

STATE OF MINNESOTA PUBLIC UTILITIES COMMISSION

**ROUTE PERMIT FOR CONSTRUCTION OF A HIGH-VOLTAGE TRANSMISSION
LINE AND ASSOCIATED FACILITIES**

**IN
ROSEAU, LAKE OF THE WOODS, BELTRAMI,
KOOCHICHING AND ITASCA COUNTIES**

**ISSUED TO
MINNESOTA POWER**

PUC DOCKET NO. E015/TL-14-21

In accordance with the requirements of Minnesota Statutes Chapter 216E and Minnesota Rules Chapter 7850, this route permit is hereby issued to:

MINNESOTA POWER

Minnesota Power is authorized by this route permit to construct and operate a single-circuit 500-kilovolt alternating current High Voltage Transmission Line and associated facilities from the U.S./Canada International Border in Roseau County to a new substation near the existing Blackberry Substation in Itasca County.

The transmission line and associated facilities shall be built within the route identified in this permit and as portrayed on the official route maps, and in compliance with the conditions specified in this permit.

Approved and adopted this 11th day of April, 2016

BY ORDER OF THE COMMISSION

Daniel P. Wolf,
Executive Secretary

CONTENTS

1.0	ROUTE PERMIT.....	1
2.0	PROJECT DESCRIPTION.....	1
2.1	Project Location.....	1
2.2	Associated Facilities and Substations.....	2
2.3	Structures and Conductors.....	3
3.0	DESIGNATED ROUTE.....	4
3.1	Right-of-Way.....	5
4.0	GENERAL CONDITIONS.....	6
4.1	Plan and Profile.....	6
4.2	Construction Practices.....	7
4.2.1	Field Representative.....	7
4.2.2	Local Governments.....	7
4.2.3	Cleanup.....	7
4.2.4	Noise.....	8
4.2.5	Vegetation Removal.....	8
4.2.6	Application of Herbicides.....	8
4.2.7	Aesthetics.....	9
4.2.8	Soil Erosion and Sediment Control.....	9
4.2.9	Wetlands and Water Resources.....	9
4.2.10	Noxious Weeds.....	9
4.2.11	Roads.....	9
4.2.12	Archaeological and Historic Resources.....	11
4.2.13	Avian Mitigation.....	11
4.2.14	Temporary Work Space.....	12
4.2.15	Restoration.....	12
4.2.16	Pollution and Hazardous Wastes.....	12
4.2.17	Notification.....	12
4.2.18	Notice of Permit.....	13
4.3	Periodic Status Reports.....	13
4.4	Complaint Procedures.....	13
4.5	Permit Distribution and Notification.....	13
4.6	Completion of Construction.....	13
4.6.1	Notification to Commission.....	13
4.6.2	As-Built Specifications.....	14
4.6.3	GPS Data.....	14

4.7	Electrical Performance Standards	14
4.7.1	Grounding.....	14
4.7.2	Electric Field	14
4.7.3	Interference with Communication Devices.....	14
4.8	Other Requirements	15
4.8.1	Applicable Codes	15
4.8.2	Other Permits.....	15
4.8.3	Pre-emption	15
4.9	Delay in Construction	15
5.0	SPECIAL CONDITIONS.....	16
6.0	PERMIT AMENDMENT.....	17
7.0	TRANSFER OF PERMIT	18
8.0	REVOCATION OR SUSPENSION OF THE PERMIT	18

FIGURES

Route Maps

Exhibit B - Anticipated Alignment Changes for the Effie Variation

ATTACHMENTS

- Attachment A - Table of Township, Range and Section Data for the approved route
- Attachment B - Complaint Procedures
- Attachment C - Compliance Filing Schedule

1.0 ROUTE PERMIT

The Minnesota Public Utilities Commission (Commission) hereby issues this route permit to Minnesota Power (Permittee) pursuant to Minnesota Statutes Chapter 216E and Minnesota Rules Chapter 7850. This permit authorizes Minnesota Power to construct a single-circuit 500-kilovolt alternating current (AC) High Voltage Transmission Line from the U.S./Canada International Border in Roseau County to a new substation near the existing Blackberry Substation in Itasca County, and as identified in the attached route permit maps, hereby incorporated into this document.

2.0 PROJECT DESCRIPTION

Minnesota Power proposed construction and operation of the Great Northern Transmission Line, which is an approximately 224-mile, 500 kilovolt (kV) overhead, single-circuit, alternating current (AC) transmission line. The transmission line would cross the U.S. and Canada Border in Roseau County, Minnesota and connect into the proposed Iron Range 500 kilovolt Substation adjacent to the existing Blackberry Substation near Grand Rapids, Minnesota.

The project also includes associated substation facilities and transmission system modifications at the Blackberry Substation site, construction of a new 500 kV series compensation station, necessary access roads, construction lay-down areas and fly-in sites. A new Iron Range 500 kV Substation for the project will be constructed east of the existing Blackberry 230/115 kV Substation.

The transmission line is expected to carry at least 750 megawatts (MW) to facilitate agreements and transmission service requests between Minnesota Power and Manitoba Hydro plus exports and transmission service requests by Manitoba to other utilities.

2.1 Project Location

The approved transmission line will cross the U.S. / Canadian border at latitude 49 00 00.00 N and longitude 95 54 50.49 W, approximately 2.9 miles east of Highway 89 in Roseau County. The transmission line would cross the border between the U.S. and Canada in Roseau County, Minnesota, and connect into the proposed Iron Range 500 kilovolt (kV) Substation adjacent to the existing Blackberry Substation near Grand Rapids, Minnesota. The route includes locations in Roseau, Lake of the Woods, Koochiching, and Itasca Counties.

2.2 Associated Facilities and Substations

The project includes construction of associated facilities including the proposed Iron Range 500 kV Substation, a new 500 kV Series Compensation Station, and three regeneration stations with permanent and temporary access roads. Additionally, construction of the proposed Project would require temporary and permanent access roads, temporary laydown areas, temporary stringing areas, and temporary fly-in sites.

The project includes the expansion of the site of the Permittee's existing 8.8 acre Blackberry 230/115 kV Substation near Grand Rapids, Minnesota to incorporate the new Iron Range 500 kV Substation. It will be constructed adjacent to and east of the existing Blackberry Substation and is expected to permanently impact approximately 23 acres. The Iron Range 500 kV Substation would accommodate the new 500 kV transmission line, existing 230 kV transmission lines, and all associated 500 kV and 230 kV equipment.

The Permittee will locate a new 500 kV Series Compensation Station within or adjacent to the approved route. The precise location for the 500 kV Series Compensation Station will be determined by electric design optimization studies and final route selection, but is anticipated to be located at the approximate midpoint between the existing Dorsey Substation in Canada and the proposed Iron Range 500 kV Substation located just east of the existing Blackberry Substation. The Series Compensation Station will permanently impact approximately 6 acres.

The Permittee is permitted to locate three regeneration stations within or adjacent to the approved route. The sites would be 75 feet by 75 feet and located on upland areas. The Permittee will construct temporary access roads within the right-of-way for construction. The Permittee will work with local property owners to identify suitable access locations during final design. The typical width of the temporary access road will be 16 feet.

The Permittee intends to establish a permanent "2-track" trail on uplands within the permanent right-of-way as a result of construction traffic. This 2-track trail would be unimproved and it is assumed that there will be no grading or filling for this permanent access.

The Permittee is permitted to establish a main staging area for temporary storage of materials and equipment. There would be other temporary staging areas located along the approved right-of-way for laydown and framing prior to structure installation. The laydown areas would be approximately 20 to 40 acres, and would be located along suitable roadways approximately 40 to 50 miles apart, and would be within 5 miles from the approved route. Upland areas with prior disturbance will be preferred; however other areas may be approved as part of the plan and profile process in instances where this is not feasible. These yards would be in place for at least

one year and used to store equipment and materials and include the construction offices. The Permittee will identify specific staging areas during final design.

The Permittee may establish temporary stringing sites within or adjacent to the approved route. The sites would be approximately 2.8 acres in size and spaced approximately 2 miles apart.

The Permittee is allowed to establish fly-in sites that would be approximately 10 acres in size, located as near to the right-of-way as possible, and approximately 5 to 7 miles apart. These sites may be in place for up to 1 year to assemble structures for helicopter (sky crane) construction. Upland areas with prior disturbance will be preferred; however, there may be some areas where this is not feasible and other areas would be used. The Permittee will identify fly-in sites during final design.

2.3 Structures and Conductors

The project will be located in new right-of-way that would be approximately 200 feet wide. A wider right-of-way may be required for certain spans of the project, at angle and corner structures, for guyed structures, or where special design requirements are dictated by topography. The Permittee is evaluating several steel structure types and configurations including a self-supporting lattice structure, a lattice guyed-V structure, and a lattice guyed-delta structure.

The transmission towers will be steel lattice structures for the majority of the route, with the exact type of structure in any given location dependent on land type, land use, and potential effect on the surrounding landscape.

The transmission tower heights will range from approximately 100 to 170 feet. In some locations, such as where the project crosses an existing transmission line, taller structures may be required. None of the structures are anticipated to be taller than 200 feet in order to meet Federal Aviation Administration (FAA) lighting standards. Approximately 4 to 5 structures are anticipated per mile of transmission line and the structures would be placed approximately 1,000 to 1,700 feet apart, with a maximum span of 1,700 feet. Where the transmission line crosses farmland, the Permittee will use self-supporting lattice structures to minimize interference with farm operations. The area of permanent impact for the guyed structures is anticipated to be 1,936 square feet per structure, with a temporary construction disturbance footprint of approximately 0.92 acres per structure.

The table below details specifics on the various structure types as presented in the route permit application.

Line Type	Conductor	Structure		Foundation	Height	Span
		Type	Material			
Single-Circuit 500 kV AC overhead transmission line	Aluminum Conductor Steel Reinforced (ACSR)	3-conductor bundle 1192.5 kcmil ACSR with 18 inch sub-spacing	NESC approved ACSR rated for 500 kV operation	Self-supporting lattice and guyed-V structures	100-170 feet	Approximately 1,000 to 1,450 feet (0.20-0.25 miles)

The transmission line and associated facilities shall be designed to meet or exceed all relevant local and state codes, the National Electric Safety Code (NESC), and North American Electric Reliability Corporation (NERC) requirements. This includes standards relating to clearances to ground, clearance to crossing utilities, clearance to buildings, strength of materials, clearances over roadways, right-of-way widths, and permit requirements. The transmission line shall be equipped with protective devices to safeguard the public if an accident occurs.

3.0 DESIGNATED ROUTE

The route designated by the Commission in this permit is the route described below and shown on the route maps attached to this permit. Enclosed as Attachment A is a summary of Township, Range and Section data of the project. The route is generally described as follows:

The location of the international border crossing at the U.S. / Canadian border is located at latitude 49 00 00.00 N and longitude 95 54 50.49 W, approximately 2.9 miles east of Highway 89 in Roseau County.

