resources	No impacts are anticipated to extractive or storage resources.	No impacts are anticipated to extractive or storage resources.	5.11
Radio and television reception and other communication or electronic control facilities	No impact to radio and television reception or other communication or electronic control facilities is anticipated.	No impact to radio and television reception or other communication or electronic control facilities is anticipated due to the construction of the line in the proposed location.	5.3
Human health and safety	Mitigation measures will be implemented as discussed in Section 5.5.3, and if maintenance schedules are met, no impacts to human health and safety are anticipated.	Mitigation measures will be implemented as discussed in Section 5.5.3, and if maintenance schedules are met, no impacts to human health and safety are anticipated.	5.4
Plant life	The land is primarily agricultural in nature. Only the areas where the structures will be placed will permanently impact plant life. Other areas where temporary impacts may occur will be restored.	Approximately 0.6 acres will be permanently impacted from the transmission line structure placement for the route. The land is primarily agricultural in nature. Temporary impacts will be restored.	5.9, 5.14



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Selection Criteria	Potential Adverse Effects		Section Addressed
Wetlands, woodlands, and wooded areas	<p>Wetland resources will be avoided to the extent practicable. M-Power will utilize line designs to avoid and minimize impacts to wetlands in the corridor.</p> <p>Woodlands are primarily associated with homes in the form of windbreaks and along fence rows.</p> <p>If impacts to wetlands and woodlands cannot be avoided, options to minimize impacts will be considered and mitigation will be proposed consistent with regulatory requirements.</p>	<p>An initial review of proposed route relative to National Wetland Inventory data and recent aerial photography indicates that wetlands can be spanned using the proposed transmission line design. M-Power will delineate wetland boundaries as soon as possible, and plans to finalize pole placement and structure types needed to avoid wetlands at that time. In the event a wetland is delineated that is too large to span and is within USACE jurisdiction, M-Power may seek a minor route variation to avoid the wetland, or will obtain coverage and mitigate impacts for pole placement within the wetland as authorized by the USACE and North Dakota Department of Health under Nationwide Permit 12.</p> <p>The route was designed to avoid impacts to woodlands and windbreaks. Any impacts will be minimal and trees and shrubs will be replaced at a ratio of 2:1 as necessary and will be monitored for survival for five years.</p>	5.9, 5.13
Animal health and safety	<p>No impacts to livestock are anticipated from the operation of the transmission line.</p> <p>Raptors, waterfowl and other bird species may be affected by the construction and placement of the transmission lines. Avian collisions are a possibility after the completion of the transmission line. Waterfowl are typically more susceptible to transmission line collision, especially if the line is placed between agricultural fields that serve as feeding areas, or between wetlands and open water, which serve as resting areas. Generally, the most difficult part of the structure for the bird to see is the shield wire.</p> <p>Mitigation measures will minimize</p>	<p>No impacts to livestock are anticipated from the operation of the transmission line</p> <p>Raptors, waterfowl and other bird species may be affected by the construction and placement of the transmission lines. Avian collisions are a possibility after the completion of the transmission line. Waterfowl are typically more susceptible to transmission line collision, especially if the line is placed between agricultural fields that serve as feeding areas, or between wetlands and open water, which serve as resting areas. Generally, the most difficult part of the structure for the bird to see is the shield wire.</p> <p>Mitigation measures, as outlined in Section 5.15.3, will minimize these</p>	5.9, 5.15



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Selection Criteria	Potential Adverse Effects		Section Addressed
	these impacts.	impacts.	

### **3.1.4 Policy Criteria**

Per Section 69-06-08-02-4, 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. (Table 9)

**Table 9  
Policy Criteria**

Policy Criteria	Suitable Policy or Practice of Applicant	Section Addressed
Location and design	M-Power's policy is to locate and design the proposed generation outlet to minimize environmental and landowner impacts and utilize existing corridors, if feasible.	1.1
Training and utilization of available labor in this state for the general and specialized skills required	M-Power will use local labor to the extent practicable.	5.1
Economies of construction and operation	M-Power will utilize local contractors to the extent practicable.	5.1
Use of citizen coordinating committees	M-Power will work with landowners of properties for the project in siting the transmission line.	7.0
A commitment of a portion of the transmitted product for use in this state	Energy transmitted by the project will be used by the other Utilities for their North Dakota customers.	1.2, 4.2
Labor relations	No labor relations will be affected.	5.1
The coordination of facilities	M-Power is coordinating with landowners and wind developers to determine the location of the facilities, to maximize benefits and minimize duplication of efforts.	1.2.1, 1.2.2



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Policy Criteria	Suitable Policy or Practice of Applicant	Section Addressed
Monitoring of impacts	M-Power will monitor that Best Management Practices (BMPs) are utilized during construction to minimize environmental impacts and will monitor construction compliance with the commitments made in this application and applicable permit conditions, including the PSC order. M-Power will monitor tree and shrub replacement for five years, if needed.	5.10, 5.14, 5.15
Utilization of existing and proposed rights of way and corridors	One of the primary goals in locating the proposed route was to maximize use of section quarter lines and roadway corridors. The proposed 230-kV transmission line location is consistent with this policy and is the best location when considering the factors identified by the Commission and M-Power's policies and project purpose and need.	1.2.1, 1.2.2, 3.1.5
Other existing or proposed transmission facilities	Because of the relatively short length of the proposed generation outlet, the use of existing transmission, pipeline and railroads was not feasible. Following existing transmission, pipeline and railroad facilities would have made the route much longer and potentially impacted additional avoidance and exclusion areas.	1.2.1, 1.2.2, 3.1.5

M-Power's practices and policies are guided by its mission, which is:

*M-Power, LLC is a community-based, locally-owned, wind resource development company, whose mission is to develop wind generation and associated renewable energy projects that offer landowners and local investors an opportunity to share in the economic benefits of such projects.*

M-Power's commitment to environmental stewardship includes providing clean, renewable energy in an environmentally sensitive manner. The goal of the routing of this generation outlet was to provide an economical route that reduced impacts to the environment and landowners to the maximum extent practicable. This project will also help further the development of wind power in central North Dakota. See Appendices A, B and C for M-Power's formal policies regarding environmental, social, and economic stewardship.

M-Power's environmental policies are consistent with the PSC policy criteria outlined in NDAC Section 69-06-08-02-4.

### 3.1.5 Design and Construction Limitations

Design and construction limitations associated with the project are primarily associated with the location of the transmission line. The points of termination largely dictate the location of the transmission line. Overall, the line must be constructed within a reasonable distance from the proposed Luverne Wind Farm



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and must connect to the proposed Pillsbury substation. M-Power is paralleling section quarter lines for almost the entire length of the project route. Since the purpose of the generation outlet is to transmit energy from the proposed Luverne Wind Farm to the transmission system, the transmission line will cross several townships as noted in Table 4. The proposed route is the most direct route while minimizing impacts to the criteria identified in Section 69-06-08-02.

For this particular project, M-Power will attempt to span all wetlands along the route. A review of the corridor, including review of recent aerial photographs and USFWS National Wetlands Inventory (NWI) data, indicate that wetlands can be avoided by pole placement and spanning. Wetlands over 1,000 feet in length, which is about the maximum span of the proposed transmission line design, were avoided in order to avoid placing transmission structures in wetlands.

The USFWS administers wetland easements on private property as part of their National Wildlife Refuge System. There are limitations to construction on these lands and direct impacts to wetlands within USFWS easements would result in the need for a compatibility assessment by local USFWS staff. For this project, M-Power sought to avoid USFWS wetland easements. However, where alternatives were not feasible or would have resulted in negative impacts to landowners, M-Power seeks to carefully site facilities in such a manner as to not disrupt the functional aspects of the easement lands. Figure 2 identifies the USFWS wetland easements within the corridor. M-Power will continue to coordinate with the USFWS regarding wetland easements.

Finally, the H-frame structures have design limitations. Following geotechnical exploration, it may become necessary to utilize special structures to avoid sensitive environmental features or different materials such as concrete footings to accommodate for soil features or other design limitations.

### **3.1.6 Economic Considerations**

There are several economic considerations in deciding where the generation outlet should be routed. Overall, minimizing the distance to the wind generating facilities decreases the cost to construct the generation outlet and transmission line due to less material and right-of-way needed. Additionally, as explained in the alternatives considered above, this line design is the most economical and efficient to deliver 157 MW of electricity.

Another consideration in decreasing cost is in minimizing the number of corner structures required for the transmission line. Corner structures increase the cost of projects since special structures and engineering are typically required. M-Power attempted to minimize these economic factors while considering exclusion areas, avoidance areas, selection criteria, policy criteria, and other factors.

## **4.0 ENGINEERING AND OPERATIONAL DESIGN**

### **4.1 PREFERRED ROUTE DESCRIPTION**

As discussed previously, the proposed route centerline for the generation outlet will generally follow section quarter lines between the proposed Luverne Wind Farm in Griggs and Steele Counties and the proposed Pillsbury substation in Barnes County. The proposed generation outlet will begin at a collector station on the east side of the proposed Luverne Wind Farm and will initially run due east along the section quarter line for about three and a half miles, then turns due south and runs parallel to section quarter lines to the BNSF railroad, a distance of approximately nine miles. The remainder of the proposed route then turns southwest, crosses over the BNSF railroad, and enters the proposed Pillsbury substation.

The preferred route is depicted in Figures 1 through 4.

### **4.2 DESCRIPTION OF PROPOSED FACILITY**

The proposed facility will be used to transmit energy from the proposed Luverne Wind Farm in Griggs and Steele Counties, North Dakota to markets served through the proposed Pillsbury substation in Barnes County, North Dakota. The Pillsbury substation will be constructed and operated by Regional facilities. The project will consist of approximately 13 miles of 230-kV transmission line. This generation outlet is necessary so the energy can be transmitted from the proposed Luverne Wind Farm to markets served through the proposed Pillsbury substation. There is not adequate demand for this energy locally. However the two regional utilities intending to buy the wind generation from the project serve customers in the area of the project.

#### **4.2.1 Transmission Structures and Right-of-Way Design**

A design data report is attached as Appendix D. M-Power considered several different voltage and conductor choices before selection of this option. Alternate designs were eliminated due to reduced performance or higher costs. The selected line design provides the most economic short and long term solution to the generation output that is anticipated connected to the line.

##### **4.2.1.1 Transmission Structures**

M-Power is proposing to construct the line as a single circuit 230-kV line. The majority of the structures will be directly H-frame structures. The H-frame structures will be approximately 60 feet in height with an average span of 600 to 900 feet and a maximum span of approximately 1,000 feet under some circumstances. Angle structures will be self supporting and more fully determined once the design is complete. Final design and geotechnical investigations may warrant the use of special structures to avoid sensitive areas, reasonable landowner desires, or accommodate special engineering circumstances.

Structure specifications will be submitted to the PSC once the plan and profile drawings have been completed, and at least 10 days prior to construction. Figures 5 and 6 depict the typical structures that will be used for this project.

The conductor will be 795 kcmil ACSR. The shield wires, also known as lightning protection wires, will be Optical Guy Wire (OPGW) steel with 24 strands of fiber optics. On H-frame structures, M-Power will also use 3/8-inch extra hard steel (EHS). The proposed transmission line is intended to carry 230-kV, alternating current. The generation outlet will operate at 157 MW.

The proposed transmission line will be designed to meet or surpass all relevant state codes, National Electric Safety Code (NESC), Rural Utilities Service (RUS), Avian Power Line Interaction Committee (APLIC) raptor-safe design standards, and other standards that M-Power has adopted. Appropriate safety standards will be met for construction and will be followed during and after construction.

#### ***4.2.1.2 Right-of-Way Design***

The approximately 13-mile-long 230-kV generation outlet will parallel section quarter lines for almost the entire length of the route. The typical right-of-way required for the new line is 125 feet with 225 feet needed at each 90° corner. The line will be located within the 125-foot-wide right-of-way, but the location within that strip will be dependent on terrain, the presence of other existing facilities, rights of way, and landowner concerns.

M-Power has contacted all 33 of the landowners along this route and is in negotiations to acquire easements at this time. See Appendix B for the M-Power Landowner and Local Utilities Relation Policy.

### **4.2.2 Right-of-Way Preparation, Construction, Restoration and Maintenance**

#### ***4.2.2.1 Right-of-Way Preparation***

The proposed route crosses areas that are primarily agricultural land. There are some areas where there is tree and shrub growth that may require right-of-way clearing. Where safety requirements permit, trees and low growing shrubs will remain (generally less than 15 feet). Significant amounts of grading are not anticipated for preparation of the transmission right-of-way.

#### ***4.2.2.2 Transmission Construction Procedures***

Construction of the generation outlet will begin once all approvals are obtained and easement acquisition is complete. A detailed construction schedule will be developed based upon crew availability, weather conditions, and any other restrictions placed on certain areas for minimizing impacts from construction. The construction will be designed for installation at existing grade for the route. No extensive grading or leveling is anticipated at this time. Once construction is completed, graded areas will be restored to original contours to the extent practicable.



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Structures will be delivered to either the staked location or a project storage yard. If the structures are delivered to the location where they will be installed, they will be placed on the right-of-way out of the clear zone of any adjacent roadways or designated pathways. Insulators and other hardware will be attached while the structure is on the ground. After the right-of-way is prepared, structures will be assembled and erected at the structure site using a crane or similar heavy-duty equipment. Each pole will be directly imbedded and will require a hole dug approximately 11 to 13 feet deep and approximately 18 inches in diameter. The poles will be imbedded into the ground and backfilled with soil or crushed rock. For angle structures, deadend structures, or potentially some structures in poor or wet soil conditions there will be a requirement to install a specifically engineered concrete foundation. These types of foundations typically will be approximately nine feet in diameter and approximately 35 feet deep.

Most of the construction activity would be limited to the area immediately around each structure. Little additional ground disturbance is necessary at the structure sites. The total area temporarily disturbed in the vicinity of each structure is expected to be confined to an area of about 100 feet wide by 100 feet long (10,000 ft<sup>2</sup>). No permanent access roads will be constructed for the project; however, temporary construction access roads will be needed to access pole locations. Temporary construction access roads will utilize existing public and private roads where possible, and will be up to 20 feet wide and located through disturbed uplands (e.g., farmed land) where no existing roads provide access.

Once the structures have been erected, conductors will be installed by establishing stringing setup areas within the right-of-way. These areas are usually established every two miles along the route. Conductor stringing operations will require brief access to each structure to secure the conductor wire to the insulators or to install shield wire clamps once final sag is established. Stringing equipment generally consists of wire pullers, tensioners, conductor reels, shield wire reels and sheave blocks. Stringing operations involve pulling lightweight cables or ropes through the stringing sheaves located at every structure site. This cable or rope 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 as needed over existing distribution or communication lines, streets, roads, highways or other obstructions, after any necessary notifications are made and permits obtained. This ensures that conductors will not obstruct traffic or contact existing energized conductors or other cables.

#### ***4.2.2.3 Restoration Procedures***

During construction, crews will attempt to limit ground disturbance wherever possible and will employ appropriate erosion control measures. Upon completion of construction activities, landowners will be contacted to determine if any additional restoration due to construction is necessary. Disturbed areas will be restored to their original condition to the maximum extent practicable and as negotiated with the landowner or required by regulatory agencies. Post-construction reclamation activities include removing



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and disposing of debris, dismantling all temporary facilities (including staging and lay down areas), leveling or filling tire ruts, and reseeding non-cultivated areas disturbed by construction activities with vegetation similar to that which was removed.

Erosion control measures will be implemented as necessary to minimize runoff during construction. Specific measures will be determined once final design of the route is complete, and a field review is made to determine any areas of concern. Erosion control measures such as silt fencing; straw bale fencing, mulching, seeding, or mesh fabric overlay would be installed when and where appropriate. Access routes to structure locations will be reviewed prior to the mobilization of equipment so erosion concerns can be avoided or minimized. Construction crews exercise caution when equipment is within 50 feet of streams and rivers and will not drive equipment through streams or rivers that the transmission line crosses.

**4.2.2.4 Maintenance Procedures**

M-Power will periodically use the right-of-way to perform inspections, to maintain equipment and to make repairs over the life of the line. M-Power will also conduct routine maintenance to remove undesired vegetation that may interfere with the safe and reliable operation of the proposed line.

**4.2.3 Easement/Right-of-Way Acquisition**

M-Power is currently in the process of securing easements. M-Power has contacted all landowners to discuss the project and has secured approval to conduct necessary engineering surveys and soil investigations. M-Power has also initiated right-of-way acquisition and is obtaining letters of understanding to grant transmission line easement for the proposed route. Once all right-of-way has been obtained, and during the construction phase, individual property owners will be advised of construction schedules, need access to the site, and any vegetation clearing required for the project. The right-of-way will be cleared of the amount of vegetation necessary to construct, operate and maintain the proposed transmission line, and landowners will be compensated for damages.

Where possible, staging and lay down areas will be located within the right-of-way and limited to previously disturbed or developed areas. When additional property is temporarily required for construction, temporary easements may be obtained from landowners for the duration of construction. These temporary easements will be limited to special construction access needs or additional staging or lay down areas required outside of the proposed right-of-way.

**4.2.4 Associated Facilities**

A proposed new wind farm, and its associated 230-kV collector substation and operations and maintenance building are being sited as part of the M-Power Luverne Wind Farm application (Docket #



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PU-08-34). The collector substation will be located near the west side of the center of the west ½ of Section 35, Township 145N, Range 57W, and will be approximately 4.0 acres in size. The collector station/operations and maintenance building will be located directly adjacent to the M-Power Luverne Wind Farm and is one of the endpoints for the proposed transmission line route.

The proposed Pillsbury substation will be constructed and operated by regional facilities and is not associated with this application, except that it is the other endpoint identified for the proposed transmission line route.

## **5.0 ENVIRONMENTAL ANALYSIS**

This section provides a description of the environmental conditions that exist within the study area corridor and route. Conservative impact estimates associated with the proposed route assumed that the line will be approximately 13 miles in length, containing 78 H-frame pole structures and eight large angle double deadend structures, with an average span of approximately 800 feet between structures. Each H-frame structure is estimated to permanently impact approximately 300 ft<sup>2</sup> and temporarily impact approximately 10,000 ft<sup>2</sup> around each structure. The large angle double deadend structures permanently impact approximately 450 ft<sup>2</sup> and temporarily impact approximately 10,000 ft<sup>2</sup> around each structure. The total permanent impact for the project is estimated to be 0.6 acres. The total temporary impact is estimated to be 19.7 acres.

General information on land use and vegetation within the corridor were estimated using the Land Use and Land Cover (LULC) Digital Dataset from the U.S. Geologic Survey. Quantification of land use within the corridor were estimated using the corridor limits, whereas the land use impacts for the route were estimated using the proposed right-of-way. Corridor limits include an area one mile to either side of the proposed route, resulting in a total corridor width of two miles. The typical right-of-way for the 230-kV transmission line is 125 feet wide, or about 62.5 feet on either side of the structure centerline.

Consistent with M-Power's Transmission Facility Site Selection Policy (Appendix A), the project has been designed to minimize impacts to the environment and landowners (Appendix B).

## **5.1 DEMOGRAPHICS**

### **5.1.1 Description of Resources**

The project is generally located within a sparsely populated rural area in east-central North Dakota. There are no known plans for new residential developments or other new construction within the corridor or route; however, it is not unreasonable to expect that some new developments may occur. Information on demographics and housing for this section were taken from the 2000 U.S. Census, and the 2007 U. S. Census estimates.

The study area corridor encompasses portions of Barnes and Steele Counties, including six townships in North Dakota (Table 3). The population of Barnes County has decreased slightly to an estimated population of 10,783 in 2007, down from 10,874 in 2006. Steele County's population has also been decreasing to an estimated population of 1,840 in 2007, down from 1,908 in 2006 (U.S. Census Bureau, 2007). The median household income for Barnes County as reported in the 2000 census is (\$31,168), which is lower than the statewide average of (\$34,604), while Steele County reported a higher value of



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(\$35,757). However, the percentage of persons living below the poverty level in these two counties is lower than the statewide average. Table 10 summarizes the population and economic characteristics within the corridor.

According to the 2000 U.S. Census, educational, health and social services is the largest industry employer within Barnes County. Steele County lists agricultural, including forestry, fishing and hunting, and mining as the largest industry employer (U.S. Census Bureau, 2000).

**Table 10  
Population and Economic Characteristics**

<b>Location</b>	<b>Population</b>	<b>Median Household Income</b>	<b>Percentage of Population Below Poverty Level</b>
North Dakota	642,200	\$ 34,604	11.9
Barnes County	11,775	\$ 31,166	10.8
Steele County	2,258	\$ 35,757	7.1

### **5.1.2 Impacts**

#### **5.1.2.1 Corridor**

Permanent agricultural land conversion associated with the transmission line structure placement will constitute a small socioeconomic impact to those landowners with structures on their land. There is no indication that any minority or low-income population is concentrated in any one area of the corridor, or that the transmission line will be placed in an area occupied primarily by any minority group.

If local contractors are used, construction of the transmission line will provide a temporary increase to the total personal income of the area. Additional personal income will also be generated by the circulation and recirculation of dollars paid out by the applicants as business expenditures and state and local taxes. Labor relations will not be affected.

By virtue of the local ownership structure of M-Power, it is anticipated that the development of this transmission line will contribute to the economic growth within the corridor area and vicinity. This line will provide a means for the transmission of electricity produced by wind generation projects in the area to an established power substation.

#### **5.1.2.2 Proposed Route**

Based on a review of structure types and locations relative to existing land use, approximately 19.7 acres of agricultural land will be temporarily removed from production during transmission line pole

construction, not including potential impacts due to temporary access. Permanent agricultural land conversion associated with the project will be approximately 0.6 acres for the transmission line structures. Landowner compensation for crop damages will be negotiated during individual easement agreements. As stated above, agricultural areas surrounding transmission line structures generally will still be able to be farmed following construction of the project. The preference for quarter line routing facilitates farming around the structures, minimizing losses. Project construction will not cause any impacts to other industries within the project area. There is no indication that any minority or low-income population is concentrated in any one area of the route, or that the transmission line will be placed in an area occupied primarily by any minority group.

### **5.1.3 Mitigation**

#### **5.1.3.1 Corridor**

Socioeconomic impacts associated with the project will be primarily positive due to an influx of wages and expenditures made at local businesses during the project construction and an increase in the county's tax base from the operation of the transmission line. M-Power will use local labor and contractors to the extent practicable. Impacts to landowners will be minimized to the extent practicable by establishing good lines of communication, negotiating easements that are at or above market rates, and maintaining landowner communications throughout the project.

#### **5.1.3.2 Proposed Route**

See Section 5.1.3.1 above for mitigation associated with the proposed route.

## **5.2 LAND USE**

### **5.2.1 Description of Resources**

The study area corridor is located in portions of northeast Barnes County and southwest Steele County. No incorporated communities are located within the two-mile-wide study area corridor. The closest community is Pillsbury, approximately 0.9 miles southeast of the project corridor.

Based on a review of aerial photographs LULC database information; USFWS and USGS database information; and a windshield survey of the corridor and route, the majority of the land area within the corridor and route is agricultural land (Figure 7) used for crops and cattle grazing. Smaller portions of the land area are grasslands, wetlands and other minor uses (e.g., utilities, railroads, roads). Table 11 identifies current land use in the corridor and route based on the LULC database and land classification data from USFWS.



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**Table 11  
Current Land Uses**

Habitat	Transmission Corridor		Transmission Route	
	Acreage	Percent of Corridor	Acreage	Percent of Route
Open Water	255	1	<1	<1
Native Grassland	530	3	4	2
Undisturbed Grassland	72	<1	2	1
Hayland	14	<1	NA	NA
Cropland	15,487	91	170	94
Forest Sheltbelt	31	<1	NA	NA
Undefined	22	<1	NA	NA
Temporary Wetland	247	1	1	1
Seasonal Wetland	211	1	3	2
Semi-permanent Wetland	229	1	1	<1

Land within the corridor is primarily used for agricultural purposes. Agricultural land use in the corridor includes approximately 91 percent cropland, and small percentages of native grassland, hayland and undisturbed grassland. Undisturbed grassland is previously disturbed or previously cropped upland that has been seeded back into some type of grass mixture, but is currently intact. This undisturbed status is often temporary in nature and includes the possibility that the land may become cropland again. Native grasslands comprise three percent of the corridor and are primarily used for grazing livestock. Native grasslands include remnants of native prairie of various qualities which are dependent on several factors including grazing pressure and herbicide applications to control weed species. Approximately six percent of the corridor area contains wetlands, or open water. Wooded areas within the corridor are relatively uncommon smaller areas primarily associated with wind breaks, streams, and current or former homesteads.

Along the proposed route, agricultural land use comprises 97 percent of the land use, including approximately 94 percent cropland, two percent native grassland, and one percent undisturbed grasslands. Native grasslands include remnants of native prairie of various qualities which are dependent on several factors including grazing pressure and herbicide applications to control weed species. Undisturbed grassland is previously disturbed or previously cropped upland that has been seeded back into some type



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of grass mixture, but is currently intact. The remaining minor portions of the route include land that is either wetland, or open water.

Unique land uses within the corridor include one small private airstrip (Table 12), a cemetery and an abandoned Minute Man missile silo. There are four sections on land within the corridor that have wetlands under easement to the USFWS. These resources are described in Section 5.11.1. Existing land uses are depicted on Figure 7.

Zoning in the corridor is regulated by the individual townships in Steele County (Carpenter, Melrose, Riverside, and Willow Lake), and by the county in Barnes County, and generally supports the agricultural and residences associated with the agricultural lands in the corridor.

**Table 12  
Area Airports**

Airport	Type	Outside Corridor	Within Corridor	Within Route
Johnson Airstrip	Private	No	Yes	No

## 5.2.2 Impacts

### 5.2.2.1 Corridor

Land use in the corridor is not expected to change as a result of construction of the proposed transmission line facilities. The majority of the area under or adjacent to the transmission line could still be used for agricultural practices and routing can generally avoid farm facilities and residences. Use of existing roads and railroads, nearby airports, and the operation of other facilities such as pipelines will not be disrupted. The development of the proposed transmission line will not displace any existing or planned industrial facilities. The project will not result in the displacement of any residences or farmsteads.

### 5.2.2.2 Proposed Route

The route will parallel section quarter lines for almost the entire length. The majority of the land use impacted by the construction of the transmission line is used for agriculture. About 0.6 acres of agricultural land will be removed from production by the proposed generation outlet. The majority of this area will remain in agricultural use since the land under or adjacent to the line can still be used by the landowner. During construction of the route, additional areas may be temporarily disturbed for laydown areas. There is one private airstrip within the corridor. No notification to the Federal Aviation Administration (FAA) is required for private use airports.



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### **5.2.3 Mitigation**

#### **5.2.3.1 Corridor**

M-Power will work closely with the landowners in finalizing transmission structure locations within the right-of-way and temporary access to structure locations in order to minimize land use disruptions to the extent possible. Disturbed areas will be returned as near as possible to original contours and non-agricultural areas reseeded with beneficial native vegetation.

#### **5.2.3.2 Proposed Route**

See Section 5.2.3.1 above.

## **5.3 PUBLIC SERVICES**

### **5.3.1 Description of Resources**

#### **Local Services**

The project is located in rural eastern North Dakota. Within this area there are established transportation and utility networks that provide access and necessary services to the light industry, small cities, homesteads and farms existing in and near the corridor. No incorporated communities are located within the two-mile-wide study area corridor. The closest community is Pillsbury, which is located approximately 1.7 miles southeast of the proposed Pillsbury substation. Water, cable television, DSL, and telephone facilities, are located in the corridor. Emergency services, including volunteer fire departments, ambulance service, hospitals, and police associated with the three communities are provided in the vicinity of the corridor in addition to local retail service facilities.

#### **Electrical Service**

There were no high voltage transmission line facilities or distribution facilities identified within the corridor. Small distribution lines provide electricity to residents found within the corridor. Regional facilities have proposed the Pillsbury-Fargo 230-KV generation outlet that will include the proposed Pillsbury substation and deliver electricity from this proposed generation outlet to their markets.

#### **Roads**

State and County roads characterize the existing roadway infrastructure surrounding the two mile wide corridor. The proposed study area is bounded to the north by Hwy 200, to the east by Hwy 32, to the south by State Highway 26 and to the west by the Steele/Griggs County Line. Primary local surface transportation within the corridor is by several interconnecting named gravel or unimproved roads.



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### Traffic

The average daily traffic volumes on the study area county highways are documented in Table 13. Average daily traffic (ADT) on SH 32 was 555 vehicles north of Pillsbury to the intersection with SH 200 and 475 vehicles south of the town to the intersection with SH 26 in the year 2007 (ND DOT website, 2008). Traffic volume along 6<sup>th</sup> Street SE within the corridor area averages 100 vehicles per day. Determining the specific capacity of any highway is a complex process; however, general estimates are used for planning purposes. For purposes of comparison, the functional capacity of a two-lane paved rural highway is approximately 5,000 vehicles per day, or ADT. In general, the state highways near the corridor and route carry lower levels of traffic than what is average for rural North Dakota, but represent only a fraction of the capacity of the roadway.

