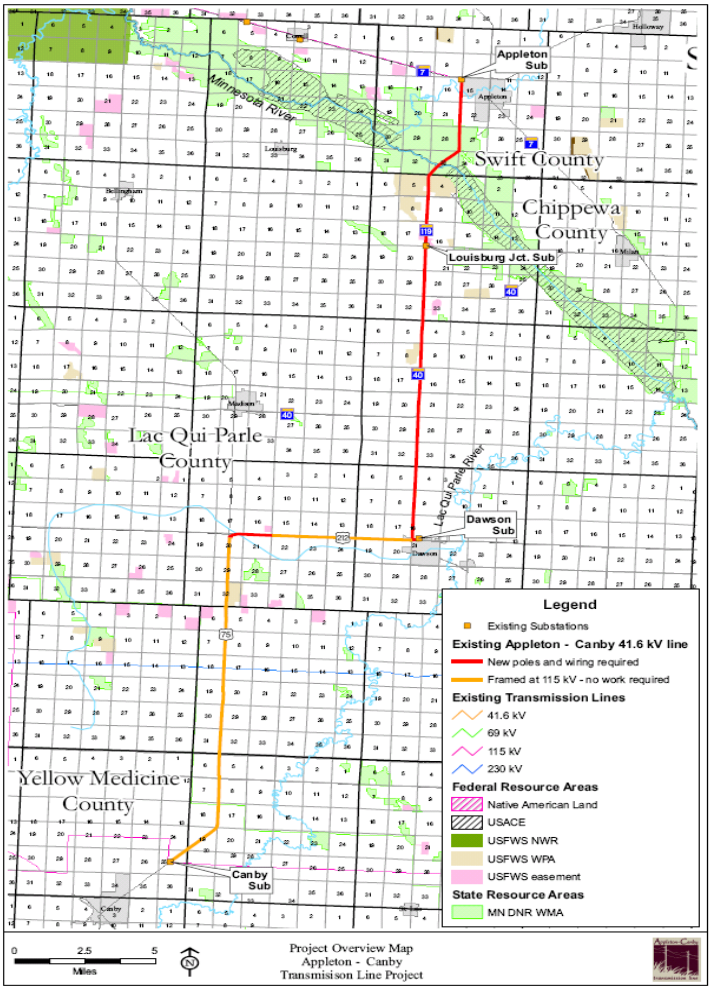
Environmental Assessment

Appleton to Canby

High Voltage Transmission Line



MPUC Docket Numbers:

E017/CN-06-677
&
E017/TL-06-1265

Prepared by

Minnesota Department of Commerce

Energy Facilities Permitting

December 15, 2006

Responsible Governmental Unit

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Abstract

Ottertail Power Company made a joint application to the Minnesota Public Utilities Commission for a Certificate of Need and Route Permit for the rebuild of the Appleton to Canby High Voltage Transmission Line and associated substation modifications on September 7, 2006 pursuant to the provisions of the Power Plant Siting Act (Minnesota Statutes Sections 216E.001 to 216E.18).

Ottertail Power Company is proposing to rebuild an existing high voltage transmission line from the existing Appleton substation in Appleton, Minnesota to the Canby substation in Canby, Minnesota. The line will be rebuilt from 41.6 kilovolt (kV) to 115 kV. The line will be approximately 42 miles in length, of which approximately 21 miles is already capable of 115 kV operation and require no further modification.

An Environmental Report is required for the Certificate of Need and an Environmental Assessment is required for the Route Permit Application. On September 28, 2006, the PUC issued an Order combining the Environmental Review and the Public Hearings for the Certificate of Need and Route Permit.

Persons interested in receiving additional information regarding this matter can register their names on the Project Docket webpage at http://energyfacilities.puc.state.mn.us/Docket.html?Id=18663 or by contacting Jeffrey Haase, Energy Facilities Permitting, 85 7th Place East, Suite 500, St. Paul, Minnesota 55101, phone (651) 297-5648, e-mail: jeffrey.haase@state.mn.us.

Many of the documents of interest regarding this matter, including this Environmental Assessment, are available online at: http://energyfacilities.puc.state.mn.us/Docket.html?Id=18663. The final Route Permit issued to Ottertail Power Company will also appear on this webpage.

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1.0 Introduction

On September 7, 2006 Ottertail Power Company (OTP or The company) filed a combined application for a Certificate of Need and a Route Permit under the alternative review process for the Appleton to Canby high voltage transmission line (HVTL) project (PUC Docket Numbers: E017/CN-06-677 & E017/TL-06-1265).

OTP is an investor-owned electric utility with headquarters in Fergus Falls, Minnesota. The company has provided electric service to customers since 1909 and presently serves about 128,000 customers in three states, about 58,000 of whom reside in Minnesota.

The Minnesota Department of Commerce (DOC or Department) is required to perform environmental review on applications for Certificates of Need and Route Permits to inform the Minnesota Public Utilities Commission (PUC or Commission), which is the final decision making body in these matters. In the matter of the Appleton to Canby HVTL project the PUC directed the DOC to combine the environmental review for both the Certificate of Need and the Route Permit into a single document in an effort to streamline the regulatory and public participation process. Historically the environmental review for projects of this nature has been satisfied by developing two separate documents, an Environmental Report for the Certificate of Need application, and an Environmental Assessment (EA) for the Route Permit application. This EA document covers the environmental review requirements or both the Certificate of Need and Route Permit.

Chapters 1 and 3 provide specific information about the proposed project. Chapter 2 provides information on the regulatory process for both the Certificate of Need and the Route Permit processes. Chapter 4 through 6 provide the analysis required for route permit applications under Minnesota Rule 4400.2750, as well as the analysis of impacts and mitigation measures required by Minnesota Rule 4410.7035 for the CON application. Chapter 4 addresses the human and environmental impacts of OTP's proposed transmission line and route. Chapter 5 addresses the unavoidable impacts of the proposed route, and Chapter 6 describes the additional permits that may be required for this project.

Chapter 7 describes and analyzes alternatives to the proposed Appleton to Canby transmission line that attempt to reduce, mitigate or eliminate the need for the proposed transmission line. The analysis of alternatives is required by Minnesota Rule 7849,0230 and 4410.7035 for the CON application.

1.1 Project Description

OTP has proposed to rebuild an existing high HVTL located in Swift, Lac Qui Parle, and Yellow Medicine counties from 41.6 kilovolt (kV) to 115 kV. OTP is proposing to construct and operate the 115 kV line between the Appleton substation in northwest Appleton, Minnesota, and the Canby substation located northwest of Canby, MN along U.S. Highway 75. The line is approximately 42 miles in length, however, approximately 21 miles of the line south from the Dawson substation to the Canby substation is already capable of transmitting power at 115 kV, although the line is operated presently at 41.6 kV. No physical changes will occur along the southern half of the line, with the exception of one mile of the line west of the Dawson substation near the intersection of U.S. Highway 212 and U.S. Highway 75 and a short segment near the Canby substation. The northern 21 miles of the line, from the Dawson substation to the Appleton substation will have new structures installed and a new static wire installed but the conductor will not be replaced. The proposed project includes changes to the following substations:

- Canby Substation

- Dawson Substation
- Louisburg Junction Substation
- Appleton Substation

In addition to modifying the above four substations, the company will also eliminate the Appleton TV substation, a small substation south of Appleton, and serve this load from the Milan Junction substation. By doing this the company will be able to remove two miles of existing 41.6 kV transmission line running to the east from MN State Highway 119. The company will also eliminate the South Appleton Junction bus, which will not be necessary when the line is energized to 115 kV.

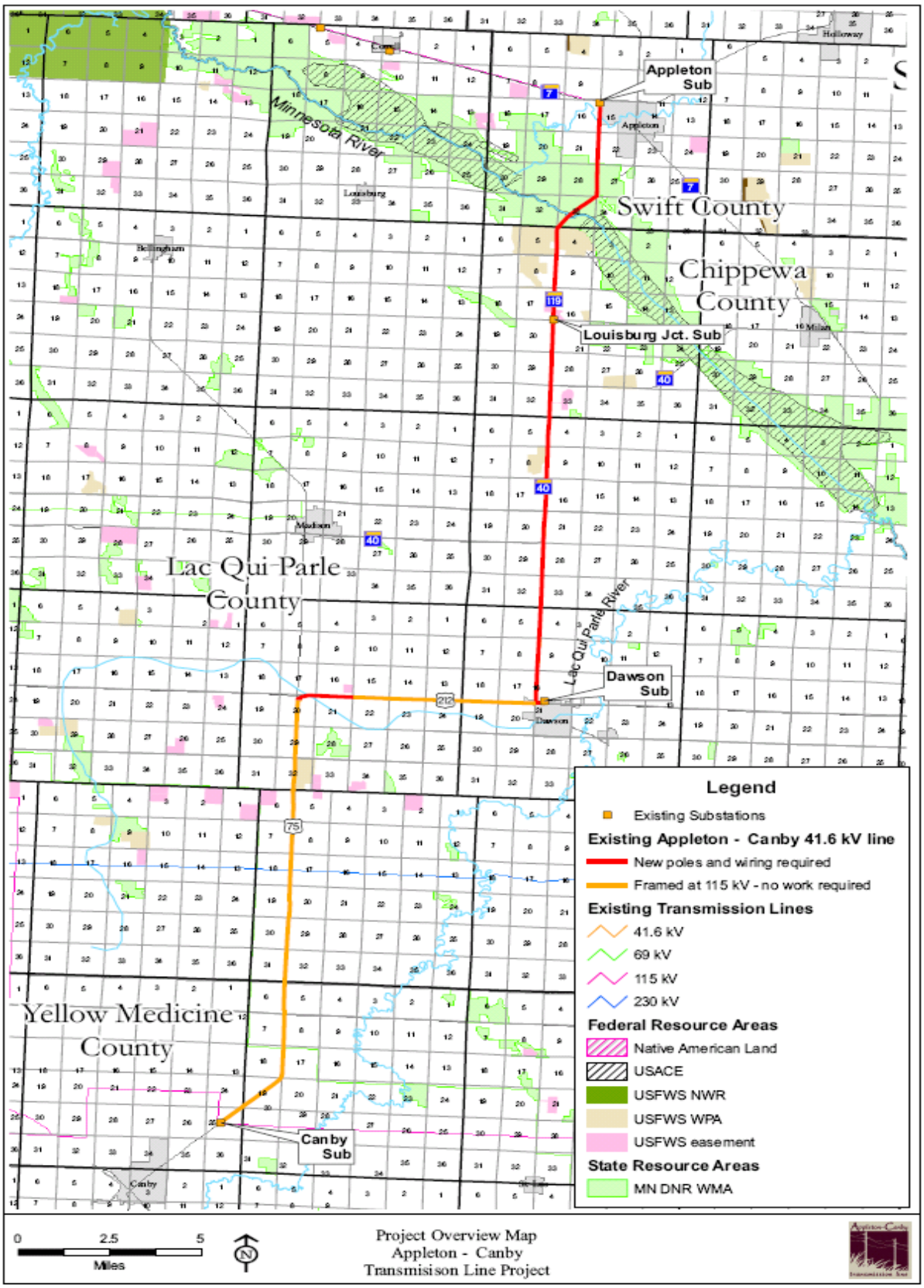
1.2 Project Location

The project is located between Appleton, MN and Canby, MN in the counties of Swift, Lac Qui Parle, and Yellow Medicine. The proposed route is the same as the route the existing 41.6 kV line presently follows. The route will originate at the Appleton substation in the northwest corner of the city of Appleton, MN. The line follows section lines due south for three miles from the Appleton substation paralleling MN State Highway 119. The line then cuts diagonally across Section 33 of Appleton Township in Swift County and crosses the Minnesota River, where it again travels due south along MN State Highway 119 about twenty miles to the Dawson substation.

From the Dawson substation the line turns due west for about six miles along U.S. Highway 212, then turns due south at the intersection of Highway 212 and U.S. Highway 75. The line parallels Highway 75 for about twelve miles, where it cuts diagonally through Section 19 of Oshkosh Township in Yellow Medicine County and runs to the Canby substation.

A map showing the entire route is found on the following page and detailed aerial photos are included in Appendix B.

Figure 1. Project Overview Map



1.3 Project Purpose

The purpose of the project is to address a load serving issue in the Yellow Medicine, Lac Qui Parle, Chippewa, Big Stone, and Swift County area. Load growth in this area has caused electrical facilities to exceed allowable capacities under certain conditions.

The existing problems will continue to worsen as load continues to grow in the Appleton/Canby area. It is anticipated that by 2009 the Canby transformer will overload during typical peak loading conditions. Also voltage levels at Dawson will drop below safe operating levels during peak conditions starting in 2008. Voltage levels in the Canby area will fall below acceptable voltage levels starting in the year 2009.

The proposed line upgrade will provide multiple benefits to the Appleton/Canby area. First the upgrade will place the loads at Appleton, Louisburg and Dawson, which are currently on radial systems, on a looped 115 kV system. A looped system provides reliable backup sources for these loads in the event of a loss of a line. In the Appleton area, the addition of a second 115 kV source alleviates low post-contingent voltage issues.

In the Canby area, removing the load at Dawson from the 41.6 kV system and placing it on the 115 kV system unloads the Canby 115/41.6 kV transformer, extending its ability to serve the remaining Canby 41.6 kV system. Furthermore, removing the Dawson load from the Canby 41.6 kV system enables backup sources to provide adequate voltage support during the loss of the Canby 115/41.6 kV transformer.

1.4 Sources of Information

Much of the information used in this EA is derived from OTP's *Application to the Minnesota Public Utilities Commission for a Certificate of Need and Route Permit for the Appleton to Canby High Voltage Transmission Line, 115-kilovolt transmission line and substation modification*, dated September 7, 2006, (Joint CN and Permit Application). The entire OTP Joint CN and Permit Application, maps, appendices, and other documents may be viewed at the Energy Facilities Permitting website via the following link:

http://energyfacilities.puc.state.mn.us/Docket.html?Id=18663

Other information sources include the U.S. Department of Energy, Environmental Assessments and Environmental Impact Statements prepared by Department of Commerce, Energy Facilities Permitting staff on other transmission line projects, and certificate of need and route permit applications to the PUC for similar projects in the area.

First hand information was gathered by DOC, EFP staff field inspection in October 2006 and review of aerial photography along the proposed route.

Additional information sources include:

- Minnesota Pollution Control Agency (http://www.pca.state.mn.us)
- Minnesota Department of Health (http://www.health.state.mn.us)
- United States Census Bureau, QuickFacts (http://quickfacts.census.gov/qfd/states/27000.html)

2.0 REGULATORY FRAMEWORK

As a result of legislation passed in 2005, the PUC has jurisdiction over both Certificates of Need and Route Permits. 2005 Minn. Laws ch. 97, art. 3, § 17. Minnesota Statutes section 216E.02, subdivision 2, states that "[t]he [public utilities] commission is hereby given the authority to provide for site and route selection for large electric power facilities." The legislature transferred these siting and routing responsibilities to the Commission in order to "ensure greater public participation in energy infrastructure policy goals with economic decisions involving large energy infrastructure." 2005 Minn. Laws ch. 97, art. 3, § 17.

2.1 PUC Certificate of Need

Minnesota Statutes section 216B.243, subdivision 2, provides that "No large energy facility shall be sited or constructed in Minnesota without the issuance of a certificate of need by the [public utilities] commission pursuant to sections 216C.05 to 216C.30 and this section and consistent with the criteria for assessment of need." A large energy facility is defined in Minnesota Statutes section 216B.2421 subdivision 2(3) as, among other things, "any high-voltage transmission line with a capacity of 100 kilovolts or more with more than ten miles of its length in Minnesota."

A Certificate of Need is required because the Project consists of a transmission line in excess of 100 kV and is more than ten miles in length.

Minnesota Rules chapter 7849 governs the consideration of applications for certificates of need by the PUC. On May 15, 2006, OTP filed a Petition for Exemption under Minnesota Rules part 7849.0200, subpart 6, requesting that the company be exempt from certain filing requirements under chapter 7849. The Public Utilities Commission granted the Petition on July 20, 2006.

2.2 PUC Route Permit

OTP is required to obtain a Route Permit from the Minnesota Public Utilities Commission (PUC) identifying the route along which the new transmission line can be built. The Route Permit will also authorize the necessary substation modifications.

An application for a Route Permit for a proposed new HVTL is considered by the PUC in accordance with the requirements of Minnesota Rules 4400. These rules require that a number of procedural steps be followed in considering any transmission line project, including providing public notice of the project and holding a public information meeting shortly after a permit application is accepted, preparing an Environmental Assessment (EA), holding a public hearing after the EA is completed, and bringing the matter to the PUC for a final decision.

OTP has filed a Certificate of Need and a Route Permit application for this matter at the same time. The PUC has combined the Certificate of Need and the Route Permit proceedings into one proceeding, which is consistent with the goal of the Legislature to simplify public participation and to expedite agency review and decision making. In its September 28, 2006 Order the PUC combined the environmental review documents and procedures and joined the public hearings for both the Certificate of Need and Route Permit proceedings for this matter.

The rules that apply to the review of Route Permit applications are found in Minnesota Rules chapter 4400.

Since this project is a transmission line between 100 and 200 kV it qualifies for the Alternative Review Process. The Alternative Review Process is shorter than the process required for transmission lines over 200 kilovolts and does not require applicants to propose alternative routes. Applicants are required to disclose any rejected routes. Further, an Environmental Impact Statement is not required under the Alternative Review Process. Instead, the Department of Commerce is required to prepare an Environmental Assessment. Unlike the full route permit process for higher voltage lines, which requires a formal contested case hearing, the Commission has discretion to determine what kind of public hearing to conduct. OTP notified the Commission on August 12, 2006, of its intent to utilize the Alternative Review Process and file its Route Permit Application under Minnesota Rules parts 4400.2000 to 4400.2950.

2.3 Scoping of Environmental Impacts and Alternative Routes

The process the Department must follow in preparing the EA is set forth in Minnesota Rules part 4400.2750. This process requires the Department to schedule at least one public meeting in the area of the proposed Project. The purpose of the meeting is to advise the public of the Project and to solicit public input into the scope of the environmental review.

The public meeting for this project was held on October 4, 2006. Representatives of the Department and OTP were available at the meeting to discuss the project and the process and to answer questions. The comment period for interested parties to comment on the project was open until October 13, 2006. Following the close of the public comment period the Commissioner of the Department of Commerce issued the Environmental Assessment Scoping Decision on October 19, 2006. A copy of the Scoping Decision is included in Appendix A of this EA.

2.4 Environmental Assessment Requirement

As part of its review of an application for a Route Permit, the PUC is required to prepare EA. In the EA the PUC evaluates the potential impacts of the project along the route proposed by the applicant and along possible alternative route segments that are identified. The EA also discusses ways to mitigate these potential impacts. The public is given an opportunity to participate in the development of the scoping decision, which identifies the routes and impacts that will be evaluated in the EA.

