EL05-028

XCEL ENERGY
APPLICATION TO THE
SOUTH DAKOTA PUBLIC UTILITIES COMMISSION
FOR A FACILITIES PERMIT

BROOKINGS COUNTY SUBSTATION TO
MINNESOTA BORDER
115 kV TRANSMISSION LINE
AND
BROOKINGS COUNTY SUBSTATION
AND
WHITE SUBSTATION
AND
BROOKINGS COUNTY SUBSTATION TO WHITE
SUBSTATION 345 kV TRANSMISSION LINES

December 1, 2005

SDPUC DOCKET NO. EL05-___

Xcel Energy
NORTHERN STATES POWER

Xcel Energy℠

414 Nicollet Mall
Minneapolis, Minnesota 55401-1993

December 1, 2005

RECEIVED
DEC 0 2 2005
SOUTH DAKOTA PUBLIC
UTILITIES COMMISSION

Ms. Heather Forney
Acting Executive Director of the Commission.
Public Utilities Commission
Capitol Building, 1st Floor
500 East Capitol Avenue
Pierre, SD 57501-5070

APPLICATION OF XCEL ENERGY FOR A FACILITIES PERMIT TO BUILD 9.65 MILES OF THE BUFFALO RIDGE TO BROOKINGS COUNTY 115 KV TRANSMISSION LINE, TWO 0.4 MILE BROOKINGS COUNTY TO WHITE 345 KV TRANSMISSION LINES, THE BROOKINGS COUNTY SUBSTATION AND TO ADD FACILITIES TO THE WHITE SUBSTATION

SDPUC DOCKET NO. EL05-___

Dear Ms. Forney

Northern States Power Company, a Minnesota Corporation d/b/a Xcel Energy, submits this Application for a facilities permit from the South Dakota Public Utilities Commission (Commission) pursuant to South Dakota Codified Law (SDCL) 49-41B and South Dakota Administrative Rules (ARSD) Parts 20:10:22. The particular facilities for which the permit is being requested (the Facility) include:

- Two new 0.4 mile 345 kilovolt (kV) connecting the Western Area Power Administration (Western) White Substation located southeast of White, South Dakota and a new Xcel Energy Brookings County Substation;
- A new 345 kV/115 kV Brookings County Substation located approximately 0.4 miles mile east of the White Substation;
- A new 9.65 mile 115 kV transmission line from the Brookings County Substation to the Minnesota/South Dakota Border; and
- Improvements to the White Substation to accommodate the new 345 kV lines.

Included with this filing are the original and ten copies of the application and a CD containing an electronic version of the application. If there are questions regarding the application, please contact Pam Rasmussen at 715-839-4661.

Sincerely,

Donald P. Jones, Director
Portfolio Delivery & Integration

Enclosures

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1.0 APPLICANT'S VERIFICATION

STATE OF Wisconsin)
:SS
COUNTY OF Eau Claire)

Pamela Jo Rasmussen, being duly sworn, deposes and says that she is Lead Permitting Agent for the Buffalo Ridge – White Transmission Project for Northern States Power d/b/a Xcel Energy.

She states that she does not have personal knowledge of all of the facts recited in the foregoing Application, but the information in the Application has been gathered by and from employees and contractors of Xcel Energy and is believed to be accurate and reliable; and on that basis the information in the application is verified by her as being true and accurate on behalf of Xcel Energy.

Dated this 29th day of November 2005.

Pamela Jo Rasmussen

Subscribed and sworn to before me
this 29th day of November 2005.

STATE OF WISCONSIN ★ SARAH B. NYSTUEN ★ NOTARY PUBLIC

Notary Public

SARAH B. NYSTUEN
NOTARY PUBLIC - STATE OF WISCONSIN
My commission expires July 30, 2006

2.0 EXECUTIVE SUMMARY

2.1 PROPOSAL SUMMARY

Northern States Power Company, d/b/a Xcel Energy (Xcel Energy), submits this application for a facilities permit from the South Dakota Public Utilities Commission (Commission) pursuant to South Dakota Codified Law (SDCL) 49-41B-4 and South Dakota Administrative Rules (ARSD) Parts 20:10:22. The particular facilities for which the permit is being requested (the Facility) include:

- Two new 0.4-mile 345 kilovolt (kV) transmission lines connecting the Western Area Power Administration (Western) White Substation located southeast of White, South Dakota, and a new Xcel Energy Brookings County Substation;
- A new 345 kV/115 kV Brookings County Substation located approximately 0.4 miles mile east of the White Substation;
- A new 9.65 mile 115 kV transmission line from the Brookings County Substation to the Minnesota/South Dakota Border;
- Improvements to the White Substation to accommodate the new 345 kV lines

The Facility comprises the western portion of the Buffalo Ridge – White transmission project (the Project), which connects the White Substation to the Buffalo Ridge Substation southeast of Lake Benton, Minnesota. The 115 kV transmission line is part of a 28-mile transmission line connecting the Xcel Energy's new Brookings County Substation with Xcel Energy's existing Buffalo Ridge Substation.

This application meets the requirements set forth in SDCL Chapter 49-41B and ARSD Chapter 20:10:22. The balance of this document includes the application, supporting exhibits and supporting documents. In accordance with SDCL 49-41B-22, Xcel Energy establishes that:

1. The proposed facilities comply with all applicable laws and rules;
2. The facilities will not pose a threat of serious injury to the environment nor to the social and economic condition of inhabitants in the siting area;
3. The facilities will not substantially impair the health, safety or welfare of the inhabitants; and
4. The Facility will not unduly interfere with the orderly development of the region with due consideration having been given the views of governing bodies of affected local units of government.

Xcel Energy requests that the Commission make complete findings and render a decision to grant a permit to construct the transmission facilities upon such terms, conditions or modifications of the construction, and operation or maintenance as the Commission may deem appropriate.

2.2 COMPLETENESS CHECKLIST

The contents required for an application with the Commission are described in SDCL 49-41B-11 and further clarified in ARSD 20:10:22:05 et seq. The Commission submittal requirements are listed in Table 1 with cross-references indicating where the information can be found in this Application.

TABLE 1
COMPLETENESS CHECKLIST

SDCL	ARSD	Required Information	Location
49-41B-11(1)	20:10:22:06	**Names of participants required.** The application shall contain the name, address, and telephone number of all persons participating in the proposed facility at the time of filing, as well as the names of any individuals authorized to receive communications relating to the application on behalf of those persons.	3.0
49-41B-11(7)	20:10:22:07	**Name of owner and manager.** The application shall contain a complete description of the current and proposed rights of ownership of the proposed facility. It shall also contain the name of the project manager of the proposed facility.	4.0
49-41B-11(8)	20:10:22:08	**Purpose of facility.** The applicant shall describe the purpose of the proposed facility.	5.0
49-41B-11(12)	20:10:22:09	**Estimated cost of facility.** The applicant shall describe the estimated construction cost of the proposed facility.	6.0
49-41B-11(9)	20:10:22:10	**Demand for facility.** The applicant shall provide a description of present and estimated consumer demand and estimated future energy needs of those customers to be directly served by the proposed facility. The applicant shall also provide data, data sources, assumptions, forecast methods or models, or other reasoning upon which the description is based. This statement shall also include information on the relative contribution to any power or energy distribution network or pool that the proposed facility is projected to supply and a statement on the consequences of delay or termination of the construction of the facility.	5.0, 7.0
49-41 B-11	20:10:22:11	**General site description.** The application shall contain a general site description of the proposed facility including a description of the specific site and its location with respect to state, county, and other political subdivisions; a map showing prominent features such as cities, lakes and rivers; and maps showing cemeteries, places of historical significance, transportation facilities, or other public facilities adjacent to or abutting the plant or transmission site.	8.0

SDCL	ARSD	Required Information	Location
49-41B-11(6), 49-41B-21, 34A-9-7(4)	20:10:22:12	**Alternative sites.** The applicant shall present information related to its selection of the proposed site for the facility, including the following: (1) The general criteria used to select alternative sites, how these criteria were measured and weighed, and reasons for selecting these criteria; (2) An evaluation of alternative sites considered by the applicant for the facility; (3) An evaluation of the proposed plant or transmission site and its advantages over the other alternative sites considered by the applicant, including a discussion of the extent to which reliance upon eminent domain powers could be reduced by use of an alternative site, alternative generation method, or alternative waste handling method.	9.0
49-41B-11(11); 49-41B-21; 49-41B-22	20:10:22:13	**Environmental information.** The applicant shall provide a description of the existing environment at the time of the submission of the application, estimates of changes in the existing environment which are anticipated to result from construction and operation of the proposed facility, and identification of irreversible changes which are anticipated to remain beyond the operating lifetime of the facility. The environmental effects shall be calculated to reveal and assess demonstrated or suspected hazards to the health and welfare of human, plant and animal communities which may be cumulative or synergistic consequences of siting the proposed facility in combination with any operating energy conversion facilities, existing or under construction. The applicant shall provide a list of other major industrial facilities under regulation which may have an adverse affect of the environment as a result of their construction or operation in the transmission site or siting area.	10.0 – 17.0

SDCL	ARSD	Required Information	Location
49-41B-11; 49-41B-22	20:10:22:14	**Effect on physical environment.** The applicant shall provide information describing the effect of the proposed facility on the physical environment. The information shall include: (1) A written description of the regional land forms surrounding the proposed plant site or through which the transmission facility will pass; (2) A topographic map of the transmission site or siting area; (3) A written summary of the geological features of the siting area or transmission site using the topographic map as a base showing the bedrock geology and surficial geology with sufficient cross-sections to depict the major subsurface variations in the siting area; (4) A description and location of economic deposits such as lignite, sand and gravel, scoria, and industrial and ceramic quality clay existent within the plan or transmission site; (5) A description of the soil type at the plant site; (6) An analysis of potential erosion or sedimentation which may result from site clearing, construction, or operating activities and measures which will be taken for their control; (7) Information on areas of seismic risks, subsidence potential and slope instability for the siting area or transmission site; and (8) An analysis of any constraints that may be imposed by geological characteristics on the design, construction, or operation of the proposed facility and a description of plans to offset such constraints.	10.0

SDCL	ARSD	Required Information	Location
49-41B-11; 49-41B-21; 49-41B-22	20:10:22:15	**Hydrology.** The applicant shall provide information concerning the hydrology in the area of the proposed plant or transmission site and the effect of the proposed site on surface and groundwater. The information shall include: (1) A map drawn to scale of the plant or transmission site showing surface water drainage patterns before and anticipated patterns after construction of the facility; (2) Using plans filed with any local, state, or federal agencies, indication on a map drawn to scale of the current planned water uses by communities, agriculture, recreation, fish, and wildlife which may be affected by the location of the proposed facility and a summary of those effects; (3) A map drawn to scale locating any known surface or groundwater supplies within the siting area to be used as a water source or a direct water discharge site for the proposed facility and all offsite pipelines or channels required for water transmission; (4) If aquifers are to be used as a source of potable water supply or process water, specifications of the aquifers to be used and definition of their characteristics, including the capacity of the aquifer to yield water, the estimated recharge rate, and the quality of ground water; (5) A description of designs for storage, reprocessing, and cooling prior to discharge of heated water entering natural drainage systems; (6) If deep well injection is to be used for effluent disposal, a description of the reservoir storage capacity, rate of injection, and confinement characteristics and potential negative effects on any aquifers and groundwater users which may be affected.	11.0
49-41B-11; 49-41B-21; 49-41B-22	20:10:22:16	**Effect on terrestrial ecosystems.** The applicant shall provide information on the effect of the proposed facility on the terrestrial ecosystems, including existing information resulting from biological surveys conducted to identify and quantify the terrestrial fauna and flora potentially affected within the transmission site or siting area; an analysis of the impact of construction and operation of the proposed facility on the terrestrial biotic environment, including breeding times and places and pathways of migration; important species; and planned measures to ameliorate negative biological impacts as a result of construction and operation of the proposed facility.	12.0
49-41B-11; 49-41B-21; 49-41B-22	20:10:22-17	**Effect of aquatic ecosystems.** The applicant shall provide information of the effect of the proposed facility on aquatic ecosystems, and including existing information resulting from biological surveys conducted to identify and quantify the aquatic fauna and flora, potentially affected within the transmission site or siting area, an analysis of the impact of the construction and operation of the proposed facility on the total aquatic biotic environment and planned measures to ameliorate negative biological impacts as a result of construction and operation of the proposed facility.	13.0

SDCL	ARSD	Required Information	Location
	20:10:22-18	**Land use.** The applicant shall provide the following information concerning present and anticipated use or condition of the land: (1) A map or maps drawn to scale of the siting area and transmission site identifying existing land use according to the following classification system: (a) Land used primarily for row and nonrow crops in rotation; (b) Irrigated lands; (c) Pasturelands and rangelands; (d) Haylands; (e) Undisturbed native grasslands; (f) Existing and potential extractive nonrenewable resources; (g) Other major industries; (h) Rural residences and farmsteads, family farms, and ranches; (i) Residential; (j) Public, commercial, and institutional use; (k) Municipal water supply and water sources for organized rural water districts; and (l) Noise sensitive land uses; (2) Identification of the number of persons and homes which will be displaced by the location of the proposed facility; (3) An analysis of the compatibility of the proposed facility with present land use of the surrounding area, with special attention paid to the effects on rural life and the business of farming; and (4) A general analysis of the effects of the proposed facility and associated facilities on land uses and the planned measures to ameliorate adverse impacts.	14.0, Exhibit C.8.8
	20:10:22-19	**Local land use controls.** The applicant shall provide a general description of local land use controls and the manner in which the proposed facility will comply with the local land use zoning or building rules, regulations or ordinances. If the proposed facility violates local land use controls, the applicant shall provide the commission with a detailed explanation of the reasons why the proposed facility should preempt the local controls. The explanation shall include a detailed description of the restrictiveness of the local controls in view of existing technology, factors of cost, economics, needs of parties, or any additional information to aid the commission in determining whether a permit may supersede or preempt a local control pursuant to SDCL 49-41B-28.	15.0
	20:10:22:20	**Water quality.** The applicant shall provide evidence that the proposed facility will comply with all water quality standards and regulations of any federal or state agency having jurisdiction and any variances permitted.	16.0
	20:10:22:21	**Air quality.** The applicant shall provide evidence that the proposed facility will comply with all air quality standards and regulations of any federal or state agency having jurisdiction and any variances permitted.	17.0
	20:10:22:22	**Time schedule.** The applicant shall provide estimated time schedules for accomplishment of major events in the commencement and duration of construction of the proposed facility.	18.0

SDCL	ARSD	Required Information	Location
	20:10:22:23	**Community impact.** The applicant shall include an identification and analysis of the effects the construction, operation, and maintenance of the proposed facility will have on the anticipated affected area including the following: (1) A forecast of the impact on commercial and industrial sectors, housing, land values, labor market, health facilities, energy, sewage and water, solid waste management facilities, fire protection, law enforcement, recreational facilities, schools, transportation facilities, and other community and government facilities or services; (2) A forecast of the immediate and long-range impact of property and other taxes of the affected taxing jurisdictions; (3) A forecast of the impact on agricultural production and uses; (4) A forecast of the impact on population, income, occupational distribution, and integration and cohesion of communities; (5) A forecast of the impact on transportation facilities; (6) A forecast of the impact on landmarks and cultural resources of historic, religious, archaeological, scenic, natural, or other cultural significance. The information shall include the applicant's plans to coordinate with the local and state office of disaster services in the event of accidental release of contaminants from the proposed facility; and (7) An indication of means of ameliorating negative social impact of the facility development.	19.0
	20:10:22:24	**Employment estimates.** The application shall contain the estimated number of jobs and a description of job classifications, together with the estimated annual employment expenditures of the applicants, the contractors, and the subcontractors during the construction phase of the proposed facility. In a separate tabulation, the application shall contain the same data with respect to the operating life of the proposed facility, to be made for the first ten years of commercial operation in one-year intervals. The application shall include plans of the applicant for utilization and training of the available labor force in South Dakota by categories of special skills required. There shall also be an assessment of the adequacy of local manpower to meet temporary and permanent labor requirements during construction and operation of the proposed facility and the estimated percentage that will remain within the county and the township in which the facility is located after construction is completed.	20.0
	20:10:22:25	**Future additions and modifications.** The applicant shall describe any plans for future modification or expansion of the proposed facility or construction of additional facilities which the applicant may wish to be approved in the permit.	21.0
	20:10:22:34	**Transmission facility layout and construction.** If a transmission facility is proposed, the applicant shall submit a policy statement concerning the route clearing, construction and landscaping operations, and a description of plans for continued right-of-way maintenance, including stabilization and weed control.	22.0

SDCL	ARSD	Required Information	Location
	20:10:22:35	**Information concerning transmission facilities.** If a transmission facility is proposed, the applicant shall provide the following information as it becomes available to the applicant: (1) Configuration of the towers and poles, including material, overall height and width; (2) Conductor configuration and size, length of span between structures, and number of circuits per pole or tower; (3) The proposed transmission site and major alternatives as depicted on overhead photographs and land use culture maps; (4) Reliability and safety; (5) Right-of-way or condemnation requirements; (6) Necessary clearing activities; and (7) If the transmission facility is placed underground, the depth of burial, distance between access points, conductor configuration and size, and number of circuits.	23.0, Exhibit C
	20:10:22:36	**Additional information in application.** The applicant shall also submit as part of the application any additional information necessary for the local review committees to assess the effects of the proposed facility pursuant to SDCL 49-41B-7. The applicant shall also submit as part of its application any additional information necessary to meet the burden of proof specified in SDCL 49-41B-22.	24.0
	20:10:22:37	**Statement required describing gas or liquid transmission line standards of construction.** The applicant shall submit a statement describing existing pipeline standards and regulations that will be followed during construction and operation of the proposed transmission facility.	N/A
	20:10:22:38	**Gas or liquid transmission line description.** The applicant shall provide the following information describing the proposed gas or liquid transmission line: (1) A flow diagram showing daily design capacity of the proposed transmission facility; (2) Changes in flow in the transmission facilities connected to the proposed facility; (3) Technical specifications of the pipe proposed to be installed, including the certified maximum operating pressure, expressed in terms of pounds per square inch gauge (psig); (4) A description of each new compressor station and the specific operating characteristics of each station; and (5) A description of all storage facilities associated with the proposed facility.	N/A
	20:10:22:39	**Testimony and exhibits.** Upon the filing of an application pursuant to SDCL 49-41B-11, an applicant shall also file all data, exhibits, and related testimony which the applicant intends to submit in support of its application. The application shall specifically show the witnesses supporting the information contained in the application.	25.0

3.0 DESCRIPTION OF THE NATURE AND LOCATION OF THE PROPOSED TRANSMISSION FACILITY

Xcel Energy proposes to construct a new 28-mile 115 kV transmission line and associated transmission improvements between the White Substation, located southeast of White, South Dakota and the Buffalo Ridge Substation, located east of Lake Benton, Minnesota. The particular facilities for which the permit is being requested include:

- Two new 0.4 mile 345 kV transmission lines connecting the Western White Substation located southeast of White, South Dakota, and a new Xcel Energy Brookings County Substation;
- A new 345 kV/115 kV Brookings County Substation located approximately 0.4 miles mile east of the White Substation;
- A new 9.65 mile 115 kV transmission line from the Brookings County Substation to the Minnesota/South Dakota Border;
- Improvements to the White Substation to accommodate the new 345 kV lines

The Facility comprises the western portion of the Project. The Minnesota Public Utilities Commission (MPUC) established the need for the Project in Minnesota in its March 11, 2003, *Order Granting Certificates of Need Subject to Conditions* (MPUC Docket No. E-002/CN-01-1958). This order is attached in Exhibit A and is described in more detail in Section 8.0.

The Facility for which this Application is being made is shown in Figure 1. The 115 kV transmission line portion of the Facility comprises approximately 36 percent of a 28-mile transmission project that will be built between the Brookings County Substation and the Buffalo Ridge Substation near Lake Benton, Minnesota. The entire Project is shown in Figure 2. The remainder, approximately 18 miles, of the Project length will be constructed in Minnesota. Table 2 identifies the Facility location.

TABLE 2
FACILITY LOCATION

County	Township Name	Township	Range	Sections
Brookings	Richland	110N	47W	6-10, 15-22, 27-30
	Richland	111N	47W	30, 31
	Alton	110N	48W	1, 12,13, 24, 25
	Sherman	111N	48W	25, 36

Since the Project proposes to interconnect with Western at the White Substation, Western must approve Xcel Energy's interconnection request and review it as a Federal action under the National Environmental Policy Act (NEPA), Section 102(2) (1969), the Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of NEPA (40 CFR Parts 1500-1508), United States Department of Energy (USDOE) NEPA Implementing Procedures (10 CFR Part 1021), and other applicable regulations.

In order to respond to Xcel Energy's interconnection request, Western will prepare an environmental assessment (EA) describing the analysis of environmental effects of the Project and alternatives, including the no-action alternative. Western may approve the proposal only after a determination on whether or not an action is a major Federal action significantly affecting the quality of the human environment, as required by NEPA. Western will also serve as lead Federal agency for National Historic Preservation Act (NHPA) Section 106 compliance and consult with the South Dakota and Minnesota State Historic Preservation Offices and tribes with interests in the Project area. This process is currently underway and the draft EA is under development.

On August 10, 2004, Xcel Energy applied to the Minnesota Environmental Quality Board (EQB) for a route permit for the Minnesota portion of this Project. Xcel Energy received a route permit from the EQB on March 17, 2005. A copy of the Route Permit is included in Exhibit B.

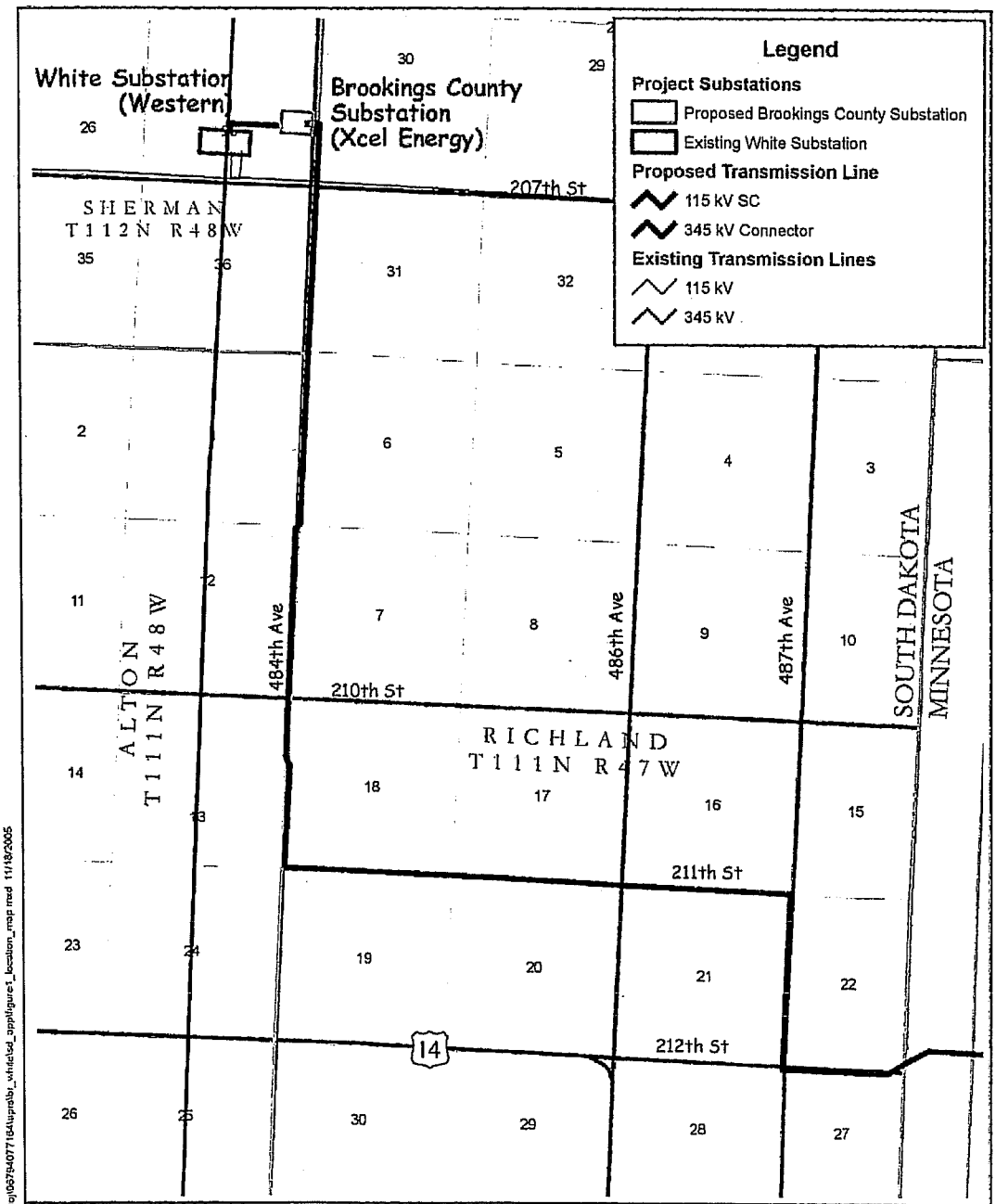

Figure 1 - Facility Location Map
Buffalo Ridge to White Transmission Project
Xcel Energy
Brookings County, SD & Lincoln County, MN

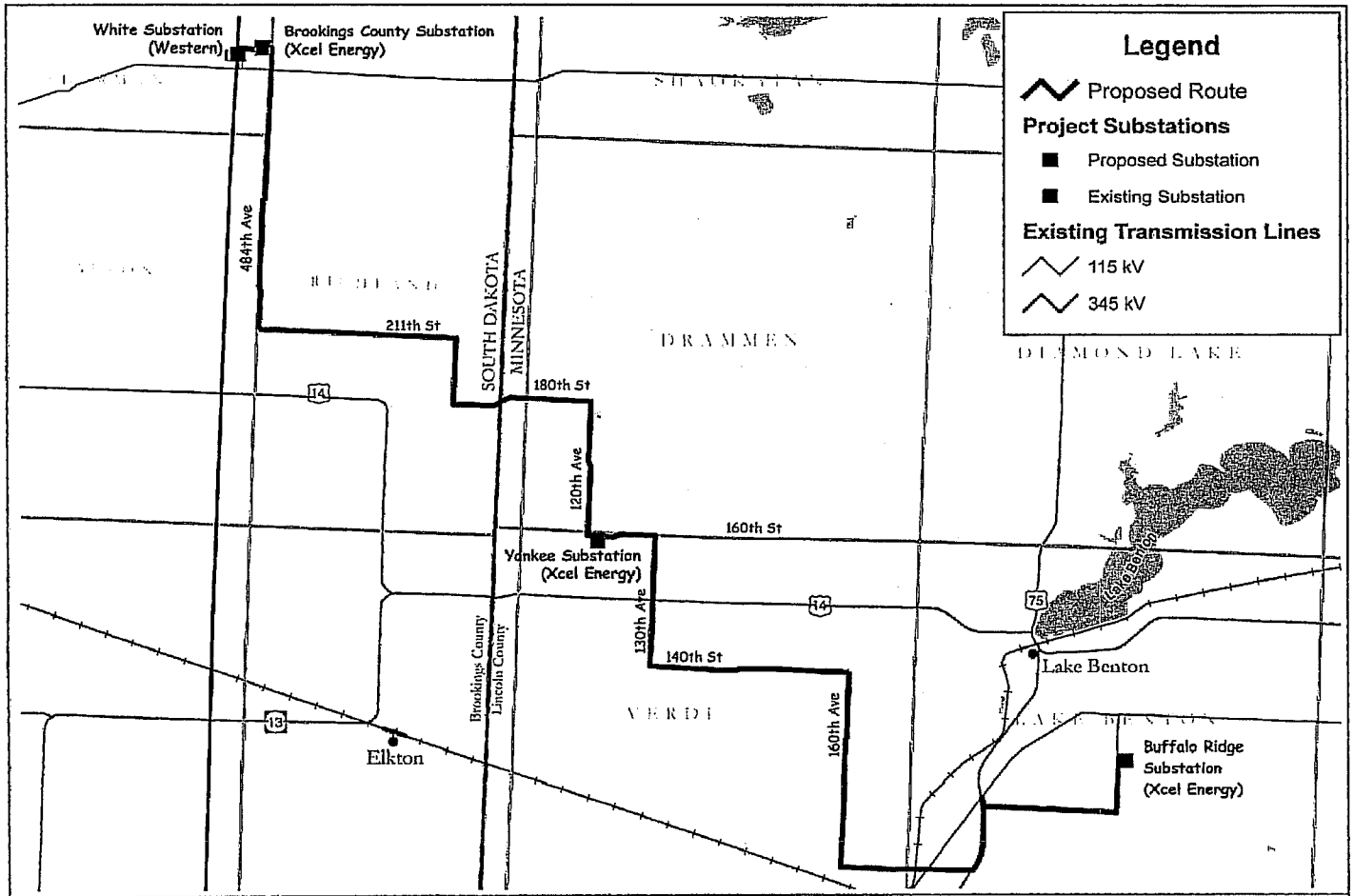

Figure 2 - Project Overview Map
Buffalo Ridge to White Transmission Project
Xcel Energy
Brookings County, SD & Lincoln County, MN

Map Document N:\gisproj\067940771E4\aprs\br_white\sd_appl\figure2_project_overview_map.mxd 11/18/2005

4.0 NAMES OF PARTICIPANTS (ARSD 20:10:22:06)

The Applicant for the Buffalo Ridge to White 115 kV Transmission Line Facility is:

Northern States Power Company
414 Nicollet Mall
Minneapolis, Minnesota 55401

The individuals authorized to receive communications relating to this Application on behalf of Xcel Energy are:

Pamela J. Rasmussen
Team Lead, Permitting and Siting
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5.0 NAME OF OWNER AND MANAGER (ARSD 20:10:22:07)

Xcel Energy will construct and own the new 345 kV and 115 kV transmission lines and the new Brookings County 115/345 kV Substation. Western will construct, own and operate the improvements required at the White Substation. Northern States Power is an operating company of Xcel Energy, Inc., but does business as Xcel Energy. The Facilities Permit should refer to Northern States Power as the sole permittee for all portions of this Facility, since the Company will pay for all of the facilities proposed in this Application, including the transmission lines, structures, the Brookings County Substation and the improvements to the White Substation.

Xcel Energy provides electric service to over 75,000 customers in South Dakota. Xcel Energy serves customers the area around Lake Benton, Minnesota, while the rest of the customers in the Project area are served by Otter Tail Corporation d/b/a Otter Tail Power Company and local cooperatives. Western, East River Electric Power Cooperative and Xcel Energy all own transmission lines in this area. Operation of Xcel Energy's transmission system is administered by the Midwest Independent System Operator (MISO), while the Western and East River systems are subject to Mid-Continent Area Power Pool (MAPP) practices.

Pamela Jo Rasmussen will serve as the Project Manager for all permitting required for the Facility, including this application. Ms. Rasmussen's contact information is included in Section 4.0.

6.0 PURPOSE OF THE TRANSMISSION FACILITY (ARSD 20:10:22:08)

The Facility is proposed to enhance the transmission system in and around the Buffalo Ridge area in order to provide transmission outlet capacity for existing and additional wind generation. Further discussion of the purpose of the Facility is included in Section 8.0.

7.0 ESTIMATED COST OF FACILITY (ARSD 20:10:22:09)

The costs for the Facility are estimated at approximately $19 million. Table 3 provides a breakdown of the Facility transmission and substation costs.

TABLE 3
FACILITY COSTS

Route	Transmission Line Costs	Right-of-way Costs	Total Cost
115 kV line (9.6 miles)	$6,300,000	$163,000	$6,463,000
345 kV line (0.3 miles)	$470,000	$7,000	$477,000
White Substation Modifications			$6,100,000
Brookings County Substation			$6000,000
Total Facility Costs			$19,040,000

Transmission line costs include items related to engineering, surveying, materials, labor and equipment. Costs for right-of-way (ROW) are estimated costs associated with the acquisition of ROW, and include expenses and labor. These costs do not include any costs related to restoration or mitigation.

Operating and maintenance costs for the transmission line will be nominal for several years since the line will be new and there is minimal vegetation maintenance required. Annual operating and maintenance costs for transmission lines across Xcel Energy's Northern States Power system in the Midwest over the last five years have averaged approximately $500 per mile of transmission ROW for 115 kV transmission lines and approximately $1000 per mile for 345 kV transmission lines. The principal operating and maintenance cost will be inspections, usually done by fixed-wing aircraft on a monthly basis and by helicopter with infrared equipment once a year.

Xcel Energy performs periodic inspections of substations and equipment. The type and frequency of inspection varies depending on the type of equipment. Typical inspection intervals are semi-annually or annually. Because maintenance and repair are performed on an as-needed basis the cost varies from substation to substation.

8.0 DEMAND FOR TRANSMISSION FACILITY (ARSD 20:10:22:10)

The demand for the Facility has been generated by the existing wind development in the region. There is also a need to accommodate additional wind development in the region. There is a significant amount of wind generation in the MISO Interconnection Queue requesting interconnections at the Yankee Substation. Those wind generation projects cannot be built unless this Facility is constructed. The majority of the existing, proposed or contemplated wind generation resources in the Upper Midwest are located on the Buffalo Ridge and to the west. The majority of the initial wind development has occurred on the potion of Buffalo Ridge that extends from the western half of northern Iowa through southwest Minnesota. It is contemplated that additional wind generation development will continue along the Buffalo Ridge where it extends into eastern South Dakota. The Facility is part of an orderly development of the transmission system that will enhance the transmission system and allow for the expansion of additional wind generation in and around the Buffalo Ridge.

A delay or termination of the Facility would constrain the ability of wind-generated electricity from the Buffalo Ridge area to connect to the transmission system, and therefore hinder development of future wind power in eastern South Dakota and the Buffalo Ridge area.

The transmission system in and around Buffalo Ridge currently has authorized generator outlet capability of approximately 260 megawats (MW) and is fully subscribed. More transmission capacity is needed to allow for increased wind generation in the area. To address this need, Xcel Energy filed an application with the MPUC on December 28, 2001 for Certificates of Need (CON) to construct a series of transmission projects in southwestern Minnesota. On March 11, 2003, the MPUC likewise concluded that Xcel Energy had demonstrated the need for transmission facilities to move 825 MW of wind generation from Buffalo Ridge and authorized Xcel Energy to construct four new transmission lines:

- A new 161 kV transmission line connecting Lakefield Junction to Fox Lake;
- A new 345 kV transmission line connecting Lakefield Junction to Split Rock in South Dakota;
- A new 115 kV transmission line connecting a new Nobles County Substation, located on the Lakefield Junction-Split Rock 345 kV line, with a new "Fenton Substation" and the existing Chanarambie Substation on Buffalo Ridge; and
- A new 115 kV transmission line connecting the Buffalo Ridge Substation with the White Substation in Lincoln County and South Dakota.

The proposed Facility, described herein, is a portion Project that will help meet this need.

A delay or termination of the Facility would constrain the ability of wind-generated electricity from eastern South Dakota and the Buffalo Ridge area to connect to the transmission system, and therefore hinder development of future wind power in eastern South Dakota and the Buffalo Ridge.

9.0 GENERAL SITE DESCRIPTION (ARSD 20:10:22:11)

The Facility is shown in Figure 1. The South Dakota portion of the Project, for which this application is being made, will be located entirely in Brookings County. The Minnesota portion of the Project will be located in Lincoln County and is not part of this application. The entire Project is shown in Figure 2.

The Facility can be broken into four components from west to east as follows:

1. Improvements to the White Substation. The existing White Substation occupies approximately 24 acres in the southern half of Section 25 of Township 111 N, Range 48 W (Sherman Township). The substation site is shown on an aerial photograph in Exhibit C.1, and a schematic of the improvements is shown in Exhibit C.2. The entire substation site is graded and covered in gravel. The area surrounding the substation is characterized as grassland, including portions of remnant prairie. Immediately to the east and southeast of the White Substation the elevation drops off rapidly, into a dried tributary of Deer Creek that is a few hundred feet wide. To the north of the Substation, the elevation rises about 15 -20 ft over a distance of a few hundred feet.

   The White Substation improvements will be entirely within the fenced area of the White Substation and will be performed by Western. Areas outside of the fenced area or the existing substation access road will not be disturbed. Modifications to the White Substation will include:

   - Expansion of the existing 345 kV ring bus to a breaker-and-a-half configuration.
   - Addition of six 345 kV breakers.

2. Brookings County Substation: The new Brookings County Substation will be developed on approximately 12 acres of a 40-acre parcel, approximately 0.4 miles east of the White Substation in the southeast quarter of Section 25 of Township 111 N, Range 48 W (Sherman Township). Xcel Energy has an option on the property for the substation. Access to the Substation will be from 484th Avenue. The substation site is shown on an aerial photograph in Exhibit C.1. The site for the new Brookings County Substation is located across the dried Tributary of Deer Creek from the White Substation. The site has been tilled and is currently used for agricultural purposes.

   Xcel Energy anticipates that the Brookings County substation will be constructed in phases to meet the need for additional transmission improvements in the area. It is expected that within the next five years additional improvements will be made at the substation to support development of wind generation in the area. Preliminary substation layouts are shown in Exhibit C.3 and Exhibit C.4. All anticipated improvements will be made within the 12-acre fenced area. Table 4 summarizes the installed equipment by phase of development.

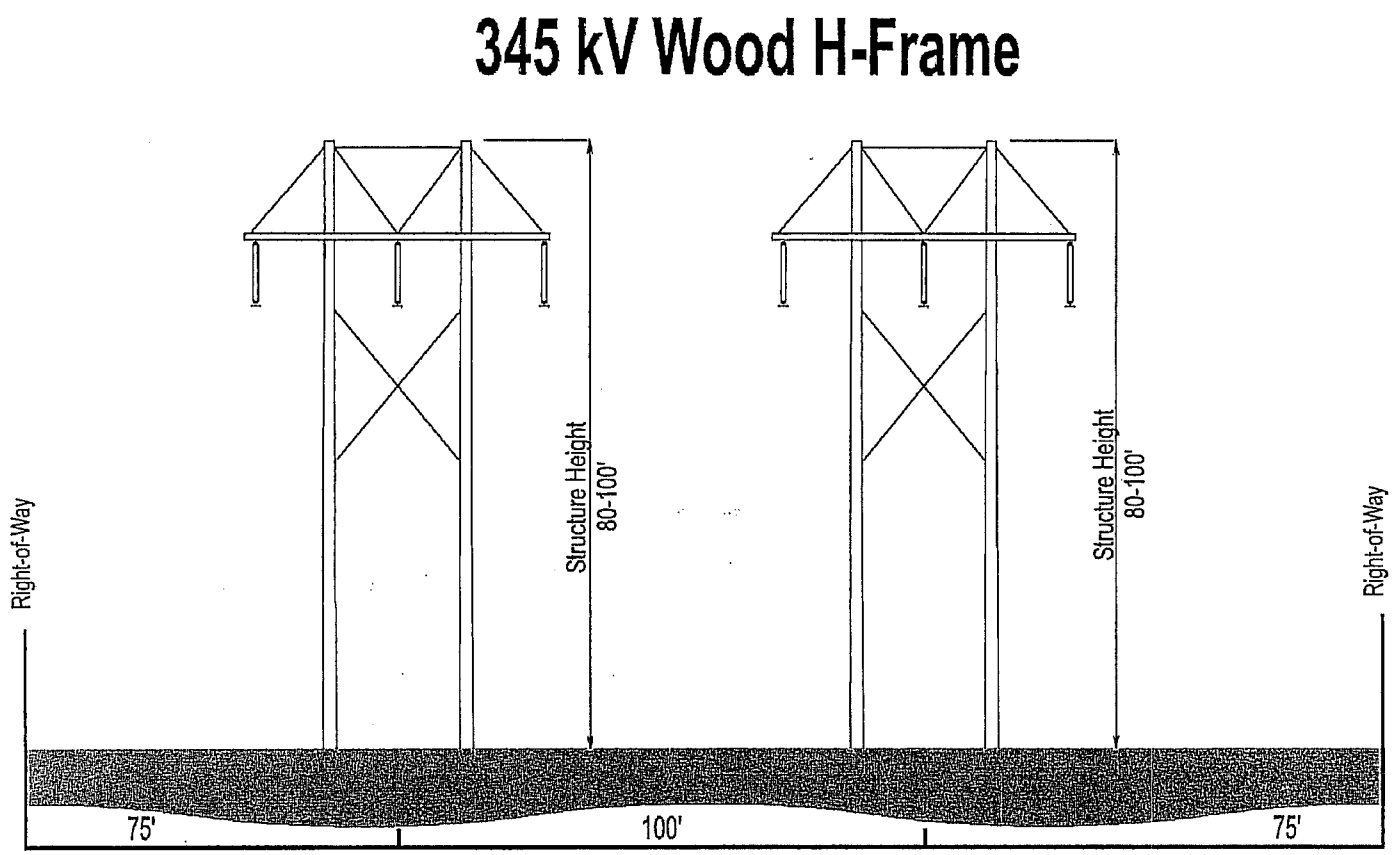
TABLE 4
BROOKINGS COUNTY SUBSTATION EQUIPMENT

Equipment	Initial Installation (Total)	Five year expansion (Total)	Ultimate Configuration (Total)
Control House	1	1	1
345/115 kV Transformer	1	2	2
115/34.5 kV Transformer	0	0	4
345 kV Circuit Breaker	0	5	12
115 kV Circuit Breaker	1	3	22
34.5 kV Circuit Breaker	0	0	14
115 kV Capacitor Banks	0	0	4

3. 345 Transmission Lines: Two new 345 kV transmission lines would exit the east side of the White Substation and then proceed approximately 0.4 miles to the east to Xcel Energy's new Brookings County Substation. The lines would span the Deer Creek Tributary that separates the White Substation from the Brookings County Substation. The landscape in this area is grassland, including native prairie remnants, particularly along the slopes leading into the Deer Creek tributary.

   The two 345 kV transmission lines will be constructed on parallel wood H-frame structures. The combined ROW for the 345 kV transmission lines will be 250 feet wide, 75 feet outside of each line's center line and 100 feet between the center lines of each line. The ROW for the 345 kV lines is illustrated in Figure 3. The H-frame structures will be approximately 80-100 feet tall with an average span of 950 feet between structures. The construction of the 345 kV lines will be staged, with the northernmost 345 kV line constructed first and the southernmost 345 kV line constructed within five years.

FIGURE 3
RIGHT-OF-WAY 345 KV TRANSMISSION LINE



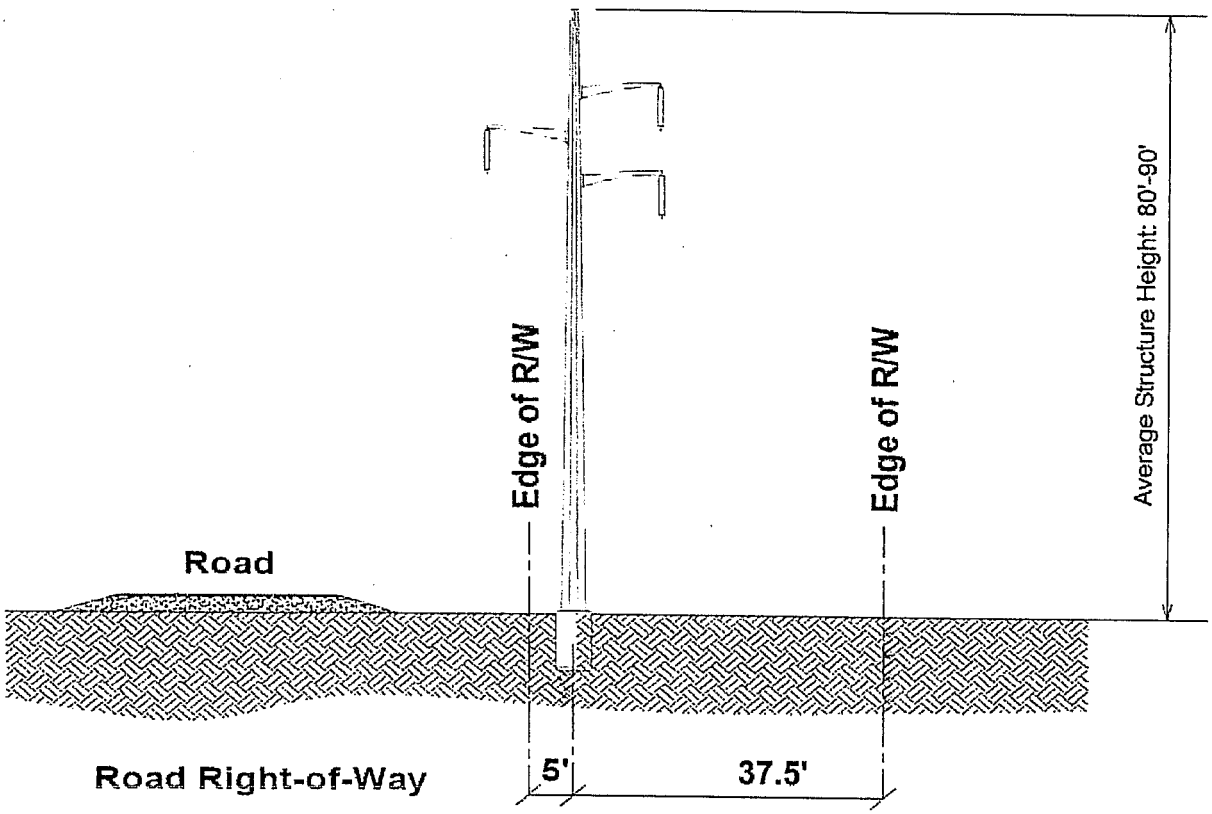
345 kV Line Typical Span 950'
250' Typical Total ROW Width (Cross-Country)

4. 115 kV Transmission Line: The 115 kV transmission line will exit the east side of the Brookings County Substation and then proceed south along the east side of 484th Avenue for approximately 2.5 miles before crossing to the west side of 484th Avenue for approximately one and one-third miles and then cross back to the east side of 484th Avenue for approximately two-thirds of a mile before turning east along 211th Street. The line will then turn east along the north side of the 211th Street alignment for approximately three miles. Approximately one mile of this portion of the route would be cross-country where the road has been abandoned along the 211th Street alignment. At 487th Avenue the line turns south for one mile on the west side of 487th Avenue for approximately one mile to 212th Street. The line then crosses 212th Street and proceeds eastward for approximately three-quarters of a mile to the Minnesota border.

   The line passes through an agricultural area of rolling hills with a mixture of landcover: cropped fields, pasture, planted grasslands and native prairie remnants. Approximately one mile crosses overland through a mixture of replanted grasslands, rowcrops and pastureland.

The 115 kV portion of the Facility will use single pole, galvanized steel, davit arm structures, with an average height of 80 - 90 feet, and an average span of 500 feet. For most of the 115 kV line the ROW will be 42.5 feet where it parallels township roads. Where the line parallels county roads, as it does for approximately 0.8 miles along Brookings County Road 32/212th Street, where the line enters South Dakota, and approximately 0.5 miles along Brookings County Road 36/484th Avenue, just before the line turns into the Brookings County Substation, the ROW will be approximately 59.5 feet. Where the line follows a cross-country route, which it does for a one-mile segment along 211th Street, the ROW width will be 75 feet. Figure 4 illustrates the ROW requirements for the 115 kV line.

FIGURE 4
RIGHT-OF-WAY 115 KV TRANSMISSION LINE



115 kV Line
Typical Span 500'
42.5' Typical Right of Way
(Parallel to Road)

10.0 ALTERNATIVE SITES (ARSD 20:10:22:12)

10.1 ROUTE IDENTIFICATION

Routes for the proposed Facility were selected after careful consideration by several planning entities within Xcel Energy. The Project was originally identified during the planning process by a team of siting, ROW, and engineering personnel. The team used a variety of data including aerial photographs and topographic maps as well as site visits to the Project area to develop the proposed route.

Xcel Energy uses a multidisciplinary team approach to develop transmission line routes in several iterative steps that can be summarized as follows:

1. Develop Preliminary Route Options by:
    - Identifying existing corridors such as transmission lines, property lines, field lines, roadways, pipelines, and railroads
    - Reviewing Project specific siting criteria
    - Minimizing length and cost
    - Avoiding major environmental features
    - Minimizing impacts to reliability
2. Refine Preliminary Route Options by:
    - Avoiding and minimizing impacts to high density residential areas
    - Identifying areas with limited clearances
    - Avoiding and minimizing impacts to environmentally sensitive sites such as: wetlands; archaeologically significant sites; areas with threatened, endangered, or species of special concern; areas of significant biological or cultural significance; and state and federal lands
    - Reviewing routes on maps with additional data from state agencies and other resources
3. Field Check Preliminary Route Options by:
    - Driving and walking preliminary routes to verify land use conflicts and other problems identified on maps

4. Obtain Agency, Public, and Utility Input on Preliminary Route Options by:

    - Holding public meetings
    - Meeting with regulatory agency personnel
    - Sending letters out for comment

5. Select Routes for Permit Application by:

    - Reviewing and comparing all information about the routes
    - Follow up with any major concerns
    - Review and compare costs

6. Prepare Proposed Routes for a Facilities Permit Application based on the best combination of the following:

    - Minimizing environmental impacts to agriculture, residents, wildlife, and wetlands
    - Minimizing costs
    - Minimizing impacts to reliability

For this Project, the specific primary routing considerations were:

- Use of existing linear corridors: Xcel Energy prefers to use existing linear corridors to the extent possible to ensure good access to the line and minimize impacts to adjacent land uses. Several linear corridors, primarily state, county and township roads already exist in the area. Given the presence of existing corridors, Xcel Energy's preference is to use existing corridors and avoid new cross-country ROW.
- Minimizing impacts to residences: Although the area is not densely populated, Xcel Energy attempts to minimize impacts to residences to the extent possible by routing through areas with sufficient setbacks from the line and avoiding areas that would require significant tree clearing.
- Minimizing impacts to agriculture: In general, Xcel Energy attempts to minimize impacts to agriculture by closely paralleling road ROW.

10.2 SUBSTATION IDENTIFICATION

After identifying potential routes the team used a set of criteria to locate the Brookings County Substation along the line using general substation siting criteria and criteria specific to the requirements of the Brookings County Substation.

Western determined that the Xcel Energy connection to their White Substation needed to be at 345 kV. Western's determination requires that Xcel Energy construct a new substation adjacent to the White Substation to accomplish the interconnection with the 115 kV transmission line. The following criteria were used to site the new substation:

- Proximity to primary roads: Substation construction requires use of large and heavy equipment, both for construction and for transporting equipment, such as transformers, to be installed at the substation. Smaller roads are often not adequately rated for the heavy equipment required. Such roads would need to be upgraded prior to construction, or maintained during and after construction to repair any damage caused by heavy equipment. Access after construction is also important for maintenance and operation.