**Table 13  
Existing Daily Traffic Levels**

Roadway Segment	Average Daily Traffic (year)	Average Daily Truck Volumes (year)
North of Pillsbury on Hwy 32 to intersection with Hwy 200	555 (2007)	110 (2007)
South of Pillsbury on Hwy 32 to intersection with Hwy 26	475 (2007)	NA
Hwy 200 between Hwy 32 and 122 <sup>nd</sup> Ave NE north of Study Area	755 (2007)	NA
6 <sup>th</sup> Street SE from Hwy 32 west to 121 <sup>st</sup> Avenue SE	100 (2007)	NA
121 <sup>st</sup> Avenue SE from Hwy 200 south to Luverne	150 (2007)	NA
South of Luverne on 121 <sup>st</sup> Avenue SE to Hwy 26	200 (2007)	35 (2007)
West of Pillsbury on Hwy 26 to Lake Ashtabula near Silbey	180 (2007)	80 (2004)

Source: North Dakota Department of Transportation (NDDOT), Bismarck website <http://www.dot.nd.gov/road-map/traffic/index.htm#>  
- Current Traffic Volumes

Most roads in North Dakota traverse east to west and north to south. The route and corridor boundary lines are configured in an upside down L-shaped orientation. The route extends south to north and parallel to SH 32 from the proposed Pillsbury substation to north of 6<sup>th</sup> Street SE where the line turns 90 degrees to the west ending near the proposed collector substation considered for the Luverne Wind Farm in Griggs and Steele Counties. The route will cross only 6<sup>th</sup> Street SE but will not interfere with traffic operations.



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### **Water Supply**

The townships have limited public infrastructure services, which is typical of most townships. Homes typically utilize septic systems and water wells for their household needs.

### **Telephone, Fiber Optic, Microwave, Television and Radio Communications**

The potential for impacts on radio and television reception, and other communication or electronic control facilities were evaluated. No radio or television signal interference directly from the transmission of electricity is anticipated because of the differences in frequency of the signals. It is possible that localized interference could occur as a result of electric discharges across small gaps in the transmission system hardware or from the development of partial electric discharges from the line itself (generally referred to as “corona”). While it is unlikely that either of these situations would occur, in the event that radio and television signals are impacted, the use of corona-free hardware and routine transmission line maintenance would be expected to eliminate the problem.

A review of the inventory information available for any existing common communication systems that may occur within the corridor was conducted to determine if the proposed project would interfere with the other facilities. There no communication facilities are located within the corridor or within the route right-of-ways.

### **5.3.2 Impacts**

#### ***5.3.2.1 Corridor***

### **Local Services**

No negative impacts to local services are anticipated.

### **Electrical Service**

No impact is anticipated, as no transmission systems occur within the corridor. This proposed generation outlet would only deliver energy to the proposed substation near Pillsbury.

### **Roads**

Constructing the transmission line will require temporary access along the route. Public and private roads will be used the extent possible and no new permanent roads will be constructed. Temporary access roads may be used to access individual pole locations where necessary. Where temporary access roads are required, access will be approved by each landowner in advance and access will be routed through uplands and to avoid passing through sensitive features such as wetlands.



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### **Traffic**

The maximum construction workforce is expected to generate an average of approximately 50 additional vehicle trips per day on local roadways. Using any combination of state and county highways and other township roads throughout the project site, the traffic impacts are considered negligible. Since many of the area roadways have minimal traffic currently, the addition of 50 vehicle trips may represent a substantial percentage increase (and likely would be perceptible), but would still be less than seasonal variations such as occur during autumn harvest.

### **Water Supply**

Construction and operation of the transmission line will not significantly impact rural water supplies. The installation or abandonment of any wells is not anticipated to be necessary for transmission line construction. No surface water or groundwater appropriation is anticipated.

### **Telephone, Fiber Optic, Microwave, Television and Radio Communications**

No impacts to these communication resources are anticipated as none are located within the 125-foot right-of-way route.

#### ***5.3.2.2 Proposed Route***

See above, Section 5.3.2.1.

#### **5.3.3 Mitigation**

##### ***5.3.3.1 Corridor***

Construction and operation of the project will be in accordance with all associated federal and state permits and laws, as well as industry construction and operation standards. Due to the minor impacts expected on the existing infrastructure during project construction and operation, extensive mitigation measures are not anticipated.

### **Local Services**

With the addition of transmission capacity, no impact to local services is anticipated, and no mitigation is required.

### **Electrical Service**

Construction of the project will not negatively impact transmission system service, and no mitigation is necessary.



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### **Roads**

Use of public and private roads for delivery of equipment and materials, and by construction personnel, is not expected to affect the road conditions. Construction equipment and material weights will generally be no greater than the existing large farm equipment common in the project vicinity. Use of temporary access roads across agricultural lands may result in compaction of agricultural soils and loss of crops. Where necessary, compacted soils will be disked following construction, and landowners will be compensated for crop losses.

### **Traffic**

No impacts are anticipated, and no mitigation is necessary.

### **Water Supply**

In the event wells are abandoned, they will be sealed as required by North Dakota law. If temporary dewatering of groundwater is required during construction activities, dewatering water will be discharged under the requirements of a National Pollutant Discharge Elimination System (NPDES) permit and Storm Water Pollution Prevention Plan (SWPPP).

### **Telephone, Fiber Optic, Microwave, Television and Radio Communications**

The Utilities Underground Location Center will be contacted prior to construction to locate and avoid underground facilities. To the extent that the proposed facilities cross or otherwise may affect existing telephone or fiber optic lines or equipment, M-Power will negotiate agreements with service providers to avoid interference with their facilities.

Since no impacts to microwave or land-based telecom systems are anticipated, no mitigation is proposed.

#### ***5.3.3.2 Proposed Route***

See above, Section 5.3.3.1.

## **5.4 HUMAN HEALTH AND SAFETY**

### **5.4.1 Description of Resources**

#### ***5.4.1.1 Human Health***

The term electromagnetic field (EMF) refers to electric and magnetic fields that are present around any electrical device. Electric fields arise from the voltage or electrical charges and magnetic fields arise from the flow of electricity or current that travels along transmission lines, distribution (feeder) lines, substation transformers, house wiring, and electrical appliances. The intensity of the electric field is

related to the voltage of the line and the intensity of the magnetic field is related to the current flow through the conductors (wire). EMF can occur indoors and outdoors.

Considerable research has been conducted throughout the past three decades to determine whether exposure to power-frequency (60 Hz) EMF cause biological responses and health effects. Epidemiological and toxicological studies have shown no statistically significant association or weak associations between EMF exposure and health risks. There are no discernible health impacts from power lines.

In 1999, the National Institute of Environmental Health Sciences (NIEHS) issued its final report on “Health Effects from Exposure to Power-Line Frequency Electric and Magnetic Fields” in response to the Energy Policy Act of 1992. NIEHS concluded that the scientific evidence linking EMF exposures with health risks is weak and that this finding does not warrant aggressive regulatory concern. However, because of the weak scientific evidence that supports some association between EMF and health effects, and the common exposure to electricity in the United States, passive regulatory action such as providing public education on reducing exposures is warranted

Recent reviews of potential human health effects from transmission line EMF were completed in California (California EMF Program 383) as part of the State of California EMF Program and in Wisconsin for the Arrowhead-Weston Environmental Impact Statement (EIS) (Arrowhead-Weston 5-21). Both studies have similar conclusions of no discernible health impacts from power lines. Both of these studies recommend the general precaution of minimizing unnecessary contact and advise prudent avoidance to EMF exposure.

As noted above, current passing through any conductor, including a transmission wire, produces a magnetic field in the area around the wire. The magnetic field associated with high voltage transmission lines surrounds the conductor and decreases rapidly with increasing distance from the conductor. The magnetic field is typically expressed in milliGauss (mG). The magnetic fields of some home appliances are greater than that from transmission lines. Table 14 shows the magnetic fields of some common household appliances.

Florida and New York, which have 150 and 200 mG exposure limits at the edge of the right-of-way, respectively, are the only two states with magnetic field exposure standards in the country. The general standard among the other states is prudent avoidance.



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**Table 14  
Magnetic Fields of Common Electric Appliances**

Appliance	Distance from Source		
	6 inches	1 foot	2 feet
	Magnetic Field Level (mG)		
Hair Drier	300	1	--
Electric Shaver	100	20	--
Can Opener	600	150	20
Electric Stove	30	8	2
Television	NA	7	2
Portable Heater	100	20	4
Vacuum Cleaner	300	60	10
Copy Machine	90	20	7
Computer	14	5	2

Source: *EMF In Your Environment* (EPA 1992).

**5.4.1.2 Human Safety**

Proper safeguards will be implemented during construction and operation of the facility. The project will be designed to meet local, state, NESC, M-Power, and RUS safety standards. Construction crews will comply with local, state, NESC, M-Power, and RUS standards regarding the installation of facilities.

The proposed generation outlet will be equipped with protective devices such as breakers and relays to safeguard the public from the transmission line if an accident occurs or if a structure or conductor falls to the ground.

**5.4.2 Impacts**

**5.4.2.1 Corridor**

**Human Health**

While the general consensus is that electric fields pose no risk to humans, the question of whether exposure to magnetic fields potentially can cause biological responses or even health effects continues to



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be the subject of research and debate. Based on the most current research on electromagnetic fields, the project will have little impact to public health and safety due to EMF. The addition of transmission facilities is not expected to add significantly to the presence of EMF exposure in the corridor.

**5.4.2.2 Proposed Route**

**Human Health**

Electric forces and magnetic fields have been modeled from single circuit 230-kV transmission lines. Electric fields have been predicted to decrease to background levels of approximately 0.1 kilovolt per meter (kV/meter) within 200 feet of the transmission line. Based on the 230-kV pole design, magnetic fields are predicted not to exceed levels of 200 mG when the line is conducting 400 MW of electric power. At distances of 50 feet away from the pole it is expected that the level of the magnetic field will be approximately 40mG. This distance is less than one-half the proposed right-of-way width M-Power seeking to obtain. At these levels the exposure level at the edge of the right of way is significantly less than that of common household appliances and less than the standards set in Florida and New York. The nearest potential receptor to the proposed route is at least 900 feet away from the transmission line, where EMF is predicted to be significantly below background levels.

**5.4.2.3 Human Safety**

No impacts are anticipated.

**5.4.3 Mitigation**

**5.4.3.1 Corridor**

**Human Health**

In selecting a route that avoids impacts to residences and other occupied structures, M-Power has limited human exposure to EMF to the extent practicable. No additional mitigation should be needed.

**Human Safety**

Assuming the proper safeguards and protective measures are implemented as described above, no additional mitigation is proposed.

**5.4.3.2 Proposed Route**

See above Section 5.4.3.1.



## 5.5 NOISE

### 5.5.1 Description of Resources

Noise is comprised of a variety of sounds of different intensities, across the entire frequency spectrum. Humans perceive sound when sound pressure waves encounter the auditory components in the ear. These components convert these pressure waves into perceivable sound. Noise is measured in units of decibels (dB) on a logarithmic scale. Because human hearing is not equally sensitive to all frequencies of sound, certain frequencies are given more “weight.” The A-weighted (dBA) scale corresponds to the sensitivity range for human hearing. Noise levels capable of being heard by humans are measured in dBA, the A-weighted sound level recorded in units of decibels. A noise level change of 3-dBA is imperceptible to human hearing. A 5-dBA change in noise level, however, is clearly noticeable. A 10-dBA change in noise levels is perceived as a doubling of noise loudness, while a 20-dBA change is considered a dramatic change in loudness. Table 15 shows noise levels associated with common everyday sources and places in context the magnitude of noise levels discussed herein.

Generally, background noise levels in rural areas vary between 40 and 50 dBA, while in suburban areas these levels increase to 50 to 60 dBA. In urban areas noise levels vary between 60 and 70 dBA (FRA 2005). Most of the corridor has background levels consistent with rural areas. The windy conditions in this region tend to increase ambient noise levels compared to other rural areas. Additionally, higher levels exist near roads and other areas of human activity. The southern portions of the route and corridor near Pillsbury have higher noise levels. The BNSF railroad is a significant source of noise near southernmost portion of the route. Rail cars traveling at 50 mph at a distance of 100 feet have noise levels of approximately 75 dBA. Train horns sounded at crossing vary between 95 and 115 dBA (FRA 2005).

**Table 15  
Common Noise Sources and Levels**

Sound Pressure Level (dB)	Typical Sources
120	Jet aircraft takeoff at 100 feet
110	Same aircraft at 400 feet
90	Motorcycle at 25 feet
80	Garbage disposal
70	City street corner
60	Conversational Speech
50	Typical office
40	Living room (without TV)
30	Quiet bedroom at night

Source: Environmental Impact Analysis Handbook, ed. by Rau and Wooten, 1980

## **5.5.2 Impacts**

### **5.5.2.1 Corridor**

There will be few people out near the transmission line on a routine basis in the corridor because it crosses through primarily rural and agricultural areas. Those individuals that are in the within the corridor may experience a small amount of noise near the transmission line during some conditions. The noise levels will be greater for those closer the route as described in 5.5.2.2. Typically, the attenuation rate for linear noise sources (i.e. the transmission line) is approximately -4 dB per distance doubled. In other words, the farther from the generation outlet a person is, the less noise they will hear.

### **5.5.2.2 Proposed Route**

Transmission conductors produce noise under certain conditions. The level of noise or its loudness depends on conductor conditions, voltage level, and weather conditions. Noise emissions are greatest from transmission lines during heavy rain and wet conductor conditions. In foggy, damp, or rainy weather conditions, power lines can create a subtle crackling sound due to the small amount of the electricity ionizing the moist air near the wires. During heavy rain the general background noise level is usually greater than the noise from a transmission line. Additionally, few people are out near the transmission line during these conditions. For these reasons audible noise is not noticeable during heavy rain. During light rain, dense fog, snow and other times when there is moisture in the air, the proposed transmission lines will produce audible noise higher than rural background levels but similar to household background levels. During dry weather, audible noise from transmission lines is an imperceptible, sporadic crackling sound.

The route was sited to be at least 900 feet from occupied houses and structures. This will minimize the noise that any individual will hear along the route. At the 900 feet distance and farther from the transmission line, the noise levels will be below the background noise levels and are not expected to be perceptible.

During construction activities, there will be noise associated with the construction equipment. The noise will be temporary at any given location, lasting only for a few days to week along given segments of the route, and is not expected to be significant.

## **5.5.3 Mitigation**

### **5.5.3.1 Corridor**

All occupied houses and structures will be at least 900 feet from the transmission line and substation. At this distance, noise from the generation outlet is predicted to be at or below background levels, especially

in areas near roadways and the BNSF railroad.

During construction, noise levels will be minimized by ensuring that construction equipment is equipped with mufflers that are in good working order. Construction activities will generally be limited to the hours of 7 a.m. to 7 p.m. and not likely to occur during earlier morning or later evening hours. No additional mitigation measures are necessary since there will be nominal noise impacts from the project.

### **5.5.3.2 Proposed Route**

See above, Section 5.5.3.1.

## **5.6 VISUAL IMPACTS**

### **5.6.1 Description of Resources**

The topography of the study area within Barnes and Steele Counties is characterized by gently rolling hills and small shallow lakes formed by glacial action. This region includes portions of the Sheyenne and Maple River deltas, which together occupy an area of about 70 square miles. At the southernmost portion of the corridor near Pillsbury, the surface elevation is approximately 1,300 feet, gradually increasing to approximately 1,500 feet near the northern termination of the route. An aerial map of the study area is shown in Figure 3, and a topographic map of the study area is shown in Figure 4.

The southern portion of the corridor and route crosses the existing BNSF railroad. A portion of the Cenex gas pipeline lies within the corridor near the BNSF railroad. There are also several existing distribution lines and other manmade features within the study area vicinity. Within the corridor and route, the dominant land use is row crop agriculture with some grazing. The most widely grown crops in the study area are soybeans, spring wheat, corn, and dry edible beans.

There are minor woodland and wetland areas scattered throughout the corridor. A mix of deciduous and coniferous trees planted for windbreaks typically surround existing and abandoned farmsteads. Generally, these forested areas are isolated groves or windrows established by the landowner/farmers to prevent wind erosion and shelter dwellings. Typical tree species used for this purpose include box elder, bur oak and cottonwood. There are scattered areas that have been designated as wetland easements within the corridor area. Wetland easements include signed agreements with private landowners to permanently protect valuable wetlands. These wetland areas cannot be drained, burned, filled, or leveled, and generally consist of native tall grass prairie and wetland species which contrast with the surrounding agricultural lands. Within the study area there are numerous isolated wetland areas which are generally dominated by cattails, sedges, rushes and willows.

Appendix G includes photos of the typical existing environment in the study area.

## **5.6.2 Impacts**

### **5.6.2.1 Corridor**

The proposed transmission line will be visible to landowners and community residents who live near the proposed route within the corridor. Most of the H-frame and large angle double deadend transmission structures will be new visible features. Visual impacts of those structures in the southern portion of the corridor adjacent to existing infrastructure (e.g. BNSF rail line, roadways), are expected to be minimized by consolidating the new infrastructure views with existing ones.

### **5.6.2.2 Proposed Route**

While the proposed transmission line will be located outside of all local communities, it may be visible to some residents traveling to those areas. Visual impacts will be most evident to drivers traveling north and south on SH 32, as well as those traveling east and west on SH 26. The transmission line will only impact landowners and residents that live in close proximity to the proposed route.

Within the first mile the new transmission line would cross the BNSF railroad, the most visible feature within the route. However, the majority of the proposed route will cross agricultural land. Impacts to aesthetics will be minimized by positioning the proposed route through rural areas. M-Power is proposing to use H-frame and large angle double deadend transmission structures. The H-frame structures will be approximately 60 feet in high with an average span between each structure of 600 to 900 feet, and large angle double deadend structures will be approximately 60 feet high with an average span between each structure of approximately 300 feet. Figures 5 and 6 depict the typical structures that will be used for the transmission line

## **5.6.3 Mitigation**

### **5.6.3.1 Corridor**

The proposed corridor contains an existing railroad, and pipeline infrastructure near its southern origin. The new transmission line will be sited within close proximity to these existing features in order to keep the infrastructure within the same corridor. The remaining area within the corridor is agricultural in nature. No impacts to the corridor are anticipated and no mitigation is warranted.

### **5.6.3.2 Proposed Route**

The transmission line will contrast with most of the surrounding land uses, excluding those areas which have already been visually impacted by an existing railroad and gas pipeline. The proposed route will not impact any existing residences. Care is being taken to avoid structure placement, as much as possible, in



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biologically sensitive areas such as wetlands and high quality native prairies. Placing structures in front of picture windows will also be avoided

## **5.7 CULTURAL RESOURCES**

### **5.7.1 Description of Resources**

In March of 2008, M-Power contacted the North Dakota SHPO (SHPO) to request a review of potential project-related impacts on known or suspected cultural resources along the proposed 230-kV generation outlet route. The SHPO did not respond. However, M-Power reviewed cultural resources information on file at the SHPO for the proposed corridor (Appendix E). Table 16 lists the four previous cultural resource inventories on file at the SHPO for the proposed project area, and Table 17 summarizes the one cultural resource site identified in these previous investigations.

**Table 16  
Previously Identified Investigations in the Project Area**

<b>Manuscript Number</b>	<b>Manuscript Title</b>	<b>Author(s)/Associations</b>	<b>Report Date</b>
004280	<i>Field Reconnaissance Survey of Churches in Barnes, Ransom, Richland, Sargent and Steele Counties of North Dakota</i>	Prairie Research	1997
005443	<i>Cenex Pipeline Company Fargo Extension Class III Cultural Resource Survey</i>	Cultural Research Management	1990
009969	<i>Keystone Pipeline Project; Class I, II and III Cultural Resource Investigations in Eastern North Dakota, Volumes 1 &amp; 2 &amp; Addendum 1 (2007)</i>	Bleier, A., E. Stine, J. Mayer, M. McFaul, A. Kulevsky, A. Barth.	2006
005944	<i>Hope Historic Structures Survey, Steele County, North Dakota</i>	Jonason, R.	2004

M-Power will continue to coordinate with SHPO in anticipation of conducting an archaeological field investigation (Class III investigation). This investigation will be conducted by a professional archaeologist permitted by the State of North Dakota per NDCC Section 55-03-01. M-Power will provide the SHPO a report for review following its investigations, and will consult upon report recommendations with SHPO staff.

**5.7.2 Impacts**

**5.7.2.1 Corridor**

The placement of poles and associated features will determine the potential impacts to cultural resources. One cultural resource site is potentially within the project corridor (Table 17), Site 32BAX0184 is the location of the Algeo Post Office. The site was recorded in either Section 4 or Section 12 of Township 143N, Range 57W. The southeast quarter of Section 12 is within the corridor; however, the proposed route does not enter Section 12. Therefore, no impacts to this site are anticipated.

The probability of encountering intact cultural resources is largely dependent on landforms and previous land use activities. Areas utilized for agricultural or mining activities will generally contain a lower probability for containing intact cultural resources, although it is understood by M-Power and the SHPO that agricultural activity does not always compromise archaeological site integrity.

**Table 17**  
**Previously Identified Archaeological Sites**  
**within the Project Area**

Site Number	Site Type	Cultural Affiliation	Comments	Manuscript Number	Location			Eligibility to NRHP	Management Recommendations
					Township	Range	Section		
32BAX184	Post Office	Historic	Algeo Post Office	004280	143N	57W	4 or 12	Unevaluated	No further work

**5.7.2.2 Proposed Route**

The proposed route follows section quarter lines for almost the entire length. M-Power does not anticipate adverse impacts to previously identified cultural resources as a result of the proposed project due to its proximity within actively cultivated lands. In the event that field investigations identify new cultural resources, M-Power will consider the location of potentially eligible cultural resources and attempt to avoid them.

**5.7.3 Mitigation**

**5.7.3.1 Corridor**

M-Power does not anticipate adverse impacts to potentially eligible cultural resources within the corridor. The one cultural resource site identified during the background and literature review generally warrants no further consideration because project activity is unlikely to impact it. However, if any additional potential NRHP-eligible sites are identified throughout the course of the project, that may likely be impacted, they will be considered on a case by case basis to determine proper mitigation procedures.



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#### **5.7.4 Proposed Route**

M-Power does not anticipate impacts to identified NRHP eligible sites or any other cultural resources along the proposed route. If potential NRHP eligible sites are identified during field investigations that will be impacted, a professional archaeologist in coordination with the SHPO would establish appropriate buffers around the potentially eligible cultural resources, or develop other necessary treatment, to protect site integrity.

M-Power will consider impacts to identified potential NRHP-eligible cultural resources to the extent practical. Constructing the line to avoid or span sensitive areas should avoid many of the identified cultural resources in the area. In the event that an impact would occur, M-Power would determine the nature of the impact and consult with SHPO on whether or not the resource was eligible for listing on the NRHP. If the resource was determined eligible, mitigation could include an effort to minimize project impacts on the resource and/or collection of additional documentation through data recovery.

M-Power will develop a discovery plan should previously unknown cultural resources or human remains be inadvertently encountered during the project. The plan would outline the framework for handling such discoveries in an efficient and legally compliant manner. If human remains were identified procedures would be followed to ensure that the appropriate authorities would be involved and in accordance with local and state guidelines such as NDCC Section 23-06-27.

### **5.8 RECREATIONAL RESOURCES**

#### **5.8.1 Description of Resources**

Recreational opportunities in Barnes and Steele Counties include camping, hiking, biking, swimming, golfing, hunting, fishing and nature observation. Review of state and federal databases indicates that no registered national wildlife refuges, state game refuges, or nature preserves are present within the corridor. Review of state and federal databases indicates that no registered national wildlife refuges, state game refuges, game management areas, or nature preserves are present within the corridor.

There are USFWS wetland easements on four sections within the corridor. The USFWS properties are private properties in which the USFWS has an easement for protection of wetland and grassland resources. These areas are depicted in Figure 2. The wetland easements stipulate that the landowner can not drain, fill, or burn the wetlands within the easement. The grassland easements stipulate that a landowner can not disturb the sod or burn the native grasslands within the easement. The purpose of wetland easements and grassland easements are to protect wetland areas and adjacent grassland buffers for the reproduction and growth of waterfowl species. USFWS wetland and grassland easements in the corridor are managed through the Valley City Wetland Management District. M-Power is coordinating

with the USFWS to identify the wetland easement boundaries. Final pole placement will be designed to avoid wetland easements to the extent practicable. In addition, special precautions will be taken during construction to protect wetland easements.

There are no Barnes or Steele county parks within the corridor.

#### ***5.8.1.1 Corridor***

In general, recreational impacts will be visual in nature and limited to individuals using public or private property in the corridor for hiking, hunting, fishing, or nature observation. See Section 5.6 for detailed discussion of anticipated visual impacts and proposed mitigation measures. No other significant impacts to recreational resources are anticipated

#### ***5.8.1.2 Proposed Route***

Recreational impacts will be primarily visual in nature and limited to individuals using public or private property for hiking, hunting or nature observation. M-Power has attempted to avoid all USFWS wetland easements along the proposed route, and will continue to coordinate with the USFWS during final pole placement. No Private Land Open to Sportsmen (PLOTS) areas are found in Barnes or Steele Counties that would be crossed by the route. No additional impacts are anticipated.

### **5.8.2 Mitigation**

#### ***5.8.2.1 Corridor***

Since it is not anticipated that any recreational resources will be removed from service by implementation of the proposed project, no adjacent land will be converted or dedicated to recreational use or wildlife management. Secondary recreational uses of proposed project property may be allowable depending on security requirements. No other mitigation is anticipated to be necessary.

#### ***5.8.2.2 Proposed Route***

The route will follow section quarter lines for almost the entire length, and has been routed to avoid impacts to recreational areas.

## **5.9 EFFECTS ON LAND BASED ECONOMIES**

### **5.9.1 Description of Resources**

#### **Agriculture/Farming**

The majority of the corridor is cultivated farmland and grasslands as summarized in Table 11 and shown on Figure 7. Approximately 15,501 acres of the corridor and 170 acres of the route are composed of



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cultivated land. Native grassland makes up approximately 530 acres of the corridor and four acres of the route. Woodlands make up approximately 31 acres of the corridor but are limited to small areas within the route.

According to the North Dakota Annual Statistics Bulletin, Barnes County is ranked 24<sup>th</sup> among North Dakota counties in agricultural products sold and Steele County is ranked 34<sup>th</sup>. Within the corridor, soybeans are the most widely grown crop. Spring wheat, corn (grain), and dry edible beans are additional crops in the corridor.

Barnes County has approximately 838 farms (in the 2002 census), of which the primary commodity is soybeans; Barnes County ranks fourth in the state in production of soybeans. Cattle are the primary livestock in Barnes County. The market value of agricultural products from Barnes County in 2002 was approximately \$94,215,000. Crop sales account for approximately 92 percent of the total value of agricultural products (USDA NASS 2002).

Steele County has approximately 318 farms (in the 2002 census), of which the primary commodity crop is soybeans; Steele County ranks ninth in the state in production of soybeans. Cattle are the primary livestock in Steele County. The market value of agricultural products from Steele County in 2002 was approximately \$52,199,000. Crop sales account for approximately 97 percent of the total value of agricultural products (USDA NASS 2002).

Prime farmland is an important factor in the crop production for Barnes, and Steele Counties. Prime farmland is defined as land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber and oilseed crops. The National Resource Conservation Service (NRCS) has two classifications for prime farmland. The first classification includes all areas of the soil series, and the second includes only the drained areas of the soil series. The NRCS also identifies farmland of statewide and local importance, which is land that is important for the production of food, feed, fiber, forage and oilseed crops. Generally, additional farmlands of statewide or local importance include those that are nearly prime and that produce high yields of crops in an economic manner when treated and managed according to acceptable farming methods. Some may produce as high a yield as prime farmland soils if conditions are favorable. Figure 8 shows the prime farmland soil distribution in the corridor and along the route.

Table 18 summarizes the amounts of prime farmland and soils of statewide/local significance in the corridor and crossed by the route. The corridor through Barnes County is composed of 1,779 acres (49%) prime farmland soils, and the 125-foot route contains 18 acres (52%) prime farmland soils. Steele County contains 6,386 acres of prime farmland (46%) within the corridor, and 96 acres or 59% within the route.



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**Table 18  
Acres of Prime Farmland, Soils of Statewide/Local Importance, and Prime Farmland when Drained in the Corridor and along the Route.**

County	All Areas Are Prime Farmland (acres)	Soil of Statewide/Local Importance (acres)	Prime Farmland Only When Drained (acres)	Not Prime Farmland (acres)	Percent Prime Farmland
<b>Study Area Corridor</b>					
Barnes	1,738.6	0.0	868.3	985.6	48.4
Steele	6,156.8	4,868.4	1,611.8	867.6	45.6
<b>Proposed Route</b>					
Barnes	17.0	0.0	7.1	9.1	51.1
Steele	74.6	53.0	13.0	7.8	50.3

Table 19 lists the soils considered prime farmland and soils of statewide or local importance in the corridor that are within the proposed route.