The Department has four months from the time the Application is submitted to complete the environmental review and prepare the EA. Upon completion of the document, the Department will publish notice in the Monitor, a bi-weekly publication of the Environmental Quality Board that can be accessed on the EQB webpage, www.eqb.state.mn.us/monitor.html, and will mail notice to persons who have registered their names with the Department to receive notices about this Project. Persons wishing to place their names on the mailing list for this Project can register their names on the Project Docket webpage at http://energyfacilities.puc.state.mn.us/Docket.html?Id=18663 or by contacting Jeffrey Haase, Energy Facilities Permitting, 85 7th Place East, Suite 500, St. Paul, Minnesota 55101, phone (651) 297-5648, e-mail: jeffrey.haase@state.mn.us.

2.5 Public Hearing

After the EA is completed, the PUC will schedule a public hearing to again solicit public input and to create an administrative record. The Commission will select a person to preside at the hearing; it may be an

administrative law judge from the Office of Administrative Hearings or another person acceptable to the Commission. The Commission will establish the procedures to be followed at the hearing. The EA will become part of the record for consideration by the Commission. Interested persons will be notified of the date of the public hearing and will have an opportunity to participate in the proceeding. The hearing will be a joint hearing to consider both the Certificate of Need and the Route Permit. It is expected that the public hearing will be held in January 2007.

Once the hearing is concluded, the matter will come to the full PUC for a decision. The Commission will again afford interested persons an opportunity to submit comments.

The Commission has one year from the time a Certificate of Need Application is submitted to reach a final decision. Minn. Stat. §§ 216B.243, subd. 5. A route permit under the Alternative Permitting Process can be issued in six months, Minnesota Statutes § 216E.04, subd. 7, but Minnesota Rules part 4400.1900, subpart 3 prohibits the Commission from making a final decision on a route permit until the certificate of need is approved.

3.0 Proposed Project

This section describes the physical attributes of the project, as well as the land requirements and construction and restoration methods for the proposed transmission line and substation modifications.

3.1 Right of Way Requirements

OTP has existing easements for the 41.6 kV line and does not anticipate that any additionally property will be required for the line at 115 kV, except for a short distance near the relocated Canby substation. In those areas where the structures need to be replaced, primarily along the section from Dawson to Appleton, OTP intends to enter into new easement agreements with landowners to update the language to reflect typical provisions included in more modern easements.

Both the existing route and the proposed route parallel existing roadway right-of-way (ROW) for approximately 90 percent of the proposed route. Where the ROW parallels a road, the actual easement necessary for the line is no more than 40-feet wide, depending on the structure size and location. If there is a need to move the line away from the road ROW, then an 80 foot right-of-way is required to comply with the standards of the National Electric Safety Code.

3.2 Anticipated Size and Type of Structures

The 115 kV line will consist of single-pole wood structures spaced approximately 250 to 300 feet apart. Typical structures for the 115 kV voltage level vary from 50 to 70 feet in height, dependent on the terrain and the length of span necessary. In addition, the spans will be longer with the rebuilt 115 kV line, which will require fewer poles than what is currently in place.

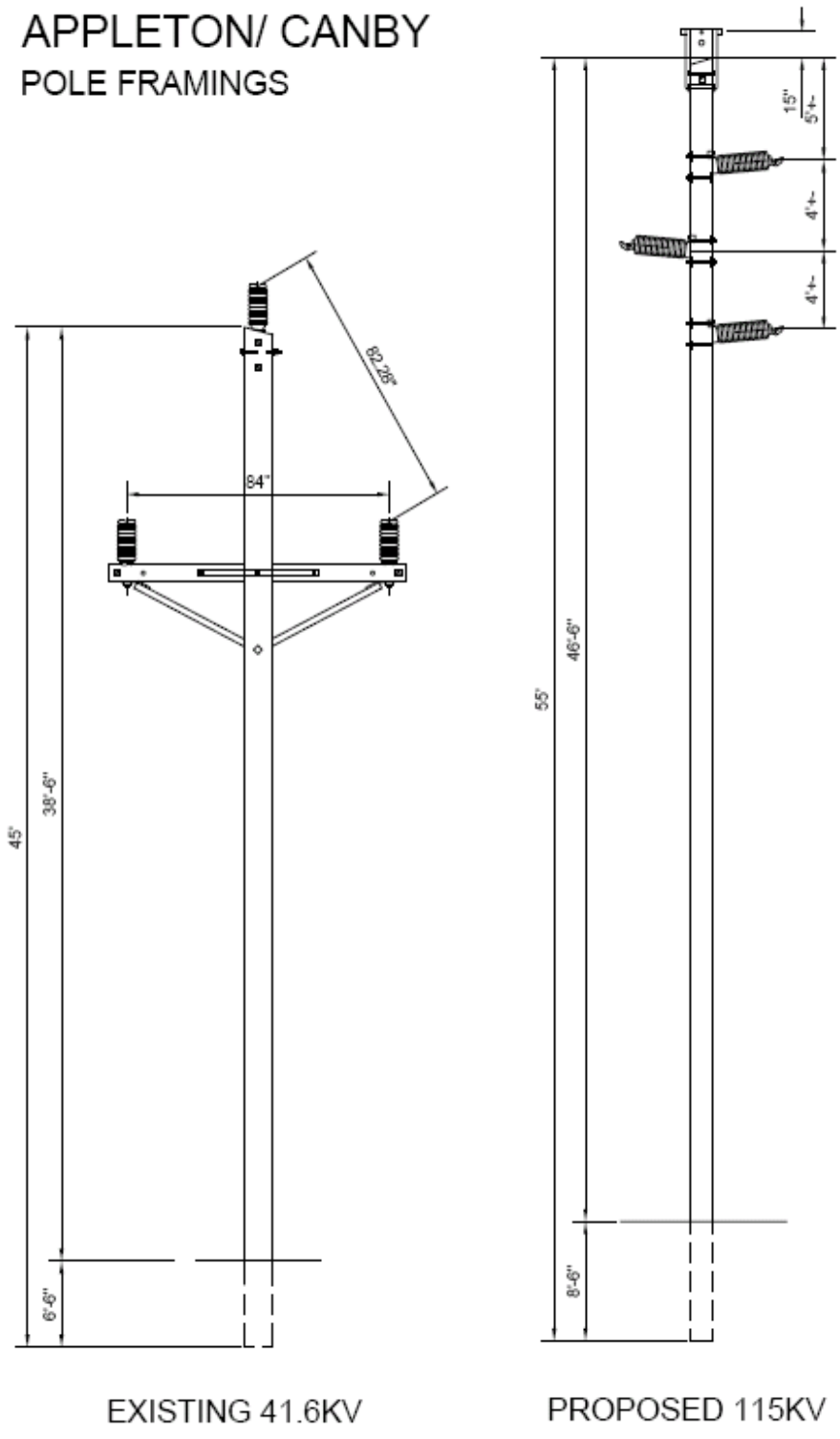
The existing conductors will remain in place on the rebuilt line sections. Presently the existing conductor is a mix of 266.8 (18/1) ACSR (Aluminum Conductor Steel Reinforced), 266.8 (26/7) ACSR and 266.8 (7 str.) AA (All Aluminum).

In addition, a static wire will be installed on the top of the new structures. The sections of line already constructed for operation at 115 kV already have a static wire installed for protection.

The service life of the line is approximately 40 years. However, based on the company's experience with these type of structures, the line and structures will last longer than 40 years.

Diagrams of both the existing and proposed structures for the Appleton to Canby Project are shown in figure 2.

Figure 2. Existing and Proposed Structures for the Appleton to Canby HVTL Project.



3.3 Transmission Line Property Acquisition Procedures

The company has existing easements for the 41.6 kV line and does not anticipate that any additional property will be required for the line at 115 kilovolts, except perhaps for a short distance near the Canby substation. However, in those places where the poles have to be replaced, primarily on the north section from Dawson to Appleton, the company intends to enter into new easements with these landowners in order to update the language to reflect typical provisions included in today's easements. In the event the Commission should authorize a different route requiring new right-of-way, OTP would be required to obtain new easements.

OTP will complete the preliminary survey work and possible soil investigations after the landowner has granted permission. As the design of the transmission line nears completion, the survey crews will stake the structure or structure location. The company will work with each landowner to determine if there are any concerns with the proposed location of the new structures.

The company will work with landowners to negotiate the terms of new easements that are acceptable to the landowner and the company. If the company cannot come to terms on a new easement, then the company intends to continue to exercise its rights that it already has from the previous easement. In the event that the Commission should authorize a new route for the line, and the company and the landowner cannot come to agreement on the terms of an easement, then the company would consider exercising its rights of eminent domain under Minnesota Statutes Chapter 117.

3.4 Transmission Line Construction Procedures

Preparation of the ROW includes clearing any vegetation within the ROW that could interfere with the safe operation of the transmission line. In addition, any vegetation that would interfere with construction would also be removed. All materials resulting from the clearing operation will either be chipped on site or stacked in the ROW based on agreements with the landowner. If temporary removal or relocation of fences is necessary, installation of temporary or permanent gates would be coordinated with the landowner. Where possible, OTP will work with landowners to coordinate an early harvest of their crops. OTP may request that landowners remove or relocate equipment and/or livestock from the ROW during the construction process.

Underground utilities will be identified in cooperation with local utility companies to minimize conflicts to the existing utilities located along the route.

Structure sites will not be graded or leveled unless it is necessary to provide a reasonably level area for construction access and activities.

OTP will employ standard construction and mitigation practices that were developed from experience with past projects as well as industry-specific best management practices (BMP). BMPs address ROW clearance, erecting transmission line structures and stringing conductors. BMPs for each specific project are based on the proposed schedules for activities, prohibitions, maintenance guidelines, inspection procedures and other practices. Some activities are modified to allow for the incorporation of BMP construction that will assist in minimizing impacts for sensitive environments. OTP does not anticipate using contractors on this line, but if there is a need for contractors they will be advised of the BMP requirements.

A main staging area will be established for the temporary storage of materials and equipment, typically this involves a previously-disturbed or developed area. Such an area includes sufficient space to lay down material and pre-assemble some structural components or hardware. Other staging areas located along the ROW are limited to the structure site areas, for structure lay down and framing prior to structure installation. Additionally, stringing setup areas are used to store conductors and equipment necessary for stringing operations

OTP will begin installation of new structures by first removing the existing structures closest to the location of the new structures. The structures are installed directly in the ground by augering or excavating a 2 to 3 foot diameter hole to a typical depth of 7 to 10 feet. Excess soil from the excavation will be offered to the landowner or removed from the site.

The new structures will then be set and the holes back-filled with the excavated material, native soil, or crushed rock. In poor soil conditions, a galvanized steel culvert is sometimes installed vertically with the structure set inside. OTP does not anticipate using concrete foundations, but if concrete foundations become necessary the size of the hold will be determined by the specific soil type. It is anticipated that the average depth of a concrete foundation would be 8.5 feet based on the soil types in the project area. The diameter of the foundations may vary from 4 to 8 feet. Concrete trucks are typically used to transport concrete to the project site from a local batch plant.

After a number of new structures have been erected, OTP will begin to install the new static wire by establishing stringing setup areas within the ROW. These stringing setup areas are usually located every two miles along a project route and occupy approximately 15,000 square feet of land. Conductor stringing operations require brief access to each structure to secure the conductor wire to the insulators or to install shield wire clamps once final sag is established. Temporary guard or clearance structures are installed, as needed, over existing distribution or communication lines, streets, roads, highways, railways or other obstructions after any necessary notifications are made or permits obtained. This ensures that conductors will not obstruct traffic or contact existing energized conductors or other cables, and protects the conductors from damage.

One particular area requiring attention during construction is the crossing of rivers and streams and wetlands. OTP does not anticipate that any structures will be installed in any waters but the Minnesota River and the Pomme de Terre River will have to be crossed. OTP intends to place structures in approximately the same location along the road right-of-way to cross the Minnesota River. OTP intends to span the Pomme de Terre River. In addition, OTP will not allow construction equipment to be driven across waterways except under special circumstances and only after discussion with the appropriate resource agency. Where waterways must be crossed to pull in the new conductors and shield wires, workers may walk across, use boats, or drive equipment across ice in the winter. In areas where construction occurs close to waterways, BMPs help prevent soil erosion and ensure that equipment fueling and lubricating occur at a distance from waterways.

3.5 Right-of-Way Restoration Procedures

During construction, limited ground disturbance at the structure sites may occur. Disturbed areas will be restored to their original condition to the maximum extent practicable, or as negotiated with the landowner.

Post-construction reclamation activities will include removing and disposing of debris, removing all temporary facilities, including staging and laydown areas, employing appropriate erosion control measures, reseeding areas disturbed by construction activities with vegetation similar to that which was removed with a seed mixture certified as free of noxious or invasive weeds and restoring the areas to their original condition to the extent possible. In cases where soil compaction has occurred, the construction crew or a restoration contractor will use one of a variety of methods to alleviate the compaction, or as negotiated with landowners.

OTP will contact the landowners once construction is complete to determine if the clean-up measures have been conducted to their satisfaction and if any other damage may have occurred. If damage has occurred to crops, fences or the property, OTP will compensate the landowner. In some cases, an outside contractor may be hired to restore the damaged property as near as possible to its original condition.

3.6 Right of Way Maintenance Procedures

Access to the ROW of a completed transmission line is required to perform periodic inspections, conduct maintenance and repair damage. Regular maintenance and inspections will be performed during the life of the transmission line to ensure its continued integrity. Generally, OTP will inspect the transmission lines at least once every other year. Inspections will be limited to the ROW and to areas where obstructions or terrain may require off-ROW access. If problems are found during inspection, repairs will be performed and the landowner will be compensated for any loss.

The ROW will be managed to remove vegetation that interferes with the operation and maintenance of the transmission line. Native shrubs that will not interfere with the safe operation of the transmission line will be allowed to reestablish in the ROW. OTP's practice provides for the inspection of 115 kV transmission lines every two years to determine if clearing is required. ROW clearing practices include a combination of mechanical and hand clearing, along with herbicide application, where allowed, to remove or control vegetation growth. Noxious weed control with herbicides will be conducted on a two-year cycle around structures and anchors. The project facilities will primarily be routed along highway right of way with relatively little tree maintenance required.

3.7 Substations

Substations interconnect transmission lines and transformers and change voltages from one transmission line to another, or to a sub-transmission level. Transmission lines are typically connected to the substation bus which in turn connects the line to other components in the substation.

Since the Appleton to Canby Transmission Line Project seeks to change the voltage of an existing line to a higher voltage, this change necessitates modifications to a number of substations that are integral to the operation of the local electrical grid. The following substation changes have been proposed by the company.

Canby Substation

The company intends to end the new line at the Canby substation. However, the company is planning to move the existing Canby substation to a new location nearby. The location of the Canby substation will be

determined in a separate proceeding (in the Matter of the Big Stone Transmission Project, PUC Docket No. CN-05-619).

Dawson Substation

The Dawson substation will have to be increased in size to accommodate the higher voltage line. The company is studying the electrical system needs for the community of Dawson. The study will determine if the company needs to change the distribution voltage for the community and whether there will need to be one or two transformers in the substation. Due to new high voltage protection requirements, the company will need to purchase additional land for the substation changes.

Louisburg Junction Substation

The Louisburg Junction substation was rebuilt approximately 15 years ago and it was designed to accommodate 115 kV. The company will need to change out the substation transformer to allow operation of the substation at 115 kV.

Appleton Substation

The Appleton substation will need to be modified to accommodate the new 115 kV switchgear and the new 115 kV tap. The additions required for this work can be contained within the existing substation fence.

Additional substation modifications

In addition to modifying the above four substations, the company will also eliminate the Appleton TV substation, a small substation south of Appleton, and serve this load from the Milan Junction substation. By doing this the company will be able to remove two miles of existing 41.6 kV transmission line running to the east from MN State Highway 119. The company will also eliminate the South Appleton Junction bus, which will not be necessary when the line is energized to 115 kV.

3.8 Substation Property Acquisition Procedures

It is anticipated that the Dawson substation is the only substation that will require additional land. Once the necessary permits are issued, OTP will contact the appropriate landowners of the sites to discuss the project in greater detail. OTP will request soil surveys and soil investigations to determine whether the site meets the substation criteria and will develop a more site-specific design. Once the design is finalized OTP will obtain land rights for the facilities and will seek to obtain property through voluntary purchases.

3.9 Substation Construction Procedures

Construction on the substations will begin once the final designs are complete and any necessary property is acquired. The construction schedules will be developed based on the availability of crews, outage restrictions for any transmission 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.

Substation upgrades generally involve the replacement of existing equipment with new equipment. All construction work occurs within the existing substation property unless expansion of the site is necessary.

Expansion of the site is necessary if the existing site is not large enough to safely accommodate the equipment required for the upgrade work. This is the case with the Dawson Substation.

To construct, operate and maintain the proposed substations, all vegetation will be cleared from the substation footprint area, from the substation driveway area and from a buffer area outside the substation fence. Vegetation on the property outside of the substation footprint, driveway, and buffer will be left undisturbed, except where it must be impacted to allow for transmission line access to the substation.

Construction of a new facility or upgrade/addition to an existing facility begins with site preparation work, which involves grading and leveling the site with heavy equipment to support electrical equipment and the control house. This may or may not include replacement of site soils depending on existing soil conditions found and those identified in the Soil Exploration Report. Topsoil will be removed, stockpiled and re-spread onsite. Any excess soil will be offered to the landowner or removed from the site. Once the site is graded, a perimeter fence, typically chain link, is installed to secure the site. All substation equipment will be contained within the fenced area. Concrete foundations are placed throughout the substation pad to support the substation equipment. A control house may be installed to house protective relaying and control equipment. Erection of steel structures follows the foundation installation. These structures are built using rolled I-beams and/or tubular steel materials. Beams are used for mounting electrical conductors, disconnects and equipment. Bare copper conductor is buried around the perimeter of the fence and within the fence to properly ground all of the equipment and provide safety of personnel. Large high-voltage equipment, such as circuit breakers and transformers with associated control cables, are installed following completion of these steel structures. The final step is to properly test and commission each electrical device.

OTP will provide erosion control methods to be implemented to minimize runoff during substation construction. A Storm Water Pollution Prevention Plan (SWPPP) will be implemented in compliance with the NPDES and if necessary, a Spill Prevention, Control and Countermeasure (SPCC) plan will be developed or updated, as applicable.

Substations will be upgraded in compliance with the applicable requirements of Rural Utilities Service, National Electrical Safety Code, Occupational Safety and Health Act and local regulations. Contractors will be committed to safe working practices. Substations will be reviewed for local conditions and will include provisions in design beyond the minimum provisions for safety established in the various regulatory codes, where warranted. Substation designs will allow future maintenance to be accomplished with a minimum impact on substation operation and allow adequate clearance to work safely.

