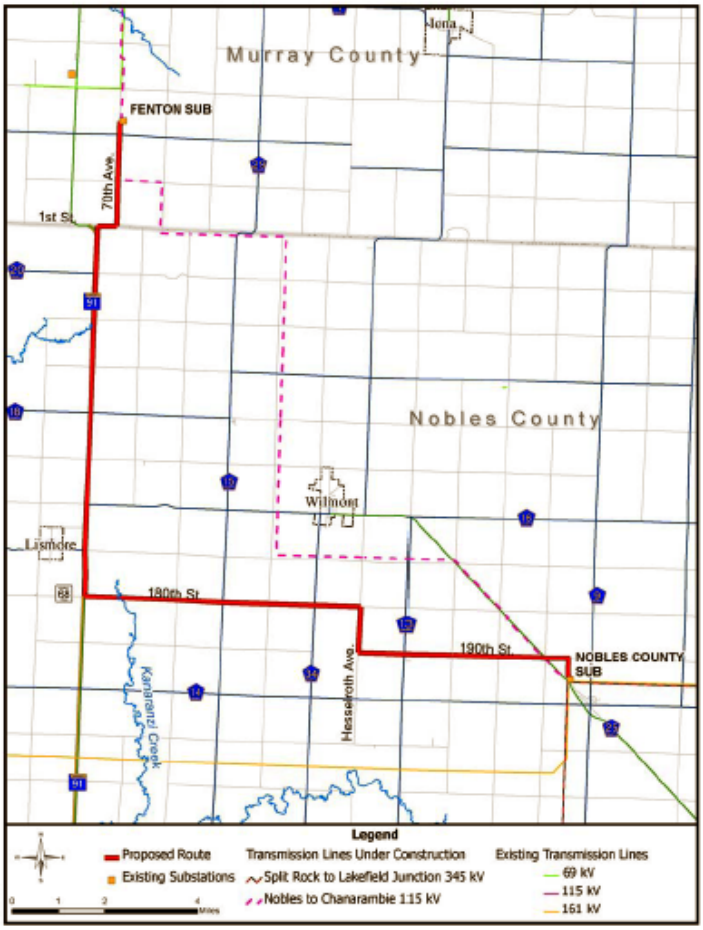
ENVIRONMENTAL ASSESSMENT



In the Matter of the Application for a Route Permit for the Fenton – Nobles #2 115kV High Voltage Transmission Line

PUC Docket No. E002/TL-07-1233

MINNESOTA DEPARTMENT OF COMMERCE

Energy Facility Permitting
85 7th Place East, Ste 500
Saint Paul, MN 55101

March 5, 2008

Responsible Governmental Unit	Project Owner
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DOC Representative Adam M. Sokolski, Project Manager Energy Facility Permitting (651) 296-2096	**Project Representative** Thomas G. Hillstrom Senior Permitting Analyst (612) 330-6538

ABSTRACT

Northern States Power Company d/b/a Xcel Energy (Xcel Energy) filed an application with the Minnesota Public Utilities Commission (PUC or Commission) for a Route Permit for the Fenton to Nobles #2 Transmission Line Project (Project) on October 17, 2007, pursuant to the provisions of Minnesota Statutes Chapter 216E.

Xcel Energy proposes construction of a second 23 mile long, 115,000 volt (115 kV) high voltage transmission line (HVTL) between the company's existing Fenton Substation in Murray County and its existing Nobles County Substation in Nobles County. The proposed Project is required in order to accommodate wind energy on the Buffalo Ridge.

The Department of Commerce, Office of Energy Security, Energy Facilities Permitting (EFP) is responsible for preparing the Environmental Assessment (EA) required for the Route Permit Application.

The route permit application is being reviewed under the Alternative Review Process (Minnesota Rules 7849.5500) of the Power Plant Siting Act. Under the Alternative Review Process, an applicant is not required to propose any alternative sites or routes. The Department of Commerce (DOC) Energy Facility Permitting staff prepares a document called an Environmental Assessment (EA), and a public hearing is required. The PUC has six months to reach a decision under the Alternative Permitting Process from the time the application is accepted.

Persons interested in these matters can register their names on the Project Docket webpage at http://energyfacilities.puc.state.mn.us/Docket.html?Id=19346 or by contacting Adam Sokolski, Energy Facilities Permitting, 85 7th Place East, Suite 500, St. Paul, Minnesota 55101, phone (651) 296-2096, e-mail: adam.sokolski@state.mnu.us Documents of interest can be found at the above website or by going to https://www.edockets.state.mn.us/EFiling/search.jsp and entering "07-1233" as the search criteria.

TABLE OF CONTENTS

TABLES

1.0 INTRODUCTION

Xcel Energy has filed a route permit application with the Minnesota Public Utilities Commission (PUC or Commission) for the Fenton to Nobles #2 115 kV transmission line project (the Project). The proposed Project is the first of three transmission line route permit applications to be reviewed by the in 2008 for Xcel Energy's (Xcel) Buffalo Ridge Incremental Generation Outlet (BRIGO) transmission project.

The transmission lines which make up the BRIGO transmission project is part of a series of measures intended to increase transmission capacity to export wind energy generated on the Buffalo Ridge to Xcel Energy's customers. Xcel indicates that the three proposed BRIGO transmission lines will increase the transmission outlet capacity on the Buffalo Ridge from approximately 825 megawatts (MW) to approximately 1,175 MW and resolve electric reliability issues in the city of Marshall.

On September 14, 2007, the Minnesota Public Utilities Commission (PUC) issued a Certificate of Need (CON) for BRIGO. In its Order, the PUC required that Xcel file route permit applications for all the three BRIGO transmission lines by January 2008 and take necessary steps to have the lines constructed and in-service no later than spring 2009.

1.2 Project Location

The proposed Project is located in Murray and Nobles Counties in the townships, ranges, and sections identified in Table 1.

The length of the proposed transmission line route is approximately 23 miles. Xcel also proposes to install associated facilities including improvements to both substations to accommodate the new transmission line.

Xcel's Application provides the following detailed description of its proposed route, and a color map can be found in Figure 1:

> "Beginning on the north end of the line at the Fenton Substation, the line would exit the substation on the west side and then run south along 70th Avenue for 2.31 miles to 1st Street (Murray County Road 71 and Nobles County Road 72). The line will turn west on 1st Street (Murray County Road 71 and Nobles County Road 72) for 0.41 miles to Highway 91. The line will run south along Highway 91 for 8.06 miles to 180th Street (County Road 68), where it will turn east along 180th Street (County Road 68) for 4.02 miles to Hesselroth Avenue. At Hesselroth Avenue the line will run south for one mile to 190th Street and then turn east along 190th Street to approximately one half-mile east of County Road 25, the proposed line would turn south and cross one half-mile of an

agricultural field owned by Xcel Energy for a total of 4.91 miles. The line would then head east a couple of hundred feet into Nobles County Substation.

The EA includes an evaluation of the "Kluis Alternative," as requested by landowners along the proposed route. The Kluis Alternative turns westerly at the intersection of 70th Avenue and 11th Street and follows 11th Street approximately one-half mile to the half section line of Section 31, Fenton Township, Murray County. At this point, the Kluis Alternative route segment turns southerly, runs approximately one mile along the half section line to 1st Street (Murray County Road 71 and Nobles County Road 72). South of 1st Street, the Kluis Alternative aligns with and follows Xcel's proposed route along Minnesota Highway 91. The Kluis Alternative can be found on the route map in Figure 1.

Table 1 – Project Location

County	Township, Range	Sections	Township Name
Murray	105N, 42W	19, 20, 29, 29, 30 - 32	Fenton
Nobles	104N, 42W	6, 7, 18, 19, 30, 31	Wilmont
Nobles	104N, 43W	1, 12, 13, 24, 25, 36	Leota
Nobles	103N, 41W	7, 14 - 23	Summit Lake
Nobles	103N, 42W	6-18, 24	Larkin
Nobles	103N, 43W	1, 12, 13	Lismore

Xcel is requesting a 400 foot wide route (200 feet each side of the centerline) and proposes to construct the transmission line primarily on private lands approximately 5 feet outside of the road rights-of-way it parallels where possible. Figure 1 identifies the project location and proposed route.

1.1 Project Description

Xcel Energy proposes to build a second 115 kV high voltage transmission line (HVTL) from its Fenton Substation to its Nobles County Substation. On October 18, 2007, Xcel Energy filed a route permit application for the Fenton – Nobles #2 115 kV Project.

The proposed transmission line will be designed to meet or surpass all relevant local and state codes, and North American Electric Reliability Corporation (NERC) and Xcel Energy standards. Appropriate standards will be met for construction and installation, and all applicable safety procedures will be followed during and after installation.

Transmission Line Structures

The BRIGO Project transmission lines are proposed to be 115 kV and use 795 ACSS (aluminum conductor steel supported) conductor (wire) material and will use bundled conductors (two

conductors per phase). The line will be shielded with a 3/8 inch, high strength steel overhead shield wire for lightning protection.

The line will be designed to operate at a nominal voltage of 115 kV. During normal operations, voltage will deviate somewhat from nominal levels. The line will be a three-phase, 60 hertz (Hz) alternating current (AC).