The approved route proceeds southeast 0.5 miles to 410th Street, approximately 0.16 of a mile from the intersection of 410th Street and County Road 3. The approved route travels south 2 miles to 390th Street and turn east following 390th Street for 10.5 miles (where 390th street then turns into County Road 118). At 0.25 miles from Highway 310 further east the approved transmission line would turn southeast and continue for another 12 miles. At 0.5 miles from 510th Avenue further southeast the approved transmission line would again turn and travel 2.3 miles east to join the existing Minnkota Power 230 kV transmission line. The proposed Project would parallel the existing Minnkota Power 230 kV transmission line southeast for 1.8 miles and then turn south where it would meet the existing Xcel Riel-Forbes 500 kV transmission line. Further southeast and beginning at a tenth of mile north of US Highway 11, the proposed

transmission line would parallel the existing Xcel 500 kV transmission line route for 36 miles after which it would turn east, leaving the Xcel 500 kV transmission line 2 miles southeast of the intersection of Faunce Forest Road and 19th Street Southwest in Lake of the Woods County (the Proposed Blue Route enters the Central Section in this location).

The approved route proceeds east for 5.8 miles and then turn northeast to rejoin the existing Minnkota Power 230 kV transmission line at its intersection with Pitt Grade Trail. The proposed transmission line would then parallel this existing 230 kV transmission line in an easterly direction for 31 miles to a point 1.5 miles west of County Road 86 in Koochiching County where it would then proceed southeast for 8.3 miles and then south for 1.8 miles. At this point, the proposed Project would be roughly 1.5 miles south from the intersection of County Road 32 and County Road 36 in Koochiching County. The transmission line would then continue southeast for 21.3 miles and intersect Highway 71 roughly 4.5 miles northeast of Big Falls, where it would continue an additional 9.6 miles to the southeast where it would rejoin the existing Minnkota Power 230 kV and Xcel Riel – Forbes 500 kV transmission lines (230/500 Corridor). The transmission line continues southeast approximately 0.9 miles and then proceeds in an east-southeasterly direction following the 230/550 Corridor for approximately 11.1 miles as it crosses Forest Road 138. The transmission lines proceed in a southeasterly direction for approximately 6.9 miles. The project continues south along the 230/550 Corridor for approximately 7.0 miles, proceeds approximately 1.0 miles to the southwest. The project continues to follow the 230/500 Corridor for approximately 13.8 miles until the 230/550 Corridor proceeds to the southeast in Township 59N, Range 23W, Section 12 in Itasca County. The approved route then exits the 230/500 kV Corridor and proceeds in a south by southwest direction for approximately 4.5 miles where it connects with the Proposed Orange Route in Township 59N, Range 23W and Section 34 and proceeds by southwest for approximately 3.3 miles and then proceeds southwest until it joins the Proposed Blue Route in Township 58N, Range 23W and Section 20.

The identified route widths will provide the Permittee with flexibility for minor adjustments of the specific alignment or right-of-way to accommodate landowner requests and unforeseen conditions. The final alignment (i.e., permanent and maintained rights-of-way) will be located within this designated route unless otherwise authorized below.

3.1 Right-of-Way

The approved route varies from 650 to 3,000 feet wide in order to provide flexibility during detailed design to try to accommodate landowner's preferences once the route is selected by the Commission. The approved route widths with anticipated alignments are shown on the detailed maps provided in Volume II: Part 3, Appendix S of the Final Environmental Impact Statement for the project.

The approved right-of-way width for the project is up to 200 feet. This permit anticipates that the right-of-way will generally conform to the anticipated alignment as noted on the attached route permit maps unless changes are requested by individual landowners and agreed to by Permittee or for unforeseen conditions that are encountered or are otherwise provided for by this permit. The anticipated alignment may be modified to incorporate changes identified by Minnesota Power (Exhibit B to its Exceptions filing, January 19, 2016, E-Dockets No. 20161-117422-04, enclosed).

Any alignment modifications within the designated route shall be located so as to have comparable overall impacts relative to the factors in Minn. R. 7850.4100, as does the alignment identified in this permit, and shall be specifically identified and documented in and approved as part of the plan and profile submitted pursuant to section 4.1 of this permit.

Where the transmission line route parallels existing highway and other road rights-of-way, the transmission line right-of-way shall occupy and utilize the existing right-of-way to the maximum extent possible, consistent with the criteria in Minn. R. 7850.4100, the other requirements of this permit, and for highways under the jurisdiction of the Minnesota Department of Transportation (Mn/DOT) rules, policies, and procedures for accommodating utilities in trunk highway rights-of-way.

4.0 GENERAL CONDITIONS

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

4.1 Plan and Profile

At least 30 calendar days before right-of-way preparation for construction begins on any segment or portion of the project, the Permittee shall provide the Commission with a plan and profile of the right-of-way and the specifications and drawings for right-of-way preparation, construction, structure specifications and locations, cleanup, and restoration for the transmission line. The documentation shall include maps depicting the plan and profile including the right-of-way, alignment, and structures in relation to the route and alignment approved per this permit.

The Permittee may not commence construction until the 30 days has expired or until the Commission has advised the Permittee in writing that it has completed its review of the documents and determined that the planned construction is consistent with this permit. If the Permittee intends to make any significant changes in its plan and profile or the specifications and drawings after submission to the Commission, the Permittee shall notify the Commission at least

five days before implementing the changes. No changes shall be made that would be in violation of any of the terms of this permit.

4.2 Construction Practices

The Permittee shall follow those specific construction practices and material specifications described in Minnesota Power's Application to the Commission for a route permit for the Great Northern Transmission Line Project dated April 15, 2014, unless this permit establishes a different requirement in which case this permit shall prevail.

4.2.1 Field Representative

At least 14 days prior to commencing construction, the Permittee shall advise the Commission in writing of the person or persons designated to be the field representative for the Permittee with the responsibility to oversee compliance with the conditions of this permit during construction.

The field representative's address, phone number, emergency phone number, and email shall be provided to the Commission and shall be made available to affected landowners, residents, public officials and other interested persons. The Permittee may change the field representative at any time upon written notice to the Commission to affected landowners, residents, public officials, and other interested persons.

4.2.2 Local Governments

During construction, the Permittee shall minimize any disruption to public services or public utilities. To the extent disruptions to public services or public utilities occur these would be temporary and the Permittee will restore service promptly. Where any impacts to public utilities have the potential to occur the Permittee will work with both landowners and local agencies to determine the most appropriate transmission structure placement.

The Permittee shall cooperate with county and city road authorities to develop appropriate signage and traffic management during construction.

4.2.3 Cleanup

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

4.2.4 Noise

Construction and routine maintenance activities shall be limited to daytime working hours, as defined in Minn. R. 7030.0200, to ensure nighttime noise level standards will not be exceeded.

4.2.5 Vegetation Removal

The Permittee shall minimize the number of trees to be removed in selecting the right-of-way specifically preserving to the maximum extent practicable windbreaks, shelterbelts, living snow fences, and vegetation in areas such as trail and stream crossings where vegetative screening may minimize aesthetic impacts, to the extent that such actions do not violate sound engineering principles or system reliability criteria.

Tall growing species located within the transmission line right-of-way that endanger the safe and reliable operation of the transmission facility will be removed by the Permittee. The Permittee shall leave undisturbed, to the extent possible, existing low growing species in the right-of-way or replant such species in the right-of-way to blend the difference between the right-of-way and adjacent areas, to the extent that the low growing vegetation that will not pose a threat to the transmission facility or impede construction.

The Permittee shall avoid construction and maintenance practices, particularly the use of fertilizer, herbicides or other pesticides that are inconsistent with the landowner's or tenant's use of the land. The Permittee will provide notification to affected landowners and tenants before using these materials.

4.2.6 Application of Herbicides

The Permittee shall restrict herbicide use to those herbicides and methods of application approved by the Minnesota Department of Agriculture and the U.S. Environmental Protection Agency. Selective foliage or basal application shall be used when practicable. The Permittee shall contact the landowner or his designee to obtain approval for the use of herbicide prior to any application on their property. The landowner may request that there be no application of herbicides on any part of the right-of-way within the landowner's property. All herbicides shall be applied in a safe and cautious manner so as not to damage crops, orchards, tree farms, or gardens. The Permittee shall provide notice of herbicide application to known beekeepers operating apiaries within one mile of the project site at least 14 days prior to such application.

4.2.7 Aesthetics

The Permittee shall consider input pertaining to visual impacts from landowners or land management agencies prior to final location of structures, rights-of-way, and other areas with the potential for visual disturbance. Care shall be used to preserve the natural landscape, minimize tree removal and prevent any unnecessary destruction of the natural surroundings in the vicinity of the project during construction and maintenance. Structures shall be placed at a distance, consistent with sound engineering principles and system reliability criteria, from intersecting roads, highway, or trail crossings and could cross roads to minimize or avoid impacts.

4.2.8 Soil Erosion and Sediment Control

The Permittee shall implement those erosion prevention and sediment control practices recommended by the Minnesota Pollution Control Agency (MPCA) Construction Stormwater Program.

The Permittee shall implement reasonable measures to minimize erosion and sedimentation during construction and shall employ perimeter sediment controls, protect exposed soil by promptly planting, seeding, using erosion control blankets and turf reinforcement mats, stabilizing slopes, protecting storm drain inlets, protecting soil stockpiles, and controlling vehicle tracking. Contours shall be graded as required so that all surfaces provide for proper drainage, blend with the natural terrain, and are left in a condition that will facilitate re-vegetation and prevent erosion. All areas disturbed during construction of the facilities shall be returned to pre-construction conditions.

When utilizing seed to establish temporary and permanent vegetative cover on exposed soil the Permittee shall select site appropriate seed certified to be free of noxious weeds. To the extent possible, the Permittee shall use native seed mixes. The Permittee shall consult with landowners on the selection and use of seed for replanting.

In accordance MPCA, the Permittee shall obtain a National Pollutant Discharge Elimination System (NPDES)/State Disposal System (SDS) Construction Stormwater permit from the MPCA.

4.2.9 Wetlands and Water Resources

Wetland impact avoidance measures that shall be implemented during design and construction of the transmission line will include spacing and placing the power poles at variable distances to span and avoid wetlands, watercourses, and floodplains.

Unavoidable wetland impacts as a result of the placement of poles shall be limited to the immediate area around the poles. To minimize impacts, construction in wetland areas shall occur during frozen ground conditions. When construction during winter is not possible, wooden or composite mats shall be used to protect wetland vegetation. Soil excavated from the wetlands and riparian areas shall be contained and not placed back into the wetland or riparian area.