3.10 Substation Restoration Procedures

Upon completion of construction activities the remainder of the site will be restored. Post-construction reclamation activities include the removing and disposing of debris, dismantling all temporary facilities (including staging areas), employing appropriate erosion control measures and reseeding areas disturbed by construction activities with vegetation similar to that which was removed.

3.11 Substation Maintenance Procedures

Over the life of the substation, annual inspections will be performed for safety, and quarterly inspections will be performed to maintain equipment and make necessary repairs. Routine maintenance will be

conducted as required to remove undesired vegetation that may interfere with the safe and reliable operation of the substation.

4.0 POTENTIAL IMPACTS OF THE PROJECT AND MITIGATION MEASURES

This section describes the potential impacts on resources and mitigation measures to minimize impacts from construction, operation and maintenance of the proposed transmission line and associated substation facilities.

The construction of a transmission line involves both short and long-term impacts. An impact is a change in the status of the existing environment as a direct or indirect result of the proposed action. Direct impacts are caused by the action and occur at the same time and place. Indirect impacts are caused by the action and occur later or are further removed in distance, but are still reasonably foreseeable. Impacts may be negative or positive and temporary or permanent or long-lasting. Short-term impacts are generally associated with the construction phase of the Project and can include crop damage, soil compaction, and noise. Long-term impacts can exist for the life of the Project and may include land use restrictions or modifications. Measures that would be implemented to reduce minimize, or eliminate potential impacts will be taken and they are discussed under the appropriate topic and highlighted as necessary in this section.

It may be possible to mitigate potential impacts by adjusting the proposed route, selecting a different type of structure or pole, using different construction methods, or implementing any number of post-construction practices. The PUC can require route permit applicants to use specific techniques to mitigate impacts or require certain mitigation thresholds or standards to be met through permit conditions.

There are a number of potential impacts associate with HVTLs that must be taken into account on any transmission line project. Minnesota Rules 4400.3150 A through N, identifies fourteen factors that the PUC must consider when designating a route for a HVTL.

4.1 Environmental Setting

The proposed route lies within the Prairie Grassland region of Minnesota. According to the DNR, the route lies within the Minnesota River Prairie subsection of the Prairie Parkland Province under the Ecological Classification System. The Minnesota River Prairie is a landscape dominated by large till plains on either side of the Minnesota River and characterized by gently rolling terrain, except where it is split by the broad Minnesota River Valley. Elevations along the route range from approximately 940 to 1,150 feet above mean sea level.

Presettlement vegetation consisted primarily of tallgrass prairie with small islands of wet prairie. The primary present day use of the land along the route is for agriculture; few remnants of native vegetation are present. Many of the wetlands have been drained and many of the smaller watercourses have been channelized to increase the acreage of land available for agricultural production.

The majority of the route crosses cropland used to grow corn and soybeans. Communities near the route are primarily small farm-based towns. The route crosses the Lac qui Parle Wildlife Management Area (WMA) and there are several WMAs and Waterfowl Production Areas (WPA) in the vicinity of the route, along with several wetlands. Relatively few forested areas are present; most wooded areas are adjacent to farmsteads.

4.2 Socioeconomics

The Project is located within Lac qui Parle, Swift and Yellow Medicine counties in southwestern Minnesota. The socioeconomic setting of the proposed project are was evaluated on a regional basis, comparing data for the area along the project route with average data for Lac qui Parle, Swift and Yellow Medicine counties and the state of Minnesota. Data was compiled from the 2000 and 1990 U.S. Census. Although Lac qui Parle, Swift and Yellow Medicine counties have been experienced a decline in population, larger cities in the area, such as Appleton, are experiencing population growth. Table **1** summarizes the socioeconomic characteristics within the project area.

Table 1. Socioeconomic Characteristics Within the Project Area

Location	Population*	1990	Change	Per Capita Income	Percentage of Population below Poverty Level
State of Minnesota	4,919,479	4,375,099	12.40%	$23,198	7.9
Lac qui Parle County	8,067	8,924	-9.70%	$17,399	8.5
Swift County	11,956	10,724	11.50%	$16,360	8.4
Yellow Medicine County	11,080	11,684	-5.20%	$17,120	10.4
Appleton Township, Swift County	232	233	-0.40%	$20,714	4.1
Hantho Township, Lac qui Parle County	154	134	14.90%	$12,854	2.3
Cerro Gordo Township, Lac qui Parle County	256	303	-15.60%	$16,486	1.6
Riverside Township, Lac qui Parle County	301	370	-18.60%	$19,205	11.1
Hamlin Township, Lac qui Parle County	185	215	-14%	$15,948	8.8
Providence Township, Lac qui Parle County	186	214	-13.10%	$19,254	10.5
Oshkosh Township, Yellow Medicine County	249	249	0%	$14,263	10.4
Hammer Township, Yellow Medicine County	233	374	-37.70%	$22,013	12.4
Appleton	2,871	1,552	85.00%	$12,429	14.7
Dawson	1,539	1,626	-5.40%	$19,084	7.4

**Estimated 2005 populations for the State of Minnesota, Lac qui Parle County, Swift County and Yellow Medicine County show population changes between 2000 and 2005 of 4.3%, -5.7%, -5.3% and -5.7%, respectively. Estimate 2005 populations are not available for the cities or townships in the project area.*

Increasing the transmission outlet capability within the project area is expected to benefit the surrounding communities in general. Upgrading the utility lines will help to serve the growing demand of the region and maintain electrical service reliability in the area.

Construction activities for this Project will be short term. Impacts to social services would be unlikely because of the short-term nature of the construction project. In the short-term, revenue would likely increase for some local businesses, such as hotels, restaurants, gas stations and grocery stores, due to workers associated with construction of the Project.

Rebuilding the existing utility lines will result in some minor short and long term economic impacts for the surrounding communities. Long term benefits would include improved utility service.

Landowner compensation will be established by individual lease agreements.

Because the proposed transmission line is along an existing route, impacts will be limited to the existing utility corridor. Project construction will not cause additional impacts to leading industries within the project area.

Short term impacts will result from the activities associated with construction. Long term impacts will result from the new utility infrastructure and will include improved utility service.

Mitigative measures

There are no mitigative measures necessary as impacts to socioeconomics will generally be short-term and beneficial.

4.3 Displacement

The proposed route follows an existing ROW. There are no homes within 100 feet of the route, and five homes are within 300 feet of the route. No homes will be within the proposed ROW and no displacement is anticipated.

4.4 Anticipated Noise Impacts

Noise is measured in units of decibels ("dB") on a logarithmic scale. The A weighted decibel (dBA) scale corresponds to the sensitivity range for human hearing. For example, a noise level change of 3 dBA is barely perceptible to average human hearing while a 5 dBA change in noise level is noticeable. Two sources of noise will be associated with the completed Project: conductors and substations.

Land use activities associated with residential, commercial, and industrial land are grouped together into Noise Area Classifications (NAC). Residences, which are typically considered sensitive to noise, are classified as NAC 1. Each NAC is assigned both daytime (7 a.m. to 10 p.m.) and nighttime (10 p.m. to 7 a.m.) noise limits for land use activities within the NAC. Table 2 shows the Minnesota Pollution Control Agency (MPCA) daytime and nighttime limits in dBA for each NAC. The limits are expressed as a range of permissible dBA within a 1-hour period; L50 is the dBA that may be exceeded 50 percent of the time within an hour, while L10 is the dBA that may be exceeded 10 percent of the time within 1 hour.

Table 2. MPCA Noise Limits by Noise Area Classification (dBA)

Noise Area Classification	Daytime		Nightime	
	L50	L10	L50	L10
1	60	65	50	55
2	65	70	65	70
3	75	80	75	80

Typical noise sensitive receptors along the route will include residences, churches, and schools; however, most of the land use along the route is rural agricultural land. Current average noise levels in these areas are typically in the 30 to 40 dBA range and are considered acceptable for residential land use activities. Ambient noise in rural areas is commonly made up of rustling vegetation and infrequent vehicle pass-bys. Higher ambient noise levels, typically 50 to 60 dBA, will be expected near roadways, urban areas and commercial and industrial properties in the project area. Conductor and substation noise will comply with state noise standards.

Noise concerns for this Project may be associated with both the construction and operation of the energy transmission system. Construction noise is expected to occur during daytime hours as the result of heavy equipment operation and increased vehicle traffic associated with the transport of construction personnel to and from the work area. Any exceedences of the MPCA daytime noise limits will be temporary in nature and no exceedences of the MPCA nighttime noise limits are expected for this Project.

Operational noise will be associated with the transmission conductors and transformers at substations that may produce audible noise under certain operational conditions. The level of noise depends on conductor conditions, voltage level and weather conditions. Noise emission from a transmission line occurs during heavy rain and wet conductor conditions. In foggy, damp or rainy weather conditions, transmission lines can create a subtle 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 a transmission line and few people are in close proximity to the transmission line in these conditions. For these reasons, audible noise is not noticeable during heavy rain. During light rain, dense fog, snow and other times when there is moisture in the air, the proposed transmission lines may produce audible noise higher than rural background levels. During dry weather, audible noise from transmission lines is an imperceptible, sporadic crackling sound.

The nearest residence to the Appleton substation is approximately 340 feet away, and is shielded by a windrow. Changing the transmission voltage at this substation will not result in perceptible changes in noise for the residence. The nearest residence to the Dawson substation is approximately 360 feet away, across U.S. Highway 212. Changing the transmission voltage at this substation, and expanding the substation to the north (away from the residence) will not result in perceptible changes in noise for the residence. The nearest residence to the Canby substation is approximately 1,500 feet away, and is shielded by a windrow. Changing the transmission voltage at this substation will not result in perceptible changes in noise for the residence. Table 3 shows the predicted noise levels at different distances from the proposed 115 kV transmission line.

Table 3. Predicted Audible Noise from the 115kV Appleton to Canby Transmission Line (dBA)

Conductor Size	Distance from center of transmission line corridor (feet)								
	-300	-200	-100	-50	0	50	100	200	300
115 kV transmission line	21	23	26	29	31	29	26	23	21

Mitigation Measures

To mitigate noise levels associated with construction activities, work will be limited to daytime hours between 7 a.m. and 10 p.m. on weekdays. Occasionally there may be construction outside of these hours or on a weekend if the company is required to work around customer schedules, line outages, or has been significantly impacted due to other factors. Heavy equipment will also be equipped with sound attenuation devices such as mufflers to minimize the daytime noise levels.

No mitigation measures are required for the operational phase of the line as operational noise levels are not predicted to exceed the state noise limits.

4.5 Aesthetics

The proposed Project will result in minimal perceptible changes to the viewshed. The proposed route follows the existing transmission line, and the proposed structures will be similar to, but slightly taller (10 feet) than, the existing structures along the route. Figure 3 shows the existing structures at the Minnesota River crossing. Figure 4 shows a photosimulation of the proposed structure at this same location. Crossing the Lac qui Parle WMA and the Minnesota River will not perceptibly change the existing viewshed of the area because the proposed route will follow the existing transmission line ROW. The potential aesthetic impact resulting from new, slightly taller, structures between Appleton and Dawson will be imperceptible to most viewers.

Figure 3. Existing Structures at the Minnesota River Crossing

Figure 4. Simulation of the proposed structures at the Minnesota River Crossing

Mitigative measures

In general, mitigation includes enhancing positive effects as well as minimizing or eliminating negative effects. Potential mitigation measures include:

- Location of structures, ROW and other disturbed areas will be determined by considering input from landowners or land management agencies to minimize visual impacts.
- Care shall be used to preserve the natural landscape; construction and operation shall be conducted to prevent any unnecessary destruction, scarring or defacing of the natural surroundings in the vicinity of the work.
- To the extent practicable, rivers shall be crossed in the same location as existing transmission lines.

4.6 Human Health and Safety

Proper safeguards will be implemented for construction and operation of the facility. The Project will be designed with the local, state, National Electric Safety Code (NESC) and OTP standards regarding clearance to ground, clearance to crossing utilities, clearance to buildings, strength of materials and ROW widths. OTP construction crews and/or contract crews will comply with local, state, NESC and OTP standards regarding installation of facilities and standard construction practices. Established OTP and industry safety procedures will be followed during and after installation of the transmission line.

The proposed transmission line will be equipped with protective devices to safeguard the public from the transmission line in the unlikely event that 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 in the event that such a situation occurs. In addition, the substation facilities will 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, such as the ground, towers, vegetation, buildings and vehicles. The electric field from a transmission line becomes weaker as the distance from the transmission line increases. Nearby trees and building materials also greatly reduce the strength of transmission line electric fields. The magnetic field associated with HVTLs surrounds the conductor and decreases rapidly as the distance from the conductor increases.

The intensity of electric fields is associated with the voltage of the transmission line and is measured in units of kilovolts per meter (kV/m). Transmission line electric fields near ground are designated by the difference in voltage between two points (usually 1 meter). Magnetic fields are expressed in units of magnetic flux density, expressed as gauss (G).

In previous transmission line cases the Minnesota Environmental Quality Board (EQB) has imposed a maximum electric field limit of 8.0 kV/m as a condition of its transmission line route permits. This limit was designed to prevent serious hazard from static discharges when touching large objects, such as a bus, tractor, or other large vehicle parked under HVTLs of 345 kV or greater.

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 the following:

"…the current body of evidence does not show that exposure to these fields is a helth 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."

Electric utilities monitor and review research o the EMF issue and where possible, incorporate these conclusions into the planning and operation of power lines and substations. In addition electric utilities provide information to the public, interested customers and employees so they can make informed decisions about EMF. This includes measurements for customers and employees who request them.

There are currently no federal or Minnesota exposure standards for magnetic fields. Both the EQB and the PUC have recognized that the 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). The general standard is one of prudent avoidance.

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.

Electric and Magnetic Fields of the Proposed HVTL

The proposed transmission line will have a peak magnitude of electric field density of approximately 0.29 kV/m underneath the conductors, 1 meter above ground level. This level is significantly below the limit of 8.0 kV/m. The predicted electrical fields for the proposed transmission line when operated at maximum capacity levels are shown in Table 4. The closest residence to the Appleton to Canby route is 140 feet away from the nearest structure.

Table 4. Predicted Electric Fields from the Proposed Transmission Line Operated at Maximum Capacity (kV/m)

Conductor Size	Distance from center of transmission line corridor (feet)										
	-300	-200	-100	-50	-30	0	30	50	100	200	300
Single Pole Davit Arm, 115 kV transmission line with 954 ACSS	0.005	0.01	0.04	0.10	0.19	0.29	0.15	0.10	0.04	0.01	0.005

The predicted magnetic fields for the proposed transmission line are shown in Table 5. The predictions were calculated for the transmission line using the maximum capacity of a transmission line conductor of 954 ACSS and not the 266 ACSR that is the base conductor of the line. This results in an over-prediction of the magnetic fields that will be generated under normal operation. Given this scenario the highest predicted magnetic field directly below the line is 12 milligauss.

Table 5. Predicted Magnetic Field from Proposed Transmission Line Operated at Maximum Capacity (milligauss)

Conductor Size	Distance from center of transmission line corridor (feet)								
	-300	-200	-100	-50	0	50	100	200	300
Single Pole Davit Arm, 115 kV transmission line with 954 ACSS	0.23	0.51	1.9	5.2	12.0	5.6	1.7	0.49	0.22

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 the 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.

No stray voltage issues are anticipated with this project.

Mitigative Measures

OTP will implement design and construction standards that incorporate necessary safeguards to human health and safety. There are no additional mitigative measures necessary to address human health and safety.

4.7 Recreation

Multiple recreational opportunities exist within the Project vicinity, including parks, trails, rivers, and museums. Popular activities include camping, fishing, hunting, bird watching, canoeing, boating, swimming, biking, hiking, and riding ATVs and snowmobiles. The Department of Natural Resources Wildlife Management Areas and USFWS Waterfowl Production Areas provide opportunities for viewing wildlife and intact ecosystems.

Table 6 provides a list of the recreational resources that are found within the vicinity of the project area.

Table 6. Recreational Resources within the Project Area

Location	Resource
Federal	Minnesota River Valley National Scenic Byway
State	Minnesota River (Wild and Scenic Designation) Highway 75 – "Historic King of Trails" Lac qui Parle WMA Hantho WMA Ohnah WMA Hamlin WMA
County/Regional	Minnesota River Valley Birding Trail Snowmobile Trail Stonehill Regional Park
Local	Appleton Golf Course Canby Golf Course Dawson Campground Dawson Gnomes Dawson Golf Course Historic Lund-Hoel House/Museum Encompassing Canby Area Canby Depot Visitor and Information Center

Because only 21.5 miles of the 42 miles will actually be upgraded, there will be little impact on recreation. In addition, since the impacts from construction of the proposed project will take place primarily along road right-of-way, there will be a limitation to the impact on recreational resources.

The proposed route is adjacent to a planned DNR construction project located along upper Lac qui Parle Lake along MN State Highway 119. The DNR project involves constructing a safe parking location for approximately 10 vehicles, adding fishing platforms, and providing all four bridge abutments with sidewalks or steps for access some of which meets the standards under the Americans with Disabilities Act. The project is designed to improve accessibility of this recreational site and reduce the hazards of the existing parking situation. OTP has already made contact with the DNR and both parties have verbally agreed that the rebuilt line will not significantly impact the DNR's plan. OTP will continue to work with the DNR to ensure that new poles and the safe parking area will be able to coexist.

Mitigative Measures

Because no impacts to recreation are anticipated, no mitigation is necessary or proposed.

4.8 Prime Farmland

The U.S. Department of Agriculture Natural Resources Conservation Service ("NRCS") defines prime farmland soils as having:

> "…the best combination of physical and chemical characteristics for producing food, feed, forage, fiber and oilseed crops…" is "…an adequate and dependable water supply from precipitation or irrigation. They have a favorable temperature and growing season with acceptable levels of acidity or alkalinity, content of salt or sodium, and few or no rocks. They are permeable to water and air, are not excessively erodible and are not saturated with water for long periods of time. They do not flood frequently or are protected from flooding (7 C.F.R. § 657)."

Soils listed as farmland of statewide importance are defined as:

> "…those that are nearly prime farmland and that economically produce high yields of crops when treated and managed according to acceptable farming methods. Some may produce as high a yield as prime farmlands if conditions are favorable (7 C.F.R. § 657)."

Along the proposed route, approximately 84.9 percent of the soils are listed by the NRCS as prime farmland, prime farmland when drained or farmland of statewide importance. The Appleton to Dawson and Dawson to Canby sections cross soils with approximately 71.4 percent and 97.7 percent, respectively, designated as prime farmland, prime when drained or farmland of statewide importance.