Xcel Energy proposes to use steel, single circuit, davit arm transmission line structures (poles) for the Project. Representative examples of such structures are shown in Figures 2 - 5.

Steel transmission structures typical for 115 kV lines are approximately 80 – 100 feet tall and have an average span length of approximately 500 feet. Specific structure heights and span lengths may vary and exceed the average due to land use requirements and topography. Additional specialty structures may be required at corners and where longer spans or higher clearances are required.

Xcel Energy has requested to use a limited number of larger steel transmission line structures along the northern 2.5 miles of the proposed route and Kluis Alternative. These proposed structures along this segment are 135 to 140 feet tall and have an average span between structures of 950 feet[1].

Xcel Energy proposes to place all of the proposed transmission line structures for the Project on concrete footings, which vary from 15 – 30 feet deep and 4 - 8 feet in width depending on the size of the structure, site specific conditions, and design requirements.

Right-of-Way

Xcel Energy has proposed a route for the 115 kV transmission line which parallels existing road rights-of-way (ROW) for nearly the entire length of the approximately 23-mile route. Xcel Energy proposes varying ROW widths consistent with the type of structure used and location of the route. A summary of the ROW requirements is presented in Table 2 and shown on the map found in Figure 1.

[1] https://www.edockets.state.mn.us/EFiling/ShowFile.do?DocNumber=4971803

Table 2 - ROW Requirements

Project Component	Length (miles)	Structure Type	Conductor	Average Structure Height (feet)	Average Span Length (feet)	ROW (feet)
115 kV Transmission Line Routed Adjacent to Public Road ROW	21.2	Steel, Single Circuit, Davit Arm	Bundled 795 kcmil 26/7 ACSS	90	500	40
115 kV Transmission Line Routed Cross Country	1.5	Steel, Single Circuit, Davit Arm	Bundled 795 kcmil 26/7 ACSS	90	500	75
Taller Structures Carrying 115 kV Transmission Line Routed Adjacent to Public Road ROW	1.5	Steel, Horizontal Post	Bundled 795 kcmil 26/7 ACSS	135 - 140	950	80
Taller Structures Carrying 115 kV Transmission Line Routed Cross Country	1.0	Steel, Horizontal Post	Bundled 795 kcmil 26/7 ACSS	135- 140	950	150

Construction Procedures

Construction and mitigation practices are developed early in the project planning process and often rely on industry specific Best Management Practices (BMPs) that have been developed over the years in consultation with appropriate agencies and affected property owners. These BMPs have been developed for ROW clearance, erecting power poles, and stringing power lines. BMPs include schedules for activities, prohibitions, maintenance guidelines, inspection procedures, and other practices. For example, in the case of wetlands, such practices include avoiding wetlands, controlling soil loss, and minimizing the impacts on hydrologically connected surface and groundwater and on the plants and animals that the water supports.

Transmission structures are generally designed for installation at existing grades. Therefore, structure sites will not be graded or leveled, unless it is necessary to provide a reasonably level area for construction access and activities. Once construction is completed, any graded area will be restored to its original contour to the extent practicable.

Any structures located in poor or wet soil conditions may require a specially engineered foundation (such as a steel caisson) that would be vibrated into the ground. The poles will then be placed within the caisson.

After structures have been erected, conductors are installed by establishing stringing setup areas within the ROW. Conductor stringing operations will also require brief access to each structure to secure the conductor wire to the insulators or to shield wire clamps once final sag is established.

During construction, temporary removal or relocation of certain fences may occur, and installation of temporary (or permanent at land owner request) gates may be required. Xcel Energy will coordinate with the landowner for early harvest of crops where possible, and removal or relocation of equipment and livestock from the ROW may occur.

Limited ground disturbance at the structure sites is anticipated during construction. A main marshaling yard for secure, temporary storage of materials and equipment will be established on a temporary easement and will include sufficient space to lay down material and hardware. Disturbed areas will be restored to their original condition to the maximum extent practicable.

Post-construction reclamation activities include cleaning up all construction sites, including removing and disposing of debris; removing all temporary facilities, including access trails and staging and laydown areas; employing appropriate erosion control measures and reseeding disturbed areas.

Once construction is completed, affected landowners will be contacted by Xcel Energy to determine if any damage has occurred as a result of the utility's project. If damage has occurred to crops, fences, drainage tile or the property, Xcel Energy will compensate the landowner for the damages caused. An outside contractor may be contracted to restore the damaged property to as near as possible to its original condition.

ROW Maintenance

After construction is complete, periodic access to the ROW of the transmission line will be required to perform inspections and conduct routine maintenance. Regular maintenance and inspections will be performed during the life of the facility to ensure its continued integrity. Periodic inspections will be performed by ground personnel. Inspections will be limited to the ROW. If problems are found during inspection, repairs will be assigned to construction crews.

The ROW will be managed to remove vegetation that interferes with the operation and maintenance of the line. Vegetation management is typically reviewed on a three to five-year cycle. ROW clearing practices include a combination of mechanical and hand clearing, along with herbicide application to remove or control the growth of vegetation in some areas.

Fenton Substation

Xcel Energy proposes to modify the Fenton Substation by installing additional equipment for the proposed 115 kV line, which will be placed entirely within the existing fence. The additional equipment will include new 115 kV circuit breakers and associated disconnects, a new 115 kV ring bus, and new concrete foundations to support the electrical equipment.

Nobles County Substation

Xcel Energy proposes to modify the existing Nobles County Substation. Improvements to the Nobles County Substation include additional equipment for the proposed 115 kV line, which will be placed entirely within the existing fence. The additional equipment will include one new 345kV/115 kV transformer, two 345 kV breakers, four 115 kV breakers, a new 345 kV main, a 345 kV ring bus, and improvements to the existing 115 kV main bus.

1.4 Sources of Information

Much of the information contained within this document was provided by the applicant or the applicant's representatives in the form of Xcel Energy's Route Permit Application and correspondence.

Additional sources of information are listed below:

- Minnesota Pollution Control Agency (http://www.pca.state.mn.us/)
- Minnesota Department of Natural Resources (http://www.dnr.state.mn.us/index.html)
- Minnesota Department of Health (http://www.health.state.mn.us/)
- U. S. Environmental Protection Agency (http://www.epa.gov/)
- Electric Power Research Institute (http://www.epri.com/default.asp)
- U. S. Department of Agriculture Natural Resources Conservation (http://soils.usda.gov/about/)
- Minnesota Geological Survey (http://www.geo.umn.edu/mgs/)
- Department of Administration, State Demographic Center (http://www.demography.state.mn.us/)
- Federal Emergency Management Agency (http://www.fema.gov/)
- U. S. Department of Energy, Energy Information Administration (http://eia.doe.gov/)

2.0 REGULATORY PROCESS AND REQUIREMENTS

This project requires two separate approvals from the Commission prior to being constructed: one determining the need for the project the transmission line and one determining the route of the transmission line.

Certificate of Need. The proposed 115 kV transmission line is a "large energy facility" because it is a transmission line operating at more than 115 kV and is greater than 10 miles long (Minn. Stat. 216B.2421, subd. 2(3)). A CON is required to be issued by the PUC for large energy facilities (Minnesota Statute 216B.243). On September 14, 2007, the PUC issued a CON for the BRIGO project, which includes the proposed Fenton to Nobles County #2 transmission line. In its Order, the PUC required that Xcel file route permit applications for all the three BRIGO transmission lines by January 2008 and take necessary steps to have the lines constructed and in-service no later than spring 2009.

Route Permit. In accordance with the Power Plant Siting Act a route permit is required before a HVTL can be constructed. The Act requirement became law in 1973 and is found in Minnesota Statutes Chapter 216E. The rules to implement the route permitting requirement for a HVTL are in Minnesota Rules Chapter 7849. A HVTL is defined as a conductor of electric energy and associated facilities designed for and capable of operating at a nominal voltage of 100 kilovolts or more either immediately or without significant modification.

Xcel Energy filed a route permit application with the PUC on October 18, 2007. The application for the HVTL Route Permit was accepted by the PUC on November 2, 2007.

The route permit application is being reviewed under the Alternative Review Process (Minnesota Rules 7849.5500) of the Power Plant Siting Act. Under the Alternative Review Process, an applicant is not required to propose any alternative sites or routes. The Department of Commerce (DOC) Energy Facility Permitting staff prepares a document called an Environmental Assessment (EA), and a public hearing is required. The PUC has six months to reach a decision under the Alternative Permitting Process from the time the application is accepted. Copies of the application, along with other pertinent documents can be obtained through the DOC Project Manager and may be viewed at PUC web site (http://energyfacilities.puc.state.mn.us/Docket.html?Id=19346).

In accordance with the rules applicable to this matter, the DOC Energy Facility Permitting (EFP) staff held a public information/EA scoping meeting in Wilmont on November 15, 2007. This meeting provided the public with an opportunity to learn about the proposed project, to suggest other route alternatives, and to identify concerns that should be considered by the DOC EPF staff in preparing an EA. Public comments on the scope of the EA were accepted through December 5, 2007.

The Commissioner of the DOC issued a Scoping Order on January 17, 2008 (Appendix A).