Wetlands and riparian areas shall be accessed using the shortest route possible in order to minimize travel through wetland areas and prevent unnecessary impacts. No staging or stringing set up areas shall be placed within or adjacent to wetlands or water resources, as practicable. Power pole structures shall be assembled on upland areas before they are brought to the site for installation. Areas disturbed by construction activities shall be restored to pre-construction conditions.

All requirements of the U.S. Army Corps of Engineers (wetlands under federal jurisdiction), Minnesota Department of Natural Resources (Public Waters/Wetlands), and County (wetlands under the jurisdiction of the Minnesota Wetland Conservation Act) shall be met.

As part of preconstruction reports, the Permittee will include a section evaluating the potential for the occurrence of Aquatic Invasive Species (AIS) in the project area and describing if any best management practices that apply to the project. The Permittee should identify any infested waters or otherwise indicate that aquatic invasive species are not anticipated. The MN DNR must be notified if any AIS are identified in an area not previously identified as infested water.

4.2.10 Noxious Weeds

The Permittee shall take all reasonable precautions against the spread of noxious weeds during all phases of construction. When utilizing seed to establish temporary and permanent vegetative cover on exposed soil the Permittee shall select site appropriate seed certified to be free of noxious weeds. To the extent possible, the Permittee shall use native seed mixes. The Permittee shall consult with landowners on the selection and use of seed for replanting.

4.2.11 Roads

The Permittee shall advise the appropriate governing bodies having jurisdiction over all state, county, city or township roads that will be used during the construction phase of the project. Where practical, existing roadways shall be used for all activities associated with

construction of the solar facility. Oversize or overweight loads associated with the facility shall not be hauled across public roads without required permits and approvals.

The Permittee shall construct the least number of site access roads it can. Access roads shall not be constructed across streams and drainage ways without the required permits and approvals. Access roads shall be constructed in accordance with all necessary township, county or state road requirements and permits.

The Permittee shall promptly repair private roads or lanes damaged when moving equipment or when obtaining access to the site, unless otherwise negotiated with the affected landowner.

4.2.12 Archaeological and Historic Resources

The Permittee shall make every effort to avoid impacts to identified archaeological and historic resources when installing the high-voltage transmission line on the approved route. In the event that a resource is encountered, the Permittee shall contact and consult with the State Historic Preservation Office (SHPO). Where feasible, avoidance of the resource is required. Where not feasible, mitigation must include an effort to minimize project impacts on the resource consistent with SHPO and State Archaeologist requirements.

Because of the federal decisions required for the Project, review of the Project and consultation with tribes and agencies under Section 106 of the National Historic Preservation Act is required. In light of the significant consultation with potentially affected parties and responsible agencies, the Permittee must defer to the Programmatic Agreement and advise the Commission when the measures to avoid, minimize or mitigate adverse effects to cultural resource and environmental justice impacts identified in the Record of Decision have been fulfilled.

Prior to construction, workers shall be trained about the need to avoid cultural properties, how to identify cultural properties, and procedures to follow if undocumented cultural properties, including gravesites, are found during construction.

4.2.13 Avian Mitigation

The Permittee's standard transmission design shall incorporate adequate spacing of conductors and grounding devices in accordance with Avian Power Line Interaction Committee standards to eliminate the risk of electrocution to raptors with larger wingspans that may simultaneously come in contact with a conductor and grounding devices.

The Permittee will consult with the Minnesota Department of Natural Resources regarding type and placement of bird diverters.

4.2.14 Temporary Work Space

The Permittee shall limit temporary easements to special construction access needs and additional staging or lay-down areas required outside of the authorized right-of-way. Temporary space shall be selected to limit the removal and impacts to vegetation. Temporary easements outside of the authorized transmission line right-of-way will be obtained from affected landowners through rental agreements and are not provided for in this permit.

Temporary driveways may be constructed between the roadway and the structures to minimize impact using the shortest route possible. Construction mats should also be used to minimize impacts on access paths and construction areas.

4.2.15 Restoration

The Permittee shall restore the right-of-way, temporary work spaces, access roads, abandoned right-of-way, and other public or private lands affected by construction of the transmission line. Restoration within the right-of-way must be compatible with the safe operation, maintenance, and inspection of the transmission line. Within 60 days after completion of all restoration activities, the Permittee shall advise the Commission in writing of the completion of such activities.

The Permittee shall fairly compensate landowners for damage to crops, fences, landscaping, drain tile, or other damages sustained during construction.

4.2.16 Pollution and Hazardous Wastes

All appropriate precautions to protect against pollution of the environment must be taken by the Permittee. The Permittee shall be responsible for compliance with all laws applicable to the generation, storage, transportation, clean up and disposal of all wastes generated during construction and restoration of the right-of-way.

4.2.17 Notification

Before entering a landowner's property for construction or maintenance, the Permittee shall notify landowners or their designee(s) at least 14 but not greater than 60 days in advance.

4.2.18 Notice of Permit

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

4.3 Periodic Status Reports

The Permittee shall report to the Commission on progress regarding finalization of the route, design of structures, and construction of the transmission line. The Permittee need not report more frequently than monthly.

4.4 Complaint Procedures

Prior to the start of construction, the Permittee shall submit to the Commission the procedures that will be used to receive and respond to complaints. The procedures shall be in accordance with the requirements set forth in the complaint procedures attached to this permit.

4.5 Permit Distribution and Notification

Within 30 days of permit issuance, the Permittee shall provide all affected landowners with a copy of this permit and the complaint procedures. In no case shall the landowner receive this route permit and complaint procedures less than five days prior to the start of construction on their property. The Permittee shall contact landowners prior to entering the property or conducting maintenance along the route. The Permittee shall work with landowners to locate the high-voltage transmission line to minimize the loss of agricultural land, forest, and wetlands, and to avoid homes and farmsteads.

At the time of first contact, the Permittee shall also provide all affected landowners with a copy of the Department of Commerce's Rights-of-Way and Easements for Energy Facility Construction and Operation fact sheet.¹

4.6 Completion of Construction

4.6.1 Notification to Commission

¹ http://mn.gov/commerce/energyfacilities/documents/Easements%20Fact%20Sheet_08.05.14.pdf

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

4.6.2 As-Built Specifications

Within 60 days after completion of construction, the Permittee shall submit copies of all final as-built plans and specifications developed during the project.

4.6.3 GPS Data

Within 60 days after completion of construction, the Permittee shall submit to the Commission, in the format requested by the Commission, geo-spatial information (e.g., ArcGIS compatible map files, GPS coordinates, associated database of characteristics) for all structures associated with the transmission line and each substation connected.

4.7 Electrical Performance Standards

4.7.1 Grounding

The Permittee shall design, construct, and operate the transmission line in a manner so that the maximum induced steady-state short-circuit current shall be limited to five milliamperes root mean square (rms) alternating current between the ground and any non-stationary object within the right-of-way, including but not limited to large motor vehicles and agricultural equipment. All fixed metallic objects on or off the right-of-way, except electric fences that parallel or cross the right-of-way, shall be grounded to the extent necessary to limit the induced short-circuit current between ground and the object so as not to exceed one milliamperes rms under steady state conditions of the transmission line and to comply with the ground fault conditions specified in the NESC. The Permittee shall address and rectify any induced current problems that arise during transmission line operation.

4.7.2 Electric Field

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

4.7.3 Interference with Communication Devices

If interference with radio or television, satellite, wireless internet, GPS-based agriculture navigation systems or other communication devices is caused by the presence or operation of the transmission line, the Permittee shall take whatever action is feasible to restore or provide reception equivalent to reception levels in the immediate area just prior to the construction of the line.

4.8 Other Requirements

4.8.1 Applicable Codes

The Permittee shall comply with applicable NERC planning standards and requirements of the NESC including clearances to ground, clearance to crossing utilities, clearance to buildings, right-of way widths, erecting power poles, and stringing of transmission line conductors.

When triple paralleling lines within the permitted route width, lines shall be located in compliance with above standards and in compliance with other permits or licenses, recognizing safety, access and operating and maintenance issues for all impacted lines regardless of ownership. Permittee shall consult with Minnesota DNR regarding forestry and other potential corridor impacts prior to submitting the Plan and Profile for review by the Department and the Commission.

4.8.2 Other Permits

The Permittee is required to work in continued consultation with applicable state and federal agencies, including the MNDNR and USFWS, to obtain approval for all required permits for this Project. The Permittee must comply with conditions of any permits. The Permittee must submit documentation of permit compliance to the Commission upon request.

4.8.3 Pre-emption

Pursuant to Minn. Stat. § 216E.10, this route permit shall be the sole approval required to be obtained by the Permittee for construction of the transmission facilities and this permit shall supersede and preempt all zoning, building, or land use rules, regulations, or ordinances promulgated by regional, county, local and special purpose government.

4.9 Delay in Construction

If the Permittee has not commenced construction or improvement of the route within four years after the date of issuance of this permit, the Permittee shall file a report on the failure to construct and the Commission shall consider suspension of the permit in accordance with Minn. R. 7850.4700.

5.0 SPECIAL CONDITIONS

The Permittee shall provide a report to the Commission as part of the plan and profile submission that describes mitigation actions and measures developed and status of the following special conditions. Special conditions shall take precedence over other conditions of this permit should there be a conflict.

5.0.1 Construction Environmental Control Plan (CECP)

The Permittee shall develop a Construction Environmental Control Plan (CECP) that shall include all environmental control plans and special conditions imposed by permits or licenses issued by state or federal agencies related to agency-managed resources. Plans within the CECP shall include, but not be limited to, the Agricultural Impact Mitigation Plan, the Avian Mitigation Plan, the Vegetation Management Plan, and a Stormwater Pollution Prevention Plan. The CECP shall be filed with the Commission as a compliance filing 30 days prior to submitting the plan and profile for any segment of the Project.

The Permittee shall provide dedicated independent environmental inspectors and monitors to oversee the construction process and to monitor compliance with 1) the Vegetation Management Plan, 2) the Avian Mitigation Plan, and 3) the requirements of this and all other environmental permits with the exception of the Mineral Resource Plan.

5.0.2 Avian Mitigation Plan and Bird Flight Diverters

Avian Mitigation Plan. The Permittee shall develop an Avian Mitigation Plan (AMP). The AMP shall be developed in consultation with the MNDNR. The Permittee shall submit and implement the plan in accordance with the CECP for the Project. The Purpose of the AMP shall be to identify site-specific risks to avian species from the Project and to identify and implement strategies to avoid and mitigate potential impacts to these species, including but not limited to, the use of bird flight diverters. The AMP shall include documentation of the Permittee's consultation with the MNDNR and the USFWS.