The Project will result in permanent and temporary impacts to prime farmland. During construction, temporary impacts, such as soil compaction and crop damages within the ROW, are likely to occur. Permanent impacts will occur as a result of structure placement along the route of the transmission line. OTP estimates permanent impacts to prime farmlands or soils of statewide importance along the Appleton-Dawson section at approximately 0.16 acres, and temporary impacts of approximately 19.3 acres. Along the Dawson-Canby section, no impacts to prime farmland are anticipated because existing structures will be utilized, except in the approximately 1.5-mile segment along U.S. Highway 212 west of Dawson where new structures will be constructed. In this segment, approximately 0.02 acre of permanent impacts and approximately 2.2 acres of temporary impacts to prime farmlands or soils of statewide importance are expected to occur.

Mitigative Measures

The proposed route minimizes impacts to farmland by paralleling existing road ROW for a majority of the route. OTP will work with landowners to minimize impacts to farming operations along the route. OTP will compensate landowners for any crop damage or soil compaction that may occur during construction activities.

4.9 Transportation

In general, the proposed route is located in rural areas served by highways with relatively low traffic volume. Given the functional capacity limits of 4,000 and 6,000 vehicles per day, congestion is not a primary factor on any of the roadways along the routes.

The Appleton Municipal Airport and the Canby Municipal Airport are located near the route. The route would be affected by Airspace Obstruction Zoning and Land Use Safety Zoning at both airports.

Three active BNSF rail lines are located along the routes. Temporary and permanent easements for both construction and utility line operation would be required from the BNSF Railway Company. Construction activities would be regulated by the carrier and any disruptions to rail service would require approval by the by the carrier.

Temporary access for the rebuild of transmission lines along the route would be along the existing transmission line ROW or by short spur trails from the existing road network to the ROW. Temporary guard structures would be used to string conductor over existing roads and railroads. The structures typically

consist of directly imbedded poles with a horizontal cross piece to support the conductor at sufficient height above traffic. Temporary traffic impacts associated with equipment are material delivery and worker transportation.

Access to modify the existing substations would be from existing roads and would cause minor and temporary disruption to traffic. Given the small number of workers and construction vehicles, traffic disruptions would be minimal and localized.

A review of county highway capital improvement plans showed no major road work along the route.

Short-term localized traffic delays are anticipated. The impacts resulting from construction and operation of the proposed transmission lines and modifications to substations would be less than significant for transportation.

During transmission line and substation modification construction activities, delays to railroad operations due to construction vehicles or equipment crossing tracks will be avoided. Construction will be coordinated with railroad operators.

Mitigative Measures

When appropriate, pilot vehicles will accompany the movement of heavy equipment. Traffic control barriers and warning devices will be used when appropriate. All necessary provisions will be made to conform to safety requirements for maintaining the flow of public traffic. Construction operations will be conducted to offer the least possible obstruction and inconvenience to public traffic. The construction contractor would be required to plan and execute delivery of heavy equipment in such a manner that would avoid traffic congestion and reduce likelihood of dangerous situations along local roadways.

4.10 Public Service

The Project generally runs through rural areas; Appleton and Dawson are the two communities with typical public services, such as natural gas, public water supply (wells), public wastewater treatment (some septic), cable television, in addition to electricity and telephone.

Mitigative Measures

Because the route follows existing transmission line ROW, no impacts to public services are anticipated and therefore no mitigation is necessary.

4.11 Radio, Television, and Cellular Phone

It is possible that localized interference could occur as a result of electric discharges across small gaps in the transmission system hardware or from the development of partial electric discharges from the line itself (generally referred to as “corona”). Corona is the breakdown of air into charged particles due to an electrical field.

Development of the proposed transmission route will avoid known telecommunications facilities. No radio or television signal interference directly from the transmission of electricity is anticipated because of the differences in frequency of the signals.

Mitigative Measures

Because no impacts are anticipated, no mitigation is proposed. In the event that radio and television signals are impacted, the use of corona-free hardware and routing transmission line maintenance would eliminate the problem.

4.12 Mining and Forestry

Notable mining resources in the area include the quaternary sands and gravels present in glacial outwash deposits. Active gravel pits are located in proximity to the cities of Appleton, Dawson and Canby; these operations are more than a mile away from the route. Two inactive gravel pits are located within 1 mile of the route. The project would not impact active mining or quarrying operations.

No economically important forestry resources are located along the proposed route alignment. The primary tree cover in the Project area is associated with waterways and homesteads.

Mitigative Measures

No mitigation measures for potential impacts to forestry and mining operations are required.

4.13 Archeological and Historic Resources

For this review, information on known archaeological and historic resources along the route was gathered June 16, 2006, from the State Historic Preservation Office (SHPO) in St. Paul, Minnesota. Historic property location maps, site forms, and survey reports were among the sources consulted.

One previously-identified archaeological resource, a pre-contact lithic scatter, is within 500 feet of the proposed route in Hamlin Township. In addition, 64 previously inventoried standing structures have been recorded within one mile of the proposed route. Previously-identified standing structures include community and commercial buildings, residences, civic structures, churches, farmsteads, schools, a bridge, a fairground and a railroad depot. Construction dates of these inventoried structures generally range from the 1880s to the 1950s. Many of the structures are centered in cities or towns.
Because the proposed Project is the rebuild of an existing line and is adjacent to highways for 90% of the route length, the corridor has already been disturbed and the likelihood of affecting archaeological resources is relatively low. Archaeological sites may be disturbed during construction of transmission structures, substations and substation expansions, maintenance structures, staging areas or access roads.

No discernible change to the viewshed from these structures will occur as a result of rebuilding the existing line along the existing route with slightly taller structures.

Cultural Values

Cultural values include those perceived community beliefs or attitudes in a given area that provide a framework for that community's unity. The communities in the vicinity of the Appleton-to-Canby Route primarily have cultural values steeped in rural agriculture and light industry. Values within the region include individualism and loyalty to local businesses and service providers. The communities along the Appleton-to-Canby Route also value their heritage and pioneer roots as settlers of the rivers, lakes, and prairies of the vicinity.

Historically, the railroads that cross the region were important for gathering agricultural goods and transporting them to markets. Agriculture and farm-related business remain central to the regional economy. The area has a diversified agricultural mix of livestock and crops, including wheat, corn, soybeans and alfalfa, hogs, and dairy and beef cattle.

The construction of the proposed transmission facilities will serve the region with a stable power supply. As the urban centers of the Western Minnesota region continue to grow, and the diverse economic base continues to expand, the available power supplied by upgraded and additional facilities will likely encourage this development and afford the residents a stable economic environment in which to live and work. In addition, these opportunities presented by the diverse economy may continue to encourage civic pride; tourism may benefit from this unity as well.

Mitigative Measures

OTP will make every effort to avoid impacts to identified archaeological and historic resources. In the event that an impact would occur, the company will consult with SHPO and invited consulting parties (particularly Native American Tribes and other State and Federal permitting or land management agencies) on whether or not the resource is eligible for listing in the National Register of Historic Places (NRHP). While avoidance of the resource would be a preferred action, mitigation for Project-related impacts on NRHP-eligible archaeological and historic resources may include an effort to minimize Project impacts on the resource and/or additional documentation through data recovery.

4.14 Air Quality

Corona and nitrogen oxide emissions are the primary air quality concerns related to transmission lines. 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 the conductors. It occurs when the electric field intensity, or surface gradient on the conductor, exceeds the breakdown strength of air. Usually some imperfection, such as a scratch on the conductor, or a water droplet, is necessary to cause corona.

Ozone 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, inhibits the production of ozone. Ozone is a very reactive form of oxygen and combines readily with other elements and compounds in the atmosphere.

An article, Environmental Impact of Power Generation, Issues in Environmental Science and Technology (Jeffers, 1999) summarizes ozone and nitrous oxide data collected underneath high-voltage power lines. No impact was detected at ground level. At 9 meters (30 feet) above ground level there is a slight increase in measurable ozone, which ranged from 0-8 parts per billion (ppb). The article stated that observed nitrogen oxide concentrations were negligible, at around one-fourth of the ozone concentration.

The Environmental Protection Agency promulgated regulations on the permissible concentrations of ozone and oxides of nitrogen. The national standard is 0.08 parts per million (ppm) on an 8-hour averaging period[1]. The Minnesota State Ambient Air Quality Standard is 0.08 ppm based upon the fourth highest 8-hour daily maximum average in one year[2].

Studies designed to monitor the production of ozone under transmission lines have generally been unable to detect any increase in ozone levels. U.S. DOE 1996: Delivery of the Canadian Entitlement Final Environmental Impact Statement (DOE/EIS-0197); Environmental Impact of Power Generation, Issues in Environmental Science and Technology (Jeffers, 1999). Based on the data provided in the studies above, there will be no measurable impacts relating to ozone along the route.

Temporary and localized impacts to air quality may occur during construction due to the disturbance of topsoil, which raises fugitive dust particles.

The entire area encompassing the route is currently in attainment with National and Minnesota Ambient Air Quality Standards for all criteria pollutants.

Mitigative Measures

Temporary impacts from fugitive dust will be minimized or avoided using BMPs. Oil and other petroleum derivatives will not be used for dust control. Equipment and vehicles that show excessive emissions of exhaust gases due to poor engine adjustments, or other inefficient operating conditions, will not be operated until repairs or adjustments have been made.

4.15 Water Resources

The route lies within the Pomme de Terre River, Upper Minnesota River and Lac qui Parle River watersheds of the Upper Minnesota River Basin. Within the portion of the route in Swift County, surface water flows generally towards the Pomme de Terre River; within Lac qui Parle and Yellow Medicine counties the water generally flows towards the Lac qui Parle River.

Table 7 shows the National Wetlands Inventory ("NWI") wetlands along the route. There are 13 NWI wetlands with a total crossing length of 8,840 feet; palustrine emergent types make up the majority of the wetlands.

[1] 40 CFR Part 50
[2] Minn. Rules part 7009.0080

Table 7. NWI Wetlands

Segment	Wetland Type	No. of Basins	Length of crossing (feet)	% of Wetlands in Segment
Appleton-Dawson	Lacustrine	1	3018	14%
	Palustrine	-	-	-
	Emergent	3	1378	43%
	Forested	0	0	0%
	Scrub/shrub	0	0	0%
	Unconsolidated bottom	3	1640	43%
	Riverine	0	0	0%
	Total	**7**	**6036**	
Dawson-Canby	Lacustrine	0	0	0%
	Palustrine	-	-	-
	Emergent	6	2804	100%
	Forested	0	0	0%
	Scrub/shrub	0	0	0%
	Unconsolidated bottom	0	0	0%
	Riverine	0	0	0%
	Total	**6**	**2804**	

The proposed route crosses three Minnesota DNR Public Waters Inventory ("PWI") basins (one in Swift County and two in Lac qui Parle County) and 16 PWI creeks and streams (two in Swift County, 12 in Lac qui Parle and two in Yellow Medicine County). Table 8 shows the PWI resources for the route.

Table 8. PWI Waters

County	Name	Type	Location
Swift	Pomme de Terre River	River/stream	T120N, R43W, Section 16
	Lac qui Parle Lake (46 P)	Lake	T120N, R43W, Section 33
	Minnesota River	River/stream	T120N, R43W, Section 33
Lac qui Parle	Unnamed (293 P)	Lake	T119N, R43W, Section 16
	Unnamed tributary to Emily Creek	River/stream	T119N, R43W, Section 21
	Emily Creek	River/stream	T119N, R43W, Section 21
	Unnamed tributary to Emily Creek	River/stream	T119N, R43W, Section 28
	Public ditch to Lac qui Parle River	River/stream	T118N, R43W, Section 16
	Public ditch to Lac qui Parle River	River/stream	T117N, R43W, Section 4
	Unnamed tributary to West Branch Lac qui Parle River	River/stream	T117N, R44W, Section 23
	West Branch Lac qui Parle River	River/stream	T117N, R44W, Section 20
	Unnamed (106 P)	Lake	T117N, R44W, Section 32
	Unnamed tributary to Lac qui Parle River	River/stream	T117N, R44W, Section 32
	Unnamed tributary to unnamed tributary of Lac qui Parle River	River/stream	T116N, R44W, Section 8
	Public ditch to unnamed Lac qui Parle River tributary	River/stream	T116N, R44W, Section 8
	Public ditch to unnamed Lac qui Parle River tributary	River/stream	T116N, R44W, Section 20
	Lazarus Creek	River/stream	T116N, R44W, Section 32
Yellow Medicine	Tributary to Lazarus Creek	River/stream	T115N, R44W, Section 8
	Public ditch to Lazarus Creek	River/stream	T115N, R45W, Section 26

The route crosses the 100-year floodplains associated with the Pomme de Terre River, Minnesota River, West Branch of the Lac qui Parle River and Lazarus Creek.

It is anticipated that the Project will be able to avoid most wetland areas and surface water features, such as rivers and streams, by spanning the transmission line over the water bodies and/or placing poles along the road embankment above the wetland edge. No impacts to wetlands, streams, floodplains or impaired waters are anticipated where existing transmission line structures will be utilized. The 1.5-mile section west of Dawson does not cross any wetlands or impaired waters. The segment does cross the floodplain associated

with the West Branch of the Lac qui Parle River. Approximately 10 poles will likely be placed in this floodplain, resulting in approximately 250 square feet of permanent impact and approximately 0.69 acre of temporary impact. Because of their small cross sections, the poles will not affect flood elevations. Rebuilding the Appleton-Dawson 41.6 kV transmission line that currently skirts the edges of the majority of the hydrologic features by following the highway ROW would minimize any new impacts to wetlands and floodplains. All streams will be spanned along the Appleton-Dawson section of the proposed line. There are five NWI wetlands wider than the maximum span (300 feet) along the Appleton-Dawson section. Of those five wetlands, two are PWI basins. Based on the width of the NWI wetlands, 17 poles may be placed in wetlands, resulting in approximately 51,000 square feet (1.17 acres) of temporary impacts and approximately 425 square feet of permanent impact. Approximately 11 of the 17 poles may be placed in PWI wetlands, resulting in approximately 33,000 square feet (0.76 acres) of temporary impact and approximately 275 square feet of permanent impacts of permanent impact. The new structures will be replacing existing structures that most likely are currently within wetlands; therefore the total number of poles within wetlands will remain approximately the same as existing conditions.

Along the Appleton-Dawson section, the line crosses one 100-year floodplain associated with the Minnesota River that is wider than 300 feet. Based on digital floodplain data, approximately 18 poles could be placed within this floodplain, resulting in 54,000 square feet (1.24 acres) of temporary impacts and 450 square feet of permanent impacts. The poles will not affect flood elevations. Additionally, the new structures will be replacing existing structures that are currently within the floodplain; therefore the total number of poles within the floodplain will remain approximately the same as existing conditions.
Because the Pomme de Terre River and Lazarus Creek are already impaired for turbidity (which is a measure of particles such as sediment and algae), any sediment reaching tributaries has the potential to further adversely affect water quality downstream. Construction of the Project would not affect the loading of ammonia, mercury or fecal coliform into the impaired waters within the project area, and would not affect biotic integrity or deplete oxygen levels.

Mitigative Measures

BMP for sediment and erosion control will be implemented when dealing with water resources. These BMP would protect topsoil and adjacent water resources by trapping sediments; this would avoid contributing sediment to the Pomme de Terre River and Lazarus Creek which are impaired for turbidity.

In order to minimize contamination of water due to accidental spilling of fuels or other hazardous substances, OTP will follow its current spill prevention procedures to aid in the prevention of potential contamination due to a fuel or hazardous substance spill. Refueling would occur at sites away from drainages.

In the event that impacts to hydrologic features are unavoidable, OTP will work with the jurisdictional agencies to determine the best ways to minimize the impacts and create appropriate mitigation measures.

4.16 Topology, Soils and Geology

Natural Resource Conservation Service Soil Survey data was reviewed to describe the soil resources in the vicinity of the route. Soils are generally grouped into categories known as “associations.” A soil association has a distinctive pattern of soils, relief and drainage, and is a unique natural landscape. Typically, an association consists of one or more major soils and some minor soils.

The soils along the route consist of nine associations, plus Water (which are soils below standing water). Table 9 lists the soil associations found along the route.

Table 9. Soil Associations in the vicinity of the Appleton to Canby HVTL Project

Soil Association	Percent of Corridor	General Description
AAZDAHL-HAMERLY-PARNELL	4.50%	Moderately well drained and poorly drained soils that formed in loamy glacial till on undulating ground moraines
BURR-DU PAGE-CALCO	3.80%	Well drained, moderately well drained and poorly drained soils (some with gypsic horizons) formed in calcareous clayey glacial lacustrine sediments and floodplain alluvium
CALCO-DU PAGE-NISHNA	2.80%	Poorly drained and moderately well drained, nearly level soils formed in alluvial deposits
CANISTEO-VES-NORMANIA	44.50%	Nearly level and undulating, well drained, moderately well drained, and very poorly drained loamy soils on till plains
COLVIN-TARA-SPICER	2.80%	Nearly level and very gently sloping, poorly drained, very poorly drained, and moderately well drained silty soils on glacial till.
FULDA-SINAI-DOVRAY	4.00%	Moderately well-drained, poorly drained, and very poorly drained nearly level to undulating soils formed in clay glacial till.
RENSHAW-SIOUX-SPOTTSWOOD	1.80%	Nearly level to gently sloping, poorly drained and excessively drained and gravelly sandy loams and loams underlain by sand and gravel on outwash plains
ROTHSAY-COLVIN-HANTHO	13.00%	Gently sloping, well drained, silt loam underlain by silt loam and sandy loam.
VES-CANISTEO-COLVIN	22.50%	Well drained and poorly drained, undulating and nearly level soils formed in glacial till and lacustrine deposits
WATER	0.20%	Soils under standing water (lakes and ponds)

The regional geology of the Project consists of Des Moines lobe deposits that overlie Precambrian and Cretaceous bedrock.

Most of the Project lies northeast of the Coteau des Prairies plateau which dominates the regional topography of southwestern Minnesota and eastern South Dakota. The Glacial River Warren floodplain (now occupied by the Minnesota River), defines much of the surficial geology in the region. Unconsolidated deposits in the area include glacial tills with intermittent boulder pavement sequences, and

abandoned river channel deposits. Patchy glacial lake sediments overlying the local till are present in the area surrounding the river valley. Localized areas of gravel and sand are observed in former meltwater channels and glacial lake outlets. Currently, the Minnesota River deposits silt and fine sand on the floodplain.

Unconsolidated sediments overlie bedrock within the majority of the project area. Bedrock outcrops in certain areas along the Minnesota River Valley and parts of the Coteau des Prairies plateau. The major constituent of the metamorphic rocks is a coarse-grained pink or white granite gneiss. Minor rock bodies in this unit are of mafic and/or granitic composition. The Sioux Quartzite is extremely resistant to erosion and therefore forms the underlying core of the high topography of the Coteau des Prairies and other prominent ridges in the area. The Cretaceous rocks generally consist of poorly consolidated quartz sands, lignitic clay, and soft dark gray shale.