3.0 ASSESSMENT OF IMPACTS AND MITIGATION MEASURES

The proposed route begins approximately 3 miles southeast of the city of Chandler, runs south mostly along road rights-of-way for approximately 23 miles and terminates at the existing Nobles County Substation near Reading. The area between the substations is primarily agricultural.

3.1 Socioeconomic

Xcel Energy provides population and economic characteristics of the townships affected by the proposed Project in the application. Census data indicate that the populations within townships along the proposed route are 96 – 100 percent Caucasian and that minority populations make up a very small percentage of the population in the area.

Per capita income in the townships along the proposed route is lower than average in Murray and Nobles counties and lower than the Minnesota average.

The direct socioeconomic impacts of transmission lines generally fall into construction phase and long term operational impacts.

During the construction phase, impacts to social and economic resources are expected to be short-term in nature. Construction phase spending in the host communities may increase revenue for some local businesses. Hotels, restaurants, gas stations and grocery stores will likely cater to crews working on the transmission lines. Other local businesses, such as excavation contractors, ready-mix concrete and gravel suppliers, hardware stores, welding and machine shops, packaging and postal services and heavy equipment repair and maintenance service providers may benefit by supplying materials and services during the construction phase. Impacts to social services would likely be minimal due to the short-term nature of construction activities. Construction crews are estimated to be approximately 20-30 personnel who may reside temporarily in the nearby towns.

Long-term beneficial impacts from the proposed transmission lines and substation additions include increased local tax base resulting from the incremental increase in revenues from utility property taxes. The availability of more reliable electricity service in the area will have a positive effect on local businesses and the general public.

A secondary set of positive long term socioeconomic impacts can be expected to coincide with future wind energy development made possible by the BRIGO Project transmission lines. County, township and school districts will benefit directly from increased wind production tax revenues. Local landowners will receive revenues from wind rights leases and easements. Local residents or businesses may also decide in invest in wind farms resulting in further economic impacts.

3.2 Noise

The direct impacts of noise associated with transmission lines are associated with initial construction and long term operation of the facility.

Noise comprises 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 the pressure waves into perceivable sound. Noise is measured in decibels (dB).

Noise standards have been established by the Minnesota Pollution Control Agency (MPCA), Minnesota Rules Chapter 7030. The MPCA is the regulatory agency responsible for the enforcement of these standards. The standards are consistent with speech (hearing and conversation), annoyance, and sleep requirements for receivers within areas classified according to land use activities.

The MPCA has established various noise area classifications (NAC) and has established noise standards for each classification. The NAC area classification is based on the land use activity at the location of the receiver, and the NAC determines the applicable noise standard. Lower noise levels are required in residential areas, for example, than in industrial zones.

The four noise area classifications are: NAC-1, NAC-2, NAC-3, and NAC-4. Some of the land use activities under NAC-1 include household units, hospitals, religious services, correctional institutions, and entertainment assemblies. NAC-2 land use activities include mass transit terminals, retail trade, and automobile parking. Some NAC-3 land uses include manufacturing facilities, utilities, and highway and street ROW. NAC-4, which has no noise limits, consists of undeveloped and under construction land use areas.[2]

Table 3 sets forth the Minnesota Noise Standards for the appropriate land use.

Table 3 - Noise Standards by Noise Area Classification

Noise Area Classification	Daytime		Nighttime	
	L_{50}	L_{10}	L_{50}	L_{10}
1	60	65	50	55
2	65	70	65	70
3	75	80	75	80

[2] http://www.pca.state.mn.us/programs/noise.html

Distance is a main criterion for measuring the strength of noise. For every doubling of distance from the noise source, a decrease of 6dB occurs from isolated sources.

There is one residence located within 200 feet and 10 residences between 200 and 400 feet of the center line of the proposed route. All the residences fall within NAC 1. The audible noise generated from the transmission lines is not expected to exceed the background noise levels nor the noise standards established for NAC 1.

Noise will be generated by the construction of the HVTL; the construction noise will be predominantly intermittent sources originating from diesel engine driven construction equipment. Potential noise impacts will be mitigated by proper sound reduction equipment fitted to construction equipment and restricting activities conducted during nighttime hours.

Corona Noise

Corona can be defined as a type of localized discharge that results from high, non-uniform electric fields. At high voltages, corona produces visible light and audible noise. The level of noise or its loudness depends on conductor conditions, voltage level, and weather conditions. Generally, noise levels during operation and maintenance of transmission lines is minimal.[3]

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 subtle crackling sound due to the small amount of the electricity ionizing the moist air near the wires. During heavy rain the general background noise level, rain falling and wind blowing, is usually greater than the noise from the transmission line.

In these conditions, very few people are out near the transmission line. For these reasons audible noise is not noticeable during heavy rain. During light rain, dense fog, snow, and other times when there is moisture in the air, the proposed transmission lines will produce audible noise higher than rural background levels but similar to household background levels. During dry weather, audible noise from transmission lines is a barely perceptible, sporadic crackling sound.

Mitigation Measures

No mitigation measures are necessary since there will be nominal corona or noise impacts from the Project.

3.3 Aesthetics

The transmission line poles will be in contrast to the primarily rural, agricultural land along the proposed route. It is possible that the transmission line will be visible to people in the communities of Lismore and Wilmont. However, there are several electric transmission lines in the area which are similar or identical to the proposed transmission line. The proposed route follows existing roads and highways for the majority (93 percent) of its length and the

[3] http://www.clarkson.edu/~mcgrath/web.html

transmission line structures will be visible to residents living near the route and to drivers using public roads adjacent to the route.

The visual impact of the new line may be less noticeable or incremental in the northern and southern portions of the proposed route and Kluis Alternative, especially near the Fenton and Nobles County substations. Theses areas contain several existing transmission lines, as well as existing wind turbines. A new line will likely be an incremental visual impact rather than a completely new visual intrusion in this area.

Xcel's proposes to use taller transmission line structures along the northern 2.5 miles of the route (and Kluis Alternative) may be more visible than the shorter 90-foot structures. However, if the taller structures are used along the segment, roughly 50 percent fewer structures will be required because the larger structures allow for larger spans between structures. In other words, fewer transmission line structures are required when structure height is increased.

Another aesthetic consideration is there are many, highly visible wind turbines in the general area which are significantly taller and generally have greater visual impacts than the proposed transmission line, although such visual impacts are highly subjective.

There are two cities near the proposed route: Lismore and Wilmont. Lismore is approximately one half mile west and Wilmont is approximately two miles north of the proposed route. The transmission line may be visible from parts of each town depending on elevation and the proximity of the transmission line to the viewer.

Although the transmission line and structures may contrast with some of the existing land uses, the proposed route and route alternative utilize existing corridors and will avoid homes to the greatest extent practicable. Xcel Energy will work with landowners to identify concerns related to the transmission line, tree clearing and aesthetics. The final alignment of the transmission line could cross the public roads along the route several times in order to avoid homes and businesses.

Mitigation Measures

Although the transmission line will be a contrast to surrounding land uses, Xcel Energy will work with landowners, as a permit condition if the PUC issues a HVTL Route Permit, to identify concerns related to the transmission line and aesthetics. In general, mitigation includes enhancing positive effects as well as minimizing or eliminating negative effects. Potential mitigation measures include:

- Final location of structures, right-of-way and other disturbed areas will be determined by considering input from landowners or land management agencies to minimize visual impacts.
- Care will be used to preserve the natural landscape; construction and operation will be conducted to prevent any unnecessary destruction of the natural surroundings in the vicinity of the work.

- To the extent practicable, rivers and streams will be crossed in the same location as existing transmission lines.
- To the extent practicable, new transmission lines will parallel existing transmission lines and other rights-of-way, to the extent that such actions do not violate sound engineering principles or system reliability criteria.
- Structures will be placed at the maximum feasible distance from highway and trail crossings, within limits of structure design.

3.4 Recreation

There are no public recreational areas within two miles of the proposed route. The proposed transmission line will not directly impact any public recreational area and it is not anticipated that the transmission line will be visible from recreational resources greater than two miles from the proposed route.

Mitigation Measures

No mitigation is necessary.

3.5 Transportation

Traffic along the proposed route is likely to increase temporarily during construction. Local motorists may be temporarily inconvenienced by the increase in construction vehicles on the roadways and possible delays in traffic. This impact is expected to last during the construction period of approximately 12 months. Traffic due to the construction workers could be expected to produce local impacts over a 30-minute period at the beginning and end of the day and each time a change in shift occurs.

In addition, Xcel Energy reports that there are two planned road construction projects in the general area near the proposed route, which will not have impacts on route selection or the proposed transmission line.

Mitigation Measures

No mitigation will be required because traffic levels may be slightly, but insignificantly, impacted during construction with no impacts anticipated during facility operation. The operation of the transmission line will have no permanent impact on traffic patterns or usage. Planned road improvements are not expected to have impacts on route selection.

3.6 Land Use

The proposed transmission line route crosses lands which are primarily cultivated agricultural lands and some rural residential land uses. Lands along the proposed route in Nobles County are zoned as Agricultural Preservation Districts and in Murray County lands are zoned agricultural. While the route is not proposed to cross any municipal boundaries, the cities of Lismore and Wilmont are near the route.