- Proximity to transmission lines: In order to minimize Facility cost and impacts, the length of the 345 kV transmission line between the new substation and the White Substation should be minimized.

- Minimize impacts to residences: As with the routing process for transmission lines, Xcel Energy attempts to minimize substation impacts to residences. The primary impacts associated with substations are noise. The proposed Brookings Substation is located approximately 2900 feet south of the nearest residence.

- Avoid locating substations in low areas, wetlands, waterways and wildlife areas. Xcel Energy tries to avoid these sensitive areas, as they pose problems both for construction and operation of a substation.

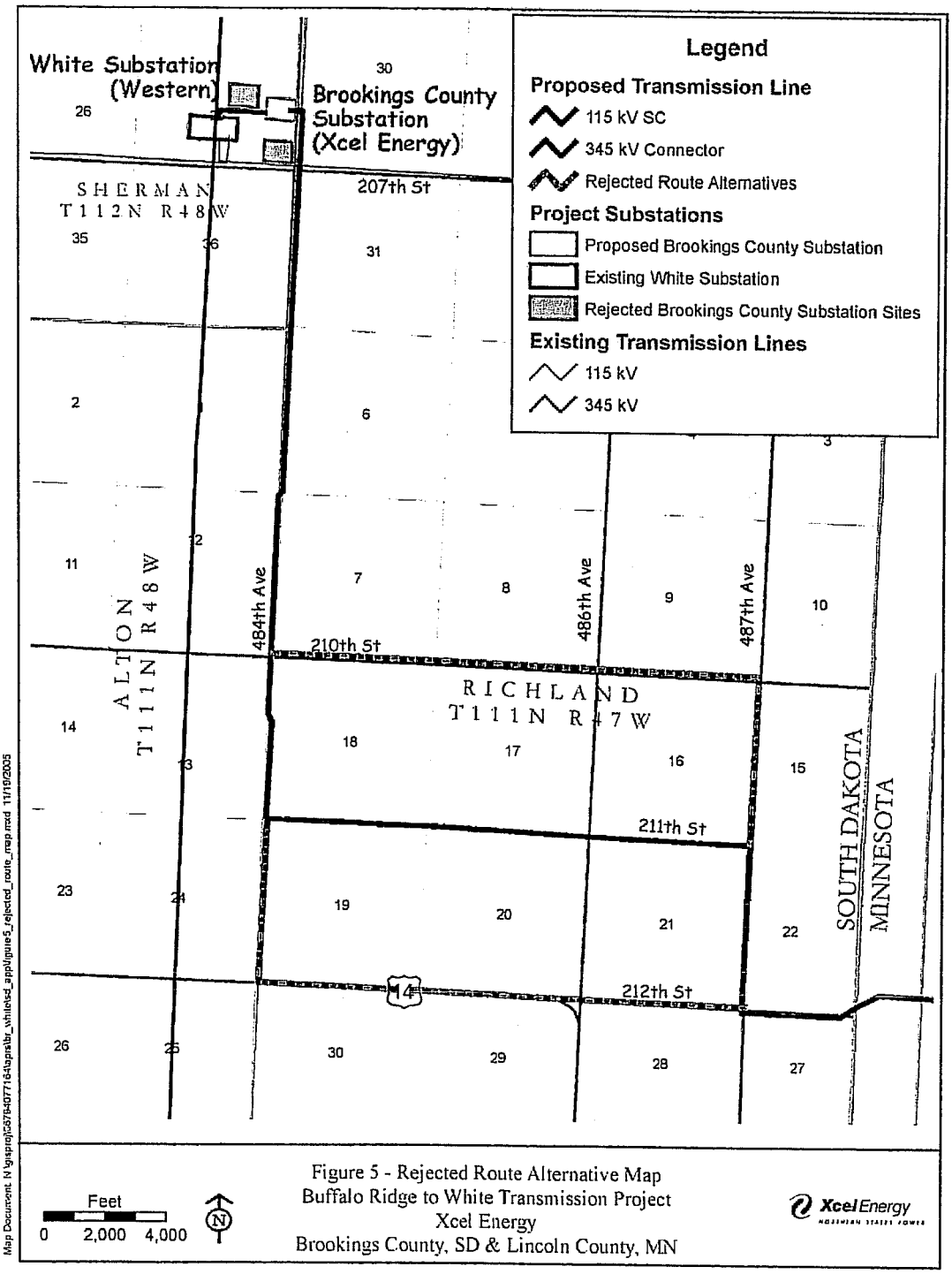
- Availability of a suitably sized parcel: Xcel Energy prefers to purchase sufficient land to construct the substation, provide for future expansion if necessary and provide for a buffer from residences. In the Buffalo Ridge area, a buffer between the substation operations and wind development is also desirable. Xcel Energy prefers to purchase a single parcel, rather than aggregate multiple smaller parcels for substation sites.

- Proximity to wind development: Siting substations designed for wind generation interconnections, such as Brookings County, includes placing the substation in areas where wind generation will be located. This is in order to reduce the length of the wind collector system feeders (34.5 kV transmission lines that connect the wind turbines to the substation). This helps to reduce the amount of losses on the feeder lines, while helping minimize cost and environmental impact.

10.3 ALTERNATIVES CONSIDERED

Xcel Energy considered, and ultimately rejected, two route alternatives to the proposed Facility shown in Figure 1. Rejected alternatives are shown in figure 5 and Exhibit C.5. The first rejected alternative proposed routing the Brookings County portion of the line north on 487th Avenue and then west on 210th Street (shown in Figure 5). Xcel Energy also considered routing the line west along 212th Street and US Highway 14 and then north along 484th Avenue. Based on comments received at the April 27, 2004 open house, Xcel Energy adjusted the route to turn west on 211th Street. The 211th Street route was preferred because it impacted fewer residences.

When the Project was initially proposed, Xcel Energy planned to connect directly into Western's White Substation at 115 kV. However, after reviewing Xcel Energy's interconnection request, Western determined that the interconnection should be accomplished at 345 kV and that Xcel Energy would need to construct a 345 kV/115 kV- substation. Siting criteria for the substation are discussed in Section 9.2. There were limited substation sites available near the White Substation that met Xcel Energy's substation selection criteria. Xcel Energy considered three adjacent substation sites near the White Substation before selecting the proposed site. Substation alternatives are shown in Figure 5 and Exhibit C.


White Substation
(Western)
Brookings County
Substation
(Xcel Energy)
Legend
Proposed Transmission Line
115 kV SC
345 kV Connector
Rejected Route Alternatives
Project Substations
Proposed Brookings County Substation
Existing White Substation
Rejected Brookings County Substation Sites
Existing Transmission Lines
115 kV
345 kV
SHERMAN
T112N R48W
ALTON
T111N R48W
RICHLAND
T111N R47W
207th St
210th St
211th St
212th St
484th Ave
486th Ave
487th Ave
SOUTH DAKOTA
MINNESOTA
14
Feet
0 2,000 4,000
N
Figure 5 - Rejected Route Alternative Map
Buffalo Ridge to White Transmission Project
Xcel Energy
Brookings County, SD & Lincoln County, MN
Xcel Energy

11.0 EFFECT ON PHYSICAL ENVIRONMENT (ARSD 20:10:22:14)

11.1 EXISTING PHYSICAL ENVIRONMENT

11.1.1 DESCRIPTION OF LAND FORMS

The topography through this area is flat to rolling; elevations range from 1,900 feet above mean sea level (amsl) at the state border to approximately 1,770 to 1,780 feet amsl near the White Substation. A topographic map is shown in Exhibit C.6.

The topographic features in this area are influenced by many ephemeral washes and small streams. The proposed transmission corridor passes over Deer Creek just south Xcel Energy's proposed Brookings County Substation.

11.1.2 GEOLOGICAL FEATURES

The surficial geology of the corridor consists of unconsolidated glacial materials deposited during the Wisconsinan glacial advance. These materials generally consist of till intermixed with outwash deposits. The till is made up of mostly calcareous clay and silt with inclusions of rock fragments. Outwash materials consist of sands and gravels deposited by glacial melt water. Unconsolidated glacial materials are generally over 400 feet thick in the Facility area.

The bedrock geology of this area consists of the Upper Cretaceous Pierre Shale and Niobara Formation, and the Precambrian Sioux Formation. The Sioux Formation underlies most of the surficial deposits in the Facility area. The Pierre Shale and the Niobara Formation underlie sediments in the northern portion of the Facility area near the White and Brookings County Substations. The Pierre Shale and Niobara Formation lie unconformably over the Sioux Quartzite in the northern portion of the Facility area.

11.1.3 ECONOMIC DEPOSITS

The primary economic geologic deposits in Brookings County, South Dakota consist of sand and gravel. The main economic uses for these resources are in construction, primarily road base and concrete aggregates. Review of the United States Geological Survey (USGS) 7.5 minute quadrangle mapping and aerial photography indicates that a few gravel pits are present in the Facility area, but do not appear to be active (Exhibit C.6).

11.1.4 SOIL TYPE

Soils in the Facility area consist primarily of loam, silty loam, silty clay loam, clay loam, and sandy clay loam. The Facility crosses 27 soil units; a description of each soil unit is attached as Exhibit H. Slopes range from nearly flat to up to 40 percent, which is characteristic of the rolling topography. Approximately 57 percent of the soils within the Facility area are listed as prime farmland; approximately 16 percent of the soil is listed as prime farmland when drained (USDA 2004). Prime farmlands are determined by the South Dakota National Resources Conservation Service (NRCS) to have adequate potential of Hydrogen (pH), water supply, growing season length and temperature for growing crops and are not excessively erodible or wet throughout the growing season.

11.1.5 SEISMIC RISKS

The seismic activity in South Dakota is fairly low. This is especially true in the eastern portions of the state. No earthquakes have been reported in Brookings County. Two earthquakes have been recorded approximately 25 miles south of the Facility area in Moody County. One of these earthquakes occurred in 1935 and registered approximately 2.5 on the Richter Scale, the other earthquake was a 3.5 to 4 magnitude earthquake in 1982.

11.2 FACILITY IMPACTS

11.2.1 POTENTIAL FOR EROSION OR SEDIMENTATION

The majority of the landscape within which the Facility is located is relatively flat with some areas of rolling hills. In general, surficial soils on flat areas are less prone to erosion than soils in slope areas. Best management practices (BMPs) will be implemented to ensure that drainageways and streams are not impacted by sediment runoff from exposed soils during significant precipitation events. Excavation activities will be avoided or minimized in steep slope areas.

Along the proposed transmission corridor, the areas with greatest potential for erosion are the banks of Deer Creek and the tributaries to Deer Creek and Medary Creek, where slopes are relatively steeper. Construction within the banks of the tributaries will be minimized to the extent possible (by spanning the drainageways); when construction near the banks is unavoidable, BMPs will be used to prevent and minimize erosion. BMPs may include protecting exposed soil, silt fencing and stabilizing restored soil through re-vegetation where necessary. Construction equipment will not be driven in the streambeds unless absolutely necessary. If streambed crossing is necessary, it will only occur in the winter months when the ground is frozen, and Xcel Energy will coordinate with the appropriate agencies to obtain any necessary permits.

11.2.2 GEOLOGICAL CONSTRAINTS ON DESIGN, CONSTRUCTION OR OPERATION OF PROPOSED FACILITY

Few geological constraints on design, construction or operation are anticipated in the Facility area. No shallow bedrock or outcrops are present; soil types general consist of clayey tills and outwash sands and gravels. Xcel Energy does not anticipate that any dewatering will be required to construct the Facility.

12.0 HYDROLOGY (ARSD 20:10:22:15)

12.1 EXISTING HYDROLOGY

The proposed transmission line is in the Big Sioux River Basin. A map showing the hydrology of the Project area is attached as Exhibit C.7. An intermittent section of Deer Creek flows west and south across the proposed Facility alignment. The proposed transmission line also crosses several intermittent tributaries to Deer Creek and Medary Creek. Southwest of the city of Aurora, Deer Creek flows into Medary Creek; this ultimately flows into the Big Sioux River at the Brookings/Moody County border.

Medary Creek drains approximately 200 square miles in Brookings County. The average annual flow of the Medary Creek, measured at the USGS gauging station near Brookings, South Dakota from 1981 to 1990, is approximately 60.3 cubic feet per second (cfs). Peak flows historically occur in the spring and early summer with a maximum flow of 2,310 cfs recorded in June 1984. Low flows occur in December through February (USGS 2005).

Along the proposed transmission line, surface water generally flows into the intermittent tributaries to Deer Creek or Medary Creek where it then flows south and west toward the Big Sioux River. Existing surface water drainage patterns are shown in Exhibit C.7.

From 207th Street south to 211th Street: The intermittent, upstream portion of Deer Creek flows southwest under this section, crossing 484th Avenue approximately a third of a mile south of 207th Street. The proposed transmission line crosses an intermittent tributary to Deer Creek approximately two thirds of a mile south of 207th Avenue. The proposed transmission line corridor crosses two intermittent Medary Creek tributaries, located approximately one-quarter mile and one half mile north of 210th Street.

From the north end of the segment to approximately one-quarter mile north of 209th Street, surface water flows directly into Deer Creek or its intermittent tributaries. South of 209th Street, surface water flows southwest into intermittent tributaries to Medary Creek.

From 484th Avenue east to 487th Avenue, and south to 212th Street, and east to Minnesota border: Within this section, surface water generally flows southwest into intermittent tributaries to Medary Creek. The proposed transmission corridor crosses three tributaries: one approximately a quarter mile east of 484th Avenue, one at the 485th Avenue/211th Street intersection, and one approximately a half mile south of 211th Street.

12.1.1 SURFACE WATER DRAINAGE PATTERNS

The Facility area lies within the Upper Big Sioux Watershed. A map showing the hydrology of the Facility area is attached as Exhibit C.7. Surface water within the Facility area generally drains to the west and south to the Big Sioux River. Drainage patterns may vary based on local topography.

12.2 FACILITY IMPACTS

12.2.1 EFFECT ON CURRENT OR PLANNED WATER USE

The Project will not require any groundwater for consumption or dewatering. The transmission line will have no impact on either municipal or private water uses in the Project area. No water storage, reprocessing or cooling is required for either the construction or operation of the transmission line. The Project will not require deep well injection.

12.2.2 SURFACE AND GROUNDWATER IMPACTS

Construction of the proposed Facility will not change existing water drainage patterns. The proposed transmission line runs across several small, intermittent tributaries. Erosion of sediment into these surface water bodies from construction may occur if BMPs to prevent sediment runoff are not taken; however Xcel Energy does employ BMPs during facility construction to prevent erosion. Xcel Energy's standard construction practices are summarized in Sections 23.3 and 23.4. Water quality impacts are discussed in Section 17.2.

Xcel Energy does not anticipate that any dewatering will result from the construction of the structure footings.

The Facility will not impact water use by communities, agriculture, recreation, fish or wildlife.

13.0 EFFECT ON TERRESTRIAL ECOSYSTEMS (ARSD 20:10:22:16)

13.1 EXISTING TERRESTRIAL ECOSYSTEM

Information on the terrestrial ecosystem was obtained using data from the South Dakota Department of Game, Fish and Parks (GFP) and the U.S. Fish and Wildlife Service (USFWS), and information collected during field surveys conducted in August 2005.

13.1.1 FLORA

Presettlement vegetation in the Facility area was tallgrass prairie. The primary present day land use is agriculture and rangeland. Isolated remnants of native prairie remain in the area and were identified along the route (Table 5). Many of the small lakes, streams, and wetlands in the region have been drained for cultivation.

TABLE 5
NATIVE PRAIRIE REMNANT LOCATIONS

Section	Township	Range	Prairie Type
25	112	48W	Dry Hill and Mesic; some areas degraded
30, 31	112	47W	Dry Hill – used as pasture and road ditches, but has high native species diversity. *Aristida purpurea var. longiseta* observed in the remnant.
6, 17-20	111	47W	Dry hill and mesic prairies – degraded by grazing or nutrient output.

The 345 kV transmission lines follow a cross-country route. The route for the 115 kV line follows existing roadway for approximately 8.65 miles of the 9.65 mile route. A majority of the vegetation surrounding the Project corridor are crops such as corn, soybeans, alfalfa and small grains and pasture dominated by common weeds such as smooth brome (*Bromus inermis*), ragweeds (*Ambrosia spp.*), Kentucky bluegrass (*Poa pratensis*), clovers (*Trifolium* and *Melilotus spp.*) and other common weeds. However, there were several small areas identified that contain native prairie remnants. Mesic and dry hill prairies were observed along the route. Mesic prairies are dry to wet-mesic plan communities dominated by grasses and sedges that are located on level to rolling glacial till. Species typically observed in this habitat type are big bluestem (*Andropogon gerardii*), Indian grass (*Sorghastrum nutans*), and prairie dropseed (*Sporobolus heterolepis*). Dry hill prairies contain dry to dry-mesic plany communities dominated by grasses and sedges. Porcupine grass (*Stipa spartea*), prairie junegrass (*Koeleria macrantha*) and sun-loving sedge (*Carex heliophila*) were the most readily identified species observed along the route.

Exhibit E contains a list of species identified along the route during the field surveys.

No state-listed threatened or endangered species were identified along the route.

13.1.2 FAUNA

Terrestrial wildlife will be most common in fallow farm fields, pasture, fencerows, woodlots and the areas along Deer Creek and its tributaries and tributaries to Medary Creek. These areas provide corridors for migration and foraging as well as ample cover for small mammals, raptors, waterfowl, upland game birds and other common wildlife in the area.

Additionally, fauna such as butterfly species that are tied to native prairie habitats are potentially present along the route. An August 2005 biological survey of the Project identified potential habitat for butterfly species such as the Dakota Skipper along portions of the route in South Dakota.

A list of the fauna identified along the Project (both Minnesota and South Dakota portions) is listed in Exhibit E.

No game production areas, state recreation areas, lake side use areas, or state game refuges are located along the proposed route.

13.2 IMPACT TO TERRESTRIAL ECOSYSTEM AND MITIGATION

In routing the proposed transmission lines, Xcel Energy has attempted to minimize impacts to terrestrial ecosystems that may result from the proposed Facility. The 345 kV transmission lines impact a wider area in terms of ROW, but the length of the lines was minimized by locating the Brookings County Substation near the White Substation. The 115 kV transmission line will follow existing roadways for approximately 86 percent of the total route in South Dakota. These measures help to minimize habitat removal and fragmentation resulting from the proposed Facility. Temporary and permanent Facility impacts are shown in Table 6.

TABLE 6
FACILITY IMPACT CALCULATIONS

Project Component	Temporary Impact (acres)	Permanent Impact (acres)
White Substation	0.0	0.00
Brookings County Substation	40.0	12.00
345 kV Transmission Lines	4.0	0.02
115 kV Transmission Line	23.4	0.14
Total Impacts	67.4	12.2

The GFP and the USFWS were contacted to identify concerns related to the proposed route. The GFP recommended avoidance of wetlands and other fish and wildlife habitat and minimization of risk of potential avian electrocution and line strikes by burying or marking lines (Exhibit I). The USFWS requested protective measures to minimize the risk of avian collisions with power lines and avian electrocution (Exhibit I). The USFWS also requested evaluation of the existing habitat in the Facility area to determine if potential habitat exists for the Western prairie fringed orchid (*Platanthera praeclara*). During the field survey in August, several wet prairie habitats and remnant mesic prairie sites were identified and no Western Prairie Fringed Orchids were observed. The probability was determined to be low due to the high occurrence of grazing in the area. The results of the field survey will be submitted to the USFWS for concurrence that the Project is not likely to adversely affect the Western prairie fringed orchid.

The Biological survey conducted in August, 2005 identified suitable habitat for Dakota Skipper in Section 6 of Richland Township (T 110N, R47W), Sections 30 and 31 of Richland Township (T111N, R47W), and Sections 25 and 36 of Sherman Township (T111N, R 48W). Xcel Energy will complete a species survey in these areas during the appropriate flight period prior to construction of the 115 kV transmission line to ensure that these species will not be affected by the Facility.

There is minimal potential for the displacement of wildlife and loss of habitat from construction of the Facility. Wildlife that inhabits natural areas such as those near waterbodies could be displaced in the short term within the immediate area of construction. The distance that animals will be displaced will depend on the species. Impacts to wildlife are anticipated to be short-term since the route will primarily be constructed along the existing roadway. Additionally, these species will be typical of those found in an agricultural setting, and populations should recover quickly from effects due to construction. A fence will surround the perimeter of the substation to help deter local fauna from entering the substation and accessing the equipment once the Facility commences operation.

Raptors, waterfowl and other bird species may also be affected by the construction and placement of the transmission lines and substations. Avian collisions are a possibility after the completion of the transmission line. Waterfowl, especially large species such as trumpeter swans, 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.

Additionally, electrocution of large birds, such as raptors, is a concern related to distribution lines. Electrocution occurs when birds with large wingspans come in contact with either two conductors or a conductor and a grounding device. Xcel Energy transmission line design standards provide adequate spacing to eliminate the risk of raptor electrocution. As such, electrocution is not a concern related to the proposed Facility.

Xcel Energy has been working with various state and federal agencies over the past twenty years to address these avian issues. Company personnel work to address problem areas as quickly and efficiently as possible. In 2002, Xcel Energy, Inc.'s operating companies, including Xcel Energy, entered into a voluntary memorandum of understanding (MOU) to work together to address avian issues throughout its territory. This includes the development of avian protection plans (APP) for each state Xcel Energy serves. Xcel Energy has completed the APP for Colorado and has begun work on the APPs for Northern States Power.

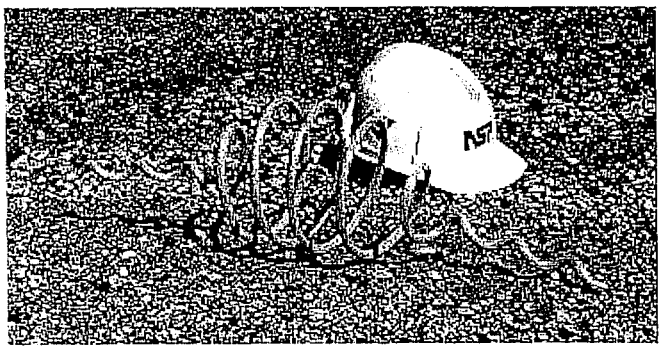
The primary methods Xcel Energy will use to address avian issues for this Facility include:

- Xcel Energy will consult with the GFP and USFWS to identify any areas that may require marking transmission line shield wires and/or to use alternate structures to reduce collisions; and,

- Xcel Energy will attempt to avoid areas known as major flyways or migratory resting spots. There are no known flyways or migratory resting spots along the South Dakota portion of the Project.

Xcel Energy has had success in reducing collisions on transmission lines by marking the shield wires with Swan Flight Diverters (SFD). SFDs are preformed spiral shaped devices made of polyvinyl chloride that are wrapped around the shield wire (Figure 6). Xcel Energy will work with the USFWS and GFP to determine if there are areas that should be marked when the line is constructed. Because the 345 kV lines will be constructed on parallel H-frame structures, the parallel wires will be easier for birds to see and reduce the potential for avian collisions.

FIGURE 6 SWAN FLIGHT DIVERTER



14.0 EFFECT ON AQUATIC ECOSYSTEMS (ARSD 20:10:22:17)

14.1 DESCRIPTION OF AQUATIC ECOSYSTEMS

The primary aquatic ecosystems within the Project area are Deer Creek and the tributaries to Deer Creek and Medary Creek. These creeks are primarily grassed waterways with low flows and have records of Topeka shiners (*Notropis Topeka*) within these waters. The National Wetland Inventory (NWI) maps indicate there are several small wetlands along the Project corridor (USFWS 2005). NWI wetland areas are shown in the area hydrology map provided in Exhibit C.7.

Between the existing White Substation and the proposed Xcel Energy Brookings Substation, the proposed transmission line crosses the northern edge of one 3.8-acre wetland. Between the Brookings Substation and 211th Street, the transmission line corridor crosses two wetlands: one 0.3-acre wetland approximately one mile south of 207th Street and one 2.2-acre wetland approximately two thirds of a mile north of 210th Street. Between 484th Avenue and the Minnesota state line, the transmission line crosses three wetlands: one 0.5-acre wetland approximately one half mile east of 484th Avenue, one 0.3-acre wetland approximately three fourths of a mile east of 484th Avenue, and one 0.3-acre wetland approximately one fourth of a mile north of 212th Street. These wetlands are palustrine wetlands. All wetlands will be spanned by the transmission line structures, since none of these wetlands are greater than 160 feet across at the corridor crossing.

The USFWS and the GFP identified one rare aquatic organism that could potentially be within the Project area, the Topeka shiner, a federally-listed endangered species. Topeka shiners inhabit small clear streams (GFP 2003). The GFP has records of Topeka shiners in Deer Creek in 2000. The USFWS is concerned about work adjacent to any streams with Topeka shiners. The GFP and USFWS response letters are included in Exhibit I. The spawning period for these fish is from May 15th to July 31st.

14.2 IMPACTS TO AQUATIC ECOSYSTEMS AND MITIGATION

During construction there is the possibility of sediment reaching surface waters as the ground is disturbed by excavation, grading and construction traffic. Once the transmission line is completed, it will have no impact on surface water quality. Maintaining water quality along the Project corridor will minimize potential impacts to rare and common aquatic organisms and the aquatic environment.

Xcel Energy will avoid major disturbance of individual wetlands and drainage systems during construction. All wetlands along the Facility corridor can be spanned by the transmission lines; spans will be approximately 950 feet between structures in the 345 kV segment and approximately 500 feet in the 115 kV segment.

No construction will occur within Deer Creek or the tributaries to Deer Creek and Medary Creek since these waterways will be spanned by the transmission lines. Xcel Energy will avoid construction within 100 feet of Deer Creek and the tributaries to Deer Creek and Medary Creek between May 15th and July 31st, the spawning period for Topeka Shiners. Xcel Energy will also implement appropriate BMPs to minimize the amount of erosion and sedimentation that could potentially impact wetlands and waterways. Temporary erosion and sediment control methods will be properly placed, monitored and maintained adjacent to water resources. These erosion control methods will remain in place until work areas become re-vegetated or are stable. BMPs may include silt fencing, mulching, seeding and hay bales. Where appropriate, Xcel Energy will re-vegetate disturbed areas.

15.0 LAND USE (ARSD 20:10:22:18)

15.1 EXISTING LAND USE

The proposed Facility will be located on private land that is zoned as agricultural and regulated by Brookings County land use plans and ordinances. Land use in the Facility is a mixture of cropland and pastureland with associated farm residences and utility infrastructure, represented by the existing White Substation and transmission lines. A land cover map is attached as Exhibit C.8 and a map showing Brookings County zoning designations is attached as Exhibit D. There are no areas zoned as commercial in the Facility area.

15.2 LAND USE IMPACTS

The Facility will not require any rezoning and will not result in any land use changes beyond the immediate footprint of the Facility, summarized in Table 6. The *Future Land Use Map of Brookings County* indicates that the County anticipates stable development in the area.

The Facility is compatible with the existing land uses in the area. There are already several high voltage transmission lines in the area. Approximately 86 percent of the transmission line will parallel existing linear corridors. The only areas requiring cross-country ROW are the 0.4 miles between the White and Brookings County Substation and approximately one mile of abandoned road along 211th Street.

In a March, 2005 letter Brookings County requested that the transmission line poles be set back 55 feet from the centerline of each county and township road (Exhibit I). Xcel Energy was concerned that placing the poles further into farm fields than necessary might have a negative impact on farm operations and has been working with Brookings County officials to clarify their request. Only two portions of the proposed 115 kV route are located along county roads: approximately 0.8 miles along Brookings County Road 32/212th Street where the line enters South Dakota, and approximately 0.5 miles along Brookings County Road 36/484th Avenue just before the line turns into the Brookings County Substation. Xcel Energy has discussed this issue with Brookings County and will work to accommodate this request for a 55-foot setback from the road's center line in these segments. In both of these cases Brookings County has expressed a need to plan for a wider ROW to accommodate future road widening projects. As a practice, Xcel Energy will accommodate any known road upgrades along proposed routes where a state, county or township has a need for a wider ROW. For the remainder of the 115 kV route, the line will be setback approximately 38 feet, five feet off of an assumed 33-foot ROW, from the centerline.

Impacts to agricultural land uses adjacent to the 115 kV transmission line will be minimized by using single, steel poles located adjacent to road ROW. The utilization of existing linear corridors also helps to minimize impacts to land uses along the route. Agricultural impacts are discussed in greater detail in Section 20.2.2.

15.2.1 DISPLACEMENT

There are no homes along the Proposed Route that meet the threshold for displacement due to the construction of the transmission line. There are no homes within 100 feet of the proposed transmission line. There are three homes within 300 feet of the transmission line; the closest home to the transmission line is approximately 180 feet. The closest home to the Brookings County Substation is approximately 2,900 feet north of the substation site.

15.2.2 NOISE

Noise is defined as unwanted sound. It may be 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. Transmission conductors and transformers at substations produce noise under certain conditions. The level of noise or its loudness depends on conductor conditions, voltage level and weather conditions.

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 7 shows noise levels associated with common, everyday sources, and places the magnitude of noise levels discussed here in context.

TABLE 7
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

Measurements of noise at the existing White Substation indicated an average noise level of approximately 59-dBA. Noise monitoring was also done at the nearest residence to the White Substation, approximately 1,250 feet southwest of the substation, and showed a day-night noise level of 47-dBA. A propagation of substation noise to the residence showed a calculated contribution of approximately 27-dBA. This contribution does not contain the level of sound energy required to increase background noise levels at the nearest sensitive receptor. Noise monitoring results are included in Exhibit F.

There will be two potential sources of audible noise from the Facility; the conductors and the new Brookings County Substation. The improvements to the existing White Substation will not result in an increase to existing noise levels.

Conductor Noise

The noise levels from the proposed line are comparable to the existing noise levels and will not have a significant impact on humans or the environment. Noise emission from a transmission line occurs during heavy rain and wet conductor conditions. In foggy, damp, or rainy weather conditions, power lines can create a crackling sound due to the small amount of electricity ionizing the moist air near the wires. During heavy rain the general background noise level is usually greater than the noise from the transmission line and few people are out near the line. As a result, people do not normally notice audible noise from a transmission line during heavy rain. During light rain, dense fog, snow and other times when there is moisture in the air, transmission lines will produce audible noise at approximately household background levels. During dry weather, audible noise from transmission lines is barely perceptible.

Corona on transmission line conductors can generate electromagnetic noise that can cause interference with radio waves (primarily with AM radio stations and the video portion of TV signals) depending on the frequency and strength of a radio and television signal. Although radio and television interference sometimes occurs, Xcel Energy investigates all such problems and corrects those problems caused by Xcel Energy facilities. The use of bundled conductor on the 115 kV line reduces the potential for corona. Consequently, Xcel Energy does not expect that there will be any impacts from the operation of the new line.

Substation Noise

Generally, noise levels during operation and maintenance of a substation are minimal. Transformers at substations produce noise under certain conditions. The level of noise, or its loudness, depends on conductor conditions, voltage level and weather conditions. The Project will not add any transformers to the White Substation. As proposed, the new Brookings County Substation will contain one 345/115 kV transformer.

Xcel Energy does not anticipate that the addition of this equipment will noticeably increase the noise level at nearby residences. The National Electrical Manufacturer's Association (NEMA TR-1) standard defines the maximum sound pressure level for a 345/115 kV transformer at 89-dBA. Assuming that the transformer acts as a spherical noise point source, the predicted sound pressure level at the nearest sensitive receptor located approximately 2900 feet north of the substation is 29-dBA. The noise contribution from the White Substation (47-dBA at 125 feet) which is located approximately 2,100 feet west of the proposed Brookings Substation is not predicted to increase the substation noise contribution at this residence. Because of the distance to the nearest home and compliance with industry noise standards, impacts from noise will be minimal.

15.2.3 RADIO AND TELEVISION INTERFERENCE

Corona on transmission line conductors can generate electromagnetic noise at the frequencies at which radio and television signals are transmitted. This noise can cause interference (primarily with AM radio stations and the video portion of TV signals) with the reception of these signals depending on the frequency and strength of the radio and television signal. Although radio and television interference sometimes occurs, Xcel Energy investigates all such problems and corrects those problems caused by Xcel Energy facilities, in accord with Federal Communications Commission (FCC) Rules regarding operation of such facilities. Xcel Energy does not expect that there will be any impacts from the operation of the new line.

15.2.4 AESTHETICS

The Facility will alter the existing landscape through the construction of the 345 kV transmission lines, the Brookings County Substation and the 115 kV transmission line. The contrast between the Facility components and the existing landscape will vary. The H-frame structures used for the proposed 345 kV transmission line will be approximately 80-100 feet high and approximately 950 feet apart. The Brookings County Substation will replace approximately 12 acres currently used as an agricultural field with a more industrial looking facility. The 115 kV transmission line will use structures approximately 80-90 feet tall and spaced approximately 500 feet apart.

The area of the Brookings County Substation is already visually dominated by White Substation and several large transmission lines, including the Western 345 kV line, which consists of lattice tower structures approximately 130 feet tall. Additionally, White Wind Farm, LLC has proposed a 200 MW wind farm in the general vicinity of the White Substation. The White Wind Farm will use wind turbines approximately 300 feet tall and visible from the Facility route, the Brookings County Substation and White Substation. The presence of the existing facilities will minimize the contrast between the Facility and the existing landscape in this area.

As the 115 kV line heads south along 484th Avenue out of the Brookings County Substation, the route parallels Western's existing 345 kV transmission line for approximately four miles until the route turns east along 211th Street.

Impacts to aesthetics are mitigated through the use of existing corridors. Approximately 86 percent of the 115 kV route will parallel existing roadways. In addition, transmission lines are already present in the vicinity of the White Substation. Xcel Energy has not identified any unique aesthetic resources that would be impacted by these transmission lines.

16.0 LOCAL LAND USE CONTROLS (ARSD 20:10:22:19)

The majority of the Facility will be constructed on agricultural land regulated by Brookings County land use plans and ordinances. The Facility will not require any rezoning.

17.0 WATER QUALITY (ARSD 20:10:22:20)

17.1 EXISTING WATER RESOURCES

Water resources are shown in Exhibit C.7. There are no South Dakota Department of Environment and Natural Resources- (DENR) listed 2004 impaired (303(d) waters within the Project area. However, the DENR includes the section of the Big Sioux River downstream of the Project on its 2004 list of impaired (303(d)) waters. Impaired waters are those that require studies to determine the total amount of pollution, or total maximum daily load (TMDL), that a water body can receive before water quality standards are violated. The Big Sioux River is considered impaired for meeting DENR's "immersion recreation" (i.e., swimming) and "limited contact recreation" (i.e., boating) uses, due to fecal coliform from livestock and wastewater sources. This section of the Big Sioux River is also listed as having unacceptably high levels of total suspended solids (TSS), leading to impairment in the warm water semi-permanent fish life propagation use. Stream bank erosion and runoff from feedlots and croplands within the drainage basin likely lead to the high TSS levels in this section of the river. South Dakota has listed this section of the river as high priority for TMDL development, and watershed management programs have been implemented in order to reduce nutrient and sediment loading. The current TMDL for TSS within Big Sioux River is 90 milligrams per liter (mg/L).

17.2 FACILITY IMPACTS AND MITIGATION

During construction there is a possibility of sediment reaching surface waters as the ground is disturbed by excavation, grading and construction traffic. Because both Deer Creek and Medary Creek flow into the Big Sioux River, which already is impaired for TSS, any sediment reaching these streams has the potential to adversely affect water quality in an impaired water.

During construction Xcel Energy will implement BMPs, such as sediment fences, to minimize the potential for erosion and sedimentation into water bodies within the Project area. Xcel Energy will maintain sound water and soil conservation practices during construction and operation of the transmission line to protect topsoil and adjacent water resources and minimize soil erosion. Practices may include containing excavated material, protecting exposed soil and stabilizing restored soil. Once the Project is completed, it will have no impact on surface water quality. With implementation of BMPs the Project is not expected to affect water quality (i.e., fecal coliform or TSS levels) within the watershed.

Work at the White Substation and the Brookings County Substation will not impact wetlands. Transmission structures will span any wetlands along the transmission line routes. BMPs to ensure slope stability and minimize potential for erosion or sedimentation will be implemented when constructing near a wetland. No permanent impacts to wetlands are anticipated.

18.0 AIR QUALITY (ARSD 20:10:22:21)

18.1 EXISTING AIR QUALITY

The entire area of the proposed Facility is currently in attainment for both National and South Dakota Ambient Air Quality Standards. The nearest Ambient Air Quality Monitoring Site is located at the Brookings City Hall in Brookings County, South Dakota, which is southwest of the Project.

18.2 FACILITY IMPACTS

During construction of the proposed transmission line and substation, there will be limited emissions from vehicles and other construction equipment and fugitive dust from ROW clearing. Temporary air quality impacts caused by the proposed construction-related emissions are expected to occur during this phase of activity.

The magnitude of the construction emissions is influenced heavily by weather conditions and the specific construction activity occurring. Exhaust emissions from primarily diesel equipment will vary according to the phase of construction but will be minimal and temporary. Adverse impacts to the surrounding environment will be minimal because of the short and intermittent nature of the emission and dust-producing construction phases.

The only potential air emissions from a transmission line result from corona and are limited. Corona can produce ozone and oxides of nitrogen in the air surrounding the conductor. Corona consists of the breakdown or ionization of air in a few centimeters or less immediately surrounding conductors. For a 115 kV transmission line, the conductor gradient surface is usually below the air breakdown level. Usually some imperfection such as a scratch on the conductor or a water droplet is necessary to cause corona. Ozone also forms naturally in the lower atmosphere from lightning discharges and from reactions between solar ultraviolet radiation and air pollutants such as hydrocarbons from auto emissions. The natural production rate of ozone is directly proportional to temperature and sunlight and inversely proportional to humidity. Thus, humidity (or moisture), the same factor that increases corona discharges from transmission lines, inhibits the production of ozone. Ozone is a very reactive form of oxygen and combines readily with other elements and compounds in the atmosphere. Because of its reactivity, it is relatively short-lived. The Project area presently meets all federal air quality standards.

Studies designed to monitor the production of ozone under transmission lines have generally been unable to detect any increase due to the transmission line Facility. Given this, there will be no measurable impacts relating to ozone for the Project.

19.0 TIME SCHEDULE (ARSD 20:10:22:22)

Xcel Energy proposes an in-service date of October 2007 for the Project. Table 8 summarizes the proposed permitting and construction schedule for the Facility.

TABLE 8
PROJECT SCHEDULE

Milestone	Timeframe
Submit Facilities Permit Application	December 2005
Facilities Permit Order Issued	May 2006
Survey Permission and Survey	November 2005 – February 2006
Line and Substation Design	June 2005 – June 2006
ROW Acquisition	May – October 2006
Yankee to Brookings County Transmission Line Construction	October 2006 to October 2007
Brookings County Substation Construction	September 2006 to October 2007
White Substation Improvements	December 2006 – July 2007
Final ROW Contacts, Damage Settlements & Cleanup	October 2007 to April 2008

20.0 COMMUNITY IMPACT (ARSD 20:10:22:23)

20.1 EXISTING SOCIOECONOMIC AND COMMUNITY RESOURCES

20.1.1 COMMUNITIES

The entire Facility is located in Brookings County and passes through Richland, Alton and Sherman townships. The closest city is White, South Dakota, with an estimated population of 505. Table 9 identifies demographic characteristics of the Facility area. Population growth in the townships immediately affected by the Project has been relatively static, with a population loss of approximately 0.4 percent between 1990 and 2004. This growth is much lower than the growth in Brookings County, 11.7 percent and South Dakota, 10.8 percent, over the same time period.

TABLE 9
DEMOGRAPHIC CHARACTERISTICS OF THE FACILITY AREA

Area	Population			% Change 1990-2004	% White (Self-identified)	% in Poverty	Median HH Income
	1990	2000	2004				
City of White	535	598	505	-5.6	98.3	6.3	$31,528
Alton Township	285	276	240	-15.8	98.6	9.8	$42,231
Richland Township	173	195	205	18.5	98.5	36.4	$21,250
Sherman Township	147	175	185	25.9	99.4	11.4	$38,750
Brookings County	25, 207	28,220	28,159	11.7	96.4	12.6	$35,438
South Dakota	696,004	754,844	770,883	10.8	88.7	12.7	$35,282

Source: US Census Bureau. All data from *Census 2000*, except 1990 population data from *Census 1990* and 2004 Population Estimates from Population Estimates Program.

20.1.2 AGRICULTURE

The County's 962 farms (418,115 acres) produced a total market value of agricultural products of over $97.5 million in the year 2002, including $42.8 million in crops and $54.8 million in livestock, poultry and related products. The median farm size in Brookings County is 435 acres. Agriculture in the Facility area is largely corn and soybeans with some pastureland.

20.1.3 TRANSPORTATION

Brookings County's transportation system is generally laid in a one mile rectilinear grid system with a majority of the roads having 66-foot ROWs. The public ROWs for County, State and Federal Highways with a bituminous or concrete surface generally exceed 100 feet. The township highway system represents the largest road system within the county.

20.1.4 CULTURAL RESOURCES

A review of records provided by the South Dakota Archaeological Research Center (SDACR) identified 5 cultural resource surveys and reports previously conducted within one mile of the proposed corridor. Survey reports identified 12 previously recorded archaeological resources, plus an unrecorded site reported by T.H. Lewis in 1889, within one mile of the corridor. Previously recorded sites consist of prehistoric artifact scatters, earthworks, a stone circle, a bone bed and a historic farmstead and historic artifact scatters. Five of the sites have been determined not eligible for listing on the National Record of Historic Places (NRHP). The remaining seven archaeological resources have not been evaluated for NRHP eligibility.

20.2 IMPACTS ON SOCIOECONOMIC AND COMMUNITY RESOURCES

20.2.1 POPULATION AND COMMUNITY IMPACT

The Facility will not have a significant short-term impact on population, income, occupational distribution or the integration or cohesion of communities in the Facility area.

There will be some long-term beneficial impacts from the new lines. The availability of reliable power in the area will have a positive effect on local businesses and the quality of service provided to the general public. This transmission line will improve the capability of local wind generators to transport energy generated in the area. This in turn may increase the amount of wind development in the area and will contribute to the local economy through easement dollars and taxes generated due to wind farm construction and operation. The establishment of this area of South Dakota as an important producer of alternative energy sources, primarily wind, may also spur the development of wind-related businesses in the area, in turn contributing to economic growth in the region.

The development of wind energy in this area has been important in diversifying and strengthening the economic base of southwestern Minnesota, and it is expected that this Facility, together with other transmission improvements in southwestern Minnesota and eastern South Dakota will make wind development opportunities more attractive in South Dakota. Northwest Economic Associates (NEA) prepared a report, "Assessing the Economic Development Impacts of Wind Power," that includes a case study of the Lake Benton I wind project in Lincoln County, Minnesota. The study

stated that the construction phase of Lake Benton supported a total of eight jobs and $98,000 in personal income primarily in the trade and services industries. During the operation and maintenance phase of Lake Benton I, a total of 31 jobs, primarily in the transportation, communication and public utilities industries, supported $909,000 in annual personal income in Lincoln County.

The Facility will increase the Brookings County tax base as a result of the incremental increase in revenues from utility property taxes, which are based in part on the value of the Facility.

20.2.2 AGRICULTURAL IMPACT

Permanent impacts will occur to farmland, both to cropped land and pastureland, throughout the corridor; no impacts are anticipated to livestock operations. However, these impacts will be minimal and will be limited to the developed area of the Brookings County Substation and areas immediately around transmission poles. During construction, temporary impacts such as soil compaction and crop damages within the ROW are likely to occur. Xcel Energy estimates that approximately 67.4 acres of agricultural land will be impacted temporarily by the proposed Facility. Permanent impacts to agricultural lands are estimated at 12.2 acres for the Facility.

Wherever possible, poles will be placed so that they closely follow the roadway ROW, minimizing permanent impacts to agricultural land. To ensure minimal loss of farmland and to ensure reasonable access to the land near the poles, Xcel Energy's standard practice is to place the poles adjacent to state, county and township road ROW, but on private property. This places the centerline of the structure approximately five feet from the property line. For the most part of the 115 kV route, the line will be setback approximately 38 feet, five feet off of an assumed 33-foot ROW, from the centerline. However, in two portions of the proposed route, approximately 0.8 miles along Brookings County Road 32/212th Street where the line enters South Dakota, and approximately 0.5 miles along Brookings County Road 36/484th Avenue just before the line turns into the Brookings County Substation, the line will be placed approximately 55 feet from the center line to accommodate Brookings County plans to widen county roads in these segments. This accommodation is discussed further in Section 15.2.

Where possible, Xcel Energy will attempt to construct the transmission line before crops are planted or following harvest. However, due to the Facility's timeline that will extend across farming seasons, Xcel Energy cannot guarantee that construction will occur only outside the growing season. The Company will compensate landowners for crop damage and soil compaction that occurs as a result of the Facility. Soil compaction will be addressed by compensating the farmer to repair the ground or by using contractors to come in and chisel plow the site. Normally, a declining scale of payments is set up over a period of a few years.

20.2.3 TRANSPORTATION IMPACTS

Impacts to the local transportation system will be minimal. The Facility will require a new drive off of 484th Avenue to access the new substation. The majority of the route will parallel existing roadway. There will be some short-term temporary impacts to traffic along these from construction during the construction phase of this Facility. These impacts may include minor traffic delays when the poles are installed and the conductors are strung. As discussed in Sections 15.2 and 20.2.2, Xcel Energy will accommodate any known road upgrades along the proposed 115 kV route.

20.2.4 CULTURAL RESOURCE IMPACTS

Because consultation with state historic preservation offices and tribes is required as part of Western's review of Xcel Energy's interconnection request, Western, the South Dakota State Historic Preservation Office (SHPO) and Xcel Energy will be entering into a Programmatic Agreement to address any Cultural Resources Impacts that may result from the Facility.

The placement of the transmission line will determine the potential impacts to previously identified archaeological and architectural resources. Based on a review of cultural resource records of the area, Xcel Energy does not anticipate adverse impacts to previously identified resources as a result of the Project. Xcel Energy has also begun work on a field survey of the entire Project alignment and will make every effort to avoid identified resources throughout the life of the Project.

In the event that an impact would occur, Xcel Energy would determine the nature of the impact and consult with the SHPO on whether or not the resource is eligible for listing in the NRHP. Mitigation for Facility-related impacts on NRHP-eligible archaeological resources may include an effort to minimize Facility impacts on the resource and/or additional documentation through data recovery.

If human remains should be inadvertently encountered during the excavation and construction, Xcel Energy will appropriately handle such a discovery in a manner compliant with SDCL 34-27.

21.0 EMPLOYMENT ESTIMATES (ARSD 20:10:22:24)

The relatively short-term nature of the Facility construction and the number of workers who will be hired from outside of the Facility area should result in short-term positive economic impacts in the form of increased spending on lodging, meals and other consumer goods and services. It is not anticipated that the Facility will create new permanent jobs, but it will create temporary construction jobs that will provide a one-time influx of income to the area. Table 10 summarizes the number of people Xcel Energy estimates will work on the Facility.

TABLE 10
ESTIMATED NUMBERS OF WORKERS

Type of Work	Number of Employees	Comments
Right-of-Way	2	
Survey	2	
Construction – Foundations	5	
Construction – Poles	8-12	
Construction – Substation	16-24	
Office Personnel	4	Infrequent Visits

22.0 FUTURE ADDITIONS AND MODIFICATIONS (ARSD 20:10:22:25)

Xcel Energy is currently in the process of assessing the construction of additional facilities in the area to support the inclusion of additional wind generation in the area as well as improving the overall transmission grid. The projects that are under consideration include:

- The construction of a second 115 kV transmission line between the Brookings County substation and the Yankee substation to support outlet capability for wind generation. This transmission line would need to be on separate ROW from the proposed Facility since it would be built to support the system if there was an outage of the Facility proposed in this application. This project is under consideration to support the addition of wind generation in both South Dakota and Minnesota.

- Initial planning studies are also considering the addition of other 115 kV transmission lines connecting the Brookings County Substation to the existing transmission system in the Toronto vicinity, northeast of the Facility proposed in this application. The project would support additional wind development in that area. Those plans are in the preliminary stages and no specific plans have been developed yet.

- Xcel Energy, along with the other four largest Minnesota transmission-owning utilities initiated the CapX 2020 study project to ensure the backbone transmission system is developed and available to serve the growing needs of the region. Information on this endeavor can be found at www.capx2020.com. The group has developed a vision of the infrastructure needs out to the year 2020 and recently completed a technical study that identified several 345 kV lines that should be pursued. One of the transmission projects identified in the technical study is a new 345 kV transmission line from the Brookings County Substation to a new substation on the southeast side of the Minneapolis/St Paul Metro area. Currently, studies are underway to identify the specific facilities required for this project and the other CAPX 2020 transmission initiatives Utilities are developing plans to proceed with permitting this Facility and several others listed in the report.

Given these potential future projects, the Brookings County substation will be designed and graded to accommodate the future 115 kV and 345 kV transmission line connections discussed above. The Brookings County substation is also designed to accommodate up to twelve 34.5 kV wind feeder lines to support wind generation that may be built in the area and tied into the system through this substation.

23.0 TRANSMISSION FACILITY LAYOUT AND CONSTRUCTION (ARSD 20:10:22:34)

23.1 ROUTE CLEARING

Xcel Energy does not anticipate significant vegetation clearing will be required for the Facility since it was sited in order to minimize clearing of wind breaks. During the ROW acquisition phase, individual property owners will be advised as to the construction schedules, needed access to the site and any vegetation clearing required for the Facility. The ROW will be cleared of the amount of vegetation necessary to construct, operate and maintain the proposed transmission line. It is standard practice to remove any vegetation that would be a danger to the line at a mature height. Also, any vegetation that is in the way of construction equipment may have to be removed. Wood from the clearing operation will be offered to the landowner or removed from the site. Brush will be chipped and disposed of in the ROW in the area that is cleared.

23.2 STAGING AND LAY DOWN AREAS

Where possible, staging and lay down areas will be located within the ROW and limited to previously disturbed or developed areas. Xcel Energy expects to use the lands acquired for the Brookings County and Yankee substation sites to store poles, equipment and other materials.

23.3 TRANSMISSION CONSTRUCTION PROCEDURES

Construction is planned to begin once required approvals are obtained and easement acquisition is completed. A detailed construction schedule will be developed based upon availability of crews, outage restrictions for lines that may be affected, weather conditions, spring load restrictions on roads, and any restrictions placed on certain areas for minimizing permanent impacts from construction.

The proposed transmission lines will be constructed from existing grade for the majority of the ROW. Generally, moderately sloping terrain conditions have minimal impact on site access by most construction equipment. Flat, level terrain conditions are preferred at, and immediately around, the structure foundation location. Grading is anticipated where it may be necessary to create a level area for foundation construction, construction access and activities at the structure sites. Xcel Energy does not expect to conduct a significant amount of grading for this Facility.