5.0.3 Agriculture Impact Mitigation Plan

The Permittee shall comply with the Agricultural Impact Mitigation Plan (AIMP) prepared for this Project and approved by the Minnesota Department of Agriculture. The Applicant/Permittee shall distribute the AIMP with the route permit to all affected landowners.

5.0.4 Vegetation Management Plan

The Permittee must develop a Vegetation Management Plan (VMP). The VMP shall be developed in consultation with the MNDNR. The purpose of the VMP shall be to identify measures to minimize the disturbance and removal of vegetation for the Project, prevent the introduction of noxious weeds and invasive species, and re-vegetate disturbed non-cropland areas with appropriate native species in cooperation with landowners and state, federal, and local resource agencies, in such a way that does not negatively impact the safe and reliable operation of the Project. The Permittee shall submit the VMP with the CECP and monitor compliance with the VMP.

5.0.5 Consultation with the United States Fish and Wildlife Service (USFWS)

The Permittee is required to develop avoidance, mitigation and conservation measures for the protection of federally-listed species (including critical habitats) and for migratory birds with the USFWS under Section 7 of the Endangered Species Act. The Permittee is required to document this consultation as part of the Periodic Status Reports.

5.0.6 Mineral Resource Plan

The Permittee must develop a Mineral Resource Plan (MRP). The Permittee shall consult with the MNDNR regarding the scope and content of the MRP. The purpose of the MRP will be to identify measures to avoid interference with the exploration or mining operations conducted on state-owned mining units. The MRP would include (1) General description of state-owned mineral resources in the project area; and (2) Documentation of consultation with the MNDNR regarding measures to avoid interference with exploration and encumbrance of state-owned minerals. The Mineral Resource Plan shall be submitted as a compliance filing 30 days prior to the Plan and Profile submittals.

6.0 PERMIT AMENDMENT

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

7.0 TRANSFER OF PERMIT

The Permittee may request at any time that the Commission transfer this permit to another person or entity. The Permittee shall provide the name and description of the person or entity to whom the permit is requested to be transferred, the reasons for the transfer, a description of the facilities affected, and the proposed effective date of the transfer.

The person to whom the permit is to be transferred shall provide the Commission with such information as the Commission shall require to determine whether the new Permittee can comply with the conditions of the permit. The Commission may authorize transfer of the permit after affording the Permittee, the new Permittee, and interested persons such process as is required.

8.0 REVOCATION OR SUSPENSION OF THE PERMIT

The Commission may initiate action to revoke or suspend this permit at any time. The Commission shall act in accordance with the requirements of Minn. R. 7850.5100, to revoke or suspend the permit

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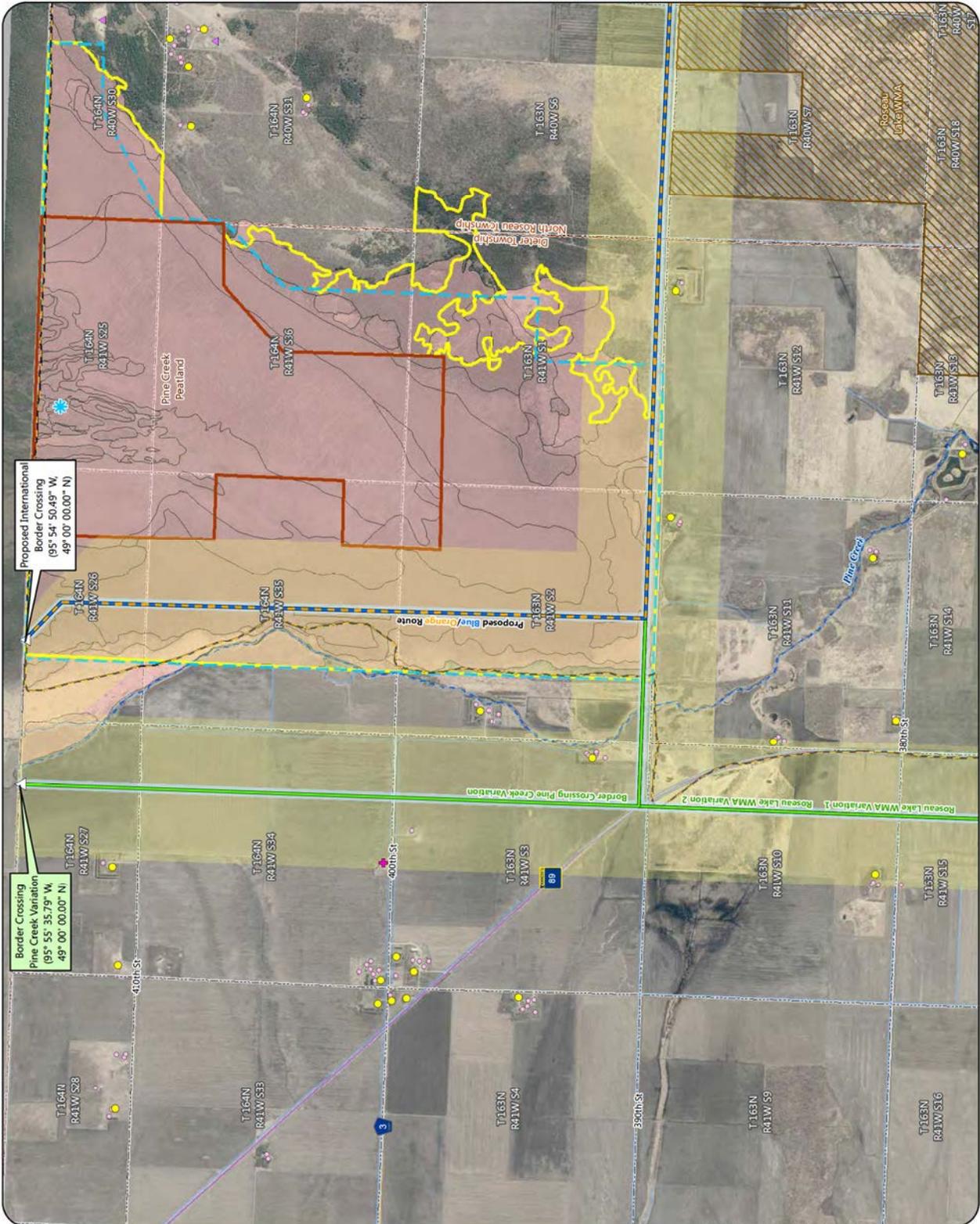


- △ Border Crossing Point
- Proposed Routes**
- Blue/Orange Route
- Alternatives**
- Route Variation
- Anticipated Right-of-Way
- Anticipated Route Width
- Residences
- Commercial or Non-Residential Structure
- Cemetery
- Approximate Calcareous Fen Location
- Aggregate Source Location
- NHD Watercourse
- PWI Watercourse
- Wildlife Management Area (WMA)
- Scientific and Natural Area (SNA)
- Preliminary Peatland SNA Watershed Protection Area
- High Conservation Value Forest
- Native Plant Community (Data only available for Roseau County)
- Snowmobile Trail
- Civil Township
- Public Land Survey Section
- County Boundary
- International Boundary



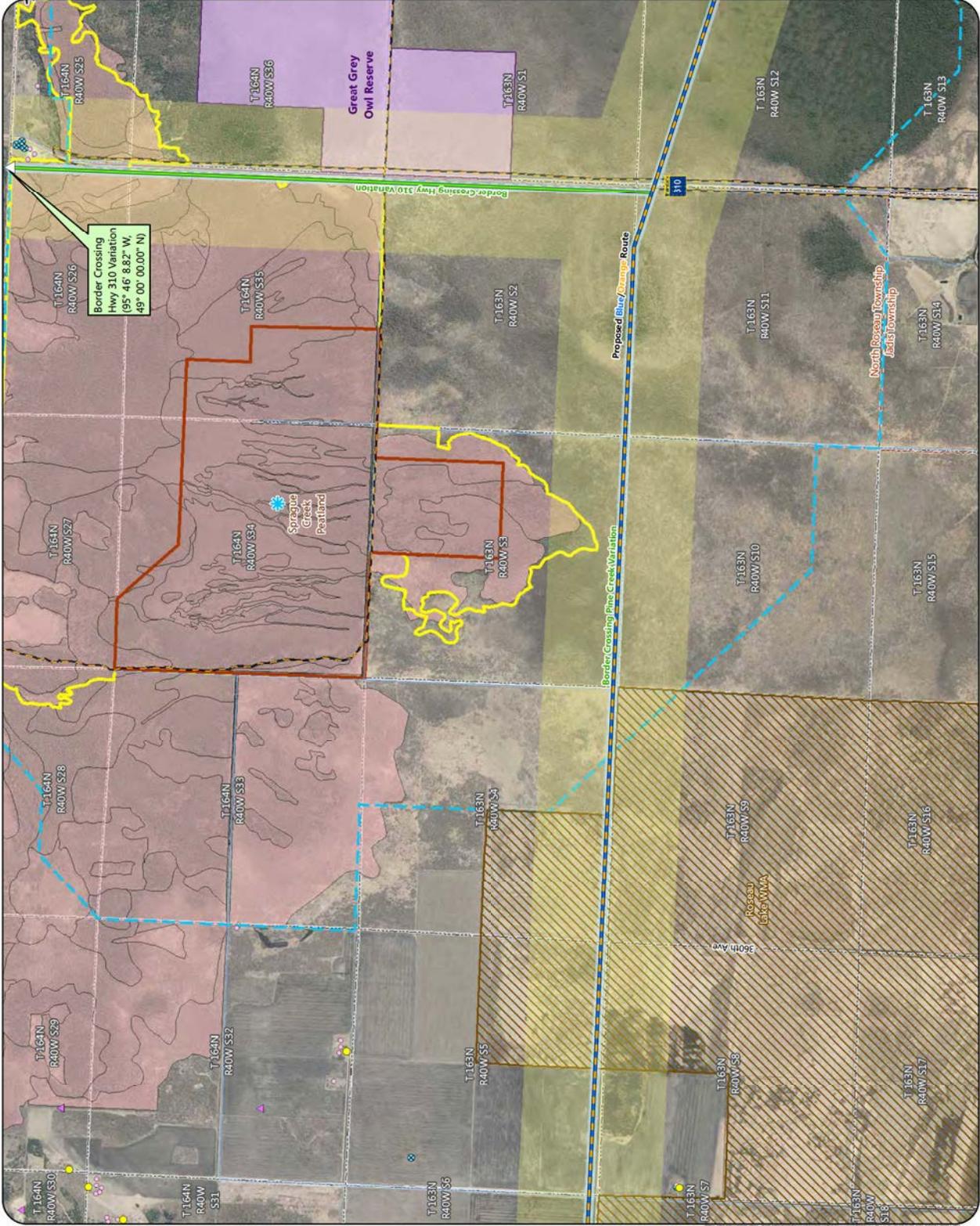
Appendix S - Map 1

MAP BOOK - WEST SECTION
Great Northern Transmission Line
Final Environmental Impact Statement