Commercial, Industrial and Residential

Xcel Energy indicates that there is one home within 200 feet and 10 homes between 200 and 400 feet from the centerline of the proposed transmission line route. With the Kluis Alternative, there is one home within 200 feet and eight homes between 200 and 400 feet from the centerline of the route.

Many wind turbines are present along the proposed route, including the 205 megawatt (MW) Fenton Wind Power Plant. Many of the wind farm's turbines are concentrated near the Fenton Substation and along the first four to five miles of the proposed route beginning at the Fenton Substation. The DOC EFP expects that additional wind turbines and wind facilities will be proposed and potentially be built along portions of the route and in the general area during the next 10 years.

Mitigation Measures

No additional mitigation measures are proposed since no impacts are anticipated.

Agriculture

Murray and Nobles counties' economies and land use are dominated by agriculture.

Xcel estimates that approximately 66 acres of agricultural land will be temporarily disturbed by construction of the proposed transmission line. Temporary impacts include soil rutting, compaction and crop damages resulting from construction equipment accessing and operating on agricultural lands.

Xcel estimates that less than one acre of agricultural land will be permanently removed from agricultural lands due to construction of the proposed line. Permanent impacts will occur due to the placement of the transmission line poles.

Mitigation Measures

Impacts to agricultural lands will be reduced and minimized by placing transmission line structures immediately adjacent to road rights of way where practicable and along property lines when running cross country. In addition, Xcel Energy's proposed use of taller structures along the northern most 2.5 miles of the route (including the Kluis Alternative) will reduce impacts on

agricultural lands by reducing the number of and increasing the distance between structures required for this part of the route.

Landowners will be compensated for the use of their land through easement payments. To minimize loss of farmland and to ensure reasonable access to the land near the poles, Xcel Energy proposes to place the transmission line structures on private lands approximately five feet from the edge of the roadway ROW. When possible, Xcel Energy will attempt to construct the transmission line before crops are planted or following harvest. Construction mats may be used to reduce soil compaction impacts. Xcel Energy will compensate landowners for crop damage and soil compaction that occurs as a result of the Project. Soil compaction will be addressed by compensating the farmer to repair the ground or by using contractors to chisel-plow the site. Normally, a declining scale of payments is set up over a period of a few years.

Forestry

There are no areas managed for forestry in or near the proposed route. The proposed route is located in what historically were prairie grasslands. Small woodlots, wind breaks and other non-commercial tree cover is present and concentrated near waterways and at homestead sites.

Mitigation Measures

No mitigation measures will be required.

Mining

There are no known commercial mining or sand and gravel operation near the proposed route. The proposed transmission line will not impact active mining operations.

Mitigation Measures

No mitigation measures will be required.

Prohibited Sites

The proposed route does not contain sites where high voltage transmission line routes are prohibited by Minnesota Statutes 216E.16 and Minnesota Rules 7849.5930 - 5940 including:

- National Parks;
- National historic sites and landmarks;
- National historic districts;
- National wildlife refuges;
- National monuments;
- National wild, scenic, and recreational river ways;
- State wild, scenic, and recreational rivers and their land use districts;

- State parks;
- Nature conservancy preserves;
- State Scientific and Natural Areas; and,
- State and national wilderness areas.

3.7 Topography, Soils and Geology

Minimal impacts are anticipated to soils outside of the direct impact of the transmission line structures. Soil erosion control measures will be followed to minimize loss of topsoil; areas disturbed will be returned to their pre-construction condition. Route permits generally require that soils compacted by construction are restored by the utility after construction is complete.

Construction will result in no disturbances to the bedrock geology beneath the site. Soils exposed during construction may be vulnerable to erosion until stabilized. Some compaction of surface soils will result from the use of heavy construction equipment.

Mitigation Measures

Xcel Energy has stated that best management practices (BMP) will be implemented during construction activities to reduce erosion, and minimize and repair soil compaction. No permanent impacts to the subsoil or geology within the proposed corridors are anticipated.

3.8 Flora and Fauna

The majority of the proposed route crosses cultivated agricultural lands, with few residences scattered along the route. Row crops such as corn and soybean dominate the area. Impacts to trees and wind breaks may occur where the transmission line crosses natural waterways and near homesteads. Xcel Energy estimates that less than 1 acre of trees will be removed for the project.

There is a potential for temporary displacement of wildlife during construction and the loss of small amounts of habitat from the proposed route. Species that inhabit trees that will be removed and agricultural areas along the route will likely be displaced. Comparable habitat is adjacent to the route for both habitat types, and it is likely that these species would only be displaced a short distance.

Additionally, the electrocution of large birds, such as raptors, can be a concern with lower voltage distribution lines. Electrocution occurs when birds with large wingspans come in contact with 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, so there are no concerns about avian electrocution as a result of the proposed project.

Mitigation Measures

To minimize impacts to trees along the proposed route, Xcel Energy proposes the route primarily immediately adjacent to road rights-of-way.

Displacement of fauna is anticipated to be temporary in nature. No long term population-level effects are anticipated; therefore, no mitigation is proposed.

Xcel Energy has been working with various state and federal agencies over the past 20 years to address these issues. 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, Inc. serves. Currently, Xcel Energy, Inc. is finalizing the APP for Colorado and has begun on an APP in Minnesota. Standard reporting methods are also developed under development.

The primary methods Xcel Energy uses to address avian issues for transmission projects include:

- Working with the Minnesota Department of Natural Resources (DNR) to identify any areas that may require marking transmission line shield wires and/or using alternate structures to reduce collisions,
- Attempting to avoid areas known as major flyways or migratory resting spots.

3.9 Rare & Unique Natural Resources

The DNR Natural Heritage and Nongame Research Program maintains a list of plants and animals considered rare in the state. At the request of Xcel Energy, DNR searched the Minnesota Natural Heritage database for known occurrences of rare species and natural communities within the proposed route. The DNR's search resulted in the identification of endangered species critical habitat for the Topeka Shiner (*Notopis Topeka*), a species of fish present in Kanaranzi Creek along the proposed route. In correspondence included in the Application, the U.S. Fish and Wildlife Service (USFWS) concludes that the proposed transmission line and route will not have impacts on the Topeka Shiner.

Mitigation Measures

To prevent impacts to the Topeka Shiner, a route permit, if issued, will require Xcel Energy to implement and follow the USFWS "Recommendations for Projects Affecting Waters Inhabited by Topeka Shiners in Minnesota," which are found in Appendix B. Transmission line structures will be placed at locations to allow the transmission line conductor to span Kanaranzi Creek and any other creek designated as critical habitat for the species.

3.10 Archaeological and Historic Features

In March 2007, a review of records at the Minnesota State Historical Preservation Office (SHPO) indicated four previously recorded architectural resources within one mile of the proposed route. These include the Lismore fire hall, a commercial building, a church and a grain elevator. None of these resources is listed on the National Registry of Historic Places (NRHP).

Xcel will also survey two areas along the route identified as having a high potential for archaeological resources near stream crossings.

Mitigation Measures

Impacts to previously identified resources are not anticipated as a result of the proposed 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 was eligible for listing in the NRHP.

3.11 Cultural Values

Cultural values include those perceived community beliefs or attitudes that provide a framework for unity in a given community. The communities near the proposed route appear to value the area's agricultural legacy pioneer roots and the local history. The area is increasingly becoming known for its rich wind resources and the wind farms generating renewable energy.

The economy of these areas depends on agricultural practices (typically livestock, corn, soybeans, grains, and grazing), manufacturing, and wind development.

Mitigation Measures

Mitigation for project-related impacts on NRHP eligible archaeological resources may include an effort to minimize impacts on the resource and/or additional documentation through data recovery.

If human remains should be encountered during the excavation and construction, such a discovery would be handled in a manner compliant with Minnesota's Private Cemeteries Act (Chapter 307.08).

No impacts are anticipated to cultural values.

3.12 Air Quality

The only potential air emissions from a 115 kV transmission line result from corona and are limited. Corona consists of the breakdown or ionization of air in a few centimeters or less

immediately surrounding conductors, and can produce ozone and oxides of nitrogen in the air surrounding the conductor. For a 115 kV transmission line, the conductor gradient surface is usually below the air breakdown level. Typically, some imperfection such as a scratch on the conductor or a water droplet is necessary to cause corona. Ozone is not only produced by corona, but 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.

Currently, both state and federal governments have regulations regarding permissible concentrations of ozone and oxides of nitrogen. The national standard is 0.08 ppm on an 8-hour averaging period. The state standard is 0.08 ppm based upon the fourth-highest 8-hour daily maximum average in one year.

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

Mitigation Measures

There will be no significant adverse air quality impacts to the surrounding environment because of the short and intermittent nature of the emission and dust-producing construction phases. No mitigation measures are necessary for the construction of the transmission lines.

3.13 Water Resources (surface water/wetlands)

During construction there is the possibility of sediment reaching surface waters as the ground is disturbed by excavation, grading, and construction traffic. Once the Project is complete it will have no impact on surface water quality.

A determination of the surface water resources was conducted by reviewing the United States Geological Survey (USGS) 7.5-minute quadrangle, the National Wetland Inventory (NWI) and the Public Waters Inventory (PWI) maps.