All 115 kV structures will anchor bolt the galvanized steel poles to concrete foundations. Single circuit 115 kV structures will require holes drilled approximately 20 to 30 feet deep. Any excess soil will be removed from the site unless otherwise requested by the landowner. Structures located in

24.0 INFORMATION CONCERNING TRANSMISSION FACILITIES (ARSD 20:10:22:35)

24.1 CONFIGURATION OF TOWERS AND POLES

Xcel Energy proposes to use either wood or steel H-frame structures for the two 345 kV transmission lines. Wood structures will be direct-embedded into holes drilled 10 to 13 feet deep. Steel structures will be anchor-bolted to concrete foundations approximately six to eight feet in diameter, and approximately 30 to 40 feet in depth. Regardless of the material, structures will have a height of 80-100 feet and an average span of 950 feet between structures.

Figure 3 shows a wood H-frame 345 kV structure of the type that may be used for the 345 kV lines. Steel H-frame structures may also be used for this segment, the configuration would be similar to wood H-frame structures, however there would not be cross-braced between the poles and the shield wires would be configured somewhat differently.

Single pole, galvanized steel, davit arm structures will be used for the 115 kV transmission line. These structures will be erected on concrete foundations approximately four to six feet in diameter, and approximately 20 to 30 feet in depth. The structures will have an average height of 80 to 90 feet and an average span of approximately 500 feet between structures.

Figure 4 shows a davit arm 115 kV structure of the type that would be used for the 115 kV line.

24.2 CONDUCTOR CONFIGURATION

For the 115 kV line, Xcel Energy proposes using a bundled 795-thousand circular mils(kcmil) 26/7 (Drake) aluminum conductor steel supported (ACSS) conductor for the transmission line. A bundled conductor configuration consists of two conductors spaced approximately 18 inches apart at the end of each insulator string. The bundled 795 ACSS conductors are rated for 600 MVA. The capacity of the bundled conductors is 3000 amps. For lightning protection, Xcel Energy will use 3/8-inch EHS 7 stranded steel shield wire.

For the 345 kV line, Xcel Energy plans to use double bundled (two conductors) 954 kcmil Type 13, Cardinal/ACSS/trapezoidal wire (TW) for each phase of the three-phase configuration. The conductor capacity of each line will be 3160 amps or 1890 MVA.

24.3 PROPOSED TRANSMISSION SITE AND MAJOR ALTERNATIVES

The proposed Facility and major alternatives are identified in Sections 3.0 and 10.0 and in Figure 1 and Figure 5. They are also shown on an aerial photograph and land use culture map shown in Exhibit C.1 and Exhibit C.

24.4 RELIABILITY AND SAFETY

24.4.1 TRANSMISSION LINE RELIABILITY

The MPUC considered reliability when it issued a CON for a system of four new transmission lines including the lines for which a site permit is sought in this Application. In granting its approval, the MPUC determined the system of lines was the most reasonable and prudent option to reliably increase outlet capacity from the Buffalo Ridge area. The Facility proposed in this Application is designed to support electric system reliability.

24.4.2 SAFETY

Proper safeguards will be implemented for construction and operation of the Facility. The Facility will be designed with the local, state, NESC and Xcel Energy standards regarding clearance to ground, clearance to crossing utilities, clearance to buildings, strength of materials and ROW widths. Xcel Energy construction crews and/or contract crews will comply with local, state, NESC and Xcel Energy standards regarding installation of facilities and standard construction practices. Established Xcel Energy and industry safety procedures will be followed during and after installation of the transmission line. This will include clear signage during all construction activities.

The proposed transmission line will be equipped with protective devices to safeguard the public from the transmission line if an accident occurs and a structure or conductor falls to the ground. The protective devices are breakers and relays located where the line connects to the substation. The protective equipment will de-energize the line should such an event occur. In addition, the substation will be fenced and access limited to authorized personnel. The costs associated with these measures have not been tabulated separately from the overall Facility costs since these measures are standard practice for Xcel Energy.

24.4.2.1 Electric Fields

Voltage on any wire (conductor) produces an electric field in the area surrounding the wire. The electric field associated with a high voltage transmission line extends from the energized conductors to other nearby objects such as the ground, towers, vegetation, buildings and vehicles. The electric field from a power line gets weaker as one moves away from the line. Nearby trees and building material also greatly reduce the strength of power line electric fields.

The intensity of electric fields is associated with the voltage of the line and is measured in kilovolts per meter (kV/M). Power line electric fields near ground are designated by the difference in voltage between two points (usually one meter).

The proposed 115 kV transmission line will have a maximum magnitude of electric field density of approximately 0.8 kV/M underneath the conductors one meter above ground level. The proposed 345 kV transmission line will have a maximum magnitude of electric field density of approximately 4.6 kV/M underneath the conductors one meter above ground level. The State of South Dakota has not established electric field strength guidelines for the design and construction of overhead transmission lines. However, estimates of electric field density for both lines are significantly less than the maximum limit of 8 kV/M that has been a permit condition imposed by the EQB in construction permits for High Voltage Transmission lines in Minnesota. The EQB standard was designed to prevent serious hazard from shocks when touching large objects, such as tractors, parked under extra high voltage transmission lines of 500 kV or greater.

24.4.2.2 Magnetic Fields

Current passing through any conductor, including a wire, produces a magnetic field in the area around the wire. The magnetic field associated with a high voltage transmission line surrounds the conductor and decreases rapidly with increasing distance from the conductor. The magnetic field is expressed in units of magnetic flux density, expressed as gauss (G).

The question of whether exposure to power-frequency (60 Hertz(Hz)) magnetic fields can cause biological responses or even health effects has been the subject of considerable research for the past three decades. The most recent and exhaustive reviews of the health effects from power-frequency fields conclude that the evidence of health risk is weak. The National Institute of Environmental Health Sciences (NIEHS) issued its final report, "NIEHS Report on Health Effects from Exposure to Power-Line Frequency Electric and Magnetic Fields" on June 15, 1999, following six years of intensive research. NIEHS concluded that there is little scientific evidence correlating extra low frequency electromagnetic field (EMF) exposures with health risk.

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 be the subject of research and debate. In addressing this issue, Xcel Energy provides information on EMF to the public, interested customers, and employees to assist them in making an informed decision about EMF. Xcel Energy will provide measurements for landowners, customers and employees who request them. In addition, Xcel Energy has followed the "prudent avoidance" guidance suggested by most public agencies. This includes using structure designs that minimize magnetic field levels and attempting to site facilities in locations with lower residential densities.

24.4.2.3 Stray Voltage

Stray voltage is defined as a natural phenomenon that can be found at low levels between two contact points in any animal confinement area where electricity is grounded. By code, electrical systems, including farm systems and utility distribution systems, must be grounded to the earth to ensure continuous safety and reliability. Inevitably, some current flows through the earth at each point where the electrical system is grounded and a small voltage develops. This voltage is called neutral-to-earth voltage (NEV). When a portion of this NEV is measured between two objects that may be simultaneously contacted by an animal, it is frequently called stray voltage. Stray voltage is not electrocution, ground currents, EMFs or earth currents. It only affects farm animals that are confined in areas of electrical use. It does not affect humans.

Stray voltage has been raised as a concern on some dairy farms because it can impact operations and milk production. Problems are usually related to the distribution and service lines directly serving the farm or the wiring on a farm. In those instances when transmission lines have been shown to contribute to stray voltage, the electric distribution system directly serving the farm or the wiring on a farm was directly under and parallel to the transmission line. These circumstances are considered in installing transmission lines and can be readily mitigated. The proposed 345 kV transmission line is not proposed to run parallel to any existing distribution line for long distances. Therefore, no stray voltage issues are anticipated with this Facility.

24.5 RIGHT OF WAY OR CONDEMNATION REQUIREMENTS

Xcel Energy has previously contacted landowners along the Project route to discuss route proposals. In addition, we have already secured an option to purchase the Brookings County Substation site (no additional property is required for the White substation work). Xcel Energy expects to initiate contact with landowners to start the survey for the new 115 kV line this fall. Landowners will also be provided information on the Facility as it proceeds through the Facilities permitting process, through periodic newsletters. Xcel Energy's Land Rights Agents will work with the landowners at an early stage to answer questions about the Facility and to obtain permission for route surveys and soil investigations prior to construction. As the design of the line is further developed, contacts with

the owners of affected properties will continue and the negotiation and acquisition phase will begin for Xcel Energy to obtain the necessary land or easement rights for the facilities.

During the acquisition phase, individual property owners will be advised as to the construction schedules, needed access to the site and any vegetation clearing required for the Facility. The ROW will be cleared of the amount of vegetation necessary to construct, operate and maintain the proposed transmission line as discussed in Section 23.1.

Many structure locations will require soil investigation to assist with the design of the foundations. Xcel Energy will inform the landowners at the initial survey consultation that soil borings may occur. An independent geotechnical testing company will take and analyze these borings. Survey crews also work with local utilities to identify underground utilities along the route. This minimizes conflicts or impacts to existing utilities along the route.

Where possible, staging and lay down areas will be located within the ROW and limited to previously disturbed or developed areas. When additional property is temporarily required for construction, temporary limited easements (TLE) may be obtained from landowners for the duration of construction. TLEs will be limited to special construction access needs or additional staging or lay down areas required outside of the proposed transmission line ROW.

24.6 NECESSARY CLEARING ACTIVITIES

Xcel Energy anticipates minimal tree clearing will need to be performed for this Facility. General ROW clearing and maintenance is described in Section 23.1. The 115 kV transmission line has been sited to minimize the need to remove trees along the route.

24.7 UNDERGROUND TRANSMISSION

No portion of the Facility will require underground transmission. Transmission lines can be placed underground but at substantial additional expense compared to overhead construction. For example, placing a 69 kV transmission line underground costs 10 times as much as building overhead. Because of the significantly greater expense associated with underground transmission construction, the use of underground technology is limited to locations where the impacts of overhead construction are completely unacceptable or where physical circumstances allow for no other option. Xcel Energy concluded that the environmental and land use setting did not warrant underground construction of this Facility.

25.0 ADDITIONAL INFORMATION IN APPLICATION (ARSD 20:10:22:36)

Xcel Energy believes that this Application contains all the information required to meet Xcel Energy's burden of proof specified at SDCL 49-41B-22. No additional information is provided.

26.0 TESTIMONY AND EXHIBITS (ARSD 20:10:22:39)

26.1 LIST OF PREPARERS

The following people contributed to the report:

Xcel Energy:

- Andrew Beckel
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- Brad Hill
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- Angela Piner
- Beth Regan
- Dan Schmidt
- Suzanne Steinhauer

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28.0 LIST OF ACRONYMS AND ABBREVIATIONS

ACSS	Aluminum Core Steel Supported
amsl	above mean sea level
APP	avian protection plan
ARSD	South Dakota Administrative Rules
BMP	best management practice
cfs	cubic feet per second
cmil	A unit of measure, most often used to define the area of a wire. The area of a circle one one-thousandth (0.001) inches in diameter.
Commission	South Dakota Public Utilities Commission
CON	Certificate of Need
d/b/a or dba	doing business as
dB	Decibels
dBA	A-weighted sound level recorded in units of decibels
DENR	South Dakota Department of Environment and Natural Resources
EMF	electromagnetic field
EA	Environmental Assessment
EQB	Minnesota Environmental Quality Board
Facility	Improvements to the White Substation, construction of the new Brookings County Substation, 0.4-mile 345 kV transmission line between White and Brookings County substations, 9.65-mile 115 kV transmission line between Brookings County Substation and the Minnesota Border
FCC	Federal Communications Commission
G	Gauss
GFP	South Dakota Department of Game, Fish and Parks
Hz	Hertz
kcmil	thousand circular mils
kV	kilovolt
kV/M	kilovolts per meter
mg/L	milligrams per liter – equivalent to parts per million (ppm)
mil	A measurement of length or width; also of volume and angle. One mil is 0.001 inches length or width.
MISO	Midwest Independent System Operator
MOU	memorandum of understanding
MPUC	Minnesota Public Utilities Commission
MW	megawatts
NEA	Northwest Economic Associates
NEMA	National Electric Manufacturer's Association
NEPA	National Environmental Policy Act
NESC	National Electrical Safety Code
NEV	neutral-to-earth voltage
NIEHS	National Institute of Environmental Health Sciences
NPDES	National Pollution Discharge Elimination System
NRCS	National Resources Conservation Service
NRHP	National Register of Historic Places

NWI	National Wetlands Inventory
pH	potential of Hydrogen
ppm	parts per million
psig	pounds per square inch gauge
Project	Improvements to White and Buffalo Ridge substations, construction of new Yankee and Brookings County substations, 0.4-mile 345 kV transmission line between White and Brookings County substations, 28-mile 115 kV transmission line between Buffalo Ridge and Brookings County substations
ROW	Right-of-way
SDACR	South Dakota Archaeological Research Center
SDCL	South Dakota Codified Law
SFD	swan flight diverter
SHPO	South Dakota State Historic Preservation Office
SWPPP	Storm Water Pollution Prevention Plan
TLE	temporary limited easements
TMDL	total maximum daily load
tss	total suspended solids
TW	trapezoidal wire
USDA	United States Department of Agriculture
USDOE	United States Department of Energy
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
Western	Western Area Power Administration
Xcel Energy	Northern States Power Company, a Minnesota Corporation d/b/a Xcel Energy

Exhibit A

EXHIBIT A
MINNESOTA PUC ORDER

MAR 1 2 2003

BEFORE THE MINNESOTA PUBLIC UTILITIES COMMISSION

LeRoy Koppendrayer	Chair
Ellen Gavin	Commissioner
Marshall Johnson	Commissioner
Phyllis A. Reha	Commissioner
Gregory Scott	Commissioner

In the Matter of the Application of Northern States Power Company d/b/a Xcel Energy for Certificates of Need for Four Large High Voltage Transmission Line Projects in Southwestern Minnesota

ISSUE DATE: March 11, 2003

DOCKET NO. E-002/CN-01-1958

ORDER GRANTING CERTIFICATES OF NEED SUBJECT TO CONDITIONS

PROCEDURAL HISTORY

I. Initial Proceedings

On December 28, 2001, Northern States Power Company d/b/a Xcel Energy (Xcel or the Company) filed an application under Minn. Stat. § 216B.243 and Minnesota Rules, Chapter 7849 for certificates of need to construct four high voltage transmission lines in southwestern Minnesota to provide outlet capacity for wind generation expected to develop there.

On February 11, 2002, the Commission issued an Order finding the application substantially complete and referring the case to the Office of Administrative Hearings for contested case proceedings. The case was assigned to Administrative Law Judge Beverly Jones Heydinger.

II. The Parties and their Representatives

The following persons and organizations were parties to this proceeding and were represented as set forth below.

Northern States Power Company d/b/a Xcel Energy, represented by Michael C. Krikava and Lisa Agrimonti, Briggs and Morgan, P.A., 2400 IDS Center, 80 South 8th Street, Minneapolis, Minnesota 55402.

Minnesota Department of Commerce, represented by Julia E. Anderson, Assistant Attorney General, 525 Park Street, Suite 200, St. Paul, Minnesota 55103.

The staff of the Minnesota Environmental Quality Board, represented by Dwight S. Wagenius, Assistant Attorney General, 525 Park Street, Suite 200, St. Paul, Minnesota 55101-7345.

Laura and John Reinhardt, 3552 26th Avenue South, Minneapolis, Minnesota 55406, appeared on their own behalf.

The North American Water Office, represented by George Crocker, P. O. Box 174, Lake Elmo, Minnesota 55042.

Public Intervenors Network, represented by Carol Overland, Attorney at Law, Box 559, Red Wing, Minnesota 55066.

Sierra Club of Minnesota Air Toxics Campaign, represented by Paula Goodman Maccabee, Attorney at Law, 1916 Selby Avenue, St. Paul, Minnesota 55104.

Izaak Walton League of America, represented by Peter T. Grills and Carl T. Williams, O'Neill, Grills & O'Neill, W1750 First National Bank Building, 352 Minnesota Street, St. Paul, Minnesota 55101, and by Beth Soholt, Senior Energy Associate, Izaak Walton League of America, Midwest Office, 1619 Dayton Avenue, St. Paul, Minnesota 55104.

American Wind Energy Association, represented by John R. Dunlop, Regional Manager, 448 Morgan Avenue South, Suite 300, Minneapolis, Minnesota 55405.

Rural Minnesota Energy Task Force, represented by Kevin Walli, Fryberger, Buchanan, Smith & Frederick, 386 North Wabasha Street, Suite 1190, St. Paul, Minnesota 55102, and by David Benson, Task Force Chair, Nobles County Commissioner, and Jack Keers, Pipestone County Commissioner.

Minnesotans for an Energy-Efficient Economy, represented by Michael Noble, Executive Director, Minnesota Building, Suite 600, 46 East Fourth Street, St. Paul, Minnesota 55101.

Minnesota Power, represented by Deborah A. Amberg, Attorney at Law, 30 West Superior Street, Duluth, Minnesota 55802.

III. Proceedings Before the Administrative Law Judge

The Administrative Law Judge held evidentiary hearings in the case on May 6-9, May 13-17, 2002, May 20-25, 2002, May 29, 2002, June 25-28, 2002, and July 3, 2002. The parties filed initial briefs and reply briefs after the close of hearings.

The Administrative Law Judge held public hearings on six dates: May 7 and 7 in Worthington, May 8 in Pipestone, May 9 in Redwood Falls, and May 13 and 14 in St. Paul.

On November 8, 2002, the Administrative Law Judge filed her Findings of Fact, Conclusions of Law, and Recommendation (the ALJ's Report). In brief, that report recommended

(a) granting an immediate certificate of need for one line;

(b) granting certificates of need for the other three lines subject to further environmental review and subject to conditions designed to ensure that they would be used for their stated purpose of transmitting wind energy;

(c) requiring Xcel to continue discussions with local elected officials and wind developers to identify and address barriers to small wind development, especially as they relate to the construction and financing of substations; and

(d) requiring Xcel to file periodic compliance reports.

IV. Proceedings Before the Commission

On or before November 25, 2002, the parties filed exceptions to the report of the Administrative Law Judge. The Commission heard oral argument from all parties on January 23, 2003 and held deliberations on January 30, 2003. Having reviewed the entire record herein, and having heard the arguments of all parties, the Commission makes the following Findings, Conclusions, and Order.

FINDINGS AND CONCLUSIONS

I. Introduction

This is a unique certificate of need application because the Company does not claim that the transmission lines it proposes are needed as need is usually defined in certificate of need proceedings – it does not claim that they are needed to meet increased demand for electricity. Instead, the Company claims that the lines are needed to meet a transmission deficit that is preventing the development of wind energy in Minnesota, thereby frustrating state policies requiring Minnesota utilities in general, and Xcel in particular, to rely more heavily on wind generation.

The Company proposes to remedy the transmission deficit by building four transmission lines across some 168 miles in southwestern Minnesota. These lines would carry electricity from the Buffalo Ridge region, the site of the state's richest wind resources, to areas of the state with the greatest demand for electricity.

Many of the generation facilities the lines would be built to serve have not yet been built, because it is pointless to build generation without assurance that adequate transmission will be available. Since it is also pointless to build transmission without assurance that adequate generation will be available, Buffalo Ridge's rich wind resources remain underdeveloped. The proposed lines are intended to end this stalemate, permitting further wind development on Buffalo Ridge and implementing the state's policy of reducing dependence on fossil fuels through increased use of renewable energy.

This application is also unique because it carries the risk that the proposed transmission lines will not be used for the purpose for which they are intended and for which any certificates of need would be granted. Transmission is an interstate activity regulated by the Federal Energy Regulatory Commission. Under federal law, Xcel cannot reserve the proposed lines for wind generation; in fact, it cannot even reserve them for its own use, except under carefully defined circumstances.

Access to the Company's transmission lines is determined by the terms of its federal open access transmission tariff, which must and does permit access on a non-discriminatory, first-come, first-served basis. The Company's transmission lines, and access to them, are controlled by the Midwest Independent System Operator (MISO), a neutral third party recognized as an appropriate administrator under federal law.

While the rules governing a utility's access to its own transmission lines are still in flux, at the time of evidentiary hearings and oral argument Xcel believed that it could reserve transmission capacity for new generation that it designated as a "network resource" and that it could reserve transmission capacity necessary to serve future load growth.[1]

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[1] ALJ's Report, ¶ 79.

This uncertainty about the proposed transmission lines' ultimate availability to carry wind generation led the Administrative Law Judge and most of the parties to recommend placing conditions on any certificates of need ultimately granted to maximize the likelihood that transmission lines built under these certificates would be used for their stated purpose.

II. The Legal Standard

The certificate of need statute directs the Commission to "adopt assessment of need criteria to be used in the determination of need for large energy facilities pursuant to this section."[2] The statute also directs the Commission to evaluate the following factors in assessing need:[3]

(a) the accuracy of the long-range energy demand forecasts on which the necessity for the facility is based;

(b) the effect of existing or possible energy conservation programs under Minn. Stat. § 216C.05 through 216C.30 or other federal or state legislation on long-term energy demand;

(c) the relationship of the proposed facility to overall state energy needs, as described in the most recent state energy policy and conservation report prepared under Minn. Stat. § 216C.18;

(d) promotional activities that may have given rise to the demand for this facility;

(e) benefits of this facility, including its uses to protect or enhance environmental quality, and to increase reliability of energy supply in Minnesota and the region;

(f) possible alternatives for satisfying the energy demand or transmission needs including but not limited to potential for increased efficiency and upgrading of existing energy generation and transmission facilities, load-management programs, and distributed generation;

(g) the policies, rules, and regulations of other state and federal agencies and local governments; and

(h) any feasible combination of energy conservation improvements, required under Minn. Stat. § 216B.241, that can (i) replace part or all of the energy to be provided by the proposed facility; and (ii) compete with it economically.

To comply with its statutory obligation to establish criteria for assessing need, the Commission has adopted the certificate of need rules, Minnesota Rules Chapter 7849. Those rules are detailed, but in brief, they require the Commission to issue a certificate of need when the applicant demonstrates four things:

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[2] Minn. Stat. § 216B.243, subd. 1.

[3] Minn. Stat. § 216B.243, subd. 3.

(a) the probable result of denial would be an adverse effect upon the future adequacy, reliability, or efficiency of energy supply to the applicant, to the applicant's customers, or to the people of Minnesota and neighboring states;

(b) a more reasonable and prudent alternative to the proposed facility has not been demonstrated by a preponderance of the evidence on the record;

(c) by a preponderance of the evidence on the record, the proposed facility, or a suitable modification of the facility, will provide benefits to society in a manner compatible with protecting the natural and socioeconomic environments, including human health; and

(d) the record does not demonstrate that the design, construction, or operation of the proposed facility, or a suitable modification of the facility, will fail to comply with relevant policies, rules, and regulations of other state and federal agencies and local governments.

Minn. Rules 7849.0120.

The rules also set forth factors to consider in evaluating whether the applicant has met the requirements of criteria A, B, and C.

III. The Company's Filing

The Company requested authority to build transmission facilities capable of moving 825 megawatts of electricity from the Buffalo Ridge area to its northern control area. Its initial filing presented detailed information about four alternatives, with the Company's initially preferred option, Option 1, comprising the following parts:

- a 24-mile, 161-kilovolt line from Lakefield to Fox Lake
- a 94-mile, 345-kilovolt line from Split Rock, South Dakota to Lakefield
- a 24-mile, 115-kilovolt line running through Chanarambie Township Fenton Township, and Nobles County
- a 14-mile, 115-kilovolt line running through Fenton Township and Nobles County

In the course of the hearings the Company developed another option, Option 1H, in response to other parties' testimony, which improved transmission access along the northern portion of the Buffalo Ridge area. Option 1H, which the Company subsequently adopted as its preferred option and which the Administrative Law Judge found to be the most reasonable and prudent alternative based on the record, comprises the following parts:

- a 24-mile, 161-kilovolt line from Lakefield to Fox Lake
- a 94-mile, 345-kilovolt line from Split Rock, South Dakota to Lakefield
- a 24-mile, 115-kilovolt line running through Chanarambie Township, Fenton Township, and Nobles County

- a 26-mile, 115-kilovolt line running from Buffalo Ridge to the Company's Yankee Substation to White, South Dakota

Option 3, which the Administrative Law Judge considered a close second to Option 1H, comprises the following parts:

- a 24-mile, 161-kilovolt line from Lakefield to Fox Lake
- a 52-mile, 161-kilovolt line connecting the Company's Chanarambie and Heron Lake substations
- a 26-mile, 115-kilovolt line running from Buffalo Ridge through the Company's Yankee Substation to White, South Dakota
- a 44-mile 115-kilovolt line connecting the Company's Lyon substation with its Franklin substation

IV. The Administrative Law Judge's Report and Recommendations

The Administrative Law Judge found that Xcel had demonstrated need under the certificate of need statute and rules for transmission facilities with the capacity to carry 825 megawatts of wind energy from the Buffalo Ridge area. She found that record evidence established that the most reasonable and prudent alternative was Option 1H.

The Administrative Law Judge found that Xcel had demonstrated current need for the 161-kilovolt line connecting Lakefield and Fox Lake and recommended granting an immediate certificate of need for that line, contingent upon the Company receiving MISO approval to use the line to carry wind generation that it already had under contract.

The Administrative Law Judge recommended that the Commission issue certificates of need for the other three lines subject to two conditions:

(1) that the Environmental Quality Board examine both Options 1H and 3 during the siting proceeding and determine that the three remaining lines in Option 1H will not have a significantly greater negative impact on the environment than the three remaining lines in Option 3; and

(2) that Xcel demonstrate before placing the other three lines in service that MISO has approved transmission requests for a total of 825 megawatts of wind generation that will connect with the system through the two substations associated with the new lines.

The Administrative Law Judge made two additional recommendations:

(1) requiring Xcel to work with elected officials and wind developers to establish criteria for siting new substations in response to wind development and to clarify which costs would be borne by the generator and which by Xcel; and

(2) requiring Xcel to file annual reports on (a) the number of wind transmission requests pending with MISO from generators on Buffalo Ridge; (b) the number of wind transmission requests granted by MISO to generators on Buffalo Ridge; and (c) Xcel's efforts to facilitate small wind development (10 MW) or less on Buffalo Ridge.

V. Positions of the Parties

A. Xcel

The Company opposed deferring a final decision on which option to certify until the siting proceeding, claiming that the record demonstrated that Option 1H was the superior option. The Company also claimed that referring both options to the Environmental Quality Board for environmental review would be inconsistent with both the certificate of need and the siting statutes and that it would make the siting proceeding unnecessarily costly, burdensome, and confusing.

The Company opposed conditioning operation of three of the four lines on MISO approval of 825 megawatts of Buffalo Ridge wind generation. The Company claimed that this condition would violate federal law, impede wind development, and jeopardize the Company's ability to proceed with construction in light of the uncertainty it would create regarding rate recovery of the cost of a potentially unusable investment.

The Company urged Commission adoption of Option 1H without conditions and the adoption of the remainder of the ALJ's recommendations. The Company claimed that it is so clear that wind development will accompany the building of the proposed transmission lines that conditions to ensure their use for wind transmission are unnecessary.

B. The Department of Commerce

The Department of Commerce (the Department) opposed stand-alone certification of the first line in Option 1H on grounds that the record did not support it. All record evidence, the Department argued, went to the issue of the need to, and the most reasonable and prudent means to, move 825 megawatts of wind energy from Buffalo Ridge. The need to, and the most reasonable and prudent means to, move smaller amounts of wind energy were not examined in the record, and in the absence of record evidence there is no way to make a competent judgement on those issues.

The Department opposed referring both Options 1H and 3 to the Environmental Quality Board for environmental review for much the same reasons as the Company.

The Department opposed the ALJ's recommendation to condition operation of the lines on MISO approval of 825 megawatts of wind transmission on grounds that that condition had not been explored on the record, making its impact unclear. The Department recommended conditioning approval of the lines' construction on Xcel itself contracting to buy a total of 825 megawatts of wind energy from the Buffalo Ridge area and taking the steps necessary to secure MISO approval for its transmission.

C. The Staff of the Environmental Quality Board

The staff of the Environmental Quality Board (the EQB staff) filed no exceptions to the ALJ's Report, identified three alternative courses of action open to the Commission, and took no position on which course of action the Commission should take.

The three courses of action identified by the EQB staff were (1) reject the Administrative Law Judge's recommendation to refer two options to the EQB for environmental development and limit certification to one or none; (2) remand the case to the Administrative Law Judge for further development of the environmental record; or (3) refer both options to the EQB for further environmental development.

D. Laura and John Reinhardt

Laura and John Reinhardt opposed granting any certificate of need in this proceeding, arguing that the application failed to demonstrate need as that term is used in the certificate of need statute and rules. They argued that the record was inadequately developed as to the environmental impacts and costs of the proposed lines. And they argued that the Commission violated the due process rights of potentially affected landowners by failing to require direct mailed notice apprising them that their land could be taken by eminent domain to build the proposed transmission lines.

E. Public Intervenors Network

The Public Intervenors Network supported certifying the four lines in Option 3 and opposed Option 1H, mainly because it considered the 345-kilovolt line in Option 1H unnecessary to carry wind energy and likely to be used instead for bulk power transfers of energy generated with fossil fuels. The Network emphasized that any certificates of need issued should be conditioned upon proof of power purchase agreements for 825 megawatts of wind generation from the Buffalo Ridge area.

F. Izaak Walton League, Minnesotans for an Energy-Efficient Economy, and American Wind Energy Association

These three parties opposed referring both Options 1H and 3 to the Environmental Quality Board for environmental review for much the same reasons as the Company.

These parties also opposed the ALJ's recommendation to condition operation of the lines on MISO approval of 825 megawatts of wind transmission on grounds that that condition could delay the development of wind generation on Buffalo Ridge or worse, could result in the lines never being built and the wind generation they are intended to promote never developing. The three parties recommended conditioning approval of the lines' construction on Xcel itself contracting to buy a total of 825 megawatts of wind energy from the Buffalo Ridge area and taking the steps necessary to secure MISO approval for its transmission.

During Commission deliberations these three parties, in conjunction with the Sierra Club Air Toxics Campaign, the North American Water Office, and the Rural Minnesota Energy Task Force, submitted a joint recommendation that, in brief, would

- certify Option 1H,
- require Xcel to buy a minimum of 60 megawatts of small, locally-owned wind generation on Buffalo Ridge for purposes of triggering installation of substations before the lines are completed,
- require Xcel to contract for 825 megawatts of wind energy from Buffalo Ridge by December 31, 2003, to seek Commission approval of those contracts within a time frame permitting approval by June 30, 2004, and to seek MISO approval of transmission access within ten days of executing letters of intent,
- require Xcel to seek MISO authorization for 825 megawatts of wind transmission from Buffalo Ridge within 15 days of receiving certificates of need,

- require Xcel to install the additional 400 megawatts of wind energy mandated by Commission Order[4] by 2006 instead of the 2012 deadline set in the Order in the Company's 1998 resource plan[5],
- require Xcel to build the Fenton and Yankee substations planned for Buffalo Ridge as soon as 30-40 megawatts of small, locally-owned wind generation per substation has been aggregated,
- require Xcel to work with elected officials, wind developers, and other stakeholders to ensure transmission access for small, locally owned wind projects; to clarify the criteria for siting substations; and to facilitate the development of locally-owned wind generation in southwestern Minnesota

G. Sierra Club Air Toxics Campaign

The Sierra Club originally supported Option 3 but did not take exception to the Administrative Law Judge's finding that Option 1H was the most reasonable and prudent option unless evidence developed in the siting proceeding before the Environmental Quality Board demonstrated that Option 1H carried significantly higher environmental costs than Option 3.

As noted above, the Sierra Club ultimately joined with the Izaak Walton League, Minnesotans for an Energy-Efficient Economy, the American Wind Energy Association, the North American Water Office, and the Rural Minnesota Energy Task Force in a joint recommendation designed to ensure that the proposed transmission lines would in fact carry wind generation from Buffalo Ridge and that small, locally-owned wind generation projects could interconnect with the transmission system.

H. Rural Minnesota Energy Task Force

The Rural Minnesota Energy Task Force is made up of County Commissioners from the southwestern Minnesota counties in which the proposed transmission lines and the new wind generation facilities they are intended to serve will be located – Cottonwood, Jackson, Lincoln, Lyon, Mower, Murray, Nobles, Pipestone, Redwood, Renville, and Rock. The Task Force intervened in this proceeding to try to establish cost-sharing mechanisms under which Xcel and small, local wind developers would share the costs of developing the transmission access infrastructure necessary for small, locally-owned wind generation to flourish. The Task Force took exception to the Administrative Law Judge's Report only in that they questioned whether her recommendation to direct Xcel to continue these discussions was specific enough to achieve those objectives.

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[4] *In the Matter of the Application of Northern States Power Company for Approval of its 1998 Resource Plan*, Docket No. E-002/RP-98-32, ORDER MODIFYING RESOURCE PLAN, REQUIRING ADDITIONAL WIND GENERATION, REQUIRING FURTHER FILINGS, AND SETTING STANDARDS FOR NEXT RESOURCE PLAN FILING (February 17, 1999).

[5] Id.

As noted above, later the Task Force joined with the Sierra Club Air Toxics Campaign, the Izaak Walton League, Minnesotans for an Energy-Efficient Economy, the American Wind Energy Association, and the North American Water Office in a joint recommendation designed to ensure that the proposed transmission lines would in fact carry wind generation from Buffalo Ridge and that small, locally-owned wind generation projects could interconnect with the transmission system.

I. North American Water Office

The North American Water Office concurred with the Administrative Law Judge that the Company had demonstrated need for the new transmission lines to carry out state energy policies requiring less dependence on fossil fuels and more dependence on renewable energy. Beyond that, the Water Office, like the Rural Minnesota Energy Task Force, focused mainly on crafting conditions that would ensure that small, locally-owned wind generation could have a significant role in meeting this mandate.

As noted above, ultimately the North American Water Office joined with the Rural Minnesota Energy Task Force, the Sierra Club Air Toxics Campaign, the Izaak Walton League, Minnesotans for an Energy-Efficient Economy, and the American Wind Energy Association in a joint recommendation designed to ensure that the proposed transmission lines would in fact carry wind generation from Buffalo Ridge and that small, locally-owned wind generation projects could interconnect with the transmission system.

VI. Summary of Commission Action

The Administrative Law Judge held 20 days of evidentiary hearings and six days of public hearings. She reviewed the testimony of 20 witnesses, 3,000 pages of transcript, and dozens of exhibits. She considered the parties' initial briefs, reply briefs, and comments on the draft environmental report.

Her report is thoughtful, comprehensive, and thorough. She made 245 findings of fact, 24 conclusions of law, and two recommendations, set forth above. Having examined the record itself and having carefully considered the report of the Administrative Law Judge, the Commission concurs in – and will accept, adopt, and incorporate herein – nearly all of her findings of fact and conclusions of law.

At a few points, however, the Commission reaches different conclusions as to the exact form the requested certificates of need should take, based on its institutional expertise and statutory responsibilities.

First, the Commission considers itself bound to examine the application as a whole and will not grant stand-alone certification to the 161-kilovolt line between Lakefield and Fox Lake, as recommended by the Administrative Law Judge. The Commission will instead certify the Lakefield-Fox Lake line as part of the proposed package of transmission facilities.

The Commission concurs with the ALJ that the Company has demonstrated a need for 825 megawatts of new transmission capacity to move wind generation from Buffalo Ridge to its northern control area. The Commission also concurs with the ALJ that the Company has

demonstrated on the record that Option 1H is the most reasonable and prudent alternative for meeting that need. The Commission does not, however, concur with the ALJ that Option 3's relatively close ranking to Option 1H on the merits justifies asking the Environmental Quality Board to develop the environmental record on both options at the upcoming siting proceeding. The Commission will instead certify Option 1H and refer that option for siting.

The Commission concurs with the ALJ that it is critical for the certificates of need granted in this case to carry conditions that ensure, to the greatest extent possible, that the lines will be used for their intended purpose of carrying wind generation from Buffalo Ridge. The Commission concludes, however, that the condition recommended by the ALJ – prohibiting operation of the lines until MISO has authorized 825 megawatts of wind transmission from Buffalo Ridge – is less likely to accomplish this goal than requiring Xcel to acquire a total of 825 megawatts of wind generation from Buffalo Ridge as a condition of building the lines.

The Commission concurs with the ALJ that state energy policy supports requiring that Xcel continue in dialog with local officials, wind developers, and other stakeholders to identify and address barriers to small wind development, especially as they relate to the construction and financing of substations. Based on its regulatory experience, however, the Commission concludes that a stronger and clearer directive is required than that recommended by the ALJ.

Finally, the Commission concurs with the ALJ on the need for periodic reports on Xcel's progress in meeting the conditions placed on its certificates of need. Instead of specifying an annual time frame, however, as recommended by the ALJ, the Commission believes that it can monitor performance more effectively by delegating timing details to its staff and the Department of Commerce. It may well be that annual reports will suffice at some points, while more frequent reports will be necessary at others.

With the exceptions noted above, the Commission accepts, adopts, and incorporates the Administrative Law Judge's Report in its entirety. Each exception will be addressed in turn.

VII. The Commission Will Not Grant Stand-Alone Certification for the Lakefield-Fox Lake Line.

The Administrative Law Judge found that Xcel had demonstrated current need for the 161-kilovolt line connecting Lakefield and Fox Lake and recommended granting an immediate certificate of need for that line, contingent upon the Company receiving MISO approval to use the line to carry the 425 megawatts of wind generation that it already had under contract.

The Commission concurs with the Department that, while Xcel has demonstrated a need for a package of transmission facilities to move 825 megawatts of wind generation from Buffalo Ridge, it has not demonstrated stand-alone need for individual components of that package. All record evidence went to the issue of the need to, and the most reasonable and prudent means to, increase transmission capacity by 825 megawatts.

Increasing transmission capacity by 425 megawatts is a very different proposition. The alternatives for moving the smaller amount of power are different, and the need for the Lakefield-Fox Lake line cannot be adequately evaluated without evidentiary development of those alternatives.

The Commission will therefore not grant stand-alone certification to the Lakefield-Fox Lake line.

VIII. Option 3's Relatively Close Ranking to Option 1H on the Merits Does Not Justify Referring Both Options to the Environmental Quality Board for Environmental Development.

A. The ALJ's Recommendation

The Administrative Law Judge found that Xcel had demonstrated on the record that Option 1H was the most reasonable and prudent alternative for accomplishing the objective of moving 825 megawatts of wind generation from the Buffalo Ridge area to Xcel's northern control area:

> . . . [T]he two best options are Option 1H and Option 3. Based on the record presented, Option 1H, the option preferred by Xcel, is the more reasonable option. . . . ALJ's Report, p. 53.
>
> Xcel has demonstrated that Option 1H meets the criteria for certificates of need and that no other option offers a better alternative. ALJ's Report, p. 54.
>
> Based on the evidence presented, Option 1H is the more reasonable and prudent alternative, but Option 3 closely approximates the same benefits. ALJ's Report, Conclusion of Law 16, p. 46.

Because Option 3 was a close second to option 1H, however, and because the record did not include the final routing data and detailed environmental studies of final routes required for a definitive comparison of the environmental costs of the two options, the ALJ recommended requiring the Company to ask the Environmental Quality Board to examine both options during the siting proceeding. If the environmental costs of Option 1H turned out to significantly greater than those for Option 3, the Commission was to instead grant certificates of need for Option 3.

B. Summary of Commission Action

The Commission respectfully declines to take this recommendation, believing it to be inconsistent with the statutes demarcating the decision-making responsibilities of the two agencies, with the legal standard for granting certificates of need, and with principles of administrative efficiency.

Further, the Commission agrees with the ALJ that the record supports a finding that Option 1H is the most reasonable and prudent alternative for meeting the need that has been established on the record. The Commission will therefore certify Option 1H without conditioning that certification on an environmental review of Option 3 in the siting proceeding.

C. Jurisdictional Boundaries Set by Statute

Both the Public Utilities Act and the Power Plant Siting Act emphasize that the Commission and the Environmental Quality Board have separate, distinct, and non-overlapping responsibilities in regard to applications for authority to construct high-voltage transmission lines.

The Public Utilities Act makes it clear that other agencies' input on need issues is to take place during the certificate of need proceeding before the Commission, not afterward in another proceeding:

> Other state agencies authorized to issue permits for siting, construction or operation of large energy facilities, and those state agencies authorized to participate in matters before the commission involving utility rates and adequacy of utility services, shall present their position regarding need and participate in the public hearing process prior to the issuance or denial of a certificate of need. Issuance or denial of certificates of need shall be the sole and exclusive prerogative of the commission and these determinations and certificates shall be binding upon other state departments and agencies, regional, county, and local governments and special purpose government districts except as provided in sections 116C.01 to 116C.08 and 116D.04, subdivision 9.
>
> Minn. Stat. § 216B.243, subd. 7, emphasis added.

Similarly, the Power Plant Siting Act emphasizes that the Environmental Quality Board is bound by the Commission's need determination and is prohibited from examining the size, type, and timing of certified projects as part of its environmental review. In fact, the law specifically prohibits the Board from examining "alternative system configurations," the exact issue that would be raised by asking the Board to compare the environmental costs of Options 1H and 3:

> The board is hereby given the authority to provide for site and route selection for large electric power facilities. The board shall issue permits for large electric power facilities in a timely fashion. When the public utilities commission has determined the need for the project under section 216B.243 or 216B.2425, questions of need, including size, type, and timing; alternative system configurations; and voltage are not within the board's siting and routing authority and must not be included in the scope of environmental review conducted under sections 116C.51 to 116C.69.
>
> Minn. Stat. § 116C,53, emphasis added.

The Commission concludes that referring both Option 1H and Option 3 to the EQB for environmental development during the siting proceeding would violate jurisdictional boundaries set by statute.

D. Administrative Efficiency

Not only would referring both options for environmental review violate statutory jurisdictional boundaries, but it would also result in an unnecessarily confusing, expensive, and lengthy proceeding before the EQB. As the Company points out, filing the information required for the preparation of the Environmental Impact Statements for the four lines in Option 1H alone will be costly, labor-intensive, and time-consuming. Filing exhaustive environmental information on Option 3 as well would increase the cost, complexity, and length of the proceeding immensely.

Further, performing a two-track environmental review would almost certainly require the Commission to reopen the certificate of need proceeding when the siting proceeding was completed. Examining environmental effects is not a science; the Environmental Quality Board would not be able to quantify with any precision the difference between the environmental costs of

Option 1H and Option 3. As the staff of the Environmental Quality Board noted in their initial brief, "It is difficult to select among feasible and prudent alternatives. It is usually not possible to rank alternatives in terms of environmental damage."[6]

The Commission would then have to decide whether the expanded environmental record merited a change in its original finding that the record does not demonstrate the existence of a more reasonable and prudent alternative to Option 1H. There would likely be parties on both sides of that issue, and deciding it would essentially require solving the certificate of need equation all over again, since environmental factors interact with every other factor in that analytical process, including cost and reliability considerations.

These duplicative proceedings would severely undermine the administrative efficiency the statutes were attempting to achieve in setting clear jurisdictional boundaries.

E. Legal Standard for Certification Met

The legal standard for granting certificates of need, discussed in section II, requires careful weighing of a lengthy, complex factual record against a long list of public interest factors set forth in the certificate of need statute and rules. The ALJ's report examines the record in light of these factors and concludes that Option 1H meets the certificate of need criteria, including the rules' requirement that the record demonstrate that there is not a more reasonable or prudent alternative.[7]

Because Option 3 "is very close in virtually every respect,"[8] to Option 1H, however, she concludes that " . . . it is appropriate to develop the environmental record more fully before determining that there is no prudent or feasible alternative to Option 1H."[9] This "no prudent or feasible alternative" requirement is set forth in the Minnesota Environmental Policy Act at Minn. Stat. § 116D.04, subd. 6:

> No state action significantly affecting the quality of the environment shall be allowed, nor shall any permit for natural resources management and development be granted, where such action or permit has caused or is likely to cause pollution, impairment, or destruction of the air, water, land or other natural resources located within the state, so long as there is a feasible and prudent alternative consistent with the reasonable requirements of the public health, safety, and welfare and the state's paramount concern for the protection of its air, water, land and other natural resources from pollution, impairment, or destruction. Economic considerations alone shall not justify such conduct.

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[6] Brief of the Environmental Quality Board Staff, p. 9.

[7] ALJ's Report, Conclusion of Law 16, p. 46; p. 53, ¶ 6; p. 54, ¶ 4.

[8] ALJ's Report, p. 53, ¶ 6.

[9] ALJ's Report, p. 57, ¶ 2.

The Commission finds that the "feasible and prudent alternative" standard has been met. Both the ALJ and the Commission have carefully weighed the five alternative transmission options extensively developed in the record. Both the ALJ and the Commission have reached a considered judgment that Option 1H is the most reasonable and prudent alternative under the factors set forth in the certificate of need statute and rules.

Further, the fact that Option 1H has a close second is not surprising – there are always different transmission system configurations that achieve the same results – and it does not necessitate or justify singling out one factor for further development. There is no need to second-guess the Legislature's decision to defer exhaustive environmental review to the siting stage of transmission proceedings.

Option 1H is superior to Option 3 in nearly every category examined – cost, reliability, robustness, flexibility, speed of construction, ease of future upgrades.[10] Option 3 is superior in no category. The two options are indistinguishable in the gravity of their environmental effects. Option 1H is amply supported in the record as the most reasonable and prudent alternative to meet the need established in the record. The Commission will therefore grant the certificates of need required under that option, conditioned as set forth below.

IX. Conditioning the Certificates of Need on MISO Approval of 825 Megawatts of Buffalo Ridge Wind Generation Carries Unacceptable Risks; the Commission Will Instead Require Xcel to Obtain the Generation.

A. Introduction

As discussed earlier, this certificate of need application is unique in at least two respects. First, the need it seeks to meet is not a need for more electricity, but a need to remedy an infrastructure deficit blocking the implementation of state policies on renewable energy. Second, granting the application cannot in and of itself ensure that the need will be met, since Xcel cannot reserve the proposed lines for wind generation and since most of the wind generation for which the lines would be built is not yet present.

Most of the parties therefore recommended conditioning any certificates of need on requiring the Company to buy enough Buffalo Ridge wind energy to bring its total Buffalo Ridge wind portfolio to the lines' capacity and to time those purchases to coincide with the in-service date of the new lines. The Company contended that this was unnecessary because of the certainty that wind energy projects would materialize in response to the new lines.

The Company also contended that requiring it to make those purchases on a predetermined and tight time line would skew negotiations with wind vendors, result in higher purchase prices, and be inconsistent with the Commission's Order in its 1998 resource plan. That Order required additional wind purchases but required that they be made as part of an all-source bidding process.[11]

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[10] ALJ's Report, Findings of Fact 143, 146, 194, 211; ALJ's Memorandum, p. 54, ¶ 3.

[11] *In the Matter of the Application of Northern States Power Company for Approval of its 1998 Resource Plan*, Docket No. E-002/RP-98-32, ORDER MODIFYING RESOURCE PLAN, REQUIRING ADDITIONAL WIND GENERATION, REQUIRING FURTHER FILINGS, AND SETTING STANDARDS FOR NEXT RESOURCE PLAN FILING (February 17, 1999).

B. Summary of Commission Action

The Commission concurs with the ALJ that it is critical for the certificates of need granted in this case to carry conditions to ensure that the certified lines will be used for their intended purpose.

The Commission concludes, however, that the condition recommended by the ALJ – prohibiting operation of the lines until MISO has authorized 825 megawatts of wind transmission from Buffalo Ridge – both carries unacceptable risks and is less likely to accomplish this goal than requiring Xcel to acquire 825 megawatts of wind generation from Buffalo Ridge as a condition of building the lines. The Commission will therefore require Xcel to purchase the wind generation.

These actions are explained below.

C. Conditions are Critical to Protect the Public Interest.

The Commission concurs with the Administrative Law Judge that it is critical to place conditions on these certificates of need to maximize the likelihood that the certified lines will be used for their intended purpose.

Under federal law, these lines will be available to all eligible generators on a first-come, first-served basis. Xcel will have first claim on the lines' capacity, but only to the extent that it can document that it has "network resources" waiting to use the capacity or that it needs the capacity to meet future load growth. If neither of these conditions is present – and under Xcel's plan they would not be – and if wind generation did not develop on Buffalo Ridge within the expected and critical time frame, these lines would likely be used to transmit electricity that was both unneeded by Xcel's customers and derived from fossil fuel.

Further, the proposed transmission lines represent an estimated $163 million investment that would normally be borne by ratepayers. Building the proposed lines will probably require the taking of private land for public benefit under the power of eminent domain. Building and operating the proposed lines will inevitably cause some damage to the natural environment. These costs are significant, and they obligate the Commission to take steps to ensure that the purpose for which they are incurred is ultimately served by them.

As the ALJ found, "Xcel has demonstrated that granting the certificates of need has a high probability of promoting increased renewable energy generation."[12] Given the high costs associated with these lines, however, and given that there is no demonstrated need for these lines other than wind transmission, the Commission agrees with the ALJ that the certificates of need should carry conditions designed to maximize the likelihood that the lines will be used for their intended purpose.

D. The Conditions Recommended by the ALJ Carry Unacceptable Risks.

The ALJ recommended that the certificates of need granted in this case prohibit Xcel from operating the newly certified lines until MISO (the Midwest Independent System Operator, the neutral third party operating Xcel's transmission lines and its transmission tariff under federal law) has authorized the transmission of 825 megawatts of wind energy from the Buffalo Ridge area.

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[12] ALJ's Report, Conclusion of Law 12.

The Commission will instead require Xcel to acquire a total of 825 megawatts of Buffalo Ridge wind power by the time the lines become operational and to take prompt action to secure MISO transmission authority as each increment of that wind energy becomes available. While it is possible that these conditions and those recommended by the ALJ would have the same effect, the Commission believes that its own conditions pose fewer risks for ratepayers.

First, the Commission shares the Department's concern that the ALJ's "no operation" scenario has not been explored on the record, making its impact unclear. It is not clear, for example, how much authority the Commission would have over the decision to energize the lines. It is possible that once the lines were in place, their energizing, like most other facets of their operation, would be subject to federal jurisdiction. The lines could then be energized to carry fossil-fuel-derived electricity before adequate wind energy had developed on Buffalo Ridge.

Neither is it clear how the "no operation" condition would interact with wind development efforts. If these efforts in fact depend upon transmission being actually available, the condition could seriously delay that development. Meanwhile, ratepayers, Xcel, or some combination of the two would be paying for costly and idle transmission infrastructure improvements, or for costly transmission infrastructure improvements being used to transmit unnecessary fossil-fuel-derived generation.

Similarly, it is not clear whether Xcel would build the lines subject to a "no operation" condition, given the cost recovery uncertainties associated with the risk that the lines would be idle or used for non-renewable generation. And finally, if the lines were placed into service to comply with federal law before wind development had occurred, Minnesota would still face the need to upgrade its transmission infrastructure to accommodate the renewable generation required under state law and policy.