The glacial cover in this area consists of approximately 150 to 300 feet of till overlying a layer of Cretaceous sediments 0 to 200 feet thick. The glacial till is underlain by silty outwash sand and gravel 20 to 90 feet thick near Appleton. The glacial till is inundated with many surficial and buried sand and gravel lenses. The Cretaceous sediments are mainly composed of shale with a lower mantle of sandstone or sand. The bedrock geology consists of a thin covering of Cretaceous sediments overlying the Precambrian crystalline rock.

The Project is expected to result in approximately 31.0 acres of temporary impact to soils along the segments where new poles will be installed. The Project is expected to result in 0.26 acres of permanent impact to soils.

Mitigative Measures

OTP will implement BMP and sound soil conservation practices during construction and operation of the Project to protect topsoil and minimize soil erosion.

Because no impacts to geologic resources will occur, no mitigation is necessary or proposed.

4.17 Flora

The native vegetation in the Project area was primarily tallgrass prairie; floodplain forests along the Minnesota River and other streams were vegetated predominantly with silver maple, elm, cottonwood, and willow. Agriculture is the dominant land use in the area and has displaced much of the native vegetation.

Table 10. Land Cover along the Proposed Alignment.

Cover Type	Area (acres)	Percent of Route
Agriculture (Cropland and Pasture)	10,235	94.08%
Deciduous Forest	343	3.15%
Farmsteads, rural residences	289	2.66%
Grassland/Shrubland	7	0.06%
Water	5.5	0.05%

Source: International Coalition Land Use/Land Cover data (1990)

Along the route, there are several areas where natural vegetation is being managed. Managed areas such as WMA and WPA have been analyzed by OTP within 1 mile of the route alignment. These resources provide potential habitat for native vegetation, wildlife and rare and unique resources. A distance of 1 mile was used because studies have shown that impacts to wildlife (particularly waterfowl) are negligible at distances greater than 1 mile from wildlife habitat (Avian Power Line Interaction Committee, 1994). Table 11 provides a summary of the state and federal lands within one mile of the proposed alignment.

Table 11. State and Federal Lands within 1 Mile of the Proposed Alignment.

Land Type	Owner/Land Interest	Flora
Lac qui Parle Lake	COE	Aquatic and wetland vegetation
Unnamed WPA (5)	USFWS	Wetland vegetation
Wetland Easements (8)	USFWS	Wetland vegetation
Habitat Easement (1)	USFWS	Wetland and grassland vegetation
Ohnah WMA	DNR	Grassland and wetland vegetation
Hamlin WMA	DNR	Wetland vegetation
Lac qui Parle WMA	DNR	Wetland, aquatic, grassland and forest vegetation

The route crosses four native plant communities listed by the DNR:

- One mesic prairie community in Swift County, and
- Three mesic prairie communities in Lac qui Parle County.

Within 1 mile of the route, there are 24 additional natural communities listed by the DNR's Minnesota Natural Heritage and Nongame Wildlife Program 2005.

The route crosses Lac qui Parle WMA for a length of 2.4 miles (12,760 feet). Given the maximum span of 300 feet, approximately 43 poles will be placed within the WMA. Approximately 129,00 square feet (3.0 acres) of temporary impact and 1,075 square feet (0.02 acres) of permanent impact would occur within the WMA. The proposed route will follow the existing transmission line route through the WMA; therefore impacts to previously-undisturbed vegetation will be avoided.

The route crosses one U.S. Fish and Wildlife wetland easement for a length of approximately 1,670 feet. Although the NWI wetlands are narrower than the maximum span of 300 feet in this section, it is possible that existing poles are within a wetland, and that proposed poles would also be within a wetland. To the extent possible OTP will reduce the number of poles within this wetland by maximizing spans.

The route crosses the U.S. Fish and Wildlife WPA for a length of 4,880 feet. Given the maximum span of 300 feet, it is possible that 16 poles will be placed in the WPA. This would result in approximately 48,000 square feet (1.1 acres) of temporary impact and 400 square feet (>0.01 acres) of permanent impact.

The route crosses a FWS habitat easement for a length of approximately 1,935 feet. Given the maximum span of 300 feet, approximately seven poles will be placed within the easement. No impacts to wetlands within this easement will occur because they are smaller than the maximum span of 300 feet.

Approximately 21,000 square feet (0.48 acres) of temporary impact and 175 square feet of permanent impact could occur in upland (grassland) vegetation.

Mitigative Measures

The proposed transmission line will follow the existing transmission ROW, minimizing impacts to previously-undisturbed vegetation. No additional ROW or easements will be required within any of these managed areas.

OTP will continue to work with the DNR and FWS to minimize and avoid impacts to sensitive flora along the route alignment, including the native vegetative communities. A threatened and endangered species survey was conducted in July 2006 where the route crosses Lac qui Parle WMA and the FWS WPA. No rare plants were found along the surveyed portions of the route. OTP will continue to coordinate with the appropriate agencies to determine appropriate minimization and mitigation measures within the WMA and FWS lands. Coordination will continue with the FWS to determine appropriate avoidance/minimization measures should it be necessary to place poles in wetlands within FWS easements. Areas disturbed due to construction activities will be restored to pre-construction contours and will be reseeded with a seed mix recommended by the local DNR management that is free of noxious weeds.

4.18 Fauna

WMA and WPA in the vicinity of the route provide habitat for a variety of animal species. The WMA are managed by the DNR for wildlife production, with primary game species consisting of waterfowl, pheasants and white-tailed deer. Other wildlife found in the area along the route include songbirds, small game mammals, such as squirrels and rabbits, and non-game animals, such as mice, raccoon, and red fox.

The Lac qui Parle WMA covers 23,976 acres, is located along the Minnesota River, and consists of Marsh Lake and Lac qui Parle Lake and prairie and wetland habitats, and is managed to preserve the fish, mammals, waterfowl, shorebirds and grassland birds associated with the prairie pothole ecosystem. Marsh Lake, approximately two miles from the route, hosts the largest white pelican colony in North America[3].

There are also five WPAs within 1 mile of the route. These areas serve to protect breeding, forage, shelter and migratory habitat for waterfowl such as ducks, geese, herons, and egrets. WPAs also generally provide habitat for amphibians and small reptiles as well as small mammals.

There is minimal potential for the displacement of wildlife and loss of habitat from construction of the route. Wildlife that inhabit natural areas could be impacted in the short-term within the immediate area of construction. The distance that animals will be displaced will depend on the species. Additionally, these animals will be typical of those found in agricultural and urban settings and should not incur population level effects due to construction.

Raptors, waterfowl and other bird species may be affected by the construction and placement of the transmission lines. Avian collisions are a possibility after the completion of the transmission line. Waterfowl are typically more susceptible to transmission line collision, especially if the transmission line is placed between agricultural fields that serve as feeding areas, or between wetlands and open water, which serve as resting areas. The route passes through areas designated by the FWS and DNR joint assessment as

[3] *Minnesota DNR, Recreation Compass: Lac qui Parle WMA, Main Unit (2006).*

having both important grassland and wetland habitats for waterfowl. In these areas, it is likely that waterfowl and other birds will be traveling between different habitats, potentially increasing the likelihood of avian conflicts with the transmission line. OTP recognizes that the FWS and DNR are concerned about these areas and will continue to work with these agencies to address their concerns.

There will be approximately 129,000 square feet (3.0 acres) of temporary impact and 1,075 square feet (0.02 acres) of permanent impact within Lac qui Parle WMA. The proposed route follows the existing transmission line alignment; therefore impacts to undisturbed wildlife habitat will be avoided. Impacts to managed wildlife habitat within the FWS WPA and wetland and habitat easements will be avoided by placing the poles outside of the boundaries.

Mitigative Measures

To mitigate possible impacts to wildlife within WMAs and WPAs, OTP will span these habitats wherever feasible. In areas where complete spanning is not possible, OTP will minimize the number of structures placed in high quality wildlife habitat and will work with the DNR and FWS to come up with appropriate mitigation. Additionally, where appropriate, OTP will use mats to avoid compacting the soils. Areas disturbed due to construction activities will be restored to pre-construction contours and will be reseeded with a DNR recommended seed mix that is free of noxious weeds.

OTP will also address avian issues by working with the DNR and FWS to identify any areas that may require marking transmission line shield wires and/or to use alternate structures to reduce the likelihood of collisions.

OTP is currently looking into reducing the amount of overhead distribution lines within the Lac qui Parle WMA through an agreement with the local Rural Electric Cooperative (REC). Undergrounding existing REC overhead lines could further reduce the potential for avian collisions. OTP will continue to coordinate with the DNR and REC on this issue.

4.19 Rare and Unique Natural Resources

Table 12 lists the rare and unique resources identified within 1 mile of the proposed route that were identified using the DNR Natural Heritage database.

Table 12. Rare and Unique Resources in the Project Vicinity

Common Name	Scientific Name	Number of Occurrences	Federal Status	MN Status*	State Rank**	Habitat
Burrowing Owl	Speotyto cunicularia	1	Not Listed	END	S1	Open areas with low ground cover. They nest in abandoned burrows of small mammals
Henslow's Sparrow	Ammodramus henslowii	1	Not Listed	END	S1	Tall prairie with some forbs and shrubs
Dakota Skipper	Hesperia dacotae	1	Candidate	THR	S2	Wet prairie and dry prairie dominated by bluestem grasses
Elktoe mussel	Alasmidonta marginata	1	Not Listed	THR	S2	Riffle sections of small to medium sized streams with gravel and sand bottoms
Loggerhead Shrike	Lanius ludovicanus	2	Not Listed	THR	S2	Grasslands and open, agricultural areas characterized by short vegetation and scattered trees, shrubs, or hedgerows
Marbled Godwit	Limosa fedoa	2	Not Listed	SPC	S3	Prairies near marshes or ponds. They nest on the ground, usually in short grass
Powesheik Skipper	Oarisma powesheik	4	Not Listed	SPC	S3	Wet mesic prairie with native grasses, sedges and a significant number of plants in the sunflower family
Regal Fritillary	Speyeria idalia	1	Not Listed	SPC	S3	Large grassland areas or lightly grazed pasture lands with prairie remnants. Larval plants are violets.

Common Name	Scientific Name	Number of Occurrences	Federal Status	MN Status*	State Rank**	Habitat
Slender Milk-vetch	Astragalus flexuous	4	Not Listed	SPC	S3	Mesic and dry mesic prairie
Soft Goldenrod	Solidago mollis	1	Not Listed	SPC	S3	Dry or drying prairies, often found in open woods. Also frequently found along fence rows
Mousetail	Myosurus minimus	3	Not Listed	NON	S4	Shallow still or slowly flowing waters. Muddy or sandy shorelines and areas with fluctuating water levels
Northern Grasshopper Mouse	Onychomy's poweshiek	1	Not Listed	NON	SNR	Grassland and shrub steppes
Upland Sandpiper	Bartramia longicauda	7	Not Listed	NON	S4	Dry prairies
Dry Hill Prairie (Southern)		3	Not Listed	None	S2	
Dry Sand – Gravel Prairie (Southern)		1	Not Listed	None	S2	
Mesic Prairie (Southern)		23	Not Listed	None	S2	
Mussel Sampling Site	Freshwater Mussel Concentration Area	1	Not Listed	None	SNR	
Wet Prairie (Southern)		1	Not Listed	None	S2	

** END - Endangered; THR - Threatened; SPC - Special Concern; NON - no legal status, data being gathered for possible future listing; None - Terrestrial communities do not have assigned status, but are considered important ecologically.*

*** State rank is assigned to species and terrestrial communities to reflect the extent and condition of that element. Ranks range from 1 - in greatest need of conservation, to 5 - secure under present conditions. NR - not ranked; X - extirpated, species believed to be extirpated from the State; H - historical, species occurred historically in State but has not been verified in the last 20 years.*

Source: Minnesota Natural Heritage and Nongame Wildlife Program. 2005. Threatened Natural Communities and Rare Species List

Two state endangered species (burrowing owl and Henslow's sparrow), one federal candidate/state threatened species (Dakota skipper), two state threatened species (elktoe mussel and loggerhead shrike) and five species of special concern have been documented within 1 mile of the route. Many of the rare and unique resources identified along the route are associated with remnants of prairie land within the Lac qui Parle WMA. Twenty-eight DNR-listed natural communities are within 1 mile of the proposed route alignment.

Additionally, a sensitive species survey was conducted on July 5 – 6, 2006, in the Lac qui Parle WMA and the FWS WPA (areas identified as having the highest potential for sensitive species). No federally-listed species and no state-listed sensitive plant species were found within the vicinity of the route. State-listed species of special concern found within a quarter mile of the route included marbled godwits and regal fritillaries. Habitat potentially exists for other state-listed animal species within the WMA and WPA.

Approximately four poles will likely be placed in areas identified as having moderate biodiversity significance, and approximately 40 poles will likely be placed in areas having high biodiversity significance. The proposed route will follow the existing transmission line route through these areas; therefore, impacts to previously undisturbed vegetation will be avoided.

Dry uplands and shelterbelts and hedgerows are important habitat for loggerhead shrikes, a state threatened species. Shelterbelts and hedgerows will be conserved to the extent possible, and dry prairie communities will be spanned where practical. Although the proposed line will be constructed along existing transmission ROW, it is possible that shelterbelts or hedgerows may be cleared to ensure the safe and reliable operation of the transmission line according to National Electric Reliability Council (NERC) standards.

Two of the listed special concern species (mousetail and marbled godwit) are associated with wetlands and stream banks and could be impacted by placement of structures in these habitats, or by increased erosion and sedimentation that could occur if BMPs are not employed. OTP will span streams and wetlands along the route, whenever feasible.

The elktoe mussel is a state endangered species found in the Minnesota River. Impacts to this species could occur if pole construction along the river crossing does not utilize BMPs. However, care will be taken along the river crossing to minimize impacts to the river.

Mitigative Measures

When structures must be placed in areas of prairie remnants, native communities, and areas of biodiversity significance, the number of structures within these lands will be minimized. Areas disturbed due to construction activities will be restored to pre-construction contours and will be reseeded with a seed mix recommended by the local DNR management and is free of noxious weeds.

Additionally, host plants for listed organisms (such as the Dakota skipper and Regal Fritillary) will be preserved and the area will be restored with the appropriate seed mix containing host plants, as applicable. In the event shelterbelts and hedgerows for a known loggerhead shrike population must be affected, coordination will occur with the DNR on appropriate mitigation.

OTP will 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 and sedimentation. Rebuilding along existing transmission right of way will avoid impacting undisturbed habitat along the route in the WMA and WPA. OTP will continue to coordinate with the DNR and FWS to ensure that sensitive species associated with the Minnesota River are not impacted by the Project; possible mitigation measures could include replacing structures pole for pole in the river crossing area.

5.0 Unavoidable Impacts

The Appleton to Canby HVTL project will have no significant unavoidable adverse impacts. It will not have the same level of impacts that are usually associated with the construction of new transmission line due to the fact that it is a rebuild of an existing line. As the project is a rebuild the bulk of the new impacts will be related to those short term impacts that are associated with the construction of the transmission line project. The long term impacts of the transmission line, those related to land and visual impacts, have already been realized with the existing line. As the proposed line will be located in essentially the same place as the existing line, the incremental long term impacts of changing out the structures on the northern half of the line will not result in perceptible changes to the transmission line. Operating the transmission line at the higher voltage level of 115 kV will also not result in a significant environmental impact. In addition, the significant ROW sharing associated with this project will further mitigate the direct impacts associated with the construction of the new line.

In addition, there are few commitments of resources associated with this project that are irreversible and irretrievable, but those that do exist are primarily related to construction. Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects that the use of these resources have on future generations. Irreversible effects primarily result from the use or destruction of a specific resource that cannot be replaces within a reasonable time frame. Irretrievable resource commitments involve the loss in value of an affected resource that cannot be restored as a result of the action. Construction resources that will be used include aggregate resources, concrete, steel, and hydrocarbon fuel. These resources will be used to construct the project. During construction, vehicles will be traveling to and from the site utilizing hydrocarbon fuels.

6.0 Additional Permits and Approvals Required

In addition to the Certificate of Need and Route Permit applied for in this document, several other permits may be required for the Project depending on the actual route selected and the conditions encountered during construction. These are the same kind of permits utilities have identified in other applications to the PUC for authorization to construct similar high voltage transmission lines and there is nothing unusual about the permits that may be required in this case.

Table 13, 14 and 15 provide a list of the local, state and federal permits that might be required for this Project.

Table 13. Potential Local Permits required for the Appleton to Canby HVTL Project

Local Approvals		
Permit	**Jurisdiction**	**Requirement**
Road Crossing/ROW Permits	County, Township, City	These permits may be required to cross or occupy county, township, and city road ROW.
Lands Permits	County, Township, City	These permits may be required to occupy county, township, and city lands such as park lands, watershed districts, and other properties ownd by these entities
Building Permits	County, Township, City	These permits may be required by the local jurisdictions for substation modifications and construction.
Overwidth Loads Permits	County, Township, City	These permits may be required to move over width or heavy loads on county, township, or city roads.
Driveway/Access Permits	County, Township, City	These permits may be required to construct access roads or driveways from county, township, or city roadways.

Table 14. Potential State Permits required for the Appleton to Canby HVTL Project

Minnesota State Approvals		
Permit	**Jurisdition**	**Requirement**
Endangered Species Consultation	MN DNR – Ecological Services	Consultation was requested from the department for the Project regarding rare and unique species.
License to Cross Public Waters	MN DNR – Lands and Minerals	A license to cross Public Waters is required under Minnesota Statutes § 84.415 and Minnesota Rules chapter 6135. The Proposed Project will require a license for all Public Waters crossings along the route.
License to Cross Public Lands	MN DNR – Lands and Minerals	The Proposed Project will require a license to cross Public Lands for the Lac qui Parle WMA crossing.
Utility Permit	Mn/DOT	A permit from the Mn/DOT is required for construction, placement, or maintenance of utility lines that occur adjacent or across the highway ROW.
Wetland Conservation Act	BWSR	The Minnesota Board of Water and Soil Resources administers the state Wetland Conservation Act, under Minn. Rules chapter 8420. The proposed project may require a permit under these rules if permanent impacts to wetlands are anticipated to result from construction.
NPDES Permit	MPCA	A NPDES permit is required for stormwater discharges associated with construction activities disturbing equal to or greater than one acre. A requirement of the permit is to develop and implement a stormwater pollution prevention plan (SWPPP), which includes BMPs to minimize discharge of pollutants from the site.