The Project crosses several public waters including Kanaranzi Creek, Elk Creek, and the north branch of Jack Creek. There are no designated trout streams or impaired waters along the proposed route. Kanarznzi Creek is designated critical habitat for the Topeka Shiner, a federally listed endangered species of fish.

The proposed transmission line route passes through or near several wetlands of varying sizes and characteristics. There are several freshwater emergent wetlands and ponds throughout the proposed route.

The proposed transmission line route is not expected to result in any substantial, permanent water quality impacts. Minimal temporary impacts to wetlands may occur from construction activities and access to the ROW. Minimal temporary impacts to wetlands may occur if these areas need to be crossed during construction of the transmission ROW. However, Xcel Energy would avoid crossing wetlands during construction to the greatest extent feasible.

During construction, there is the possibility of sediment reaching surface waters as the ground is disturbed by excavation, grading and construction traffic. The Applicant will employ erosion control BMPs and adhere to the terms and conditions of the National Pollution Discharge Elimination System (NPDES) permits and Stormwater Pollution Prevention Plan (SWPPP) during construction to protect topsoil and adjacent water resources, and to minimize soil erosion and trap it before it reaches surface water resources.

After construction, maintenance and operation activities for substation or transmission line facilities are not expected to have an adverse impact on surface water quality.

Mitigation Measures

Standard erosion control measures and BMPs will be utilized to minimize potential impacts.[4] An NPDES permit and SWPPP will be prepared for the Project.

Xcel Energy will be required to maintain sound water and soil conservation practices during construction and operation of the Project to protect topsoil and adjacent water resources and minimize soil erosion. Practices may include containing excavated material, protecting exposed soil and stabilizing restored soil. Xcel Energy would avoid major disturbance of individual wetlands and drainage systems during construction. This would be done by spanning wetlands and drainage systems where possible. When it is not possible to span the wetland, Xcel Energy would draw on several options during construction to minimize impacts:

- When possible, construction would be scheduled during frozen ground conditions.
- Crews would attempt to access the wetland with the least amount of physical impact to the wetland (e.g., shortest route).
- The structures would be assembled on upland areas before they are brought to the site for installation.
- When construction during winter is not possible, plastic mats would be used where wetlands would be impacted.

No additional mitigation is necessary.

[4] http://www.pca.state.mn.us/publications/wq-strm2-05.pdf

3.14 Human Health and Safety

Proper safeguards will need to be implemented for construction and operation of the facility. The Project would be designed to comply with 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 would comply with local, state, NESC and Xcel Energy standards regarding installation of facilities and standard construction practices. Established Xcel Energy and industry safety procedures would be followed during and after installation of the transmission line. This would include clear signage during all construction activities.

The transmission line would 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 transmission line connects to the substation. The protective equipment would de-energize the transmission line, should such an event occur. In addition, the substation facilities would be fenced and access limited to authorized personnel.

Electric and Magnetic Fields

Voltage transmitted through any conductor produces both an electric field and a magnetic field in the area surrounding the wire. The electric field associated with HVTLs extends from the energized conductors to other nearby objects. The magnetic field associated with HVTLs surrounds the conductor. Together, these fields are generally referred to as electromagnetic fields, or EMF. These effects decrease rapidly as the distance from the conductor increases.

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 transmission line gets weaker as one moves away from the transmission line. Nearby trees and building material also greatly reduce the strength of transmission line electric fields.

The intensity of electric fields is associated with the voltage of the transmission line and is measured in kilovolts per meter (kV/M). Transmission line electric fields near ground are designated by the difference in voltage between two points (usually 1 meter). Table 4 provides the electric fields at maximum conductor voltage for the proposed transmission lines. Maximum conductor voltage is defined as the nominal voltage plus five percent.

Table 4 – Calculated Electric Fields (kV/m) for Proposed Transmission Line
(3.28 feet above ground)

Type	Voltage	Distance to Proposed Centerline								
		300'	200'	100'	50'	0'	50'	100'	200'	300'
Single Circuit 115 kV Single Steel Pole w/ Davit Arm	121kV	0.01	0.03	0.10	0.27	0.73	0.29	0.10	0.03	0.01

The proposed 115 kV transmission line would have a maximum magnitude of electric field density of approximately 0.73 kV/M underneath the conductors, one meter above ground level. This is significantly less than the maximum limit of 8 kV/M which has been a permit condition imposed by the PUC in other High Voltage Transmission Line (HVTL) applications. The permit standard was designed to prevent serious hazard from shocks when touching large objects parked under extra HVTL of 345 kV or greater.

High intensity electric fields can have adverse impacts on the operation of pacemakers and implantable cardioverter/defibrillators (ICD). Interference to implanted cardiac devices can occur if the electric field intensity is high enough to induce sufficient body currents to cause interaction. Modern bipolar devices are much less susceptible to interactions with electric fields. Medtronic and Guidant, manufacturers of pacemakers and ICDs, have indicated that electric fields below 6 kV/meter are unlikely to cause interactions affecting operation of most of their devices.

Older unipolar designs are more susceptible to interference from electric fields. Research has indicated that the earliest evidence of interference was in electric fields ranging from 1.2 to 1.7 kV/meter.

Table 4 above shows that the electric fields for the Project are well below levels at which modern bipolar and older unipolar devices are susceptible to interactions with electric fields. Recent research concludes that the risk of interference inhibition of unipolar cardiac pacemakers from high voltage power lines in everyday life is small.

In the unlikely event a pacemaker is impacted, the effect is typically a temporary asynchronous pacing (commonly referred to as reversion mode or fixed rate pacing). The pacemaker would return to its normal operation when the person moves away from the source of the interference.

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 milligauss (mG).

Table 5 - Calculated Magnetic Fields (milligaus) for Proposed 115 kV Transmission Line Design (3.28 feet above ground)

Type	Condition	Distance to Proposed Centerline								
		-300'	-200'	-100'	-50'	0'	50'	100'	200'	300'
Single Circuit 115 kV Single Steel Pole w/ Davit Arm	Normal	0.07	0.15	0.56	1.66	3.98	1.37	0.47	0.13	0.06
Single Circuit 115 kV Single Steel Pole w/ Davit Arm	Peak	1.05	2.36	8.93	22.68	63.87	22.04	7.61	2.08	0.95

The calculated magnetic flux density table (see Table 5 above), provides the estimated magnetic fields based on the proposed lines and structure designs. The expected magnetic fields for the structure type and voltage have been calculated at various distances from the center of the pole.

It can be noted that magnetic fields are not singularly associated with power lines. Every person has exposure to these fields to a greater or lesser extent throughout each day, whether at home or in schools and offices. The following table contains field readings for a number of selected, commonly encountered items. These reading represent median readings, meaning one might expect to find an equal number of readings above and below these levels.

Table 6 - Magnetic Fields (milligauss) From Common Home and Business Appliances

Type	Distance From Source in Feet			
	0.5	1	2	4
Computer Display	14	5	2	-
Fluorescent Lights	40	6	2	-
Hairdryer	300	1	-	-
Vacuum Cleaners	300	60	10	1
Microwave Oven	200	40	10	2
Conventional Electric Blanket	39.4 peak 21.8 average			
Low EMF Electric Blanket	2.7 peak .09 average			

Source: EMF In Your Environment, EPA 1992

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. As required by code, electrical systems, including farm systems and utility distribution systems, must be grounded to 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, EMF or earth currents.

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.

Potential Impacts

Many years of research on the biological effects of electric fields have been conducted on animals and humans. No association has been found between exposure to electric fields and human disease. The possible effect of EMF exposure on human health has been a matter of public concern over the past few years. While the general consensus is that electric fields pose no risk to humans, the question of whether exposure to magnetic fields can cause biological responses or even health effects continues to be the subject of research and debate.

The most current and exhaustive reviews of the health effects from power-frequency fields conclude the evidence of health risk is weak and do not support the allegation of a major public health danger. The National Institute of Environmental Health Sciences (NIEHS) issued its final report on June 15, 1999, following six years of intensive research. The NIEHS concluded that the scientific evidence that extra low frequency EMF exposures pose any health risk is weak. The NIEHS was the lead government agency in directing and carrying out a congressionally mandated research program on EMF.

The Minnesota Department of Health (MDH) issued *An Assessment of Health Effects Research on Electric an Magnetic Fields* in January of 2000. The MDH concluded there is not a cause and effect relationship between magnetic fields and any biological response.

> *…the current body of evidence does not show that exposure to these fields is a health hazard. Specifically, no conclusive and consistent evidence shows that exposures to residential electric and magnetic fields produce cancer or any other adverse human health effect.*
>
> *The current body of research lacks fundamental evidence to support a cause and effect relationship between magnetic fields and childhood leukemia. This conclusion is based on laboratory studies, which have failed to demonstrate adverse health effects or a plausible biological mechanism of causation (in vivo and in vitro).*
>
> *As with many other environmental health issues, the possibility of a health risk from EMF cannot be entirely dismissed. The MDH considers it prudent public health policy to continue to monitor the EMF research and to support prudent avoidance measures, such as providing information to the public regarding EMF sources and exposure.*

There are currently no federal or Minnesota exposure standards for magnetic fields. Florida and New York are the only two states in the country that have set standards for magnetic field exposure (150 milligauss limit in Florida and 200 milligauss limit in New York). These

exposure limits were not based on scientific analysis, but in response to maintaining transmission systems within historic levels.