**Table 19  
Farmland Soil Characteristics along the Proposed Route – Barnes and Steele Counties**

Corridor Soil Units	All Areas Are Prime Farmland	Soil of Statewide & Local Importance	Prime Farmland Only When Drained	Soil Unit in Route
Balaton-Wyard loams, 0 to 6 percent slopes	X			X
Barnes-Buse loams, 3 to 6 percent slopes	X	X		X
Barnes-Buse loams, 6 to 9 percent slopes				X



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Corridor Soil Units	All Areas Are Prime Farmland	Soil of Statewide & Local Importance	Prime Farmland Only When Drained	Soil Unit in Route
Barnes-Buse loams, 9 to 15 percent slopes				
Barnes-Buse-Langhei loams, 6 to 9 percent slopes		X		X
Barnes-Buse-Langhei loams, 9 to 15 percent slopes				
Barnes-Buse-Parnell complex, 0 to 6 percent slopes		X		
Barnes-Sioux loams, 0 to 6 percent slopes				
Barnes-Sioux loams, 6 to 9 percent slopes				
Barnes-Sioux loams, 9 to 25 percent slopes				X
Barnes-Svea loams, 0 to 3 percent slopes	X			
Barnes-Svea loams, 3 to 6 percent slopes	X			X
Binford-Coe complex, 0 to 6 percent slopes				
Brantford loam, 0 to 2 percent slopes				
Buse-Barnes loams, 15 to 35 percent slopes				X
Buse-Barnes-Darnen loams, 3 to 9 percent slopes		X		X
Buse-Barnes-Darnen loams, 6 to 15 percent slopes				X
Buse-Barnes-Darnen loams, 9 to 35 percent				



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Corridor Soil Units	All Areas Are Prime Farmland	Soil of Statewide & Local Importance	Prime Farmland Only When Drained	Soil Unit in Route
slopes				
Coe-Binford complex, 6 to 9 percent slopes				
Colvin silty clay loam, 0 to 1 percent slopes			X	
Darnen loam, 2 to 6 percent slopes	X			X
Divide loam, 0 to 2 percent slopes	X			X
Divide loam, loamy substratum, 0 to 2 percent slopes	X			
Fram-Wyard loams, 0 to 3 percent slopes			X	
Hamerly-Tonka complex, 0 to 3 percent slopes			X	X
Hamerly-Wyard loams, 0 to 3 percent slopes	X		X	X
Heimdal-Ernrick loams, 0 to 3 percent slopes	X			
Lamoure silt loam, channeled, 0 to 6 percent slopes				X
Lowe loam, channeled, 0 to 2 percent slopes				
Marysland loam, 0 to 1 percent slopes			X	
Marysland loam, loamy substratum, 0 to 1 percent slopes			X	
Parnell silty clay loam, 0 to 1 percent slopes				X
Pits, gravel and sand				



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Corridor Soil Units	All Areas Are Prime Farmland	Soil of Statewide & Local Importance	Prime Farmland Only When Drained	Soil Unit in Route
Renshaw loam, 0 to 2 percent slopes				
Renshaw-Sioux loams, 2 to 9 percent slopes				
Sioux-Renshaw loams, 9 to 25 percent slopes				
Southam silty clay loam, 0 to 1 percent slopes				
Svea-Barnes loams, 0 to 3 percent slopes				
Svea-Cavour loams, 0 to 3 percent slopes				X
Tonka silt loam, 0 to 1 percent slopes			X	
Vallers-Hamerly loams, saline, 0 to 3 percent slopes				
Vallers loam, 0 to 1 percent slopes				
Vallers-Parnell complex, 0 to 1 percent slopes				
Vallers-saline-Parnell complex, 0 to 1 percent slopes				X

According to the North Dakota State Water Commission (Honeyman, 2008), there are no irrigation permits within the corridor.

There are 14 occupied residences within the corridor. Occupied residences are identified on Figure 2. The route centerline was sited to be at least 550 feet from occupied houses and structures. The nearest occupied residence to the proposed route is approximately 900 feet. There are no farmsteads with silos within 555 feet of the proposed route.



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## **Woodlands**

Economically important forestry resources are not found in the corridor. Woodlands are primarily associated with streams and rivers or woodlots and windbreaks at existing or abandoned homesteads in the corridor. Woodlands along the route are depicted as forest and sheltbelt on Figure 7.

## **5.9.2 Impacts**

### ***5.9.2.1 Corridor***

#### **Agriculture/Farming**

Permanent impacts will be associated with the areas surrounding the transmission line structures, where farming equipment will not be able to operate and crops will not be able to be grown. All areas underneath and surrounding the proposed transmission line will be available for agricultural use following construction. Quarter line siting preference facilitates use of large farm equipment, enabling operation on all types of structures. Considering the large amount of agricultural land in the corridor, potential impacts will be negligible. Temporary impacts typically include soil disturbance, possible compaction of farm soils and crop damage if construction occurs during the growing season.

## **Woodlands**

Since a majority of the woodlands are associated with homesteads and windbreaks, few impacts, if any, are anticipated.

### ***5.9.2.2 Proposed Route***

#### **Agriculture/Farming**

No impacts are anticipated to animal health and safety due to the construction or operation of the transmission line. Except for the physical locations of the transmission line structures, all the land surrounding the transmission line will be available for grazing.

Based on a review of structure types, locations and workspace requirements (Section 5.0) relative to existing land use, the permanent agricultural land that will be converted due to the project will be approximately 0.6 acres for the transmission line structures. Approximately 19.7 acres of agricultural land will be temporarily removed from production during construction of the transmission line poles, not including potential impacts due to temporary access. Landowner compensation for crop damages will be negotiated during individual lease agreements. As stated previously, agricultural areas surrounding transmission line structures generally will still be able to be farmed following construction of the project. It is possible that some of the land classified as agricultural may not be used for agricultural purposes



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during construction; thus the actual impacts to agriculture production cannot be determined until the transmission line location is finalized.

The effect of heavy equipment on agricultural soils may cause compaction. Compaction of soil is a concern where construction equipment is used intensively, even during a relatively short duration such as the construction season needed for transmission line installation.

When considering the impact on production for the top five crops in Barnes and Steele Counties, the temporary construction impact of 19.7 acres would affect less than 0.1 percent of the yearly production for those commodities based on yields reported in 2006 (USDA NASS 2007).

Family farms will be impacted due to the temporary loss of land during construction of the transmission line; permanent impacts are anticipated to be minor as noted above.

**Woodlands**

Limited woodland areas are present along the route. These woodlands are primarily associated with stream crossings, homesteads and windbreaks. Relatively few trees within the right-of-way are expected to need removal, except where needed for safe operation of the facilities.

**5.9.3 Mitigation**

**5.9.3.1 Corridor**

**Agriculture/Farming**

M-Power will work with landowners to minimize impacts to their land, and the transmission line structures will be located to minimize impacts to farming operations and prime farmland as much as possible. Land used for the structures will be unavailable for future crop production. However, once the generation outlet is constructed, all land surrounding the structures will still be able to be farmed or grazed. Construction staging areas and temporary transmission line access roads will be disked as necessary to relieve excessive compaction caused by construction. Landowners will also be compensated for any damage that occurs to crops due to the construction of the generation outlet.

**Woodlands**

Impacts to woodlands, if any, will be restricted to those areas necessary for the safe and reliable operation of the line. M-Power will replace impacted trees and shrubs at a ratio of 2:1 to a location where the trees will not impact the function of the transmission line, and M-Power will monitor the success of replacement vegetation for five years.



### 5.9.3.2 Proposed Route

See above, Section 5.9.3.1.

## 5.10 SOILS

Barnes and Steele Counties soil types; their characteristics and their acreage in the route are listed in Table 20 and shown on Figure 9.

**Table 20**  
**Soil Types and Characteristics**

Soil Type and Description	Acreage in Corridor	Acreage in Route
<b>Svea-Buse-Barnes</b> - Deep, level to moderately steep slopes, well drained and moderately well drained.	2,540.8	15.7
<b>Svea-Hamerly-Barnes</b> - Soils with a thick black surface layer and associated soils with a thin surface layer or very limey soil; they are usually rolling, undulating, and nearly level loams or clay loams.	3.3	0.00
<b>Tonka-Svea-Hamerly-Barnes</b> - Deep, level to gently sloping, somewhat poorly drained and poorly drained, medium textured soils.	14,561.9	166.1

### 5.10.1 Impacts

#### 5.10.1.1 Corridor

The permanent impact to soils in the area will be limited to areas removed from agricultural production at transmission line structure locations. Temporary impacts to soils are anticipated during construction in the areas immediately surrounding the transmission line structures.

#### 5.10.1.2 Proposed Route

The permanent impact to soils in the area will be limited to areas removed from agricultural production at transmission line structure locations. These impacts will be relatively minor, totaling approximately 0.6 acres for the transmission line. During transmission line construction, approximately 19.7 acres may be impacted temporarily for access roads and staging areas. In isolated cases, grading may be required for access roadway construction. Generally, soil removed in these cases will be on steep slopes and not agriculturally productive. A discussion of impacts to prime farmland soils is provided in Section 5.9.



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The potential for wind and water erosion exists in the soil types found within the corridor. Construction practices will minimize soil erosion during and after transmission line construction and impacts are not expected to be significant.

## **5.10.2 Mitigation**

### ***5.10.2.1 Corridor***

Wind and water erosion are potential hazards for the soils found within the corridor. To minimize erosion during and after construction, BMPs for erosion and sediment control will be utilized. Only non-structural practices are expected to be required. These practices include: temporary seeding, permanent seeding, mulching, filter strips, erosion blankets, grassed waterways and sod stabilization. Topsoil will be segregated if cuts are made during construction and reapplied after final contours have been graded.

### ***5.10.2.2 Proposed Route***

See above, Section 5.10.2.1.

## **5.11 GEOLOGIC AND GROUNDWATER RESOURCES**

### **5.11.1 Description of Resources**

#### **Geology**

Both Barnes and Steele Counties are contained within the Drift Prairie physiographic province. This area is characterized by gently rolling hills and shallow lakes formed by glacial action. The land surface within this province varies from strongly rolling to nearly flat.

Barnes County is characterized by gently undulating plains of ground moraine separated by relatively narrow, elongate end moraines creating a system of poorly defined and unconnected drainage resulting from glaciation. The surface deposits in Barnes County are composed primarily of material of glacial origin, ranging in texture from clay to large boulders (Kelly 1966). Within the corridor, the glacial deposits are primarily ground moraine. Total relief in Barnes County does not exceed 500 feet. Precambrian bedrock underlies Barnes County at a depth of more than 2,000 feet. The Precambrian is overlain by Cambrian sandstone, shale of the Deadwood Formation, and by three Ordovician formations. An angular unconformity separates the Ordovician strata from the overlying Dakota Sandstone. The Dakota Sandstone is the oldest formation that yields potable water in Barnes County. The formation is composed primarily of gray siltstone and shale with interbedded sandstone. A thick sequence of Upper Cretaceous shale overlies the Dakota Sandstone (Kelly 1966). Within the corridor, Niobrara and Pierre shale formations are present. Alluvium deposits are present along the Sheyenne, Maple and Rush Rivers



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with isolated deposits of sand and gravel occurring at numerous places on the ground moraine surface. One gravel pit was identified in the study corridor near Pillsbury.

The western portion of Steele County is characterized by flat to gently rolling topography. This topography is rugged in areas of end moraines and intense ice thrusting. However it is subdued on the ground moraine and outwash plains. Major landforms contained in this area include washboard moraines, drumlins, eskers, kames, meltwater trenches, and water-washed areas. Drainage is generally directed southeastward by the south-flowing Maple and Sheyenne rivers which converge near Fargo and eventually drain into the Red River of the North. The surficial geology is made up of younger geologic materials which were deposited mainly by glacial action. The oldest rock layer in the county is made up Precambrian basement rocks about 1,000 feet deep. This Precambrian layer is overlain by rocks of Cambrian age which include the Deadwood Formation. Newer Ordovician age layers including the Winnipeg, Red River, and Stony Mountain Formations make up the next geologic layer. Bedrock within Steele County includes rock of Ordovician, Jurassic and Cretaceous ages. Within the project corridor there are three rock units of Cretaceous age; the Carlile Formation which is found in the southernmost third of the corridor, the Niobrara Formation which includes larger central portion of the route, and the Pierre Formation which is located in the northernmost third of the corridor nearest the Sheyenne River (Bluemle 1975).

**Groundwater**

Ground water in Barnes County is obtainable from two major types of aquifers – consolidated rocks and unconsolidated glacial deposits. The Dakota Sandstone aquifer is the principal aquifer in the consolidated rocks, and has produced more water than any other aquifer in Barnes County. However, the water quality from the Dakota Sandstone aquifer is not suitable for modern appliances and plumbing and is primarily used for livestock. The depth of the wells in this aquifer range from 600 feet to 1,500 feet and are located primarily in the eastern half of the county where water-bearing sands are present at shallower depths. The Spiritwood aquifer is the most productive Barnes County aquifer composed of unconsolidated glacial deposits. Spiritwood aquifer water is generally of good quality. Its thickness ranges from 0 feet to 88 feet (Kelly 1966).

The Dakota aquifer is potentially the most productive bedrock aquifer in Steele County; however, most wells are unused but are maintained on a standby basis. The Dakota aquifer is located about 580-865 feet below the land surface. The study area is not within the area of any of the surficial aquifers. Steele County includes the Spiritwood, McVile, Elk Valley, and Galesburg glacial-drift aquifers. Many of the farms in the western portion of Steele County tap deposits of glacial till, developing wells which yield sufficient water to meet the needs of typical small farm operations (Downey and Armstrong 1977).



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## **5.11.2 Impacts**

### ***5.11.2.1 Corridor***

#### **Geology**

One gravel pit was identified within the proposed corridor near Pillsbury.

#### **Groundwater**

Impacts to groundwater resources are not anticipated as water supply needs will be limited to minor construction related activities. The H-frame structures will be installed at depths of 12 to 25 feet. These structures might encounter surficial groundwater but would not affect the quantity or quality of groundwater available.

### ***5.11.2.2 Proposed Route***

#### **Geology**

As noted in Section 5.11.2.1, no gravel resource areas are present in the proposed corridor. It is possible that other, undeveloped gravel resource areas are present in the area given the nature of the surficial geology. No active gravel or sand pits will be impacted by the route.

#### **Groundwater**

As noted in Section 5.11.2.1 groundwater resources will not be substantially affected.

## **5.11.3 Mitigation**

### ***5.11.3.1 Corridor***

At the corridor level, there is potential for sand and gravel resources to be made unavailable for future development. If this does occur, mitigation in the form of compensation could be required. No other mitigation is anticipated to be necessary.

### ***5.11.3.2 Proposed Route***

Transmission line structure locations will not impact the use of existing water wells because the structures will not be sited on or adjacent to occupied structures. Transmission line structures will be sited so as to avoid sand and gravel resources identified along the route. Where sand and gravel resources cannot be avoided, M-Power will coordinate with landowners regarding impacts and any necessary mitigation. No other mitigation is anticipated to be necessary.

## **5.12 SURFACE WATER AND FLOODPLAIN RESOURCES**

### **5.12.1 Description of Resources**

Surface water and floodplain resources for the corridor and route were identified by reviewing U.S. Geological Survey topographic maps, Flood Insurance Rate Maps (FIRM) produced by the Federal Emergency Management Agency (FEMA), current aerial photography, and USFWS NWI data. The Sheyenne River is located on the west boundary of the study area, and the Maple River situated east of this area. No major surface waters are located within the project corridor. Surface water from this area drains primarily to the south and east. The topography of the study area contains numerous intermittent tributaries, perennial and intermittent small lakes or ponds, and periodic wetlands including isolated palustrine wetlands. Seasonal variations in precipitation and groundwater recharge are the primary factors affecting wetland and lake elevations. These streams and ponds are depicted in Figure 2.

The project lies within the Red River Watershed Basin which spans an area of nearly 40,000 square miles within the states of North Dakota, Minnesota, and South Dakota. Most of the flow in the Red River comes from its eastern tributaries as a result of regional patterns in precipitation, evapotranspiration, soils, and topography. Although these flows can be variable, the highest streamflows generally occur in spring and early summer as a result of snowmelt, rain falling on melting snow, or heavy rain falling on saturated soils. Streamflow of the Red River during the remaining periods of the year are generally less than one-fourth of the average annual streamflow.

The study area is located in the drift prairie physiographic area. This area is characterized by gently rolling hills and shallow lakes formed by glacial action. This region includes portions of the Sheyenne and Maple River deltas, which together occupy an area of about 70 square miles. Both of these rivers are major tributaries to the Red River, and are limited in range to North Dakota. The Sheyenne River has a drainage area of about 6,910 miles and is about 500 miles long (Williams-Sether 2004). The Maple River is about 100 miles long and is a tributary of the Sheyenne River. This river originates in Steele County and generally flows south, turning to the northeast after it enters Ransom County. The Sheyenne River merges with the Maple River and shore deposits of glacial Lake Agassiz, and then empties into the Red River.

The study area occurs in the northeast corner of Barnes County and the southwest corner of Steele County. This area is blanketed with glacial drift, with uplands covered with till and associated glaciofluvial deposits. The floodplains of streams found within this area are blanketed by alluvium. The Luverne end moraine traverses the project area within the two counties from north to south, in an area east of the Sheyenne River. The highest elevation point on this moraine is 1,570 feet, located north of Valley City. Lake Ashtabula, located on the Sheyenne River is the only major surface water feature within the study area in either Steele or Barnes Counties.



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Although the corridor area crosses the no major rivers, it contains segments of five unnamed intermittent streams, and numerous unnamed ponds.

Reviews of the FEMA FIRM maps available reveal that there are no printed maps available for the corridor or project area. However, the Barnes County FIRM index map indicates that Pillsbury is not a flood prone city.

### **5.12.2 Impacts**

#### ***5.12.2.1 Corridor***

No impact to surface waters or floodplain resources within the corridor is anticipated. Although the generation outlet structures will be placed to avoid surface waters, construction of the generation outlet will cause some limited land disturbance within the corridor. The structures utilized for the transmission lines will not be prone to flood damages or contribute to any possible flooding within the corridor.

#### ***5.12.2.2 Proposed Route***

No major rivers or perennial streams occur within the proposed route. The route crosses thirteen intermittent streams or their tributaries. Impacts to these surface waters are not anticipated because they will be spanned. Impacts to wetlands are addressed below in Section 5.13.

### **5.12.3 Mitigation**

#### ***5.12.3.1 Corridor***

There are no anticipated impacts within the corridor which would require mitigation. The corridor will allow impacts to waters of the United States to be avoiding by routing and pole placement in uplands.

Construction access roads, if adjacent to intermittent streams and drainageways, can be designed in a manner to facilitate unrestricted runoff from the upper portion of the watershed to the lower portion of the watershed, and to control runoff from disturbed areas to drainageways. A NPDES permit application and Storm Water Pollution Prevention Plan (SWPPP) will be prepared by the M-Power and submitted to the North Dakota Department of Health, as required, prior to the initiation of transmission line construction.

#### ***5.12.3.2 Proposed Route***

No impacts to surface waters, streams or drainageways are anticipated due to the proposed route and structure locations; therefore, no mitigation is necessary. Mitigation to prevent surface water impacts will include those measures described in Section 5.12.3.1.



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## **5.13 WETLANDS**

### **5.13.1 Description of Resources**

Wetlands within the corridor and along the route have been provisionally identified by reviewing NWI data and recent aerial photography (Figure 10). The USFWS used historical aerial photographs as a basis for developing NWI maps. The NWI maps provide guidance in determining areas to be evaluated for wetland characteristics, but should not be used as the sole basis for wetland determinations. A formal wetland delineation has not been completed at this time, but will be completed prior to construction to determine jurisdictional limits of wetlands. Individual pole placements will be modified to avoid wetlands if possible (Figure 11).

Based on review of the corridor, some wetlands within the corridor appear to be isolated by topography and many within farmed areas appear to have been drained for agriculture use. At the origin of the corridor near Pillsbury, a number of braided tributaries appear within the corridor area, along with occurrences of isolated wetland areas of various sizes. The most northern portion of the corridor occurs in an area of relatively flat agricultural land which includes a mosaic of numerous smaller isolated wetland depressions and surface drainages.

Wetlands in the corridor represent typical glacial prairie pothole wetlands and range in size from isolated basins of a few hundred square feet to small lakes. For wetlands identified within the corridor, over 92 percent are palustrine emergent wetlands, seven percent are freshwater ponds, and less than one percent contains palustrine scrub-shrub areas. The NWI wetland types and their acreages within the corridor are summarized in and crossing locations are depicted in Figure 10.

The proposed route avoids many of the wetlands identified in the corridor, but its right-of-way overlaps 30 NWI wetlands areas totaling 7.0 acres within the new permanent right-of-way. However, because the transmission poles can be spaced up to 1,000 feet apart, all wetland impacts should be avoided by pole placement. Approximate pole locations relative to NWI wetlands are depicted on Figure 11.



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**Table 21  
 NWI Wetland Types and Acreages in Corridor**

<b>Wetland Acreages (by type)</b>		
<b>Cowardin Classification</b>	<b>Count</b>	<b>Acres<sup>1</sup></b>
Palustrine Aquatic Bed, Flooded	21	54.7
Palustrine Emergent, Flooded	1042	716.8
Palustrine Forested and Scrub-Shrub, Flooded	7	3.8
<b>Total</b>	<b>1070</b>	<b>775.3</b>

The NWI wetlands along the proposed route include only palustrine emergent wetlands as summarized in Table 22.

**Table 22  
 NWI Wetland Types and Acreages along the Route**

<b>Wetland Acreages (by type)</b>		
<b>Cowardin Classification</b>	<b>Count</b>	<b>Acres<sup>1</sup></b>
Palustrine Emergent Temporarily Flooded (PEMA)	14	1.8
Palustrine Emergent Temporarily Flooded, Partially drained (PEMA <sub>d</sub> )	1	0.1
Palustrine Emergent Temporarily Flooded, Seasonally Flooded (PEMC)	14	4.5
Palustrine Emergent Semi permanently Flooded, Seasonally Flooded, Partially drained (PEMC <sub>d</sub> )	1	0.6
<b>Total</b>	<b>30</b>	<b>7.0</b>

<sup>1</sup> Wetland acreage calculated by overlaying the proposed permanent right-of-way onto USFWS NWI data.



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## **5.13.2 Impacts**

### ***5.13.2.1 Corridor***

There are no anticipated impacts to wetland areas within the corridor. In general, the transmission line can be routed to avoid, or structures can be designed to span, and thus avoid, wetland areas.

During construction there is the possibility of sediment reaching surface waters as the ground is disturbed by excavation, grading and construction traffic. Reasonable efforts will be employed to limit any sediment movement within the project area. Following completion of the project it is anticipated that there will be no additional impacts on surface water quality.

### ***5.13.2.2 Proposed Route***

A review of the proposed route indicates that there are no wetlands along the proposed route which cannot be avoided by the route or spanned using the proposed transmission line structures. Wetlands over 1,000 feet in length, which is the maximum span of the proposed transmission line design, may require that transmission structures be placed in wetlands. If this occurs, each H-frame pole structure would result in 300 ft<sup>2</sup> of permanent impact.

## **5.13.3 Mitigation**

### ***5.13.3.1 Corridor***

There are no anticipated impacts to wetland areas within the project corridor. Most of the wetlands within the corridor are isolated basins and can be avoided by routing or spanning. M-Power will use BMPs during construction and operation of the transmission line to protect topsoil and minimize soil erosion into adjacent wetland resources. Practices may include containing excavated material, protecting exposed soil, stabilizing restored material and revegetating disturbed areas with native species.

### ***5.13.3.2 Proposed Route***

No wetland impacts are anticipated within the proposed route. In the event wetlands are delineated that within U.S. Army Corps of Engineers (USACE) jurisdiction that can not be avoided by routing or spanning, then M-Power will install the structure and mitigate impacts as authorized by Nationwide Permit 12. M-Power will also use BMPs during construction and operation of the transmission line to protect topsoil and minimize soil erosion into adjacent wetland resources. Practices may include containing excavated material, protecting exposed soil, stabilizing restored material and revegetating disturbed areas with native species.



## 5.14 VEGETATION

### 5.14.1 Description of Resources

While both the corridor and route are dominated by cropland (87 percent and 93 percent respectively), there is a difference in the composition of the remaining land. The second largest vegetation type is planted herbaceous perennials which in the corridor represents 4.5 percent of the vegetation, and in the route 2.4 percent. Wetlands and open water are the third largest cover type on both the corridor and the route at 5.4 and 2.3 percent, respectively, while prairie, woodlands, shrubs, and developed areas make up the rest the acreage. The total acreage of each land cover is listed in Table 23.

**Table 23**  
**Vegetation Types**

Vegetation Type	Approximate Acreage	
	Corridor	Proposed Route Right-of-Way
<b>Cropland.</b> Lands tilled and planted to annual herbaceous small grain and row crops. Common small grain crops include wheat, barley, and oats. Examples of row crops include corn, sunflowers, soybeans, and dry edible beans. The land cover category includes both non-irrigated and irrigated crops. These lands have a bare soil phase during the growing season that generally occurs in early spring when most crops are planted.	15,073	167
<b>Planted herbaceous perennials.</b> Lands planted to perennial herbaceous grasses, forbs, or grass-legume mixtures. Often the species planted are introduced species such as smooth brome, crested wheatgrass, alfalfa and sweet clover although some plantings are native grass species. Most lands are used to produce forage crops for harvest or for grazing by domestic livestock. This class includes lands enrolled in retired cropland conservation programs that are planted to grass and legume species. In addition to planted fields, smooth brome has invaded and established stands in many native grasslands and some of these are likely mapped as planted grasslands. Leafy spurge invasions in native grassland may also be mapped as this class.	723	5



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Vegetation Type	Approximate Acreage	
	Corridor	Proposed Route Right-of-Way
<p><b>Bluestem - Needlegrass-Wheatgrass transition prairie.</b> A transition prairie between tall grass prairie to the east and mixed grass prairie to the west generally occurring on soils derived from glacial materials. Common species are little bluestem, porcupinegrass, green needle grass, big bluestem, switchgrass, western wheatgrass, slender wheatgrass, needle and thread grass, blue grama, Kentucky bluegrass, and smooth brome. Dominance by a single species typically occurs only over small areas with most stands less than 0.1 ha in size. The complex distribution of species over short distances is believed to be largely determined by variability in plant available moisture and nutrients. An outstanding feature of glacial till parent materials is their variability due to the diverse ways by which the debris was laid down, of differences in the chemical composition of the original materials and of fluctuation in the grinding action of the ice. Soils heterogeneity occurs over short distances with textures varying from sands, silts, sand, and clays.</p>	57	<1
<p><b>Needlegrass prairie.</b> Dominant grasses are needle and thread grass, blue grama, and upland western wheatgrass and prairie sandreed are abundant locally. This vegetation occurs on nearly level to rolling landscapes with shallow to deep, moderately coarse textured soils, with moderate permeability and low to moderate available water capacity.</p>	1	<1
<p><b>Upland Deciduous Shrubland.</b> Upland areas dominated by shrubs typically occur on sites where available soil moisture is greater than sites with prairie land cover types and less than sites with woodland land cover types. Sites include well-drained depressions and riparian areas, north and east facing slopes, and woodland edges. Stands are typically small and vary greatly in shrub density and species composition. The following species are dominants in different stands: western snowberry occupies upland depressions, mesic swales, and flood plains; silver buffaloberry, chokecherry, Juneberry, fireberry hawthorn, silverberry, and American plum often occur as small, dense thickets in mesic swales and aspects, and the outer edges of floodplains and woodlands; smooth sumac occurs on the edges of Bur Oak woodlands in eastern North Dakota; skunkbush sumac occupies ridges, hills, and slopes associated with scoria outcrops in south western North Dakota; Eastern poison ivy often obtains greatest abundance on sandy soils.</p>	241	2
<p><b>Lowland Deciduous Shrubland.</b> Depression and riparian areas dominated by shrubs with a high water table and high water availability. This map unit includes lands mapped by the Palustrine scrub-shrub. Sandbar willow and peachleaf willow are common shrub species in this map unit. Beaked hazelnut, a common understory species of Aspen and Bur Oak woodlands, occurs as dense riparian shrublands in Pembina Hills.</p>	2	NA



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Vegetation Type	Approximate Acreage	
	Corridor	Proposed Route Right-of-Way
<b>Floodplain Woodland.</b> Woodlands occurring on the floodplains of the Red River and its tributaries, the Sheyene River, James River, Souris River, Mouse River, Missouri River and its tributaries, and Little Missouri River. Dominant tree species include green ash, American elm, and eastern cottonwood. Other associated tree species include American basswood, bur oak, quaking aspen, box elder, common hackberry, and Rocky Mountain juniper. The variability and diversity of floodplain forests decreases from east to west. Structure and composition of the forest overstory are strongly related to stand age and horizontal and vertical position on the floodplain.	4	NA
<b>Deciduous woodland.</b> Woodlands dominated by mixtures of deciduous species including the native tree species green ash, bur oak, Populus tremuloides, American elm, and eastern cottonwood and a wide variety of introduced deciduous and conifer tree species planted in shelterbelts, windbreaks and tree rows.	95	<1
<b>Green Ash Woodland.</b> Green ash - American elm woodlands are the most common type of woodland in North Dakota. Stands occur on the upland edge of floodplain woodlands, in the bottom and sides of draws and ravines, and mesic, typically north and north east facing, slopes. Box elder is a common tree species in these woodlands	4	NA
<b>Bur Oak Woodland.</b> Woodlands dominated by bur oak generally occur in the bottom and sides of draws and ravines, and well drained upland areas on a wide range of slope angles and aspects. Quaking aspen and green ash are associated tree species in some stands. Associated shrub species include beaked hazelnut, chokecherry, Juneberry, and western snowberry. Pennsylvania sedge is a common herbaceous understory species in the more mesic stands.	10	NA
<b>Palustrine temporary wetland.</b> Wetlands dominated by persistent emergents or aquatic beds where surface water is present for brief periods during the growing season, but the water table usually lies well below the soil surface. Plants that grow both in uplands and wetlands may be characteristic of this water regime.	337	1
<b>Palustrine seasonal wetland.</b> Wetlands dominated by persistent emergents or aquatic beds where surface water is present for extended periods especially early in the growing season, but is absent by the end of the growing season in most years. The water table after flooding ceases is variable, extending from saturated to the surface to a water table well below the ground surface.	337	5
<b>Palustrine semipermanent wetland.</b> Wetlands dominated by persistent emergents or aquatic beds where surface water persists throughout the growing season in most years. When surface water is absent, the water table is usually at or very near the land's surface.	176	1



Vegetation Type	Approximate Acreage	
	Corridor	Proposed Route Right-of-Way
<b>Water.</b> Surface water identified from analysis of Landsat Thematic Mapper imagery that was not identified as wetlands in the U.S. Fish and Wildlife Service National Wetland Inventory Data.	16	<1
<b>Developed - Commercial/industrial/transportation.</b> Infrastructure such as roads, railroads, airports and other highly developed areas not classified as high intensity residential.	21	<1

The North Dakota Department of Agriculture lists yellow toadflax as the only one of the twelve state noxious weeds present in the study area. The Department lists it as present in Barnes County; noxious weeds are not found in Steel County.