For all these reasons, the Commission concludes that it must condition the certificates of need on Xcel purchasing the wind generation the lines are intended to accommodate.

E. Xcel Must Acquire the Wind Generation.

The most straightforward way to ensure that the proposed lines will be used to carry wind generation and the way most likely to succeed is to require Xcel to purchase the 825 megawatts of wind the lines are intended to carry and to secure transmission authority from MISO before the lines are ready to go into service. Since these requirements are consistent with both the purpose of Xcel's certificate of need application and with its existing legal obligations to add significant amounts of renewable generation to its supply portfolio, it is the best solution to the stalemate resulting from the interdependence of wind development and transmission availability.

The Company is obligated by statute to have 425 megawatts of wind energy under contract by December 31, 2002.[13] It is obligated by statute and Commission Order to add another 400

[13] Minn. Stat. § 216B.2423, subd. 1.

megawatts by 2012.[14] It is obligated by statute to make a good faith effort to convert 10% of its supply portfolio to renewables by 2015, an obligation Xcel states could result in its purchase of over 1,000 additional renewable megawatts over the next 13 years.[15] And it is obligated by statute to give a preference to renewable energy in all future resource acquisitions.[16]

Given Xcel's plethora of renewable energy obligations, its request to build transmission lines for the explicit purpose of carrying renewable energy, and the significant risk that these lines might not be used for that purpose, it makes little sense not to require Xcel to acquire the 825 megawatts of wind generation that it expects those lines to carry.

F. Xcel's 1998 Resource Plan Is Not a Barrier.

Xcel opposed the purchase requirement in part because the Commission Order issued in its 1998 resource plan proceeding, which required the Company to buy the additional 400 megawatts of wind energy left to Commission discretion by statute, required that that additional 400 megawatts be secured through all-source bidding.[17] The Commission was concerned that at that stage in the development of the wind industry, a wind-only bidding process could result in inflated prices and could also inadvertently impede the development of a competitive wind generation sector.

The purchase requirement imposed as a condition in this case does not literally conflict with that Order, however, since the megawatts at issue here are not necessarily the 400 megawatts dealt with in that Order. Energy policy has continued to evolve, and the Company's renewable obligation now far exceeds the 400 megawatts in that Order.

More fundamentally, however, it is important to remember that resource planning is an iterative process. The 1998 resource plan is about to be replaced by the 2002 resource plan, which is now out for comment from stakeholders. If the Company wishes to re-evaluate the all-source bidding requirement in the earlier Order, the current proceeding would be an appropriate vehicle. It would also be an appropriate vehicle for seeking clarification that intervening circumstances make it appropriate to secure some or all of the 400 wind megawatts required in that Order as part of 825 wind megawatts upon which these certificates of need are conditioned.

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[14] *In the Matter of the Application of Northern States Power Company for Approval of its 1998 Resource Plan*, Docket No. E-002/RP-98-32, ORDER MODIFYING RESOURCE PLAN, REQUIRING ADDITIONAL WIND GENERATION, REQUIRING FURTHER FILINGS, AND SETTING STANDARDS FOR NEXT RESOURCE PLAN FILING (February 17, 1999); Minn. Stat. § 216B.2423, subd. 2.

[15] Xcel's Post-Hearing Brief, p. 19, citing to transcript, S. Jones, Vol. 133, lines 18-20; Minn. Stat. § 216B.1691.

[16] Minn. Stat. § 216B.2422, subd. 4.

[17] *In the Matter of the Application of Northern States Power Company for Approval of its 1998 Resource Plan*, Docket No. E-002/RP-98-32, ORDER MODIFYING RESOURCE PLAN, REQUIRING ADDITIONAL WIND GENERATION, REQUIRING FURTHER FILINGS, AND SETTING STANDARDS FOR NEXT RESOURCE PLAN FILING (February 17, 1999), at 5.

The wind industry has matured substantially since the 1998 resource plan Order, and the concerns expressed there about the risk of stifling a young industry's competitiveness through subsidized success may no longer be as acute. The Administrative Law Judge's Report is certainly full of references to advances in wind technology in the past several years. The Commission still respects the Company's concern, however, that requiring major capacity purchases under publicly announced deadlines can affect negotiating positions and distort prices.

There is no alternative to the deadlines established here if the Commission is to maximize the possibility that these new transmission lines will serve their intended purpose. To reduce any negotiating disadvantage these deadlines may create for the Company, however, the Commission will require only 675 megawatts, the approximate break-even point at which Option 1H becomes the most economical,[18] by the end of this calendar year. The remainder of the 825 megawatts must be secured and authorized for transmission by the lines' in-service date.

The Commission will also require Xcel to promptly seek regulatory approval of negotiated wind contracts and to secure transmission authority from MISO for these 825 megawatts of wind generation under time frames set forth below. To ensure adequate regulatory oversight, the Commission will require prompt reports on any regulatory developments that may affect the conditions placed on these certificates of need.

The Commission will accept the Company's proposed in-service dates for the proposed lines, knowing that construction schedules could be affected by other regulatory proceedings, weather, and other factors, and that the Company will complete construction as soon as practicable.

X. The Commission Will Impose Conditions Designed to Ensure Transmission Access by Small, Locally-Owned Wind Generation.

A. Introduction

The Rural Minnesota Energy Task Force, made up of County Commissioners from the eleven counties that would host the proposed transmission lines, intervened in this case with two goals: (1) to clarify Xcel's policies on when it would build substations and other infrastructure to support small, local wind development; and (2) to establish mechanisms whereby local developers and Xcel would share the expense of building infrastructure, which is essential for small, locally-owed wind generation to flourish.

The Task Force emphasized that locally-owned wind generation provides significantly higher benefits to local economies than non-locally-owned wind generation and argued that it was both equitable and sound public policy for communities bearing the burdens of transmission lines to reap some of their benefits as well. They also argued that conditioning these certificates of need on ensuring opportunities for local, small wind development would reduce local opposition to constructing these lines.

Xcel, the Task Force, and other stakeholders held discussions on these issues throughout the proceeding, but no concrete agreements were reached. Neither were Xcel's policies on substation construction clarified.

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[18] Xcel Energy Exhibits 55, 56.

As noted above, during Commission deliberations the Task Force, the North American Water Office, the Izaak Walton League of America, Minnesotans for an Energy-Efficient Economy, the American Wind Energy Association, and the Sierra Club of Minnesota Air Toxics Campaign jointly submitted a list of concrete conditions they recommended attaching to the certificates of need to ensure access to the new transmission lines by small, local wind generators.

B. The Benefits of Small, Locally-Owned Wind Development; the ALJ's Decision

The record clearly establishes the significant benefits that accrue to local economies from small, locally-owned wind development and clearly establishes that these benefits significantly exceed the benefits of larger, non-locally-owned projects –

> There is strong evidence that local ownership of new wind generation will provide substantially greater benefit to southwestern Minnesota than outside ownership. . . . ALJ's Report, Finding of Fact 220.
>
> The proposed transmission lines will do little to induce future development in Southwestern Minnesota unless wind generation or other small renewable energy projects are able to access the lines. . . . ALJ's Report, Finding of Fact 223.
>
> There is no doubt that the economic benefit for southwestern Minnesota will be greater if locally-owned, dispersed wind development takes place. . . . The 1996 study, *Economic Impact Analysis of Windpower Development in Southwest Minnesota,* concluded that the economic development from wind may be ten times greater if the new generation is locally owned and financed. . . . ALJ's Report, p. 60, footnote omitted.

The record also establishes that Xcel's failure to set and disclose clear policies and procedures for siting substations and other facilities that give small wind generators access to transmission has hampered and continues to hamper the development of small, locally-owned wind generation in southwestern Minnesota –

> At this time, Xcel does not have a written policy that clarifies when and under what conditions it will construct substations or 35 kV lines to "collect" the electricity that is generated by wind turbines dispersed throughout Buffalo Ridge. . . . ALJ's Report, Finding of Fact 107.
>
> Financing for a collector system is necessary to spur local ownership. . . . ALJ's Report, Finding of Fact 193.
>
> The lack of criteria and information hampers the efforts of local wind developers to construct a proposal and obtain financing. If, for example, Xcel agreed that it would build substation facilities whenever 20 or more megawatts of small, locally-owned wind generation were constructed, it would provide a level of certainty that is currently lacking. . . . ALJ's Report, p. 62.

Despite these findings, the Administrative Law Judge declined to recommend specific conditions to permit transmission access by small, locally-owned wind generators, finding that state policy contained no preference for local ownership, that the parties supporting access by small, locally-

owned generators had not made a clear statement of what they wanted the Commission to order, and that the Notice and Order for Hearing in this case did not specifically identify generation ownership issues as among those to be addressed.[19]

She therefore recommended only conditioning the certificates of need on requiring Xcel to continue its dialog on these issues with the stakeholders.

C. Summary of Commission Action

The Commission will condition these certificates of need on (a) Xcel purchasing at tariff rates all available megawatts of small, locally-owned wind generation in the Buffalo Ridge area, up to a total of 60 megawatts; (b) Xcel building substations in the Buffalo Ridge area when the aggregated output of small, locally-owned generators reaches 30-40 megawatts; and (c) Xcel cooperating with elected representatives, wind developers, other owners of transmission infrastructure, and other interested stakeholders to identify and remove barriers to small wind development, especially as they relate to the construction and financing of substations.

These conditions are necessary to give proper weight to the socioeconomic effects of the proposed transmission lines, as required by rule, and to further state policies promoting the development of small wind generation projects. The Commission concludes that the notice concerns expressed by the Administrative Law Judge are neither fatal nor so grave as to outweigh the need to effectuate these state policies, especially since the notice did specify the Commission's intention to examine the economic and employment effect of the proposed lines.

D. The Certificate of Need Rules

The certificate of need rules make the socioeconomic effects of proposed projects, including their effects on economic development, important factors in the need equation. The rules set four criteria for judging applications for certificates of need; the third criterion is whether the Commission has determined that

> (1) by a preponderance of the evidence on the record, the proposed facility, or a suitable modification of the facility, will provide benefits to society in a manner compatible with protecting the natural and socioeconomic environments, including human health, considering:
>
> (2) the effects of the proposed facility, or a suitable modification thereof, upon the natural and socioeconomic environments compared to the effects of not building the facility;
>
> (3) the effects of the proposed facility, or a suitable modification thereof, in inducing future development . . .
>
> Minn. Rules 7840.0120 C.

The rules' second criterion, too, requires consideration of the facility's effects on the "natural and socioeconomic environments." Minn. Rules 7849.0120, B (3).

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[19] ALJ's Report, pages 60-62.

Taking socioeconomic effects into account in this case compels the conclusion that these certificates of need should carry conditions designed to ensure that small, locally-owned wind projects have access to these transmission lines.

It is clear that the socioeconomic and economic development effects of the proposed transmission lines will vary dramatically depending upon whether those lines are accessible to locally-owned small wind generators. If they are accessible, they will benefit the local economy substantially; if they are not accessible, their effect on the local economy will be much less significant. Furthermore, it is clear that the proposed lines will impose significant environmental, social, and aesthetic burdens on the host communities.

While it is impossible to offset the burdens the lines will impose with precision, the economic benefits that would flow from more locally-owned small wind generation would significantly move the burden/benefit ratio toward the benefit side of the ledger, making the socioeconomic and economic development impact of the lines much more positive. These facts justify and require conditioning the certificates of need on ensuring access to the proposed facilities by locally-owned small wind developers.

E. Other State Policies

Furthermore, not only do these conditions meet the requirements in the certificate of need rules to weigh the socioeconomic and economic development consequences of proposed projects, but they further other important state policies promoting the development of small and locally-owned wind projects. For example,

(a) 216C.41, subd. 1 (c), which makes local ownership a condition of certain wind production incentives;

(b) 216B.1611, subd. 2, requiring utilities to develop procedures to encourage the interconnection of small distributed generation projects using renewable or other clean fuels;

(c) 216B.2423, subd. 3, requiring streamlined procedures for negotiating contracts with wind generators under two megawatts; and

(d) Xcel's stipulation with the Department of Commerce in its merger docket, in which it agreed to help facilitate the development of small, distributed wind generation by developing a tariff for purchases from wind generators below two megawatts.[20]

In short, requiring Xcel to take steps to ensure that residents of the communities affected by these transmission lines share in some of their economic benefit is reasonable, equitable, consistent with the certificate of need rules, and consistent with overarching state policies favoring the development of small wind projects. For all these reasons, the Commission will condition these certificates of need on measures to facilitate transmission access by small, locally-owned small wind projects.

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[20] *In the Matter of the Application of Northern States Power Company for Approval to Merge with New Century Energies, Inc.*, Docket No. E,G-002/PA-99-1031; *In the Matter of Northern States Power Company's Petition for Approval of a Small Wind Energy Tariff*, Docket No. E-002/M-00-1747.

XI. The Commission Will Delegate the Timing of Compliance Reports to its Staff and the Department of Commerce.

Finally, it is clear that the Commission's regulatory responsibilities require that it receive periodic updates on Xcel's progress in complying with the conditions set forth in this Order. The ALJ recommended annual reporting.

While annual reports may certainly suffice at some points, more frequent reports may be necessary at others. To preserve flexibility and ensure adequate monitoring, the Commission will delegate the timing details to its staff and the Department of Commerce, who will be monitoring Xcel's performance and will therefore be in the best position to judge how often reporting would be helpful.

XII. Conclusion

For all these reasons, the Commission grants the Company's certificate of need of application, certifying Option 1H with the conditions set forth in this Order, which are designed to ensure that the certified transmission lines serve their stated, intended, and needed purpose.

The Commission accepts the recommendations of the Administrative Law Judge as modified in this Order. The Commission accepts, adopts, and incorporates herein the Administrative Law Judge's Findings of Fact, Conclusions of Law, and Recommendation, as modified above, with the exception of Finding of Fact 56 and Conclusion of Law 16.

ORDER

1. The Commission accepts, adopts, and incorporates herein the Findings of Fact, Conclusions of Law, and Recommendation of the Administrative Law Judge, except as set forth above.

2. The Commission hereby grants Northern States Power Company d/b/a Xcel Energy (Xcel or the Company) four certificates of need as set forth in the record as option 1H, which includes the following lines:

   - a new 161-kV line in Jackson and Martin counties connecting the Lakefield Junction Substation and the Fox Lake Substation;
   - a new 345-kV line connecting the Lakefield Junction Substation and the Split Rock Substation in South Dakota, the Minnesota portion of which would be in Jackson, Nobles, and Rock counties;
   - a new 115-kV line in Nobles and Murray counties connecting a new Nobles County Substation, located on the new 345-kV line, with a new Fenton Substation and the existing Chanarambie Substation on Buffalo Ridge; and
   - a new 115-kV line from the Buffalo Ridge Substation to the White Substation in South Dakota, the Minnesota portion of which would be in Lincoln County.

3. The Commission hereby adopts the in-service dates proposed by Xcel for the project, with the understanding that construction should be completed as soon as practicable after those dates if the regulatory processes or construction takes longer than originally expected.

4. The Commission hereby imposes the following conditions on the certificates of need granted herein, not as pre-construction requirements, but as requirements to be met during the period required for completion of the regulatory processes and construction:

   a. Xcel must sign power purchase agreements with wind developers no later than the end of 2003 for a minimum of 675 MW of wind-generated electricity on the Buffalo Ridge and must seek Commission approval of those contracts within a time frame permitting approval by June 30, 2004;

   b. Xcel must install a total of 825 MW of wind generation at Buffalo Ridge by the time the four transmission lines become operational;

   c. Xcel must, within 15 days of obtaining the certificates of need, make transmission service requests for network (firm) service to the Midwest Independent System Operator for at least 825 MW of wind-generated power and must cooperate in all aspects of the generators' requests for transmission service;

   d. Xcel must designate the new wind generation resources as network resources pursuant to MISO's Open-Access Transmission Tariff within ten days of executing letters of intent for wind generation or as soon as allowed by MISO;

   e. Xcel must report to the Commission on any regulatory developments at the regional or federal level that could affect the conditions placed on the certificates of need.

5. Xcel must purchase at tariff rates all available small, locally-owned wind generation on Buffalo Ridge up to a total of 60 megawatts for purposes of triggering the timing of substation facilities prior to completion of the certified lines.

6. Xcel must build the Fenton and Yankee Substations on Buffalo Ridge as soon as 30–40 megawatts or more of viable, small, locally-owned wind generators are aggregated per substation, using the Rural Minnesota Energy Task Force's definition of "small locally owned projects."

7. Xcel shall work with elected representatives, wind developers in southwestern Minnesota, other owners of transmission infrastructure in southwestern Minnesota, and other interested stakeholders, to ensure that access to transmission for small, locally owned wind projects is provided; to clarify the criteria for siting new substations in response to wind development; and to facilitate the development of locally-owned wind in southwestern Minnesota.

8. Xcel shall report periodically on its efforts to implement the requirements set forth above, in a manner and at intervals determined by the Department of Commerce and Commission Staff.

9. This Order shall become effective immediately.

BY ORDER OF THE COMMISSION

Burl W. Haar
Executive Secretary

(S E A L)

This document can be made available in alternative formats (i.e., large print or audio tape) by calling (651) 297-4596 (voice), (651) 297-1200 (TTY), or 1-800-627-3529 (TTY relay service).

Exhibit B

EXHIBIT B
MINNESOTA ROUTE PERMIT

ROUTE PERMIT

FOR CONSTRUCTION OF A

HIGH VOLTAGE TRANSMISSION LINE

IN

LINCOLN COUNTY, MINNESOTA

ISSUED TO

NORTHERN STATES POWER CO. d/b/a XCEL ENERGY

EQB DOCKET No. 04-84-TR-XCEL

In accordance with the requirements of Minnesota Statutes Section 116C.575 and Minnesota Rules Chapter 4400, this Route Permit is hereby issued to:

NORTHERN STATES POWER CO. d/b/a XCEL ENERGY

Northern States Power Co., d/b/a Xcel Energy (hereinafter referred to as Xcel Energy), is authorized by this route permit to construct a new 115 kilovolt high voltage transmission line and associated facilities approximately 28 miles long between the Buffalo Ridge Substation, located south and east of Lake Benton in Lincoln County, Minnesota, to the new Brookings Substation in Brookings County, South Dakota, near the Western Area Power Administration's White Substation. The Minnesota portion of the project, approximately 18.6 miles long, shall be built along the route identified in this Permit and in compliance with the conditions specified in this Permit. Xcel Energy is also authorized to construct the Yankee Substation.

Approved and adopted this 17th day of March, 2005.

STATE OF MINNESOTA
ENVIRONMENTAL QUALITY BOARD

Robert A. Schroeder, Chair

I. ROUTE PERMIT

The Minnesota Environmental Quality Board hereby issues this Route Permit to Xcel Energy pursuant to Minnesota Statutes section 116C.575 and Minnesota Rules Chapter 4400. This permit authorizes Xcel Energy to construct a 115 kilovolt high voltage transmission line and associated facilities and the Yankee Substation in Lincoln County, Minnesota.

II. PROJECT DESCRIPTION

The new alternating current high voltage transmission line authorized to be constructed under this Permit is a 115,000-volt (115 kilovolt or kV) line that will connect the Buffalo Ridge Substation in Lincoln County Minnesota, and the new 345/115 kV Brookings County Substation in Brookings County, South Dakota, which will be connected to the Western Area Power Administration's White Substation. The line will require new right-of-way that will vary in width from 45 to 75 feet for most of its length, although nearly all of the line will be located immediately adjacent to existing road rights-of-way. The Minnesota portion of the route is approximately 18.6 miles in length.

Xcel Energy is proposing to use single pole, galvanized steel, single and double circuit 115 kV davit arm structures. Certain portions of the route will be designed to accommodate existing single circuit and double circuit 34.5 kV wind feeder and other distribution lines as an underbuild on the 115 kV structures to consolidate lines. Near the Yankee Substation (extending eastward for one mile and north for a distance of up to two miles), the new structures will be designed to accommodate multiple circuit configurations to avoid transmission line congestion from any new or existing wind feeder lines and 115 kV or higher voltage transmission lines that will also tie into the Yankee Substation in the future.

Bundled (two) 795-kcmil 26/7 (Drake) aluminum core steel supported (ACSS) conductors will be used for each phase of the Buffalo to Brookings 115 kV transmission line. For lightning protection a 3/8-inch shield wire will be used.

This EQB Route Permit also authorizes Xcel Energy to:

1. Reroute approximately 0.2 miles of the existing Lake Yankton-Pipestone 115-kV Transmission Line to join with the Buffalo Ridge-Brookings County 115-kV Transmission Line and then double circuit the two transmission lines for 1.7 miles to intersect with the existing Lake Yankton Transmission Line and remove approximately 1.4 miles of the Lake Yankton-Pipestone 115-kV Transmission Line from the Hole-in-the-Mountain Wildlife Management Area and the Nature Conservancy's Hole-in-the-Mountain Prairie.

2. Improve Xcel Energy's Buffalo Ridge Substation to accommodate the new 115-kV transmission line.

3. Construct a new Yankee Substation located approximately midway along the 115 kV transmission line.

4. Relocate up to four 115 kV transmission line structures of the Lake Yankton - Pipestone 115 kV transmission line at the Buffalo Ridge Substation.

5. Relocate up to four 115 kV transmission line structures of the Lake Yankton - Pipestone 115 kV line where the re-routed double circuit 115 kV line intersects the Lake Yankton - Pipestone transmission line.

III. DESIGNATED ROUTE AND SUBSTATION SITES

The route designated by the EQB in this Permit is comprised of route segments A, B, C, D, E and F as described below and shown on the map attached to this Permit (Attachment 1). The route width is 300 feet or 150 feet on each side of the centerline of the road that each route segment follows, except as noted in the route description below. Xcel Energy may acquire a 45 foot wide right-of-way, except where a 75 foot wide right-of-way is required as described below in Route Segments A and E. The Minnesota portion of the route is generally described as follows, beginning at the Buffalo Ridge Substation in Lincoln County and ending at the Minnesota/South Dakota border.

Route Segment A. Begins at the Buffalo Ridge Substation and follows Lincoln County Road (CR) 108 south for approximately one mile to CR 9. The route turns west to parallel CR 9 for approximately two miles until it intersects with US Highway 75. The route width for the last half mile of Route Segment A is 400 feet or 200 feet from the centerline of CR 9, where Xcel Energy may require a 75 foot wide right-of-way.

Route Segment B. Reroutes the existing Lake Yankton - Pipestone 115 kV transmission line to the south along the east side of US 75.

Route Segment C. Proceeds south along the east side of US Highway 75 until it intersects CR 9 (110th Street), where it turns west to parallel 110th Street until it intersects the existing Lake Yankton – Pipestone 115 kV transmission line.

Route Segment D. Proceeds west along CR 9 (110th Street), until it intersects 160th Avenue. At the intersection of 110th Street and 160th Avenue, Route Segment D proceeds north along 160th Avenue for one mile up to 120th Street.

Route Segment E. Begins at the intersection of 120th Street and 160th Avenue and proceeds north along 160th Avenue for two miles until it intersects 140th Street. At the intersection of 160th Avenue and 140th Street, the line turns west and proceeds along CR 119 (140th Street) for three miles unit it intersects 130th Avenue. The last half mile of this three mile portion of Route Segment E will require a 75 foot wide right-of-way. At the intersection of 140th Street and 130th Avenue, Route Segment E proceeds north for two miles along 130th Avenue. At the intersection of 130th Avenue and 160th Street, Route Segment E turns west to follow 160th Street west for one mile until it intersects Lincoln

County State Aid Highway (CSAH) 1. At the intersection of 160th Street and Highway 1, Route Segment E will end at the Yankee Substation.

Route Segment F. Exits the Yankee Substation and proceeds north along CSAH 1 for two miles, then proceeds west along CSAH 13 for approximately 1.4 miles to the South Dakota Border.

Substation Sites. The MEQB authorizes Xcel Energy to construct the Yankee Substation on site number 5, located in the north east one quarter of section 5 of Verdi Township.

If Xcel Energy obtains the approval of the landowner(s) for site 3 in the southeast one quarter of section 31 in Drammen Township or site 4 in the northeast one quarter of section 6 in Verdi Township, site 3 or site 4 may be used for the Yankee Substation.

IV. PERMIT CONDITIONS

The Permittee shall comply with the following conditions during construction of the transmission line and associated facilities and the life of this Permit.

A. Plan and Profile. At least 14 days before right-of-way preparation for construction begins, the Permittee shall provide the EQB with a plan and profile of the right-of-way and the specifications and drawings for right-of-way preparation, construction, cleanup, and restoration for the transmission line. The Permittee may not commence construction until the 14 days has expired or until the EQB has advised the Permittee in writing that it has completed its review of the documents and determined that the planned construction is consistent with this permit. If the Permittee intends to make any significant changes in its plan and profile or the specifications and drawings after submission to the EQB, the Permittee shall notify the EQB at least five days before implementing the changes. No changes shall be made that would be in violation of any of the terms of this permit.

B. Construction Practices.

1. Application. The Permittee shall follow those specific construction practices and material specifications described in the Xcel Energy Application to the Minnesota Environmental Quality Board for a Route Permit dated August 10, 2004, and as described in section 8.0 of the Environmental Assessment unless this Permit establishes a different requirement in which case this Permit shall prevail.

2. Field Representative. At least ten days prior to commencing construction, the Permittee shall advise the EQB in writing of the person or persons designated to be the field representative for the Permittee with the responsibility to oversee compliance with the conditions of this Permit during construction. This person's address, phone number, and emergency phone number shall be provided to the EQB, which may make the information available to local residents and public officials and other interested persons.

The Permittee may change its field representative at any time upon written notice to the EQB.

3. **Cleanup.** All waste and scrap that is the product of construction shall be removed from the area and properly disposed of upon completion of each task. Personal litter, including bottles, cans, and paper, from construction activities shall be removed on a daily basis.

4. **Vegetation Removal.** The Permittee shall minimize the number of trees to be removed as part of the construction of the line, taking into account Permit Condition IV.H.1, which recognizes that the Permittee has obligations to comply with clearance requirements.

5. **Erosion Control.** The Permittee shall implement reasonable measures to minimize runoff during construction and shall plant or seed non-agricultural areas that were disturbed where structures are installed. Upon request, the Permittee shall submit to the EQB a copy of any Soil Erosion and Sediment Control Plan prepared for the Minnesota Pollution Control Agency as part of a storm-water runoff permit application.

6. **Temporary Work Space.** The Permittee shall limit temporary easements to special construction access needs and additional staging or lay-down areas required outside of the authorized right-of-way.

7. **Restoration.** The Permittee shall restore all temporary work spaces, access roads, and other private lands affected by construction of the transmission line. Restoration must be compatible with the safe operation, maintenance, and inspection of the transmission line. Within sixty days after completion of all restoration activities, the Permittee shall advise the EQB in writing of the completion of such activities.

8. **Notice of Permit.** The Permittee shall inform all employees, contractors, and other persons involved in the construction of the transmission line of the terms and conditions of this Permit.

C. Periodic Status Reports. Upon request, the Permittee shall report to the EQB on progress regarding finalization of the route, design of structures, and construction of the transmission line. The Permittee need not report more frequently than quarterly.

D. Complaint Procedure. Prior to the start of construction, the Permittee shall submit to the EQB the company's procedures to be used to receive and respond to complaints. The procedures shall be in accordance with the requirements set forth in Exhibit 1 attached to this Permit.

E. Notification to Landowners. The Permittee shall provide all affected landowners with a copy of this Permit at the time of the first contact with the landowners after issuance of this Permit.

F. Completion of Construction.

1. **Notification to EQB.** At least three days before the line is to be placed into service, the Permittee shall notify the EQB of the date on which the line will be placed into service and the date on which construction was complete.

2. **As-Builts.** Within 180 days of completion of the project, the Permittee shall submit copies of all the final as-built plans and specifications developed during the project.

3. **GPS Data.** Within sixty days after completion of construction, the Permittee shall submit to the EQB, in the format requested by the EQB, geo-spatial information (GIS compatible maps, GPS coordinates, etc.) for all above ground structures associated with the transmission lines and each substation connected.

G. Electrical Performance Standards.

1. **Grounding.** The Permittee shall design, construct, and operate the transmission line in such a manner that the maximum steady-state short-circuit current shall be limited to five milliamperes rms alternating current between the ground and any non-stationary object within the right-of-way including but not limited to, large motor vehicles and agricultural equipment. All fixed metallic objects on or off the right-of-way, except electric fences that parallel or cross the right-of-way, shall be grounded to the extent necessary to limit the short circuit current between ground and the object so as not to exceed one milliampere rms under steady state conditions of the transmission line and to comply with the ground fault conditions specified in the National Electric Safety Code.

2. **Electric Field.** The transmission line shall be designed, constructed, and operated in such a manner that the electric field measured one meter above ground level immediately below the transmission line shall not exceed 8.0 kV/m rms.

3. **Interference with Communication Devices.** If interference with radio or television, satellite or other communication devices is caused by the presence or operation of the transmission line, the Permittee shall take whatever action is prudently feasible to restore or provide reception equivalent to reception levels in the immediate area just prior to the construction of the line.

H. Other Requirements.

1. **Applicable Codes.** The Permittee shall comply with applicable North American Electric Reliability Council (NERC) planning standards and requirements of the National Electric Safety Code (NESC) including clearances to ground, clearance to crossing utilities, clearance to buildings, right-of way widths, erecting power poles, and stringing of transmission line conductors.

2. **Other Permits.** The Permittee shall comply with all applicable state rules and statutes. The Permittee shall obtain all required permits for the project and comply with the conditions of these permits. A list of the required permits is included in the permit

application and the environmental assessment. The Permittee shall submit a copy of such permits to the EQB upon request.

3. **Pre-emption.** Pursuant to Minnesota Statutes section 116C.61, subdivision 1, this Site Permit shall be the sole route approval required to be obtained by the Permittee and this Permit shall supersede and preempt all zoning, building, or land use rules, regulations, or ordinances promulgated by regional, county, local and special purpose government.

I. Delay in Construction. If the Permittee has not commenced construction or improvement of the route within four years after the date of issuance of this Permit, the EQB shall consider suspension of the Permit in accordance with Minn. Rules part 4400.3750.

J. Special Conditions.

1. **Permanent Right-of-Way Acquisition.** Where the transmission line parallels road or transmission line rights-of-way, Xcel Energy may acquire up to 45 feet of right-of-way, unless an agreement with a landowner allows acquisition of new right-of-way up to 75 feet.

2. **Removal of approximately 1.4 miles of the Lake Yankton – Pipestone 115 kV Transmission Line.** The Permittee must remove the portion the existing Lake Yankton – Pipestone 115 kV transmission line from the Hole-in-the Mountain Wildlife Management Area and the Nature Conservancy's Hole-in-the Mountain Prairie as described in the Route Permit Application dated August 10, 2004, and in the Environmental Assessment dated January 16, 2005. The Permittee shall advise the Department of Natural Resources and the Nature Conservancy on the removal plan and schedule at least 60 days prior to commencing removal of the transmission line.

3. **Interstate Telecommunications Cooperative, Inc.** Xcel Energy shall:

a. Meet with representatives of Interstate Telecommunications Cooperative, Inc., prior to any right-of-way acquisition, construction, or installation being commenced, and discuss any concerns with the location or engineering design of the 115 kV transmission line, including the avoidance of interference that exceeds existing standards which may be caused by the project;

b. Xcel Energy shall in consultation with ITC determine or predict the level of interference that may be produced by the transmission line before right-of-way acquisition, construction and installation commences; and

c. Xcel Energy must fulfill, comply with, and satisfy all Institute of Electrical and Electronics Engineers, Inc. (IEEE) standards applicable to this project, including but not limited to IEEE 776, IEEE 519, and IEEE 367, provided ITC has complied with any

obligations imposed on it pursuant to these standards. Upon request by the EQB, the Permittee shall report to the EQB on compliance with these standards.

V. PERMIT AMENDMENT

This permit may be amended at any time by the EQB. Any person may request an amendment of this permit by submitting a request to the Chair in writing describing the amendment sought and the reasons for the amendment. The Chair will mail notice of receipt of the request to the Permittee. The EQB may amend the permit after affording the Permittee and interested persons such process as is required.

VI. TRANSFER OF PERMIT

The Permittee may request at any time that the EQB transfer this permit to another person or entity. The Permittee shall provide the name and description of the person or entity to whom the permit is requested to be transferred, the reasons for the transfer, a description of the facilities affected, and the proposed effective date of the transfer. The person to whom the permit is to be transferred shall provide the EQB with such information as the EQB shall require to determine whether the new permittee can comply with the conditions of the permit. The EQB may authorize transfer of the permit after affording the Permittee, the new permittee, and interested persons such process as is required.

VII. REVOCATION OR SUSPENSION OF THE PERMIT

The EQB may initiate action to revoke or suspend this permit at any time. The EQB shall act in accordance with the requirements of Minnesota Rules part 4400.3950 to revoke or suspend the permit.

Designated Route
Buffalo Ridge
to
Brookings County
115 kV Transmission Line
Xcel Energy
Windfarm Transmission
Improvement Projects

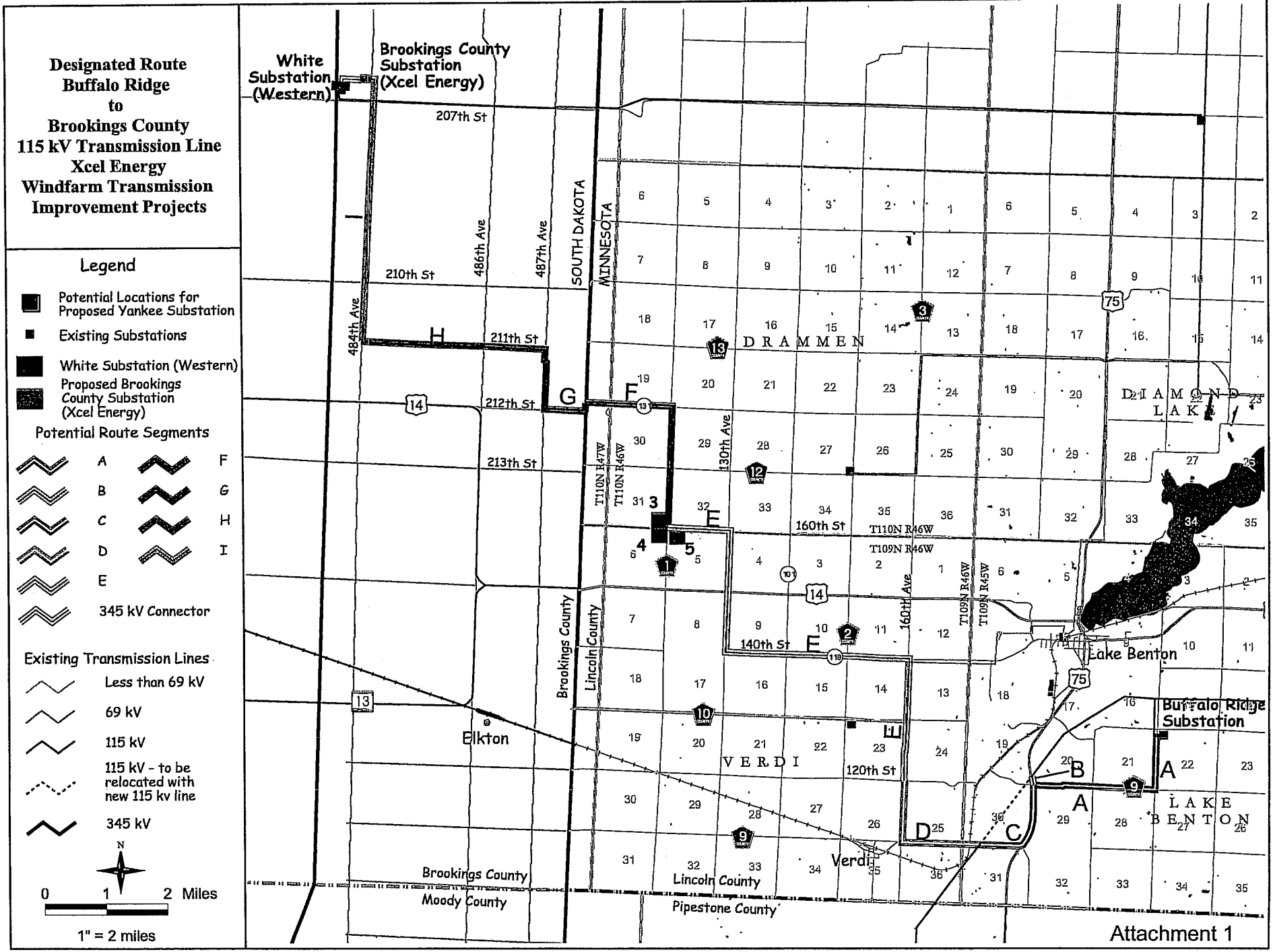

EXHIBIT 1

ENVIRONMENTAL QUALITY BOARD
COMPLAINT REPORT PROCEDURES FOR
HIGH VOLTAGE TRANSMISSION LINES

1. Purpose

To establish a uniform and timely method of reporting complaints received by the permittee concerning the permit conditions for right-of-way preparation, construction, cleanup and restoration, and resolution of such complaints.

2. Scope

This reporting plan encompasses complaint report procedures and frequency.

3. Applicability

The procedures shall be used for all complaints received by the permittee.

4. Definitions

Complaint - A statement presented by a person expressing dissatisfaction, resentment, or discontent as a direct result of right-of-way preparation, construction, cleanup and restoration. Complaints do not include requests, inquiries, questions, or general comments.

Substantial Complaint - Any complaints submitted to the permittee in writing that, if substantiated, could result in permit modification or suspension pursuant to the applicable regulations.

Person - An individual, partnership, joint venture, private or public corporation, association, firm, public service company, cooperative, political subdivision, municipal corporation, government agency, public utility district, or any other entity, public or private, however organized.

5. Responsibilities

Everyone involved with right-of-way preparation, construction, cleanup and restoration is responsible to ensure expeditious and equitable resolution of all complaints. It is therefore, necessary to establish a uniform method for documenting and handling complaints directed to this project. The following procedures will satisfy this requirement:

A. The permittee shall document all complaints by maintaining a record of all applicable information concerning the complaint, including the following:

1. Name of the permittee and project.
2. Name of complainant, address and phone number.
3. Precise property description or tract number (where applicable).
4. Nature of complaint.
5. Response given.
6. Name of person receiving complaint and date of receipt.
7. Name of person reporting complaint to the EQB and phone number.
8. Final disposition and date.

B. The permittee shall assign an individual to summarize complaints for transmittal to the EQB.

6. Requirements

The permittee shall report all complaints to the EQB according to the following schedule:

Immediate Reports - All substantial complaints shall be reported to the EQB by phone the same day received (or on the following working day for complaints received after working hours) at 651-296-5089.

Monthly Reports

By the 15th of each month, a summary of all complaints, including substantial complaints received or resolved during the proceeding month, and a copy of each complaint shall be sent to Minnesota Environmental Quality Board, 300 Centennial Building, 658 Cedar St., St. Paul, MN 55155.

7. Complaints Received by the EQB

Copies of complaints received directly by the EQB from aggrieved persons regarding right-of-way preparation, construction, cleanup and restoration shall be promptly sent to the permittee.

Designated Route
Buffalo Ridge
to
Brookings County
115 kV Transmission Line
Xcel Energy
Windfarm Transmission
Improvement Projects

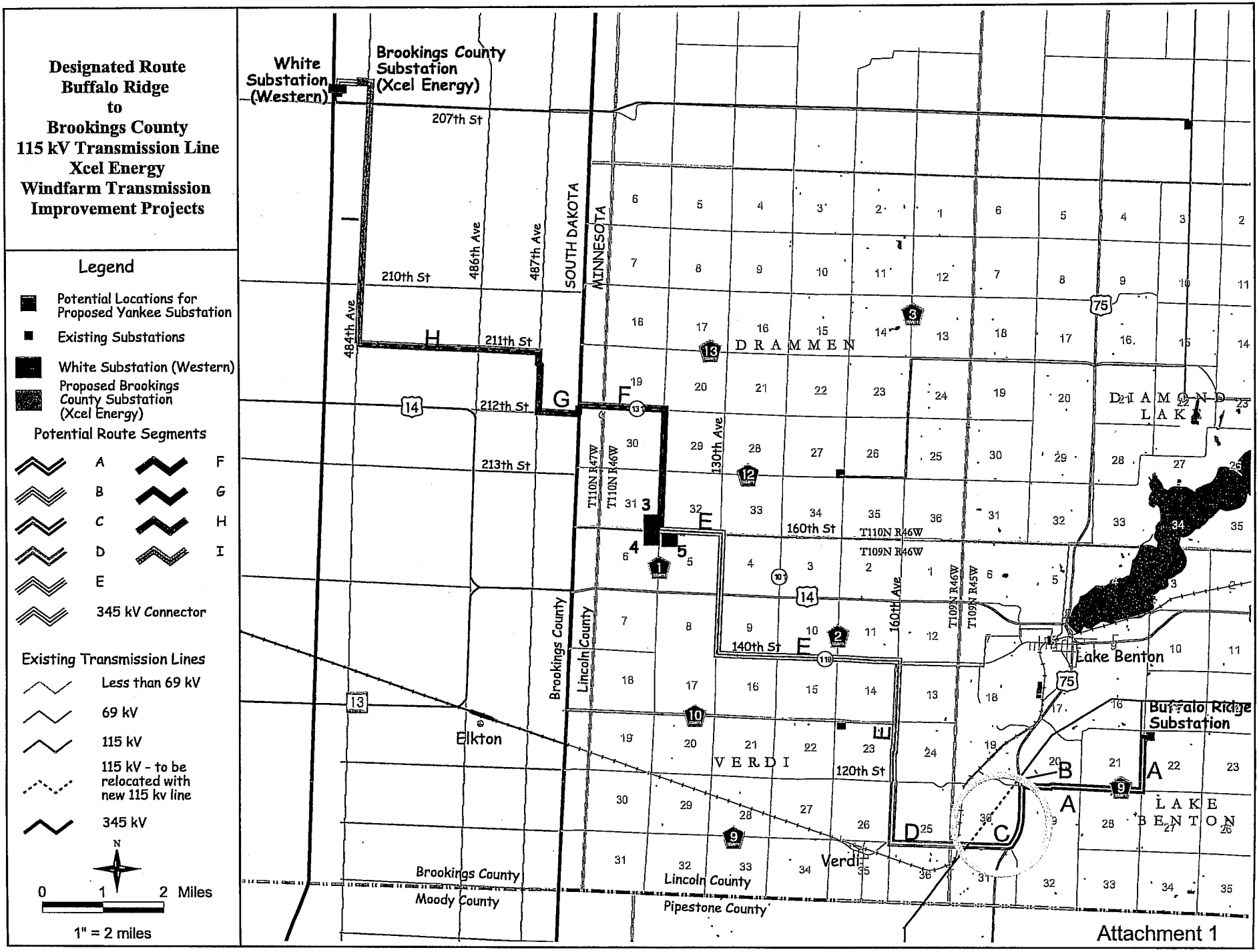

Exhibit C

EXHIBIT C
FACILITY MAPS

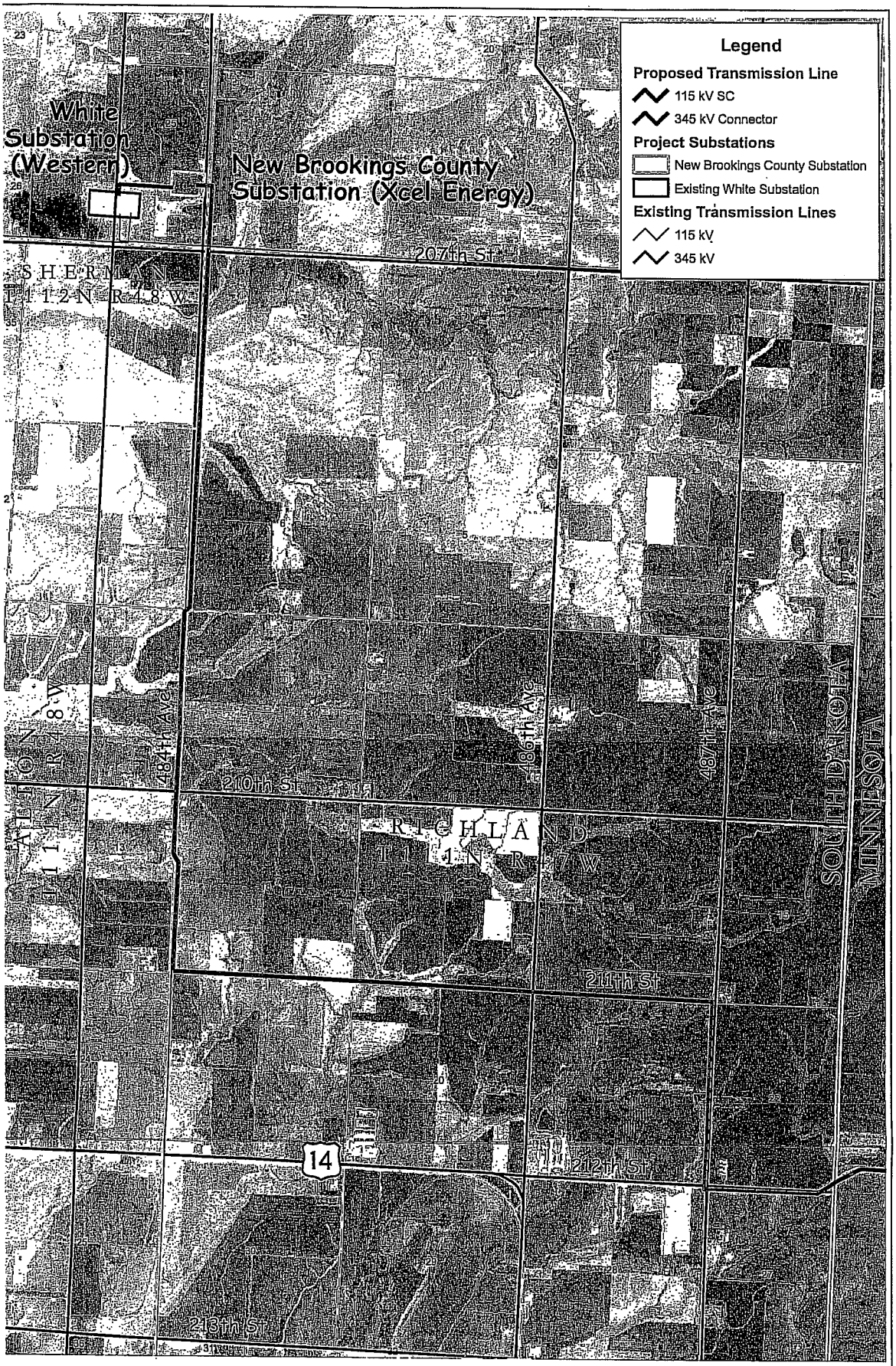

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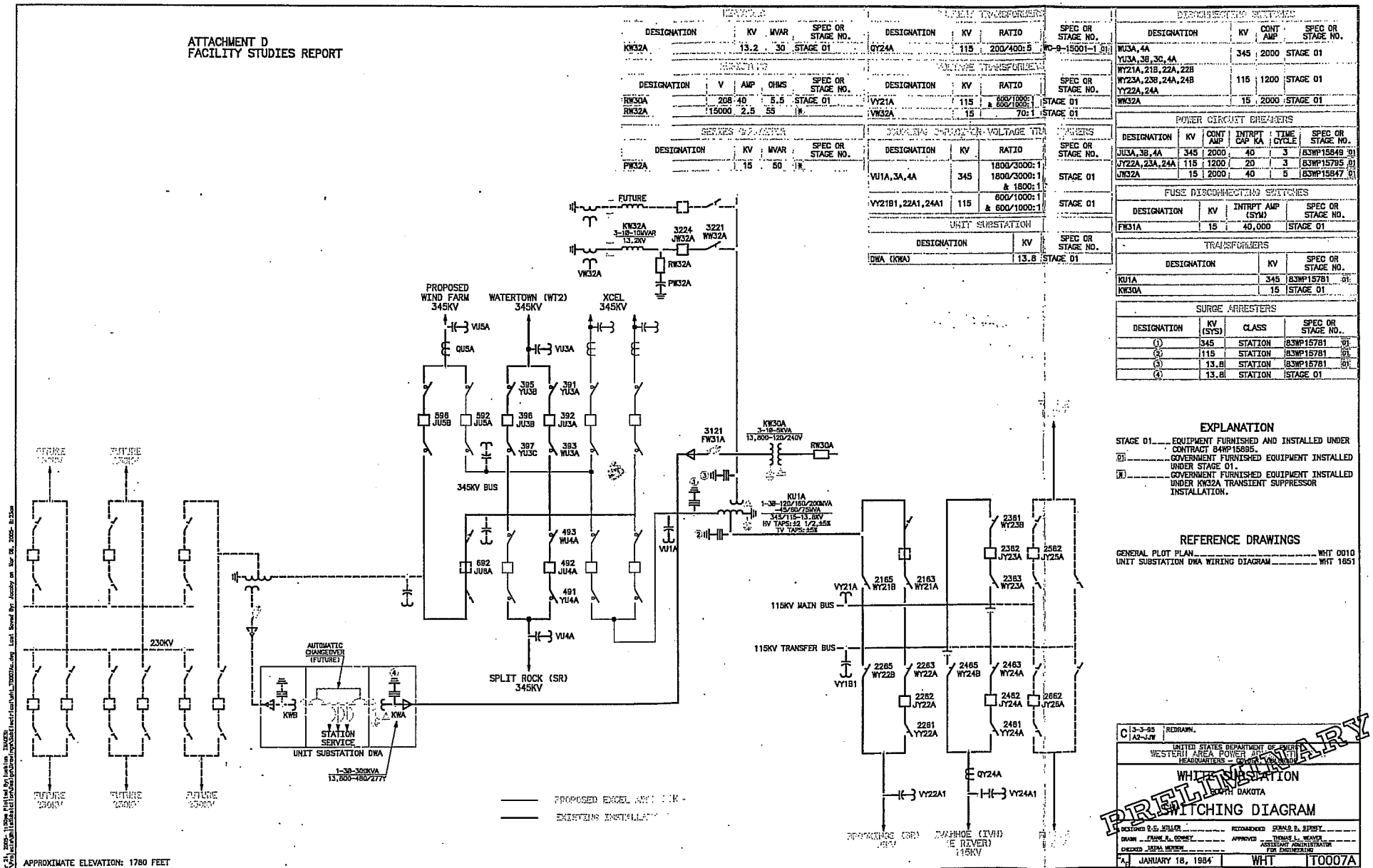
Exhibit C.1 - Proposed Facility
Buffalo Ridge to White Transmission Project
Xcel Energy
Brookings County, SD & Lincoln County, MN

Xcel Energy
NORTHERN STATES POWER

ATTACHMENT D
FACILITY STUDIES REPORT



DESIGNATION	KV	MVAR	SPEC OR STAGE NO.
KW32A	13.2	30	STAGE 01

DESIGNATION	V	AMP	OHMS	SPEC OR STAGE NO.
RW30A	208	40	5.5	STAGE 01
RW32A	15000	2.5	55	#

DESIGNATION	KV	MVAR	SPEC OR STAGE NO.
PW32A	15	50	#

DESIGNATION	KV	RATIO	SPEC OR STAGE NO.
QY24A	115	200/400:5	WC-9-15001-1 01

DESIGNATION	KV	RATIO	SPEC OR STAGE NO.
VY21A	115	600/1000:1 & 600/1800:1	STAGE 01
VW32A	15	70:1	STAGE 01

DESIGNATION	KV	RATIO	SPEC OR STAGE NO.
VU1A,3A,4A	345	1800/3000:1 1800/3000:1 & 1800:1	STAGE 01
VY21B1,22A1,24A1	115	600/1000:1 & 600/1000:1	STAGE 01

DESIGNATION	KV	SPEC OR STAGE NO.
DWA (KWA)	13.8	STAGE 01

DESIGNATION	KV	CONT AMP	SPEC OR STAGE NO.
WU3A,4A	345	2000	STAGE 01
YU3A,3B,3C,4A			
WY21A,21B,22A,22B WY23A,23B,24A,24B YY22A,24A	115	1200	STAGE 01
WW32A	15	2000	STAGE 01

POWER CIRCUIT BREAKERS

DESIGNATION	KV	CONT AMP	INTRPT CAP KA	TIME CYCLE	SPEC OR STAGE NO.
JU3A,3B,4A	345	2000	40	3	83WP15849 01
JY22A,23A,24A	115	1200	20	3	83WP15795 01
JW32A	15	2000	40	5	83WP15847 01

FUSE DISCONNECTING SWITCHES

DESIGNATION	KV	INTRPT AMP (SYM)	SPEC OR STAGE NO.
FW31A	15	40,000	STAGE 01

TRANSFORMERS

DESIGNATION	KV	SPEC OR STAGE NO.
KU1A	345	83WP15781 01
KW30A	15	STAGE 01

SURGE ARRESTERS

DESIGNATION	KV (SYS)	CLASS	SPEC OR STAGE NO.
①	345	STATION	83WP15781 01
②	115	STATION	83WP15781 01
③	13.8	STATION	83WP15781 01
④	13.8	STATION	STAGE 01

EXPLANATION

STAGE 01 ____ EQUIPMENT FURNISHED AND INSTALLED UNDER CONTRACT 84WP15895.