Past decisions have reflected that the scientific data does not show any significant risk of health effects due to exposure to magnetic fields. Policy decisions have continued to support the construction of electric infrastructure, taking into consideration the most recent information available on the issue.

Most recently, the World Health Organization provided an update, issuing Fact sheet N°322, *Electromagnetic fields and public health: Exposure to extremely low frequency fields*, June 2007. In many studies, a weak, statistical link between exposure to EMF and incidence of childhood leukemia has been noted. Additionally, some epidemiologic studies making a regression analysis of leukemia cases have found a statistical association. A similar link has not been noted with other types of cancer. In its report, after reviewing recent studies, WHO concludes that laboratory evidence does not support these findings:

> *… epidemiological evidence is weakened by methodological problems, such as potential selection bias. In addition, there are no accepted biophysical mechanisms that would suggest that low-level exposures are involved in cancer development. … Additionally, animal studies have been largely negative. Thus, on balance, the evidence related to childhood leukaemia is not strong enough to be considered causal. … Regarding long-term effects, given the weakness of the evidence for a link between exposure to ELF magnetic fields and childhood leukaemia, the benefits of exposure reduction on health are unclear.*

Mitigation Measures

As per the MDH White Paper recommendations concerning "prudent avoidance," Xcel Energy routinely provides information on the issue to the public, interested customers and employees. This information contains references to studies, and provides data to help explain the relative impact of transmission line exposure to other EMF exposures most people experience throughout the day at home or at work. Xcel Energy also provides measurements for landowners, customers and employees who request them. In addition, Xcel Energy would use structure designs that minimize magnetic field levels and, where practicable, site facilities in locations affecting the fewest number of people.

3.15 Radio and TV Interference

Corona on transmission line conductors can generate electromagnetic noise at 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. However, this interference is often due to weak broadcast signals or poor receiving equipment.

If interference occurs because of the power line, the electric utility is required to remedy problems so that reception is restored to its original quality.

Mitigation Measures

No interference issues are anticipated with this Project.

4.0 OTHER PERMITS AND APPROVALS REQUIRED

Table 7 contains a list of the anticipated permits and associated environmental approvals required for the Fenton to Nobles #2 transmission line project. Compliance with the terms of all applicable and relevant regulatory permits and approvals will be a condition of any Route Permit issued by the PUC.

Table 7 – Potentially Required Permits

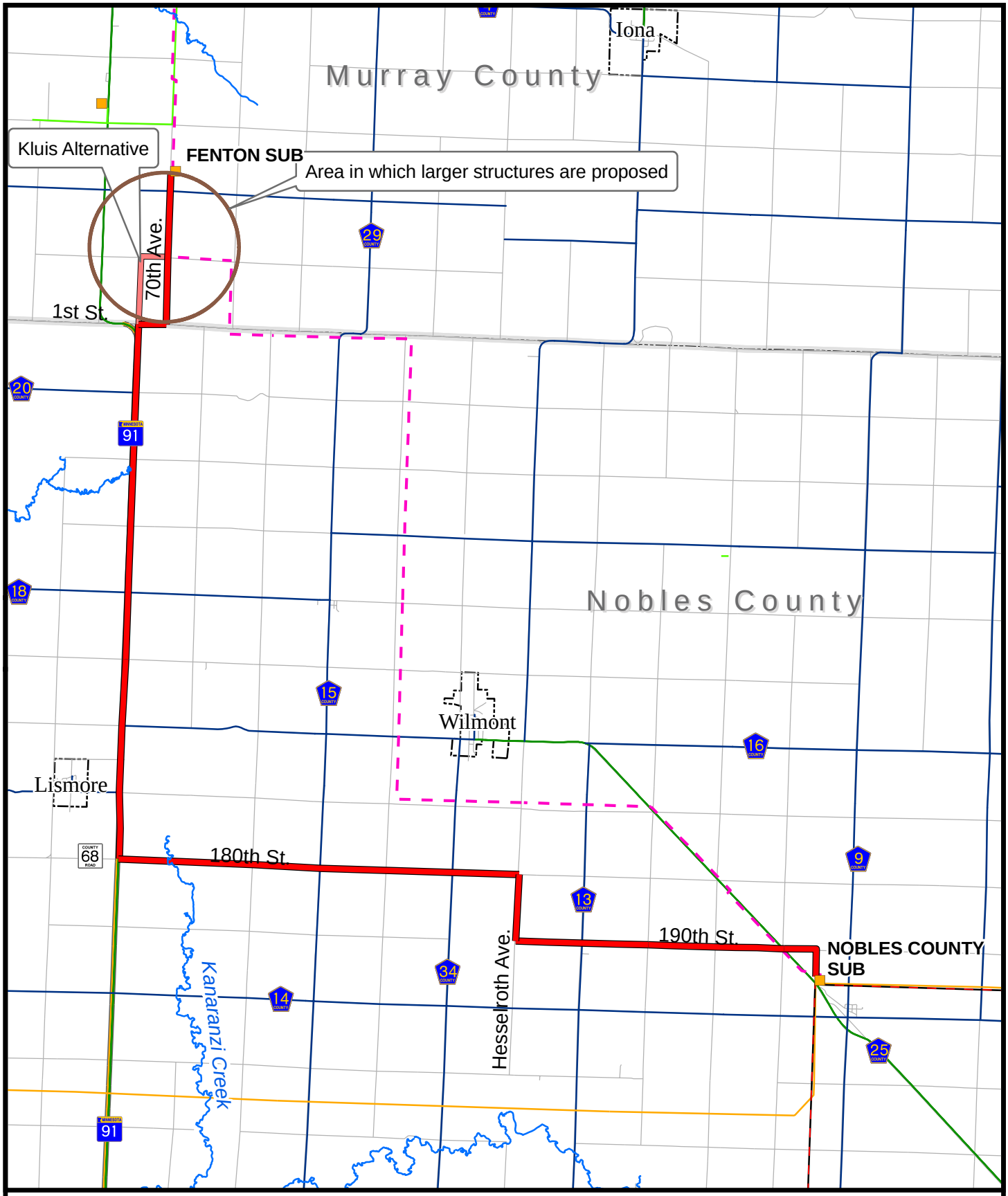
Permit	Jurisdiction
Utility Permits	State, County, Township
Licence to Cross Public Lands or Waters	MDNR
Oversize Loads Permits	State, County, Township, City
Driveway/Access Permits	County, Township, City
Route Permit (Alternative Process)	PUC
NPDES Permit	MPCA

5.0 ACRONYMS, ABBREVIATIONS and DEFINITIONS

AADT	Annual Average Daily Traffic
ACSS	Aluminum Conductor Steel Supported
BMP	best management practice
CBD	Central Business District
COE	Corps of Engineers
Commission	Minnesota Public Utilities Commission
CON	Certificate of Need
CPCN	Certificate of Public Convenience and Necessity
CSAH	County State Aid Highway
CWI	Minnesota County Well Index
dB	decibels
dBA	A-weighted sound level recorded in units of decibels
d/b/a	doing business as
DLM	Division of Land and Minerals
DNR	Department of Natural Resources
DOC	Department of Commerce
EA	Environmental Assessment
EFP	Department of Commerce Energy Facilities Permitting
EMF	electromagnetic field
EPA	United States Environmental Protection Agency
EQB	Environmental Quality Board
G	Gauss
G&T	Generation and Transmission Cooperative
HDR	HDR Engineering, Inc.
HVTL	high voltage transmission line
Hz	Hertz
kV	kilovolt
kV/M	Kilovolt per meter
MCBS	Minnesota County Biological Survey
MDH	Minnesota Department of Health
mg/L	milligrams per liter – equivalent to parts per million (ppm)
MN DNR	Minnesota Department of Natural Resources
MN DOT	Minnesota Department of Transportation
MPCA	Minnesota Pollution Control Agency
NAC	noise area classification
NERC	North American Electric Reliability Council
NESC	National Electrical Safety Code
NEV	Neutral-to-Earth Voltage
NIEHS	National Institute of Environmental Health Sciences
NPDES	National Pollution Discharge Elimination System
NPS	National Park Service