The corridor contains no state or federal grasslands. The USFWS does have wetland easements in four sections within the corridor. These USFWS easements are identified in Figure 2.

### 5.14.2 Impacts

#### 5.14.2.1 Corridor

Permanent impacts to vegetation will occur at each structure location. Temporary impacts will occur around each structure and where access is needed to construct each structure.

#### 5.14.2.2 Proposed Route

It is anticipated that temporary impacts will occur during construction and will include ground disturbance by construction equipment around each structure and along the right-of-way as the line is constructed. These impacts are anticipated to total approximately 19.7 acres.

Temporarily disturbed areas that are not cultivated will be reseeded per USFWS and NRCS recommendations to blend in with existing vegetation.

### 5.14.3 Mitigation

#### 5.14.3.1 Corridor

M-Power will work closely with landowners to minimize impacts to vegetation associated with structure placement along the route. M-Power will conduct a pre-construction survey for wetlands and native prairie to finalize structure locations to avoid impacts. M-Power will also attempt to avoid and minimize



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impacts to existing trees and shrubs. If impacts to individual trees and shrubs cannot be avoided, these resources will be mitigated at a ratio of 2:1 and plantings will be monitored for success for five years.

If permanent filling within jurisdictional wetland impacts is identified, then M-Power will comply with the requirements of the USACE Nationwide Permit 12. Permanent impacts to jurisdictional wetlands and waters will be mitigated according to USACE requirements.

M-Power will use BMPs during construction and operation of the transmission line to protect topsoil and minimize soil erosion to wetland resources. Practices may include containing excavated material, protecting exposed soil, stabilizing restored material and revegetating disturbed areas with native species.

***5.14.3.2 Proposed Route***

See above, Section 5.14.3.1.

**5.15 WILDLIFE**

**5.15.1 Description of Resources**

Wildlife in the corridor consists of birds, mammals, fish, reptiles, amphibians and insects, both resident and migratory, which utilize the corridor habitat for forage, migratory stopover, breeding and/or shelter. Species present in the project vicinity are associated with agricultural fields, pasture grasslands, and wetland areas. Common wildlife found in the project vicinity include ducks, geese, sandhill cranes, sharp tailed grouse, ring necked pheasant, various raptors, raccoon, mink, striped skunk, weasel, white-tailed deer, coyote, red fox, badger, porcupine and rabbit.

**5.15.2 Impacts**

***5.15.2.1 Corridor***

Raptors, waterfowl and other bird species may be affected by the construction and placement of the transmission line. Avian collisions are a possibility after the completion of the transmission line. Waterfowl are typically more susceptible to transmission line collision, especially if the line is placed between agricultural fields that serve as feeding areas, or between wetlands and open water, which serve as resting areas. Generally, the most difficult part of the structure for the bird to see is the shield wire.

Additionally, large birds, such as raptors, could potentially be impacted by generation outlet through electrocution. Electrocution occurs when birds with large wingspans come in contact with either two conductors or a conductor and a grounding device.



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**5.15.2.2 Proposed Route**

Avian interactions (i.e., collisions and electrocutions) with overhead power lines not only injure and kill birds, but also disrupt service and affect the state's ability to generate electricity. Transmission lines can be collision obstacles for migrating whooping cranes, waterfowl and other large water birds. M-Power proposes to place aviation ball markers along the line in areas of concentrated wetlands and at stream crossings to reduce the probability of collisions. See Figure 12 for proposed locations.

**5.15.3 Mitigation**

**5.15.3.1 Corridor**

The following measures will be used, to the extent practicable, to help avoid potential impacts to wildlife along the route during generation outlet design and operation:

- ◆ H-frame structures will be used for all but eight of the structures along the length of the generation outlet project. H-frame structures put the conductor wires in parallel, making them easier for birds to see.
- ◆ The proposed design will exceed the recommended safe clearances of 60 inches between a phase conductor and ground required for raptors. M-Power also proposes structure designs using suspension insulators with a clearance of approximately 84 inches.
- ◆ As requested by the USFWS, the proposed transmission line will be designed in accordance with guidance found in “2006 Suggested Practices for Avian Protection on Power Lines.”
- ◆ M-Power will work with the North Dakota Game and Fish Department (NDGF), and the USFWS, to identify areas to be considered for marking transmission line shield wires with “International Danger Orange” (U.S. Engineer’s Spec. 595-121197) aerial marking spheres to reduce avian collisions. Where proposed utility wires pose a potential aerial hazard to crane movement (e.g., wetlands and stream crossings), these devices would be installed on wires to ensure high visibility.
- ◆ M-Power is conducting preconstruction surveys for wetlands, native prairies and woodlands in the vicinity of the proposed transmission line to minimize impacts.
- ◆ M-Power will avoid or minimize disturbance of individual wetlands or drainage systems during construction and operation of the project.
- ◆ In case of permanent wetland impacts, M-Power will replace any unavoidable loss of wetland habitat will be done with functionally equivalent wetlands, as required by applicable permits.
- ◆ M-Power will installation and maintain of appropriate erosion control measures to reduce sediment transport to adjacent wetlands and stream channels.



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- ♦ M-Power will protect or replace existing trees and shrubs if impacted at a 2:1 ratio at the site, subject to landowner approval.
- ♦ M-Power will maintain sound water and soil conservation practices during construction and operation of the project to protect topsoil and adjacent resources and to minimize soil erosion. To minimize erosion during and after construction, North Dakota BMPs for erosion and sediment control will be followed. These practices include: temporary seeding, permanent seeding, mulching, filter strips, erosion blankets, grassed waterways, and sod stabilization.
- ♦ M-Power will revegetate non-cropland and pasture areas with seeding mix as recommended by the USFWS and NRCS.
- ♦ M-Power will inspect and control noxious weeds in the vicinity of the transmission line immediately after construction and periodically for the life of the project.

**5.15.3.2 Proposed Route**

See above, Section 5.15.3.1.

**5.16 RARE AND UNIQUE NATURAL RESOURCES**

**5.16.1 Description of Resources**

The USFWS, NDGF, and North Dakota Parks and Recreation (NDPR) were contacted to review the corridor for threatened and endangered species and unique habitats. In response to a request for a project review, the USFWS stated that there are currently no federally listed species or designated critical habitat present in the proposed transmission line corridor. However, the USFWS noted there have been historical sightings of the whooping cranes (*Grus americana*) using roosting habitat in the vicinity of the proposed transmission line route in other parts of Barnes County (No species are listed for Steele County). They further commented that “the proposed route is located outside the primary 180 mile-wide migration corridor that includes 95% of all confirmed whooping crane sightings in North Dakota.”

The whooping crane breeds in the wetlands of Wood Buffalo National Park in northern Canada and spends the winter on the Texas coast at Aransas National Wildlife Refuge near Rockport. These birds live in family groups which contain one or two offspring and their parents. The breeding habitat of whooping cranes includes freshwater marshes and prairies, while habitat used during migration and in winter consists of grain fields, shallow lakes, lagoons, and saltwater marshes (Lewis, 1995). During migration, whooping cranes make regular stops to feed and rest. Although migrating whooping cranes use a variety of habitats for foraging and resting during these stopovers, they generally seem to prefer isolated sites away from human activities (FWS, 1986).

Because whooping crane sightings have been confirmed in the vicinity together with potential suitable roosting and feeding habitat along the route, it is conceivable that this species could be found in the study area. However, whooping crane use of the cultivated farmlands found in the study area during their annual spring and fall migrations is remote given only five percent of all confirmed whooping crane sightings in North Dakota have been documented outside of the main migration corridor.

The NDPR provided a response and information from the North Dakota Natural Heritage Inventory Database (NHID) which the NDPR maintains as the most complete source of data on North Dakota's rare, endangered or otherwise significant plant and animal species, plant communities and other natural features. Jesse Hanson of the NDPR provided written comment on March 26, 2008, noting the recorded presence of Central mixed grass prairie (*Pascopyrum smithii* – *Stipa comata* prairie) within a one-mile radius located north and adjacent to the proposed transmission line corridor in northeast ¼ of Section 21, Township 145N, Range 57W. Due to the close proximity of this species to the immediate area proposed for the transmission lines study area, Mr. Hanson indicated that suitable habitat for this community may possibly exist within the corridor boundary. Surveys for this plant community will be conducted during the wetland delineation.

The NDGF did not respond.

## **5.16.2 Impacts**

### **5.16.2.1 Corridor**

No impacts to rare and unique natural resources are anticipated as both open water and other sensitive habitats are expected to be avoided by routing and pole placement.

### **5.16.2.2 Route**

No impacts to rare and unique natural resources are anticipated as both open water and other sensitive habitats are expected to be avoided. The route passes through some areas where potentially suitable habitat for mixed grass prairie communities may occur. The presence of this sensitive community will be investigated as a part of the wetlands survey that will be completed prior to construction. If the occurrence of the prairie community is confirmed within the route right-of-way, this area will be spanned by the transmission poles. In the event that those habitats cannot be avoided, M-Power will coordinate directly with both the USFWS and the NDPR, as appropriate, to evaluate the potential impacts and develop acceptable mitigation measures.

### **5.16.3 Mitigation**

#### **5.16.3.1 Corridor**

Site specific mitigation measures will not be necessary, since no impacts are anticipated to rare and unique natural resources. However, in response to the USFWS request the following design considerations will be implemented:

- The proposed transmission line will be designed in accordance with guidance found in “2006 Suggested Practices for Avian Protection on Power Lines.
- Power lines will be marked with state of the art line marking devices at all stream crossings, along the sections with designated wetland easements and areas of concentrated wetlands along the project route (Figure 12).
- Increased power line visibility in accordance with the document entitled: “Mitigating Bird Collisions with Power Lines: The State of the Art in 1994” will be utilized.
- M-Power will avoid native prairie if suitable habitat extends into the northern portion of the study area and execute surveys by a qualified biologist of any native prairie that is unavoidable.

#### **5.16.3.2 Route**

A pre-construction inventory of existing wetlands, native prairie, and woodlands will be conducted along the route. M-Power will avoid the resources identified to the extent practicable and implement the mitigation measures outlined in Section 5.16.3.1. No additional mitigation measures are proposed.

### **5.17 SUMMARY OF ROUTE IMPACTS**

Table 24 summarizes the resources that will be impacted as a result of the construction of the generation outlet and the appropriate mitigation.



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**Table 24  
Summary of Route Impacts and Mitigation**

<b>Resource</b>	<b>Impact</b>	<b>Mitigation</b>
Demographics	Socioeconomic impacts are primarily positive due to increased expenditures during construction and the long term benefits of an increased tax base of the county due to property taxes. A nominal amount of land will be permanently removed from production due to the construction of the project.	Impacts are primarily positive, so no mitigation is proposed for socioeconomic impacts. Impacts to landowners will be minimized to the extent practicable.
Land Use	Approximately 0.6 acres of land will be permanently impacted due to the construction of the generation outlet. The existing land use is primarily agriculture and will remain in agriculture use since the land under or adjacent to the line can still be used by the landowner.	M-Power will work with landowners and regulatory agencies to minimize impacts of the project.
Public Services	No impacts are anticipated.	The transmission system will be constructed according to the configuration identified by the Utilities to mitigate any potential impacts. Impacts to existing public services will be avoided to the extent practicable.
Human Health and Safety	No impacts are anticipated.	M-Power will follow "prudent avoidance" methods to minimize EMF exposure and any potential impacts to human health. If proper safeguards are implemented, no additional mitigation is required.
Noise	The closest occupied structure to the generation outlet is approximately 900 feet. No impacts to noise sensitive land uses are anticipated.	No mitigation measures are proposed.
Visual	The generation outlet will be evident to individuals traveling on adjacent as well as residences and landowners that live in close proximity to the transmission line and substations.	The route minimizes the number of residences impacted by the line.
Cultural and Archaeological	No impacts to previously identified cultural resources are anticipated.	M-Power has completed a Class I Cultural Resources Inventory for the corridor and route. A Class III inventory along the proposed route will also be conducted and the report recommendations will be provided to the SHPO for concurrence prior to construction.



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Resource	Impact	Mitigation
Recreational Resources	Impacts to recreational resources are primarily visual, and limited to individuals using the resources.	The generation outlet will follow section quarter lines for almost the entire length. Visual impacts will be minimized by placement of structures away from these features to the extent possible.
Land Based Economies	A total of approximately 0.6 acres of land will be permanently impacted by construction of the generation outlet. Approximately 19.7 acres of temporary impacts are anticipated.	M-Power will work with landowners to minimize impacts to their land. Prime farmland will be avoided to the extent practicable.
Soils	A total of approximately 0.6 acres of land will be permanently impacted by the generation outlet. Approximately 19.7 acres of temporary impacts are anticipated.	BMPs for erosion and sediment control will be utilized to minimize wind and water erosion along the route. Only land needed for the generation outlet will be permanently impacted. Temporarily disturbed areas that are not cultivated will be revegetated.
Geologic and Groundwater Resources	No impacts to geologic and groundwater resources are anticipated.	No mitigation measures are necessary.
Surface Water and Floodplain Resources	No impacts are anticipated to intermittent streams, drainageways or floodplain resources.	To minimize impacts during construction an NPDES permit and SWPPP will be prepared and submitted to the North Dakota of Health. No structures will be placed within a regulatory floodway.
Wetlands	No impacts are anticipated.	All wetland impacts will be avoided to the extent practicable. If wetlands are impacted that fall under USACE jurisdiction, M-Power will mitigate impacts as specified under USACE Nationwide Permit 12.
Vegetation	A total of approximately 0.6 acres of land will be permanently impacted by the generation outlet. Approximately 19.7 acres of temporary impacts are anticipated.	M-Power will work with the USFWS to minimize impacts. M-Power will avoid existing trees and shrubs as practicable. M-Power will use BMPs during construction and operation to minimize impacts. Impacts to individual trees or shrubs will be replaced at a ratio of 2:1 and will be



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Resource	Impact	Mitigation
		monitored for survival for five years. Temporarily disturbed areas will be reseeded per USFWS and NRCS recommendations.
Wildlife	Impacts to wildlife populations are expected to be minimal. Potential avian and bat collisions may occur, but are anticipated to be relatively small.	A variety of mitigation measures will be implemented, as discussed in Section 5.15.3.
Rare and Unique Natural Resources	Impacts to rare and unique natural resources are not anticipated.	Surveys will be completed for Central mixed grass prairie prior to construction to ensure that transmission structures can span the community. If impacts are found to occur, M-Power will coordinate with the USFWS for recommended revegetation seed mixes.

## **6.0 PUBLIC COORDINATION**

Keeping the public informed about the project’s status is a key component to its success. Landowners who have entered into easement agreements with M-Power are principal stakeholders in the project. Also, landowners along the route where easements are acquired will also become minority owners of the facility and will receive profit distributions from the energy transmitted through the line. M-Power has personally contacted all landowners whose property is crossed by the proposed route. On March 10, 2008, M-Power provided a written notice about the project to county chairmen and auditors; township and city officers; and representatives and senators of districts within the study area. In addition, M-Power has met with Steele and Barnes County Commissioners, and township and city officers representing the project area and their staff to inform them of the project, discuss local permit requirements and answer questions. M-Power will continue to meet with county, city and township officials as the project moves forward to obtain local permits and approvals that have been identified.

M-Power has notified the key state agencies identified in NDAC Section 69.06.01.05 about the project, and notified key federal agencies including the U.S. Army Corps of Engineers, Fish and Wildlife Service and the Natural Resources Conservation Service. Issues raised by state and federal agencies are described in Section 8.11 of the application and copies of correspondence are provided in Appendix F.



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M-Power is committed to keeping key stakeholders engaged in the project as it moves forward. M-Power may host a landowner meeting before the PSC public hearing if this is deemed appropriate, but this is not currently anticipated to be necessary.

In May 2008, M-Power hosted a bus tour of the proposed route for affected property owners. All property owners were invited to participate. A project briefing was provided prior to the bus tour, and M-Power staff answered questions from property owners.



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**7.0 IDENTIFICATION OF REQUIRED PERMITS/APPROVALS**

The federal, state and local permits or approvals that have been identified as potentially being required for the construction and operation of the project are shown in Table 25.

**Table 25  
Possible Permits and Approvals**

Agency	Type of Approval	Status*	Need
<b>Federal Approvals</b>			
USACE	Section 404 Permit	3	Permit required for fill in jurisdictional waters of the US. If needed, authorization under Nationwide Permit 12 is anticipated.
Environmental Protection Agency	Spill Prevention Control and Countermeasure (SPCC) Plan	3	Required if the substation facility has greater than 1320 gallons of oil. A copy of the plan will be maintained on file with the substation's owner/operator and will be reviewed by the certifying engineer every five years.
BNSF Railroad	Temporary Occupancy Permit	2	Required for any geotechnical studies required for the project.
	Wire Line Crossing or Longitudinal Communication and Electric Permit	1	Required for a project that crosses or is within the railroad right-of-way.
<b>State of North Dakota</b>			
Public Services Commission	Waiver of Procedures and Time Schedules	1	Included herein.
	Certificate of corridor Compatibility	1	Included herein.
	Certificate of Public Convenience and Necessity	2	Certificate issued by the PSC indicating public need and convenience for the generation outlet. M-Power will file at a later date in spring or early summer 2008
	Route Permit	1	Included herein.



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Agency	Type of Approval	Status*	Need
North Dakota Department of Health	401 Water Quality Certification	3	Required for fill in jurisdictional waters of US. If needed, authorization under Nationwide Permit 12 is anticipated.
	NPDES Permit: General Construction Storm Water	2	Required for disturbance of over 1 acre of land. Must prepare a Storm Water Pollution Prevention Plan (SWPPP).
North Dakota Division of Emergency Management	Emergency Planning and Community Right-to-Know Act (EPCRA) Tier II report	2	Required for owner/operators of facilities containing hazardous materials. A copy of the report must be filed annually by March 1 <sup>st</sup> .
SHPO	Permit to Investigate Effects on Cultural Resources	1	Compliance with NDCC Section 55-03 to assess the potential project effects to cultural resources.
	Section 106 Compliance Approval	3	Compliance with Section 106 of the NHPA is required if a project is considered a federal undertaking (i.e. federal funding, USACE.) Need for this compliance is not anticipated at this time due to the lack of a federal undertaking.
North Dakota Highway Patrol	Overheight/Overweight Permit	2	Permit required for hauling construction equipment and materials on state highways.
North Dakota Department of Transportation	Road Approach/Access Permit	2	Permit required for construction of access roads from state highways.
	Utility Permit/Risk Management Documents	2	Permit required for utility crossings on state highway right-of-way.



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Agency	Type of Approval	Status*	Need
<b>Local Permits</b>			
Barnes County and Steele County Townships  (Carpenter, Melrose, Riverside, and Willow Lake)	Conditional Use Permit	2	Permit required for project construction.
	Building Permit	2	Permit required for substation construction and generation outlet line.
	Haul Road Agreement	2	Permit required for hauling construction equipment and materials on County Roads.
	Utility Permit	2	Permit required for utility crossings on County road right-of-way.

\* Status Explanation:

1 Applied – Decision Pending

2 Will Apply Once Certificate and Route Permit is Received

3 Final Layout will Determine Whether Permit/Approval is needed

## **8.0 FACTORS CONSIDERED**

The North Dakota Energy Conversion and Transmission Facility Siting Act lists 11 factors to guide the Commission in evaluation of the corridor and route.

### **8.1 PUBLIC HEALTH AND WELFARE, NATURAL RESOURCES, AND THE ENVIRONMENT**

The preceding sections discuss the research and investigations relating the effects of the proposed facility on public health and welfare, natural resources, and the environment. The effects and mitigation in relation to the corridor and route are discussed in the impact and mitigation of Section 5.0. Impacts evaluated in the corridor and route are minor.

### **8.2 TECHNOLOGIES TO MINIMIZE ADVERSE ENVIRONMENTAL EFFECTS**

M-Power will utilize the most recent technologies that minimize impacts to the environment. The corridor study and consequently the route structures proposed for the project are the most appropriate technologies to minimize adverse environmental effects. This is evident in the minimal environmental effects identified in this application associated with the project.

### **8.3 POTENTIAL FOR BENEFICIAL USES OF WASTE ENERGY**

This factor is not applicable to this project.

### **8.4 UNAVOIDABLE ADVERSE ENVIRONMENTAL EFFECTS OF THE ROUTE**

Unavoidable adverse environmental effects include the visual impacts and physical impacts to the land (primarily agricultural land) associated with the project. M-Power will implement measures as described in the environmental analysis herein and as identified by regulatory agencies to minimize these unavoidable adverse environmental effects.

### **8.5 ALTERNATIVES TO THE PROPOSED CORRIDOR OR ROUTE**

M-Power did not identify any other alternatives to the proposed corridor because the proposed corridor seemed to meet the requirements prescribed by the PSC. The corridor that was studied was selected to convey energy from the proposed Luverne Wind Farm to the proposed Pillsbury substation for integration into the power grid.



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Alternatives to the route segments have been considered based on input M-Power received from agency responses and landowner concerns. Alternative routing in certain areas was evaluated in an attempt to avoid impacts to USFWS wetland easements while not adversely impacting farming operations. However, significant changes to the route have been rejected due to the exclusion and avoidance criteria within the route. The proposed route presented in this application minimizes and avoids impacts to the exclusion, avoidance, and selection criteria.

## **8.6 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF NATURAL RESOURCES FOR THE CORRIDOR OR ROUTE**

Irreversible and irremediable resource commitments are related to the use of nonrenewable resources and the effects that the use of these resources have on future generations. Irreversible effects primarily result from use or destruction of a specific resource that cannot be replaced within a reasonable time frame. Irremediable resource commitments involve the loss in value of an affected resource that cannot be restored as a result of the action. There are few commitments of resources associated with this project that are irreversible and irremediable, but include those resources primarily related to construction.

Construction resources that will be used include aggregate resources, concrete, aluminum, steel, wood, and hydrocarbon fuel. These resources will be utilized to construct the project. During construction vehicles will be traveling to and from the site, utilizing hydrocarbon fuels.

## **8.7 DIRECT AND INDIRECT ECONOMIC IMPACTS OF THE PROPOSED FACILITY**

Direct economic impacts include the impacts associated with up to 0.6 acres of agricultural land being removed from production due to the construction of the generation outlet. In general, agricultural areas surrounding each structure can still be farmed, and landowners will be compensated for the land occupied by the transmission line. Also, landowners along the route where easements are acquired will become minority owners of the facility and will receive royalties from the energy transmitted through the line.

The remaining direct and indirect economic impacts are primarily positive. To the extent that local contractors are used for portions of the construction, total wages and salaries paid to contractors and workers will contribute to the total personal income of the region. Additional personal income will be generated for residents in the county and the state by circulation and recirculation of dollars paid out by the Applicants as business expenditures and state and local taxes. Expenditures made for equipment, energy, fuel, operating supplies, and other products and services benefit businesses in the county and the state.



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Long-term beneficial impacts to the county's tax base as a result of the construction and operation of the wind farm will contribute to improving the local economy in this area of North Dakota. The development of wind energy in this region will be important in diversifying and strengthening the economic base of central North Dakota. Additional revenues are expected from property and income taxes.

**8.8 EXISTING DEVELOPMENT PLANS OF THE STATE, LOCAL GOVERNMENT AND PRIVATE ENTITIES AT OR IN THE VICINITY OF THE CORRIDOR AND ROUTE**

No conflicts are anticipated with existing state and local government and private entities' development plans. M-Power is obtaining conditional use permits from local governmental entities for the proposed project facilities.

**8.9 EFFECT OF ROUTE ON CULTURAL RESOURCES**

M-Power has reviewed cultural resources information on file at the SHPO for the corridor and route and prepared the Class I Cultural Resources Inventory. A review of the four documented studies at the SHPO identified one previously recorded archaeological resource site potentially within the corridor (Table 17). However, this potential site is well outside the limits of the proposed route.

M-Power is committed to minimize impacts to these resources and will avoid these resources and any additional resources identified throughout the life of the project. M-Power continues to consult with the SHPO in anticipation of the Class III inventory. Potential archaeological resources in the area may be avoided due to the nature of transmission line construction, where the line can be constructed to avoid sensitive areas by moving proposed structure locations and spanning those areas. In the event that an impact cannot be avoided, M-Power would determine the nature of the impact and consult with the SHPO on whether or not the resource was eligible for listing in the National Register of Historic Places (NRHP). Mitigation for project-related impacts on NRHP-eligible archaeological resources may include an effort to minimize project impacts on the resource and/or additional documentation through data recovery.

If the Class III cultural resources inventory should determine that such a plan is appropriate, M-Power will also develop a discovery plan to be in place should previously unknown archaeological resources or human remains be inadvertently encountered during the project. The plan will outline the framework for handling such discoveries in an efficient and legally compliant manner. The discovery plan may include the following topics: construction contractor training, identification of resources in the field, contact information for M-Power -designated professionals to address a discovery, procedures for avoidance, and associated tasks in the event of work stoppage in a construction area. With regard to a discovery of

human remains, procedures would be followed to ensure that the appropriate authorities would become involved quickly and in accordance with local and state guidelines.

There are no anticipated impacts to paleontological resources because the site is covered with over 100 feet of glacial sediments overlying the Cretaceous Fox Hills Formation.

## **8.10 EFFECT OF ROUTE ON BIOLOGICAL RESOURCES**

M-Power has implemented measures to avoid and minimize effects to biological resources in the vicinity of the proposed project. The impact of the project on wildlife is expected to be minimal. The proposed facility will include measures to minimize impacts to avian species, including aviation ball markers placed along the line in significant wetland areas where waterfowl and raptors may be nesting, feeding and roosting (See Figure 12).

## **8.11 PROBLEMS RAISED BY AGENCIES**

Agencies were contacted to comment on the generation outlet in a letter sent on March 10, 2008, except as noted below. A copy of the letter sent to each agency is provided in Appendix F along with the mailing list that was utilized. A summary of comments received in response are provided below. Where applicable, letters and other correspondence received from agencies are also provided in Appendix F.

### **8.11.1 North Dakota Game and Fish Department**

The North Dakota Game and Fish Department recommended that steps should be taken to protect wetlands that cannot be avoided, and that above-ground appurtenances not be placed in wetland areas. In addition they recommended that existing draining patterns be maintained, and at that the risk of avian collisions be assessed for this project and line markers implemented as appropriate.

### **8.11.2 U.S. Fish and Wildlife Service (USFWS)**

Concerns of the USFWS focused on migratory birds, threatened and endangered species (in particular whooping cranes), wetlands, USFWS property interests, and other high value habitat. In relation to migratory birds, the USFWS asked that transmission line be buried or that overhead power lines be constructed in accordance with the current guidelines for preventing raptor electrocutions. M-Power is incorporating USFWS recommendations into its transmission line design and will coordinate with the USFWS once field surveys are complete and plans are finalized to verify that areas of concern have been addressed and mitigation measures are adequate to minimize impacts to migratory birds, as required.

The USFWS stated that whooping cranes have been documented using roosting habitat in the vicinity of the project. However, the proposed route is outside of the 180-mile wide migration corridor where 95

percent of all whooping cranes sightings in North Dakota have occurred. The USFWS stated that if mitigation measures are incorporated into the project design, that a determination of “may effect, not likely to adversely effect” may be appropriate. M-Power is incorporating USFWS recommendations into its transmission line design and will coordinate with the USFWS once field surveys are complete and design plans are finalized to verify that areas of concern have been addressed and mitigation measures are adequate to reduce the potential impacts to whooping cranes.

M-Power has obtained the information for the wetland easements leased by the USFWS. On March 31, 2008, the USFWS Valley City Wetland Management District provided the locations of USFWS wetland easements within the proposed corridor. Four sections of land within the proposed corridor have active USFWS wetland easements (Figure 2). M-Power has proposed a route that attempts to avoid all USFWS wetland easements. If impacts to USFWS wetland easements become necessary, M-Power would request a compatibility assessment from local USFWS staff. The process will consider the magnitude of the impact, the type or quality of the habitat which is impacted, and the feasibility of avoiding the impact. If compatibility is found, a right-of-way permit will be issued for the impact. M-Power will continue to coordinate with the USFWS to determine final pole placement.

The USFWS recommended that impacts to native prairie, wetlands, wooded draws, and riparian forests be avoided, where possible. The USFWS also recommended a series of mitigation measures to minimize impacts to existing habitats in their letter to M-Power. M-Power will implement these measures as they are applicable to the project. The proposed route currently avoids impacts to wetlands.

### **8.11.3 U.S. Army Corps of Engineers**

The U.S. Army Corps of Engineers responded on March 17, 2008, that permits should be requested if work will be done in navigable waters (under Section 10 of the Rivers and Harbors Act) or Waters of the United States (under Section 404 of the Clean Water Act). The proposed route is currently anticipated to avoid all wetlands.

### **8.11.4 State Historical Society of North Dakota (SHPO)**

The SHPO did not respond to M-Power’s request for information. However, M-Power has completed a Class I cultural resources inventory and four cultural resources reports were identified within the study area. A review of these studies and additional records at the SHPO identified one previously recorded cultural resources site potentially within the corridor but well outside of the route (Appendix E). A Class III cultural resources inventory will be undertaken for locations of the project that have received no previous field survey.



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M-Power is committed to minimize impacts to these resources and will make all efforts to avoid these resources and any additional resources identified throughout the life of the project. M-Power will continue to consult with the SHPO in anticipation of the Class III inventory. Potential cultural resources in the area may be avoided due to the nature of transmission line construction, where the line can be constructed to avoid sensitive areas by moving proposed structure locations and spanning those areas. In the event that an impact cannot be avoided, M-Power would determine the nature of the impact and consult with the SHPO on whether or not the resource was eligible for listing in the National Register of Historic Places (NRHP). Treatment for project-related impacts on NRHP-eligible cultural resources may include an effort to minimize project impacts on the resource and/or additional documentation through data recovery.