01 ____ GOVERNMENT FURNISHED EQUIPMENT INSTALLED UNDER STAGE 01.

____ GOVERNMENT FURNISHED EQUIPMENT INSTALLED UNDER KW32A TRANSIENT SUPPRESSOR INSTALLATION.

REFERENCE DRAWINGS

GENERAL PLOT PLAN ____ WHT 0010
UNIT SUBSTATION DWA WIRING DIAGRAM ____ WHT 1651

C	3-3-95 A2-JJW	REDRAWN.

UNITED STATES DEPARTMENT OF ENERGY
WESTERN AREA POWER ADMINISTRATION
HEADQUARTERS - GOLDEN, COLORADO

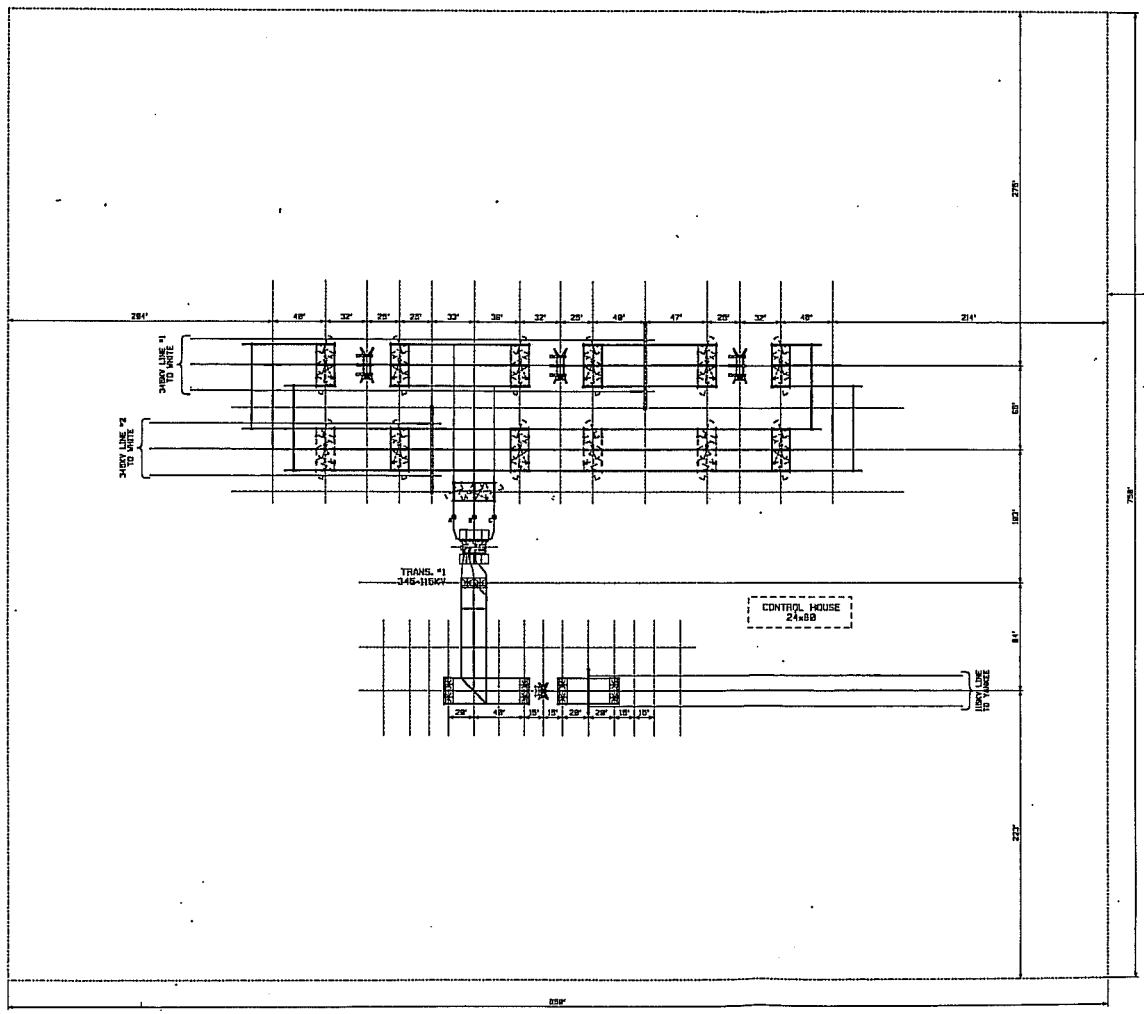
WHITE SUBSTATION
SOUTH DAKOTA

SWITCHING DIAGRAM

PRELIMINARY

DESIGNED D.G. MILLER — RECOMMENDED DONALD B. BIRNEY
DRAWN FRANK R. GOMEZ — APPROVED THOMAS L. WEAVER, ASSISTANT ADMINISTRATOR FOR ENGINEERING
CHECKED JAIMA MOREHN

DATE JANUARY 18, 1984 | WHT | T0007A

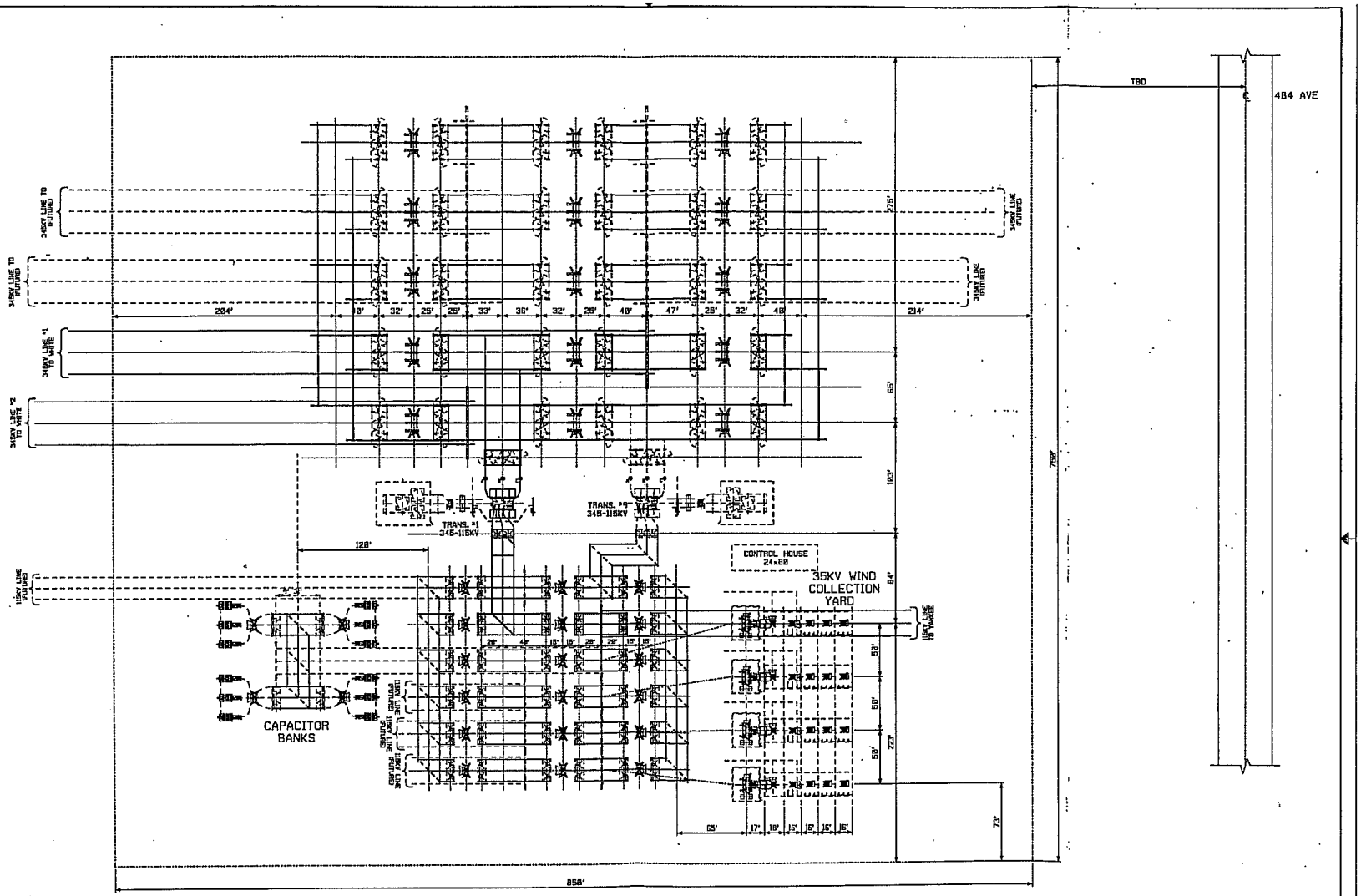


PRELIMINARY
NOT FOR CONSTRUCTION

THIS PHOTOCOPY IS A TOOL TO ASSIST EMPLOYEES IN THE PERFORMANCE OF THEIR JOBS. FOR PERSONAL SAFETY IS PROVIDED FOR BY USING SAFETY PRACTICES, PROCEDURES AND EQUIPMENT AS DESCRIBED IN THE SAFETY TRAINING PROGRAMS, MANUALS AND BOOKS.

BROOKINGS COUNTY SUBSTATION

BOK



PRELIMINARY
NOT FOR CONSTRUCTION

BROOKINGS COUNTY SUBSTATION
345-115-34.5KV PROPOSED ULTIMATE LAYOUT PLAN

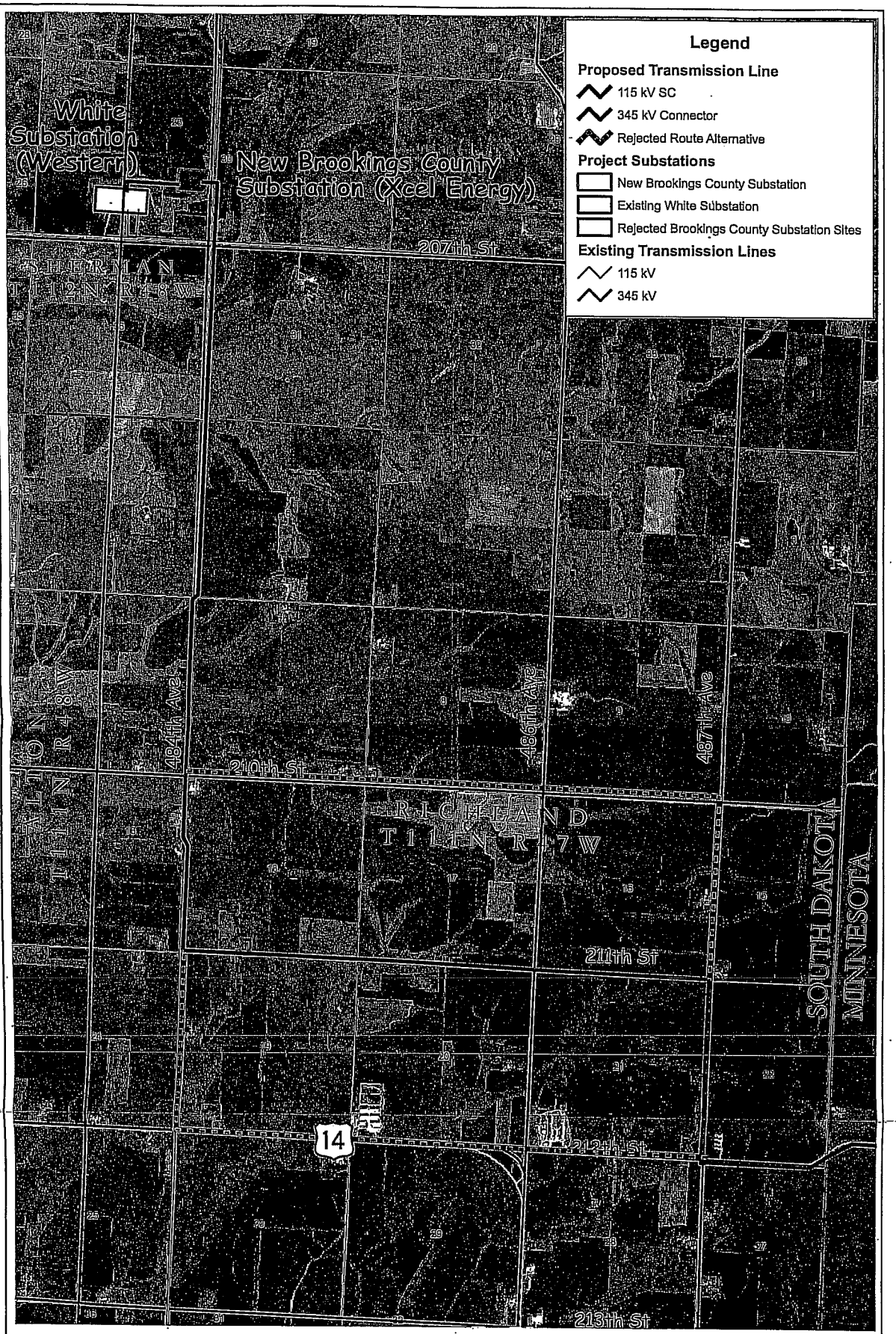


Exhibit C.5 - Rejected Route Alternative
Buffalo Ridge to White Transmission Project
Xcel Energy
Brookings County, SD & Lincoln County, MN

Xcel Energy
NORTHERN STATES POWER

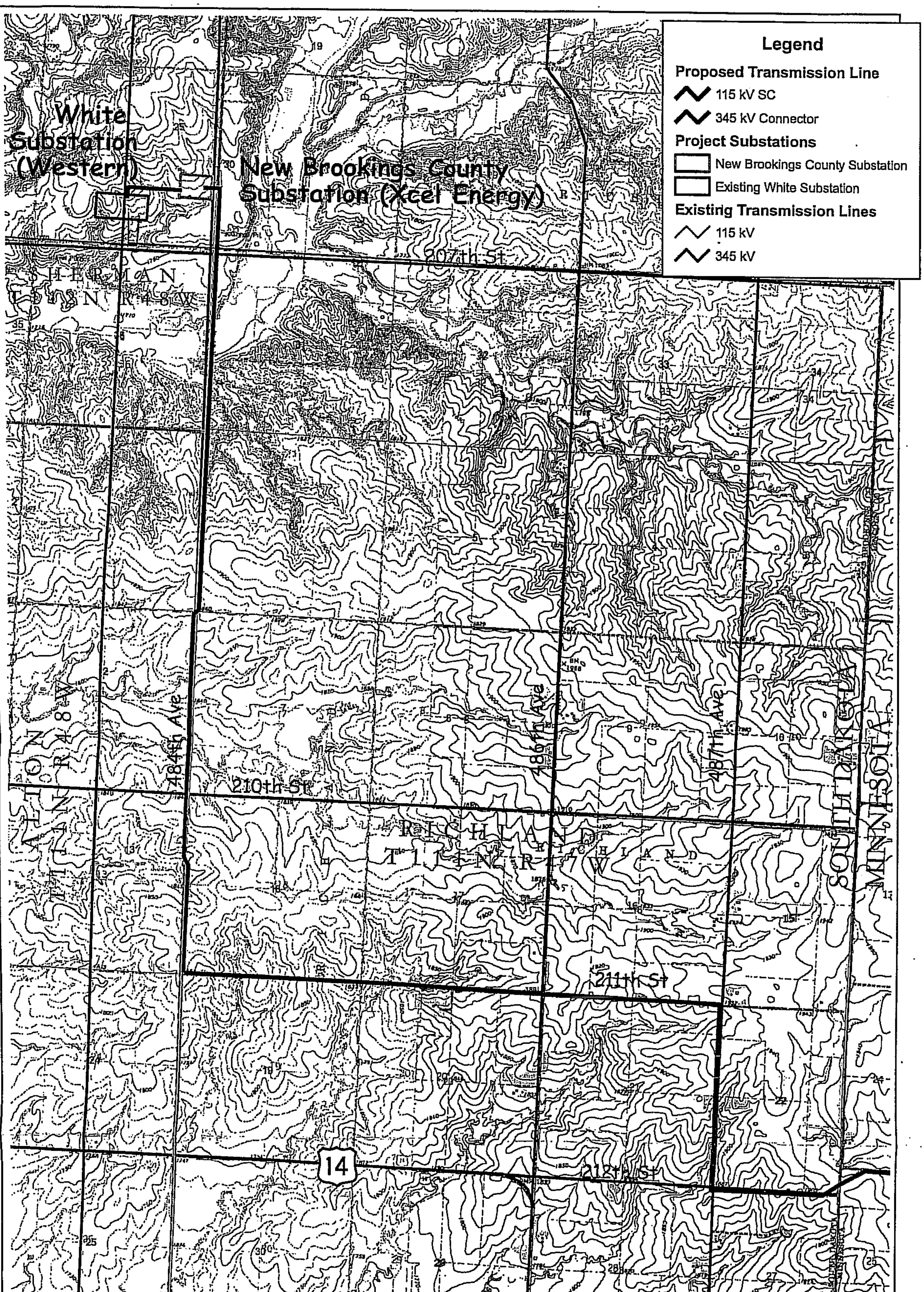


Exhibit C6 - Topographic Map of Facility Area
Buffalo Ridge to White Transmission Project
Xcel Energy
Brookings County, SD & Lincoln County, MN

Feet
0 2,000 4,000

Xcel Energy
NORTHERN STATES POWER

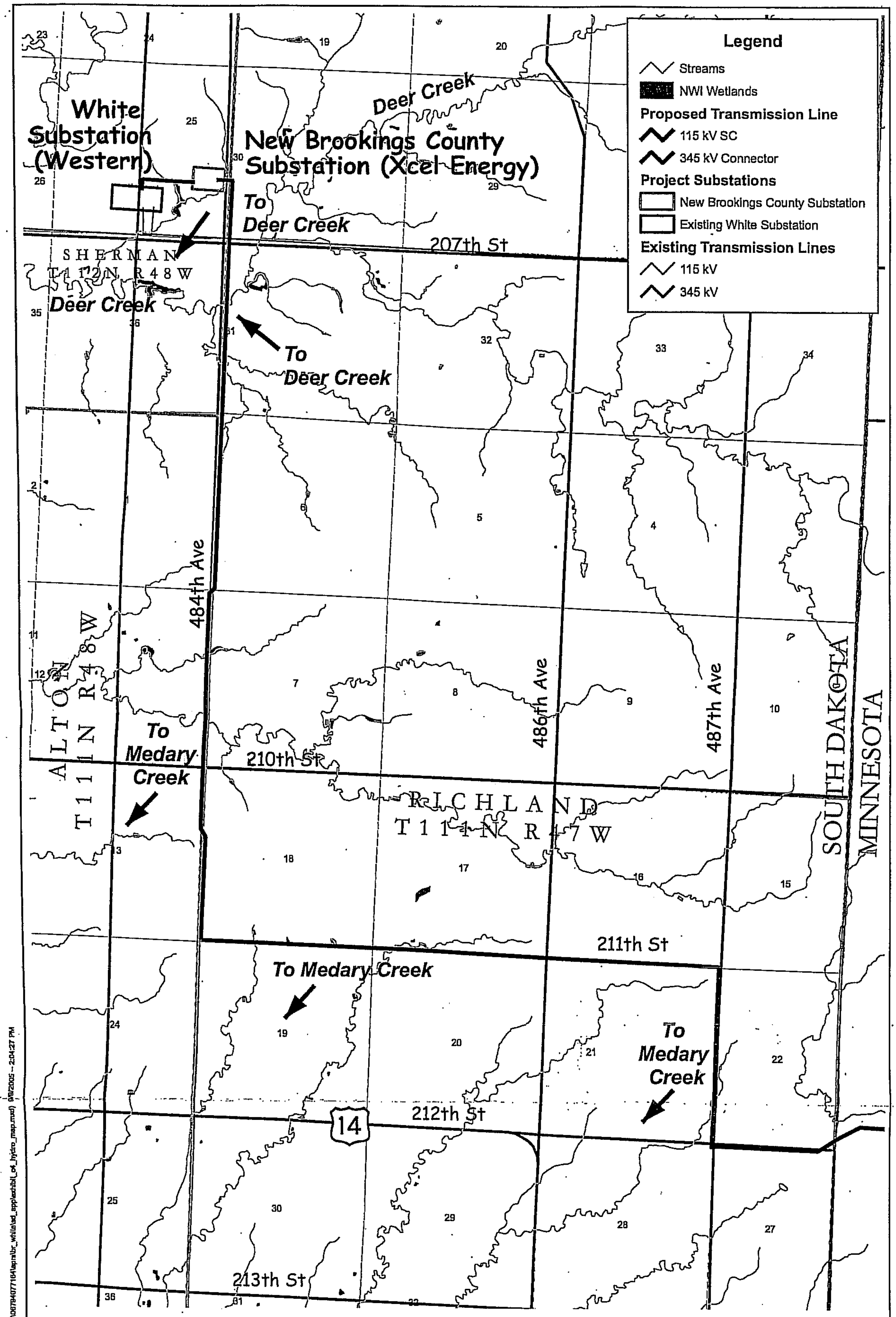
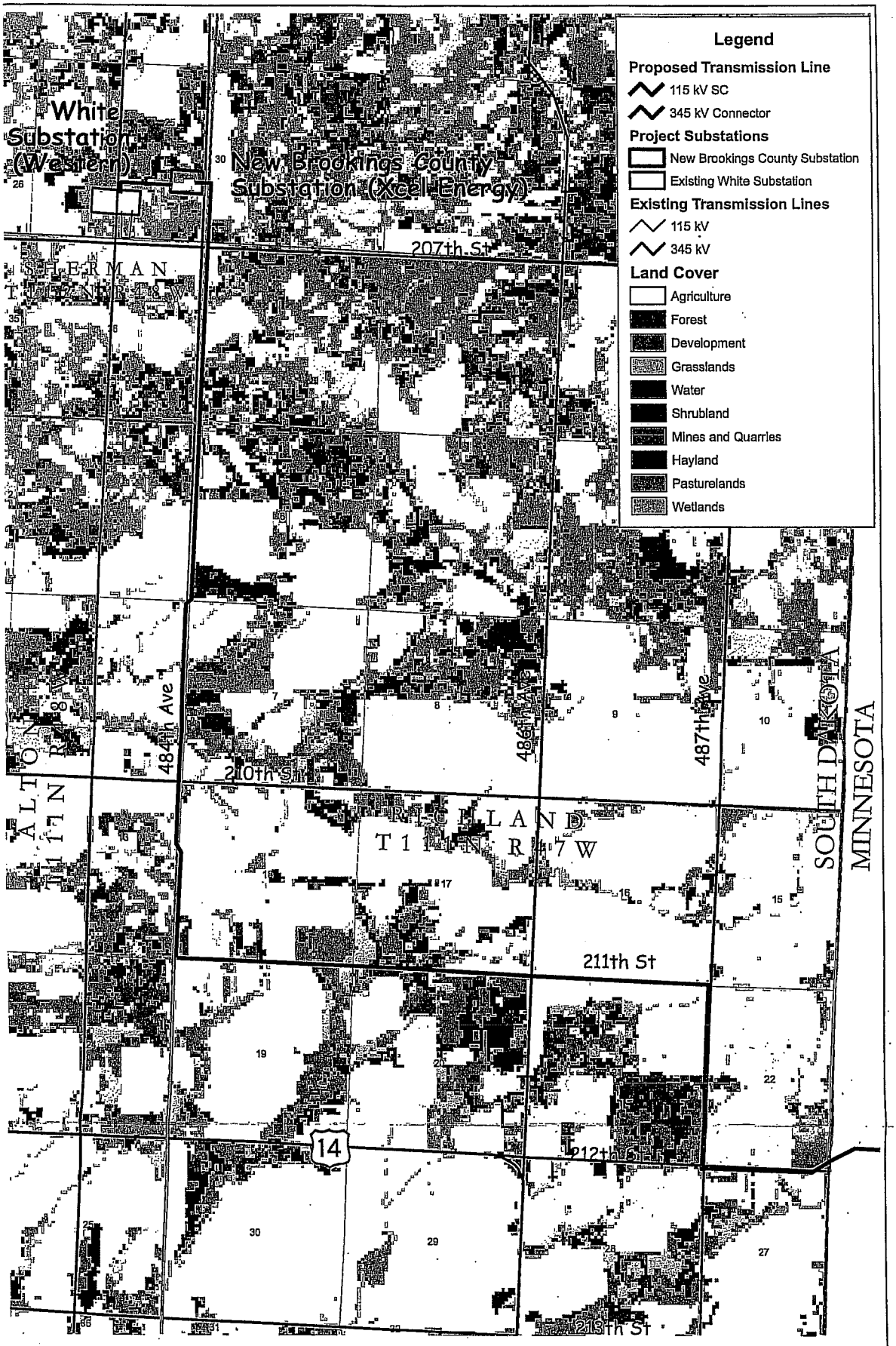


Exhibit C.7 - Hydrologic Map
Buffalo Ridge to White Transmission Project
Xcel Energy
Brookings County, SD & Lincoln County, MN

Xcel Energy NORTHERN STATES POWER

Map Document: (N:\gisproj\06794077164\apr\br_white\sd_applexhibit_c4_hydro_map.mxd) 9/8/2005 -- 2:04:27 PM



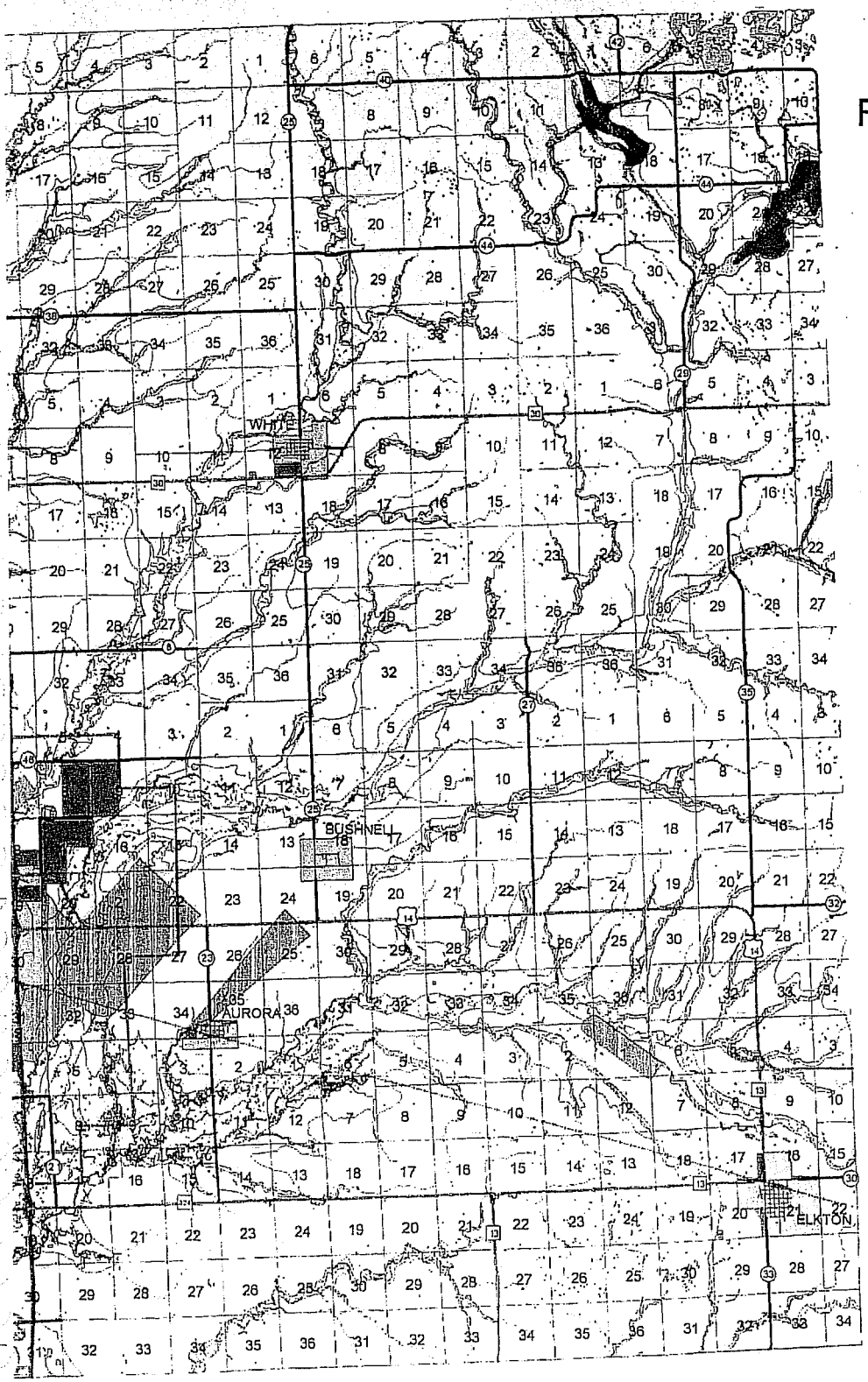
Feet
0 2,000 4,000

Exhibit C.8 - Land Cover Map
Buffalo Ridge to White Transmission Project
Xcel Energy
Brookings County, SD & Lincoln County, MN

Xcel Energy
NORTHERN STATES POWER

Exhibit D

EXHIBIT D
ZONING INFORMATION



FUTURE LAND USE MAP
BROOKINGS COUNTY

PLANNING AREAS

- Municipalities - Areas of Development Opportunity
- Areas of Development Transition
- Areas of Development Stability
- City of Brookings/Brookings County Joint Jurisdiction Boundary

HYDROLOGIC FEATURES

- Lakes
- Big Sioux River
- Wetlands
- Streams and Rivers
- Floodplain
- Aquifer
- Wellhead Protection Area

TRANSPORTATION FEATURES

- Interstate 29
- State and Federal Highway
- County Highway
- County and Township Gravel Roads
- Railroad

N

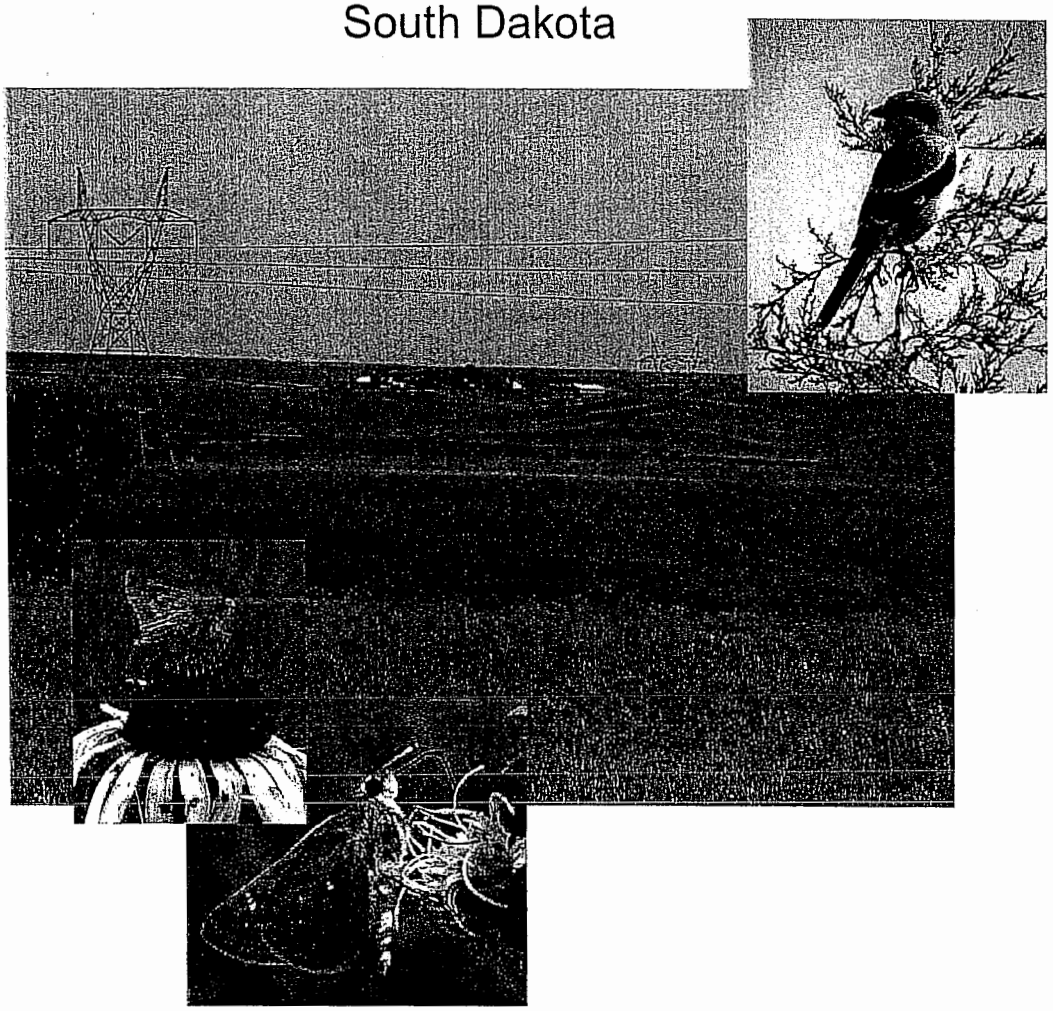
Exhibit E

EXHIBIT E
BIOLOGICAL SURVEY

Xcel Energy Buffalo Ridge to White Sensitive Species Survey Report

Prepared for: HDR Engineering, Inc.

Lincoln County, Minnesota to Brookings County, South Dakota



September 28, 2005

GES Project No. 2005.070

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Xcel Energy Buffalo Ridge to White Sensitive Species Survey Report

Prepared for: HDR Engineering, Inc.

Lincoln County, Minnesota and Brookings County, South Dakota

September 28, 2005

Summary

Xcel Energy proposes to construct a transmission line from Xcel Energy's Buffalo Ridge substation located southeast of Lake Benton, Minnesota to Xcel's White substation in South Dakota. Graham Environmental Services, Inc. (GES) was retained by HDR Engineering, Inc. (HDR) to conduct a review of potential prairie habitats along the entire route that could harbor the federally listed western prairie fringed-orchid (*Platanthera praeclara*, Sheviak & Bowles), federal candidate species Dakota skipper (*Hesperia dacotae*), several Minnesota State listed butterfly species, and to identify other natural communities or other species of concern that might occur along the proposed project corridor (**Figure 1**).

A cursory survey was conducted at the Hole-in-the-Mountain prairie and Wildlife Management Area (WMA) site on July 7, 2005 to assess the presence/absence of Dakota skipper populations near the proposed corridor and during peak flight periods of this Minnesota threatened and federal candidate species. No other portion of the route was reviewed at this time. The habitat assessment and surveys for the western prairie fringed orchid occurred between August 10 and 12, 2005 which is after the July 1–29 flowering period documented for the western prairie fringed-orchid (Smith, 1993) as well as the flight period of the Dakota skipper (mid-June to mid-July) that occurs in similar remnant prairie habitats as the orchid. This report provides the results of the August 10-12, 2005 survey and observations during the July 7, 2005 cursory site review. A total of 165 vascular plants, nine (9) different general land-use types, and four (4) natural community types were catalogued during the August 2005 survey period. Five sensitive species at five different locations were discovered along the proposed project corridor during the survey.

Background

Xcel Energy owns, operates, and maintains electric generation and transmission facilities in several states, including Minnesota and South Dakota, where this project is located. HDR is preparing environmental

documents for Xcel Energy to comply with the National Environmental Policy Act, a Minnesota Environmental Assessment, and with South Dakota Public Utilities Commission (PUC) requirements when constructing a transmission facility as described under South Dakota Codified Law 49-41B-11.

HDR submitted requests to the United States Fish and Wildlife Service (USFWS), Minnesota Department of Natural Resources (MDNR), and South Dakota Department of Game, Fish and Parks (SDDGFP) to search their respective data bases to determine if any known occurrences of listed species occurred within the vicinity of the proposed project. The respective databases revealed occurrence locations of one federally listed species (Topeka Shiner (*Notropis topeka*)), one candidate for federal listing (Dakota Skipper), and 52 species or rare community occurrences listed as sensitive by the Minnesota Department of Natural Resources along the proposed route (**Appendix A**).

USFWS, MDNR, and SDDGFP comment letters expressed concern over tributaries to Medary and Deer Creeks (T109N, R46, Section 4, T109N, R46W, Section 18, T110N, R46W, Section 31) where the Topeka shiner is known to occur. The remaining sensitive species and community records are centered on the Hole-in-the-Mountain prairie area. This area, located near the Buffalo Ridge sub-station at the eastern end of the proposed project, is a large (approximately 4,300 acre) prairie remnant situated on slopes surrounding the Flandreau River headwaters in T109N, R45W, Sections 7, 17, 18, 19, 20, 30, 31. Most of these lands are owned by The Nature Conservancy and State of Minnesota and are set aside as preserves or WMA. Records for seven state of Minnesota endangered, threatened, or special concern butterfly species, two special concern species of jumping spider, six special concern plant species, one threatened turtle, and two rare community types occur on the Hole-in-the-Mountain prairie or on lands just south (T108N, R46W, Section 1) of the boundaries of state-owned land. Other species mentioned as having potential to occur within the project corridor by the USFWS and the SDDGFP included prairie-fringed orchid and bald eagle.

Methodologies

GES evaluated general plant community types within 0.25 mile of the proposed corridor centerline and documented biota on those parcels with natural community types and when encountered along the altered land-use types. Meander searches were conducted on parcels that warranted further review (i.e. remnant prairies, road ditches, or wetlands) with particular emphasis on areas exhibiting suitable habitat for sensitive

species such as; bald eagle (*Haliaeetus leucocephalus*), western prairie-fringed orchid and Dakota skipper.

Sites were assessed for sensitive plants and animals using a modified meander search method. Goff et al. (1982) utilized a time meander search to catalogue plants in a variety of plant communities and statistically illustrated through species area curves that this method adequately samples a given vegetative community for rare plants. A qualitative assessment of the effectiveness of using the transect versus meander-search method conducted by Penskar (1991) in the Ottawa National Forest, Michigan, indicated that the meander-search method is in all probability the best technique to adequately sample for rare taxa in both small and large sample areas.

The purpose of the meander search method is to catalogue all the vascular plants in a given plant community type by systematically visiting all potential microhabitat sites that comprise the larger community type. Upon entering the plant community type all vascular plants visible at that point are catalogued. This process continues at additional points within the community type that supports plants not yet recorded until all the plants occurring in the community type are catalogued or, based on the surveyor's experience with the community type, it is determined that the areas have been adequately sampled for rare taxa. Sampling rigor increases in specific microhabitats or plant community types that support habitat considered potentially optimal for specific rare taxa. Microhabitats are typically defined by topographic relief and /or soil moisture gradients.

GES modified the meander search method by identifying potentially suitable habitats and screening out obviously unsuitable habitats. This modification allowed us to conduct even more intensive surveys in the areas most likely to harbor target species and eliminate the timed survey intervals described by Goff (1982). Quantitative analysis of the vegetation was not the principal goal of the survey. The meander search method, without the use of timed intervals, was deemed appropriate for qualitatively assessing the presence/absence of rare taxa.

Visual and auditory cues were used to identify avian species within land use types along the proposed project corridor. GES also documented avian and butterfly species while conducting the meander searches for plants during the cursory review on July 7, 2005 and during the August 10-12, 2005 survey.

GES reviewed aerial photographs of potential remnant prairie sites. Areas deemed most likely to provide suitable habitat for targeted species were

identified and then evaluated in the field. A GES biologist drove along the proposed corridor alignments stopping at areas that were:

- characteristic of remnant native prairie plant communities (i.e. an abundance and diversity of native forbs and grasses);
- located in landscape positions that are difficult to plow;
- pastured, fallow, or set-aside lands.

After stopping at sites with suitable habitats, GES reviewed sites to identify prairie indicator species and to locate possible rare species that occurred on the site and noted the ecological condition of the site by assessing historic land use evidence and plant community characteristics. Species observed on these sites were documented and natural community characteristics were documented in the field then transferred to ArcInfo 9.1 shapefile data.

An experienced professional wildlife biologist/botanist familiar with the Midwestern natural community types, corridor sightings, and the target species conducted the survey. Curriculum Vitae for GES staff involved with the survey and report preparation are included in **Appendix B**.

Survey Area

The survey area lies within the Bemis moraine, a regional feature which forms the crest of the Coteau des Prairies in southwestern Minnesota and northeastern South Dakota. Albert (1995) further divides the regional landscape into the Lake Benton-Adrian sub-subsection (II.2.2) and the Ivanhoe-Worthington Coteau sub-subsection (II.2.3). Albert (1995) broadly characterizes these sub-subsections as tallgrass prairie prior to European settlement. The Lake Benton-Adrian sub-subsection was almost entirely tallgrass prairie with isolated slopes containing dry hill prairie species prior to settlement while the Ivanhoe-Worthington Coteau sub-subsection was dominated by tallgrass prairie or wet prairie. Hill prairies containing species more characteristic of the western mid-grass prairies also occurred along steeper slopes. The steep scarp on the northern edge of the coteau supported oak, elm, ash, and basswood in gullies, which are protected from the winds and fires of the Coteau and which also receive meltwaters from winter snow accumulations (Wright 1972).

The tallgrass prairie ecosystem has ceased to exist except in small isolated sites (i.e. on steep slopes, in ditches along road or railroad corridors, and on lands that have escaped plowing) throughout the Midwest. This ecosystem is comprised of several native plant community types but only four were documented along the proposed route. Native plant communities observed along the proposed route included: Mesic

Prairie, Dry Prairie, Wet Prairie, and Mixed Emergent Marsh. Most of the native plant communities were converted to agriculturally related land uses and few areas that are dominated by remnant prairie vegetation remain along the proposed route. Many of the streams and wetlands in the region have been drained or utilized for agricultural purposes.

A majority of the vegetation surrounding the proposed corridor are cropped lands planted in corn, soybeans, alfalfa, small grains, or are pastured. The areas surrounding these cropped lands and the associated field margins are populated primarily by invasive or pioneering species such as smooth brome (*Bromus inermis*), Kentucky bluegrass (*Poa pratensis*), ragweeds (*Ambrosia artemissiifolia*, *A. trifida*) clovers and sweet clovers (*Trifolium* spp. and *Melilotus* spp.). The proposed project traverses numerous natural and altered vegetation community types (Figure 2). The principal native plant community types encountered, in accordance with Minnesota's Native Vegetation: A Key to Natural Communities Version 1.5, include; Mesic Prairies, Dry Prairies, Mixed Emergent Marsh, and Wet Prairie. These classifications are based on the dominant plant community assemblages present at a particular location.

Mesic Prairie

Mesic Prairies are dry to wet-mesic plant communities dominated by grasses and sedges that are located on level to rolling glacial till. Mesic Prairie communities are fire-dependent and where fire is absent woody species invade. Big bluestem (*Andropogon gerardii*), Indian grass (*Sorghastrum nutans*), and prairie dropseed (*Sporobolus heterolepis*) are typically the dominant species with numerous other species of grasses occurring at different levels of dominance based upon moisture availability or disturbance. Invasive species such as Kentucky bluegrass (*Poa pratensis*) and Canada bluegrass (*P. compressa*) occur in varying abundance on these sites depending upon the level of disturbance at a particular site. Forbs on remnant Mesic Prairie sites are abundant and have a high level of diversity. Forb communities also vary in diversity and makeup with available soil moisture levels and levels of disturbance. Soils are generally classified as Molisolls. A list of species observed on remnant Mesic Prairies along the proposed corridor is attached in **Appendix C**.

Dry Prairie

Dry Prairies are dry to dry-mesic plant communities that are dominated by grasses and sedges. Dry Prairies are maintained by fire but require less frequent fires than Mesic Prairies due to the droughty conditions where they occur. These dry and poor soil conditions slow the advance of woody species. Generally, Dry Prairies have a greater component of Great Plains species than remnant Mesic Prairies (Aaseng et. al. 1993). Mid-

height and short grasses and sedges are usually dominant in remnant Dry Prairie communities. Porcupine grass (*Stipa spartea*), prairie junegrass (*Koeleria macrantha*) and sun-loving sedge (*Carex heliophila*) were the most readily identified species observed on remnant dry prairie during our review of the corridor. Invasive species such as musk thistle (*Carduus nutans*) and yellow sweet clover (*Melilotus officinalis*) vary based upon frequency and duration of grazing on these sites. Low shrubs such as leadplant (*Amorpha canescens*), prairie rose (*Rosa arkansana*), and wolfberry (*Symphoricarpos occidentalis*) were also present in varying amounts. A list of species observed on remnant Dry Prairies along the proposed corridor is attached in Appendix C.

Wet Prairie

Wet Prairie community types are dominated by sedges and grasses. Prairie cordgrass (*Spartina pectinata*) and Canada bluejoint (*Calamagrostis canadensis*) are the dominant grasses observed in this community type but a large number of sedge species including (*Carex pellita*, *C. sartwellii*, and *C. praegracilis*) occur in this community type. Forbs within the remnant Wet Prairie are less abundant than in other community types observed in the survey area. Species such as giant goldenrod (*Solidago gigantea*), giant sunflower (*Helianthus giganteus*), cup-plant (*Silphium perfoliatum*) and tall meadow rue (*Thalictrum dasycarpum*) were present in varying amounts based upon soil moisture levels. Reed canary grass (*Phalaris arundinacea*) occurs in varying levels of abundance based upon the amount of historic and current disturbance to the remnant Wet Prairie sites.

Remnant Wet Prairies are maintained by fire or mowing and succumb to shrub and tree cover in the absence of these activities. This community type occurs in depressions or drainageways with high water tables throughout a good portion of the growing season. Remnant Wet Prairies occur on soils that are mainly Mollisols and mucks. A list of species observed on remnant Wet Prairies throughout the survey area are attached in Appendix C.

Mixed Emergent Marsh

Wetlands documented along the proposed corridor were primarily seasonally flooded systems or isolated depressions dominated by persistent emergent species including; cattails (*Typha latifolia*), squirrel tail (*Hordeum jubatum*), hairy-leaved sedge (*Carex atherodes*), marsh spike rush (*Eleocharis smallii*), lady's thumb (*Polygonum persicaria*), and water smartweed (*Polygonum amphibium*). These wetlands all had an abundance of reed canary grass (*Phalaris arundinacea*) that indicates an accumulation of nutrients due to agricultural disturbance. A list of species

observed in Mixed Emergent Marsh along the proposed corridor is attached in Appendix C.

Results

A total of nine (9) different land uses were identified within 0.25 mile of the proposed corridor route. GES broadly categorized land use types for mapping purposes and broke down the land use types into smaller natural community types when natural communities were encountered. The following land use types were utilized for mapping areas along the proposed corridor:

1. Cropped lands – includes areas planted in corn, soybeans, alfalfa, small grains or other cash crops.
2. CRP – includes lands set aside from active plowing and planted in grasses and forbs (usually native).
3. Ditches – includes grassed areas, fallow areas dominated by non-native grasses and forbs, some abandoned homesteads or yards.
4. Fallow field – includes areas that were not actively plowed, planted or cultivated during the 2005 growing season.
5. Wetland – includes areas dominated by hydrophytic vegetation, areas not plowed to allow water to flow through fields without eroding topsoils, and flooded areas.
6. Pasture – includes areas actively grazed by livestock and areas that are not actively grazed but that have become dominated by non-native grasses and forbs with signs of erosion or other damage due to exposed soils from grazing.
7. Remnant prairie – includes those areas that harbor native plant communities that range from poor to high quality. These native communities are further broken down as described below.
8. Roads –includes driveways, gravel pits, farmyards, turn arounds, roads of all types, railroads and other areas altered to offer easy access to vehicles.
9. Woodlots –includes windrows, wooded yards, fencelines, abandoned homesteads, wooded pasture, and other small wooded areas.

The remnant prairie land use harbored four different natural communities including; Mesic Prairie, Dry Prairie, Wet Prairie, and Mixed Emergent Marsh. Natural communities occur scattered throughout the proposed corridor but all have been altered by agricultural practices, grazing, or the construction of roads, buildings, or maintained landscaping. Each community type varied in the amount and location of native species present. The following locations were documented with prairie remnants that occur within 0.25 mile of the proposed route.