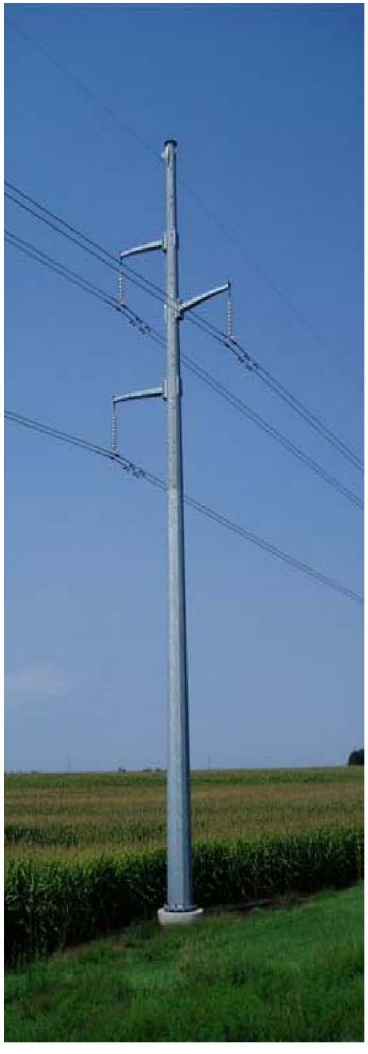
NRCS	National Resources Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetland Inventory
PEBC	Prairie Ecology Bus Center
ppm	parts per million
PUC	Public Utilities Commission
PWI	Public Waters Inventory
ROW	Right-of-Way
SFD	Swan Flight Diverter
SHPO	State Historic Preservation Office
SNA	Scientific and Natural Area
SWPPP	Stormwater Pollution Prevention Plan
TLE	Temporary Limited Easement
USDA	United States Department of Agriculture
USDOE	United States Department of Energy
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WPA	Waterfowl Production Area
WMA	Wildlife Management Area
WPSC	Wisconsin Public Service Commission
WSR	Wild and Scenic River

FIGURES



Map Document: (N:\GIS\Projxcel\55365\map_docs\mxd\RouteApplication\Fenton_Nobles_GeneralVicinity.mxd)
10/1/2007 --

FIGURE 2
115 KV STEEL SINGLE CIRCUIT DAVIT ARM STRUCTURE BUNDLED CONDUCTOR



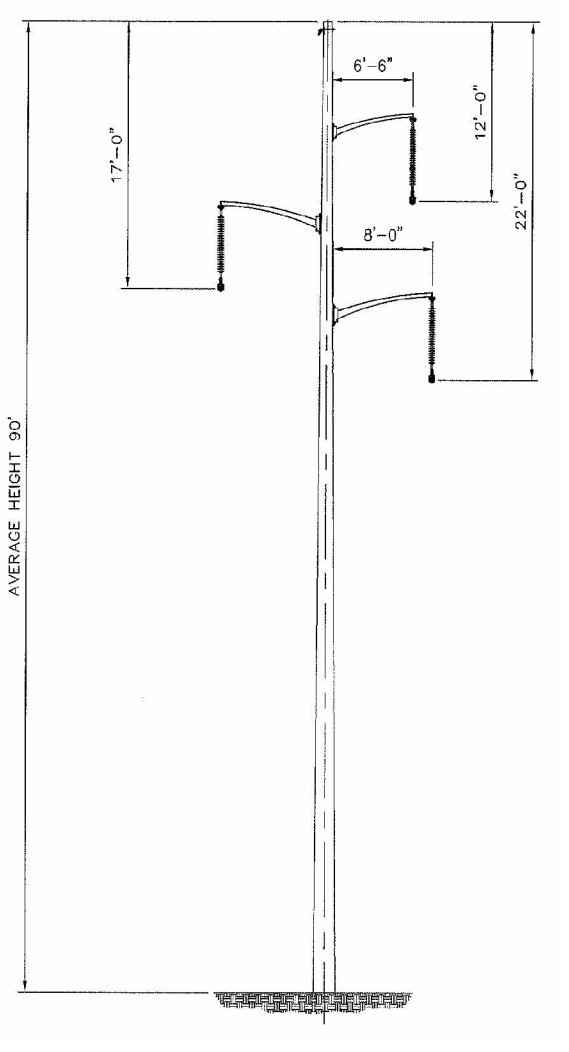
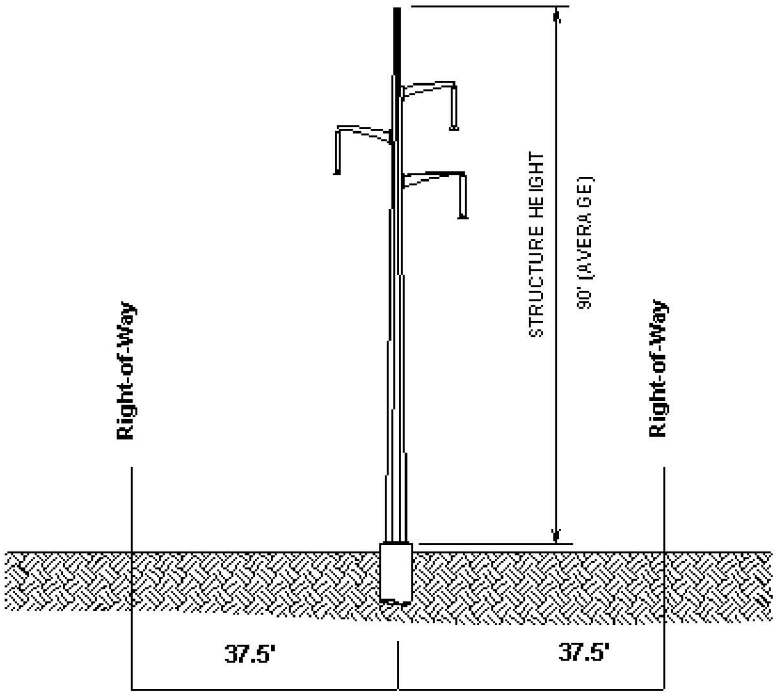


FIGURE 3
RIGHT-OF-WAY REQUIREMENTS



115 kV Line Typical Structure
75' Typical Total Right-of-Way Width

FIGRUE 4
EXAMPLE OF PROPOSED 140 FOOT STRUCUTRES

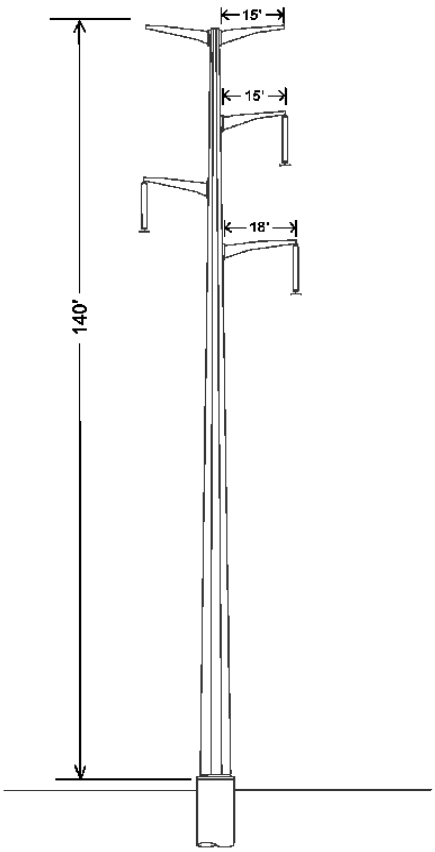
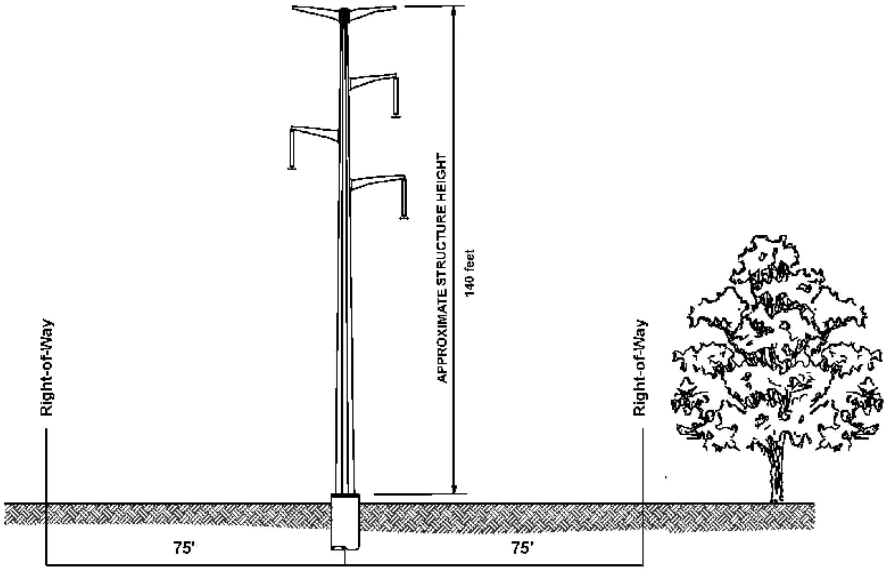


FIGURE 5
RIGHT OF WAY REQUIREMENTS FOR 140 FOOT STRUCUTRES



APPENDIX A

MINNESOTA DEPARTMENT OF COMMERCE

In the Matter of the Application for a Route Permit for the Fenton – Nobles #2 115kV High Voltage Transmission Line

ENVIRONMENTAL ASSESSMENT SCOPING DECISION
PUC Docket No. E002/TL-07-1233

The above matter has come before the Commissioner of the Department of Commerce (the Department) for a decision on the scope of the Environmental Assessment (EA) to be prepared on the proposed Xcel Energy Fenton to Nobles County #2 Transmission Line Project in Murray and Nobles counties, Minnesota.

Xcel has filed an application with the Public Utilities Commission (PUC) for a Route Permit for the proposed high voltage transmission line (HVTL). The PUC has accepted the application.