If the Class III cultural resources inventories should determine that such a plan is appropriate, M-Power would also develop a discovery plan to be in place should previously unknown cultural resources or human remains be inadvertently encountered during the project. The plan would outline the framework for handling such discoveries in an efficient and legally compliant manner. The discovery plan may include the following topics: construction contractor training, identification of resources in the field, contact information for the M-Power's designated professionals to address a discovery, procedures for avoidance, and associated tasks in the event of work stoppage in a construction area. With regard to a discovery of human remains, procedures would be followed to ensure that the appropriate authorities would become involved quickly and in accordance with local and state guidelines.

**8.11.5 North Dakota Geological Survey**

The North Dakota Geological Survey did not respond.

**8.11.6 North Dakota Parks and Recreation Department (NDPR)**

The NDPR indicated on March 26, 2008, that the generation outlet would not affect state park lands or parks that have received LWCF grants for recreation improvements.

The NDPR conducted a search for rare plants and ecological communities in the North Dakota Natural Heritage Conservation database. One significant ecological community, Central mixed grass prairie, was documented northwest of the project area. Habitat surveys for this community will be conducted during the wetland delineations. M-Power is committed to working with the NDPR in conjunction with the USFWS, NRCS, and NDGF to seed disturbed areas with appropriate seed mixes, if it is determined that any Central mixed grass prairie communities would be disturbed during construction.



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#### **8.11.7 North Dakota Office of Attorney General**

On March 31, 2008, the Attorney General's Office responded that the Attorney General and members of his staff are prohibited from giving legal advice, opinions, or assistance to private businesses.

#### **8.11.8 North Dakota Department of Commerce**

On March 17, 2008, the North Dakota Department of Commerce expressed support for the project and noted no permits are required from the Department of Commerce. In addition, they deferred to the NDGF, NDPR, SHPO and the North Dakota Health Department (NDHD) for permitting requirements. They noted that the local land use authorities and the North Dakota Public Service Commission are responsible for permits and land use approvals.

#### **8.11.9 North Dakota Department of Health**

The North Dakota Department of Health did not respond.

#### **8.11.10 North Dakota Department of Transportation**

The North Dakota Department of Transportation did not respond.

#### **8.11.11 North Dakota State Water Commission**

The Office of the State Engineer/State Water Commission did not respond. However, Rex Honeyman of the State Water Commission was contacted in order to obtain information regarding irrigation permits within the corridor. He responded on April 17, 2008, that there are no irrigation permits within the corridor (Appendix F).

#### **8.11.12 Natural Resources Conservation Service**

The Natural Resource Conservation Service did not respond.

#### **8.11.13 North Dakota State Land Department**

The State Land Department did not respond.

#### **8.11.14 Aeronautics Commission**

The Aeronautics Commission did not respond.

#### **8.11.15 North Dakota Department of Agriculture**

The North Dakota Department of Agriculture did not respond.



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**8.11.16 North Dakota Department of Human Services**

The North Dakota Department of Human Services did not respond.

**8.11.17 North Dakota Department of Labor**

The North Dakota Department of Labor did not respond.

**8.11.18 Job Service North Dakota**

On March 14, 2008, the Job Service North Dakota responded that they have no comments regarding the proposed project and have no applicable permits that are required.

**8.11.19 North Dakota Department of Career and Technical Education**

The North Dakota Department of Career and Technical Education did not respond.

**8.11.20 North Dakota Governor**

The North Dakota Governor did not respond.

**8.11.21 North Dakota Indian Affairs Council**

The North Dakota Indian Affairs Council did not respond.

**8.11.22 North Dakota Office of Management and Budget**

The North Dakota Office of Management and Budget did not respond.

**8.11.23 North Dakota Soil Conservation Committee**

The North Dakota Soil Conservation Committee did not respond.

**8.11.24 North Dakota Farm Service Agency**

The North Dakota Farm Service Agency (FSA) did not respond.



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**9.0 QUALIFICATIONS OF CONTRIBUTORS TO SITING STUDY**

NAME PROJECT ROLE	EDUCATION AND PROFESSIONAL EXPERIENCE
<p><b>MITCHELL SHIELDS</b>  Project Manager</p>	<p>Mr. Shields serves as a senior environmental project manager for HDR. He has 19 years of experience including 12 years in the energy industry, primarily in permitting and construction for new linear facilities (e.g., pipeline, transmission line, and rail lines). He is an expert in preparing NEPA documentation, feasibility studies, and other federal, state, and local reports and regulatory applications. He has reviewed and developed project plans, proposals, and schedules; completed due diligence reviews for asset acquisitions; conducted meetings with agencies, stakeholders, and the general public; led field investigations, right-of-way reviews, and alternatives analyses; managed environmental compliance services during construction; provided environmental training presentations; and managed contractors/subcontractors/staff, delegated work assignments, and prepared and managed large budgets.</p> <p>Master of Science, Civil/Environmental Engineering, University of Minnesota, 1989 Bachelor of Science, Biology, Winona State University, 1985, Magna Cum Laude</p>
<p><b>Allen Wynn</b>  Assistant Project Manager</p>	<p>Mr. Wynn currently is a senior project manager with over 15 years experience focused on National Environmental Policy Act documents and permitting for linear projects (roadways, pipeline, and transmission lines). In managing and contributing to NEPA studies he has developed evaluation processes in response to key environmental and community issues; led and managed agency and public involvement programs and provided environmental compliance during construction for large linear projects.</p> <p>Bachelor of Science, Environmental Sciences, Southwest Texas State University, 1992</p>
<p><b>David Thomas</b>  Environmental Scientist</p>	<p>Mr. Thomas has 30 years of ecological research and collection experience acting as principal field investigator in a variety of freshwater and coastal projects throughout Texas and Louisiana. Mr. Thomas' participation in aquatic ecology investigations has included technical proposal and report preparation, design of sampling programs, extensive literature reviews, data collection, data management, data analyses, and impacts assessments. He has contributed to numerous environmental impact assessments in addition to the technical aspects of such projects in the preparation of environmental assessments (EA) and environmental information documents (EID) and has assisted in environmental impact statement (EIS) preparation.</p> <p>Bachelor of Science, Resource and Environmental Studies, Southwest Texas State University, 1977.</p>



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<b>NAME PROJECT ROLE</b>	<b>EDUCATION AND PROFESSIONAL EXPERIENCE</b>
<b>Peggy Jones</b> Environmental Scientist	<p>Mrs. Jones is a biologist with significant taxonomic, laboratory research and report production experience. She has been involved in numerous projects including landuse and vegetation surveys, reviews of endangered and threatened species, database management and manipulation, GIS mapping of project areas, GPS determination of sample sites and project areas, and zooplankton taxonomic studies. Her field experience includes extensive botanical surveys and taxonomy, zooplankton taxonomy (both salt and freshwater), biological sampling techniques, maintenance of an extensive database system, and technical report writing. As a database manager, she has experience with the production and manipulation of large amounts of data within projects and the production of specific database sets utilizing queries and other database applications.</p> <p>Bachelor of Science, Biology, Lamar University, Beaumont, TX. 1974.</p>
<b>Noel Gonsalvez</b> GIS Manager	<p>Mr. Gonsalvez is responsible for Geographic Information Systems (GIS) development in civil, environmental, and architectural areas. He works with ArcGIS, ArcView, and a variety of system support software. He provides development of GIS databases, spatial analysis, and mapping services.</p> <p>Bachelor of Arts, Geography – University of Texas , 1990</p>



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## **10.0 REFERENCES**

AirNav. 2008. Airport Locations. <http://www.airnav.com/airports/>. Retrieved in April of 2008.

Avian Power Line Interaction Committee (APLIC). 1996. Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 1996. Edison Electric Institute and the Raptor Research Foundation. Washington, D.C.

Avian Power Line Interaction Committee (APLIC). 1994. Mitigating Bird Collisions with Power Lines: The State of the Art in 1994. Edison Electric Institute. Washington, D.C.

Barnes County. No Date. Parks in Barnes County.  
<http://www.co.barnes.nd.us/Related/Parks.asp>. Retrieved in April of 2008.

Best Management Practices For Erosion And Sediment Control. North Dakota Department of Health. Division of Water Quality SFN 19389 (09/99)

Bluemle, John P. 1975. Bulletin 64. Ground Water Resources of Griggs and Steele Counties, North Dakota, Part I Geology. Geologic and Groundwater Resources.  
<http://www.swc.state.nd.us/4dlink9/4dcgi/GetContentRecord/PB-263>. Retrieved April 7, 2008.

Downey, J.S. and C.A. Armstrong. 1977. Bulletin 64. Ground Water Resources of Griggs and Steele Counties, North Dakota, Part III Ground Water Resources. Geologic and Groundwater Resources.  
<http://www.swc.state.nd.us/4dlink9/4dcgi/GetContentRecord/PB-263>. Retrieved April 7, 2008.

Federal Rail Administration (FRA). 2005. Horn Noise Questions and Answers. August 29, 2005.  
<http://www.fra.dot.gov/us/content/1173>. Retrieved March 6, 2008.

Fingrid. 2004. Radio and Television Interference.  
[http://www.fingrid.fi/portal/in\\_english/environment\\_and\\_transmission\\_lines/frequently\\_asked\\_questions/radio\\_and\\_television\\_interference](http://www.fingrid.fi/portal/in_english/environment_and_transmission_lines/frequently_asked_questions/radio_and_television_interference). Retrieved April 13, 2005.

Georgia Transmission. Frequently Asked Questions – Will a transmission line interfere with television and radio reception? <http://www.gatrans.com/gtcsite/gtc/faqs/?project=&type=global&question=20>. Retrieved April 13, 2005.

Great River Energy. 2002. Plymouth Maple Grove Power Line Project – Frequently Asked Questions – Will the new line cause television or radio interference?



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[http://www.greatriverenergy.com/projects/lines/pmg/pmg\\_translineqa.html#P68\\_7026](http://www.greatriverenergy.com/projects/lines/pmg/pmg_translineqa.html#P68_7026). Retrieved April 13, 2005.

Grover, S. 2002. Economic Impacts of Wind Power in Kittitas County, Final Report. Funded by State of Washington Office of Trade and Economic Development and the Energy Foundation. ECONorthwest. Portland, OR. 20 pp.

Honeyman, Rex. 2008. Personal Communication between Rex Honeyman, North Dakota State Water Commission and Allen Wynn, HDR Engineering regarding irrigation permits on April 17, 2008.

Kelly, E. 1966. Bulletin 43 Geology and Ground Water Resources of Barnes County, North Dakota, Part I Geology, and Part III Ground Water Resources.

<http://www.swc.state.nd.us/4dlink9/4dcgi/GetContentRecord/PB-248>. Retrieved April 7, 2008.

Lewis, J. C. 1995. Whooping Crane. In: A. Poole and F. Gill, editors. In: The Birds of North America. Ithaca (NY): Cornell Laboratory of Ornithology.

NWCC. 2004. Wind Turbine Interactions with Birds and Bats: A Summary of Research Results and Remaining Questions. Resolve, Inc., Washington D.C., 7 pp.

National Institute of Environmental Health Sciences EMF-RAPID Program Staff, 1999. NIEHS Report on Health Effects from Exposure to Power Line Frequency Electric and Magnetic Fields. Research Triangle Park, NC.

North Dakota Department of Health. 2007. Health Facilities.

[http://www.ndhealth.gov/HF/North\\_Dakota\\_Rural\\_Health\\_Clinics.htm](http://www.ndhealth.gov/HF/North_Dakota_Rural_Health_Clinics.htm). Retrieved March 4, 2008.

North Dakota Department of Transportation. Barnes County, Steele County 2002 Map Counts. Bismarck, North Dakota.

North Dakota Department of Transportation. State of North Dakota GIS Base Map Data, Version 1.1a, 2000.

North Dakota Game and Fish Department. Wildlife Management Area Guide.

<http://gf.nd.gov/hunting/wildlife.html>. Retrieved in April of 2008.

North Dakota Game and Fish Department. 2008. PLOTS GIS data, provided March 2008.



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**Luverne Wind Farm**  
**Generation Outlet Project**

North Dakota State Data Center. Population Bulletin – Poverty Estimates for Persons Living in North Dakota in 2004.

Northwest Economic Associates. 2003. Assessing the Economic Development Impacts of Wind Power. National Wind Coordinating Committee. Washington.  
[http://www.nationalwind.org/pubs/economic/econ\\_final\\_report.pdf](http://www.nationalwind.org/pubs/economic/econ_final_report.pdf).

PanAero Corporation. 1999. Wind Energy in North Dakota Final Report. Division of Community Service, State of North Dakota. <http://www.state.nd.us/dcs/energy/docs/windmark.pdf>. Retrieved on January 27, 2005.

SMP Electric Cooperative. Sho-Me Dictionary – Radio and Television Interference Noise.  
[http://www.shomepower.com/dict/r/radio\\_and\\_television\\_interferenc.htm](http://www.shomepower.com/dict/r/radio_and_television_interferenc.htm). Retrieved on April 13, 2005.

U.S. Census Bureau, Population Division. 2007. Annual Estimates of the Populations for Counties of North Dakota: April 1, 2000 to July 1, 2006 (CO-EST2006-01-38). Released March 20, 2007. Available at: <http://www.ndsu.nodak.edu/sdc/data.htm>. Retrieved in April of 2008.

U.S. Census Bureau. 2000. Census 2000 Summary File 3. Barnes County, North Dakota and Steele County, North Dakota.

U.S. Department of Agriculture, National Agricultural Statistics Service North Dakota Field Office. North Dakota Agricultural Statistics 2007. 2007. Available at:  
[http://www.nass.usda.gov/Statistics\\_by\\_State/North\\_Dakota/Publications/Annual\\_Statistical\\_Bulletin/index.asp](http://www.nass.usda.gov/Statistics_by_State/North_Dakota/Publications/Annual_Statistical_Bulletin/index.asp) Retrieved in April of 2008.

U.S. Department of Agriculture, NASS. 2002. 2002 Census of Agriculture - Volume 1 Geographic Area Series Census, State - County Data. Available at  
[http://www.nass.usda.gov/Census/Create\\_Census\\_US\\_CNTY.jsp](http://www.nass.usda.gov/Census/Create_Census_US_CNTY.jsp). Retrieved in April of 2008

U.S. Department of Agriculture. NRCS SSURGO Soils Data Barnes and Steele County

U.S. Department of Agriculture. NRCS STATSGO Statewide Soils Data North Dakota.

U.S. Department of the Interior, National Park Service. 2008. Land and Water Conservation Fund Detailed Listing of Grants Grouped by County. <http://waso-lwef.ncrc.nps.gov/public/index.cfm>  
Retrieved in April of 2008.



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Generation Outlet Project**

United States Environmental Protection Agency (EPA). 1992. EMF in Your Environment: Magnetic Field Measurements of Everyday Electrical Devices, U.S. Environmental Protection Agency, Office of Radiation and Indoor Air, 402-R-92-008, Washington, D.C.

U.S. Fish and Wildlife Service (FWS). 1986. Whooping Crane Recovery Plan. Albuquerque (NM): U.S. Fish and Wildlife Service.

U.S. Fish and Wildlife Service. 2003. Interim Guidelines to Avoid and Minimize Wildlife Impacts from Wind Turbines. Washington. Wind Turbine Siting Working Group.

U.S. Fish and Wildlife Service. North Dakota Land Cover Classification. North Dakota.

U.S. Fish and Wildlife Service. America's National Wildlife Refuge System.

<http://www.fws.gov/refuges/refugeLocatorMaps/NorthDakota.html>. Retrieved on February 29, 2008.

U.S. Fish and Wildlife Service. Mountain-Prairie Region – North Dakota. <http://mountain-prairie.fws.gov/nd.html>. Retrieved in April of 2008.

Williams-Sether, Tara, 2004, River gain and loss studies for the Red River of the North Basin, North Dakota and Minnesota: U.S. Geological Survey Open-File Report 2004-1076, 21 p. <http://pubs.water.usgs.gov/ofr20041076/>. Retrieved April 3, 2008.



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## **11.0 DEFINITIONS**

ADT	Average Daily Traffic
BMPs	Best Management Practices; prevents soil erosion and sedimentation
Capacity	The capability of a system, circuit, or device for storing electric charge.
Certificate	Certificate of Site Compatibility
Class I Cultural Resources Inventory	Existing data inventory – a large-scale review and compilation of known cultural resource data.
Class III Cultural Resources Inventory	Intensive field inventory – complete surface inventory of a specific area.
Commission or PSC	North Dakota Public Service Commission
Corridor Certificate	Certificate of Corridor Compatibility
dBA	A-weighted decibel
Distribution	Relatively low-voltage lines that deliver electricity to the retail customer's home or business.
EMF	Electromagnetic Field
EPCRA	Emergency Planning and Community Right-to-Know Act
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Maps
FSA	U.S. Department of Agriculture Farm Service Agency
Generator	A machine by which mechanical energy is changed into electrical energy.
Geotechnical	A science that deals with the application of geology to engineering.



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Interconnection	To be or become mutually connected.
kV	kilovolt
mG	milliGauss
MW	megawatt
MAPP	Mid-Continent Area Power Pool
MISO	Midwest Independent System Operator
mph	miles per hour
NDDOT	North Dakota Department of Transportation
NESC	National Electric Safety Code
NDAC	North Dakota Administrative Code
NDCC	North Dakota Century Code
NDGF	North Dakota Game and Fish Department
NDPR	North Dakota Parks and Recreation Department
NHID	Natural Heritage Inventory Database
NIEHS	National Institute of Environmental Health Sciences
NPDES	National Pollutant Discharge Elimination System
NRCS	National Resource Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
PLOTS	Public Land Open for Trapping and Shooting
PPA	Power Purchase Agreement



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Project, the	Luverne Wind Farm Generation Outlet
PSC or Commission	North Dakota Public Service Commission
PTC	Production Tax Credit
SHPO	North Dakota State Historic Preservation Office
Substation	A subsidiary station in which electric current is transformed.
SWPPP	Storm Water Pollution Prevention Plan
Transformer	An electrical device by which alternating current of one voltage is changed to another voltage.
Transmission	A high voltage power line usually in excess of 69 kilovolts made up of three current conducting wires and a static shield wire. Transmission lines are used to deliver bulk power.
USACE	US Army Corps of Engineers
USFWS	US Fish and Wildlife Service
WPAs	Waterfowl Production Areas



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## **FIGURES**



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**APPENDIX A**

**M-Power, LLC Transmission Facility Site Selection Policy**

# M-Power, LLC Transmission Facility Site Selection Policies Resolution

Whereas, M-Power, LLC is a community-based, locally-owned, wind resource development company, whose mission is to develop projects that offer landowners and local investors an opportunity to share in the economic benefits of wind generation, and

Whereas, the constituency of M-Power, LLC is landowner-based and as such, desire to be good stewards of the land and the environment, and

Whereas, M-Power, LLC desires to avoid, minimize, or mitigate any adverse affects that its project(s) may have on landowners, the environment, or other utilities, and

Whereas, M-Power, LLC will strictly adhere to the local, regional, state, and federal requirements relative to landowner and environmental concerns resulting from the project(s), and

Whereas, there are often trade-offs among environmental, landowner, economics, and technical considerations, and

Whereas, M-Power, LLC benefits from the broad experience of its personnel who have successfully sited power plants, wind farms, high voltage transmission lines, and related facilities to the mutual satisfaction of landowners, regulators, other utilities, and facility owners.

Now, therefore, be it resolved that M-Power, LLC shall adopt and apply the following transmission facility site selection policies in its development efforts:

1. Identify potential conflicts among landowner, environmental, economic, technical, other utilities, and regulator interests early in the project development; avoid or resolve before final decisions are made.
2. Prefer to locate transmission line routes “square-with-the-world” over diagonal routes, when there is evidence of cultivated fields and/or existing field patterns.
3. Prefer untilled rangeland to cultivated fields for transmission facility siting.
4. Prefer the “quarter-line” (half-mile line) routing of transmission lines over routes adjacent to section lines.
5. Take advantage of existing rights-of-way that might accommodate collocation or compatible contiguous alignment.
6. Consider viable alternative routing opportunities early in the planning stages.

7. Coordinate development plans with other utilities serving the area and having existing infrastructure within the general vicinity of M-Power project(s), and consider their recommendations in the project(s) development.
8. Consult with landowners, regulators, and designers to select the least objectionable site.
9. Accommodate the desires of affected landowners whenever such decision is environmentally, technically and economically feasible.
10. Mitigate siting problems that cannot otherwise be avoided or resolved.



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## **APPENDIX B**

### **M-Power, LLC Landowner and Local Utilities Relation Policy**

# M-Power, LLC Landowner and Local Utility Relations Policy Resolution

Whereas, M-Power, LLC is a community-based, locally-owned, wind resource development company, whose mission is to develop projects that offer landowners and local investors an opportunity to share in the economic benefits of wind generation, and

Whereas, the business model adapted by M-Power, LLC provides the opportunity for landowners to voluntarily participate in ownership of a project through their willingness to exercise wind resource options, wind turbine easements, and/or transmission line rights-of-way easements, and

Whereas, M-Power, LLC has provided additional investment opportunities for landowners in the footprint and other local investors to participate in its ownership, and

Whereas, many of the owners of the wind farm project(s) developed by M-Power, LLC will be those within the footprint of the project(s), and those who provide easements for transmission line rights-of-way or turbine facilities, and other local investors, and

Whereas, M-Power, LLC desires to establish and maintain good working relationships with its owners and other landowners affected by the projects, and

Whereas, M-Power, LLC desires to establish and maintain good working relationships with other utilities currently serving its landowners and local investors, and

Whereas, M-Power, LLC desires to establish a model that will encourage emulation by other landowners and utilities throughout the state of North Dakota.

Now, therefore, be it resolved that M-Power, LLC shall adopt and apply the following policies in its development efforts:

11. Provide the opportunity for landowners affected by project facilities such as: turbine sites, access roads, maintenance buildings, substations, transmission lines, or other project elements, to communicate their concerns directly with project planners, engineers, and contractors before final decisions are made.
12. Accommodate the desires of affected landowners whenever such decision is environmentally, technically and economically feasible.
13. Provide fair-market remuneration to the affected landowner for any damages, adverse affects, easements, or other negative impacts caused by the project that may be mutually agreed upon by the landowner and M-Power, LLC.

14. Coordinate development plans with other utilities who have existing infrastructure within the vicinity of the project(s) and who serve the area, and consider their recommendations in the project(s) development.
15. Provide the opportunity for other utilities who have existing infrastructure within the vicinity of the project(s) and who serve the area, to participate in the benefits of the project(s) that may be developed.



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## APPENDIX C

### M-Power, LLC Ten-Year Plan

**TEN YEAR PLAN: 2008-2018**

**M-Power, LLC**

**May 2008**

M-Power, LLC is a wind resource Development Company. As such, its primary purpose is to identify, evaluate, and secure the rights to develop wind resources to the point that a quantifiable project, with identified buyers, and a feasible electrical transmission solution has been permitted and authorized for construction. At that point, the Development Company establishes a Project Company, e.g., M-Power One, LLC. The Project Company has at least three business options: 1.) Pursue a long-term Power Purchase Agreement (PPA) with the intended buyer; 2.) Sell the Project as a Construction Ready (CR) Project, in which case the rights to that Project (or portion of a Project) is sold to the buyer; or 3.) Build the Project, commission the turbines, and sell the completed Project to the buyer. This option is referred to as a Build-Transfer (BT) Project. For this Application, M-Power One, LLC is currently negotiating a 157.5 MW PPA for part of the Luverne foot print and a 49.5 MW CR Project that will be contiguous and in the same footprint.

An additional 50MW is under consideration for development, contiguous to the Luverne footprint, within the near term. The business model for the 50MW addition to the initial concurrent projects described above has not yet been determined.

The Luverne Wind Farm output will be delivered to the transmission grid by way of a planned Minnkota Power Cooperative (Minnkota) owned 230 KV transmission line from Pillsbury to West Fargo. In order to access this interconnection solution, M-Power plans to build a “generation outlet” 230 KV transmission line of approximately 13 miles from a collector station located on the east side of the Luverne Wind Farm to the proposed Pillsbury substation.

M-Power is designing and securing the necessary permits and rights-of-way for a 230 kV transmission line that will provide a generation outlet to the regional transmission grid. This is a 13-mile line that has the capacity to carry the generation from near the mid-point of the Luverne footprint to a planned substation to be built by Minnkota Power Cooperative just west of Pillsbury, North Dakota. Minnkota will also build a 230 KV transmission line from Pillsbury, approximately 60 miles to the Maple River Substation near Fargo, North Dakota.

It is a broadly known fact that the “Pembina Ridge,” which generally runs north-south through the west edge of Steele County and the east edge of Griggs County, holds high potential for wind generation. M-Power’s wind monitoring data has indicated that there are several additional areas within Griggs and Steele Counties that have relatively high developable wind resources. Each area has its own constraints however; the most significant of which is a transmission outlet. Pending transmission solutions, and of course, market opportunity, M-Power plans to pursue the development of up to 500MW of wind generation within the two counties.

M-Power plans to pursue all viable business options during the next ten years. The expansion location, timing, and type of project priorities will be, in large part, dictated by the location of developable wind resources, market demands, transmission solutions, and M-Power’s management decisions.

It is highly probable that M-Power will pursue additional project developments in Griggs and Steele Counties within the next two to five years.

M-Power has spent a good deal of time and money to structure its business model with local ownership. Although M-Power is a locally owned and locally governed entity, its development interests may extend beyond the two counties in which the wind resource research has been conducted. Other Projects with potential for development may be pursued if landowners in other areas express an interest in the business model, during the ten year period.



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## APPENDIX D

### Design Data Report

**LUVERNE WIND FARM GENERATION OUTLET  
BARNES AND STEELE COUNTIES, NORTH DAKOTA**

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**DESIGN DATA REPORT**

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**Project**

- Approximately 13-mile transmission line.
- Final layout and structure types to be completed after design is finalized.

**Transmission Line**

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**GENERAL SPECIFICATIONS**

Voltage	230-kV
Average Height	60 feet (H-frame)
Capacity	300 MW
Operating Capacity	150 MW
Average Span Length	750 feet
Structure Type	H-frame
Minimum Conductor Size	795 kcmil Aluminum Conductor Steel Reinforced (ACSR)
Shield Wire	3/8 inch EHS and Optical Ground Wire
Right-of-Way	125 feet wide (typical)
Average Pole Depth	11 to 13 feet
Average Pole Diameter	18 inches
Foundation Type	Direct imbed tangent, rock back-fill – guyed angles and dead ends

**Pillsbury - Fargo  
Generation Outlet Project**

**APPENDIX E**

**Class I Cultural Resources Inventory Data**

**M-Power: Luverne Wind Farm Generation Outlet Project  
Class I Literature Search  
In Barnes and Steele Counties, North Dakota**

**For**

**M-Power, LLC  
Finley, North Dakota**

**By**

**HDR Engineering Inc  
701 Xenia Avenue South  
Suite 600  
Minneapolis, MN 55416**

**(763) 591-5400**

**Project No: 80575  
March 2008**

## Luverne Wind Farm Generation Outlet Cultural Resource Literature Review

This memorandum documents the cultural resources data collection (Class I Literature Search) for the proposed 230 kV transmission line from the proposed Luverne Wind Farm in Steel County, North Dakota to the proposed Pillsbury Substation in Barnes County, North Dakota, also known as the Luverne Wind Farm Generation Outlet project. In March 2008 HDR reviewed information on file at the North Dakota State Historic Preservation Office (NDSHPO) to ensure that relevant cultural properties in the study area were considered during project planning. Cultural resource data, housed at the NDSHPO in Bismarck, North Dakota, consisted of cultural resource site files, cultural resource site leads, and previous professional cultural resource surveys and reports.

### Cultural Resource Reports and Sites

HDR reviewed existing cultural resources documentation for specific sections in the following townships for the study area (Table 1). These township sections are spread across Barnes and Steele Counties in North Dakota. The project area is comprised of a linear route that travels in a general north to south direction. The proposed corridor is 2 miles wide.

**Table 1.**  
**Corridor Area (Luverne Wind Farm Generation Outlet)**

Township Name	Township	Range	Sections
Baldwin	143N	57W	1,12,13
Carpenter	144N	56W	5,6,7,8,17,18,19,20,29,30,31,32
Ellsbury	143N	56W	5,6,7,8,17,18
Melrose	145N	56W	28,29,30,31,32,33
Riverside	145N	57W	25,26,27,34,35,36
Willow Lake	144N	57W	1,2,3,4,12,13,24,25,36

The archival report inventory documented four previous cultural resource investigations within the project vicinity. These reports illustrate a wide variety of investigations in the study area, including those conducted in support of natural gas pipeline projects, road construction and historic church inventories.

**Table 2.**  
**Previous Cultural Resource Investigations within the Project Vicinity**

Manuscript Number	Report Date	Manuscript Title	Author(s)	Comment
005443	1990	Cenex Pipeline Company Fargo Extension, Steele, Griggs, Foster, Cass, Barnes, Eddy, Wells, Pierce, McHenry and Ward Counties, Class III Cultural Resource Survey	Schweigert, K.	Field survey for natural gas pipeline
004280	1997	Field Reconnaissance Survey of Churches in Barnes, Ransom, Richland, Sargent and Steele Counties of North Dakota	James R. Schimmer/	Field survey of churches in 5 ND counties, NEAR
009969	2006	Keystone Pipeline Project: Class I, II and III Cultural Resources Investigations in Eastern North Dakota, Volumes 1 & 2 & Addendum 1 (2007)	Bleier, A., E. Stine, J. Mayer, M McFaul, A. Kulevsky, A. Barth	Literature Review and Field survey for natural gas pipeline
005944	1981	Hope Historic Structures Survey, Steele County, North Dakota	Jonason, R.	