T109N, R45W, Sections 29, 30, 31, 32

Prairie remnants that occur in Sections 30 and 31 are part of the Hole-in-the-Mountain Prairie and harbor good quality Mesic Prairie, Dry Hill Prairie, Wet Prairie, and Mixed Emergent Marsh communities. Sections 29 and 32 are located east of U.S. Highway 75 and harbor prairie remnants that were heavily grazed. There are Mesic and Dry Hill Prairie communities that persist on portions of the steepest slopes but invasive and pioneering species occur here in abundance. Despite the abundance of invasive species, several native grasses, forbs and the more disturbance tolerant rare butterflies were observed on portions of these parcels.

T109N, R46W, Sections 8, 9, 16, 17

Prairie remnants within these sections are utilized for grazing and are generally of poor quality. The best quality Dry Hill Prairie communities appear scattered in road ditches and on portions of the landscape that are difficult for cattle to graze (on the steepest slope faces). All of these prairie remnants were actively grazed during the August survey.

T110N, R46W, Section 32

This is a very small prairie remnant that occurs along an east-facing slope. Much of this area used to be a homestead and is dominated by non-native grasses, shrubs and numerous trees. However, several small patches of Mesic Prairie plant assemblages occur along the slope. The surrounding areas are cropped lands, set aside lands dominated by native grasses, or pasture located along an intermittent stream.

T110N, R46W, Sections 30

This is a heavily grazed pasture located along a stream. Areas that are difficult to access for livestock maintain some Mesic Prairie plant assemblages but are surrounded by pasture dominated by non-native grasses and forbs. The northern reaches of the waterway were not as heavily grazed during 2005 and reflect areas with good Mesic and Wet Prairie plant assemblages. Areas surrounding the northern reaches of this prairie remnant are dominated by native upland grasses such as *Andropogon gerardii* and *Sorghastrum nutans*. These adjacent lands were cut for hay during the August survey period and may have been restored grassland or set-aside lands with good stands of native grasses.

T110N, R47W, Sections 17, 18, 19, 20

Prairie remnants in this area are located on steeply dissected slopes with intermittent streams located in the lowest portions of the landscape. Most of these areas are heavily grazed but several areas had not been utilized as heavily during 2005 and exhibited healthy populations of native grasses

and forbs such as *Andropogon gerardii*, *Sorghastrum nutans*, *Spartina pectinata*, *Ratibida columnifera*, *Liatris punctata*, and *Aster sericeus* among others. The surrounding lands are cropland, hay, or windrows from old homesteads. The road ditches in this area also harbor good quality native prairie plant community assemblages.

T 110N, R47W, Section 6, T111N, R47W, Sections 30, 31, T111N, R48W, Sections 25, 36

Prairie remnants in this area appear to be similar in quality as those located at the Hole-in-the-Mountain Prairie in Minnesota. The landscape is comprised of highly dissected slopes with abundant native forbs located on the slopes. These lands are utilized as pasture but healthy populations of native grasses and forbs persist on most slopes within this area. The lower portions harbor very healthy native prairie forbs, especially sunflowers (*Helianthus* sp.) and *Andropogon gerardii*. GES discovered populations of *Aristida purpurea var. longiseta* on several hillsides and within road ditches along this portion of the proposed route. Although this is not a TES species in South Dakota it may be an indicator of the quality of dry hill and mesic prairie that persists here. Other listed species such as the western prairie fringed-orchid or Dakota skipper that utilize these habitats could occur.

Table 1 is a list of avian and butterfly species observed throughout the proposed corridor route. A list of plant species is included in Appendix C.

Table1.

Common Name	Scientific Name	Associated Land-use Type	Comment	State
		Birds		
Great blue heron	*Ardea herodias*	Mixed emergent marsh		MN
Wood duck	*Aix sponsa*	Mixed emergent marsh		MN
Mallard	*Anas platyrhynchos*	Mixed emergent marsh		MN
Blue-winged teal	*Anas discors*	Mixed emergent marsh		MN/SD
Turkey vulture	*Cathartes aura*	Cropped lands, Prairie remnants, Woodlots		MN/SD
Northern harrier	*Circus cyaneus*	Prairie remnants, Set aside lands		MN
Red-tailed hawk	*Buteo jamaicensis*	Cropped lands, Prairie remnants, Roads, Woodlots		MN/SD
American kestrel	*Falco sparverius*	Cropped lands, Prairie remnants, Roads, Woodlots		MN/SD
Pheasant	*Phasianus colchicus*	Cropped lands, Road ditches, Set aside lands		MN/SD
Gray partridge	*Perdix perdix*	Cropped lands, Road ditches, Set aside lands		MN
Killdeer	*Charadrius vociferus*	Cropped lands, Prairie remnants, Roads		MN/SD
Upland sandpiper	*Bartramia longicauda*	Prairie remnants	Observed during July not in August	MN
Mourning dove	*Zenaida macroura*	Cropped lands, Prairie		MN/SD

Common Name	Scientific Name	Associated Land-use Type	Comment	State
		remnants, Roads, Woodlots		
Rock dove	*Columba livia*	Cropped lands, Prairie remnants, Roads, Farms, Woodlots		MN/SD
Northern flicker	*Colaptes auratus*	Cropped lands, Prairie remnants, Roads, Farms, Woodlots		MN/SD
Eastern kingbird	*Tyrannus tyrannus*	Cropped lands, Set aside lands, Road ditches, Prairie remnants		MN/SD
Western kingbird	*Tyrannus verticalis*	Cropped lands, Set aside lands, Road ditches, Prairie remnants.		MN/SD
[redacted]				
American crow	*Corvus brachyrhynchos*	Cropped lands, Prairie remnants, Roads, Farms, Woodlots		MN/SD
Horned lark	*Eremophila alpestris*	Roads, Road ditches, Cropped lands		MN/SD
Ruby-throated hummingbird	*Archilochus colubris*	Migrant, Woodlots		SD
Red-headed woodpecker	*Melanerpes erythrocephalus*	Roads, Woodlots, Road ditches		MN
Cliff swallow	*Petrochelidon pyrrhonota*	Roads, Road ditches, Cropped lands		MN/SD
Barn swallow	*Hirundo rustica*	Cropped lands, Prairie remnants, Roads, Farms, Woodlots		MN/SD
Sedge wren	*Cistothorus platensis*	Prairie remnants, Set aside lands		MN/SD
Eastern bluebird	*Sialia sialis*	Cropped lands, Prairie remnants, Roads, Farms, Woodlots,		MN/SD
American robin	*Turdus migratorius*	Cropped lands, Prairie remnants, Roads, Farms, Woodlots		MN/SD
Willow flycatcher	*Empidonax traillii*	Migrant		MN
Eastern phoebe	*Sayornis nigricans*	Migrant		MN/SD
European starling	*Stumus vulgaris*	Cropped lands, Prairie remnants, Roads, Farms, Woodlots		MN/SD
Common yellowthroat	*Geothlypis trichas*	Mixed emergent marsh, Prairie remnants, Road ditches		MN/SD
Yellow warbler	*Dendroica petechia*	Mixed emergent marsh, Prairie remnants, Road ditches		MN
Chestnut-sided warbler	*Dendroica pensylvanica*	Migrant		SD
Northern cardinal	*Cardinalis cardinalis*	Woodlots		MN/SD
Indigo bunting	*Passerina cyanea*	Cropped lands, Prairie remnants, Roads, Farms, Woodlots		MN/SD
Dickcissel	*Spiza americana*	Cropped lands, Prairie remnants, Roads, Farms		MN/SD
Field sparrow	*Spizella pusilla*	Cropped lands, Set		MN/SD

Common Name	Scientific Name	Associated Land-use Type	Comment	State
		aside lands, Prairie remnants		
Chipping sparrow	*Spizella passerina*	Cropped lands, Set aside lands, Prairie remnants, Woodlots, Farms		MN/SD
Clay-colored sparrow	*Spizella pallida*	Cropped lands, Set aside lands, Prairie remnants		MN/SD
Song sparrow	*Melospiza melodia*	Cropped lands, Set aside lands, Prairie remnants		MN/SD
Grasshopper sparrow	*Ammodramus savannarum*	Cropped lands, Set aside lands, Prairie remnants		MN/SD
Savannah sparrow	*Passerculus sandwichensis*	Cropped lands, Set aside lands, Prairie remnants		MN/SD
Vesper sparrow	*Pooecetes gramineus*	Cropped lands, Set aside lands, Prairie remnants		MN/SD
Western meadowlark	*Sturnella neglecta*	Cropped lands, Set aside lands, Prairie remnants		MN/SD
Brown-headed cowbird	*Molothrus ater*	Cropped lands, Woodlots		MN/SD
Red-winged blackbird	*Agelaius phoeniceus*	Mixed emergent marsh, Cropped lands		MN/SD
Common grackle	*Quiscalus quiscula*	Cropped lands, Prairie remnants, Roads, Farms, Woodlots		MN/SD
Baltimore oriole	*Icterus galbula*	Cropped lands, Prairie remnants, Roads, Farms, Woodlots		MN/SD
House finch	*Carpodacus mexicanus*	Cropped lands, Prairie remnants, Roads, Farms, Woodlots		MN/SD
American goldfinch	*Carduelis tristis*	Cropped lands, Prairie remnants, Roads, Farms, Woodlots		MN/SD
House sparrow	*Passer domesticus*	Cropped lands, Prairie remnants, Roads, Farms, Woodlots		MN/SD
Butterflies				
Monarch	*Danaus plexippus*	Road ditches, Set aside lands, Prairie remnants		MN/SD
Viceroy	*Limenitis archippus*	Road ditches, Cropped lands, Woodlots		MN
Red admiral	*Vanessa atalanta rubria*	Road ditches, Set aside lands, Prairie remnants		MN
Painted lady	*Vanessa virginiensis*	Road ditches, Set aside lands, Prairie remnants		MN/SD
Cabbage butterfly	*Pieris rapae*	Road ditches, Cropped lands		MN
Alfalfa butterfly	*Colias eurytheme*	Road ditches, Cropped lands		MN/SD
Black swallowtail	*Papilio polyxenes*	Road ditches, Set aside lands, Prairie remnants		MN/SD
Clouded sulphur	*Coias philodice*	Road ditches, Cropped lands		MN/SD
Orange sulphur	*Coias eurytheme*	Road ditches, Set aside lands, Prairie remnants		MN
Common wood nymph	*Cercyonis pegala*	Road ditches, Prairie		MN/SD

Common Name	Scientific Name	Associated Land-use Type	Comment	State
		remnants		
Great spangled fritillary	*Speyeria cybele*	Road ditches, Set aside lands, Prairie remnants		MN/SD
Meadow fritillary	*Boloria bellona*	Road ditches, Cropped lands		MN
Silver-bordered fritillary	*Boloria selene myrina*	Road ditches, Cropped lands		MN
Pearl-crescent	*Phyciodes tharos*	Road ditches, Cropped lands		MN/SD
Melissa blue	*Lycaeides melissa*	Prairie remnants		MN/SD
Eastern-tailed blue	*Everes comyntas*	Road ditches, Cropped lands		MN/SD
Sachem	*Atalopedes campestris*	Road ditches, Cropped lands		MN
Least skipper	*Ancyloxypha numitor*	Road ditches, Prairie remnants, Set aside lands		MN
Common checkered skipper	*Pyrgus communis*	Road ditches, Cropped lands		MN

[redacted]

Sensitive (TES) Species

In addition to evaluating sites for remnant prairies, GES located 11 individual TES species occurrences within the proposed corridor. A location for one USFWS candidate species (Dakota skipper) was located within the survey area. Locations for three species of butterfly, one species of bird, and one species of plants identified on Minnesota's List of Endangered, Threatened, and Special Concern Species were located on lands within 0.25 mile of the proposed corridor within natural community types during the survey. The Dakota skipper (also a Federal Candidate species), Ottoe skipper (*Hesperia ottoe*), regal fritillary (*Speyeria idalia*), loggerhead shrike (*Lanius ludovicianus* var. *migrans*), and red three-awn (*Aristida purpurea* var. *longiseta*) were observed along the proposed corridor during the cursory review on July 7, 2005 and during the August

10-12, 2005 survey. No species identified on the SDDGFP Threatened, Endangered, and Candidate Species of South Dakota list (November 2004) were identified in the survey area.

Bald Eagle (*Haliaeetus leucocephalus*, L.) (Federal Threatened, South Dakota Threatened, Minnesota Special Concern)

The bald eagle is classified as threatened under the Endangered Species Act and breeds in particularly large numbers in northern Minnesota. Typical breeding habitat includes super-canopy trees, primarily red pine and white pine, associated with lakes and rivers supporting fish for a food supply (Mathisen 1983). According to the MDNR nongame program web site, the statewide total of breeding pairs is now about 600 and increasing at the rate of 30 pairs per year. Although most nest sites are located in areas with minimal human activity, some eagles have adapted to human presence and nest in close proximity to human dwellings and other activity. Numerous perch sites occur throughout the survey area, however no adult bald eagles were observed within the proposed corridor in Minnesota or South Dakota during the August survey conducted by GES.

Loggerhead Shrike (*Lanius ludovicianus var. migrans*, Vieillot) (Minnesota Threatened)

The range of the loggerhead shrike occurs throughout the continental United States, northern Mexico, and the southern Prairie Provinces in Canada (Coffin and Pfannmuller 1988). Continental populations have experienced marked declines in many areas (including Minnesota) during recent decades (Coffin and Pfannmuller 1988, Lefranc 1997). The loggerhead shrike occupies open country, dry uplands, pastures, gravel roadsides, with numerous perch sites such as shrubs, trees or shelterbelts. This species often utilizes powerlines, fences, isolated trees or shrubs that offer perches next to dirt roads where small vertebrates and insects can be observed and captured as they attempt to cross roads. This species is a rare and very local summer resident mainly in the southern one-third of Minnesota (Janssen, 1988). GES observed three fledgling loggerhead shrikes and a possible nest site at the boundary between T109N, R46W, Section 5 and T110N, R46W, Section 32 during the August survey. These three birds were observed on two separate days in the same local along a dirt road between pastured lands south of the road and cropped lands north of the road just east of the proposed Yankee substation location.

Blanding's Turtle (*Emydoidea blandingii*, South Dakota Endangered, Minnesota Threatened)

The Blanding's turtle is known from southern Ontario and the Great Lakes states westward to Nebraska. It is found as far south as Illinois and scattered populations occur to the New England states (Oldfield and

Moriarty, 1994). They are associated with mixed emergent marshes and ponds with other turtle species such as snapping turtles and painted turtles. In southwestern Minnesota they are associated with small stream complexes (Moriarty, 1986). MDNR records indicate that there are occurrences within a mile of the proposed corridor and suitable habitat is located in T109N, R45W, Section 30 and 31; however, no Blanding's turtles were observed during the cursory visit in July or during the August survey.

Western Prairie Fringed-Orchid (*Platanthera praeclara*, Federal Threatened, Minnesota Endangered)
The range of the western prairie fringed-orchid occurs in western Minnesota, extreme eastern North and South Dakota, and in isolated locations in Iowa and Nebraska. The stronghold of this species occurs along the ancient beach ridges of glacial Lake Agassiz east of Crookston, Minnesota. Several other records exist for this species in southwestern Minnesota including occurrences in Rock and Pipestone Counties (Smith, 1993). It is known to occur in calcareous meadows and prairies in full sunlight. The known flowering dates for this species occurs from July 1 through July 29 (Smith, 1993). GES reviewed several remnant wet prairie habitats and remnant mesic prairie sites within the proposed project corridor for the presence of this species but none were observed during the August survey period.

Hair-like beak-rush (*Rhyncospora capillacea*,) (Minnesota Threatened)
The range of this species occurs through the northeastern one-half of the continental United States and into central portions of Alberta. It is considered very rare west of the Mississippi River and in many portions of its eastern range (Coffin and Pfannmuller, 1988). It is a species associated with calcareous fens (which are a protected community in Minnesota) as they occur in the prairie region of the state. GES reviewed several remnant Wet Prairie habitats but no calcareous fens or occurrences of this species were observed along the proposed corridor during the August survey period.

Small White-Ladyslipper (*Cypripedium candidum*, Minnesota Special Concern)
In Minnesota, the small white-ladyslipper is a species associated with moist prairies, calcareous fens, and sedge meadows (Smith, 1993). It has become rare throughout most of its range. It is known to occur within the Hole-in-the-Mountain Prairie but was not observed during the August survey. Suitable habitat for small white-ladyslipper occurs within the survey area and this species may occur within the proposed corridor but the survey was conducted well after its May flowering period and any

plants that may occur would have senesced or been obscured by sedges or other grass species along the survey corridor.

Small-leaved pussytoes (*Antennaria parvifolia*, Minnesota Special Concern)
Small-leaved pussytoes occurs throughout the western United States in areas of dry, open areas with sandy or gravelly soil. This species is known from Lincoln, Polk, and Roseau counties in western Minnesota (Ownbey and Morley, 1992). It is known to occur within the Hole-in-the-Mountain Prairie but was not observed during the August survey. Suitable habitat does exist along the proposed corridor.

Red Three-awn (*Aristida purpurea var. longiseta*, Minnesota Special Concern)
Red three-awn occurs throughout the western United States with populations also located in sandy habitats of North and South Carolina. Red three-awn reproduces by seeds and tillers and flowers between May and October. It is known to occur within the Hole-in-the-Mountain Prairie and was identified during the August survey by GES at a location approximately 0.25 mile north of the proposed project corridor at the Hole-in-the-Mountain Prairie and at one location in South Dakota.

Prairie Moonwort (*Botrychium campestre*, Minnesota Special Concern)
This species appears to be an endemic of the northern Great Plains, but the extent of its range is not known (Coffin and Pfannmuller, 1988). It occurs very early in the growing season (Notes from the Botrychium Workshop June 7-8, 2000), usually May, then quickly senesces and often cannot be found by mid-June. It is known to occur within the Hole-in-the-Mountain Prairie but was not observed during the August survey. Suitable habitat does exist along the proposed corridor but the survey date precluded possible observance of this species.

Soft Goldenrod (*Solidago mollis*, Minnesota Special Concern)
Soft Goldenrod occurs in the dry plains and foothills that extend from Saskatchewan to Texas and eastward into Minnesota. This species is known from Lac Qui Parle, Lincoln, and Traverse counties in western Minnesota (Ownbey and Morley, 1992). Soft Goldenrod is an inhabitant of dry hill prairies and is much more common in the more xeric prairies of western North and South Dakota. The flowering period coincided with the August survey period but GES did not identify any new locations for this species. It is known to occur within the Hole-in-the-Mountain Prairie near the proposed corridor.

Plains Reedgrass (*Calamagrostis montanensis*, Special Concern)
Plains reedgrass occurs from Idaho southward to Colorado and north to western Minnesota and into Canada. This species is known from Clay, Norman, Polk, and Lincoln counties in western Minnesota (Ownbey and Morley, 1992). It grows on dry grassland sites in western Minnesota and has been documented within the Hole-in-the-Mountain Prairie near a railroad corridor. GES did not identify any new locations for this species.

Dakota Skipper (*Hesperia dakotae*) (Minnesota Threatened, Federal Category 2 candidate species)
The Dakota skipper is a northern prairie endemic whose range extends from Manitoba south through Minnesota into Iowa and west to the Dakotas (Coffin and Pfannmuller, 1988). The presence of the Dakota skipper at Hole-in-the-Mountain Prairie has been known since 1967 (Dana, 1997) and is thought to occur throughout Nature Conservancy and WMA owned lands. The Dakota skipper has one adult generation per year and adults are active for only three to five weeks from late June to mid-July (Coffin and Pfannmuller, 1988). This species is a prairie obligate species requiring undisturbed native prairie, particularly those areas with abundant mid-height grasses and purple coneflower (*Echinacea angustifolia*) (Dana, 1997). Those portions of the Hole-in-the-Mountain prairie crossed by the proposed line exhibit these characteristics on west-facing slopes in T109N, R45W, Section 30. During the cursory review of the site in July 7, 2005 GES identified one male and possibly two female Dakota skippers on these west-facing slopes approximately 0.25 mile north of the proposed route. Suitable habitat also occurs in T 110N, R47W, Section 6, T111N, R47W, Sections 30, 31, T111N, R48W, Sections 25, 36 of South Dakota, however, this area was not evaluated during the appropriate flight period for this species.

Ottoe Skipper (*Hesperia ottoe*) (Minnesota Threatened)
The Ottoe skipper has a more extensive range than the Dakota skipper that extends from southern Michigan west to southern Manitoba, eastern Montana, and Colorado, south to northern Texas (Opler et al. 1995). It is also known to occur at the Hole-in-the-Mountain Prairie. Although it has a broader range this species is strongly local and generally uncommon to rare throughout its range (Coffin and Pfannmuller 1988, Marrone 2002). The Ottoe skipper has only one adult generation per year and adults are present for six to seven weeks, usually from mid-June to August with a peak flight in the first half of July (McCabe and Post 1977, Coffin and Pfannmuller 1988, Layberry et al. 1998, Nielsen 1999, Swengel and Swengel 1999). This species is a prairie specialist and is associated with well drained native grasslands including; dry sand prairies, sand dunes, limestone bluff prairie, open oak barrens, and shortgrass prairie (Coffin and Pfannmueller 1988, Cuthrell 2001). There are large areas within the

Hole-in-the-Mountain Prairie that exhibit these characteristics both north and south of the proposed project area but especially on the west facing slopes near the project corridor. GES observed a single male north of the project corridor during the cursory survey conducted on July 7, 2005.

Uncas Skipper (*Hesperia uncas*) (Minnesota Endangered)
The Uncas skippers' range is centered through the rocky mountain region from Saskatchewan and Alberta through the Great Plains to Texas and into Mexico (Coffin and Pfannmuller, 1988). Two records are known from the Hole-in-the-Mountain Prairie in 1979 and 1982 from a mesic gravel till hill prairie (MDNR occurrence records). These records are from dry hill prairie in T109N, R45W, Section 19 and represent individuals from Great Plains populations which are thought to periodically colonize overgrazed pastures within the dissected valleys of the Bemis moraine (Coffin and Pfannmuller, 1988). The flight period for this species in Minnesota is known from only June (Coffin and Pfannmuller, 1988) but in South Dakota there are two peak flight dates that occur from late June to July and August (Marrone, 2002). The Uncas skipper is a locally common species in the northeastern portion of South Dakota and prefers short-grass and mixed-grass prairie sites in this region (Marrone, 2002). The Hole-in-the-Mountain Prairie has harbored this species during years that it invades grazed prairies but no known breeding has been documented on the Nature Conservancy or WMA lands. GES did not observe any of these butterflies during the cursory review during July or during the August survey.

Pawnee Skipper (*Hesperia leonardus* var. *pawnee*) (Minnesota Special Concern)
The Pawnee skipper is a subspecies of Leonard's skipper. The Pawnee skipper generally has lighter coloration and a more western distribution than Leonard's skippers, although some overlap does occur in eastern Minnesota and western Wisconsin. It is also known to occur at the Hole-in-the-Mountain Prairie. The Pawnee skipper has only one adult generation per year with a flight period occurring during August (Marrone, 2002). This subspecies is also a prairie obligate that prefers open grassy areas including native prairies and open pine forest. GES did not observe any Pawnee skippers during the August survey period; however, suitable habitat occurs within the proposed corridor and it appears this years adults had not emerged as there were very few butterflies observed generally during this survey period.

Arogos Skipper (*Atrytone arogos*) (Minnesota Special Concern)
The range of the Arogos skipper includes populations along the Atlantic coast, gulf coast with separate prairie populations extending northward from Texas through Colorado and Montana to North Dakota and eastward

to Minnesota (Opler, 1992). It is known to occur at the Hole-in-the-Mountain Prairie. The Arogos skipper has only one adult generation per year with a flight period occurring during July (Marrone, 2002). This species is found in relatively undisturbed prairies and grasslands (Marrone, 2002). GES did not observe any Arogos skippers during the cursory site review during July; however, suitable habitat occurs within the proposed corridor.

Powesheik Skipperling (*Oarisma powesheik*) (Minnesota Special Concern)
The range of the Powesheik skipperling roughly coincides with that of the Dakota skipper but this species is also known to occur in Wisconsin and southern Michigan (Coffin and Pfannmuller 1988). There are several records of this species from the Hole-in-the-Mountain Prairie (Schlicht, 1995). The Powesheik skipperling has only one adult generation per year with a flight period occurring during July. This species is a prairie specialist that seems to be less particular about prairie type and condition than other prairie specialists and is known to persist in small or slightly degraded prairies such as those along railroad rights-of-way and in tall-grass prairie near wetlands (Coffin and Pfannmuller 1988, Marrone 2002). GES did not observe any Powesheik skipperlings during the cursory site review during July; however, suitable habitat occurs within the proposed corridor.

Regal Fritillary (*Speyeria idalia*) (Minnesota Special Concern)
The regal fritillary is considered a prairie obligate butterfly that has suffered population declines in the Midwest mainly due to the conversion of tallgrass prairies into cropland. Pesticides have also contributed to the species' decline. Large tracts of native prairie that harbor abundant forbs, prairie remnants, or lightly grazed pasture lands containing prairie vegetation are habitats utilized by the regal fritillary. Larval food plants are violets, primarily prairie violet (*Viola pedatifida*), birdsfoot violet (*V. pedata*) and arrowleaf violet (*V.sagittata*) (Opler, 1984, WDNR). Adults utilize the nectar of numerous forb species including milkweeds, thistle, blazing star, and purple coneflowers. The regal fritillary was found at several locations at the Hole-in-the-Mountain Prairie during the cursory review conducted in July and during the August survey on remnant Mesic and Dry Hill prairies in T109N, R45W, Sections 29 and 30. This species was not observed in South Dakota.

Nine different land-use types were documented along the proposed route. The majority of lands along the route are characterized as agricultural lands of which the majority is cropped lands. Included in these agricultural land uses are cropped lands, roads, homes, farm yards, set aside cropland, woodlots, and pastures. Natural community types included Mesic Prairie, Dry Hill Prairie, Wet Prairie, and Mixed Emergent Marsh.

Although some remnant prairie occurs within the survey area, all of these areas have been impacted to some degree by grazing, cropping, road construction or other human uses. GES also located 11 individual TES species occurrences within the proposed corridor. A single location for the Dakota skipper (a USFWS candidate species) was located within the survey area. Locations for three species of butterfly, one species of bird, and one species of plants identified on Minnesota's List of Endangered, Threatened, and Special Concern Species were also located on lands within 0.25 mile of the proposed corridor within natural community types during the survey.

Regulatory Jurisdiction

Federal Regulations

Endangered and threatened species and their critical habitat are protected as a result of the Section 7 of Federal Endangered Species Act and are defined as:

Endangered Species are defined as: "any species which is in danger of extinction throughout all or a significant portion of its range."

Threatened Species are defined as: "threatened species" means any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range."

Critical Habitat for a threatened or endangered species is defined as: " (i) the specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the provisions of section 4 of the Endangered Species Act, on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protection; and
(ii) specific areas outside the geographical area occupied by the species at the time it is listed in accordance with the provisions of section 4 the Endangered Species Act, upon a determination by the Secretary that such areas are essential for the conservation of the species.
(B) Critical habitat may be established for those species now listed as threatened or endangered species for which no critical habitat has heretofore been established as set forth in subparagraph (A) of this paragraph.
(C) Except in those circumstances determined by the Secretary, critical habitat shall not include the entire geographical area which can be occupied by the threatened or endangered species."

Minnesota Regulations

Minnesota Statutes 84.0985, Subp. 3 defines endangered, threatened and special concern species as follows:

"Endangered: the species is threatened with extinction throughout all or a significant portion of its range,"

"Threatened: the species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range, and

Special Concern: although the species is not endangered or threatened, it is extremely uncommon in this state, or has unique or highly specific habitat requirements and deserves careful monitoring of its status. Species on the periphery of their range that are not listed as threatened may be included in this category along with those species that were once threatened or endangered buy now have increasing or protected, stable populations."

Species listed as endangered or threatened species are protected and a take permit is required for such species to be destroyed or transplanted. Special concern species do not have any specific statutory protection.

South Dakota Regulations

South Dakota State Law defines endangered, threatened, and non-game species in chapter 335 Subp. 1; 34A-8-1. Definition of terms:

(1) "Endangered species," any species of wildlife or plants which is in danger of extinction throughout all or a significant part of its range other than a species of insects determined by the Game, Fish and Parks Commission or the secretary of the United States Department of Interior to constitute a pest whose protection under this chapter would present an overwhelming and overriding risk to man;

(2) "Nongame species," any wildlife species not legally classified a game species, fur-bearer, threatened species, or as endangered by statute or regulations of this state;

(3) "Threatened species," any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range;

The information contained herein represents my findings during sensitive species survey activities conducted on July 7, and August 10-12, 2005 along the proposed Buffalo Ridge, Minnesota to White, South Dakota transmission line corridor.

Graham Environmental Services, Inc.

_____ _____

Scott Krych Date
Biologist/Professional Wetland Scientist No. 000303

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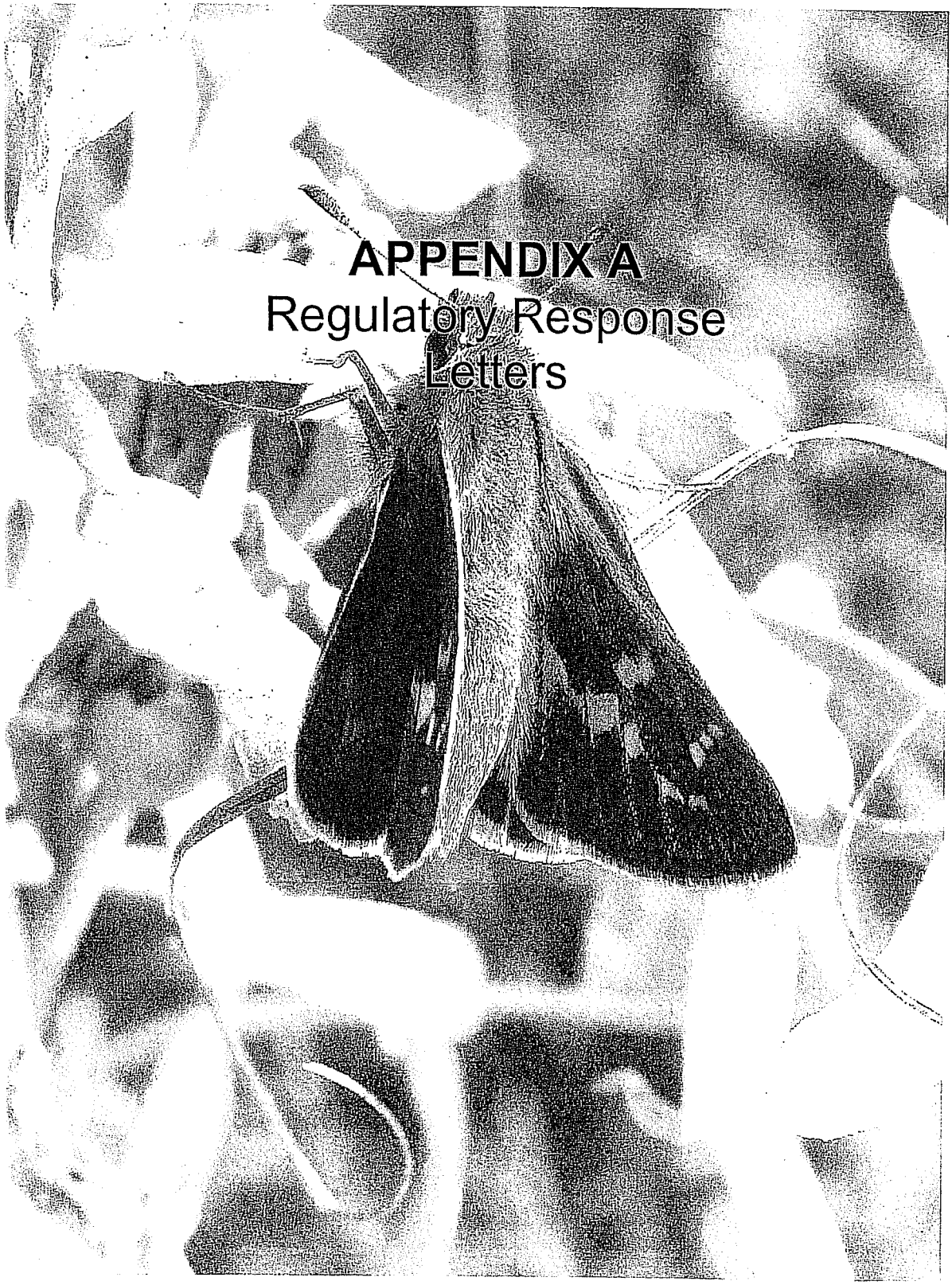
Xcel Buffalo Ridge to White Sensitive Species and Remnant Prairie Locations

Figure 1



APPENDIX A
Regulatory Response Letters

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
420 South Garfield Avenue, Suite 400
Pierre, South Dakota 57501-5408

RECEIVED
MAR 3 2006
HDR Engineering, Inc.

February 28, 2005

Ms. Suzanne Steinhauer
HDR Engineering, Inc.
6190 Golden Hills Drive
Minneapolis, Minnesota 55416

Re: Buffalo Ridge to White Transmission Project, Xcel Energy, Brookings County, South Dakota

Dear Ms. Steinhauer:

This letter is in response to your request dated January 28, 2005, for environmental comments regarding the above referenced project involving construction of a new White substation located one-half mile east of the existing White substation (in section 25, Township 111 North, Range 48 East), approximately 2,000 feet of 345 kV transmission line connecting the two substations and 9.4 miles of 115 kV transmission lines extending south/southeast from the substation to the South Dakota/Minnesota border.

Your current letter provides details of a project originally submitted to this office via an April 24, 2002, letter from HDR Engineering, Inc. and includes some discussion of the concerns raised in our June 7, 2002, response to that original proposal. The first of these addresses the issue of raptor electrocutions. Your letter states that "As a general rule, Xcel Energy routinely implements measures to protect raptors from electrocution." Clearance between conductors and cross arms is specifically mentioned. We understand that transmission lines are typically larger than distribution lines and thereby have greater clearances between conductive materials. However, it is not clear from your letter whether that protective measure or any other will be applied to the new transmission lines or substation. We request information regarding which measures, if any, are to be applied to this project. The issue of avian collisions with power lines should be addressed in a similar manner.

Impacts to the existing bald eagle nest near the Split Rock Substation (referred to in the original project proposal) will apparently be addressed by Xcel Energy via future section 7 consultation with this office as per the Endangered Species Act. Xcel Energy has apparently already committed to avoiding the nest, and we commend that effort.

In our previous letter, we recommended that surveys for the Western prairie fringed orchid be completed prior to construction to determine the plant's presence/absence in historically occupied areas, including Brookings County. The need for surveys can be further clarified by evaluation of existing habitat in the project area. Should the project footprint impact potential habitats of the Western prairie fringed orchid (e.g., native prairie, sedge/wet meadows - potentially including riparian zones), surveys should be considered.

The recommendations provided in our last letter to avoid impacts to the Topeka shiner still apply, based on the assumption that the proposed transmission lines will all be above ground. If the proposed lines may be installed underground (we recommend underground installation of lines whenever possible in order to entirely avoid the avian electrocution/collision issues raised earlier), further consultation regarding Topeka shiner impacts may be necessary, depending on whether trenching or boring is used to place the line. Although underground crossings may temporarily disturb Topeka shiner habitats in the tributaries of Medary and Deer Creeks in Brookings County (which are to be crossed by the proposed transmission lines), such disturbances can be minimized and considered minor, particularly when compared to the long-term impacts of established overhead lines.

The proposed construction of a new substation located only one-half mile from an existing one and the installation of a transmission line also located only one-half mile from an existing line suggests that further efforts might be made to minimize environmental impact by consolidating new structures with old ones. We recommend this approach wherever possible to avoid disturbing additional habitat, particularly intact native prairie. Avoidance of tall structures such as powerlines has been exhibited by prairie nesting birds; thus, the area impacted by such structures often goes beyond the footprint of a powerline pole. Minimization techniques should be applied wherever possible.

The Service appreciates the opportunity to provide comments to this updated project proposal. The comments regarding other issues included in our earlier letter still apply. If you have any questions on these comments, please contact Natalie Gates of this office at (605) 224-8693, Extension 34.

Sincerely,

Pete Gober
Field Supervisor
South Dakota Field Office

Minnesota Department of Natural Resources

Natural Heritage and Nongame Research Program, Box 25
500 Lafayette Road
St. Paul, Minnesota 55155-40__

Phone: (651) 296-7863 Fax: (651) 296-1811 E-mail: sarah.hoffmann@dnr.state.mn.us

RECEIVED
JUN 3 2004
HDR Engineering, Inc.

June 1, 2004

Suzanne Steinhauer
HDR Engineering, Inc.
6190 Golden Hills Drive
Minneapolis, MN 55416

Re: Request for Natural Heritage information for vicinity of proposed Buffalo Ridge to White 115 kV Transmission Line, T109N R45W Sections 19-22, & 27-31; T109N R46W Sections 4-6, 8-17, 23-26, & 36; T110N R46W Sections 19, 29, & 30-32; and T110N R47W Sections 24 & 25, Lincoln County
NHNRP Contact #: ERDB 20040893

Dear Ms. Steinhauer,

The Minnesota Natural Heritage database has been reviewed to determine if any rare plant or animal species or other significant natural features are known to occur within an approximate one-mile radius of the area indicated on the map enclosed with your information request. Based on this review, there are 52 known occurrences of rare species or natural communities in the area searched (for details, see enclosed database printout and explanation of selected fields). Following are specific comments for **only those elements that *may* be impacted** by the proposed project. Rare feature occurrences not listed below are not anticipated to be affected by the proposed project.

- As you are aware, the Hole-in- the- Mountain WMA and Prairie are located in the eastern portion of the project area. These managed areas contain significant prairie communities which support several special concern plant species and several protected butterfly species including, the Uncas Skipper, an endangered species, the Dakota Skipper, a state listed threatened and federal candidate species, and the Ottoe skipper, a state threatened species. Because more than 99% of the prairie that was present in the state before settlement has been destroyed, and more than one-third of Minnesota's endangered, threatened, and special concern species are now dependent on the remaining small fragments of Minnesota's prairie ecosystem, we feel that all prairie remnants merit protection. All of the route segments under consideration have the potential to disturb some prairie habitat and the associated rare species, however the segments with the greatest potential for negative impacts are route segments S1b, S1e, S1f, and S1g. We recommend complete avoidance of these routes. If this is not feasible and these routes are considered further, additional consultation with our office will be necessary to discuss the endangered species permitting process. Please see the enclosed permitting information for details.

- Please note that several prairie remnants have also been identified in the rights-of-way of the DM&E Railroad (see the enclosed map for details). The 1997 Minnesota State Legislature directed the DNR to conduct a field review of active railroad rights-of-way (ROW) to identify native prairie. Railway ROW extend from 20 to 200 feet on either side of the track and are safety zones required for safe railroad operations. The DNR surveyed 3240 miles of railroad ROW, of which 487 discontinuous miles of native prairie were identified. The prairie fragments were

ranked *very good*, *good*, or *fair* based on the coverage of native prairie plant species, abundance of woody shrubs, and level of disturbance (such as herbicide use or equipment storage). The railroad prairie remnants in the project area were considered to be in good condition. Route segments S1e and S1g could impact these railroad prairies and, as noted above, we recommend that they be avoided.

- Topeka shiners (*Notropis topeka*), a federally listed endangered species and state species of special concern species, have been documented within several of the streams that will be crossed by the proposed transmission line. Topeka shiners are adversely impacted by actions which alter stream hydrology or decrease water quality, including sedimentation, dredging and filling, stream dewatering, impoundment, eutrophication, channelization, and pollution/contamination. We are assuming that the project will not involve any in stream work, in which case direct impacts to this rare fish species are not anticipated. However, it is imperative that all standard precautions available to prevent sediment moving into streams be taken to prevent degradation of their aquatic habitat. I have enclosed the Best Management Practices developed for Topeka Shiner habitat protection for your reference.

- The eastern half of the project area is within a "known concentration" area of Blanding's Turtles (*Emydoidea blandingii*), a state threatened species. There are 15 such areas in the state. These areas have been determined by the DNR to be locations of highest priority for research and management activities, and are relied upon to maintain the species' security in the state. For your information, I have attached a fact sheet and a flyer about the Blanding's Turtle. The fact sheet is intended to provide you with background information regarding habitat use, life history, and reasons for the species' decline, as well as recommendations for avoiding and minimizing impacts to this rare turtle. As you will note, there are two lists of recommendations. The first list contains recommendations to prevent harm to turtles during construction work, and is relative to all areas inhabited by Blanding's Turtles. The second column expands on the first column, and contains greater protective measures to be considered for areas known to be of state-wide importance to Blanding's Turtles. Because your project is within one of these areas, please refer to both list of recommendations. The flyer, which should be given to all contractors working in the area, contains an illustration and description of the Blanding's Turtle, as well as a summary of the recommendations provided in the fact sheet.

The Natural Heritage database is maintained by the Natural Heritage and Nongame Research Program, a unit within the Division of Ecological Services, Department of Natural Resources. It is continually updated as new information becomes available, and is the most complete source of data on Minnesota's rare or otherwise significant species, natural communities, and other natural features. Its purpose is to foster better understanding and protection of these features.

Because our information is not based on a comprehensive inventory, there may be rare or otherwise significant natural features in the state that are not represented in the database. A county-by-county survey of rare natural features is now underway, but has not been completed for Lincoln County. Therefore ecologically significant features for which we have no records may exist on the project area.

Please be aware that review by the Natural Heritage and Nongame Research Program focuses only on *rare natural features*. It does not constitute review or approval by the Department of Natural Resources as a whole. If you require further information on the environmental review process for other wildlife-related issues, you may contact your Regional Environmental Assessment Ecologist, Shannon Fisher, at (507) 359-6073.

An invoice for the work completed is enclosed. You are being billed for map and database search and staff scientist review. Please forward this invoice to your Accounts Payable Department. Thank you for consulting us on this matter, and for your interest in preserving Minnesota's rare natural resources.

Sincerely,

Sarah D. Hoffmann
Endangered Species Environmental Review Coordinator

encl: Database search results
Rare Feature Database Print-Outs: An Explanation of Fields
Fact sheets: Topeka Shiner BMPs, Blanding's Turtle, Endangered Species Permitting
Invoice

cc: Shannon Fisher
Robert Meyer

State of Minnesota Endangered Species Permits

Minnesota's endangered species law (MS 84.0895) and associated rules (Chapter 6212.1800 - 6121.2300 and 6134) impose a variety of restrictions, a permit program, and several exemptions pertaining to species designated as endangered or threatened. The current list of species designated under MS 84.0895 can be found at http://www.dnr.state.mn.us/ecological_services/nhnrp/endlist.pdf. The law and rules prohibit taking, purchasing, importing, possessing, transporting, or selling endangered or threatened plant or animal, including their parts or seeds, without a permit. For animals, taking includes pursuing, capturing, or killing. For plants, taking includes picking, digging, or destroying. The law and rules specify conditions under which the Commissioner of the Department of Natural Resources may issue permits to allow taking and possession of endangered or threatened species. In order to understand all regulations pertaining to species that are designated as endangered, threatened or species of special concern, persons are advised to read the full text of the law and rules, which can be accessed at http://www.leg.state.mn.us/leg/statutes.htm.

PERMITS

Permits may be issued for taking only under certain conditions:

- **for scientific study,**
- **for educational programs,**
- **to enhance propagation or survival of the species,**
- **to prevent injury to people or property, or**
- **when the social and economic benefit of the taking outweigh the harm caused by it.**

Permitting decisions must be consistent with the intent of the law, which is to retain or restore healthy populations of native plants and animals. The responsibility for making permitting decisions has been delegated by the Commissioner to the Division of Ecological Services. **Permit issuance is discretionary and based on DNR's assessment of all relevant information.**

Some species listed under Minnesota law are also listed under the Federal Endangered Species Act. If species that are federally listed as endangered or threatened are to be taken, the USFWS should be contacted at 612/725-3276, ext. 250 or see http://endangered.fws.gov/esasum.html#Incidental Take.

APPLYING FOR PERMITS

Permit requests must be submitted in writing to:

Minnesota Department of Natural Resources
Attn. Endangered Species Permits
500 Lafayette Rd., Box 25
St. Paul, MN 55155.

For species to be taken from the wild in Minnesota, the applicant must document the **justification for the taking, location, species, number of individuals** to be taken or possessed, that there are **no feasible alternatives to the taking,** and provide assurance that **the taking will not negatively affect the species' status in Minnesota.**

When taking is proposed in connection with a scientific study, the request must be accompanied by a research proposal that outlines the **justification, methodology** (including the **species and number of individuals** to be taken), the **location** of the project, and the **qualifications** of the researcher. If the research is judged to provide important information about the species that will foster its conservation, the researcher is qualified to do the work, and the proposed taking will not have a significant negative effect on the species population in the state, a permit may be issued. Permits will specify that final disposition of specimens acquired for the purposes of scientific study is to the University of Minnesota Bell Museum of Natural History. Alternative repositories may be considered if compelling justification is provided.

For permits to possess living or dead specimens for scientific or educational purposes, the request must indicate that the permittee is **currently conducting scientific or educational programs** in the field of biology or natural history, and that they or their institution **have appropriate and adequate facilities for the care, exhibition, or storage of the particular species** that are sought to be taken, acquired or possessed. The request must also indicate the **proposed source of the specimens,** and for specimens to be acquired from a secondary source, **documentation that they were legally acquired.** For **possession of living specimens,** the request must indicate **the qualifications and experience of the person(s) who will be caring for the species,** and demonstrate **an understanding of the specific needs of the species,** and **how they will be met.**

When taking is proposed in connection with a development project, the request can be in the form of a letter that outlines the **nature of the project,** the **location** and the **species and number of individuals** that would be taken. Before a permit can be issued, **the project proposer is asked to explore project alternatives,** including other locations or designs, which would avoid or minimize taking.

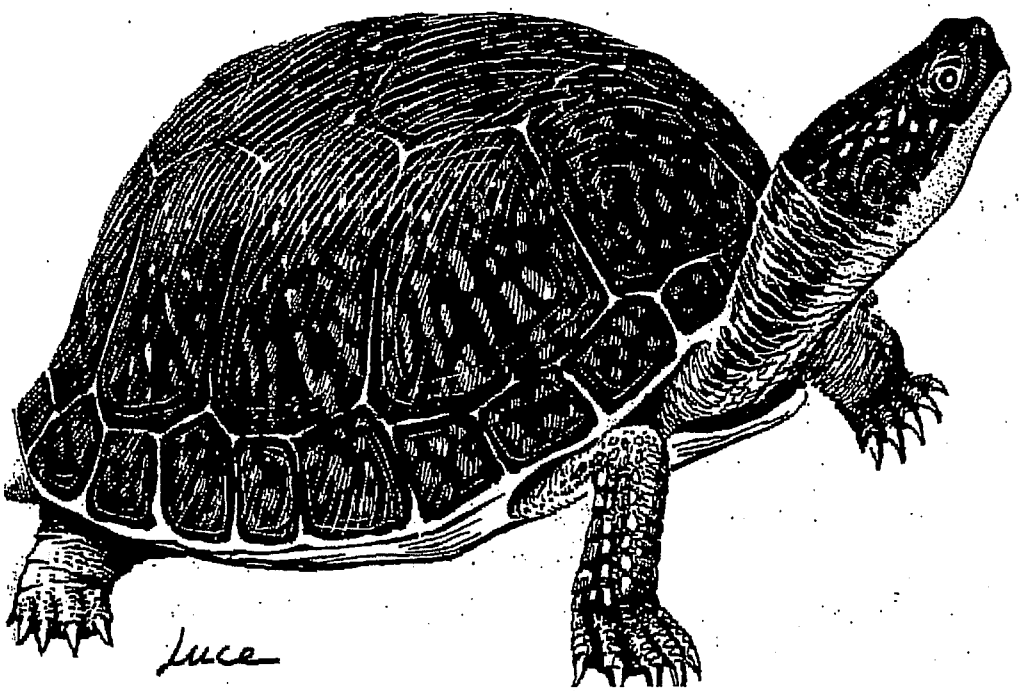
MITIGATION

If it is determined that there are no feasible alternatives to taking in connection with a development project, the applicant must propose compensatory mitigation to reduce the impact of the taking to an acceptable level. The magnitude of the compensation required is related to the degree of impact on the species, (for example, will the whole population at a site be destroyed, or just a few individuals?), and also to the statewide significance of the population on the site. Examples of types of compensatory mitigation that have been done for taking endangered or threatened species in Minnesota include:

- funding state acquisition of another site where the species occurs that is currently unprotected and vulnerable to destruction,
- funding additional survey work to locate other sites, and/or
- funding research to improve our understanding of the habitat requirements or protection needs of the species.

Transplantation generally has not been considered by MNDNR to be acceptable mitigation for taking of endangered or threatened species for several reasons. First, conservation of species in their native habitats is our first priority. Transplantation into an artificial habitat is not a sustainable strategy for native plant and animal conservation. Second, it is necessary to understand the life history, habitat requirements, and genetic structure of natural populations in order to determine the feasibility and advisability of transplantation. This information is unknown for most rare

CAUTION



BLANDING'S TURTLES

MAY BE ENCOUNTERED IN THIS AREA

The unique and rare Blanding's turtle has been found in this area. Blanding's turtles are a State Threatened species and are protected under Minnesota Statute 84.095, Protection of Threatened and Endangered Species. Please be careful of turtles on roads and in construction sites. For additional information on turtles, or to report a Blanding's turtle sighting, contact the DNR Nongame Specialist nearest you: Bemidji (218-755-2976); Brainerd (218-828-2228); New Ulm (507-359-6033); Rochester (507-280-5070); or St. Paul (651-297-2277).

DESCRIPTION: The Blanding's turtle is a medium to large turtle (5 to 10 inches) with a black or dark blue, dome-shaped shell with muted yellow spots and bars. The bottom of the shell is hinged across the front third, enabling the turtle to pull the front edge of the lower shell firmly against the top shell to provide additional protection when threatened. The head, legs, and tail are dark brown or blue-gray with small dots of light brown or yellow. A distinctive field mark is the bright yellow chin and neck.