The Department's Energy Facilities Permitting (EFP) Unit held a public information and EA scoping meeting on November 15, 2007, at the Wilmont Community Center to discuss the project with the public and to solicit input into the scope of the EA to be prepared. A public comment period on the scope of the EA closed on December 5, 2008. One comment letter was received which proposed a route alternative affecting a segment of Xcel's proposed route.

Having reviewed the matter, consulted with the EFP staff, and in accordance with Minnesota Rule 7849.5700, I hereby make the following Scoping Decision:

MATTERS TO BE ADDRESSED

The Environmental Assessment on the Fenton to Nobles County #2 Transmission Project will address and provide information on the following matters:

A. GENERAL DESCRIPTION OF THE PROPOSAL

1. Purpose of the Transmission Line
2. Project Location and Environmental Setting
3. Engineering and Operation Design
    a. Transmission Line and Structures
    b. Transmission Capacity
    c. Construction Procedures
    d. ROW Maintenance

B. IMPACTS AND MITIGATIVE MEASURES

1. Human Settlements
2. Noise
3. Aesthetics
4. Recreation
5. Transportation
6. Land Use
7. Prime Farmland
8. Soils and Geology
9. Flora
10. Fauna
11. Archaeological and Historic Features
12. Air Quality
13. Surface Water
14. Wetlands
15. Human Health and Safety to include Electric and Magnetic Fields (EMF)
16. Potential for radio, television and cell phone interference from transmission lines

C. ALTERNATIVES TO BE ADDRESSED IN THE EA

The EA will include evaluation of the Kluis Alternative, as recommended by James and Joan Kluis, landowners along the proposed route. The Kluis Alternative turns westerly at the intersection of 70th Avenue and 11th Street and follows 11th Street approximately one-half mile to the half section line of Section 31, Fenton Township, Murray County. At this point, the Kluis Alternative route segment turns southerly, runs approximately one mile along the half section line to 1st Street (Murray County Road 71 and Nobles County Road 72). South of 1st Street, the Kluis Alternative aligns with and follows Xcel's proposed route along Minnesota Highway 91.

D. IDENTIFICATION OF PERMITS

The Environmental Assessment will include a list of permits that will be required for construction of this project.

ISSUES OUTSIDE THE SCOPE OF THE EA

The Environmental Assessment will not consider the following matters:

1. The manner in which land owners are paid for transmission right-of-way easements, as that is outside the PUC jurisdiction.
2. Any alternatives not described specifically in this Scoping Decision.
3. The Department will not, as part of this environmental review, consider whether a different size or different type of transmission line should be built. Nor will the

Department consider the no-build option regarding the HVTL or routes other than those noted herein.

SCHEDULE

The EA shall be completed and available in February 2008. A public hearing will be held in the Wilmont area after the EA has been issued and notice served.

Signed this 17 day of Jan, 2008

STATE OF MINNESOTA
DEPARTMENT OF COMMERCE

Glenn Wilson, Commissioner

STATE OF MINNESOTA)
) ss
COUNTY OF RAMSEY)

AFFIDAVIT OF SERVICE

I, **Sharon Ferguson**, being first duly sworn, deposes and says: that on the **18th** day of **January, 2008**, served the **Minnesota Department of Commerce Environmental Assessment Scoping Decision**

MN DOC DOCKET NUMBER: E002/TL-07-1233

XX by depositing in the United States Mail at the City of St. Paul, a true and correct copy thereof, properly enveloped with postage prepaid

XX electronic filing

/s/Sharon Ferguson

Subscribed and sworn to before me

this 18th day of January, 2008

/s/ Clodetta I. Jenson
Notary Public-Minnesota
Commission Expires 1/31/2009

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APPENDIX B

Recommendations for Projects Affecting Waters Inhabited by Topeka Shiners (*Notropis topeka*) in Minnesota

U.S. Fish and Wildlife Service
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Background

Topeka shiner (*Notropis topeka*) occurs throughout the Big Sioux and Rock River Watersheds in five southwestern Minnesota counties (Figure 1). The U.S. Fish and Wildlife Service (Service) listed Topeka shiner as an endangered species in 1998 and designated critical habitat[1] for it in 2004. The Endangered Species Act (ESA) prohibits the taking[2] of this species.

Endangered Species Act Guidance for Actions Affecting Topeka Shiner Habitat

Federal Agency Actions

Federal agencies or their designated non-federal representatives must consult with the Service on any action that they fund, authorize, or carry out that may affect Topeka shiner or its critical habitat. If an agency proposes to implement an action that is likely to result in adverse effects to Topeka shiner, it must undergo formal consultation with the Service. If the agency determines that an action may affect Topeka shiners, but that those effects are not likely to be adverse, it may avoid formal consultation by receiving written concurrence on this determination from the Service.

For general information regarding the section 7 process, contact the Service's Twin Cities Field Office at (612)725-3548 or review our internet site - http://www.fws.gov/midwest/Endangered/section7/index.html.

1 See 69 Federal Register 44,736 (July 27, 2004) or http://www.fws.gov/midwest/endangered/fishes/index.html#topeka for further information about Topeka shiner critical habitat.
2 The term "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.

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Private or Local (Non-federal) Actions

Private landowners, corporations, state or local governments, and other non-federal entities or individuals who wish to conduct activities that might incidentally take Topeka shiners must first obtain an incidental take permit from the U.S. Fish and Wildlife Service (Service). To determine whether an action may require an incidental take permit, coordinate with the Service when planning actions that may affect streams or off-channel habitats in the Rock River or Big Sioux River watersheds in Minnesota. Contact the Service's Twin Cities Field Office (612/725-3548) for further information or see the following website for information regarding Endangered Species permits – http://endangered.fws.gov/permits/index.html?#forms.

Project Recommendations

The following recommendations are provided to help design actions that would avoid or minimize adverse effects to Topeka shiner. These recommendations may not address every way in which proposed actions may affect this species and may not preclude the need for formal consultation for federal actions or for an incidental take permit for non-federal actions. Therefore, we highly recommend that you coordinate as early in the planning process as possible with the Service's Twin Cities Field Office (612/725-3548) when contemplating any action that may affect streams or associated off-channel habitats (oxbows, abandoned channels, etc.) in the Big Sioux River or Rock River watersheds in Minnesota (Fig. 1).

In some cases, projects may not be implemented without going against one or more of these recommendations. In those cases, project planners, landowners, etc. should promptly coordinate with the Service's Twin Cities Field Office to determine whether formal section 7 consultation (federal agencies) or an incidental take permit (private landowners, local government agencies, etc.) would be required.

1. Do not dewater stream reaches or temporarily divert streams for construction. Pumping to dewater stream areas or off-channel habitats will almost always require formal section 7 consultation (federal actions) or an incidental take permit (non-federal actions, see above) if Topeka shiners are likely to be present.

2. To avoid disrupting Topeka shiner spawning, do not conduct in-stream work before August 15.

3. Follow all applicable requirements and best management practices for stormwater and erosion control – for example, requirements contained within stormwater permits from Minnesota Pollution Control Agency (MPCA).[3]

3 Resources for designing effective erosion control – Protecting Water Quality in Urban Areas Manual (MPCA, see

4. Minimize removal of riparian (streamside) vegetation; if such removal is necessary, it should occur sequentially as needed over the length of the project and it should be replaced as soon as if feasible upon project completion.

5. Mulch areas of disturbed soils and reseed promptly with non-invasive plant species, preferably native species.

6. Implement appropriate erosion and sediment prevention measures to the maximum extent practicable. Inspect devices frequently to ensure that they are effective and in good repair, especially after precipitation.

7. Leave existing features, such as bridge abutments, retaining walls, and riprap, in place as much as is feasible.

8. Ensure that erosion prevention measures are in place and in adequate condition when leaving work site.

9. Design and install instream structures in a manner that will not impair passage of Topeka shiners and other fish species during and after construction.

10. Where feasible, replace bridges with bridges or other open-bottomed structures to avoid altering the natural stream bottoms.

11. Do not operate motorized vehicles instream. Excavation, culvert placement, etc. should be conducted from streambanks outside of standing or flowing water.

12. Backfill placed in the stream shall consist of rock or granular material free of fines, silts, and mud. Machinery parts (i.e., backhoe buckets, etc.) shall be cleaned of all such material and free of grease, oil, etc. before their instream use.

13. Prevent materials and debris from falling into the water during construction.

14. If the project is modified, or if field conditions change, the applicant or agency representative should contact U.S. Fish and Wildlife Service before proceeding.

15. Ensure that contractors and subcontractors understand all permit provisions that are necessary to avoid or minimize adverse effects to Topeka shiners.

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http://www.pca.state.mn.us/water/pubs/sw-bmpmanual.html); Minnesota Department of Transportation Erosion Control Handbook for Local Roads (http://www.lrrb.gen.mn.us/PDF/200308.pdf). Also see http://www.pca.state.mn.us/water/stormwater/stormwater-c.html#factsheets.

Figure 1. Recorded occurrences of Topeka shiner and officially designated critical habitat in Minnesota. Data included here were provided by the Natural Heritage and Nongame Research Program of the Division of Ecological Services, Minnesota Department of Natural Resources (DNR), and were current as of January 2007. These data are not based on an exhaustive inventory of the state. The lack of data for any geographic area shall not be construed to mean that no significant features are present."