Previous investigations documented one cultural resource site potentially within the corridor.

*#4280 Final Report Field Reconnaissance of Churches in Barnes, Ransom, Richland, Sargent and Steele Counties of North Dakota:*

*32BAX0184* is the location of the Algeo Post Office. The site was recorded in Township 143N, Range 57W, Section 4 or Section 12. The southeast quarter of Section 12 is within the corridor; however, the proposed route does not enter Section 12. Therefore, no impacts to this site are anticipated.

**SHPO Correspondence**

On March 19, 2008, M-Power contacted the North Dakota SHPO (ND SHPO) to request a review of potential project-related impacts on known or suspected cultural resources along the proposed 230-kV transmission line route. The ND SHPO did not respond.

**Conclusions**

No impacts to previously recorded cultural resources are anticipated. M-Power will conduct a Class III intensive cultural resources inventory for areas that have not received previous survey for construction of the transmission line. These investigations will be conducted by a professional archeologist permitted by the State of North Dakota per NDCC Section 55-03-01. The nature of the cultural resource inventory would depend on surface exposure and the characteristics of the landform for development. For the survey, archaeologists will design a survey methodology to document the areas proposed for ground

disturbance, identify existing archaeological resources within those areas, and offer recommendations for archaeological avoidance and impact minimization.

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TOWNSHIP: 143 RANGE: 056 SECTION: 18  
MANUSCRIPT\_NO:005443 YEAR: 1990  
TITLE: Cenex Pipeline Company Fargo Extension, Steele, Griggs, Foster, Cass, Barnes, Eddy, Wells, Pierce, McHenry, and Ward Counties, Class III Cultural Resource Survey (also see MS 5591)  
AUTHOR(s): Schweigert, K.

TOWNSHIP: 143 RANGE: 056 SECTION: 17  
MANUSCRIPT\_NO:005443 YEAR: 1990  
TITLE: Cenex Pipeline Company Fargo Extension, Steele, Griggs, Foster, Cass, Barnes, Eddy, Wells, Pierce, McHenry, and Ward Counties, Class III Cultural Resource Survey (also see MS 5591)  
AUTHOR(s): Schweigert, K.

TOWNSHIP: 143 RANGE: 056 SECTION: 22  
MANUSCRIPT\_NO:005443 YEAR: 1990  
TITLE: Cenex Pipeline Company Fargo Extension, Steele, Griggs, Foster, Cass, Barnes, Eddy, Wells, Pierce, McHenry, and Ward Counties, Class III Cultural Resource Survey (also see MS 5591)  
AUTHOR(s): Schweigert, K.

TOWNSHIP: 143 RANGE: 056 SECTION: 23  
MANUSCRIPT\_NO:005443 YEAR: 1990  
TITLE: Cenex Pipeline Company Fargo Extension, Steele, Griggs, Foster, Cass, Barnes, Eddy, Wells, Pierce, McHenry, and Ward Counties, Class III Cultural Resource Survey (also see MS 5591)  
AUTHOR(s): Schweigert, K.

TOWNSHIP: 143 RANGE: 056 SECTION: 24  
MANUSCRIPT\_NO:005443 YEAR: 1990  
TITLE: Cenex Pipeline Company Fargo Extension, Steele, Griggs, Foster, Cass, Barnes, Eddy, Wells, Pierce, McHenry, and Ward Counties, Class III Cultural Resource Survey (also see MS 5591)  
AUTHOR(s): Schweigert, K.

TOWNSHIP: 143 RANGE: 056 SECTION: 25  
MANUSCRIPT\_NO:005443 YEAR: 1990  
TITLE: Cenex Pipeline Company Fargo Extension, Steele, Griggs, Foster, Cass, Barnes, Eddy, Wells, Pierce, McHenry, and Ward Counties, Class III Cultural Resource Survey (also see MS 5591)  
AUTHOR(s): Schweigert, K.

TOWNSHIP: 143 RANGE: 056 SECTION: 16  
MANUSCRIPT\_NO:005443 YEAR: 1990  
TITLE: Cenex Pipeline Company Fargo Extension, Steele, Griggs, Foster, Cass, Barnes, Eddy, Wells, Pierce, McHenry, and Ward Counties, Class III Cultural Resource Survey (also see MS 5591)  
AUTHOR(s): Schweigert, K.

TOWNSHIP: 143 RANGE: 056 SECTION: 15  
MANUSCRIPT\_NO:005443 YEAR: 1990  
TITLE: Cenex Pipeline Company Fargo Extension, Steele, Griggs, Foster, Cass, Barnes, Eddy, Wells, Pierce, McHenry, and Ward Counties, Class III Cultural Resource Survey (also see MS 5591)  
AUTHOR(s): Schweigert, K.

TOWNSHIP: 143 RANGE: 056 SECTION: 17  
MANUSCRIPT\_NO:004280 YEAR: 1987  
TITLE: Final Report Field Reconnaissance Survey of Churches in Barnes, Ransom, Richland, Sargent and Steele Counties of ND  
AUTHOR(s): Schimmer, J.

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TOWNSHIP: 143      RANGE: 057      SECTION: 19  
MANUSCRIPT\_NO:000972      YEAR: 1980  
TITLE: 1978-1979 Cultural Resource Investigations Along the Middle Sheyenne River Valley Including Lake Ashtabula and A Portion of the Sheyenne River, Vol. 1, Barnes Co., Griggs Co., & Steele Co., ND  
AUTHOR(s): Fox, R.

TOWNSHIP: 143      RANGE: 057      SECTION: 07  
MANUSCRIPT\_NO:000085      YEAR: 1948  
TITLE: Preliminary Appraisal of the Archeological and Paleontological Resources of the Baldhill Reservoir, North Dakota, Griggs Co. & Barnes Co., ND  
AUTHOR(s): Kivett, M.

TOWNSHIP: 143      RANGE: 057      SECTION: 08  
MANUSCRIPT\_NO:000085      YEAR: 1948  
TITLE: Preliminary Appraisal of the Archeological and Paleontological Resources of the Baldhill Reservoir, North Dakota, Griggs Co. & Barnes Co., ND  
AUTHOR(s): Kivett, M.

TOWNSHIP: 143      RANGE: 057      SECTION: 06  
MANUSCRIPT\_NO:000217      YEAR: n.d.  
TITLE: Report on the Archaeological Aerial Survey of Lake Ashtabula, Barnes Co., & Griggs Co., North Dakota  
AUTHOR(s): Strachan, R.      K. Roetzel

TOWNSHIP: 143      RANGE: 057      SECTION: 07  
MANUSCRIPT\_NO:000217      YEAR: n.d.  
TITLE: Report on the Archaeological Aerial Survey of Lake Ashtabula, Barnes Co., & Griggs Co., North Dakota  
AUTHOR(s): Strachan, R.      K. Roetzel

TOWNSHIP: 143      RANGE: 057      SECTION: 18  
MANUSCRIPT\_NO:000217      YEAR: n.d.  
TITLE: Report on the Archaeological Aerial Survey of Lake Ashtabula, Barnes Co., & Griggs Co., North Dakota  
AUTHOR(s): Strachan, R.      K. Roetzel

TOWNSHIP: 143      RANGE: 057      SECTION: 19  
MANUSCRIPT\_NO:000217      YEAR: n.d.  
TITLE: Report on the Archaeological Aerial Survey of Lake Ashtabula, Barnes Co., & Griggs Co., North Dakota  
AUTHOR(s): Strachan, R.      K. Roetzel

TOWNSHIP: 143      RANGE: 057      SECTION: 19  
MANUSCRIPT\_NO:000547      YEAR: 1978  
TITLE: Archaeological Field Report: 1978 Fall Field Season and Rip Rap Operation Investigations, Lake Ashtabula, Barnes Co., North Dakota  
AUTHOR(s): Fox, R.

TOWNSHIP: 143      RANGE: 057      SECTION: 07  
MANUSCRIPT\_NO:000547      YEAR: 1978  
TITLE: Archaeological Field Report: 1978 Fall Field Season and Rip Rap Operation Investigations, Lake Ashtabula, Barnes Co., North Dakota  
AUTHOR(s): Fox, R.

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- TOWNSHIP: 143 RANGE: 057 SECTION: 06  
MANUSCRIPT\_NO:000085 YEAR: 1948  
TITLE: Preliminary Appraisal of the Archeological and Paleontological Resources of the Baldhill Reservoir, North Dakota, Griggs Co. & Barnes Co., ND  
AUTHOR(s): Kivett, M.
- TOWNSHIP: 143 RANGE: 057 SECTION: 18  
MANUSCRIPT\_NO:000972 YEAR: 1980  
TITLE: 1978-1979 Cultural Resource Investigations Along the Middle Sheyenne River Valley Including Lake Ashtabula and A Portion of the Sheyenne River, Vol. 1, Barnes Co., Griggs Co., & Steele Co., ND  
AUTHOR(s): Fox, R.
- TOWNSHIP: 143 RANGE: 057 SECTION: 20  
MANUSCRIPT\_NO:009969 YEAR: 2006  
TITLE: Keystone Pipeline Project: Class I, II, and III Cultural Resource Investigations in Eastern North Dakota, Volumes 1 & 2 & Addendum 1 (2007)  
AUTHOR(s): Bleier, A. E. Stine J. Mayer M. McFaul A. Kulevsky  
A. Barth
- TOWNSHIP: 143 RANGE: 057 SECTION: 04  
MANUSCRIPT\_NO:005443 YEAR: 1990  
TITLE: Cenex Pipeline Company Fargo Extension, Steele, Griggs, Foster, Cass, Barnes, Eddy, Wells, Pierce, McHenry, and Ward Counties, Class III Cultural Resource Survey (also see MS 5591)  
AUTHOR(s): Schweigert, K.
- TOWNSHIP: 143 RANGE: 057 SECTION: 03  
MANUSCRIPT\_NO:005443 YEAR: 1990  
TITLE: Cenex Pipeline Company Fargo Extension, Steele, Griggs, Foster, Cass, Barnes, Eddy, Wells, Pierce, McHenry, and Ward Counties, Class III Cultural Resource Survey (also see MS 5591)  
AUTHOR(s): Schweigert, K.
- TOWNSHIP: 143 RANGE: 057 SECTION: 02  
MANUSCRIPT\_NO:005443 YEAR: 1990  
TITLE: Cenex Pipeline Company Fargo Extension, Steele, Griggs, Foster, Cass, Barnes, Eddy, Wells, Pierce, McHenry, and Ward Counties, Class III Cultural Resource Survey (also see MS 5591)  
AUTHOR(s): Schweigert, K.
- TOWNSHIP: 143 RANGE: 057 SECTION: 14  
MANUSCRIPT\_NO:005443 YEAR: 1990  
TITLE: Cenex Pipeline Company Fargo Extension, Steele, Griggs, Foster, Cass, Barnes, Eddy, Wells, Pierce, McHenry, and Ward Counties, Class III Cultural Resource Survey (also see MS 5591)  
AUTHOR(s): Schweigert, K.
- TOWNSHIP: 143 RANGE: 057 SECTION: 11  
MANUSCRIPT\_NO:005443 YEAR: 1990  
TITLE: Cenex Pipeline Company Fargo Extension, Steele, Griggs, Foster, Cass, Barnes, Eddy, Wells, Pierce, McHenry, and Ward Counties, Class III Cultural Resource Survey (also see MS 5591)  
AUTHOR(s): Schweigert, K.
- TOWNSHIP: 143 RANGE: 057 SECTION: 13  
MANUSCRIPT\_NO:005443 YEAR: 1990  
TITLE: Cenex Pipeline Company Fargo Extension, Steele, Griggs, Foster, Cass, Barnes, Eddy, Wells, Pierce, McHenry, and Ward Counties, Class III Cultural Resource Survey (also see MS 5591)  
AUTHOR(s): Schweigert, K.

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TOWNSHIP: 143      RANGE: 057      SECTION: 07  
MANUSCRIPT\_NO:006449      YEAR: 1995  
TITLE: North Dakota Department of Transportation Safety Project Cultural Resource Review 1992-1994

AUTHOR(s): Borchert, J.

TOWNSHIP: 143      RANGE: 057      SECTION: 08  
MANUSCRIPT\_NO:007415      YEAR: 1999  
TITLE: A Report on Cultural Resource Investigations for Dakota Water Users, Inc.: The Class II Sample Survey for the Sharon System Exchange

AUTHOR(s): Larson, T.

TOWNSHIP: 143      RANGE: 057      SECTION: 06  
MANUSCRIPT\_NO:007626      YEAR: 2000  
TITLE: Phase II Testing and Evaluation of Four Archaeological Sites, 32GG3, 32GG236, 32BA7, and 32BA14 at Lake Ashtabula, Griggs and Barnes Co., ND

AUTHOR(s): Stine, E.      A. Kulevsky      T. Madigan

TOWNSHIP: 143      RANGE: 057      SECTION: 07  
MANUSCRIPT\_NO:000972      YEAR: 1980  
TITLE: 1978-1979 Cultural Resource Investigations Along the Middle Sheyenne River Valley Including Lake Ashtabula and A Portion of the Sheyenne River, Vol. 1, Barnes Co., Griggs Co., & Steele Co., ND

AUTHOR(s): Fox, R.

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TOWNSHIP: 144 RANGE: 057 SECTION: 05  
MANUSCRIPT\_NO:009969 YEAR: 2006  
TITLE: Keystone Pipeline Project: Class I, II, and III Cultural Resource Investigations in Eastern North Dakota, Volumes 1 & 2 & Addendum 1 (2007)  
AUTHOR(s): Bleier, A. E. Stine J. Mayer M. McFaul A. Kulevsky  
A. Barth

TOWNSHIP: 144 RANGE: 057 SECTION: 33  
MANUSCRIPT\_NO:009969 YEAR: 2006  
TITLE: Keystone Pipeline Project: Class I, II, and III Cultural Resource Investigations in Eastern North Dakota, Volumes 1 & 2 & Addendum 1 (2007)  
AUTHOR(s): Bleier, A. E. Stine J. Mayer M. McFaul A. Kulevsky  
A. Barth

TOWNSHIP: 144 RANGE: 057 SECTION: 28  
MANUSCRIPT\_NO:009969 YEAR: 2006  
TITLE: Keystone Pipeline Project: Class I, II, and III Cultural Resource Investigations in Eastern North Dakota, Volumes 1 & 2 & Addendum 1 (2007)  
AUTHOR(s): Bleier, A. E. Stine J. Mayer M. McFaul A. Kulevsky  
A. Barth

TOWNSHIP: 144 RANGE: 057 SECTION: 21  
MANUSCRIPT\_NO:009969 YEAR: 2006  
TITLE: Keystone Pipeline Project: Class I, II, and III Cultural Resource Investigations in Eastern North Dakota, Volumes 1 & 2 & Addendum 1 (2007)  
AUTHOR(s): Bleier, A. E. Stine J. Mayer M. McFaul A. Kulevsky  
A. Barth

TOWNSHIP: 144 RANGE: 057 SECTION: 30  
MANUSCRIPT\_NO:005443 YEAR: 1990  
TITLE: Cenex Pipeline Company Fargo Extension, Steele, Griggs, Foster, Cass, Barnes, Eddy, Wells, Pierce, McHenry, and Ward Counties, Class III Cultural Resource Survey (also see MS 5591)  
AUTHOR(s): Schweigert, K.

TOWNSHIP: 144 RANGE: 057 SECTION: 31  
MANUSCRIPT\_NO:005443 YEAR: 1990  
TITLE: Cenex Pipeline Company Fargo Extension, Steele, Griggs, Foster, Cass, Barnes, Eddy, Wells, Pierce, McHenry, and Ward Counties, Class III Cultural Resource Survey (also see MS 5591)  
AUTHOR(s): Schweigert, K.

TOWNSHIP: 144 RANGE: 057 SECTION: 33  
MANUSCRIPT\_NO:005443 YEAR: 1990  
TITLE: Cenex Pipeline Company Fargo Extension, Steele, Griggs, Foster, Cass, Barnes, Eddy, Wells, Pierce, McHenry, and Ward Counties, Class III Cultural Resource Survey (also see MS 5591)  
AUTHOR(s): Schweigert, K.

TOWNSHIP: 144 RANGE: 057 SECTION: 32  
MANUSCRIPT\_NO:005443 YEAR: 1990  
TITLE: Cenex Pipeline Company Fargo Extension, Steele, Griggs, Foster, Cass, Barnes, Eddy, Wells, Pierce, McHenry, and Ward Counties, Class III Cultural Resource Survey (also see MS 5591)  
AUTHOR(s): Schweigert, K.

TOWNSHIP: 144 RANGE: 057 SECTION: 09  
MANUSCRIPT\_NO:004280 YEAR: 1987  
TITLE: Final Report Field Reconnaissance Survey of Churches in Barnes, Ransom, Richland, Sargent and Steele Counties of ND  
AUTHOR(s): Schimmer, J.

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TOWNSHIP: 144 RANGE: 056 SECTION: 35  
MANUSCRIPT\_NO:009687 YEAR: 2006  
TITLE: STATEOP-0454 Class III Inventory Report, Steele Co., ND

AUTHOR(s): Wermers, G.

TOWNSHIP: 144 RANGE: 056 SECTION: 04  
MANUSCRIPT\_NO:009320 YEAR: 2005  
TITLE: Community Transportation Enhancement Grant Program: A Class III Cultural Resource Inventory in Dunn, Pierce, Steele and Williams Co., ND

AUTHOR(s): Stine, E.

TOWNSHIP: 144 RANGE: 056 SECTION: 01  
MANUSCRIPT\_NO:008733 YEAR: 1998  
TITLE: North Dakota Highway 38 Rows Survey. A Class III Cultural Resource Inventory From Page, ND North to ND Highway 32. Cass & Steele Co., ND

AUTHOR(s): Kinney, W.

TOWNSHIP: 144 RANGE: 056 SECTION: 02  
MANUSCRIPT\_NO:008733 YEAR: 1998  
TITLE: North Dakota Highway 38 Rows Survey. A Class III Cultural Resource Inventory From Page, ND North to ND Highway 32. Cass & Steele Co., ND

AUTHOR(s): Kinney, W.

TOWNSHIP: 144 RANGE: 056 SECTION: 03  
MANUSCRIPT\_NO:008733 YEAR: 1998  
TITLE: North Dakota Highway 38 Rows Survey. A Class III Cultural Resource Inventory From Page, ND North to ND Highway 32. Cass & Steele Co., ND

AUTHOR(s): Kinney, W.

TOWNSHIP: 144 RANGE: 056 SECTION: 12  
MANUSCRIPT\_NO:008733 YEAR: 1998  
TITLE: North Dakota Highway 38 Rows Survey. A Class III Cultural Resource Inventory From Page, ND North to ND Highway 32. Cass & Steele Co., ND

AUTHOR(s): Kinney, W.

TOWNSHIP: 144 RANGE: 056 SECTION: 04  
MANUSCRIPT\_NO:008733 YEAR: 1998  
TITLE: North Dakota Highway 38 Rows Survey. A Class III Cultural Resource Inventory From Page, ND North to ND Highway 32. Cass & Steele Co., ND

AUTHOR(s): Kinney, W.

TOWNSHIP: 144 RANGE: 056 SECTION: 36  
MANUSCRIPT\_NO:006622 YEAR: 1995  
TITLE: Bridge (112-30) Replacement Project in Steele County, North Dakota. A Report of a Class III Cultural Resource Inventory for the Proposed County Highway Project DPI-0036(002)463

AUTHOR(s): Kinney, W.

TOWNSHIP: 144 RANGE: 056 SECTION: 35  
MANUSCRIPT\_NO:006622 YEAR: 1995  
TITLE: Bridge (112-30) Replacement Project in Steele County, North Dakota. A Report of a Class III Cultural Resource Inventory for the Proposed County Highway Project DPI-0036(002)463

AUTHOR(s): Kinney, W.

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TOWNSHIP: 144      RANGE: 056      SECTION: 01  
MANUSCRIPT\_NO:005944      YEAR: 1981  
TITLE: Hope Historic Structures Survey, Steele Co., ND

AUTHOR(s): Jonason, R.

TOWNSHIP: 144      RANGE: 056      SECTION: 01  
MANUSCRIPT\_NO:004280      YEAR: 1987  
TITLE: Final Report Field Reconnaissance Survey of Churches in Barnes, Ransom, Richland, Sargent and Steele Counties of ND

AUTHOR(s): Schimmer, J.

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TOWNSHIP: 145      RANGE: 056      SECTION: 34  
MANUSCRIPT\_NO:008733      YEAR: 1998  
TITLE: North Dakota Highway 38 Rows Survey. A Class III Cultural Resource Inventory From Page, ND North to ND Highway  
32. Cass & Steele Co., ND  
AUTHOR(s): Kinney, W.

TOWNSHIP: 145      RANGE: 056      SECTION: 35  
MANUSCRIPT\_NO:008733      YEAR: 1998  
TITLE: North Dakota Highway 38 Rows Survey. A Class III Cultural Resource Inventory From Page, ND North to ND Highway  
32. Cass & Steele Co., ND  
AUTHOR(s): Kinney, W.

TOWNSHIP: 145      RANGE: 056      SECTION: 36  
MANUSCRIPT\_NO:008733      YEAR: 1998  
TITLE: North Dakota Highway 38 Rows Survey. A Class III Cultural Resource Inventory From Page, ND North to ND Highway  
32. Cass & Steele Co., ND  
AUTHOR(s): Kinney, W.

TOWNSHIP: 145      RANGE: 056      SECTION: 31  
MANUSCRIPT\_NO:005944      YEAR: 1981  
TITLE: Hope Historic Structures Survey, Steele Co., ND  
AUTHOR(s): Jonason, R.

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Date: 3/4/08

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Range 057

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TOWNSHIP: 145      RANGE: 057      SECTION: 04  
MANUSCRIPT\_NO:009969      YEAR: 2006  
TITLE: Keystone Pipeline Project: Class I, II, and III Cultural Resource Investigations in Eastern North Dakota, Volumes 1 & 2 & Addendum 1 (2007)  
AUTHOR(s): Bleier, A.      E. Stine      J. Mayer      M. McFaul      A. Kulevsky  
A. Barth

TOWNSHIP: 145      RANGE: 057      SECTION: 33  
MANUSCRIPT\_NO:009969      YEAR: 2006  
TITLE: Keystone Pipeline Project: Class I, II, and III Cultural Resource Investigations in Eastern North Dakota, Volumes 1 & 2 & Addendum 1 (2007)  
AUTHOR(s): Bleier, A.      E. Stine      J. Mayer      M. McFaul      A. Kulevsky  
A. Barth

TOWNSHIP: 145      RANGE: 057      SECTION: 30  
MANUSCRIPT\_NO:000972      YEAR: 1980  
TITLE: 1978-1979 Cultural Resource Investigations Along the Middle Sheyenne River Valley Including Lake Ashtabula and A Portion of the Sheyenne River, Vol. 1, Barnes Co., Griggs Co., & Steele Co., ND  
AUTHOR(s): Fox, R.

TOWNSHIP: 145      RANGE: 057      SECTION: 31  
MANUSCRIPT\_NO:000972      YEAR: 1980  
TITLE: 1978-1979 Cultural Resource Investigations Along the Middle Sheyenne River Valley Including Lake Ashtabula and A Portion of the Sheyenne River, Vol. 1, Barnes Co., Griggs Co., & Steele Co., ND  
AUTHOR(s): Fox, R.

### *Legals Search*

<i>County</i>	<i>Site</i>	<i>Township</i>	<i>Range</i>	<i>Section</i>	<i>AreaSig1</i>
BA	X0262	143	057	11	Archeological
+ BA	X0184	143	057	12	Historical
BA	00412	143	057	19	Archeological

### *Legals Search*

<i>County</i>	<i>Site</i>	<i>Township</i>	<i>Range</i>	<i>Section</i>	<i>AreaSig1</i>
ST	00002	145	057	30	Architectural
ST	00002	145	057	30	Historical

### *Legals Search*

<i>County</i>	<i>Site</i>	<i>Township</i>	<i>Range</i>	<i>Section</i>	<i>AreaSig1</i>
ST	X0010	144	056	27	Historical
ST	00156	144	056	35	Architectural
ST	00156	144	056	36	Architectural

145 056 1-36 none

### *Legals Search*

<i>County</i>	<i>Site</i>	<i>Township</i>	<i>Range</i>	<i>Section</i>	<i>AreaSig1</i>
ST	X0049	144	057	28	Archeological
ST	00145	144	057	30	Architectural
ST	00145	144	057	30	Historical
ST	00843	144	057	30	Historical
ST	00159	144	057	32	Architectural
ST	X0011	144	057	32	Architectural
ST	00171	144	057	33	Historical

### *Legals Search*

<i>County</i>	<i>Site</i>	<i>Township</i>	<i>Range</i>	<i>Section</i>	<i>AreaSig1</i>
BA	00202	143	056	17	Architectural N0
BA	X0181	143	056	21	Historical
BA	X0182	143	056	21	Historical
BA	X0183	143	056	27	Historical

**NDCRS SITE FORM  
HISTORICAL ARCHEOLOGICAL SITES**

SITS # 32 BA X0184  
State County Site Number

Field Code Site Name ALGEO POST OFFICE  
Field Code Site Name

Map Quad  
Map Quad

LTL	Twp 143	Range 057	Section 04	QQQ 0	QQ 0	Q 5	1. N 1/2
LTL	Twp 143	Range 057	Section 12	QQQ 0	QQ 0	Q 5	2. E 1/2
							3. S 1/2
							4. W 1/2
							5. NE 1/4
							6. SE 1/4
							7. SW 1/4
							8. NW 1/4
							9. C

FEATURE TYPE	CULTURAL MATERIAL	SiteType
0 CM Scatter	0 Bone	Context
0 Chimney	0 Ceramics	0 SiteArea
0 Depression	0 Charcoal	m. x m.
0 Dump	0 Cloth	0 Cultural Depth cm.
0 Earthworks	0 Faunal Remains	0 Depth Indicator
0 Fortification	0 Fire Cracked Rock	Occupation Date
0 Foundation	0 Floral Remains	Begin End
0 Graves	0 Glass	0 0
0 Hearth	0 Hide,Hair,Fur	Basis for Dating
0 Machinery	0 Human Remains	0 CM Density
0 Quarry/Mine	0 Masonry	0 Isolated Find
0 Rock Art	0 Metal	
0 Trail	0 Plastic	
0 Wreck	0 Rubber	
0 Other	0 Shell	
	0 Wood	
	0 Other	

Landform 1	Landform 2	Slope/Exposure	Ecosystem
Landform 1	Landform 2	Slope/Exposure	Ecosystem
Elevation:	Drainage System	View, Degree	View, Distance
0 m.			
Dist Perm Water	Perm Water Type	Dist Seas Water	Seas Water Type
0 m.		0 m.	