- Proposed Routes**
- Blue/Orange Route
- Alternatives**
- Route Variation
 - Anticipated Right-of-Way
 - Anticipated Route Width
 - Residences
 - Commercial or Non-Residential Structure
 - Approximate Calcareous Fen Location
 - Airstrip
 - Aggregate Source Location
 - County Well Index
 - NHD Watercourse
 - Wildlife Management Area (WMA)
 - Great Grey Owl Reserve
 - Scientific and Natural Area (SNA)
 - Preliminary Peatland SNA Watershed Protection Area
 - High Conservation Value Forest
 - Native Plant Community (Data only available for Rosseau County)
 - Snowmobile Trail
 - Civil Township
 - Public Land Survey Section
 - County Boundary
 - International Boundary
 - MPCA Database
 - Tanks and Leaks
- Border Crossing Point
- Scale: 0 to 2,000 Feet





Proposed Routes

- Blue/Orange Route
- Alternatives**
- Route Variation
- Anticipated Right-of-Way
- Anticipated Route Width
- Residences
- Commercial or Non-Residential Structure
- NHD Watercourse
- PWI Watercourse
- MPCA Impaired Stream
- Great Grey Owl Reserve
- Preliminary Peatland SNA Watershed Protection Area
- Snowmobile Trail
- Public Land Survey Section



Appendix S - Map 3

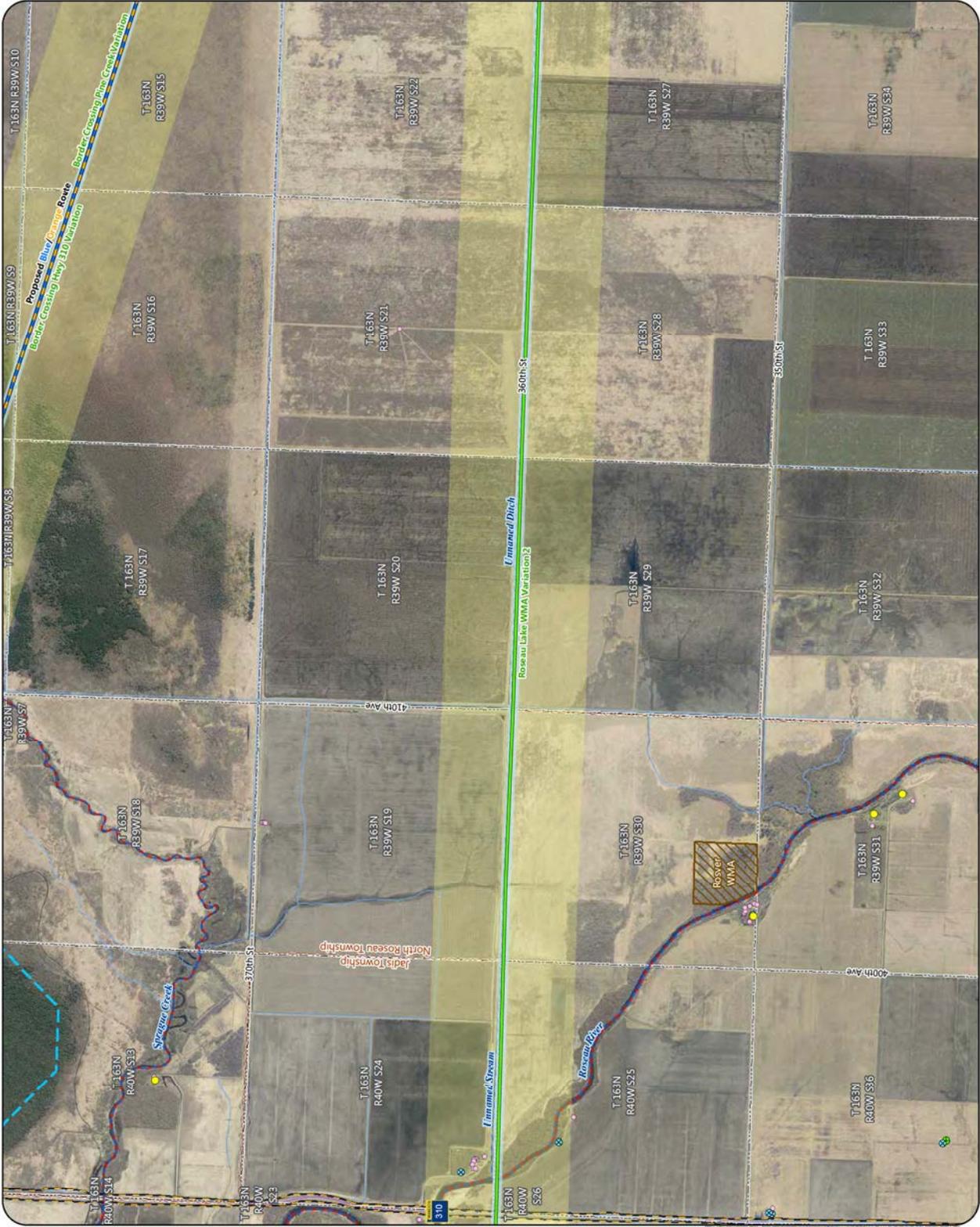
MAP BOOK - WEST SECTION
Great Northern Transmission Line
Final Environmental Impact Statement





Proposed Routes

- Blue/Orange Route
- Alternatives**
- Route Variation
- Anticipated Right-of-Way
- Anticipated Route Width
- Residences
- Commercial or Non-Residential Structure
- County Well Index
- Mineral Exploration or Engineering Drillhole
- NHD Watercourse
- PWI Watercourse
- MPCA Impaired Stream
- Wildlife Management Area (WMA)
- Preliminary Peatland SNA Watershed Protection Area
- Snowmobile Trail
- Civil Township
- Public Land Survey Section



Appendix S - Map 19

MAP BOOK - WEST SECTION
Great Northern Transmission Line
Final Environmental Impact Statement



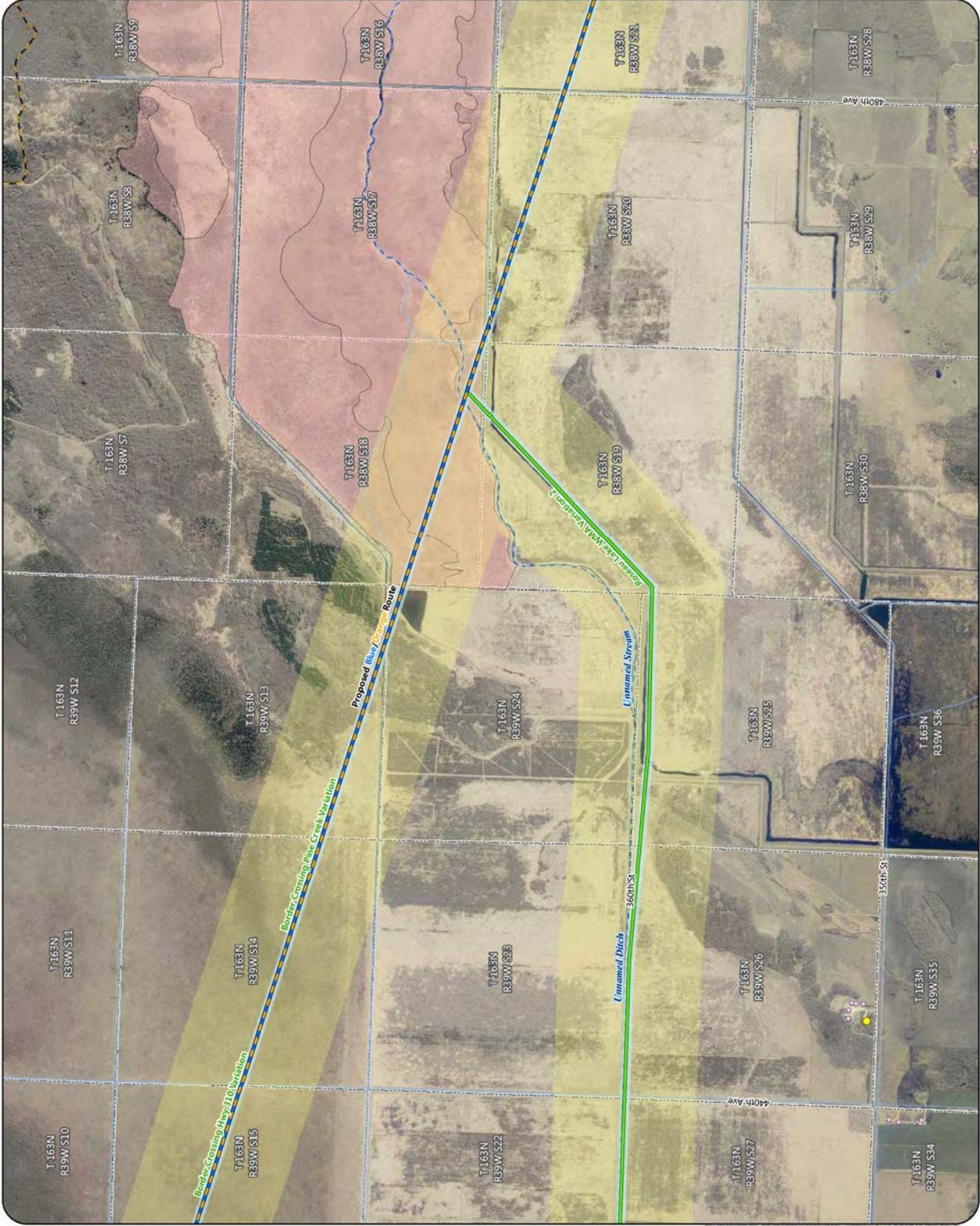


Proposed Routes

Blue/Orange Route

Alternatives

- Route Variation
- Anticipated Right-of-Way
- Anticipated Route Width
- Residences
- Commercial or Non-Residential Structure
- NHD Watercourse
- PWI Watercourse
- Native Plant Community (Data only available for Roseau County)
- Snowmobile Trail
- Public Land Survey Section