Illustration by Don Luce, from Turtles in Minnesota, Natural History Leaflet No. 9, June 1989, James Ford Bell Museum of Natural History

SUMMARY OF RECOMMENDATIONS FOR AVOIDING AND MINIMIZING IMPACTS TO BLANDING'S TURTLE POPULATIONS

(see Environmental Review Fact Sheet Series for full recommendations)

- A flyer with an illustration of an adult Blanding's turtle should be given to all contractors working in the area. Homeowners should also be informed of the presence of Blanding's turtles in the area.
- Turtles which are in imminent danger should be moved, by hand, out of harms way. Turtles which are not in imminent danger should be left undisturbed to continue their travel among wetlands and/or nest sites.
- If a Blanding's turtle nests in your yard, do not disturb the nest, and do not allow pets near the nest.
- Blanding's turtles do not make good pets. It is illegal to keep this threatened species in captivity.
- Silt fencing should be set up to keep turtles out of construction areas. It is critical that silt fencing be removed after the area has been revegetated.
- Small, vegetated temporary wetlands should not be dredged, deepened, or filled.
- All wetlands should be protected from pollution; use of fertilizers and pesticides should be avoided, and run-off from lawns and streets should be controlled. Erosion should be prevented to keep sediment from reaching wetlands and lakes.
- Roads should be kept to minimum standards on widths and lanes.
- Roads should be ditched, not curbed or below grade. If curbs must be used, 4" high curbs at a 3:1 slope are preferred.
- Culverts under roads crossing wetland areas, between wetland areas, or between wetland and nesting areas should be at least 36 in. diameter and flat-bottomed or elliptical.
- Culverts under roads crossing streams should be oversized (at least twice as wide as the normal width of open water) and flat-bottomed or elliptical.
- Utility access and maintenance roads should be kept to a minimum.
- Below-ground utility construction sites should be returned to original grade.
- Terrain should be left with as much natural contour as possible.
- Graded areas should be revegetated with native grasses and forbs.
- Vegetation management in infrequently mowed areas -- such as in ditches, along utility access roads, and under power lines -- should be done mechanically (chemicals should not be used). Work should occur fall through spring (after October 1st and before June 1st).

Compiled by the Minnesota Department of Natural Resources Natural Heritage and Nongame Research Program, August, 2001
Endangered Species Environmental Review Coordinator, 500 Lafayette Rd., Box 25, St. Paul, MN 55155 / 651-296-7863

BMPs for Topeka Shiner Habitat Protection

Minnesota Department of Natural Resources
Division of Ecological Services

The following Best Management Practices are generally applicable to protection of Topeka shiner habitat wherever it may be impacted by human activity. They are typical of provisions that are currently attached to public waters work permits issued by the Division of Waters for activities such as ditch clean-outs and utility crossings, and are featured in comment letters on road and bridge construction.

1. No in stream work should be conducted between ice-out and August 15, to ensure free passage of Topeka shiner adults and to protect spawning habitat. Site work above the ordinary high water line is not affected. No tracked or wheeled vehicles should be allowed in the streambed. All mechanized work should be conducted from the banks.

2. Only accumulated sediment should be removed from the channel. No changes in stream geometry, width or depth should occur. It is preferred that the streambed be dry before sediment removal begins. The local SWCD and/or NRCS office should be consulted regarding implementation of BMPs to minimize soil erosion in the watershed.

3. Erosion control measures will receive the utmost attention. Silt fences should be installed adjacent to the stream, and *additional* devices such as silt fences or check bales should be installed upslope. Devices should be inspected frequently, particularly following precipitation, to ensure that they are effective and in good repair. Repairs or replacements should be made promptly. Erosion control measures should remain in place until vegetation begins to recover.

4. Existing features such as bridge abutments, retaining walls and riprap should remain in place, to the extent practicable.

5. Construction should not begin if rain is forecast during the next three days. Construction should not begin until the entire project can be completed without delay.

6. Removal of riparian vegetation should be kept to a minimum, and should occur sequentially as needed over the length of the project. Areas of disturbed soils should be mulched and/or reseeded promptly, preferably with native grasses and forbs. The site should be inspected following spring green up, to ensure that vegetation is recovering as expected.

7. Construction, demolition and/or removal operations conducted over, or in the vicinity of, the stream, will be so controlled as to prevent materials from falling into the water. Any materials that do fall into the water or into areas below the OHWL should be retrieved promptly, by hand or by equipment working from the banks, and disposed of in a manner consistent with state and local ordinances.

8. Any fill materials that must be placed below the OHWL must be clean and free of fine materials, and should be locally sourced, if possible. Final grade ratios should not exceed 3:1. If installation of riprap is permitted as part of the proposed action, Class III riprap should be installed over geotextile material, such that stream banks are protected from scour. Riprap or other materials that already exist onsite should be minimally disturbed

9. The applicant will meet with any hired contractors before the commencement of the project, to ensure that all permit provisions are clearly understood. If the project is modified, or if field conditions change, the proposer should contact the Area Hydrologist before proceeding.

Endangered, Threatened, and Special Concern Species of Minnesota

Blanding's Turtle

(Emydoidea blandingii)

Minnesota Status:	Threatened	State Rank[1]:	S2
Federal Status:	none	Global Rank[1]:	G4

HABITAT USE

Blanding's turtles need both wetland and upland habitats to complete their life cycle. The types of wetlands used include ponds, marshes, shrub swamps, bogs, and ditches and streams with slow-moving water. In Minnesota, Blanding's turtles are primarily marsh and pond inhabitants. Calm, shallow water bodies (Type 1-3 wetlands) with mud bottoms and abundant aquatic vegetation (cattails, water lilies, etc.) are preferred, and extensive marshes bordering rivers provide excellent habitat. Small temporary wetlands (those that dry up in the late summer or fall) are frequently used in spring and summer -- these fishless pools are amphibian and invertebrate breeding habitat, which provides an important food source for Blanding's turtles. Also, the warmer water of these shallower areas probably aids in the development of eggs within the female turtle. Nesting occurs in open (grassy or brushy) sandy uplands, often some distance from water bodies. Frequently, nesting occurs in traditional nesting grounds on undeveloped land. Blanding's turtles have also been known to nest successfully on residential property (especially in low density housing situations), and to utilize disturbed areas such as farm fields, gardens, under power lines, and road shoulders (especially of dirt roads). Although Blanding's turtles may travel through woodlots during their seasonal movements, shady areas (including forests and lawns with shade trees) are not used for nesting. Wetlands with deeper water are needed in times of drought, and during the winter. Blanding's turtles overwinter in the muddy bottoms of deeper marshes and ponds, or other water bodies where they are protected from freezing.

LIFE HISTORY

Individuals emerge from overwintering and begin basking in late March or early April on warm, sunny days. The increase in body temperature which occurs during basking is necessary for egg development within the female turtle. Nesting in Minnesota typically occurs during June, and females are most active in late afternoon and at dusk. Nesting can occur as much as a mile from wetlands. The nest is dug by the female in an open sandy area and 6-15 eggs are laid. The female turtle returns to the marsh within 24 hours of laying eggs. After a development period of approximately two months, hatchlings leave the nest from mid-August through early-October. Nesting females and hatchlings are often at risk of being killed while crossing roads between wetlands and nesting areas. In addition to movements associated with nesting, all ages and both sexes move between wetlands from April through November. These movements peak in June and July and again in September and October as turtles move to and from overwintering sites. In late autumn (typically November), Blanding's turtles bury themselves in the substrate (the mud at the bottom) of deeper wetlands to overwinter.

IMPACTS / THREATS / CAUSES OF DECLINE

- loss of wetland habitat through drainage or flooding (converting wetlands into ponds or lakes)
- loss of upland habitat through development or conversion to agriculture
- human disturbance, including collection for the pet trade* and road kills during seasonal movements
- increase in predator populations (skunks, racoons, etc.) which prey on nests and young

*It is illegal to possess this threatened species.

RECOMMENDATIONS FOR AVOIDING AND MINIMIZING IMPACTS

These recommendations apply to typical construction projects and general land use within Blanding's turtle habitat, and are provided to help local governments, developers, contractors, and homeowners minimize or avoid detrimental impacts to Blanding's turtle populations. **List 1** describes minimum measures which we recommend to prevent harm to Blanding's turtles during construction or other work within Blanding's turtle habitat. **List 2** contains recommendations which offer even greater protection for Blanding's turtles populations; this list should be used *in addition to the first list* in areas which are known to be of state-wide importance to Blanding's turtles (contact the DNR's Natural Heritage and Nongame Research Program if you wish to determine if your project or home is in one of these areas), or in any other area where greater protection for Blanding's turtles is desired.

List 1. Recommendations for all areas inhabited by Blanding's turtles.	**List 2. *Additional* recommendations for areas known to be of state-wide importance to Blanding's turtles.**
GENERAL	
A flyer with an illustration of a Blanding's turtle should be given to all contractors working in the area. Homeowners should also be informed of the presence of Blanding's turtles in the area.	Turtle crossing signs can be installed adjacent to road-crossing areas used by Blanding's turtles to increase public awareness and reduce road kills.
Turtles which are in imminent danger should be moved, by hand, out of harms way. Turtles which are not in imminent danger should be left undisturbed.	Workers in the area should be aware that Blanding's turtles nest in June, generally after 4pm, and should be advised to minimize disturbance if turtles are seen.
If a Blanding's turtle nests in your yard, do not disturb the nest.	If you would like to provide more protection for a Blanding's turtle nest on your property, see "Protecting Blanding's Turtle Nests" on page 3 of this fact sheet.
Silt fencing should be set up to keep turtles out of construction areas. It is critical that silt fencing be removed after the area has been revegetated.	Construction in potential nesting areas should be limited to the period between September 15 and June 1 (this is the time when activity of adults and hatchlings in upland areas is at a minimum).
WETLANDS	
Small, vegetated temporary wetlands (Types 2 & 3) should not be dredged, deepened, filled, or converted to storm water retention basins (these wetlands provide important habitat during spring and summer).	Shallow portions of wetlands should not be disturbed during prime basking time (mid morning to mid- afternoon in May and June). A wide buffer should be left along the shore to minimize human activity near wetlands (basking Blanding's turtles are more easily disturbed than other turtle species).
Wetlands should be protected from pollution; use of fertilizers and pesticides should be avoided, and run-off from lawns and streets should be controlled. Erosion should be prevented to keep sediment from reaching wetlands and lakes.	Wetlands should be protected from road, lawn, and other chemical run-off by a vegetated buffer strip at least 50' wide. This area should be left unmowed and in a natural condition.
ROADS	
Roads should be kept to minimum standards on widths and lanes (this reduces road kills by slowing traffic and reducing the distance turtles need to cross).	Tunnels should be considered in areas with concentrations of turtle crossings (more than 10 turtles per year per 100 meters of road), and in areas of lower density if the level of road use would make a safe crossing impossible for turtles. Contact your DNR Regional Nongame Specialist for further information on wildlife tunnels.
Roads should be ditched, not curbed or below grade. If curbs must be used, 4 inch high curbs at a 3:1 slope are preferred (Blanding's turtles have great difficulty climbing traditional curbs; curbs and below grade roads trap turtles on the road and can cause road kills).	Roads should be ditched, not curbed or below grade.

ROADS cont.	
Culverts between wetland areas, or between wetland areas and nesting areas, should be 36 inches or greater in diameter, and elliptical or flat-bottomed.	Road placement should avoid separating wetlands from adjacent upland nesting sites, or these roads should be fenced to prevent turtles from attempting to cross them (contact your DNR Nongame Specialist for details).
Wetland crossings should be bridged, or include raised roadways with culverts which are 36 in or greater in diameter and flat-bottomed or elliptical (raised roadways discourage turtles from leaving the wetland to bask on roads).	Road placement should avoid bisecting wetlands, or these roads should be fenced to prevent turtles from attempting to cross them (contact your DNR Nongame Specialist for details). This is especially important for roads with more than 2 lanes.
Culverts under roads crossing streams should be oversized (at least twice as wide as the normal width of open water) and flat-bottomed or elliptical.	Roads crossing streams should be bridged.
UTILITIES	
Utility access and maintenance roads should be kept to a minimum (this reduces road-kill potential).	
Below-ground utility construction sites should be returned to original grade (trenches can trap turtles).	
LANDSCAPING AND VEGETATION MANAGEMENT	
Terrain should be left with as much natural contour as possible.	As much natural landscape as possible should be preserved (installation of sod or wood chips, paving, and planting of trees within nesting habitat can make that habitat unusable to nesting Blanding's turtles).
Graded areas should be revegetated with native grasses and forbs (some non-natives form dense patches through which it is difficult for turtles to travel).	Open space should include some areas at higher elevations for nesting. These areas should be retained in native vegetation, and should be connected to wetlands by a wide corridor of native vegetation.
Vegetation management in infrequently mowed areas -- such as in ditches, along utility access roads, and under power lines -- should be done mechanically (chemicals should not be used). Work should occur fall through spring (after October 1st and before June 1st).	Ditches and utility access roads should not be mowed or managed through use of chemicals. If vegetation management is required, it should be done mechanically, as infrequently as possible, and fall through spring (mowing can kill turtles present during mowing, and makes it easier for predators to locate turtles crossing roads).

Protecting Blanding's Turtle Nests: Most predation on turtle nests occurs within 48 hours after the eggs are laid. After this time, the scent is gone from the nest and it is more difficult for predators to locate the nest. Nests more than a week old probably do not need additional protection, unless they are in a particularly vulnerable spot, such as a yard where pets may disturb the nest. Turtle nests can be protected from predators and other disturbance by covering them with a piece of wire fencing (such as chicken wire), secured to the ground with stakes or rocks. The piece of fencing should measure at least 2 ft. x 2 ft., and should be of medium sized mesh (openings should be about 2 in. x 2 in.). It is ***very important*** that the fencing be **removed before August 1st** so the young turtles can escape from the nest when they hatch!

REFERENCES

[1]Association for Biodiversity Information. "Heritage Status: Global, National, and Subnational Conservation Status Ranks." NatureServe. Version 1.3 (9 April 2001). http://www.natureserve.org/ranking.htm (15 April 2001).

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Sajwaj, T. D., and J. W. Lang. 2000. Thermal ecology of Blanding's turtle in central Minnesota. Chelonian Conservation and Biology 3(4):626-636.

DEPARTMENT OF GAME, FISH AND PARKS
Foss Building
523 East Capitol
Pierre, South Dakota 57501-3182

RECEIVED
MAR 28 2005
HDR Engineering, Inc.

March 23, 2005

Suzanne Steinhauer
HDR
6190 Golden Hills Drive
Minneapolis, MN 55416

RE: Buffalo Ridge to White Transmission Project

Suzanne:

As requested I have searched the South Dakota Natural Heritage Database for records of rare, threatened or endangered species in the areas described in your letter of March 8, 2005. There are no records of rare or T&E species along the proposed transmission line route. The only area of concern is the crossing over Deer Creek. Deer Creek is a stream that is known to have a Topeka shiner population. There are records of this federally endangered fish in the Deer Creek watershed. The attached report has more details. Use of BMP's while working in or near Deer Creek should minimize any negative impacts that this project might have.

Migratory species such as the federally threatened bald eagle could be present in the project area during spring and fall. Bald eagle nests are being found in many locations in eastern South Dakota. New nests are found every year. It is possible the new bald eagle nests could be found along the proposed transmission line route.

If you have any questions or need additional information, please contact me.

Sincerely,

Doug Backlund
Wildlife Biologist

Scientific Name: *Notropis topeka* **Occurrence #:** 41

Common Name: Topeka Shiner **SD Protection Status:**
Global Rank G3 **State Rank** S2 **Federal Status**
Endangered

County: Brookings **Township Range:** 111N048W **Section:** 13

Latitude: 442515N **Longitude:** 0963245W

Directions:
TRIBUTARY TO DEER CREEK, ABOUT 5 EAST AND 1 SOUTH OF WHITE

Survey Information:

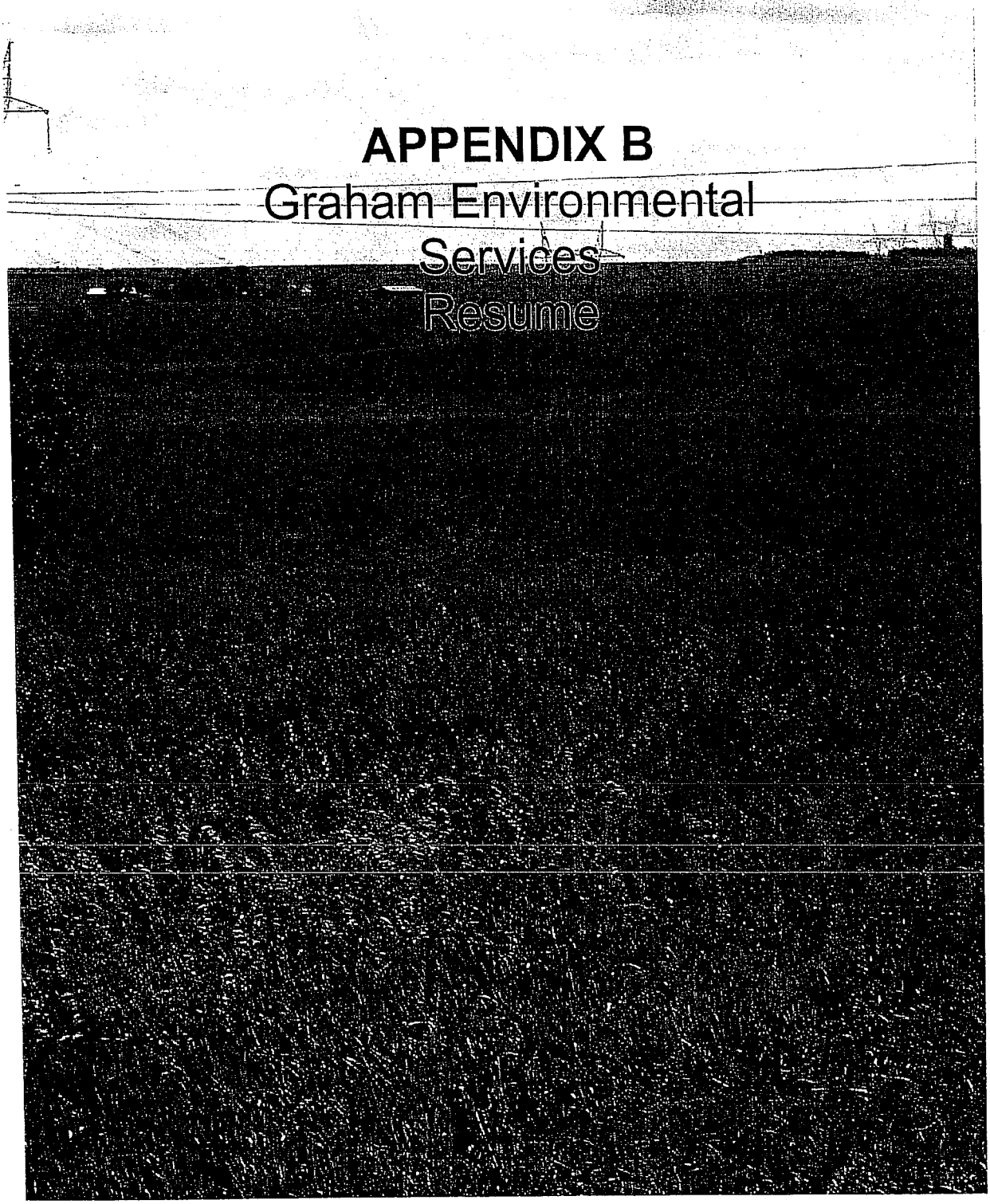
First Observation: 2000-09-18 **Last Observation:** 2000-09-18

Eo Type:

EO Data: 14 TOPEKA SHINERS CAPTURED FROM LARGE POOL, SEVERAL AGE CLASSES, YOY TO ADULT

APPENDIX B

Graham Environmental Services Resume



CURRICULUM VITAE

SCOTT A. KRYCH, PWS

Senior Project Manager, Professional Wetland Scientist

GRAHAM ENVIRONMENTAL SERVICES, INC.

EXPERTISE

- Botanical and Ornithological Studies
- Ecological Investigations
- Wetland Restoration
- Wetland Delineation
- Wetland Mitigation Planning
- GPS/GIS Applications
- Regulatory Compliance Strategies
- Habitat and Ecosystem Mapping

ACADEMIC BACKGROUND:

- BS, Biology, Mankato State University, 1986

REGISTRATION:

- Professional Wetland Scientist, SWS, #000303

PROFESSIONAL AFFILIATIONS:

- Wilson Ornithological Society
- Minnesota Ornithologists Union
- Wetland Delineators Association
- Society of Wetlands Scientists

SPECIALIZED TRAINING

- Identification of Sedges and Rushes, Dr. Robert Mohlenbrock, 2004.
- Minnesota Wetland Plant Identification, Dr. Robert Mohlenbrock, 2003.
- Wisconsin DNR's Karner Blue Butterfly HCP Effectiveness Monitoring Training, 2003
- Training in Delineation of Problem and Disturbed Wetlands using 1987 Corps of Engineers Wetlands Delineation Manual. Corps of Engineers, Minnesota Board of Water & Soil Resources and Coon Creek Watershed District. 1993.
- Introduction to GPS. Dunwoody Institute, MN. 1995
- Regulatory Issues of Corridor Projects. U.W.-Madison. 1992.

PROJECT RELATED EXPERIENCE

Mr. Krych has served as Project Manager for large biological and ecological field surveys and as Principal Investigator for threatened and endangered species on projects in the Great Lakes region for the past 16 years. He has managed and conducted field surveys for over 60 endangered and threatened species in the Chequamegon, Chippewa, Hiawatha, Nicolet and Ottawa National Forests. Mr. Krych has prepared and assisted in preparation of NEPA documents and National Forest Management Plans and has conducted surveys for endangered or threatened birds, plants and insects on over twelve large-scale projects in the Midwest. Mr. Krych has also managed and conducted wetland delineations using 1987 Corps Wetland Delineation Manual on over 2000 miles of utility corridors and on hundreds of local projects since 1989. Mr. Krych is versed in use of GIS (Arcview™), GPS (CMT PCGPS), and database (Access™) methods to map ecosystems, habitat types, land-use patterns, and endangered or threatened species locations on a number of projects located in the Great Lakes Region. He specializes in wetland delineation, regulatory assistance, habitat assessment/utilization, and the analysis of songbird and raptor communities.

- ❖ Project manager and principal investigator for endangered, threatened and special concern plant species on three projects of over 80 acres. Conducted habitat evaluation, natural community mapping, natural community classification, rare species searches, and impact assessments for state-listed plants with known occurrences within the Anoka Sand Plain. Target elements included: tubercled rein-orchid (*Platanthera flava* var. *herbiola*), cross-leaved milkwort (*Polygala cruciata*), twisted yellow-eyed grass (*Xyris torta*), lance-leaved violet (*Viola lanceolata*), tooth-cup (*Rotala ramosior*), autumn fimbristylis (*Fimbristylis autumnalis*), marginated rush (*Juncus marginatus*), tall nut-rush (*Scleria triglomerata*), willow-herb (*Decodon verticillatus*), butternut (*Juglans cinerea*), and sea-beach needlegrass (*Aristida tuberculosa*). Utilized GPS (CMT PCGPS) and GIS (Arcview™) technologies to locate community types and identify rare plant locations. Identified and located over nine community types within 240 acres of agricultural lands, wetlands, and upland forest types Anoka Sand Plain. 2004
- ❖ Project manager and principal investigator of regional forester sensitive species within the Chippewa National Forest for Enbridge and Great Lakes Gas Transmission Company. Evaluated and surveyed locations for threatened or endangered plants and animals along 26 miles of existing pipeline corridor. Botanical survey target elements included: meander searches for 15 species of threatened or endangered plants including *Botrychium pallidum, B. lanceolatum* var. *angustisegmentum, B. simplex, B. rugulosum, B. oneidense, B. mormo, Calypso bulbosa,*

Cypripedium arietinum, Malaxis monophyllos var. *brachypoda, Sparganium glomeratum* and *Taxus canadensis*. Avian target elements included; black-backed woodpecker *(Picoides arcticus)*, Connecticut warbler (*Oporomis agilis)*, LeConte's sparrow (*Ammodramus leconteii)*, olive-sided flycatcher (*Contopus cooperi)*, red-shouldered hawk (*Buteo lineatus)*, and northern goshawk (*Accipiter gentilis*). Utilized GPS (CMT PCGPS) and GIS (Arcview™) technologies. Identified over 157 threatened and endangered plants at 14 locations along the existing pipeline right-of-ways. 2003.

- Project manager and principal investigator of 19 forest sensitive plant species for the Chippewa National Forest. Evaluated and surveyed 206 stands for threatened or endangered plants. Utilized GPS (CMT PCGPS) and GIS (Arcview™) technologies to verify stand locations and identify rare plant locations. Identified and located over 13 threatened and endangered plants within 4,052 acres of northern hardwood , black spruce swamp, tamarack swamp, aspen and red pine forest types. 2003.
- Project manager and principal investigator on Loggerhead Shrike Nest Survey. Comprehensive site search for State Threatened Loggerhead Shrike nests and habitat on a 250 acre parcel located in Rosemount, MN. 2003.
- Project manager and principal investigator for surveys of breeding birds and rare plants within the Chippewa National Forest. Managed and conducted surveys for Region 9 sensitive species and federally threatened and endangered plants along 110 miles of Enbridge Pipleine corridor in northern Minnesota. Investigations included: call/response surveys for northern goshawk and red-shouldered hawks), helicopter surveys for bald eagle (*Haliaeetus leucocephalus*) and point count surveys for songbirds. Botanical elements included: meander searches for 15 species of threatened or endangered plants including *Botrychium pallidum, B. lanceolatum* var. *angustisegmentum, B. simplex, B. rugulosum, B. oneidense, B. mormo, Calypso bulbosa, Cypripedium arietinum, Malaxis monophyllos* var. *brachypoda,* and *Taxus canadensis*. Prepared sections of Chippewa National Forest EA and BE for the project. 2000-2002.
- Project manager and principal investigator of natural resource inventory for the City of Blaine. Evaluated and surveyed locations of wetlands, uplands and threatened or endangered plants and animals within 35 square miles of the Anoka Sandplain region of Minnesota. Utilized National Wetlands Inventory (NWI) maps, half section aerial photographs and field reconnaissance to identify wetlands or high quality ecosystems. Wetlands were classified according to guidelines established in Classification of Wetland and Deepwater Habitats of the United States (Cowardin et. al.) Identified 384 wetlands, 17 high quality upland sites, eight threatened and endangered plants at 15 locations and over 16 different community types using GPS (CMT PCGPS) and GIS (Arcview™) technologies. A general database was constructed to help the City plan for open space, greenway corridors and property acquisition. Blaine, MN. 1999-2000.
- Project manager for wetland evaluation/environmental assessment and permitting for over 300 local projects within the Mississippi River drainage in and around the Minneapolis-Saint Paul metropolitan area. Delineated Section 404 waters of the United States wetlands using 1987 Corps Wetland Delineation Manual (Waterways Experiment Station Technical Report Y-87-1, January 1987). Permits were issued for construction based on the delineation and subsequent planning . 1989 to present.
- Project manager for Vector Pipeline project in IL, IN and MI. Organized, planned, and managed the delineation of over 480 Section 404 Waters of the United States and Section 10 Waters along a 329.4-mile length of a proposed, natural gas pipeline route. Delineations made extensive use of GIS (Arcview™), GPS (CMT PCGPS), and database (Access™) methods. Investigator for a survey for Indiana Bat (*Myotis sodalis*) and suitable breeding habitat in select sites in Illinois and Indiana. 1999-2001.
- Project manager for Great Lakes Gas Transmission G.L. 300 Expansion Pipeline project in MN, WI and MI. Organized, planned, and managed the delineation of over 480 Section 404 Waters of the United States and Section 10 Waters along a 166 miles of a proposed, natural gas pipeline route. Delineations made extensive use of GIS (Arcview™), GPS (CMT PCGPS), and database (Access™) methods. 1998.
- Project investigator for Alliance Pipeline project in ND, MN, IA and IL. Assisted in organizing, managing and conducting the delineation of over 1100 Section 404 Waters of the United States and Section 10 Waters along a 850-mile length of a proposed, natural gas pipeline route. Assisted in developing GPS/GIS technologies that were used in the production of data forms compliant with 1987 COE Wetland Delineation Manual and NRCS specifications. Wetland polygons from several wetlands were seamlessly integrated into environmental worksheets prepared by the project engineer. Delineations made extensive use of GIS (Arcview™), GPS (CMT PCGPS), and database (Access™) methods., 1997-1999.
- Principal wetland biologist for citywide wetland inventory and functions and values analysis for the City of Plymouth, Minnesota. Duties included aerial photograph interpretation, field verification, and functional analysis of approximately 90 percent of the 770 individual wetlands within the city. Plymouth, MN. 1996
- Project manager and principal investigator of wetland delineation on over 1500 miles of pipeline right-of-way in MN, ND, WI, and MI. Wetland delineations were conducted for Great Lakes Gas Transmission projects, Lakehead Pipe Line and Northern Natural Gas projects. 1989-92
- Project manager and principal investigator for surveys of breeding birds in the Chippewa, Hiawatha and Chequamegon National Forests. Managed and conducted auditory and visual point counts along 105 miles of Natural Gas Pipeline corridor in MN, WI and MI. 1997.
- Project investigator for raptor surveys along natural gas pipeline corridors. Carried out surveys and impact assessments for Federal and state threatened, endangered, and sensitive species on 61 miles of natural gas pipeline proposed by Paiute Gas Corporation in Humboldt, Washoe, Pershing, Carson City, and Douglas Counties, Nevada. Species surveyed included bald eagle, golden eagle (*Aquila chrysaetos*), ferruginous hawk (*Buteo regalis*), Swainson's hawk (*Buteo swainsoni*), red-tailed hawk (*Buteo jamaicensis*), prairie falcon (*Falco mexicanus*), northern

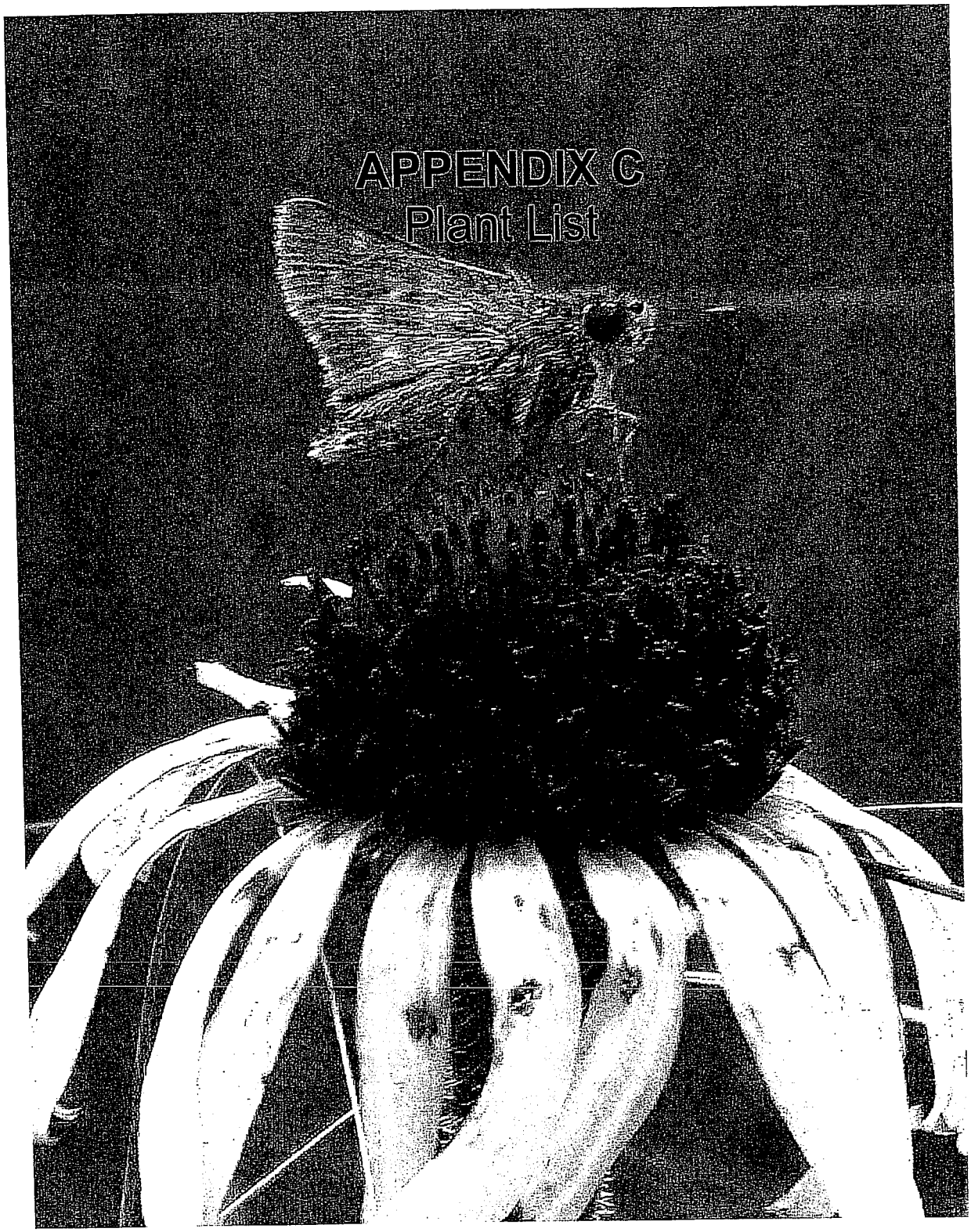
harrier (*Circus cyaneus*), common barn owl (*Tyto alba*), long-eared owl (*Asio otus*), northern goshawk, American kestrel (*Falco sparverius*), and burrowing owl (*Athene cunicularia*). 1992.

- Principal investigator for a cursory survey for Hine's Emerald Green Dragonflies and suitable breeding habitat in the vicinity of the Des Plaines River in Illinois. 1998.
- Project manager and principal investigator for historic osprey nesting location in the Chippewa National Forest at a proposed natural gas meter station improvement. 1996.
- Principal Investigator for threatened and endangered plants and animals on a 357-acre site in Scott County, MN. Project included, habitat mapping, botanical survey and site assessment, as part of an EAW, preceding issuance of a permit to proceed. Credit River, Minnesota. 1999.
- Principal Investigator for analysis of biotic communities, wetlands, and threatened and endangered species for preparation of federal Environmental Assessment and State of Minnesota EIS for Metropolitan Airports Commission Dual Track Airport Planning process. Conducted field investigations, reviewed literature, interviewed agency specialists, and participated in public hearings. Conducted waterfowl counts on Mississippi River and assisted in preparation of bird-aircraft hazard. 1996.
- Project Investigator for federal Environmental Assessment and State of Minnesota EIS project in Brainerd, MN. Conducted analysis of biotic communities, wetlands, and threatened and endangered species for proposed runway expansion. Conducted field investigations and reviewed literature. Conducted waterfowl counts on Mississippi River and assisted in preparation of bird-aircraft hazard analysis. 1995.
- Project manager and principal investigator for surveys of Blanding's Turtles (*Emydoidea blandingii*). Conducted surveys and prepared mitigation strategies for Blanding's turtles and critical habitat on several sites in the Minneapolis/St. Paul metropolitan area. 1995-present.
- Project manager and principal investigator for surveys of Loggerhead Shrike (*Lanius ludovicianus* var. *migrans*). Conducted surveys and prepared mitigation strategies for Loggerhead shrikes and critical habitat on several sites in the Minneapolis/St. Paul metropolitan area. 1995-present.
- Principal Investigator: Conducted survey for raptors nesting within 0.5 miles of a proposed 35-mile right-of-way in southwest and central Nevada. Included a Northern Goshawk (*Accipiter gentilis*) call/response survey and meander search. 1993.
- Regal Fritillary (*Speyeria idalia*). Surveyed a proposed Wisconsin wastewater treatment site for adult butterflies and host plant species. 1993.
- Project manager and principal investigator on Loggerhead Shrike Nest Survey. Comprehensive site search for State Threatened Loggerhead Shrike nest on a 50 acre parcel located in Shakopee, MN. 1994.

PERTINENT PUBLICATIONS AND PRESENTATIONS

Timpson, M. E. , J. L. Arndt, and S. A. Krych. 1998. Innovative approaches to large-scale wetland delineation projects. p.328 *In* Agron. Abstracts. ASA, Madison, WI.

Arndt, J. L., M. E. Timpson, S. A. Krych, and D. Dignen. 1998. Integrated database strategies for wetland and soil resource assessments. p.62 *In* Agron. Abstracts. ASA, Madison, WI.


APPENDIX C
Plant List

Appendix C: Species Observed along proposed Buffalo Ridge to White corridor.

Genus	Species	Species Author	Common Name	Mesic Prairie	Dry Hill Prairie	Wet Prairie	Mixed Emergent Marsh
Understory Trees							
Acer	*negundo*		Box elder	X			X
Acer	*saccharinum*		Silver maple				X
Fraxinus	*pennsylvanica*		Green ash	X			X
Juniperus	*virginiana*	L.	Eastern red cedar	X	X		
Populus	*deltoides*		Eastern cottonwood	X			X
Quercus	*macrocarpa*		Bur oak	X			
Salix	*nigra*		Black willow			X	X
Ulmus	*americana*	L.	American elm	X			
Shrubs							
Amelanchier	*alnifolia*		Juneberry	X			
Amorpha	*canescens*	Pursh	Lead plant	X	X	X	
Parthenocissus	*quinquifolia*		Virginia creeper	X			X
Rhus	*glabra*		Smooth sumac	X	X		
Symphoricarpos	*occidentalis*	Moench	Wolfberry			X	
Forbs							
Achillea	*millefolium*	L.	Yarrow	X	X		
Agalinis	*tenuifolia*		Slender agalinis	X	X		
Allium	*stellatum*		Prairie wild onion	X	X		
Anemone	*cylindrica*		Long-headed thimbleweed	X	X		
Anemone	*canadense*	L.	Meadow anemone	X	X	X	
Anemone	*patens*		Pasque flower	X	X		
Antennearia	*neglecta*		Pussytoes		X		
Apocynum	*sibericum*	Jacq.	Dogbane	X		X	X
Artemisia	*dracunculus*		Wormwood	X	X	X	
Artemesia	*ludoviciana*	Nutt.	Prairie sage	X	X		
Asclepias	*incarnata*		Swamp milkweed			X	X
Asclepias	*viridflora*		Green milkweed	X	X		
Aster	*ericoides*		Heath aster	X		X	
Aster	*lanceolatus*		Panicled aster	X	X		
Aster	*laevis*		Smooth aster	X	X		
Aster	*novae-angliae*		New England aster	X		X	X
Aster	*sericeus*		Silvery aster	X	X		
Astragalus	*crassicarpus*		Ground plum	X	X		
Brickellia	*eupatorioides*		False boneset	X	X	X	
Calylophus	*serrulatus*		Toothed evening primrose	X	X		
Chrysopsis	*villosa*		Golden aster	X	X		
Cicuta	*maaculata*		Water hemlock			X	X
Cirsium	*discolor*	Spreng.	Pasture thistle	X	X		

Cirsium	*flodmanii*		Flodman's thistle	X	X		
Comandra	*umbellata*		Bastard toadflax	X	X		
Convovulus	*sepium*		Hedge bindweed				X
Coreopsis	*palmata*		Coreopsis	X	X		
Dalea	*purpurea*		Purple prairie clover	X	X	X	
Delphinium	*virescens*	Nutt.	White larkspur	X	X		
Erigeron	*strigosus*		Daisy fleabane	X	X		
Echinacea	*angustifolia*		Purple coneflower	X	X		
Echinocystis	*lobata*		Wild cucumber			X	X
Eupatorium	*maculatum*		Joe-pye weed			X	X
Euthamia	*graminifolia*		Grass-leaved goldenrod			X	
Fragaria	*virginiana*		Strawberry	X		X	
Galium	*boreale*		Northern bedstraw			X	
Geum	*triflorum*		Prairie smoke		X		
Glycyrrhiza	*lepidota*	Nutt.	Wild licorice	X			
Heleanthus	*grosseserratus*		Sawtooth sunflower	X	X	X	
Helianthus	*maximiliani*	Schrad.	Maximilian's sunflower	X		X	
Helianthus	*pauciflorus*		Stiff sunflower	X	X	X	
Heliopsis	*helianthoides*	L.	Smooth oxeye	X			
Heuchera	*americana*		Alum root	X	X		
Hypoxis	*hirsuta*	L.	Yellow star grass	X		X	
Lathyrus	*venosus*		Veiny pea	X	X		
Lithospermum	*canescens*		Hoary puccoon	X	X		
Liatris	*aspera*		Rough blazing star	X			
Liatris	*punctata*		Dotted blazing star	X	X		
Liatris	*ligulistylis*		Plains blazing star		X		
Lilium	*philadelphicum*		Wood lily	X	X		
Lobelia	*spicata*	Lam.	Pale spiked lobelia	X	X	X	
Lycopus	*americana*		American bugleweed			X	X
Lycopus	*asper*		Rough bugleweed			X	X
Lysimachia	*ciliata*		Fringed loosestrife				X
Mentha	*arvense*		Wild mint			X	X
Monarda	*fistulosa*	L.	Wild bergamot	X		X	
Mirabilis	*nyctaginea*	Michx.	Wild four-o-clock	X		X	
Onosmodium	*molle*		Marbleseed	X	X		
Oxytropis	*lanbertii*		Lambert's locoweed		X		
Pedicularis	*canadensis*	L.	Wood betony	X	X		
Pediomelum	*esculentum*		Prairie turnip	X	X		
Penstemon	*grandiflorus*	Nutt.	Large-flowered beard tongue		X		
Petalostemon	*candidum*		White prairie-clover	X	X		
Petalostemon	*purpureum*	Vent.	Purple prairie	X	X		

			clover				
Phlox	*pilosa*		Phlox	X		X	
Physalis	*virginiana*	Mill.	Ground cherry	X	X		
Plantago	*aristida*	Michx.	Poor Joe			X	X
Polygonum	*amphibium*		Water smartweed			X	X
Potentilla	*anserina*		Silverweed		X		
Potentilla	*argentea*		Silvery cinquefoil	X			
Potentilla	*arguta*		Tall cinquefoil	X			
Psoralea	*argophyllum*	Pursh	Silverleaf scurfpea	X	X		
Ratibida	*columnifera*		Prairie coneflower	X	X		
Ratibida	*pinnata*		Gray-headed coneflower	X		X	
Rosa	*arkansana*		Prairie rose	X	X	X	
Rudbeckia	*hirta*	L.	Black-eyed Susan	X	X		
Senecio	*plattensis*		Prairie ragwort	X	X		
Silphium	*laciniatum*	L.	Compass plant	X		X	
Silphium	*perfoliatum*	L.	Cup plant			X	X
Sisyrinchium	campestre		Field blue-eyed grass	X	X		
Solidago	*rigida*	L.	Stiff goldenrod	X	X		
Solidago	*nemoralis*	Aiton	Gray goldenrod		X		
Solidago	*missouriensis*		Missouri goldenrod	X		X	
Solidago	*gigantea*		Giant goldenrod			X	X
Solidago	*canadensis*		Canada goldenrod	X		X	
Taraxicum	*officinale*		Common dandelion			X	X
Thalictrum	*dasycarpum*	Fisch. & Ave-Lall.	Purple meadow rue	X		X	
Tradescanti	*bracteata*		Spiderwort	X	X		
Urtica	*dioica*		Stinging nettle	X		X	X
Verbena	*stricta*	Vent.	Hoary vervain	X	X		
Veronicastrum	*virginicum*		Culver's root			X	X
Vicia	*americana*	Willd.	American vetch			X	X
Vitis	*riparia*		Riverbank grape			X	X
Zigadenus	*glaucaus*	Nutt.	White camas			X	
Zizea	*aurea*		Golden alexanders	X	X		
Zizia	*aptera*		Heart-leaved alexanders	X			
Grasses, Rushes and Sedges:							
Andropogon	*scoparius*		Little bluestem	X	X		
Andropogon	*gerardii*		Big bluestem	X	X	X	
Bouteloua	*curtipendula*		Side-oats grama	X	X	X	
Bouteloua	*gracilis*		Blue grama	X	X		
Calamagrostis	*canadensis*		Canada bluejoint			X	
Calamagrostis	*stricta*		Narrow reedgrass	X		X	
Carex	*atherodes*		Hairy-leaved			X	

			sedge				
Carex	*granularis*	Willd.	Pale sedge	X		X	
Carex	*gravida*	L.H.Baily	Heavy sedge	X			
Carex	*heliophila*		Sun-loving sedge	X			
Carex	*pellita*		Wooly sedge			X	
Carex	*sartwellii*		Sartwell's sedge			X	X
Carex	*stricta*		Hummock sedge			X	X
Carex	*vulpinoidea*		Fox sedge	X		X	X
Eleocharis	*smallii*		Marsh spike rush			X	X
Elymus	*trachycaulus*		Slender wheatgrass	X			
Hordeum	*jubatum*		Squirrel-tail			X	X
Koeleria	*macrantha*		June grass	X	X		
Muhlenbergia	*cuspidata*		Plains muhly	X	X		
Panicum	*wilcoxianum*	Vasey	Wilcox's panic grass	X	X		
Panicum	*virgatum*		Panic grass	X	X	X	
Panicum	*liebergii*	Vasey	Prairie panic grass	X			
Sorghastrum	*nutans*		Indian grass	X	X	X	
Scirpus	*fluviatilis*		River bulrush			X	X
Spartina	*pectinata*		Cord grass	X		X	X
Stipa	*comota*		Needle-and-thread		X		
Stipa	*spartea*		Porcupine grass	X	X		
Typha	*latifolia*		Broad-leaved cattail			X	X
Exotic Invasive Species							
Agropyron	*repens*		Quackgrass	X	X		
Ambrosia	*artemissiifolia*		Common ragweed	X		X	X
Ambrosia	*trifida*		Giant ragweed	X		X	
Asclepias	*syriaca*		Common milkweed	X		X	
Bromus	*inermis*		Smooth brome	X	X		
Bromus	*tectorum*		Cheet		X		
Carduus	*nutans*		Musk thistle	X	X		
Cirstum	*arvense*	(L.) Scop.	Canada thistle	X	X	X	
Dactylis	*glomerata*		Orchard grass	X	X		
Elaeagnus	*commutata*		Russian olive	X			
Euphorbia	*esula*	L.	Leafy spurge	X	X		
Medicago	*sativa*		Black medic	X	X		
Melilotus	*alba*	Medik.	White sweet clover	X		X	
Melilotus	*officinalis*	L.	Yellow sweet clover	X		X	
Phalaris	*arundinacea*		Reed canary grass	X		X	X

Phleum	*pratense*		Timothy	X		X	
Plantago	*major*	L.	Common plantain	X		X	
Poa	*compressa*		Canada bluegrass	X	X	X	
Poa	*pratensis*	L.	Kentucky bluegrass	X	X	X	
Polygonum	*convolvulus*	L.	Black bindweed	X		X	X
Polygonum	*persicaria*		Lady's thumb			X	X
Rumex	*crispus*	L.	Curly dock			X	X
Taraxicum	*officinale*		Common dandelion	X	X	X	
Tragopogon	*pratensis*	L.	Goat's beard	X		X	
Trifolium	*aureum*	Pollich	Yellow hop clover	X	X		
Trifolium	*hybridum*	L.	Alsike clover	X	X	X	
Trifolium	*pratense*	L.	Red clover	X		X	
Ulmus	*pumila*		Siberian elm	X		X	

Exhibit F

EXHIBIT F
NOISE MEMO

HDR | ONE COMPANY *Many Solutions*℠

Memo

To:	Suzanne Steinhauer		
From:	Angela Gowan	Project:	Xcel White
CC:			
Date:	8/1/05	Job No:	00006794077164

RE: Noise monitoring at White, SD

On July 18 and 19, 2005, HDR performed short term and 24 hour noise monitoring at the White, SD Substation, to obtain baseline noise readings prior to planned substation additions. The short term monitoring consisted of a 20 minute measurement to determine the average noise level (Leq) at a point outside the fence of the substation where noise levels seemed greater relative to other locations along the fence. The 24 hour monitoring was performed at the closest residence to the substation to determine the Ldn, the day-night sound level which describes the 24 hour cumulative exposure level. The 24 hour monitoring location for the White Substation was approximately 1250 feet south-southwest of the substation.

The 24 hour noise monitoring was done utilizing a Larson-Davis model 824 Type I sound level meter. The microphone for the meter was enclosed in a wind screen with wire bird spikes and mounted on a tripod approximately six feet above the ground. A cable connected the microphone to the noise meter which was preprogrammed to start and stop the measurements at the appropriate times. The meter was calibrated prior to use through the use of the manufacturer supplied calibration unit emitting a 114 dB signal.

The short term noise monitoring was done using a Quest model 2900 Type I sound level meter. The meter was mounted on a tripod approximately five feet above the ground and set to measure the Leq for 20 minutes. Prior to use, the meter was calibrated at 114 dB using the manufacturer supplied calibration unit.

Weather conditions during monitoring consisted of clear skies with a falling barometric pressure. Temperatures ranged from 57 to 89 degrees Fahrenheit and winds were variable, ranging from west-northwesterly to easterly on the 18th to east-southeasterly to southerly on the 19th. Wind speeds ranged from calm to 25 mph, with highest readings occurring during the afternoons and calm readings between 9:00 and 11:00 pm. Additional possible sources of noise at the White location include: wind, roadway traffic, lawn mowers, and dogs.

The following table and graph show the data from the monitoring. All data are expressed in dB(A). Calculation of the Ldn imposes a 10 dB penalty on measurements made between 10pm and 7am. The penalty is not reflected in the individual hourly Leq values shown in the table.

The actual component of noise measured during the 24 hour periods attributable to the substation can be predicted using the measured short term Leq's. Assuming that the substation is a large spherical source, the noise produced by the substation will drop off at a rate of 6 dB as the distance from the substation doubles. For the White substation, the measured distance from the Quest 2900 meter to the closest source of noise within the substation was 125 feet. The measured Leq was 46.9 dB(A) and the distance to the 24 hour monitoring location was 1250 feet. This results in a calculated value of 26.9 dB(A) as the contribution of noise from the substation.

Given the relatively small calculated contributions from the substation to the noise levels at the closest residence, planned substation upgrade is not predicted to adversely influence noise levels at residences near this substation.