Table 15: Potential Federal Permits required for the Appleton to Canby HVTL Project

Federal Approvals		
Permit	**Jurisdiction**	**Requirement**
Section 10 Permit	Corps of Engineers	The Minnesota River is classified by the Army Corps of Engineers as a navigable water, and a Section 10 Permit will be required from the Army Corps of Engineers for the proposed project's Minnesota River crossing.
Section 404 Permit	Corps of Engineers	A Section 404 permit is required from the Army Corps of Engineers for discharges of dredged or fill material into waters of the United States.
Permit to Cross Federal Aid Highway	FHWA	A use and occupancy permit is required when a utility is to cross or otherwise occupy highway right of way.
Spill Prevention, Control and Countermeasure (SPCC) Plan	EPA	A SPCC plan is required to prevent discharge of oil into navigable waters of the United States, and is required if the aboveground storage capacity for the substance is greater than 1,320 gallons and there is a reasonable expectation of a discharge into navigable waters of the United States. OTP will update and develop their SPCC plans at substations meeting the criteria per 40 CFR 112.
Other	USFWS	OTP has been coordinating with the USFWS regarding USFWS lands that will be crossed by the proposed Project. Because existing easements within USFWS lands will be used for the rebuild of the existing line, the USFWS has indicated that no permits or licenses will be required.

7.0 Alternatives to the Proposed Transmission Line

In lieu of upgrading the existing transmission line the applicant could have elected to pursue any number of alternatives. A general description of the alternatives to the proposed project is required per Minn. R. 4410.7035, Subp. 1 (B). The requirements of this rule include an investigation into the feasibility of the following alternatives:

- The no-build alternative,
- Demand side management,
- Purchased power,
- Facilities of a different size or using a different energy source than the source proposed by the applicant,
- Generation rather than transmission,
- Renewable energy sources

The magnitude of any alternative is based on the assumption that approximately 17 MW of additional generation will be required to meet the increasing demand for power in the project area. This is based on information that was submitted in the route permit application, which states:

> *Based on load flow steady state analysis, about 10 megawatts of generation would be required somewhere between Appleton and Ortonville and approximately 7 megawatts of generation would be required in the Canby area to meet the increasing demand for power in the area.*

The following section discusses the feasibility and availability of potential alternatives to the transmission line which could eliminate the need for the proposed project.

7.1 No build alternative

Under the no build alternative none of the existing structures would be replaced and the transmission line would continue to be operated at 41.6 kV. The southern half of the line, from Canby to Dawson, will still have structures and equipment capable of 115 kV operation. None of the proposed substations improvements would be completed; however, as the proposed relocation of the Canby substation is part of a separated docket (E017/TR-05-1275) it is conceivable that the substation would be relocated to the new location and that the existing facilities, including a short section of the Appleton to Canby HVTL, would be modified to accommodate the relocated substation.

Under this alternative peak-demand periods could result in localized voltage collapse or damage to equipment. The company would need several hours to restore electric service to customers in the area under such a scenario, and once service was restored the company may need to institute rotating blackouts to insure that voltage would not collapse again. Furthermore, it is likely that there would be a negative effect on the local economy due to the unreliable electrical service in the area.

This is not a feasible alternative. This alternative does not address the voltage support issues that are being experienced in the Appleton and Canby area. Under this alternative it is likely that there would be an unacceptable negative effect on the local economy due to the unreliable electrical service in the area.

7.2 Conservation alternative

This alternative would seek to address the need for 17 MW of additional generation with a slate of conservation measures that would ultimately reduce load in the area to a level that would allow the current system to operate in a reliable manner. This conservation effort would most likely be phased in, and would be above and beyond the companies current efforts. In addition, any load growth occurring in the area would also need to be met through aggressive conservation effort.

OTP has obtained significant energy savings from various conservations programs, including the Conservation Improvement Program (CIP) as required by Minnesota Statutes 216B.241. While the company anticipates futures savings from the continuation of these efforts, conservation alone will not be sufficient to address the significant reliability issue that exists in the area. In comments on OTP's Certificate of Need Application, Department analyst Steve Rakow states the following:

> *…OTP's actual demand savings from the Company's CIP for 2005 were about 2.9 MW; 11.5 percent higher than the goal of about 2.6 MW. Clearly, even if OTP's entire demand side management (DSM) effort were focused on this one region it could not produce an amount of demand reduction equivalent to the generation OTP states would be required.*

This is not a feasible alternative given that an unrealistic amount of conservation would have to be achieved in the project area to meet the needs that would otherwise be met by the proposed project.

7.3 Purchased Power

OTP could purchase power to meet the increased load growth in the area. However, there would still be voltage support issues in the area and OTP may not be able to deliver the purchased power to the area unless the transmission line were upgraded

This is not a feasible alternative as there would still be voltage support issues in the area and it is likely that OTP would have to upgrade the transmission line in order to deliver purchased power to the area.

7.4 Facilities of a different size or using a different energy source than the source proposed by the applicant

OTP considered the possibility of installing a line of a different voltage than 115 kV. However, constructing this line at a voltage level other than 115 kV would add significantly to the cost of the project. The two endpoints of the proposed project, Appleton and Canby, are served by existing 115 kV lines today. Building the project at a voltage level other than 115 kV would require a transformer at each end to step the voltage to the proper level, which would add significant costs to the project without achieving any substantial benefit.

This is not a feasible alternative. Constructing the project at a voltage level lower than 115 kV would result in a decreased level of capacity, and would require the company to upgrade the system at a later date. Constructing the project at a voltage level higher than 115 kV would not result in increased capacity because the capacity of the higher voltage line would be limited to the capacity of the 115 kV system that would supply power to it.

7.5 Generation Alternatives

Any generation alternative to the transmission line would be required to generate approximately 17 MW of capacity for delivery to the area. This generation would likely have to be segmented into a 10 MW block to serve the Appleton and Ortonville area as well as a 7 MW block to serve the Canby area. While there could be a phased approach to the generation alternative, one that would meet the load growth as it occurred, for the purposes of this analysis it will be assumed that all capacity would be installed at once.

While there are multiple sources of generation that would be capable of meeting the capacity need that has been identified in these areas, the most likely are:

- Natural gas combustion turbine generator
- Diesel generator or series of Diesel Generators
- Large Wind Energy Conversion System

Table 16, from the U.S. Department of Energy, provides some specifics regarding the generation alternatives that have been selected for review in this matter. (Source: http://www.eere.energy.gov/femp/technologies/derchp_derbasics.cfm)

Table 16. Summary of Cost and Performance Parameters for Distributed Generation Technologies (Excerpt)

Summary of Cost and Performance Parameters for Distributed Generation Technologies							
Technology	**Size Range (kW)**	**Installed Cost ($/kW)[b]**	**Heat Rate (BTU/ kWh_e)**	**Approx. Efficiency (%)**	**Variable O&M ($/kWh)**	**Emissions[a] (lb/kWh)**	
						NO_x	**CO_2**
Diesel Engine	1-10,000	350-800	7,800	45	0.025	0.017	1.7
Natural Gas Engine	1-5,000	450-1,100	9,700	35	0.025	0.0059	0.97
Combustion Turbine	300-10,000	550-1,700	11,000	31	0.024	0.0012	1.15
Wind Turbine	0.2-5,000	1,000-3,000	--	N/A	0.01	0	0

[a] Nationwide utility averages for emissions from generating plants are 0.005 lb/kWh of NO_x and 1.2 lb/kWh of CO_2.

[b] The high end of the range indicates costs with NO_x controls for the most severe emissions limits internal combustion technologies only.

Natural Gas Generator

Natural gas fired generation, in the form of either a combustion turbine generator or a reciprocating engine, is not feasible because there is no readily available natural gas supply in the area, and installing a pipeline for such a small generator would not be cost effective.

Diesel Generator

Diesel fired generators are generally utilized on a standby basis, and fired up when conditions, such as a contingency situation when a line or transformer is taken out of service, require operation of the generator. While diesel generators are not generally operated continually, however there are a number of models available that would be capable of higher annual hours of operation.

However, this alternative is not feasible since the ongoing operating cost of a diesel generator would be significant, both monetarily and environmentally. A generation alternative that employs 17 MW of diesel fueled generation would require roughly 6.7 million gallons of fuel annually. This figure assumes a heat rate of 7,800 BTU/kWh, a diesel energy content of 139,000 BTU/gal, and an annual capacity factor of 80 percent. This level of consumption would result in the annual emission of more than 1,000 tons of NO_x and more than 100,000 tons of CO_2. Furthermore, a diesel alternative would require that the fuel be delivered by truck. This delivery method would require more than 2,000, 3,000-gallon diesel shipments annually, amounting to roughly 6, 3,000-gallon shipments every day.

The costs of this alternative would be extremely high; fuel costs alone would result in energy that was more than $0.11/kWh, assuming a relatively low diesel fuel price of $2.00 per gallon. In addition, the capital cost of such an alternative would range from $5.95 million to $13.6 million dollars, not including any transmission upgrades that would be necessary to interconnect these generation sources.

Renewable Generation Alternative

The Appleton/Canby area has a sufficient wind resource for wind-power development. A renewable generation alternative to supply 17 MW of power would require the installation of between 7 and 11 turbines. However, this would reflect a nameplate capacity of 17 MW and may not be capable of providing 17 MW of power during the critical periods this project is intended to address.

If the wind facility were required to produce a minimum of 17 MW of capacity throughout the year it would have to be sized using the lowest monthly accreditation. Accreditation refers to the level of capacity that a wind plant will be able to provide at a particular point in time, usually during peak demand periods. In the Midwest capacity accreditation is lowest during the summer months when the area experiences its lowest wind resource.

The Midcontinent Area Power Pool (MAPP) monthly accreditation for variable generation sources was discussed in the *2004 Xcel Energy and the Minnesota Department of Commerce Wind Integration Study – Final Report*[4]. In that study the lowest monthly accreditation was 16.6% and associated with the month of July. If the wind facility were required to produce a minimum of 17 MW of capacity throughout the year it would have to be sized using the lowest monthly accreditation. This example would require a 102.4 MW wind farm, with between 45 and 62 wind turbines, an unrealistic approach to meet the stated need of the proposed project.

[4] Source: Xcel Energy and Minnesota Department of Commerce Wind Integration Study – Final Report. September 28, 2004. http://www.state.mn.us/mn/externalDocs/Commerce/Wind_Integration_Study_092804022437_WindIntegrationStudyFinal.pdf.

Since wind turbines can be viewed as modular energy systems, it is possible that as the needs of the area grew more wind turbines could be installed. However, this approach would not be able to take advantage of economies of scale and would likely result in more expensive energy than if all of the anticipated needs of the area were met from a large wind farm.

It is unlikely that a wind generation alternative would be a feasible alternative to the proposed project. The development of wind turbines have significant transmission implications, which may only serve to further stress the existing transmission system in the area. There is a real risk that any wind generation alternative would not be capable of generating energy during critical contingency periods, especially during high demand periods in the summer months. This is due to the documented seasonal fluctuations in the wind resource that results in a resource that is often lowest during the high demand summer months.

Wind development is expected to proceed in the area regardless of whether or not this project is used as a vehicle for achieving it. Upgrading the transmission system in the area to 115 kV may improve the ability for wind generators to interconnect to the transmission grid, although specific studies would have to be conducted to determine the precise impacts such an addition would have on the grid.

Appendix A – Environmental Assessment Scoping Decision

MINNESOTA DEPARTMENT OF COMMERCE

In the Matter of the Application for a Route Permit and Certificate of Need for a the Appleton to Canby 115kV High Voltage Transmission Line Project

ENVIRONMENTAL ASSESSMENT SCOPING DECISION

PUC Docket No. E017/TL-06-1265
PUC Docket No. E017/CN-06-677

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 Ottertail Power Company (OTP) Appleton to Canby 115kV High Voltage Transmission Line (HVTL) Project in Swift, Lac Qui Parle, and Yellow Medicine counties, Minnesota.

The applicant has filed a joint application with the Public Utilities Commission (PUC) for the Certificate of Need and the Route Permit for the proposed facilities. The PUC has combined the Certificate of Need and Route Permit processes, and authorized the Department to prepare a single EA in order to streamline the processes. The Department will include in the EA the analysis of alternatives required in rules guiding environmental review in Certificate of Need cases (Minnesota Rule 4410.7035).

The Public Utilities Commission (PUC) has authorized the Department staff to initiate the environmental review process in these dockets in accordance with Minnesota Rule 4400.2750.

The Department's Energy Facilities Permitting (EFP) Unit held a public information and EA scoping meeting on October 4, 2006, at the Dawson City Hall to discuss the project with the public and to solicit input into the scope of the EA to be prepared. Approximately 6 persons attended the public meeting. A public comment period on the scope of the EA closed on October 13, 2006. No comments were received from the public on the proposed project.

Having reviewed the matter, consulted with the EFP staff, and in accordance with Minnesota Rule 4400.2750, I hereby make the following Scoping Decision:

MATTERS TO BE ADDRESSED

The Environmental Assessment will address the following matters:

The EA will include a description and analysis of human and environmental impacts of the proposed project and alternatives that would have otherwise been required by Minnesota Rule 4410.7035 under an Environmental Report for the Certificate of Need. The Environmental Report requirements will evaluate the matters of size, type and timing that would not normally be included in an EA for a route permit application. The EA will also address the human and environmental impacts of the proposed routes in the route permit application and other impacts

identified by public comments received through the scoping process as required under Minnesota Rules 4400.2750, subp 2.

INTRODUCTION

1.0 SUMMARY OF THE APPLETON TO CANBY TRANSMISSION PROJECT

1.1 Project Description
1.2 Project Location
1.3 Project Purpose
1.4 Project Alternatives
1.5 Sources of Information

2.0 REGULATORY FRAMEWORK

2.1 PUC Certificate of Need
2.2 PUC Route Permit
2.3 Scoping of Environmental Impacts and Alternative Routes
2.4 Environmental Assessment Requirement

ALTERNATIVES TO THE TRANSMISSION PROJECT

The EA will consider only alternatives that have an impact on the proposed transmission project. The Department will evaluate alternatives that deliver an equal amount of energy and capacity to the area as proposed by OTP. Such alternatives may attempt to reduce, mitigate or eliminate the need for the proposed transmission line, while delivering the proposed "needed" energy. Any analysis of the alleged need will be conducted through the Certificate of Need testimony and public hearing(s) generally and not specifically in this EA. The EA will focus on the environmental, social, economic and cultural impacts of the proposed project and alternatives.

Because the requirements for both the Certificate of Need and the Route Permit will be addressed in a single EA the analysis will review feasibility, general impacts and mitigation measures for those alternatives that would otherwise be required in an Environmental Report for the Certificate of Need.

3.0 POTENTIAL HUMAN AND ENVIRONMENTAL IMPACTS

3.1 Right-of-Way Requirements
3.2 Anticipated Size and Type of Structures
3.3 Electric and Magnetic Fields
3.4 Anticipated Noise Impacts
3.5 Anticipated Visual Impacts
3.6 Anticipated Emissions of any Hazardous Air Pollutants and VOCs
3.7 Anticipated Impacts on Water Quality
3.8 Anticipated Impacts on Natural and Wildlife Resources
3.9 Anticipated Social and Economic Impacts

4.0 POTENTIAL MITIGATION MEASURES

4.1 No-build Alternative
4.2 Conservation Alternative
4.3 Existing Line/System Improvements
4.4 Generation Alternative

5.0 FEASIBILITY AND AVAILABILITY OF ALTERNATIVES

5.1 No-build Alternative
5.2 Conservation Alternative
5.3 Existing Line/System Improvements
5.4 Generation Alternative

IMPACTS OF TRANSMISSION ROUTE AND ALTERNATIVES

The EA will review impacts and mitigation measures for the proposed route as described in the Appleton to Canby Project route permit application.

6.0 ASSESSMENT OF IMPACTS AND MITIGATION MEASURES

6.1 Description of Environmental Setting
6.2 Impacts on Human Settlement
- 6.2.1 Socioeconomic
- 6.2.2 Displacement
- 6.2.3 Noise
- 6.2.4 Aesthetics
- 6.2.5 Human Health and Safety

6.3 Impacts on Land-based Economics
- 6.3.1 Recreation
- 6.3.2 Prime Farmland
- 6.3.3 Transportation
- 6.3.4 Mining and Forestry
- 6.3.5 Economic Development
- 6.3.6 Archeological and Historic Resources

6.4 Impacts on Natural Environment
- 6.4.1 Air Quality
- 6.4.2 Water Quality, Soils and Geology
- 6.4.3 Groundwater and Wetlands
- 6.4.4 Fish and Wildlife Resources
- 6.4.5 Vegetation

6.5 Rare and Unique Natural Resources

7.0 OTHER CONSIDERATIONS

7.1 Significant Unavoidable Adverse Impacts
7.2 Irreversible/Irretrievable Commitment of Resources

8.0 PERMITS AND APPROVALS REQUIRED

8.1 Federal
8.2 State
8.3 Local

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.

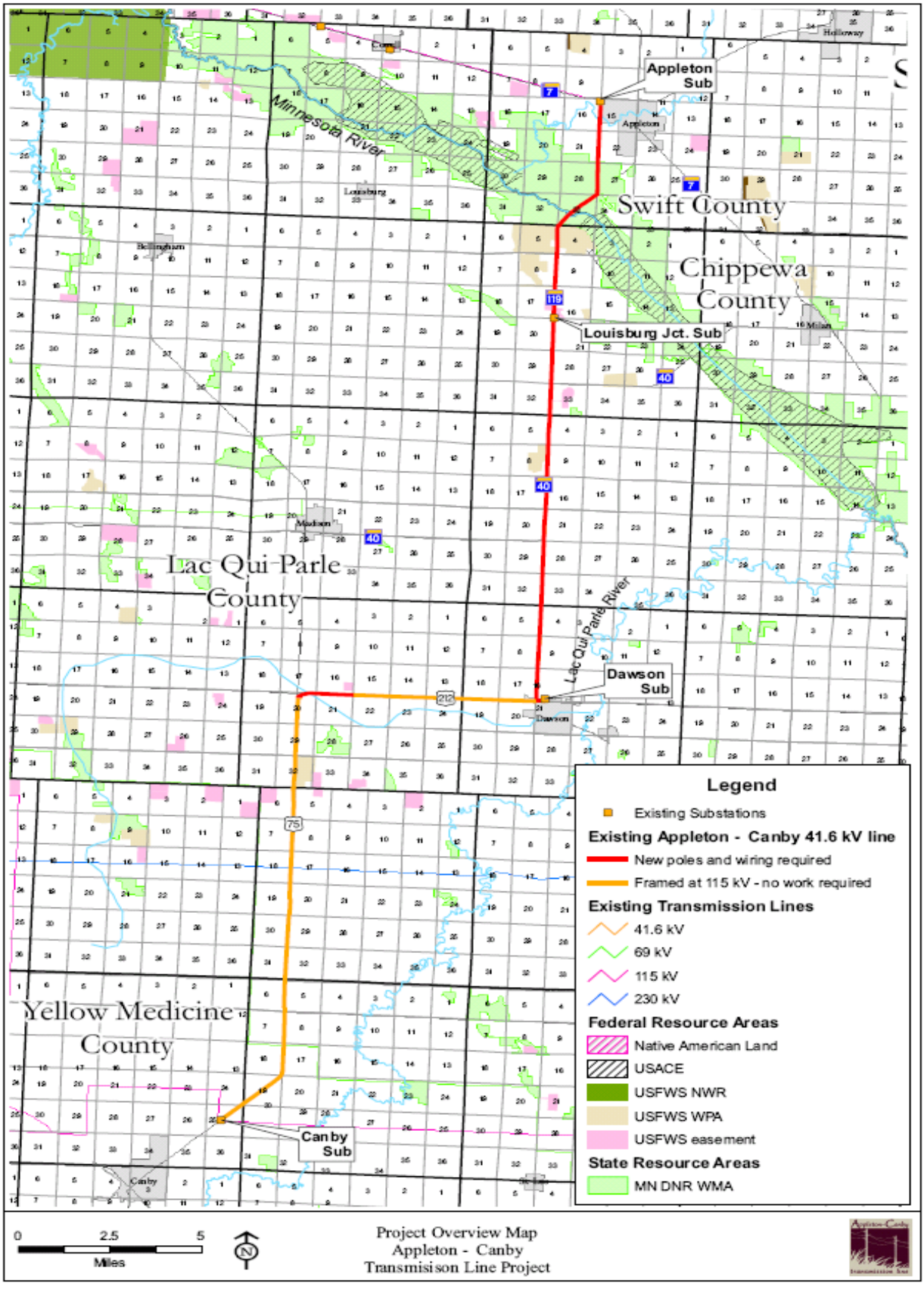
SCHEDULE

The EA shall be completed and available by December 15, 2006. A public hearing will be held in Lac qui Parle County before an Administrative Law Judge after the EA has been issued and notice served. The exact date and location of the public hearing will be determined by the Administrative Law Judge assigned to this matter.