Appendix S - Map 4





Proposed Routes

Blue/Orange Route

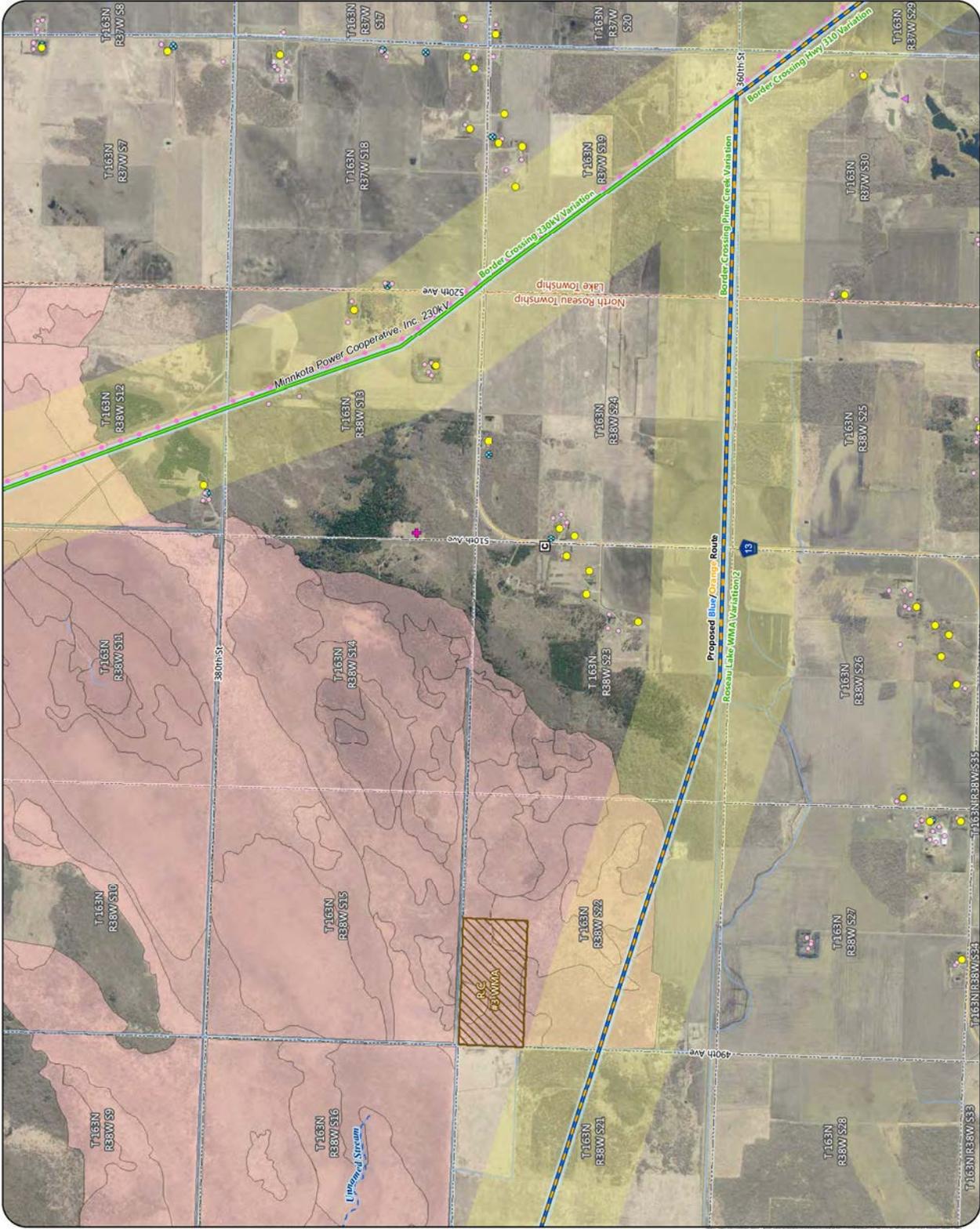
Alternatives

- Route Variation
- Anticipated Right-of-Way
- Anticipated Route Width
- Residences
- Commercial or Non-Residential Structure
- Church
- Cemetery
- Aggregate Source Location
- County Well Index
- NHD Watercourse
- PWI Watercourse
- Wildlife Management Area (WMA)
- Native Plant Community (Data only available for Roseau County)
- Civil Township
- Public Land Survey Section
- Existing Transmission Lines
- 230 KV



Appendix S - Map 5

MAP BOOK - WEST SECTION
Great Northern Transmission Line
Final Environmental Impact Statement





- Proposed Routes**
- Blue/Orange Route
- Alternatives**
- Route Variation
 - Anticipated Right-of-Way
 - Anticipated Route Width
- Residences
- Commercial or Non-Residential Structure
 - Aggregate Source Location
 - County Well Index
 - NHD Watercourse
 - Native Plant Community (Data only available for Roseau County)
 - Scenic Byway
 - Civil Township
 - Public Land Survey Section
- MPCA Database**
- Tanks and Leaks
- Existing Transmission Lines**
- 230 KV
 - 500 KV



Appendix S - Map 6

MAP BOOK - WEST SECTION
Great Northern Transmission Line
Final Environmental Impact Statement





Proposed Routes

Blue/Orange Route

Alternatives

Route Variation

Anticipated Right-of-Way

Anticipated Route Width

Visual Simulation Viewpoint

Residences

Commercial or Non-Residential Structure

Aggregate Source Location

Communication Tower

County Well Index

Mineral Exploration or Engineering Drillhole

NHD Watercourse

PWI Watercourse

Wildlife Management Area (WMA)

Native Plant Community (Data only available for Roseau County)

Scenic Byway

Snowmobile Trail

Civil Township

Public Land Survey Section

MPCA Database

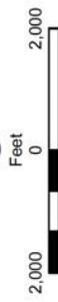
Hazardous Waste

Tanks and Leaks

Existing Transmission Lines

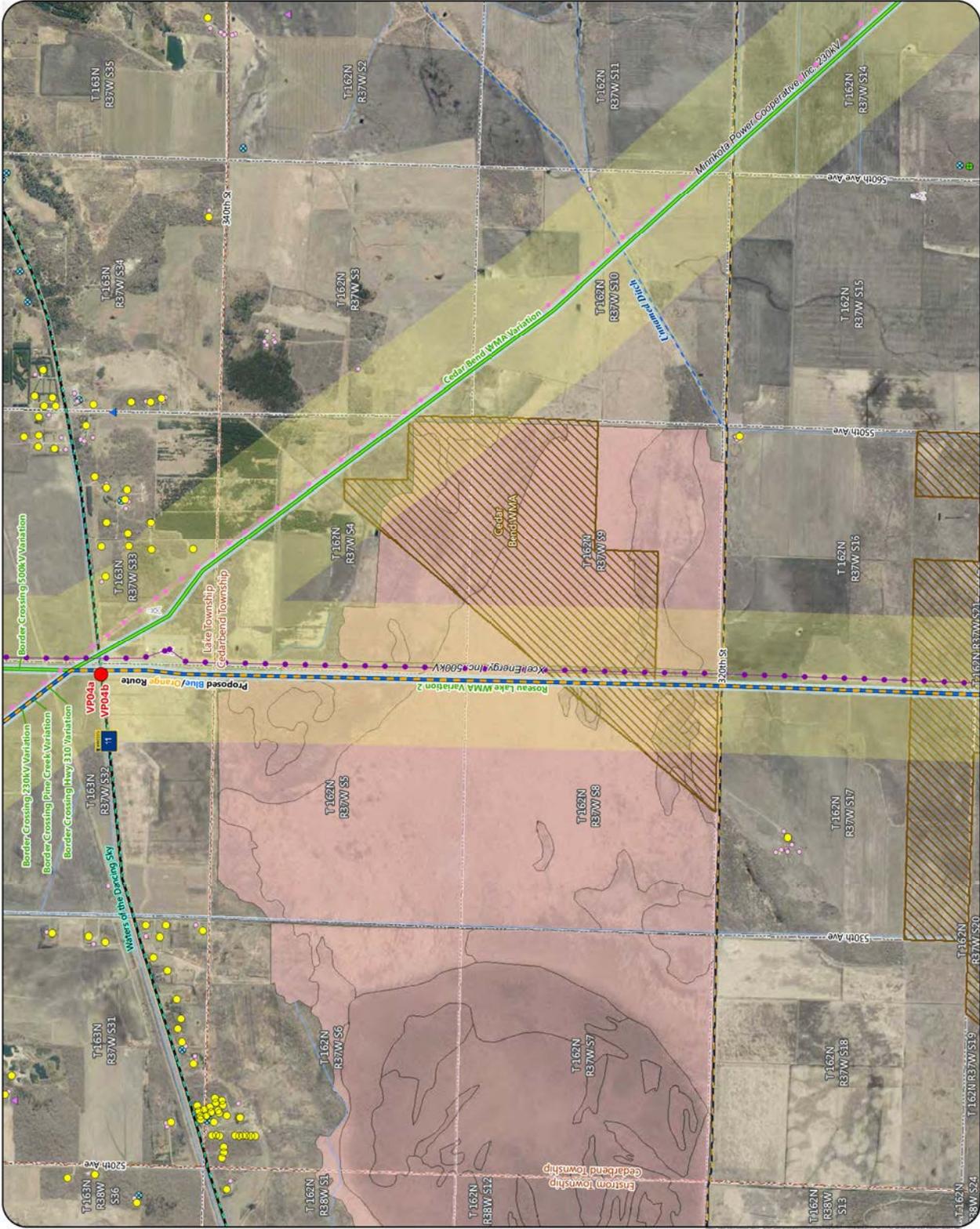
230 KV

500 KV



Appendix S - Map 7

MAP BOOK - WEST SECTION
Great Northern Transmission Line
Final Environmental Impact Statement





Proposed Routes

Blue/Orange Route

Alternatives

Route Variation

Anticipated Right-of-Way

Anticipated Route Width

Residences

Commercial or Non-Residential Structure

Communication Tower

County Well Index

Mineral Exploration or Engineering Drillhole

NHD Watercourse

PWI Watercourse

Wildlife Management Area (WMA)