Measurement	White Substation
Leq (Time interval)	46.9 (10:28 – 10:48)
Ldn *	59.4
Hourly Leq's from 24 hour measurement	
7:00:00	51.5
8:00:00	49.7
9:00:00	47.7
10:00:00	51.6
11:00:00	56.8
12:00:00	61.1
13:00:00	65.7
14:00:00	66.9
15:00:00	66.5
Start of White measurement 16:00:00	52.3
17:00:00	49.0
18:00:00	49.3
19:00:00	46.3
20:00:00	45.3
21:00:00	45.2
22:00:00	48.8
23:00:00	48.5
0:00:00	50.1
1:00:00	48.6
2:00:00	48.6
3:00:00	43.8
4:00:00	41.7
5:00:00	44.9
6:00:00	47.5

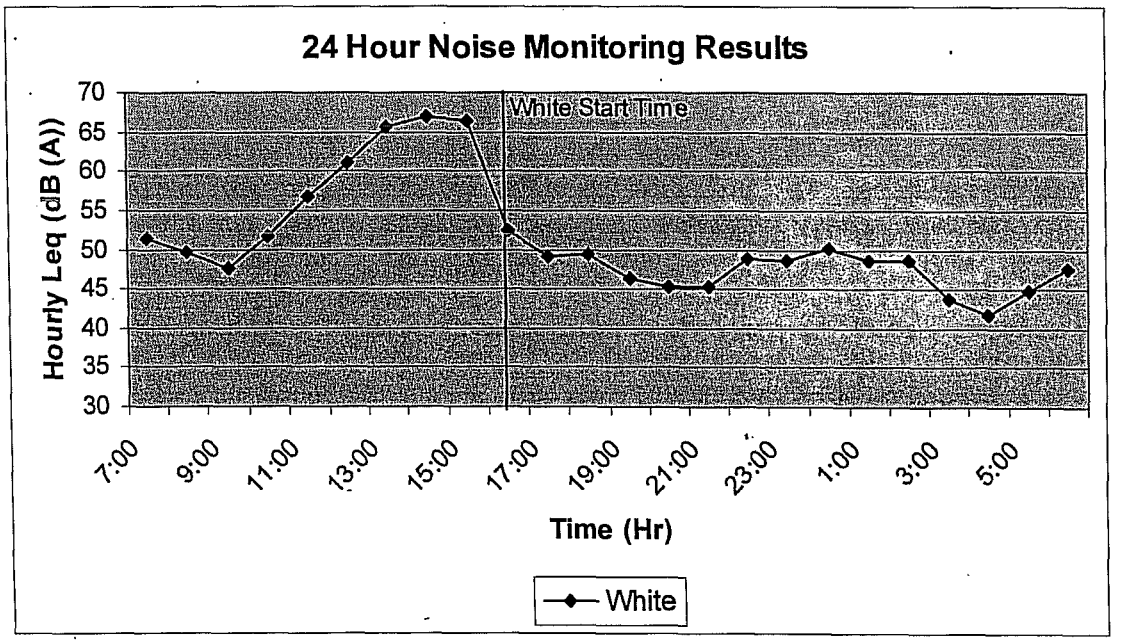


Exhibit G

EXHIBIT G
ARCHAEOLOGICAL AND ARCHITECTURAL RESOURCES

Exhibit G

Archaeological and Architectural Resources

Table G-1

Cultural Resources Surveys near Project Area (South Dakota)

Survey Report Date	Report Title	Author (Association)
1997	*An Intensive Cultural Resources Survey of Sioux Valley Southwestern Electric Company's Proposed 1997 Underground Cable Installation in T111N and T112N, R48W, Brookings County, South Dakota: Upper Big Sioux Archaeological Study Unit*	Timothy V. Gillen, (Archeology Laboratory, Augustana College, Sioux Falls, South Dakota)
1973	*An Archeological Survey of the A Proposed Watertown, South Dakota – Moville, Iowa 345 KV Transmission Line 1973*	John S. Sigstad (University of South Dakota)
1985	*Overview and Summary of the Archeology of the Northern Border Pipeline Project in Montana, North Dakato, South Dakota, Minnesota, and Iowa.*	Hannus, L. Adrien (Augustana College Archeology Lab, Sioux Falls, SD. Submitted to Northern Border Pipeline Co., Omaha, NE)

Table G-2.

Previously identified archaeological Resources within the Project and Study Area (SOUTH DAKOTA).

Site Number	Site Name	Type	Location			Comments
			T	R	S	
39BK4	N/A	Artifact Scatter	112N	48W	35	NRHP Eligibility unknown
39BK10	Deer Creek Channel	Faunal/Paleontological	111N	47w	19	NRHP Eligibility unknown
39BK11	Lake Shaokaton	Artifact Scatter	111N	47W	16	NRHP Eligibility unknown

Table G-3

Previously Identified Historic Standing Structures within the Project and Study Area (SOUTH DAKOTA)

Site Number	Site Name	Date	Location			Comments
			T	R	S	
BK00000031	Tolk, Leonard	1900's	110N	47W	19	NRHP Eligibility unknown
BK00000032	Abandoned Site	N/A	110N	47W	20	NRHP Eligibility unknown
BK00000033	Thompson, Duane	N/A	110N	47W	20	NRHP Eligibility unknown
BK00000034	Vaskey, Clayton	N/A	110N	47W	21	NRHP Eligibility unknown
BK00000035	Nichols, Kelly	N/A	110N	47W	21	NRHP Eligibility unknown
BK00000036	Wrigg, Henry	N/A	110N	47W	27	NRHP Eligibility unknown
BK00000041	Styf, John	N/A	110N	47W	17	NRHP Eligibility unknown
BK00000056	Even, Donald	N/A	110N	47W	28	NRHP Eligibility unknown
BK00000057	Kolbeck's Station	N/A	110N	47W	29	NRHP Eligibility unknown
BK00000059	MscLaughlin, Ernie	N/A	110N	47W	19	NRHP Eligibility unknown
BK00000061	Rocky Ranch	1930s	110N	47W	18	NRHP Eligibility unknown
BK00000065	Van Dyke, Gary	N/A	110N	47W	27	NRHP Eligibility unknown
BK00000066	Wiskur, James	N/A	110N	47W	28	NRHP Eligibility unknown
BK00000067	Farm Site	N/A	110N	47W	28	NRHP Eligibility unknown
BK00000068	Kurtz, Raymond	N/A	110N	47W	17	NRHP Eligibility unknown
BK00000093	Abandoned Site	N/A	110N	47W	15	NRHP Eligibility unknown
BK00000115	Miller, Delmer C.	N/A	110N	47W	17	NRHP Eligibility unknown
BK00000163	Courthouse Adolph Peterson	N/A	110N	47W	6	NRHP Eligibility unknown
BK00000164	Kurtz, Raymond	N/A	110N	47W	7	NRHP Eligibility unknown
BK00000173	Motter, Richard	N/A	110N	47W	15	NRHP Eligibility unknown
BK00000174	Nichols, Steve & Kelly	N/A	110N	47W	15	NRHP Eligibility unknown
BK00000176	Risch, Ronald	1920's	110N	47W	16	NRHP Eligibility unknown
BK00000192	Abandoned Site	N/A	111N	47W	30	NRHP Eligibility unknown
BK00000193	Diamond R West Ranch	N/A	111N	47W	30	NRHP Eligibility unknown
BK00000430	Lang, Charles Farm	N/A	110N	48W	1	NRHP Eligibility unknown
BK00000431	McKeown, Gordon	N/A	110N	48W	1	NRHP Eligibility unknown
BK00000432	Berdahl	N/A	110N	48W	1	NRHP Eligibility unknown
BK00000633	Farm Site	N/A	110N	48W	13	NRHP Eligibility unknown
BK00000643	Farrell Farm	1800's	110N	48W	12	NRHP Eligibility unknown
BK00001406	Lund, Dan	N/A	110N	48W	24	NRHP Eligibility unknown
BK00001407	Janssen, Shean Farm	N/A	110N	48W	24	NRHP Eligibility unknown
BK00001408	Brodersen, Gordon	1900's	110N	48W	24	NRHP Eligibility unknown
BK00001623	Oppelt, Lester	1924	110N	48W	24	NRHP Eligibility unknown
BK00001624	Koch, Don	N/A	110N	48W	13	NRHP Eligibility unknown
BK00001625	Even, Doug	N/A	110N	48W	12	NRHP Eligibility unknown

Exhibit H

EXHIBIT H
SOIL UNIT DESCRIPTIONS

Exhibit H

Description of Soil Units in Project Corridor

Buffalo Ridge – White Transmission Project

Brookings County, South Dakota

Soil Association	Percent of Corridor	General Description
Barnes clay loam, 0 to 2 percent slopes	1.4%	Well drained, moderately or moderately slowly permeable soils that formed in loamy till on till plains and moraines.
Barnes clay loam, 2 to 6 percent slopes	7.6%	
Buse-Barnes loams, 6 to 9 percent slopes	8.8%	Well drained, moderately or moderately slowly permeable soils that formed in loamy till on till plains and moraines.
Buse-Barnes loams, 9 to 20 percent slopes	4.3%	
Buse-Langhei Complex, 15 to 40 percent slopes	4.1%	Well drained, moderately or moderately slowly permeable soils that formed in loamy till and calcareous till on till plains and moraines.
Doland Loam, 2 to 6 percent slopes	2.9%	Well drained moderately permeable soils that formed in a silty mantle and in underlying loamy glacial till or entirely in the silty mantle on glacial moraines.
Estelline silt loam, 0 to 2 percent slopes	4.5%	Well drained soils formed in silty material overlying sand and gravel on stream terraces and glacial outwash plains.
Fordville-Renshaw loams, 2 to 6 percent slopes	1.3%	Well drained to somewhat excessively drained soils formed in loamy sediments that are moderately deep over sand and gravel on outwash plains and terraces.
Hamerly-Badger Complex, 0 to 2 percent slopes	3.7%	Somewhat poorly drained soils that formed in calcareous loamy till on flats on lake plains and on convex slopes surrounding shallow depressions and on slight rises on till plains, or formed in alluvium over silty or loamy glacial till in upland swales, drainageways and toeslopes.

Kranzburg-Brookings silty clay loams, 0 to 2 percent slopes	2.2%	Well drained and moderately well drained soils formed in silty glacial drift or loess and the underlying glacial till on uplands and foot slopes of till plains.
Kranzburg-Brookings silty clay loams, 1 to 6 percent slopes	23.6%	
Lamoure clay loam, 0 to 1 percent slopes	2.1%	Somewhat poorly drained or poorly drained soils formed in silty alluvium on flood plains.
Lamoure-Rauville silty clay loams, channeled	3.1%	Somewhat poorly drained, poorly drained or very poorly drained soils formed in silty alluvium on flood plains or flats.
Lanona-Swenoda sandy loams, 2 to 6 percent slopes	1.7%	Well drained or moderately well drained soils formed in loamy sediments underlain by finer textured loamy glaciolacustrine or glacial till sediments on uplands.
McIntosh-Badger silty clay loams, 0 to 2 percent slopes	0.6%	Moderately well drained or somewhat poorly drained calcareous soils that formed in a silty mantle of glacial lacustrine sediments or loess over loamy glacial till on glacial lake plains, moraines, upland swales, drainageways and toeslopes.
McIntosh-Lamoure silty clay loams, 0 to 2 percent slopes	2.7%	Moderately well drained, somewhat poorly drained or poorly drained calcareous soils that formed in a silty mantle of glacial lacustrine sediments or loess over loamy glacial till on glacial lake plains and moraines.
Moritz-Lamoure Complex, 0 to 2 percent slopes	4.6%	Somewhat poorly drained or poorly drained soils formed in alluvium on flood plains.
Orthents, Gravelly	0.5%	Newly formed soil in gravelly parent material
Renshaw-Sioux Complex, 6 to 9 percent slopes	0.4%	Somewhat excessively drained or excessively drained soils formed in loamy sediments and the underlying sand and gravel on outwash plains, terraces and eskers.
Renshaw-Sioux Complex, 15 to 40 percent slopes	0.5%	
Strayhoss loam, 0 to 2 percent slopes	0.8%	Well drained soils formed in loamy eolian material over sandy eolian material on uplands.

Strayhoss loam, 2 to 6 percent slopes	0.1%	
Strayhoss-Maddock Complex, 2 to 6 percent slopes	1.1%	Well drained or somewhat excessively drained soils formed in loamy eolian material over sandy eolian material on uplands, or in eolian or alluvial material on sandy glaciolacustrine or glaciofluvial, outwash and delta plains.
Venagro-Svea loams, 0 to 2 percent slopes	0.5%	Well drained or moderately well drained soils formed in loamy eolian material and the underlying loamy glacial till on till plains and high terraces, or formed in calcareous till and local alluvium from the till on concave positions on till plains.
Venagro-Svea loams, 1 to 6 percent slopes	3.0%	
Vienna-Brookings Complex, 1 to 6 percent slopes	3.4%	Well drained and moderately well drained soils formed in silty and loamy loess over loamy glacial till on uplands and foot slopes of till plains.
Vienna-Buse Complex, 6 to 9 percent slopes	10.7%	Well drained drained soils formed in silty and loamy loess over loamy glacial till on uplands and glacial moraines.

Data obtained from the USDA-NRCS Soil Survey Division, Online Official Soil Series Description Query Facility, http://ortho.ftw.nrcs.usda.gov/cgi-bin/osd/osdnamequery.cgi

Exhibit

I

EXHIBIT I
COMMENTS

DEPARTMENT OF GAME, FISH AND PARKS
Foss Building
523 East Capitol
Pierre, South Dakota 57501-3182

RECEIVED
FEB 3 2005
HDR Engineering, Inc.

February 1, 2005

Ms. Suzanne Steinhauer
Environmental Planner
HDR Engineering, Inc.
6190 Golden Hills Drive
Minneapolis, MN 55416

RE: Buffalo Ridge to White Transmission Project; 115 kV Transmission Line
Windfarm Transmission Improvement Project

Dear Ms. Steinhauer:

This letter is in response to your request dated January 10, 2005 for environmental comments regarding the above referenced project involving construction of a new North White substation and new transmission lines in Brookings County, South Dakota.

According to National Wetland Inventory maps, numerous wetlands exist within the proposed construction corridor. If a project may impact wetlands or other important fish and wildlife habitats, this Department recommends complete avoidance of these areas, if possible, followed by minimization of any adverse impacts, and finally replacement or mitigation of any lost acres. Alternatives should be examined and the least damaging practical alternative selected. Should any underground service lines be installed, the following recommendations should be implemented in the construction plans for the placement of any lines that cross streams and wetlands.

1. Crossing of wetland basins should be done when dry conditions exist, if possible.

2. Stream bottoms and wetlands impacted by construction activities should be restored to pre-project elevations.

3. Stream crossings should not be undertaken during fish spawning periods. Most spawning occurs in April through July.

4. Streams should be crossed perpendicular to flow.

5. Removal of vegetation and soil should be accomplished in a manner to reduce soil erosion and to disturb as little vegetation as possible.

6. Grading operations and reseeding of native species, if necessary, should begin immediately following trench backfilling.

Please also be advised that work requiring the alteration or disturbance of wetlands or streams may require a permit from the U.S. Army Corps of Engineers according to regulations set forth in Section 404 of the Clean Water Act. You may wish to contact the South Dakota Regulatory Office at 28563 Powerhouse Road, Room 118, Pierre, South Dakota 57501, phone (605) 224-8531.

Regarding the proposed transmission line, a primary concern of this office is the threat of electrocution to raptors and other avian species. Bird mortality results when species attempt to utilize overhead power lines as nesting, hunting, resting, feeding, and sunning sites. For this reason, and to minimize environmental impacts, we recommend underground power lines be installed whenever possible and appropriate. Transmission lines, unlike distribution lines, typically pose a lesser risk of electrocution due to their large size. However, the potential of avian line strikes still exists with the presence of overhead lines. For all new overhead lines, we recommend incorporating measures to prevent electrocutions and, in situations where these lines are adjacent to wetlands or other waters on opposite sides of the lines, we recommend marking the lines in order to make them more visible to birds.

Thank you for the opportunity to provide comments on this project. If changes are made to the project plans or if I may be of further assistance, please contact me at (605) 773-6208.

Sincerely,

Leslie Petersen
Aquatic Resource Coordinator

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
SOUTH DAKOTA REGULATORY OFFICE
28563 POWERHOUSE ROAD, ROOM 118
PIERRE SD 57501-6174

RECEIVED
FEB 14 2005
HDR Engineering, Inc.

REPLY TO
ATTENTION OF:

February 10, 2005

South Dakota Regulatory Office
28563 Powerhouse Road, Room 118
Pierre, South Dakota 57501

HDR Engineering Inc
Attn: Suzanne Steinhauer
Environmental Planner
6190 Golden Hills Drive
Minneapolis, Minnesota 55416

Dear Ms. Steinhauer:

Reference is made to the preliminary information received January 31, 2005, concerning Department of the Army authorization requirements for construction of the Buffalo Ridge to White Transmission Project, in Brookings County, South Dakota.

The Corps' jurisdiction is derived from Section 10 of the Rivers and Harbors Act of March 3, 1899, and Section 404 of the Clean Water Act passed by Congress in 1972. Section 10 calls for Federal regulation of activities in or affecting navigable waters of the United States including adjacent wetlands. Waterways and their adjacent wetlands in South Dakota subject to regulation under the provisions of Section 10 include the Missouri River, the James River, the lower five miles of the Big Sioux River and Lake Traverse (Bois de Sioux River). Section 404 calls for Federal regulation of the discharge of dredged or fill material into certain waterways, lakes and/or wetlands (i.e. waters of the United States), including the above noted navigable waters. Activities that do not involve work in or affecting navigable waters (Section 10) or activities that do not involve a discharge of dredged or fill material into waters of the United States (Section 404) do not require Department of the Army authorization.

Based on the preliminary information provided, it can not be determined if the proposed construction activities involve the discharge of dredged or fill material into waters subject to Federal regulation.

Enclosed is the necessary application form (ENG Form 4345) and information pamphlet. When completing the application form, we would request from the applicant (a) a detailed description of the work activity [i.e., explain precisely what you are going to do and how you are going to accomplish it; include fill and/or excavation

quantities and dimensions to be performed below the ordinary high water elevation (if in a lake, river or stream) or to be performed within the boundary of jurisdictional wetlands (if the project involves wetlands), along with the source/type of fill and the type of equipment to be used during construction]; (b) the purpose, need and/or benefits of the proposed project; and (c) any alternative project designs or locations considered.

Along with the completed application form, we would request from the applicant (1) detailed drawings (plan and cross-sectional views; the drawings should be submitted on 8-1/2x11 inch paper), (2) location map(s) showing all jurisdictional work sites (i.e., where the utility line will be placed in a waterway, lake, and/or wetland). Any crossing that will exceed 500 feet in length will need to be clearly identified. (3) a delineation of affected wetlands if the project involves wetlands, (4) if available, colored pictures showing at least two views of the proposed project site(s) and (5) any ecological or environmental information available that you feel may be pertinent to your project (i.e., area wildlife activity, area vegetation, area land use, quality of fishery, etc.).

Adherence to the above information requests will speed up the application evaluation and permit processing time. The requested information is used to help the Corps determine the type of permit to process if a permit is required and is used in the public review.

Regarding your request for comment relative to environmental impacts, this office assesses project impacts, including environmental impacts, after receipt of the detailed, site specific information required via our permit application process. However, in general terms, utility line crossings of waters of the United States generally result in minimal impact and are typically permitted under Nationwide Permit No. (12) found in the January 15, 2002, Federal Register, Issuance of Nationwide Permits; Notice (67 FR 2020-2095) and the February 13, 2002, Federal Register, Issuance of Nationwide Permits; Notice Correction (67 FR 6692-6695).

Please note that you must notify the Corps of Engineers in the form of a permit application to do work under this Nationwide Permit when one or more of the following criteria apply to the proposed project:

a. Mechanized landclearing in a forested wetland.
b. The utility line crosses one of the above noted navigable waterways that is subject to regulation under Section 10 of the Rivers and Harbors Act.
c. The utility line in waters of the United States, excluding overhead lines, exceeds 500 feet.
d. The utility line is placed within a jurisdictional area (i.e., a water of the United States), and it runs parallel to a streambed that is within that jurisdictional area.
e. Discharges associated with the construction of utility line substations that result in the loss of greater than 1/10th acre of water of the United States.
f. Permanent access roads constructed above grade in waters of the United States for a distance of more than 500 feet; of
g. Permanent access roads constructed in waters of the United States with impervious materials. (Section 10 and 404).

You can obtain additional information about the Regulatory Program and download forms from our website: www.nwo.usace.army.mil/html/od-rsd/frame.html

If you have any questions or need any assistance, please feel free to contact this office at the above Regulatory Office address or telephone (605) 224-8531.

Sincerely,

Steven E. Naylor

Steven E. Naylor
Regulatory Program Manager,
South Dakota

Enclosures

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
420 South Garfield Avenue, Suite 400
Pierre, South Dakota 57501-5408

RECEIVED
MAR 3 2006
HDR Engineering, Inc.

February 28, 2005

Ms. Suzanne Steinhauer
HDR Engineering, Inc.
6190 Golden Hills Drive
Minneapolis, Minnesota 55416

Re: Buffalo Ridge to White Transmission Project, Xcel Energy, Brookings County, South Dakota

Dear Ms. Steinhauer:

This letter is in response to your request dated January 28, 2005, for environmental comments regarding the above referenced project involving construction of a new White substation located one-half mile east of the existing White substation (in section 25, Township 111 North, Range 48 East), approximately 2,000 feet of 345 kV transmission line connecting the two substations and 9.4 miles of 115 kV transmission lines extending south/southeast from the substation to the South Dakota/Minnesota border.

Your current letter provides details of a project originally submitted to this office via an April 24, 2002, letter from HDR Engineering, Inc. and includes some discussion of the concerns raised in our June 7, 2002, response to that original proposal. The first of these addresses the issue of raptor electrocutions. Your letter states that "As a general rule, Xcel Energy routinely implements measures to protect raptors from electrocution." Clearance between conductors and cross arms is specifically mentioned. We understand that transmission lines are typically larger than distribution lines and thereby have greater clearances between conductive materials. However, it is not clear from your letter whether that protective measure or any other will be applied to the new transmission lines or substation. We request information regarding which measures, if any, are to be applied to this project. The issue of avian collisions with power lines should be addressed in a similar manner.

Impacts to the existing bald eagle nest near the Split Rock Substation (referred to in the original project proposal) will apparently be addressed by Xcel Energy via future section 7 consultation with this office as per the Endangered Species Act. Xcel Energy has apparently already committed to avoiding the nest, and we commend that effort.

In our previous letter, we recommended that surveys for the Western prairie fringed orchid be completed prior to construction to determine the plant's presence/absence in historically occupied areas, including Brookings County. The need for surveys can be further clarified by evaluation of existing habitat in the project area. Should the project footprint impact potential habitats of the Western prairie fringed orchid (e.g., native prairie, sedge/wet meadows - potentially including riparian zones), surveys should be considered.

The recommendations provided in our last letter to avoid impacts to the Topeka shiner still apply, based on the assumption that the proposed transmission lines will all be above ground. If the proposed lines may be installed underground (we recommend underground installation of lines whenever possible in order to entirely avoid the avian electrocution/collision issues raised earlier), further consultation regarding Topeka shiner impacts may be necessary, depending on whether trenching or boring is used to place the line. Although underground crossings may temporarily disturb Topeka shiner habitats in the tributaries of Medary and Deer Creeks in Brookings County (which are to be crossed by the proposed transmission lines), such disturbances can be minimized and considered minor, particularly when compared to the long-term impacts of established overhead lines.

The proposed construction of a new substation located only one-half mile from an existing one and the installation of a transmission line also located only one-half mile from an existing line suggests that further efforts might be made to minimize environmental impact by consolidating new structures with old ones. We recommend this approach wherever possible to avoid disturbing additional habitat, particularly intact native prairie. Avoidance of tall structures such as powerlines has been exhibited by prairie nesting birds; thus, the area impacted by such structures often goes beyond the footprint of a powerline pole. Minimization techniques should be applied wherever possible.

The Service appreciates the opportunity to provide comments to this updated project proposal. The comments regarding other issues included in our earlier letter still apply. If you have any questions on these comments, please contact Natalie Gates of this office at (605) 224-8693, Extension 34.

Sincerely,

Pete Gober
Field Supervisor
South Dakota Field Office

BROOKINGS COUNTY ZONING DIRECTOR
BROOKINGS COUNTY RESOURCE CENTER
826 32nd AVE
BROOKINGS, SOUTH DAKOTA 57006

ROBERT W. HILL
TELEPHONE (605) 696-8350
FAX (605) 696-8355
E-MAIL zoning@brookings.net

RECEIVED
MAR 2 1 2005
HDR Engineering, Inc.

March 7, 2005

HDR Engineering, Inc.
Attn: Suzanne Lamb Steinhauer
6190 Golden Hills Drive
Minneapolis, MN 55416

Dear Suzanne:

This letter is to inform you that my office has received your request for input pertaining to the possible development of transmission line project between Brookings County, SD and the State of Minnesota.

The Brookings County Highway Superintendent attended the meeting held by your organization on February 23, 2005 in White, SD. One concern that he has is that the route of the transmission towers would be placed too close to the County roads involved, County 32, also known as 212th Street and County 35, also known as 468th Avenue, and County 36 also known as 484th Ave. Our current zoning regulation requires a minimum of fifty (50) feet of right-of-way (measured from the centerline) setback on county roads, regardless of how much right-of-way is annotated on legal documents.

Therefore Brookings County requests that the plans be reviewed and the towers be placed five feet away from the fifty (50) foot right-of-way (measured from the centerline) setback. The justification for this request is the possibility of regrading both County Roads and the federal requirement that the County have adequate right-of-way. The input from the Townships in the affected area was basically the same, they desire that you stay out of the right-of-way on their roads. Enclosed is a copy of the Brookings County Driveway Application and Construction Permit, which is required is the construction companies desire to upgrade approaches to construction sites.

The Brookings County Zoning ordinance, appropriate section enclosed, requires a conditional use permit for the substation that is proposed. Enclosed is the conditional use permit application. The application needs to be submitted before the close of business on

the second Tuesday of the month prior to the public hearing which will occur during a regularly scheduled zoning meeting, which occurs on the First Tuesday of the month.

I have also enclosed a copy of the latest Wind Energy System Update that just took effect after a twenty day waiting period. Please include it in your information packet for the Navitas WES Project.

The Brookings County Commission has received one written reply to the proposed transmission line project. The Commission does not endorse the letter but did want the public to be heard in this matter.

The Brookings County Highway Department can be contacted at 605-696-8270 and the Zoning Office at 605-696-8350.

Sincerely,

Robert W. Hill
Brookings County
Zoning and Drainage Director

BROOKINGS COUNTY DRIVEWAY APPLICATION AND CONSTRUCTION PERMIT

Application made by _____
(Type or Print full name)

for an entrance to be located off Brookings County Highway No. _____
(County Road No.)

Pertinent information to the proposed entrance:

1. Type of entrance:
   - A. Commerical _____
   - B. Residential _____
   - C. Farm _____
   - D. Other _____
2. Location:
   - A. Township _____
   - B. Section _____
   - C. Co. Rd. No. _____
   - D. Approximate Location _____
   - E. Legal Description _____
3. Entrance:
   - A. Width (driveway top) _____
   - B. Approximate date of construction _____

ENTRANCE TO BE BUILT AS DIRECTED BY THE BROOKINGS COUNTY HIGHWAY DEPARTMENT

Submitted by:

_____
Name

_____ _____
Address Phone No.

_____
City State Zip Code

Below Filled Out by Brookings County

On Site Survey by: _____
(Type or Print Name)

Culvert Needed: Yes _____ No _____ Type _____ Size _____
(cmp/rcp) (Length & Height)

Approved by : _____ Date: _____
Brookings Co. Highway Superintendent

Brookings Co. Highway Superintendent

CONTRACTORS NAME:

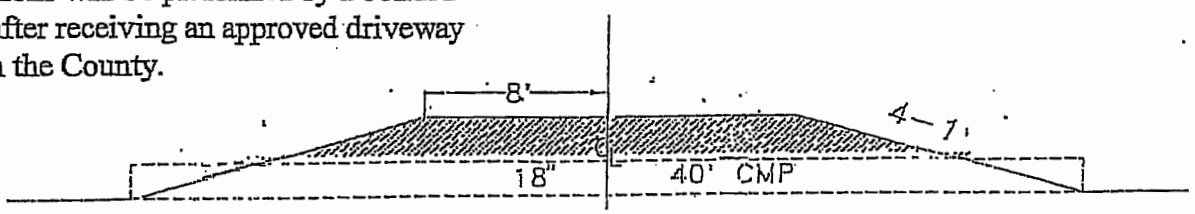
Name

Address

City State Zip

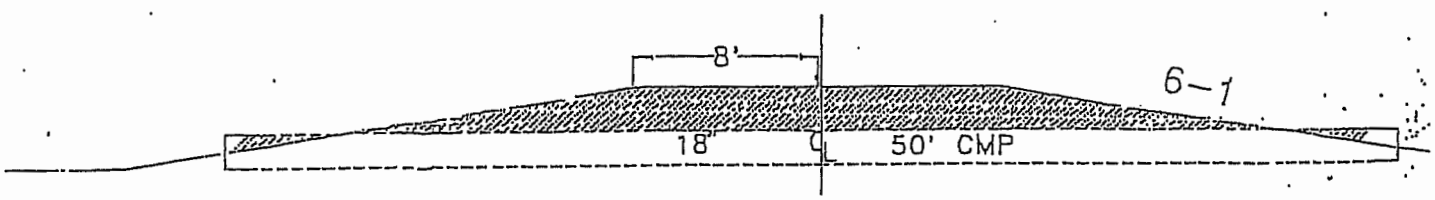
(Area Code) Phone

NOTE:
Pipe size and length will be determined by the Brkgs. Co. Highway Dept. in relation to the location of the proposed driveway entrance. All installations will be preformed by a bonded contractor after receiving an approved driveway permit from the County.



TYPICAL SECTION FOR A 16' DRIVEWAY
WITH 4–1 SIDESLOPES
WITH A STANDARD 3–1/2' DITCH

NOTE:
The work will be done in accordance with the S.D. Dept. of Transportation STANDARD SPECIFICATIONS for ROADS and BRIDGES.



TYPICAL SECTION FOR A 16' DRIVEWAY
WITH 6–1 SIDESLOPES
WITH A STANDARD 3–1/2' DITCH

TABLE OF CONTENTS
1997 REVISED ZONING ORDINANCE
OF BROOKINGS COUNTY, SOUTH DAKOTA

Conditional Uses

1. Airports and airstrips;

2. Church or cemetery;

3. Golf course, golf driving range;

4. Sand, gravel or quarry operation, mineral exploration and extraction;

5. Rock crushers, concrete and asphalt mixing plants;

6. Contractors shops and yards;

7. Sanitary landfills provided:

   a. The site meets the requirements of the State Department of Water and Natural Resources.

   b. A site plan is provided indicating the following information:

      (1) Present topography, soil types, depth to groundwater.

      (2) Location of existing water drainage, existing buildings, existing shelterbelts.

      (3) Identification of roads leading to the site.

      (4) Proposed changes at the site such as new shelterbelts, new buildings, changes in topography, new fence lines.

      (5) Proposed monitoring wells, etc.

   c. A minimum of 1,320 feet from the landfill property line to the nearest residence; excluding the residence of the landfill operator.

8. Institution farms, including religious farming communities;

9. Sewage treatment plants;

10. Fur farms;

11. Class A, B, C, and D Concentrated Animal Feeding Operations. See Section 1211.

23. Agricultural processing plants.

24. Spreading of manure with irrigation system.

25. Wind Energy Systems (WES)

26. The County Zoning Commission may permit other uses which, in its opinion, are not detrimental to other uses and are in the general character of the Agricultural District.

Area Regulations

All buildings are set back from road right-of-way lines and lot line to comply with the following yard requirements:

1. Lot Size: All lots for purposes of residential use unless otherwise provided for in this ordinance, shall be a minimum of thirty five (35) acres, except as provided in Item 7 below.

2. Front Yard: The minimum depth of the front yard shall be one hundred (100) feet. A corner lot will have two front yards.

3. Side Yard: The minimum width of a side yard shall be twenty-five (25) feet.

4. Rear Yard: The minimum depth of a rear yard shall be fifty (50) feet.

5. Maximum Lot Coverage: Dwellings and buildings accessory thereto shall cover not more than twenty-five (25) percent of the lot area.

6. Shelterbelts. (See Section 1208.)

7. The County Zoning Commission may allow a smaller minimum lot size for the "A" Agricultural District under the following condition:

   a. Where a second single family home is requested on an established farmstead, so long as it is immediately connected to the existing farming operation.

   b. Single family residences legally built under these ordinances shall be considered an established farm building site after it has existed ten (10) years.

   c. The County Zoning Commission may deny any request for a smaller minimum lot size if it is determined to be an attempt to circumvent the intent or requirements of this ordinance.

APPLICATION FOR CONDITIONAL USE PERMIT

Date of Application: _____

To the Brookings County Planning Commission
826 32nd Avenue
Brookings, South Dakota

I/We, the undersigned property owner(s), do hereby petition the Planning Commission of Brookings County, South Dakota, to grant a Special Exemption to the Brookings County Zoning Regulations for the purpose of:

_____

_____

_____

Section of Zoning Regulations to be exempted:

_____

_____

_____

_____

Legal Description of Property:

_____

_____

_____

Time & Date Set for
Hearing Before County
Planning Commission

_____
Person filing petition

_____
Date

_____
Address

_____
Time

_____
Telephone

Approved_____

_____
Chairman, Brookings County
Planning Commission

Rejected_____

Date _____

A conditional use permit that is granted and not used within 3 years will be considered invalid.

March 8, 2005

[redacted]

Pam Rasmussen, Team Lead
Siting and Land Rights Dept
Xcel Energy
1414 W. Hamilton Ave.
Eau Claire, WI 54702-0008

RE: Buffalo Ridge Substation to White Substation Transmission Project

I would like to address the proposed route of the transmission line from the new Brookings County substation south to the property listed as 111N 48W 36, NE corner. I own 240 acres here and it includes my building site.

I visited with someone at one of the informational meetings and I am again requesting that this route be modified to go a different direction to the new Yankee substation. I want to re-establish my airstrip north of the buildings. I have easements on two sides of my farm now and putting in a transmission line on the east side would eliminate my usage of the property for a landing field.

I have previously negotiated with the power companies that own the east-west transmission line that runs along the north of the property to keep this east side open I am requesting the County Commission to not issue you a Conditional Use Permit. I have also visited with the SD Public Utility Commission in the hopes they can better understand and support my request.

Sincerely,

Cliff R. Kurtz

CC: Governor Mike Rounds
Western Area Power Administration
SD PUC: Dusty Johnson, Commissioner
Brookings County Commission
Brookings County Zoning Board

b. Recommendations. Other objects which are desirable to clear, if practicable, are objects which do not have a substantial adverse effect on the airport but, if removed, will enhance operations. These include objects in the controlled activity area and obstructions to air navigation which are not covered in paragraph 211.a, especially those penetrating an approach surface. On a paved runway, the approach surface starts 200 feet (61 m) beyond the area usable for takeoff or landing, whichever is more demanding. On an unpaved runway, the approach surface starts at the end of the area usable for takeoff or landing.

212. RUNWAY PROTECTION ZONE (RPZ). The RPZ's function is to enhance the protection of people and property on the ground. This is achieved through airport owner control over RPZs. Such control includes clearing RPZ areas (and maintaining them clear) of incompatible objects and activities. Control is preferably exercised through the acquisition of sufficient property interest in the RPZ.

a. Standards.

(1) RPZ Configuration/Location. The RPZ is trapezoidal in shape and centered about the extended runway centerline. The controlled activity area and a portion of the Runway OFA are the two components of the RPZ (see figure 2-3). The RPZ dimension for a particular runway end is a function of the type of aircraft and approach visibility minimum associated with that runway end. Table 2-4 provides standard dimensions for RPZs. Other than with a special application of declared distances, the RPZ begins 200 feet (60 m) beyond the end of the area usable for takeoff or landing. With a special application of declared distances, see Appendix 14, separate approach and departure RPZs are required for each runway end.

(a) The Runway OFA. Paragraph 307 contains the location, dimension, and clearing standards for the Runway OFA.

(b) The Controlled Activity Area. The controlled activity area is the portion of the RPZ beyond and to the sides of the Runway OFA.

(2) Land Use In addition to the criteria specified in paragraph 211, the following land use criteria apply within the RPZ:

(a) While it is desirable to clear all objects from the RPZ, some uses are permitted, provided they do not attract wildlife, are outside of the Runway OFA, and do not interfere with navigational aids. Golf courses (but not club houses) and agricultural operations (other than forestry or livestock farms) are expressly permitted under this proviso. Automobile parking facilities, although discouraged, may be permitted, provided the parking facilities and any associated appurtenances, in addition to meeting all of the preceding conditions, are located outside of the object free area extension (as depicted in figure 2-3).

(b) Land uses prohibited from the RPZ are: residences and places of public assembly. (Churches, schools, hospitals, office buildings, shopping centers, and other uses with similar concentrations of persons typify places of public assembly.)

b. Recommendations. Where it is determined to be impracticable for the airport owner to acquire and plan the land uses within the entire RPZ, the RPZ land use standards have recommendation status for that portion of the RPZ not controlled by the airport owner.

c. FAA Studies of Objects and Activities in the Vicinity of Airports. The FAA policy is to protect the public investment in the national airport system. To implement this policy, the FAA studies existing and proposed objects and activities, both off and on public-use airports, with respect to their effect upon the safe and efficient use of the airports and safety of persons and property on the ground. These objects need not be obstructions to air navigation, as defined in 14 CFR Part 77. As the result of a study, the FAA may issue an advisory recommendation in opposition to the presence of any off-airport object or activity in the vicinity of a public-use airport that conflicts with an airport planning or design standard or recommendation.

213. to 299. RESERVED

Table 2-4. Runway protection zone (RPZ) dimensions

Approach Visibility Minimums 1/	Facilities Expected To Serve	Dimensions			
		Length L feet (meters)	Inner Width W_1 feet (meters)	Outer Width W_2 feet (meters)	RPZ acres
Visual and Not lower than 1-Mile (1 600 m)	Small Aircraft Exclusively	1,000 (300)	250 (75)	450 (135)	8.035
	Aircraft Approach Categories A & B	1,000 (300)	500 (150)	700 (210)	13.770
	Aircraft Approach Categories C & D	1,700 (510)	500 (150)	1,010 (303)	29.465
Not lower than 3/4-Mile (1 200 m)	All Aircraft	1,700 (510)	1,000 (300)	1,510 (453)	48.978
Lower Than 3/4-Mile (1200 m)	All Aircraft	2,500 (750)	1,000 (300)	1,750 (525)	78.914

1/ The RPZ dimensional standards are for the runway end with the specified approach visibility minimums. The departure RPZ dimensional standards are equal to or less than the approach RPZ dimensional standards. When a RPZ begins other than 200 feet (60 m) beyond the runway end, separate approach and departure RPZs should be provided. Refer to appendix 14 for approach and departure RPZs.

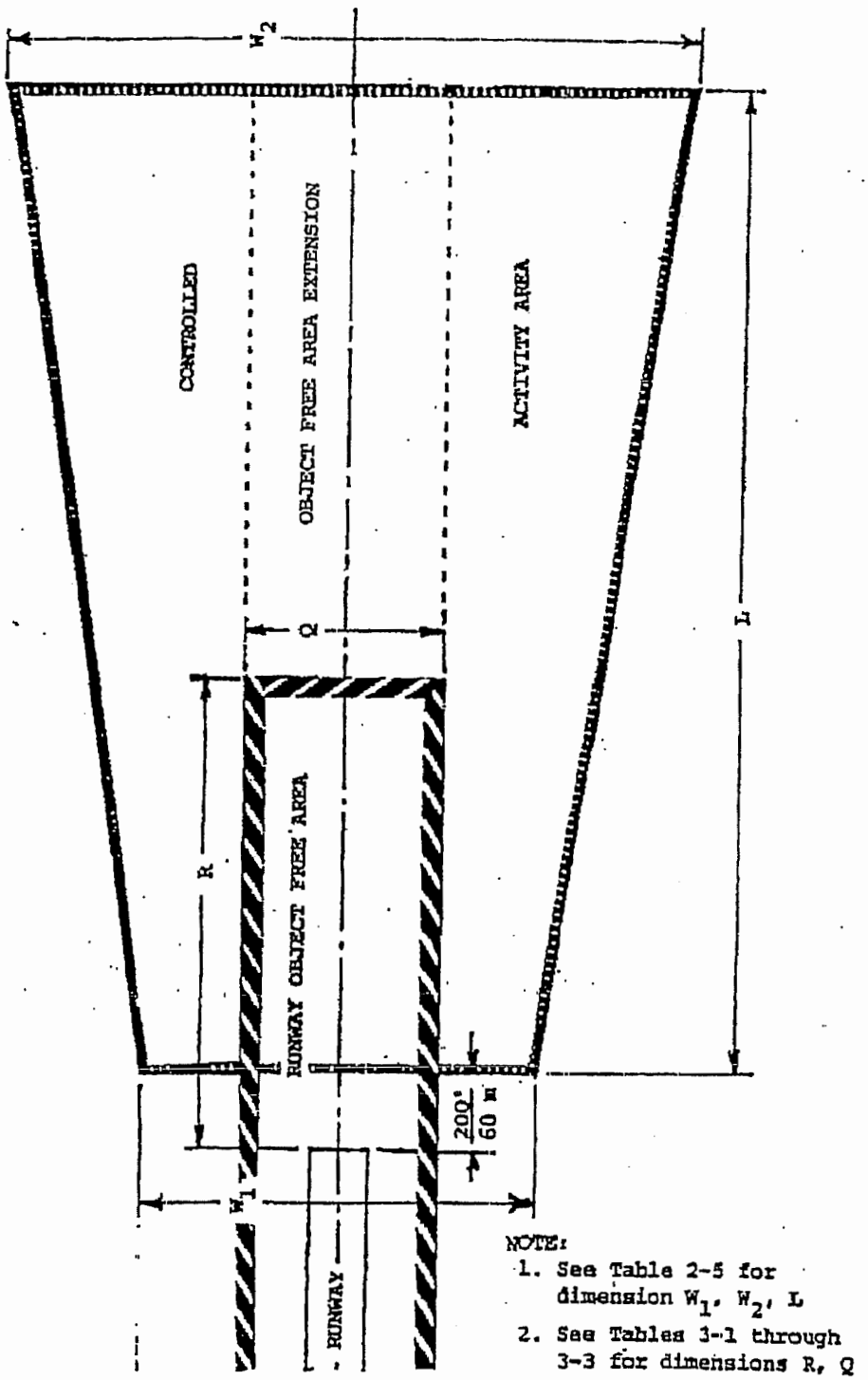


Figure 2-3. Runway protection zone

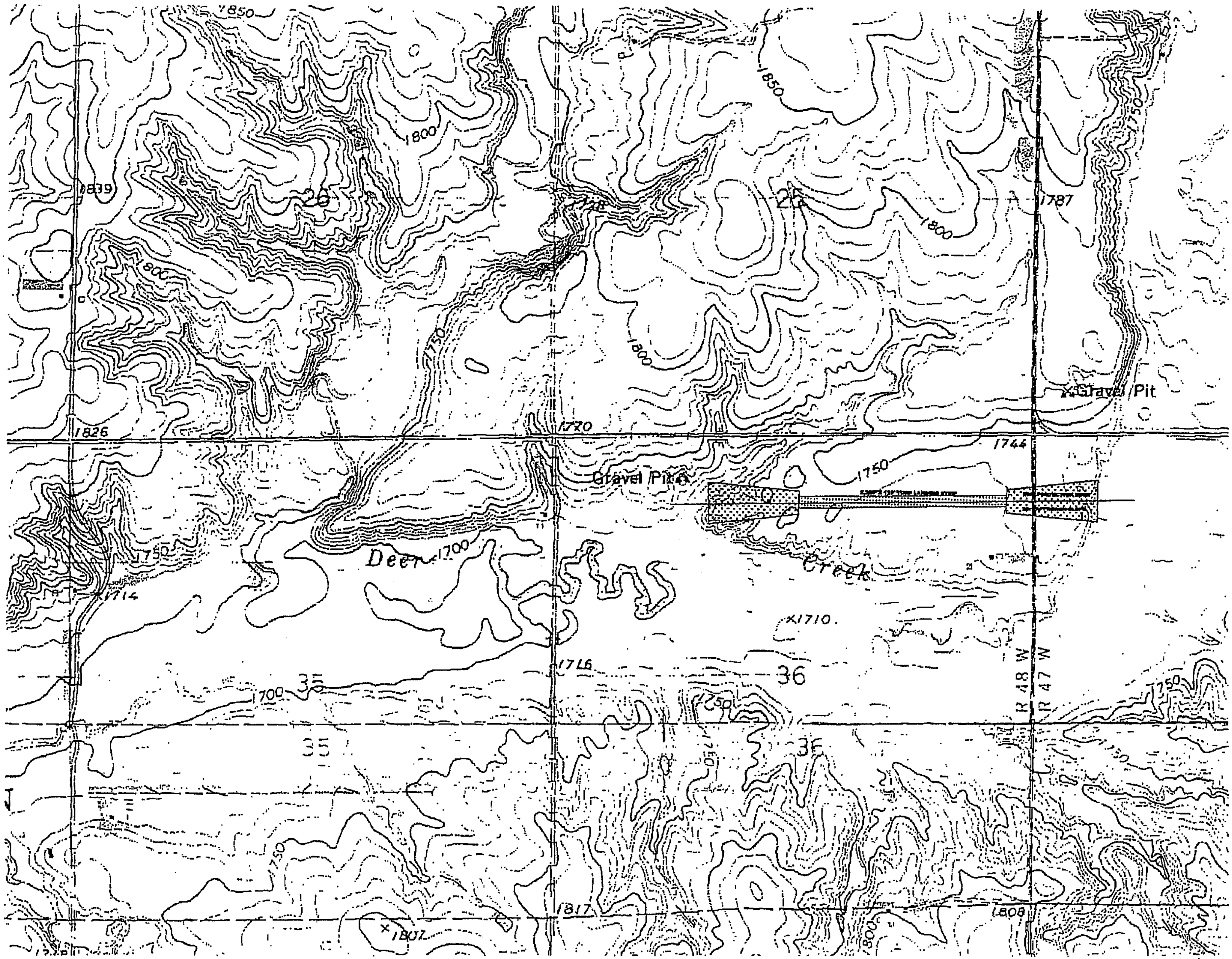
Table 2-1. Runway separation standards for aircraft approach categories A & B

ITEM	DIM 1/	AIRPLANE DESIGN GROUP				
		I 2/	I	II	III	IV
Visual runways and runways with not lower than 3/4-statute mile (1 200 m) approach visibility minimums						
Runway Centerline to:						
Parallel Runway Centerline	H	- Refer to paragraphs 207 and 208 -				
Holdline		- Refer to Advisory Circular 150/5340-1 -				
Taxiway/Taxilane Centerline 3/	D	150 ft 45 m	225 ft 67.5 m	240 ft 72 m	300 ft 90 m	400 ft 120 m
Aircraft Parking Area	G	125 ft 37.5 m	200 ft 60 m	250 ft 75 m	400 ft 120 m	500 ft 150 m
Helicopter Touchdown Pad		- Refer to Advisory Circular 150/5390-2 -				
Runways with lower than 3/4-statute mile (1 200 m) approach visibility minimums						
Runway Centerline to:						
Parallel Runway Centerline	H	- Refer to paragraphs 207 and 208 -				
Holdline		- Refer to Advisory Circular 150/5340-1 -				
Taxiway/Taxilane Centerline 3/	D	200 ft 60 m	250 ft 75 m	300 ft 90 m	350 ft 105 m	400 ft 120 m
Aircraft Parking Area	G	400 ft 120 m	400 ft 120 m	400 ft 120 m	400 ft 120 m	500 ft 150 m
Helicopter Touchdown Pad		- Refer to Advisory Circular 150/5390-2 -				

1/ Letters correspond to the dimensions on figure 2-1.

2/ These dimensional standards pertain to facilities for small airplanes exclusively.

3/ The taxiway/taxilane centerline separation distances are for sea level. At higher elevations, an increase to these separation distances may be required to keep taxiing and holding airplanes clear of the RSA and OFZ (refer to paragraph 206).



Gravel Pit
Gravel Pit
Deer Creek
R 48 W
R 47 W
36
35
1839
1826
1770
1744
1787
1714
1716
1710
1817
1808
1807

GREAT FACES. GREAT PLACES.

DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES
PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

RECEIVED
MAR 17 2005
HDR Engineering, Inc.

March 9, 2005

Suzanne Steinhauer
HDR Engineering Inc
6190 Golden Hills Drive
Minneapolis MN 55416

Dear Ms. Steinhauer:

The South Dakota Department of Environment and Natural Resources (DENR) has reviewed the Buffalo Ridge to White Transmission Line project in Brookings County, South Dakota. The DENR finds that this construction should not cause violation of any statutes or regulations administered by the DENR based on the following recommendations:

1. The department does not anticipate any adverse impacts to the air quality of the state. The Air Quality Program has no objections to this project.

2. Best Management Practices (BMP) for sediment and erosion control should be incorporated into the planning, design, and construction of this project.

3. Wetlands and tributaries may be impacted by this project. These water bodies are considered waters of the state and are protected under the South Dakota Surface Water Quality Standards. The discharge of pollutants from any source, including indiscriminate use of fill material, may not cause destruction or impairment except where authorized under Section 404 of the Federal Water Pollution Control Act. Please contact the U.S. Army Corps of Engineers concerning these permits.

4. These segments of Medary and Deer Creek are classified by the South Dakota Surface Water Quality Standards and Uses Assigned to Streams for the following beneficial uses:

   (6) Warmwater Marginal fish life propagation waters;
   (8) Limited contact recreation waters;
   (9) Fish and wildlife propagation, recreation, and stock watering waters; and
   (10) Irrigation waters.

Because of these beneficial uses, special construction measures may have to be taken to ensure that the total suspended solids standard of 90 mg/L is not violated.

If you have any questions concerning these comments, please contact me at (605) 773-3351.

Sincerely,

John Miller
Environmental Program Scientist
Surface Water Quality Program

DEPARTMENT OF GAME, FISH AND PARKS
Foss Building
523 East Capitol
Pierre, South Dakota 57501-3182

RECEIVED
MAR 2 8 2005
HDR Engineering, Inc.

March 23, 2005

Suzanne Steinhauer
HDR
6190 Golden Hills Drive
Minneapolis, MN 55416

RE: Buffalo Ridge to White Transmission Project

Suzanne:

As requested I have searched the South Dakota Natural Heritage Database for records of rare, threatened or endangered species in the areas described in your letter of March 8, 2005. There are no records of rare or T&E species along the proposed transmission line route. The only area of concern is the crossing over Deer Creek. Deer Creek is a stream that is known to have a Topeka shiner population. There are records of this federally endangered fish in the Deer Creek watershed. The attached report has more details. Use of BMP's while working in or near Deer Creek should minimize any negative impacts that this project might have.

Migratory species such as the federally threatened bald eagle could be present in the project area during spring and fall. Bald eagle nests are being found in many locations in eastern South Dakota. New nests are found every year. It is possible the new bald eagle nests could be found along the proposed transmission line route.

If you have any questions or need additional information, please contact me.

Sincerely,

Doug Backlund
Wildlife Biologist

Scientific Name: *Notropis topeka*

Occurrence #: 41

Common Name: Topeka Shiner

SD Protection Status:

Global Rank G3 **State Rank** S2

Federal Status

Endangered

County: Brookings **Township Range:** 111N048W **Section:** 13

Latitude: 442515N **Longitude:** 0963245W

Directions:

TRIBUTARY TO DEER CREEK, ABOUT 5 EAST AND 1 SOUTH OF WHITE

Survey Information:

First Observation: 2000-09-18 **Last Observation:** 2000-09-18

Eo Type:

EO Data: 14 TOPEKA SHINERS CAPTURED FROM LARGE POOL, SEVERAL AGE CLASSES, YOY TO ADULT