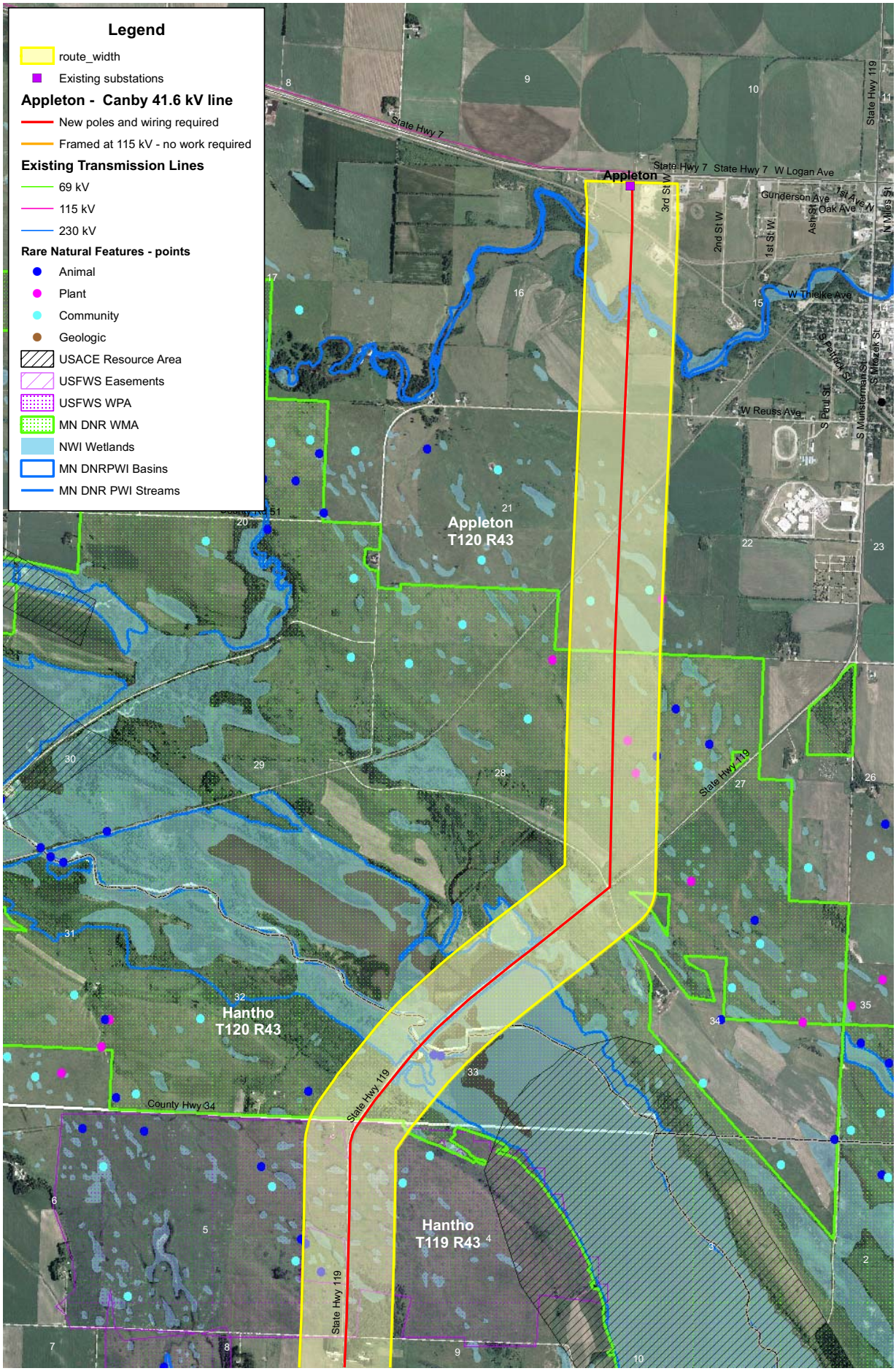
Signed this 19 day of October, 2006

STATE OF MINNESOTA
DEPARTMENT OF COMMERCE

Glenn Wilson, Commissioner


Appleton Sub
Minnesota River
Swift County
Chippewa County
Louisburg Jct. Sub
Lac Qui Parle County
Lac Qui Parle River
Dawson Sub
Yellow Medicine County
Canby Sub
Legend
Existing Substations
Existing Appleton - Canby 41.6 kV line
New poles and wiring required
Framed at 115 kV - no work required
Existing Transmission Lines
41.6 kV
69 kV
115 kV
230 kV
Federal Resource Areas
Native American Land
USACE
USFWS NWR
USFWS WPA
USFWS easement
State Resource Areas
MN DNR WMA
0
2.5
5
Miles
Project Overview Map
Appleton - Canby
Transmisison Line Project

Appendix B – Aerial Photo Route Maps



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Detailed Project Maps
Appleton - Canby
Transmisison Line Project

Map 1

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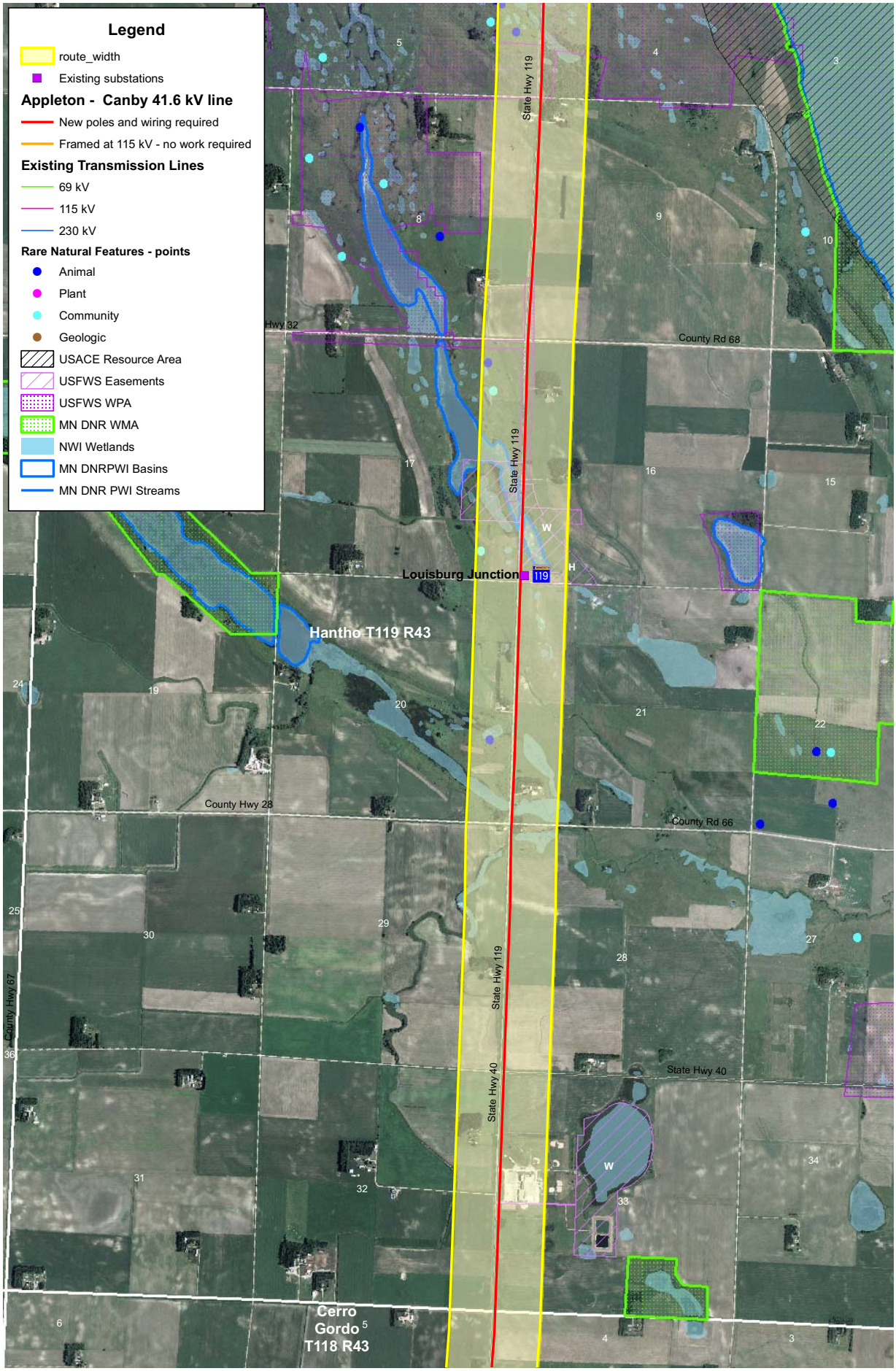

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Detailed Project Maps
Appleton - Canby
Transmisison Line Project

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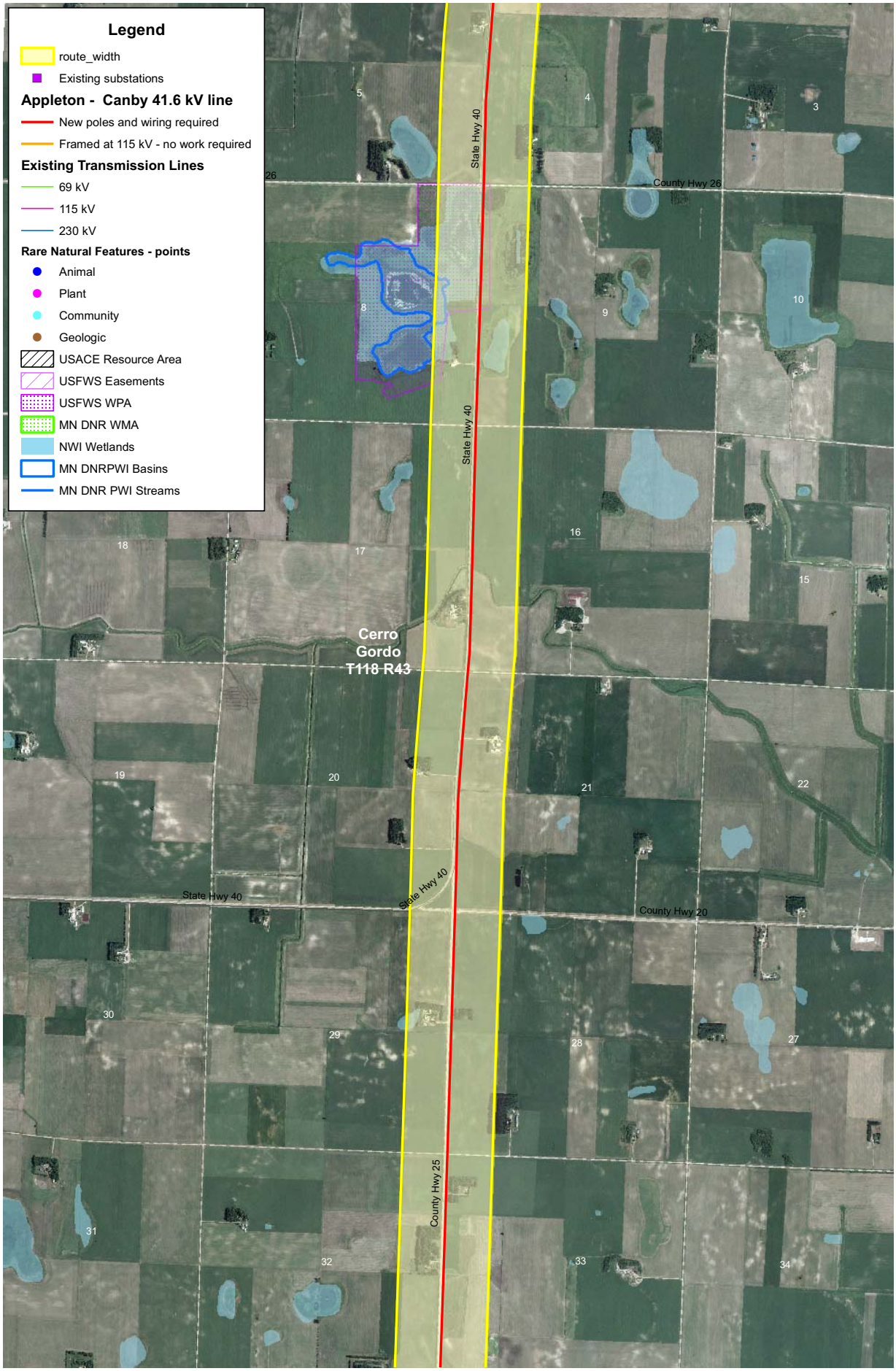

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Detailed Project Maps
Appleton - Canby
Transmisison Line Project

Map 3

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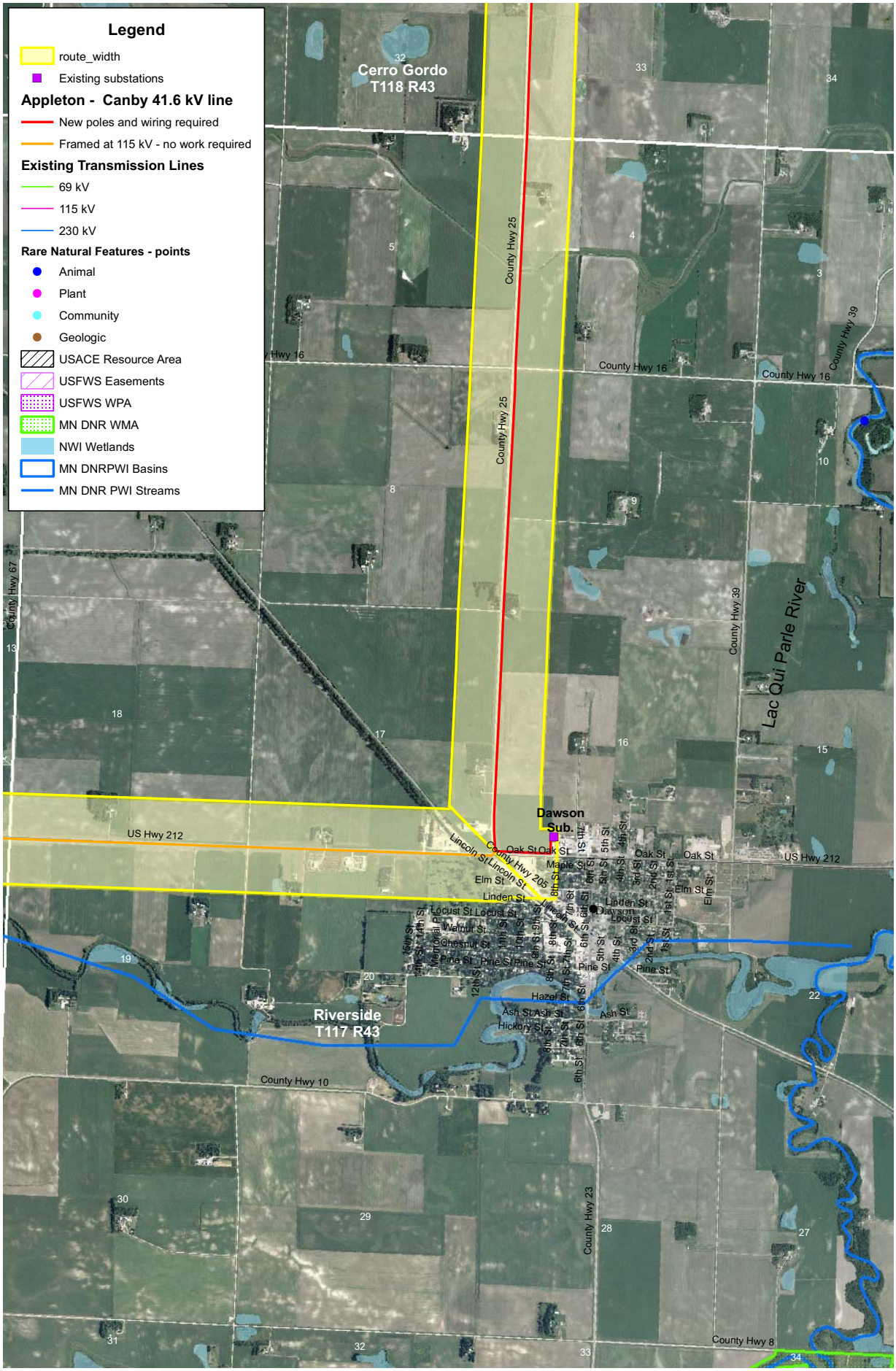

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Detailed Project Maps
Appleton - Canby
Transmisison Line Project