Ownership	Ownership
Fieldwork Date	Fieldwork Date
Site Condition	Excavation
Collection	Test/Probe
Additional Information	Management Recommendation
REAP 1978	

0 Soils	15 Ecozone	3 Area Signif			
0 Soils	Ecozone	Area Signif			E BEBSIB Coder
0 CR Type	0 Verified Site	0 Non-Site	3 ECF	3 TF	1/18/80 DateCoded
0 State Registry	0 National Register				Update

NORTH DAKOTA  
CULTURAL RESOURCES  
DATA BANK FORM

Field Number \_\_\_\_\_

Site Name 1899 POST OFFICE

F1 Map Reference \_\_\_\_\_

F2 \_\_\_\_\_

State 32 County BA Site Number X184 Twp. 14357 R. 14 Sec. 16 Subsection 0 City \_\_\_\_\_  
 F3 F4 F5 F6 F7 F8 F9 F10

Elevation \_\_\_\_\_ Surface Owner \_\_\_\_\_ Subsurface Owner \_\_\_\_\_ Erosion \_\_\_\_\_ Rodent Activity \_\_\_\_\_ Vandilism \_\_\_\_\_ Cultivation Damage \_\_\_\_\_ Construction Damage \_\_\_\_\_  
 F11 F12 F13 F14 F15 F16 F17 F18

Grazing Damage \_\_\_\_\_ Mining Damage \_\_\_\_\_ Other \_\_\_\_\_ Physical Integrity \_\_\_\_\_ Ecological Zone \_\_\_\_\_ Landform I \_\_\_\_\_ Landform II \_\_\_\_\_ General Topography \_\_\_\_\_  
 F19 F20 F21 F22 F23 F24 F25 F26

Exposure \_\_\_\_\_ View \_\_\_\_\_ Lookout \_\_\_\_\_ Ecosystem \_\_\_\_\_ Soil Association \_\_\_\_\_ Geological Strata \_\_\_\_\_ Stream Name \_\_\_\_\_  
 F27 F28 F29 F30 F31 F32 F33

Distance to Water \_\_\_\_\_ Water Type \_\_\_\_\_ Cultural Depth \_\_\_\_\_ Site Area \_\_\_\_\_ Surface Collection \_\_\_\_\_ Test \_\_\_\_\_ Excavation \_\_\_\_\_ Date of Field Work \_\_\_\_\_  
 F34 F35 F36 F37 F38 F39 F40 F41

Site Photos \_\_\_\_\_ Site Maps \_\_\_\_\_ Management Recommendations \_\_\_\_\_ Register Status \_\_\_\_\_ Area of Significance \_\_\_\_\_ Cultural Resource Type \_\_\_\_\_ Thematic Category \_\_\_\_\_ Rock Arrangements \_\_\_\_\_  
 F42 F43 F44 F45 F46 F47 F48 F49

Tipi Ring \_\_\_\_\_ Earthlodge Village \_\_\_\_\_ Earthworks \_\_\_\_\_ Rock Shelter \_\_\_\_\_ Ruins House Sites \_\_\_\_\_ Kill Site \_\_\_\_\_ Jump \_\_\_\_\_ Quarry/Workshop \_\_\_\_\_ Cache, Storage pit \_\_\_\_\_  
 F50 F51 F52 F53 F54 F55 F56 F57 F58

Hearth \_\_\_\_\_ Artifact Scatter \_\_\_\_\_ Grave, Cemetery \_\_\_\_\_ Mounds or Mound \_\_\_\_\_ Midden, Refuse \_\_\_\_\_ Trails, Roads \_\_\_\_\_ Excavations, Eagle catching pit \_\_\_\_\_ Rock Art \_\_\_\_\_  
 F59 F60 F61 F62 F63 F64 F65 F66

Isolated Find \_\_\_\_\_ Miscellaneous \_\_\_\_\_ Fire cracked rock \_\_\_\_\_ Trade Goods \_\_\_\_\_ Chipped stone work \_\_\_\_\_ Projectile points \_\_\_\_\_ Woodwork \_\_\_\_\_ Worked bone \_\_\_\_\_  
 F67 F68 F69 F70 F71 F72 F73 F74

Shell work \_\_\_\_\_ Skin, hair \_\_\_\_\_ Glass \_\_\_\_\_ Ceramics \_\_\_\_\_ Ground stone \_\_\_\_\_ Metal work \_\_\_\_\_ Faunal remains \_\_\_\_\_ Floral remains \_\_\_\_\_ Fossil remains \_\_\_\_\_ Charcoal \_\_\_\_\_  
 F75 F76 F77 F78 F79 F80 F81 F82 F83 F84

Artifact Density \_\_\_\_\_ Early Period \_\_\_\_\_ Middle Period \_\_\_\_\_ Late Period \_\_\_\_\_ Historic \_\_\_\_\_ Period Unknown \_\_\_\_\_ Cultural Affiliation \_\_\_\_\_ Basis for dating \_\_\_\_\_ Significance \_\_\_\_\_  
 F85 F86 F87 F88 F89 F90 F91 F92 F93

Verified Site \_\_\_\_\_ Non-site \_\_\_\_\_  
 F94 F95

Date of Field Work: \_\_\_\_\_  
 Coder: Rosen  
 Date Coded: 1-18-00

Description, Comments, Problems 1899 POST OFFICE  
 F96 \_\_\_\_\_  
 Urban: Address: \_\_\_\_\_  
 F97 Lot: \_\_\_\_\_ Block: \_\_\_\_\_ Plat: \_\_\_\_\_  
 F98 F99 F100

## **APPENDIX F**

Agency Correspondence

**Pillsbury - Fargo  
Generation Outlet Project**



ONE COMPANY | *Many Solutions*<sup>SM</sup>

March 10, 2008

To: Project Notice Distribution List

RE: Proposed construction of a high-voltage transmission line facility from the Luverne Wind Farm in Griggs and Steele Counties to a proposed substation located northwest of Pillsbury in Barnes County, North Dakota

Dear Recipient:

On behalf of M-Power, LLC (M-Power), HDR Engineering, Inc. (HDR) is notifying you of the project described above. The proposed project includes approximately 13 miles of high voltage 230-kV transmission line, which would transport power from M-Power's proposed Luverne Wind Farm to a proposed Otter Tail Power Company and Minnkota Power Cooperative substation located northwest of Pillsbury, North Dakota. HDR is preparing an application that M-Power will submit to the North Dakota Public Services Commission (PSC) for a Certificate of Corridor Compatibility and Route Permit. This notice is provided to the parties identified by NDAC 69-06-01-05 and other parties that have been identified by the PSC staff.

We request that you review the proposed project and then provide comments and/or information about applicable permits that may be required from your office. M-Power anticipates submitting the application to the PSC by mid-May to allow construction to start by mid-summer of 2008. You will receive notice when the PSC application is filed.

As the crosshatched area of the enclosed map shows, the corridor study area is located in Steele and Barnes Counties, North Dakota. The study area is a two-mile wide corridor. Legal descriptions (townships, ranges, and sections) are provided on the attached table.

Comments received by April 15, 2008, will be included in the Certificate of Corridor Compatibility and Route Permit application. If you have questions or concerns contact me as soon as possible at the address, phone number or email provided. You may also contact the M-Power Project Manager Warren Enyart at [WEnyart@griggs-steeleEz.org](mailto:WEnyart@griggs-steeleEz.org). Other project team leaders and I are happy to meet with you at your convenience.

In addition, M-Power is planning to hold an open house meeting in the project area in April to gather public input. Notice of that meeting will be published in local newspapers. Your attendance and participation would be welcome.

HDR Engineering, Inc.

4401 West Gate Blvd, Suite 400  
Austin, Texas 78745

Phone (512) 912-5100  
Fax (512) 912-5158  
[www.hdrinc.com](http://www.hdrinc.com)

Thank you for your assistance.

Sincerely,  
**HDR Engineering, Inc.**

Allen Wynn  
Assistant Project Manager  
Phone: (512)845-6774  
awynn@hdrinc.com

Enclosures: Project Study Area Map  
Table of Study Area Locations  
Project Notice Distribution List

cc: Warren Enyart, M-Power  
Mitchell Shields, HDR

HDR Engineering, Inc.

4401 West Gate Blvd, Suite 400  
Austin, Texas 78745

Phone (512) 912-5100  
Fax (512) 912-5158  
[www.hdrinc.com](http://www.hdrinc.com)

**Agency Notification List**  
**Laverne Wind Form Transmission Line; Barnes and Steel Counties, North Dakota**

State Agencies										
Agency Name		Title	First Name	Last Name	Job Title	Address	City	State	Zip	Phone (701)
Aeronautics Commission	North Dakota Aeronautics Commission	Mr.	Gary R.	Ness	Director	P.O. Box 5020 Bismarck Municipal Airport - General Aviation Terminal 2301 University Drive, Building 1652-22	Bismarck	ND	58502-5020	328-9650
Attorney General	Attorney General's Office	Mr.	Wayne	Stenehjem	Attorney General	State Capitol 600 E. Boulevard Ave., Dept. 125	Bismarck	ND	58505	328-2210
Dept. of Agriculture	North Dakota Department of Agriculture	Mr.	Roger	Johnson	Agriculture Commissioner	600 E Boulevard Ave., Dept. 602	Bismarck	ND	58505-0020	328-2231
Dept. of Health	North Dakota Department of Health	Mr.	Terry	Dwelle, M.D.	State Health Officer	600 East Boulevard Avenue	Bismarck	ND	58505-0200	328-2372
Dept. of Human Services	North Dakota Department of Human Services	Ms.	Carol K.	Olson	Executive Director	600 East Boulevard Ave., Dept. 325	Bismarck	ND	58505-0250	328-4933
Dept. of Labor	North Dakota Department of Labor	Ms.	Lisa	Fair McEvers	Commissioner of Labor	600 East Boulevard Ave., Dept. 406	Bismarck	ND	58505-0340	328-2660
Department of Vocational Education	North Dakota Department of Career and Technical Education	Mr.	Wayne	Kutzer	Director and Executive Officer	State Capitol 15th Floor 600 East Boulevard Avenue, Dept. 270	Bismarck	ND	58505-0610	328-3180
Economic Development Commission	North Dakota Department of Commerce Division of Economic Development and Finance	Mr.	Paul	Lucy	Director	1600 East Century Avenue, Suite 2 P.O. Box 2057	Bismarck	ND	58502-2057	328-5300
Energy Development Impact Office	North Dakota State Land Department	Mr.	Jeff	Engleson	Director of Investment Division	P.O. Box 5523	Bismarck	ND	58506-5523	328-2800
Game and Fish Department	North Dakota Game and Fish Department	Mr.	Terry	Steinwand	Director	100 North Bismarck Expressway	Bismarck	ND	58501-5095	328-6305
Geological Survey	North Dakota Geological Survey	Mr.	Edward C.	Murphy	State Geologist	1016 East Calgary Ave. S.E.	Bismarck	ND	58503	328-8000
Highway Department	North Dakota Department of Transportation	Mr.	Troy	Gilbertson	District Engineer	Fargo District 3 503 38th St. SW	Fargo	ND	58103-1198	239-8904
State Historical Society of ND	State Historical Society of North Dakota	Mr.	Paul	Picha	Chief Archaeologist	North Dakota Heritage Center 612 East Boulevard Avenue	Bismarck	ND	58505-0830	328-2666
Indian Affairs Commission	North Dakota Indian Affairs Commission	Ms.	Cheryl	Kulas	Executive Director	600 East Boulevard Ave. 1st Floor-Judicial Wing	Bismarck	ND	58505-0300	328-2432
Job Service ND	Job Service North Dakota	Ms.	Maren	Daley	Executive Director	P.O. Box 5507	Bismarck	ND	58506-5507	328-2868
Land Department	North Dakota State Land Department	Mr.	Gary	Preszler	Land Commissioner	P.O. Box 5523 918 E Divide, Suite 410	Bismarck	ND	58506-5523	328-2800
Parks and Rec Dept	North Dakota Parks and Recreation Department	Ms.	Chris	Dirk		1600 E. Century Avenue, Suite 3	Bismarck	ND	58503-0649	328-5357

**Agency Notification List**  
**Laverne Wind Form Transmission Line; Barnes and Steel Counties, North Dakota**

State Agencies										
Agency Name		Title	First Name	Last Name	Job Title	Address	City	State	Zip	Phone (701)
State Planning Division - Office of Intergovernmental Assistance- Office of Management and Budget	North Dakota Department of Commerce Division of Community Services	Mr.	Paul	Govig	Director	1600 East Century Avenue, Suite 2 P.O. Box 2057	Bismarck	ND	58503	328-2094
	North Dakota Department of Commerce-Division of Community Services	Ms.	Kim	Christianson	Program Manager	1601 East Century Avenue, Suite 2 P.O. Box 2057	Bismarck	ND	58503	328-5300
State Planning Division - Office of Intergovernmental Assistance- Office of Management and Budget	Office of Management and Budget	Ms.	Pam	Sharp	Director	600 East Boulevard Ave., 4th Floor, Dept. 110	Bismarck	ND	58505-0400	328-2680
Soil Conservation Committee	NDSU Extension Service - North Dakota State Soil Conservation Committee	Mr.	Scott	Hochhalter	Soil Conservation Specialist	2718 Gateway Avenue, Unit #104	Bismarck	ND	58503	328-9718
State Water Commission	North Dakota State Water Commission	Mr.	Dale	Frink	State Engineer	900 East Boulevard, Dept. 770	Bismarck	ND	58505-0850	328-2750
Federal Agencies										
Agency Name		Title	First Name	Last Name	Job Title	Address	City	State	Zip	Phone (701)
U.S. Fish and Wildlife Service	U.S. Fish and Wildlife Service	Mr.	Jeff	Towner	Project Leader	North Dakota Field Office 3425 Miriam Avenue	Bismarck	ND	58501-7926	250-4481
U.S. Corps of Engineers	U.S. Corps of Engineers	Mr.	Daniel	Cimarosti	Regulatory Program Manager	1513 S 12th St.	Bismarck	ND	58504	255-0015
U.S. Department of Agriculture	USDA Natural Resources Conservation Service	Mr.	J. R.	Flores	State Conservationist	PO Box 1458	Bismarck	ND	58502-1458	530-2000
Local Agencies and Officials										
Agency Name		Title	First Name	Last Name	Job Title	Address	City	State	Zip	Phone (701)
Barnes County	Barnes County	Mr.	Ed	McGough	Auditor	230 4th Street NW	Valley City	ND	58072	845-8500
Barnes County	Barnes County Board of Commissioners	Ms.	Cindy	Schwehr	Chair	11442 23R ST SE	Rogers	ND	58479	845-8238
Barnes County	Minnie Lake Township	Mr.	Mike	Abraham	Chair	1840 103th Ave SE	Page	ND	58064	668-2323
Barnes County	Ellsbury Township	Mr.	Jim	Gray	Chair	13106 17 St SE	Page	ND	58064	668-2736
Barnes County	Baldwin Township	Mr.	Rodd	Svenningsen	Chair	12160 14th St SE	LuVerne	ND	58056	945-2436

**Agency Notification List**  
**Laverne Wind Form Transmission Line; Barnes and Steel Counties, North Dakota**

<b>Local Agencies and Officials</b>										
<b>Agency Name</b>		<b>Title</b>	<b>First Name</b>	<b>Last Name</b>	<b>Job Title</b>	<b>Address</b>	<b>City</b>	<b>State</b>	<b>Zip</b>	<b>Phone (701)</b>
Barnes County	Sibley Trail Township	Mr.	Robert	Fus	Chair	11837 15th St SE	Dazey	ND	58429	733-2455
Steele County	Steele County Commission	Mr.	Lance	Fugleberg	Chair	RR 1 Box 49	Portland	ND	58274-9616	786-9214
Steele County	Steele County	Ms.	Linda S.	Leadbeter	Auditor	PO Box 275	Finley	ND	58230-0275	524-2110
Steele County	Carpenter Township	Mr.	Mike	Steinke	Chair	Rt. 2 Box 8	Hope	ND	58046	945-2348
Steele County	Willow Lake Township	Mr.	Tom	Breckheimer	Chair	Box 142	Luverne	ND	58056	769-2244
Steele County	Melrose Township	Mr.	Darren	Meyer	Chair	Rt. 1, Box 106	Hope	ND	58046	945-2744
Steele County	Riverside Township	Mr.	Lloyd	Law	Chair	Rt. 1, Box 32	Finley	ND	58230	797-2276
City of Pillsbury	City of Pillsbury	Mr.	Darrel	Brudevold	Mayor	Box 6	Pillsbury	ND	58065	945-2771
City of Luverne	City of Luverne	Mr.	Alan	Leadbetter	Mayor	P.O. Box 176	Luverne	ND	58056	769-2115
<b>State Elected Officials (Senators and Representatives of districts in the corridor location)</b>										
<b>State Officials</b>		<b>Title</b>	<b>First Name</b>	<b>Last Name</b>	<b>Job Title</b>	<b>Address</b>	<b>City</b>	<b>State</b>	<b>Zip</b>	<b>Phone (701)</b>
District 20	Senator	Mr.	Elroy	Lindaas	Senator	735 153rd Avenue NE	Mayville	ND	58257-9673	786-3064
District 20	Representative	Mr.	Ole	Aarsvold	Representative	709 155th Avenue SE	Blanchard	ND	58009-9513	488-2290
District 20	Representative	Mr.	Lee	Kaldor	Representative	P.O. Box 215	Mayville	ND	58257-0215	788-4288
Governor's Office	Governor's Office	Governor	John	Hoeven	Governor's Office	600 East Boulevard Ave., Dept. 101	Bismarck	ND	58505-0001	328-2200



Wayne Stenehjem  
ATTORNEY GENERAL

STATE OF NORTH DAKOTA  
OFFICE OF ATTORNEY GENERAL

STATE CAPITOL  
600 E BOULEVARD AVE DEPT 125  
BISMARCK, ND 58505-0040  
(701) 328-2210 FAX (701) 328-2226  
www.ag.state.nd.us

March 31, 2008

Warren Enyart, Project Manager  
HDR Engineering  
4401 West Gate Blvd, Suite 400  
Austin TX 78745

Dear Mr. Enyart:

I am responding on behalf of the Attorney General to your letter regarding the proposed construction of a high-voltage transmission facility in North Dakota. You ask that this office review the proposed project and provide comments and/or information about applicable permits.

The Attorney General and members of his staff are prohibited by statute from giving legal advice, opinions, or assistance to private businesses. We may only serve as legal advisors to state officials, state's attorneys, and certain city officials.

Accordingly, we cannot review your information or provide the assistance you requested. For legal assistance and to ensure compliance with all ND laws and permit requirements you should consult an attorney in private practice licensed in this state. If you need assistance finding an attorney, you can contact the State Bar Association at (701) 255-1404.

You may wish to note our response for your file, to avoid making similar requests to this office in the future.

Sincerely,

A handwritten signature in blue ink that reads "Liz Brocker".

Liz Brocker  
Executive Assistant



## United States Department of the Interior

### FISH AND WILDLIFE SERVICE

Ecological Services  
3425 Miriam Avenue  
Bismarck, North Dakota 58501



APR 14 2008

Mr. Allen Wynn  
Assistant Project Manager  
HDR Engineering, Inc.  
4401 West Gate Boulevard, Suite 400  
Austin, Texas 78745

Re: Proposed 230kV Transmission Line from  
Luverne Wind Farm to Pillsbury Substation

Dear Mr. Wynn:

This letter is in response to your request dated March 10, 2008, for environmental comments regarding the proposed M-Power, LLC (M-Power) transmission line project. M-Power proposes to construct 13 miles of 230 kilovolt (kV) transmission line to transport power from M-Power's proposed Luverne Wind Farm to a proposed Ottertail Power Company and Minnkota Power Cooperative substation located northwest of Pillsbury, North Dakota. The project area is located in Barnes and Steele Counties, North Dakota. We offer the following comments under the authority of and in accordance with the Migratory Bird Treaty Act (16 U.S.C. 703 et seq.), Bald and Golden Eagle Protection Act (BGEPA) (16 U.S.C. 668-668d, 54 Stat. 250), Executive Order 13186 "Responsibilities of Federal Agencies to Protect Migratory Birds", the Endangered Species Act (ESA) (16 U.S.C. 1531 et seq.), the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57), and the National Environmental Policy Act (NEPA) ( Pub. L. 91-190, 42 U.S.C. 4321-4347, January 1, 1970, as amended by Pub. L. 94-52, July 3, 1975, Pub. L. 94-83, August 9, 1975, and Pub. L. 97-258, § 4(b), Sept. 13, 1982).

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

### **Migratory Birds**

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

### **Threatened and Endangered Species**

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

The Aransas Wood Buffalo Population (AWBP) of whooping cranes is the only self-sustaining migratory population of whooping cranes remaining in the wild. These birds breed in the wetlands of Wood Buffalo National Park in Alberta and the Northwest Territories of northern Canada, and overwinter on the Texas coast. Whooping cranes in the AWBP annually migrate through North Dakota during their spring and fall migrations.

Endangered whooping cranes have been documented using roosting habitat in the vicinity of the proposed transmission line route. The proposed route is located outside the primary 180 mile-wide migration corridor that includes 95% of all confirmed whooping crane sightings in North Dakota (enclosure 2). The presence of suitable roosting and feeding habitat for whooping cranes along the proposed route, and confirmed whooping crane sightings, document the potential for whooping crane presence in the area. A new transmission line in this area has the potential to affect whooping cranes during their annual spring and fall migration through North Dakota. Currently, collisions with power lines are the greatest known source of mortality for fledged whooping cranes, and have accounted for the death or serious injury of at least 46 whooping cranes since 1956.

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

#### **Fish and Wildlife Service Property Interests**

The Service administers Waterfowl Production Areas owned in fee title as well as wetland and grassland easements throughout North Dakota. A review of Service realty records indicate Service property interests (fee title land highlighted in green, wetland easements highlighted in yellow) are located in the planning area (enclosure 3). The Service has an ongoing easement acquisition program and we recommend that you contact Mr. Ed Meendering, Supervisory Wildlife Refuge Specialist, Valley City Wetland Management District, 11515 River Road, Valley City, North Dakota 58072-9619, (701-845-3466), for more specific information relative to Service easements and up-to-date realty records.

Following are some suggestions and explanations of the various land interests the Service is responsible for in the proposed project area.

Wetland easements (yellow) are legal agreements with private landowners that permanently protect wetland basins from being drained, burned, leveled, or filled.

The primary responsibility in protecting these easements is to review all proposed uses to ensure that the requests are compatible with Service easement regulations and various laws and policies. Therefore, these comments and suggestions are made in an attempt to accomplish three goals: 1) avoid impacts to Service wetland easements in the project area as much as possible; 2) if unavoidable, ensure that any proposed turbine and associated infrastructure impacts (roads, buried collection lines, transmission lines, sub-stations, etc.) on any Service easement areas are kept to a minimum; and 3) investigate potential alternatives to eliminate or reduce impacts to easement areas to protect the integrity of the easement.

With these goals in mind, the Service offers the following comments:

There are fee title lands and wetland easement tracts in the proposed project area. You will need to contact the WMD office for specific information.

- **Wetland Easements:** The Service manages a number of wetland easements in the proposed project area. The National Wetlands Inventory (NWI) identifies many of the area's wetlands; however, many of the small, shallow temporary wetland basins may not be recognized on NWI photography. You should make all reasonable efforts to avoid facility placement and disturbance to wetlands protected by easement. If your plans indicate a proposal to locate project facilities on Service wetland easements, the Service will review aerial photography along with field inspections to review construction stakes to make sure all wetland basins are avoided. In addition, it is important to make sure that access roads do not alter individual wetland basins and their individual watersheds.
- **NEPA Review:** If Service lands are proposed to be impacted, the Service will be required to conduct an analysis of impacts and examine alternatives, pursuant to NEPA.

### **High Value Habitat Avoidance**

The proposed project area is located in the Drift Prairie Glaciated Plains region of North Dakota and includes areas of native mixed-grass prairie. Since the 1800s, North Dakota has lost approximately 75-90 percent of its native grasslands, primarily due to crop production. The Service recommends avoiding construction or disturbance on native prairie areas.

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

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

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

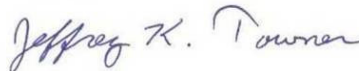
- Schedule construction for late summer or fall/early winter so as not to disrupt waterfowl or other wildlife during the breeding season (February 1 to July 15). If work is proposed to take place during the breeding season or at any other time which may result in the take of migratory birds or active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

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

- Avoid construction in native prairie, if possible, and reseed disturbed native prairie with a comparable native grass/forb seed mixture. Obtain seed stock from nurseries within 250 miles of the project area to insure the particular cultivars are well adapted to the local climate.
- Locate poles and other construction to avoid placement of fill in wetlands along the route.
- Install and maintain appropriate erosion control measures to reduce sedimentation and water quality degradation of wetlands and streams near the project area.
- Replace unavoidable wetland losses with functionally equivalent wetlands.

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

Sincerely,



Jeffrey K. Towner  
Field Supervisor  
North Dakota Field Office

Enclosures (3)

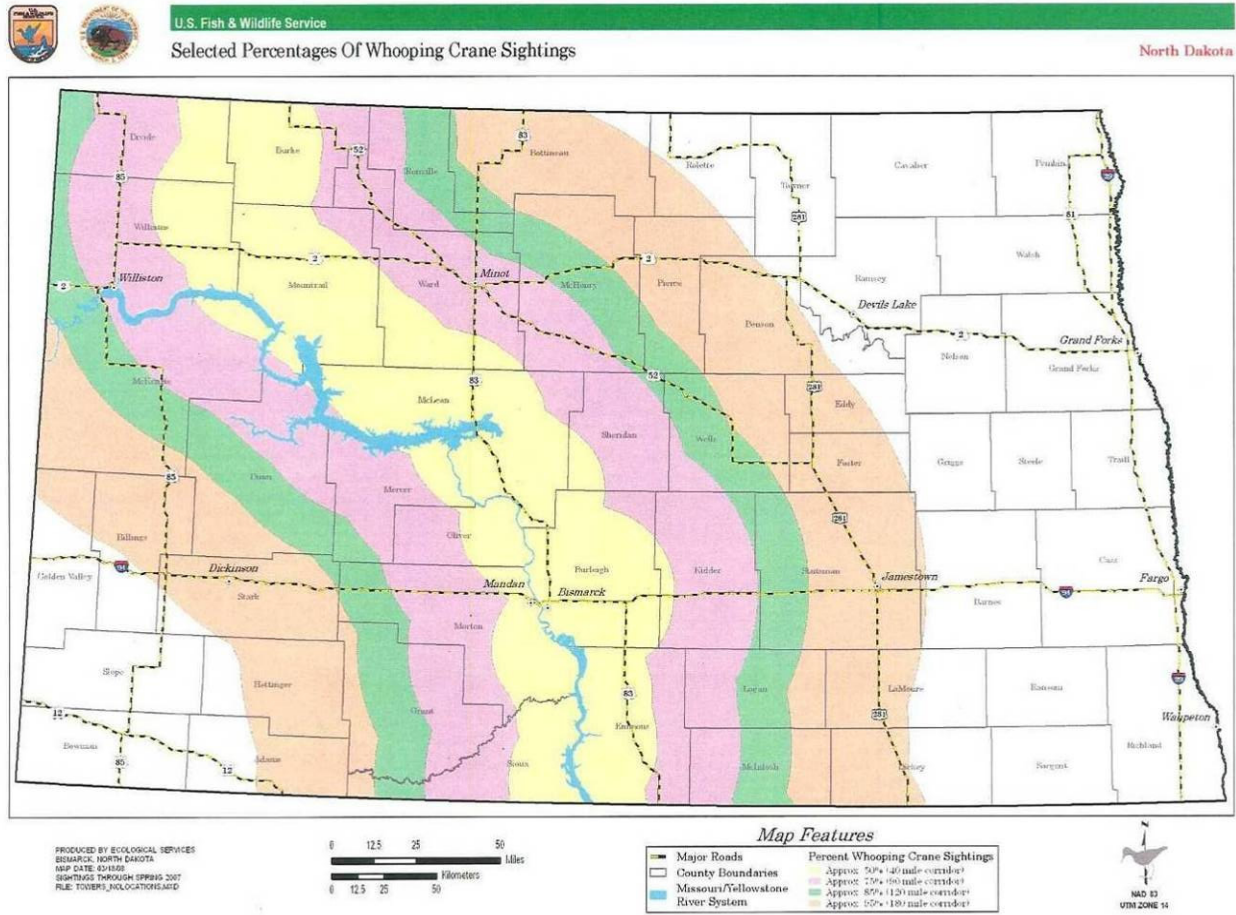
cc: Supervisory Wildlife Refuge Specialist, Valley City WMD  
Regulatory Office, Army Corps of Engineers, Bismarck  
(Attn: D. Cimarosti)  
ND Public Service Commission, Bismarck  
Director, ND Game & Fish Department, Bismarck  
(Attn: M. McKenna)

FEDERAL ENDANGERED SPECIES  
FOUND IN  
BARNES AND STEELE COUNTIES, NORTH DAKOTA

**ENDANGERED SPECIES**

Birds

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





John Hoeven, Governor  
Douglass A. Prchal, Director  
1600 East Century Avenue, Suite 3  
Bismarck, ND 58503-0649  
Phone 701-328-5357  
Fax 701-328-5363  
E-mail [parkrec@nd.gov](mailto:parkrec@nd.gov)  
[www.parkrec.nd.gov](http://www.parkrec.nd.gov)

March 26, 2008

Allen Wynn  
HDR Engineering, Inc.  
4401 West Gate Blvd, Suite 400  
Austin, TX 78745

Re: High-Voltage Transmission Line Facility from Luverne Wind Farm in Griggs and Steele Counties to a Proposed Substation Northwest of Pillsbury in Barnes County

Dear Mr. Wynn:

The North Dakota Parks and Recreation Department (NDPRD) has reviewed the above referenced project proposal submitted by M-Power, LLC to construct approximately 13 miles of high-voltage transmission line to transport power from the proposed Luverne Wind Farm located in Griggs and Steele Counties to a proposed substation located northwest of Pillsbury in Barnes County.

Our agency scope of authority and expertise covers recreation and biological resources (in particular rare species and ecological communities). The project as defined does not affect state park lands that we manage or Land and Water Conservation Fund recreation projects that we coordinate.

The North Dakota Natural Heritage biological conservation database has been reviewed to determine if any plant or animal species of concern or other significant ecological communities are known to occur within an approximate one-mile radius of the project area. Based on this review, we do have records for the occurrence of *Pascopyrum smithii* – *Stipa comata prairie* (Central mixed grass prairie) in a section adjacent to the project area indicating that the habitat in the project area may be suited for this community or other rare, threatened, sensitive or endangered species. Please see the attached spreadsheet and map for more information on these occurrences. We defer further comments regarding animal species to the North Dakota Game and Fish Department and the United States Fish and Wildlife Service.

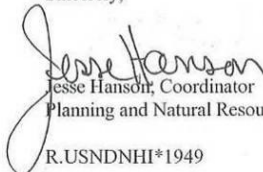
Because this information is not based on a comprehensive inventory, there may be species of concern or otherwise significant ecological communities in the area that are not represented in the database. The lack of data for any project area cannot be construed to mean that no significant features are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

Regarding any reclamation efforts, we recommend that any impacted areas be revegetated with species native to the project area.