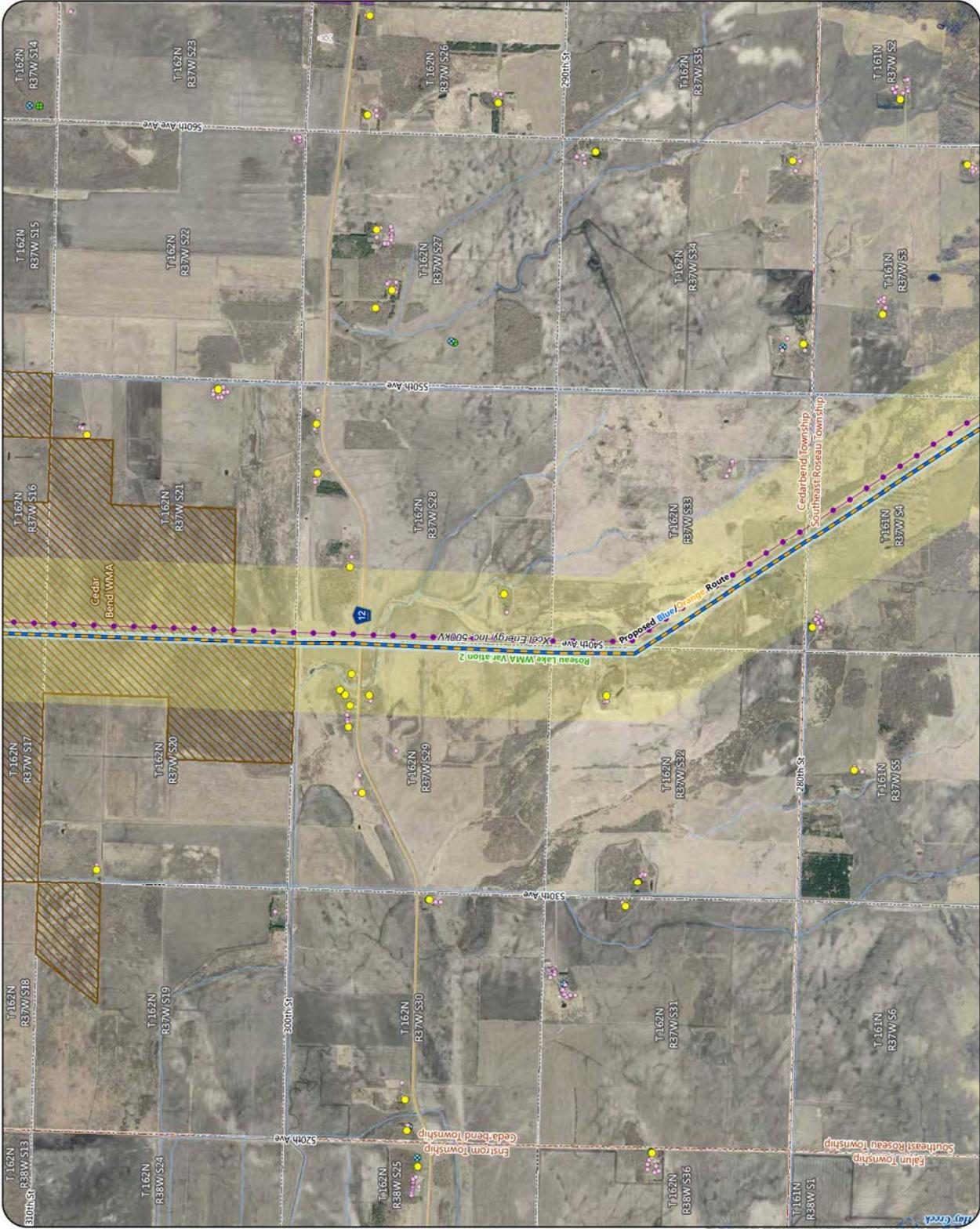
USFWS Interest Lands

Civil Township

Public Land Survey Section

Existing Transmission Lines

500 KV



Appendix S - Map 8

MAP BOOK - WEST SECTION

Great Northern Transmission Line
Final Environmental Impact Statement





Proposed Routes

Blue/Orange Route

Alternatives

Route Variation

Anticipated Right-of-Way

Anticipated Route Width

Residences

Commercial or Non-Residential Structure

Cemetery

Airstrip

County Well Index

Mineral Exploration or Engineering Drillhole

NHD Watercourse

PWI Watercourse

MPCA Impaired Stream

Trout Stream

PWI Waterbody

Shallow Lake

High Conservation Value Forest

Native Plant Community (Data only available for Roseau County)

USFWS Interest Lands

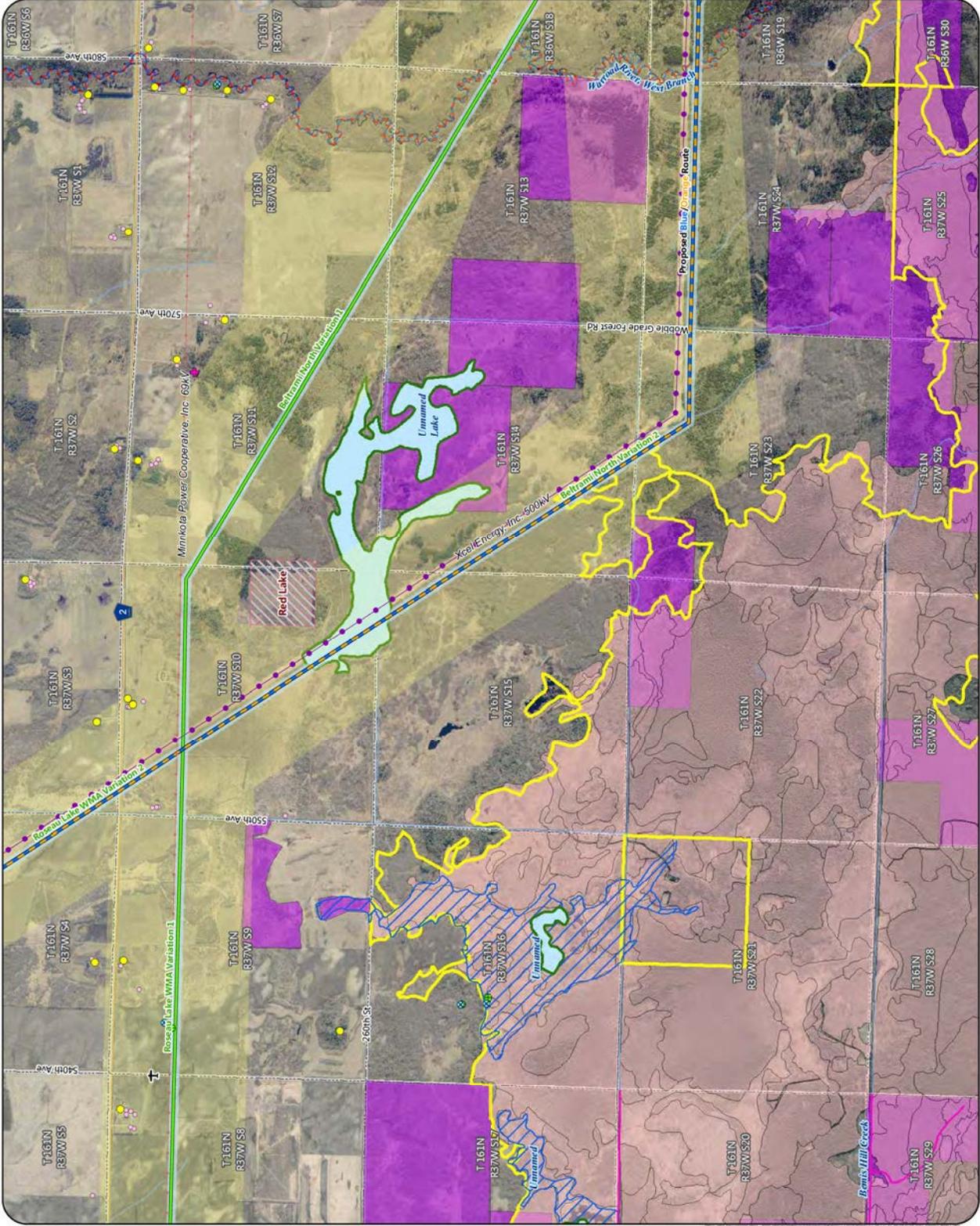
Indian Reservation Land

Public Land Survey Section

Existing Transmission Lines

69 or 115 KV

500 KV



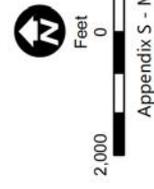
Appendix S - Map 9

MAP BOOK - WEST SECTION
Great Northern Transmission Line
Final Environmental Impact Statement





- Proposed Regeneration Site**
- Proposed Routes
 - Blue/Orange Route
- Alternatives**
- Route Variation
 - Anticipated Right-of-Way
 - Anticipated Route Width
 - Proposed Series Compensation Station
- Residences**
- Commercial or Non-Residential Structure
 - Cemetery
 - County Well Index
 - Mineral Exploration or Engineering Drillhole
 - NHD Watercourse
 - PWI Watercourse
 - MPCA Impaired Stream
 - Preliminary Peatland SNA Watershed Protection Area
- High Conservation Value Forest**
- Native Plant Community (Data only available for Roseau County)
 - USFWS Interest Lands
 - Indian Reservation Land
 - Snowmobile Trail
 - Civil Township
 - Public Land Survey Section
- Existing Transmission Lines**
- 500 KV

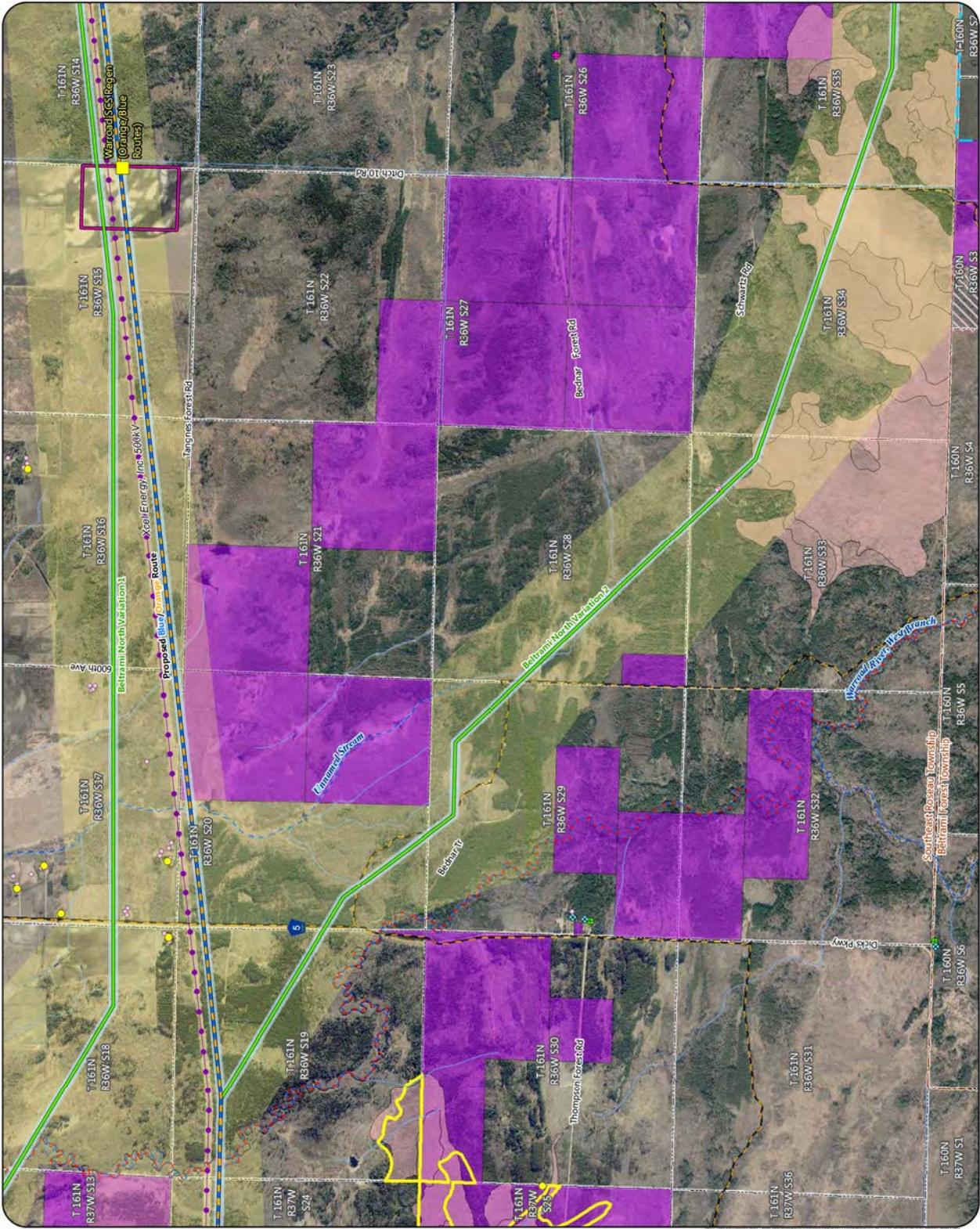


Appendix S - Map 10

MAP BOOK - WEST SECTION
Great Northern Transmission Line
Final Environmental Impact Statement