Map 4

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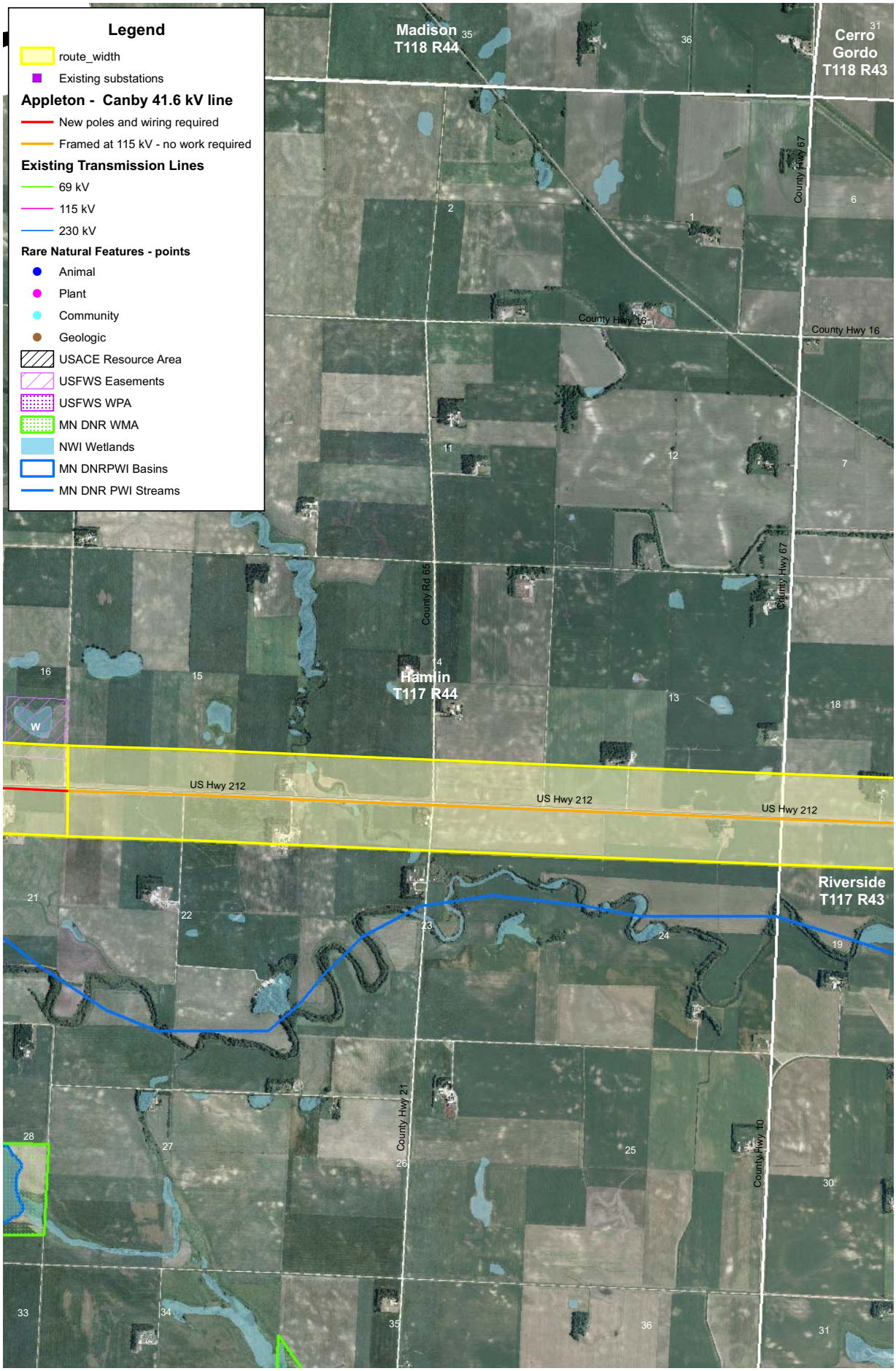

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Detailed Project Maps
Appleton - Canby
Transmisison Line Project

Map 5

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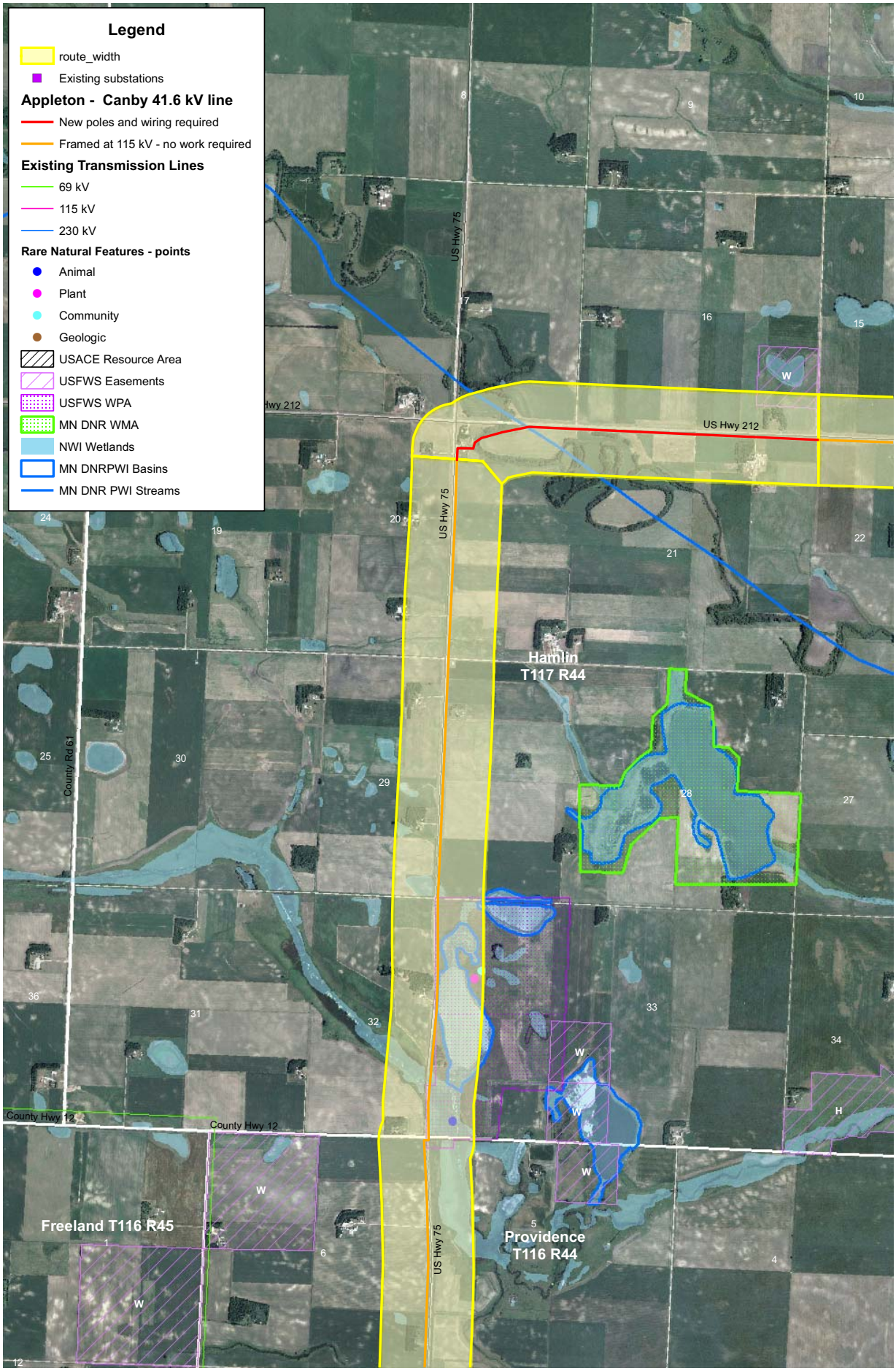

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Detailed Project Maps
Appleton - Canby
Transmisison Line Project

Map 6

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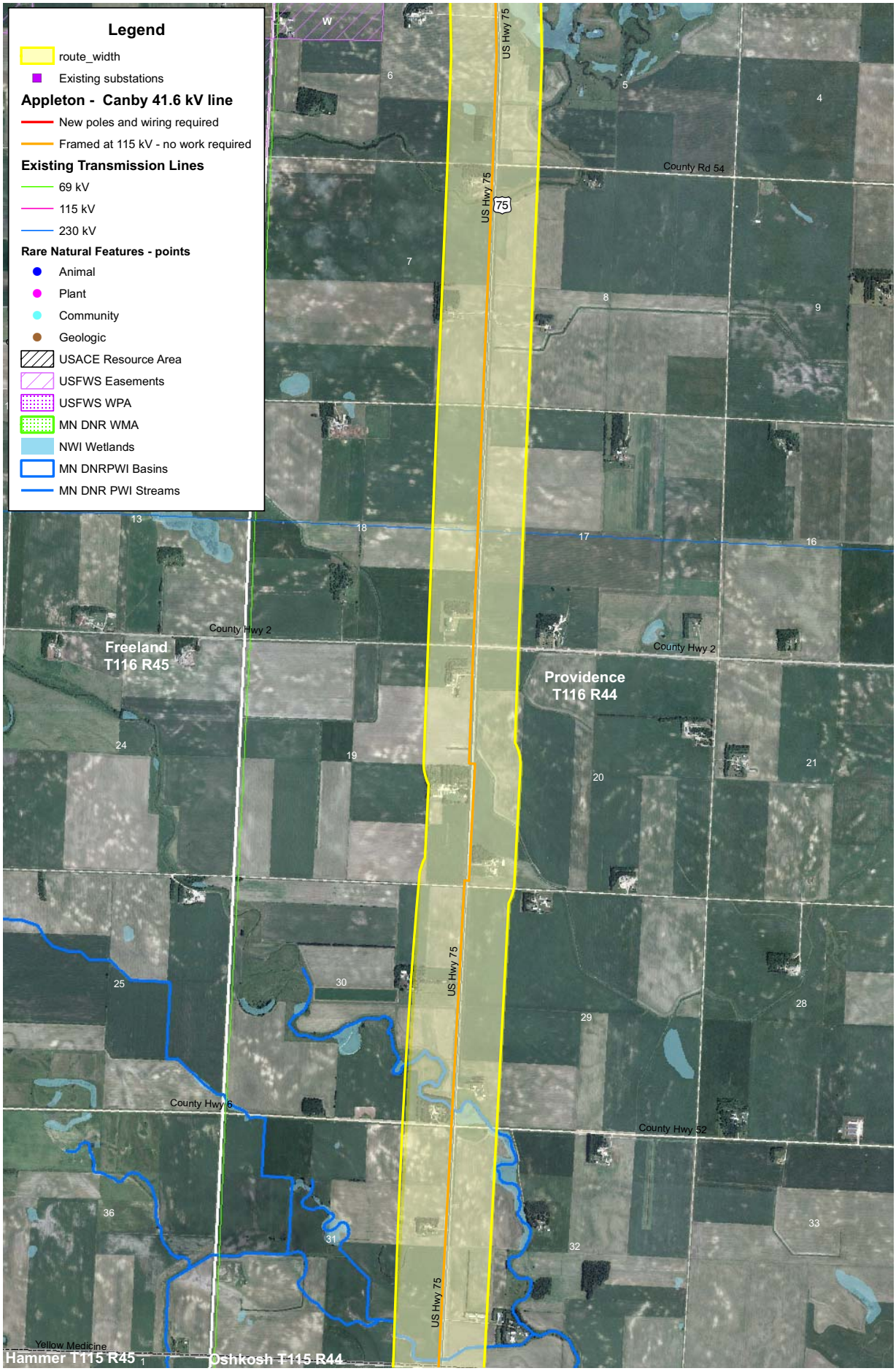

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Detailed Project Maps
Appleton - Canby
Transmisison Line Project

Map 7

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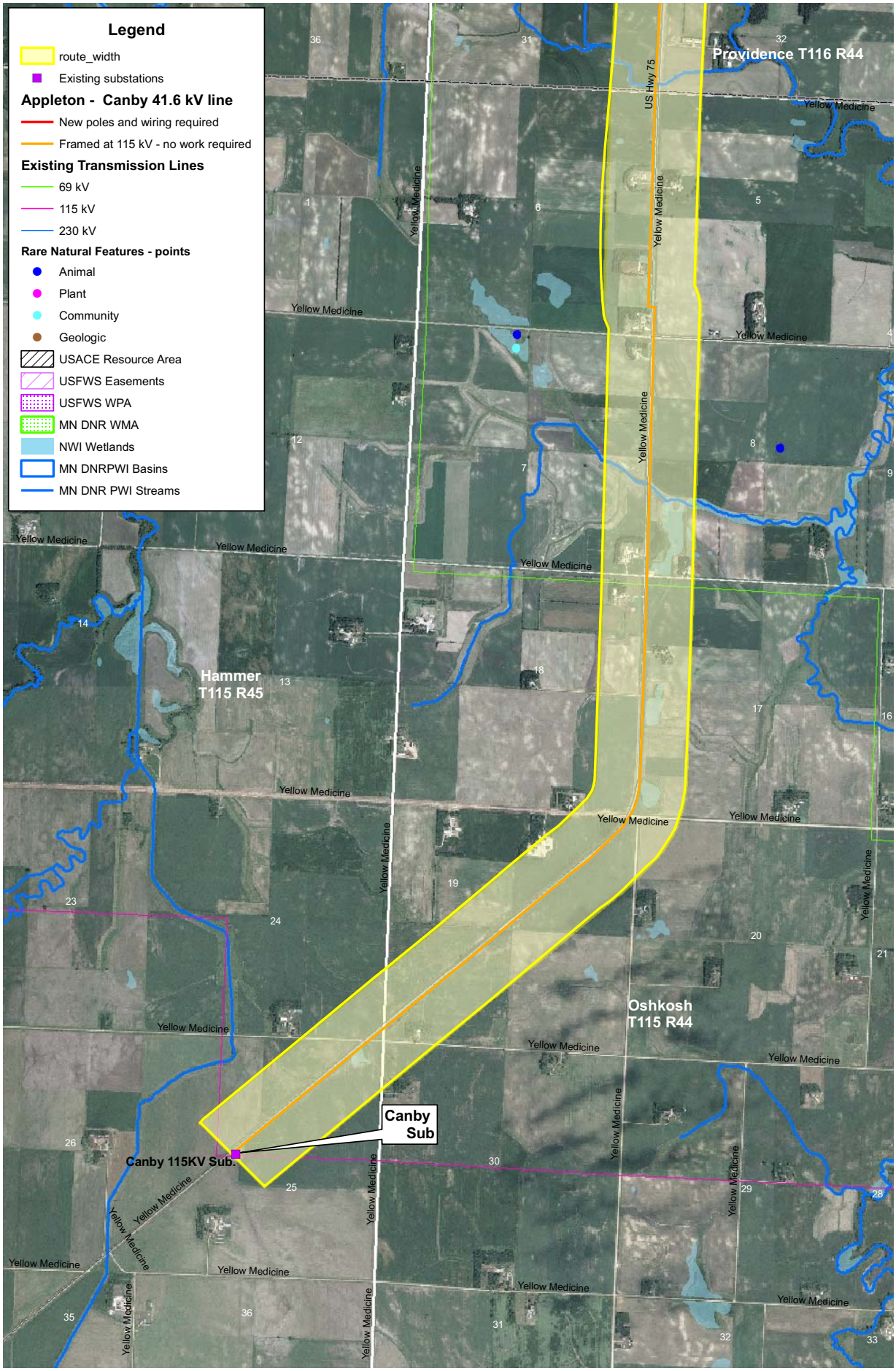

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Detailed Project Maps
Appleton - Canby
Transmisison Line Project

Map 8

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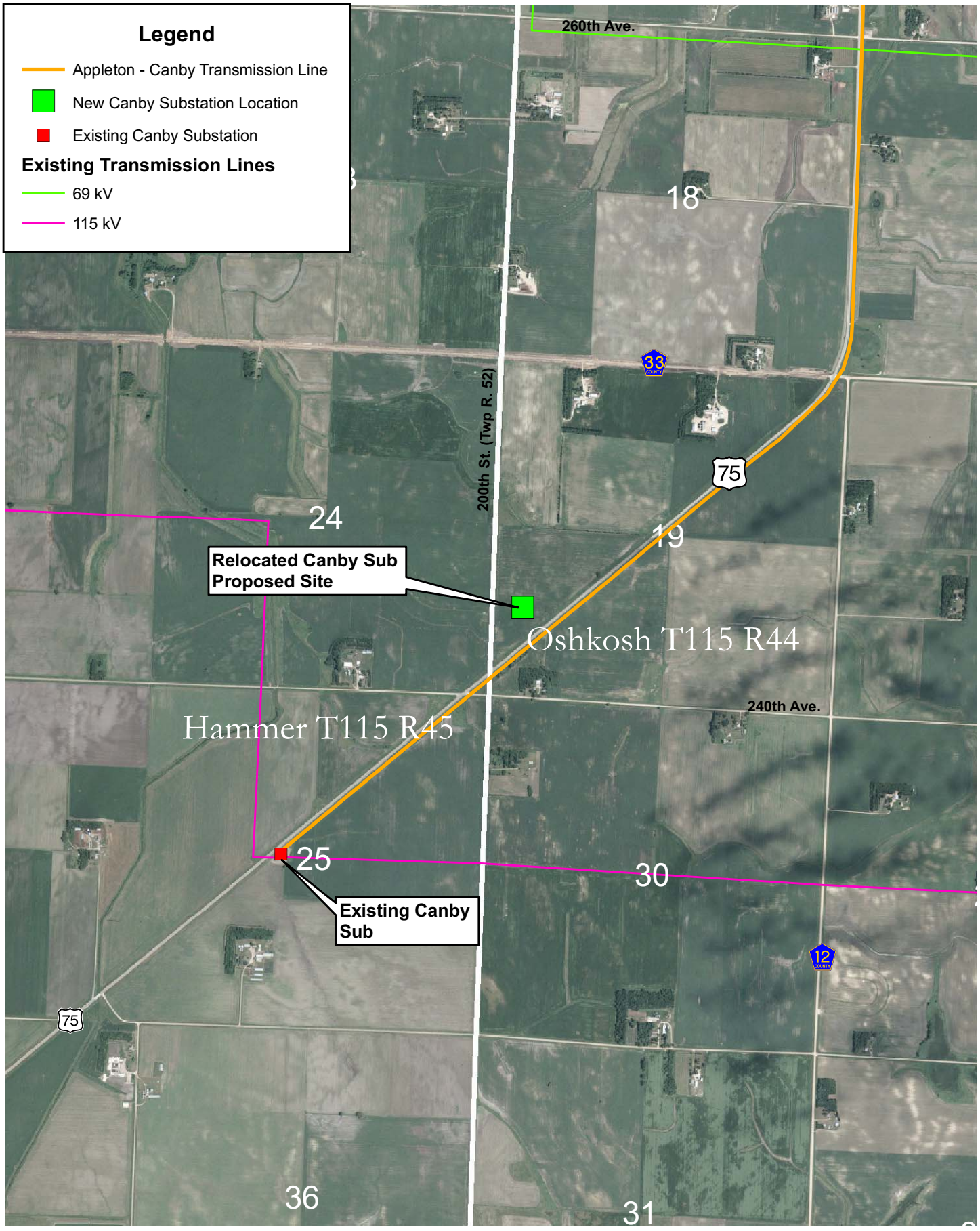

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Canby Substation Map
Appleton - Canby
Transmisison Line Project

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