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

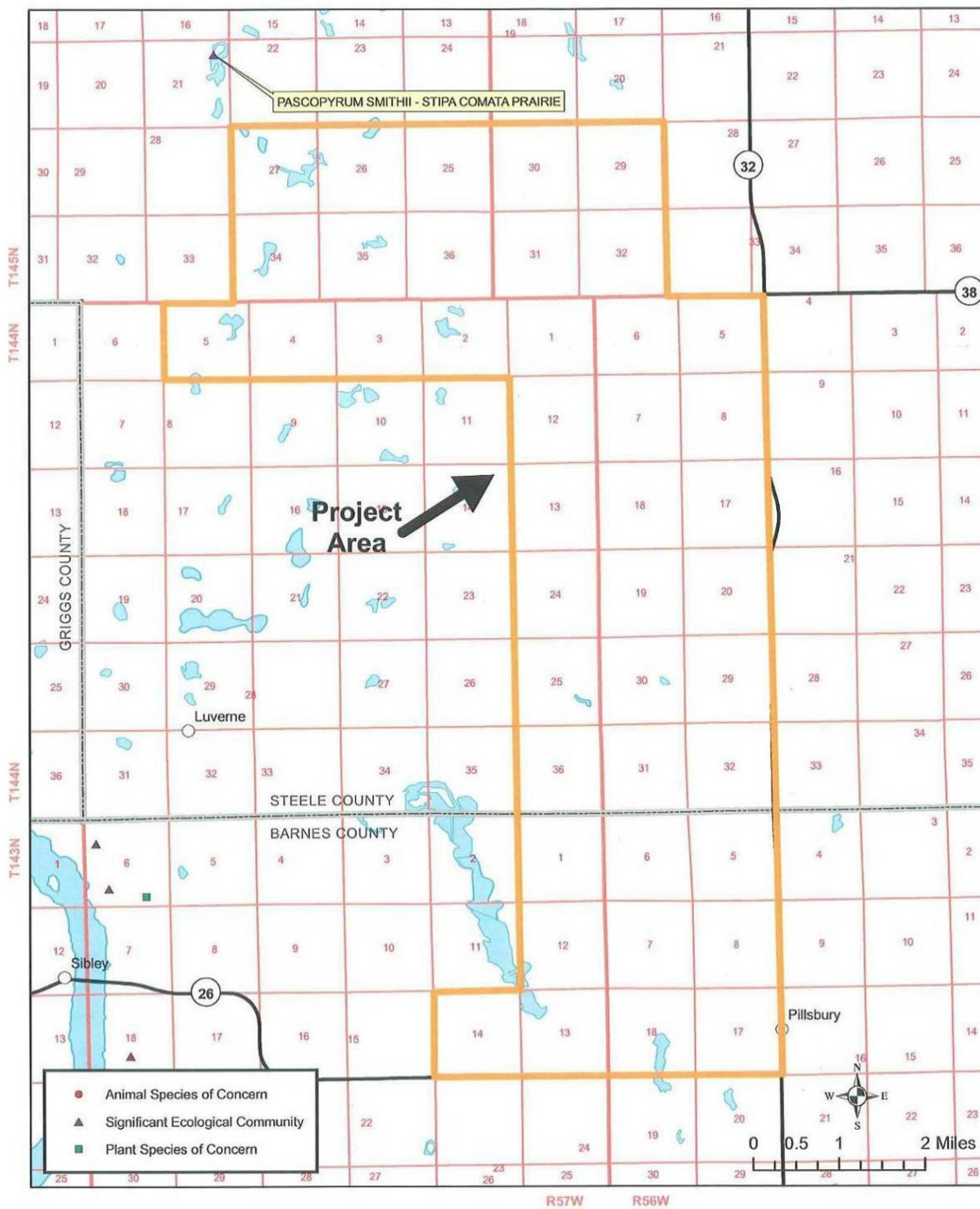
Thank you for the opportunity to comment on this project. Please contact Kathy Duttonhefner (701-328-5370 or [kgduttonhefner@nd.gov](mailto:kgduttonhefner@nd.gov)) of our staff if additional information is needed.

Sincerely,

  
Jesse Hanson, Coordinator  
Planning and Natural Resources Division  
R.USNDNHI\*1949

.....  
*Play in our backyard!*

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



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

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

State Scientific Name	State Common Name	Township & Range	Section	TRS Notes	State Rank	Global Rank	Federal Status	Last Observation
PASCOPYRUM SMITHII - STIPA COMATA PRAIRIE	CENTRAL MIXED GRASS PRAIRIE	145N057W	21	NE4 E2	S2			1995-08-29

**North Dakota Natural Heritage Inventory Biological and Conservation Data Disclaimer**

The quantity and quality of data collected by the North Dakota Natural Heritage Inventory are dependent on the research and observations of many individuals and organizations. In most cases, this information is not the result of comprehensive or site-specific field surveys; many natural areas in North Dakota have never been thoroughly surveyed, and new species are still being discovered. For these reasons, the Natural Heritage Inventory cannot provide a definite statement on the presence, absence, or condition of biological elements in any part of North Dakota. Natural Heritage data summarize the existing information known at the time of the request. Our data are continually upgraded and information is continually being added to the database. This data should never be regarded as final statements on the elements or areas that are being considered, nor should they be substituted for on-site surveys.

3/26/2008



REPLY TO  
ATTENTION OF

DEPARTMENT OF THE ARMY  
CORPS OF ENGINEERS, OMAHA DISTRICT  
NORTH DAKOTA REGULATORY OFFICE  
1513 SOUTH 12<sup>TH</sup> STREET  
BISMARCK ND 58504-6640

March 17, 2008

North Dakota Regulatory Office

[NWO-2008-00710-BIS]

HDR Engineering, Inc.  
Attn: Allen Wynn  
4401 West Gate Blvd, Suite 400  
Austin, Texas 78745

Dear Mr. Wynn:

This is in response to your letter received **March 10, 2008**, requesting Department of the Army (DA), US Army Corps of Engineers (Corps) comments on proposed construction of a high-voltage transmission line facility from the Luverne Wind Farm in Griggs and Steele Counties to a proposed substation located northwest of Pillsbury in Barnes County.

Corps regulatory offices administer Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act. Section 10 of the Rivers and Harbors Act regulates work in or affecting navigable waters. Section 404 of the Clean Water Act regulates the discharge of dredge or fill material (temporarily or permanently) in waters of the United States. Waters of the United States may include, but are not limited to, rivers, streams, ditches, coulees, lakes, ponds, and their adjacent wetlands. Fill material include, but is not limited to, rock, sand, soil, clay, plastics, construction debris, wood chips, overburden from mines or other excavation activities and materials used to create any structure or infrastructure in the waters of the United States.

If this project would require a Section 10 and/or Section 404 permit, please complete and submit the enclosed Corps of Engineers permit application to the U. S. Army Corps of Engineers, North Dakota Regulatory Office, 1513 South 12<sup>th</sup> Street, Bismarck, North Dakota 58504. If you are unsure if a permit is required, you may submit an application, or, a letter requesting a jurisdictional determination. Include a project location map, description of work, and construction methodology when submitting either.

If we can be of further assistance or should you have any questions regarding our program, please do not hesitate to contact this office by letter or phone at (701) 255-0015 and reference project number **NWO-2008-00710-BIS**.

Sincerely,

Daniel E. Cimarosti  
Regulatory Program Manager  
North Dakota

Enclosure



**Instructions for Preparing a  
Department of the Army Permit Application**

**Blocks 1 through 4.** To be completed by Corps of Engineers.

**Block 5. Applicant's Name.** Enter the name of the responsible party or parties. If the responsible party is an agency, company, corporation or other organization, indicate the responsible officer and title. If more than one party is associated with the application, please attach a sheet with the necessary information marked **Block 5**.

**Block 6. Address of Applicant.** Please provide the full address of the party or parties responsible for the application. If more space is needed, attach an extra sheet of paper marked Block 6.

**Block 7. Applicant Telephone Number(s).** Please provide the number where you can usually be reached during normal business hours.

**Blocks 8 through 11.** To be completed if you choose to have an agent.

**Block 8. Authorized Agent's Name and Title.** Indicate name of individual or agency, designated by you, to represent you in this process. An agent can be an attorney, builder, contractor, engineer or any other person or organization. Note: An agent is not required.

**Blocks 9 and 10. Agent's Address and Telephone Number.** Please provide the complete mailing address of the agent, along with the telephone number where he/she can be reached during normal business hours.

**Block 11. Statement of Authorization.** To be completed by applicant if an agent is to be employed.

**Block 12. Proposed Project Name or Title.** Please provide name identifying the proposed project (i.e., Landmark Plaza, Burned Hills Subdivision or Edsall Commercial Center).

**Block 13. Name of Waterbody.** Please provide the name of any stream, lake, marsh or other waterway to be directly impacted by the activity. If it is a minor (no name) stream, identify the waterbody the minor stream enters.

**Block 14. Proposed Project Street Address.** If the proposed project is located at a site having a street address (not a box number), please enter here.

**Block 15. Location of Proposed Project.** Enter the county and state where the proposed project is located. If more space is required, please attach a sheet with the necessary information marked Block 15.

**Block 16. Other Location Descriptions.** If available, provide the Section, Township and Range of the site and/or the latitude and longitude. You may also provide description of the proposed project location, such as lot numbers, tract numbers or you may choose to locate the proposed project site from a known point (such as the right descending bank of Smith Creek, one mile down from the Highway 14 bridge). If a large river or stream, include the river mile of the proposed project site if known.

**Block 17. Directions to the Site.** Provide directions to the site from a known location or landmark. Include highway and street numbers as well as names. Also provide distances from known locations and any other information that would assist in locating the site.

**Block 18. Nature of Activity.** Describe the overall activity or project. Give appropriate dimensions of structures such as wingwalls, dikes (identify the materials to be used in construction, as well as the methods by which the work is to be done), or excavations (length, width, and height). Indicate whether discharge of dredged or fill material is involved. Also, identify any structure to be constructed on a fill, piles or float supported platforms.

The written descriptions and illustrations are an important part of the application. Please describe, in detail, what you wish to do. If more space is needed, attach an extra sheet of paper marked Block 18.

**Block 19. Proposed Project Purpose.** Describe the purpose and need for the proposed project. What will it be used for and why? Also include a brief description of any related activities to be developed as the result of the proposed project. Give the approximate dates you plan to both begin and complete all work.

**Block 20. Reason(s) for Discharge.** If the activity involves the discharge of dredged and/or fill material into a wetland or other waterbody, including the temporary placement of material, explain the specific purpose of the placement of the material (such as erosion control).

**Block 21. Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards.** Describe the material to be discharged and amount of each material to be discharged within Corps jurisdiction. Please be sure this description will agree with your illustrations. Discharge material includes: rock, sand, clay, concrete, etc.

**Block 22. Surface Areas of Wetlands or Other Waters Filled.** Describe the area to be filled at each location. Specifically identify the surface areas, or part thereof, to be filled. Also include the means by which the discharge is to be done (backhoe, dragline, etc.). If dredged material is to be discharged on an upland site, identify the site and the steps to be taken (if necessary) to prevent runoff from the dredged material back into a waterbody. If more space is needed, attach an extra sheet of paper marked **Block 22**.

**Block 23. Is Any Portion of the Work Already Complete?** Provide any background on any part of the proposed project already completed. Describe the area already developed, structures completed, any dredged or fill material already discharged, the type of material, volume in cubic yards, acres filled, if a wetland or other waterbody (in acres or square wet). if tile work was done under an existing Corps permit, identify the authorization if possible.

**Block 24. Names and Addresses of Adjoining Property Owners, Lessees, etc., Whose Property Adjoins the Project Site.** List complete names and full mailing addresses of the adjacent property owners (public and private) lessees, etc., whose property adjoins the waterbody or aquatic site where the work is being proposed so that they may be notified of the proposed activity (usually by public notice). If more space is needed, attach an extra sheet of paper marked Block 24.

**Information regarding adjacent landowners is usually available through the office of the tax assessor in the county of counties where the project is to be developed.**

**Block 25. Information about Approvals or Denials by Other Agencies.** You may need the approval of other Federal, state or local agencies for your project. identify any applications you have submitted and the status, if any (approved or denied) of each application. You need not have obtained all other permits before applying for a Corps permit.

**Block 26. Signature of Applicant or Agent.** The application must be signed by the owner or other authorized party (agent) . This signature shall be an affirmation that the party applying for the permit possesses the requisite property rights to undertake the activity applied for (including compliance with special conditions, mitigation, etc.).

#### DRAWINGS AND ILLUSTRATIONS

General Information.

Three types of illustrations are needed to properly depict the work to be undertaken. These illustrations or drawings are identified as a **Vicinity Map**, a **Plan View** or a **Typical Cross-Section Map**. Identify each illustration with a figure or attachment number.

Please submit one original, or good quality copy, of all drawings on 8 1/2x11 inch plain white paper (tracing paper or film may be substituted). Use the fewest number of sheets necessary for your drawings or illustrations.

Each illustration should identify the project, the applicant, and the type of illustration (vicinity map, plan view or cross-section). **While illustrations need not be professional (many small, private project illustrations are prepared by hand), they should be clear, accurate and contain all necessary information.**

APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT (33 CFR 325)			OMB APPROVAL NO. 0710-0003 Expires December 31, 2004
<p>The Public burden for this collection of information is estimated to average 10 hours per response, although the majority of applications should require 5 hours or less. This includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters Service Directorate of Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302; and to the Office of Management and Budget, Paperwork Reduction Project (0710-0003), Washington, DC 20503. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. Please DO NOT RETURN your form to either of those addresses. Completed applications must be submitted to the District Engineer having jurisdiction over the location of the proposed activity.</p>			
PRIVACY ACT STATEMENT			
<p>Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research and Sanctuaries Act, 33 USC 1413, Section 103. Principal Purpose: Information provided on this form will be used in evaluating the application for a permit. Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies. Submission of requested information is voluntary, however, if information is not provided the permit application cannot be evaluated nor can a permit be issued.</p> <p>One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned.</p>			
(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)			
1. APPLICATION NO. NWO-2008-00710-BIS	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETED
(ITEMS BELOW TO BE FILLED BY APPLICANT)			
5. APPLICANT'S NAME		8. AUTHORIZED AGENT'S NAME AND TITLE <i>(an agent is not required)</i>	
6. APPLICANT'S ADDRESS		7. AGENT'S ADDRESS	
7. APPLICANT'S PHONE NOS. W/AREA CODE		10. AGENT'S PHONE NOS. W/AREA CODE	
a. Residence		a. Residence	
b. Business		b. Business	
11. STATEMENT OF AUTHORIZATION			
I hereby authorize _____ to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.			
_____ APPLICANT'S SIGNATURE		_____ DATE	
NAME, LOCATION AND DESCRIPTION OF PROJECT OR ACTIVITY			
12. PROJECT NAME OR TITLE <i>(see instructions)</i>			
13. NAME OF WATERBODY, IF KNOWN <i>(if applicable)</i>		14. PROJECT STREET ADDRESS <i>(if applicable)</i>	
15. LOCATION OF PROJECT			
_____ COUNTY _____ STATE			
16. OTHER LOCATION DESCRIPTIONS, IF KNOWN <i>(see instructions)</i>			
17. DIRECTIONS TO THE SITE			

18. Nature of Activity <i>(Description of project, include all features)</i>												
19. Project Purpose <i>(Describe the reason or purpose of the project, see instructions)</i>												
USE BLOCKS 20-22 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED												
20. Reason(s) for Discharge												
21. Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards												
22. Surface Area in Acres of Wetlands or Other Waters Filled <i>(see instructions)</i>												
23. Is Any Portion of the Work Already Complete? Yes _____ No _____ IF YES, DESCRIBE THE COMPLETED WORK												
24. Addresses of Adjoining Property Owners, Lessees, Etc., Whose Property Adjoins the Waterbody (if more than can be entered here, please attach a supplemental list).												
25. List of Other Certifications or Approvals/Denials Received from other Federal, State, or Local Agencies for Work Described in This Application												
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">AGENCY</th> <th style="text-align: center;">TYPE APPROVAL*</th> <th style="text-align: center;">IDENTIFICATION NUMBER</th> <th style="text-align: center;">DATE APPLIED</th> <th style="text-align: center;">DATE APPROVED</th> <th style="text-align: center;">DATE DENIED</th> </tr> </thead> <tbody> <tr> <td style="height: 40px;"></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED						
AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED							
*Would include but is not restricted to zoning, building and flood plain permits												
26. Application is hereby made for a permit or permits to authorize the work described in this application. I certify that the information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.												
<table style="width: 100%; border: none;"> <tr> <td style="width: 33%; border-top: 1px solid black; text-align: center;">SIGNATURE OF APPLICANT</td> <td style="width: 15%; border-top: 1px solid black; text-align: center;">DATE</td> <td style="width: 33%; border-top: 1px solid black; text-align: center;">SIGNATURE OF AGENT</td> <td style="width: 15%; border-top: 1px solid black; text-align: center;">DATE</td> </tr> </table>	SIGNATURE OF APPLICANT	DATE	SIGNATURE OF AGENT	DATE								
SIGNATURE OF APPLICANT	DATE	SIGNATURE OF AGENT	DATE									
<p>The application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.</p> <p>18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than \$10,000 or imprisoned not more than five years or both.</p>												

# United States Department of the Interior



## FISH AND WILDLIFE SERVICE Mountain-Prairie Region

VALLEY CITY WMD  
11515 River Road  
Valley City, ND 58072-9619  
March 31, 2008



Mr. Allen Wynn  
HDR Engineering, Inc.  
1421 Wells Branch Parkway, Suite 104  
Pflugerville, Texas 78660

Steele Easement #58X,1, 35X, 22X-1

Dear Mr. Wynn:

You requested that the U. S. Fish and Wildlife Service (Service) provide you with maps for protected wetlands located in section 31, NE1/4, of T. 144 N., R. 56 W., section 35, SW1/4, section 35, NW1/4, of T. 145 N., R. 57 W., Steele County, North Dakota.

The Service has purchased and owns perpetual rights which restrict or prohibit the right to drain, burn, level, and fill any wetland basin on the ownership represented by this map. This map represents the Service's effort to depict the approximate location of all protected wetland basins based on information and maps available at the time this map was prepared. However, because climatological and other natural conditions may cause the shape and location of wetland basins to change over time and from time to time, this map may or may not show wetlands as they appear in any given year.

The water levels of these wetlands naturally increase and decrease depending on the natural water cycle. The Service has procedures which allow landowners to remove sheet water or water from wetlands that are affecting roads and buildings. If issues arise concerning individual wetland basins represented on the maps, each will be looked at on a case by case basis. It is the landowner's responsibility to contact the Service if there are any questions concerning the draining, burning, filling, and/or leveling of wetlands depicted on the easement wetland maps.

In Summary there are four points to remember about the wetland easement maps:

1. The maps do not and are not intended to provide the exact size or configuration of the wetlands protected by the provisions of the easement.
2. Any burning, draining, filling, or leveling of wetlands depicted on the wetland easement map without a permit issued by the Service is a violation of the provisions of the easement.
3. It is the landowner's responsibility to contact the Service if there are any questions concerning mapped wetlands.

If you have any questions about the maps or easement contracts, please contact this office 701-845-3466.

Att: Maps (3) 58X,1, 35X, 22X-1

cc: WMD easement folder

Sincerely,



Ed Meendering  
Refuge Officer

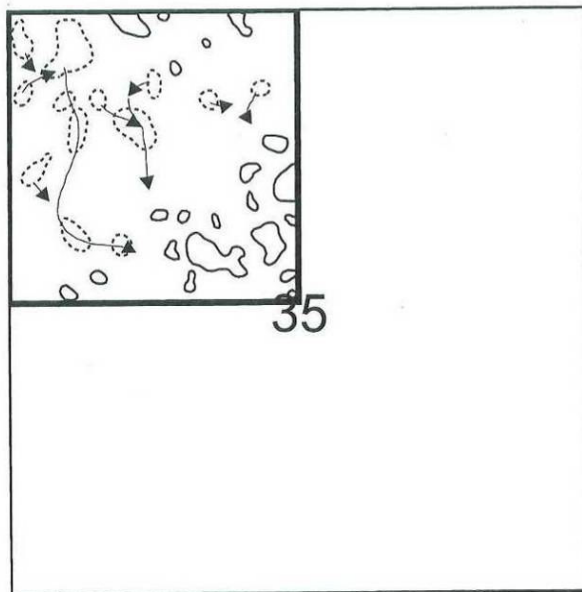
UNITED STATES DEPARTMENT OF THE INTERIOR  
FISH AND WILDLIFE SERVICE

Tract: 22x-1

Map 5 of 5

WATERFOWL PRODUCTION AREA STEELE COUNTY, STATE OF NORTH DAKOTA EASEMENT  
AUTHORIZED BY MIGRATORY BIRD HUNTING STAMP ACT OF MARCH 16, 1934, AS AMENDED.  
T. 145N., R. 57W., 5th PRINCIPAL MERIDIAN

SECTION 35 NW1/4



1 inch equals 0.25 miles






The U.S. Fish and Wildlife Service (Service) has purchased and owns perpetual rights which restrict or prohibit the right to drain, burn, level, and fill any wetland basins depicted on this map. This map represents the Service's effort to depict the approximate location, size and shape of all protected wetlands based on information and maps available at the time this map was prepared. However, wetlands are hydrologically dynamic systems, with expanding and contracting water levels. This map is not meant to depict water levels in the wetland in any given year. The Service reserves the right to revise this map, provided the mapped acreage remains consistent with the Easement's Summary Acres.

Prepared by: Matt Valley

Approved by: Ed McAndrews

Date: 2-14-07

LEGEND

-  Section Boundary
-  Boundary of Easement Description
-  Wetlands Covered by Provisions of the Easement
-  Wetlands Deleted from the Easement
-  Approved Drainage Facility

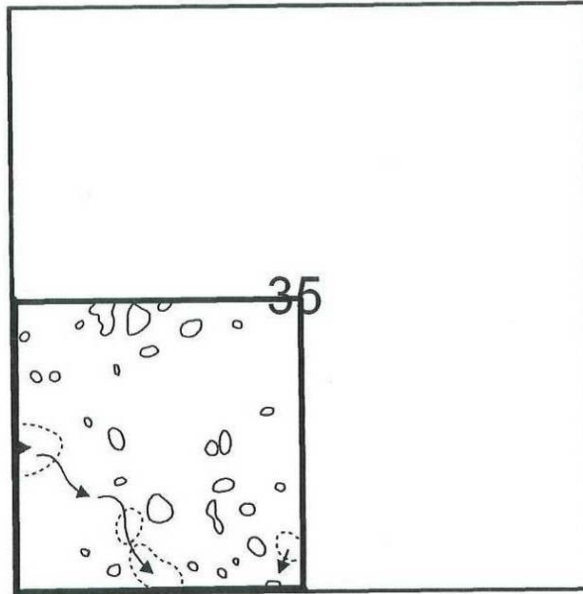
UNITED STATES DEPARTMENT OF THE INTERIOR  
FISH AND WILDLIFE SERVICE

Tract: 35X

Map 3 of 3

WATERFOWL PRODUCTION AREA STEELE COUNTY, STATE OF NORTH DAKOTA EASEMENT  
AUTHORIZED BY MIGRATORY BIRD HUNTING STAMP ACT OF MARCH 16, 1934, AS AMENDED.  
T. 145 N., R. 57 W., 5th PRINCIPAL MERIDIAN

SECTION 35, SW 1/4



1 inch equals 0.25 miles






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Prepared by: Matt Valley

Approved by: [Signature]

Date: 3-28-08

LEGEND

-  Section Boundary
-  Boundary of Easement Description
-  Wetlands Covered by Provisions of the Easement
-  Wetlands Deleted from the Easement
-  Approved Drainage Facility

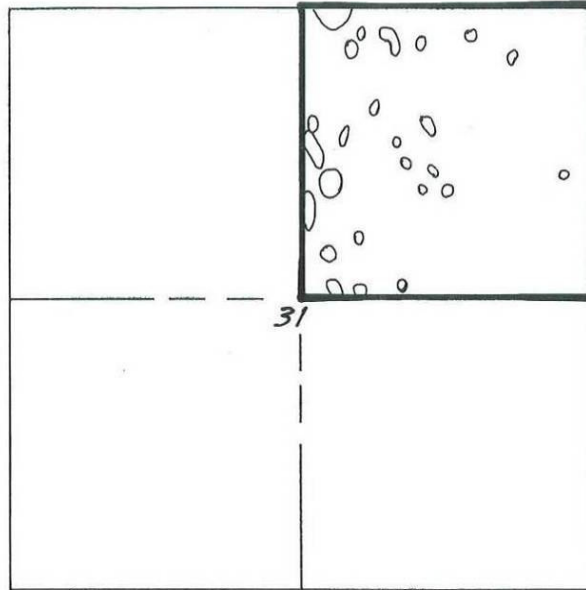
UNITED STATES DEPARTMENT OF THE INTERIOR  
FISH AND WILDLIFE SERVICE

TRACT 58X,1

MAP 1 of 2

WATERFOWL PRODUCTION AREA STEELE COUNTY, STATE OF NORTH DAKOTA  
EASEMENT AUTHORIZED BY MIGRATORY BIRD HUNTING STAMP ACT OF MARCH 16, 1934, AS AMENDED.  
T. 144 N., R. 56 W., 5TH PRINCIPAL MERIDIAN


Section: 31, NE1/4




Scale: 4 Inches = 1 Mile

The U.S. Fish and Wildlife Service (Service) has purchased and owns perpetual rights which restrict or prohibit the right to drain, burn, level, and fill any wetland on the ownership represented by this map. This map represents the Service's effort to depict the approximate location of all protected wetlands based on information and maps available at the time this map was prepared. However, wetlands are hydro logically dynamic systems, with regularly expanding and contracting water levels. This map is not meant to depict water levels in the wetland in any given year. The Service reserves the right to correct this map provided the mapped acreage remains consistent with the Easement's Summary Acres.

LEGEND

—— Boundary of Easement Description  
 Wetlands covered by provisions of the easement

 Wetland deleted from easement by  
Drainage Facility Map prepared  
when the easement was purchased.

Prepared by: /S/ Benjamin J. Clegborn Date: 8 August 2006

Approved by: /S/ Ed Meendering Date: 8 August 2006

Revised: 4/5/2004



March 17, 2008

Allen Wynn  
Assistant Project Manager  
HDR Engineering, Inc.  
4401 West Gate Blvd, Suite 400  
Austin, TX 78745

RE: Proposed construction of a high-voltage transmission line facility from the Laverne Wind Farm, Griggs & Steel Counties, North Dakota to the proposed substation located northwest of Pillsbury in Barnes County, ND.

Dear Mr. Wynn:

This office supports the development of the above referenced transmission line supporting area wind energy projects.

While no permits are required from our office, we would defer you to the North Dakota Game & Fish Department, the ND Parks & Recreation Department, the State Historical Society of North Dakota, and the North Dakota Health Department for their input on any environmental concerns or issues within the boundaries of the proposed project. According to your letter it appears you have already initiated this process.

The North Dakota Public Service Commission is the authority which issues permits for locating power plant and transmission lines within the state.

With regards to land use, approvals are granted by the local land use/zoning authorities.

Sincerely,

James R. Boyd  
Acting Energy Program Manager  
ND Division of Community Services

*"We lead North Dakota's efforts to attract, retain and expand wealth."*

1600 E. Century Avenue, Suite 2 • P.O. Box 2057 • Bismarck, ND 58502-2057  
Phone: 701-328-5300 • 1-866-4DAKOTA • Fax: 701-328-5320 • [www.ndcommerce.com](http://www.ndcommerce.com)



John Hoeven, Governor • Maren L. Daley, Executive Director

PO Box 5507 • Bismarck, ND 58506-5507

2008 MAR 20 PM 4: 14

March 14, 2008

Mr. Allen Wynn  
Assistant Project Manager  
HDR Engineering, Inc.  
4401 West Gate Blvd., Suite 400  
Austin, Texas 78745

RE: Luverne Wind Farm in Griggs and Steele Counties to a Proposed  
Substation Northwest of Pillsbury in Barnes County, North Dakota

Dear Mr. Wynn:

Job Service North Dakota administers the employment service and unemployment insurance programs.

We have no comments regarding the proposed project and have no applicable permits that are required from Job Service North Dakota.

Sincerely,

A handwritten signature in cursive script that reads "Maren Daley".

Maren Daley  
Executive Director

701.328.2825 (Voice) • 800.366.6888 (TTY Users - Relay ND) • 701.328.4000 (FAX)

Job Service North Dakota is an equal opportunity employer/program provider.  
Auxiliary aids and services are available upon request to individuals with disabilities.



"VARIETY IN HUNTING AND FISHING"

**NORTH DAKOTA GAME AND FISH DEPARTMENT**

100 NORTH BISMARCK EXPRESSWAY BISMARCK, NORTH DAKOTA 58501-5095 PHONE 701-328-6300 FAX 701-328-6352

March 14, 2008

Allen Wynn  
Assistant Project Manager  
HDR Engineering, Inc.  
4401 West Gate Blvd, Suite 400  
Austin, TX 78745

Dear Mr. Wynn:

RE: Proposed High-Voltage Transmission Line  
Luverne Wind Farm to Proposed Pillsbury Substation, North Dakota

The North Dakota Game and Fish Department has reviewed this project for wildlife concerns.

The National Wetland Inventory indicates various wetlands within the proposed project corridor. We recommend that steps be taken to protect wetlands that cannot be avoided, above-ground appurtenances not be placed in wetland areas, and existing drainage patterns be maintained.

We also suggest that the risk of avian collisions be assessed for this project and line markers implemented as appropriate.

Sincerely,

Michael G. McKenna  
Chief  
Conservation & Communication Division

js

**From:** Rex Honeyman [rhoneyman@nd.gov]  
**Sent:** Thursday, April 17, 2008 12:53 PM  
**To:** Wynn, Allen E.  
**Subject:** Re: M-Power Transmission Line-irrigation facilities

**Attachments:** Irrigation\_Permits\_04\_17\_08.png

Mr. Wynn,

There are no irrigation permits within the same sections as the proposed transmission line. The nearest is a permit out of Goose Lake in the SW1/4 Section 2, Township 143 North, Range 57 West. The enclosed map shows all the irrigation permits in the area. If you have any other questions let me know.

Rex

On 4/17/08 11:36 AM, "Wynn, Allen E." <Allen.Wynn@hdrinc.com> wrote:

Rex:

Attached is a route map for the proposed 13-mile transmission line. Could you please provide a list of irrigation facilities in the area?

Thanks for your help and please call if you have questions,

**Allen E. Wynn**

Environmental Sciences Group Leader

**HDR Engineering, Inc.**

**ONE COMPANY | *Many Solutions***

1421 Wells Branch Parkway, Suite 104 | Pflugerville, Texas 78660

Phone: 512.685.2914 | Cell: 512.845.6774 | Fax: 512.225.1400

Email: [awynn@hdrinc.com](mailto:awynn@hdrinc.com)

## **APPENDIX G**

### **Existing Environment Photos**