U.S. DEPARTMENT OF ENERGY
ENERGY

MINNESOTA DEPARTMENT OF COMMERCE





Proposed Routes

Blue/Orange Route

Alternatives

Route Variation

Anticipated Right-of-Way

Anticipated Route Width

Residences

Commercial or Non-Residential Structure

NHD Watercourse

PWI Watercourse

MPCA Impaired Stream

USFWS Interest Lands

Snowmobile Trail

Public Land Survey Section

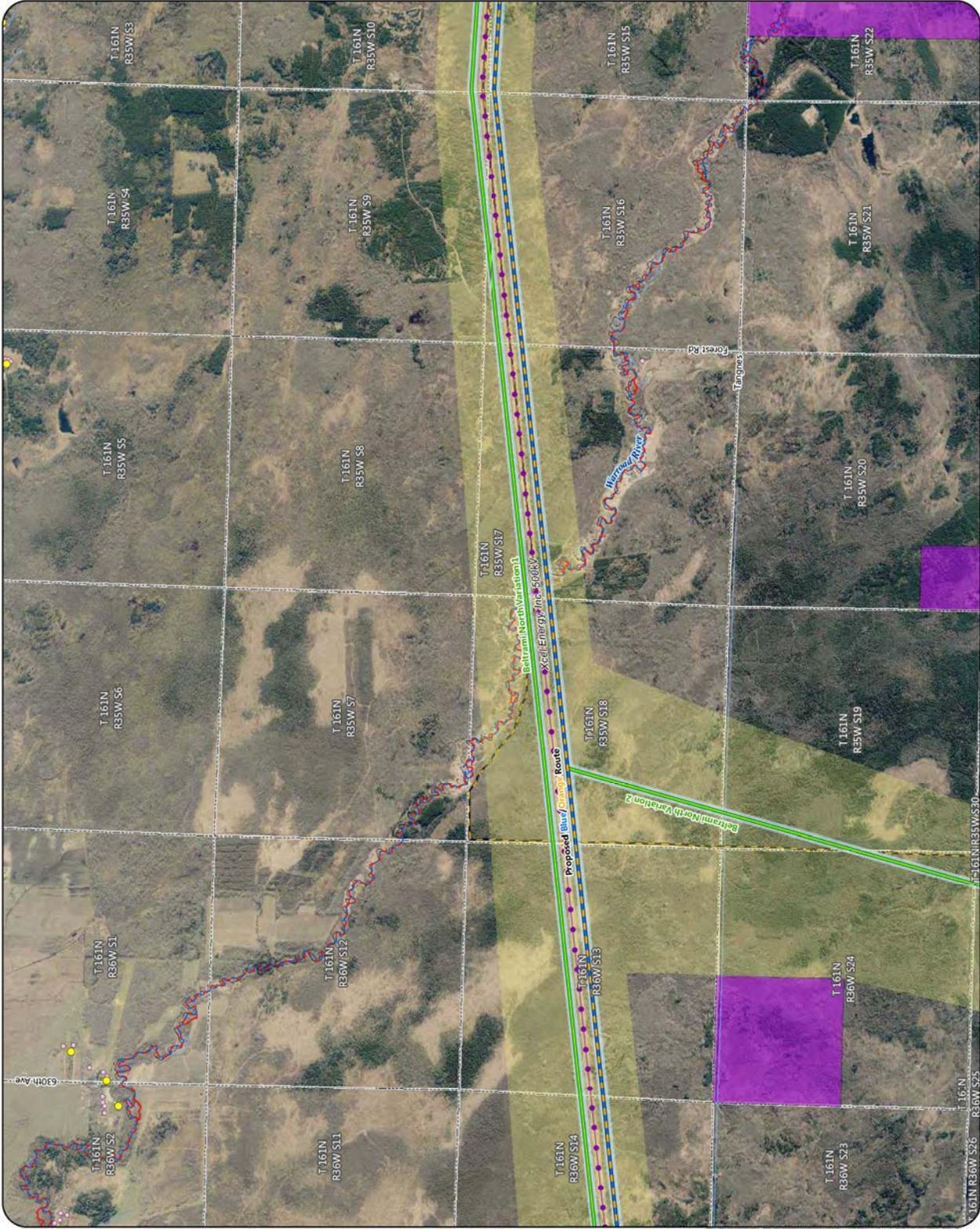
Existing Transmission Lines

500 kV



Appendix S - Map 11

MAP BOOK - WEST SECTION
Great Northern Transmission Line
Final Environmental Impact Statement





Proposed Routes

Blue/Orange Route

Route Variation

Route Variation Hop

Anticipated Right-of-Way

Anticipated Route Width

Residences

Commercial or Non-Residential Structure

Aggregate Source Location

NHD Watercourse

PWI Watercourse

MPCA Impaired Stream

NHD Waterbody

PWI Waterbody

USFWS Interest Lands

Snowmobile Trail

Civil Township

Public Land Survey Section

Existing Transmission Lines

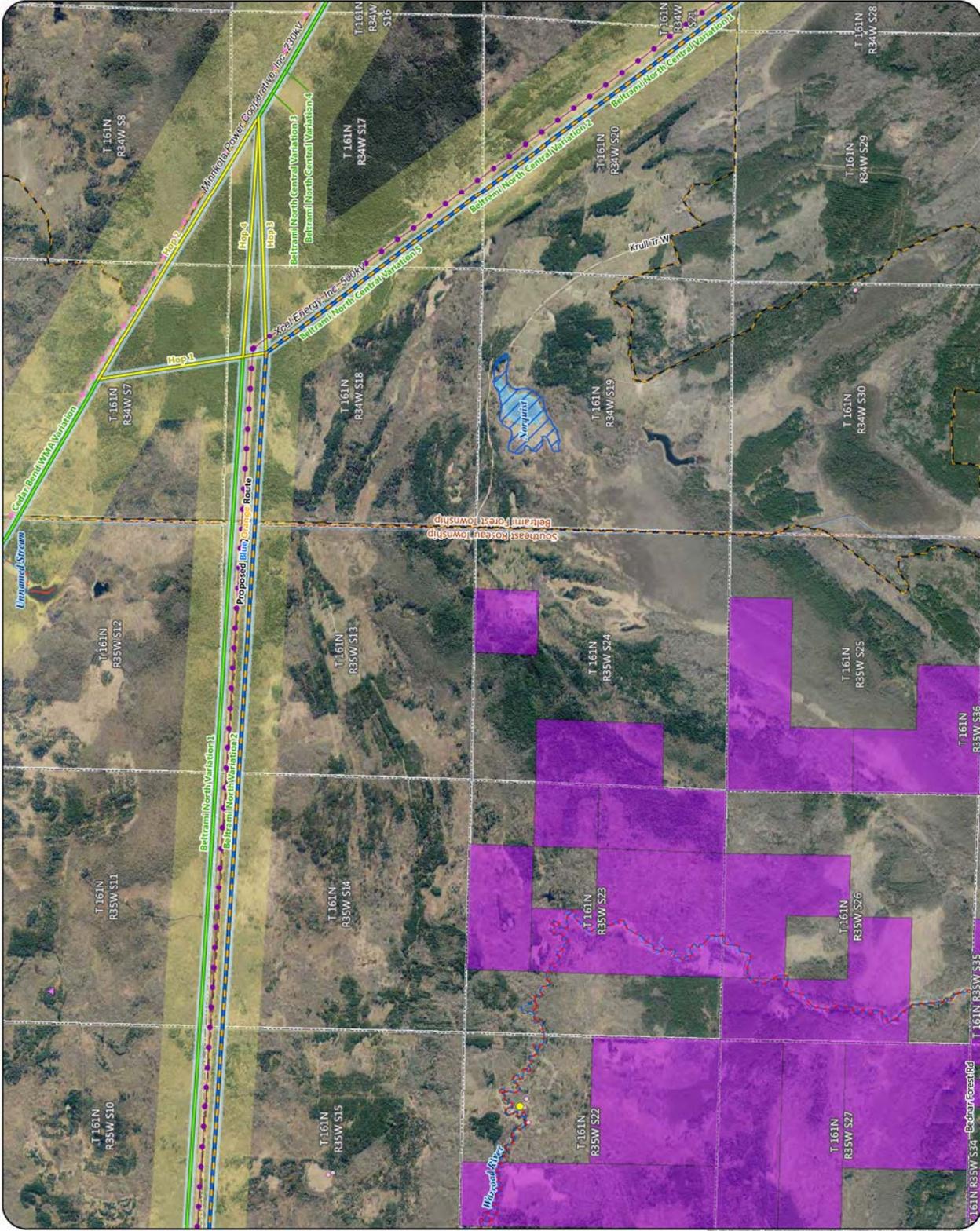
230 KV

500 KV



Appendix S - Map 12

MAP BOOK - WEST SECTION
Great Northern Transmission Line
Final Environmental Impact Statement





Proposed Routes

Blue/Orange Route

Alternatives

Route Variation

Anticipated Right-of-Way

Residences

Commercial or Non-Residential Structure

Cemetery

County Well Index

NHD Watercourse

PWI Watercourse

Indian Reservation Land

Scenic Byway

Snowmobile Trail

Municipal Boundary

Civil Township

Public Land Survey Section

MPCA Database

Hazardous Waste

Investigation and Cleanup

Tanks and Leaks

Multiple Activities

Existing Transmission Lines

230 KV

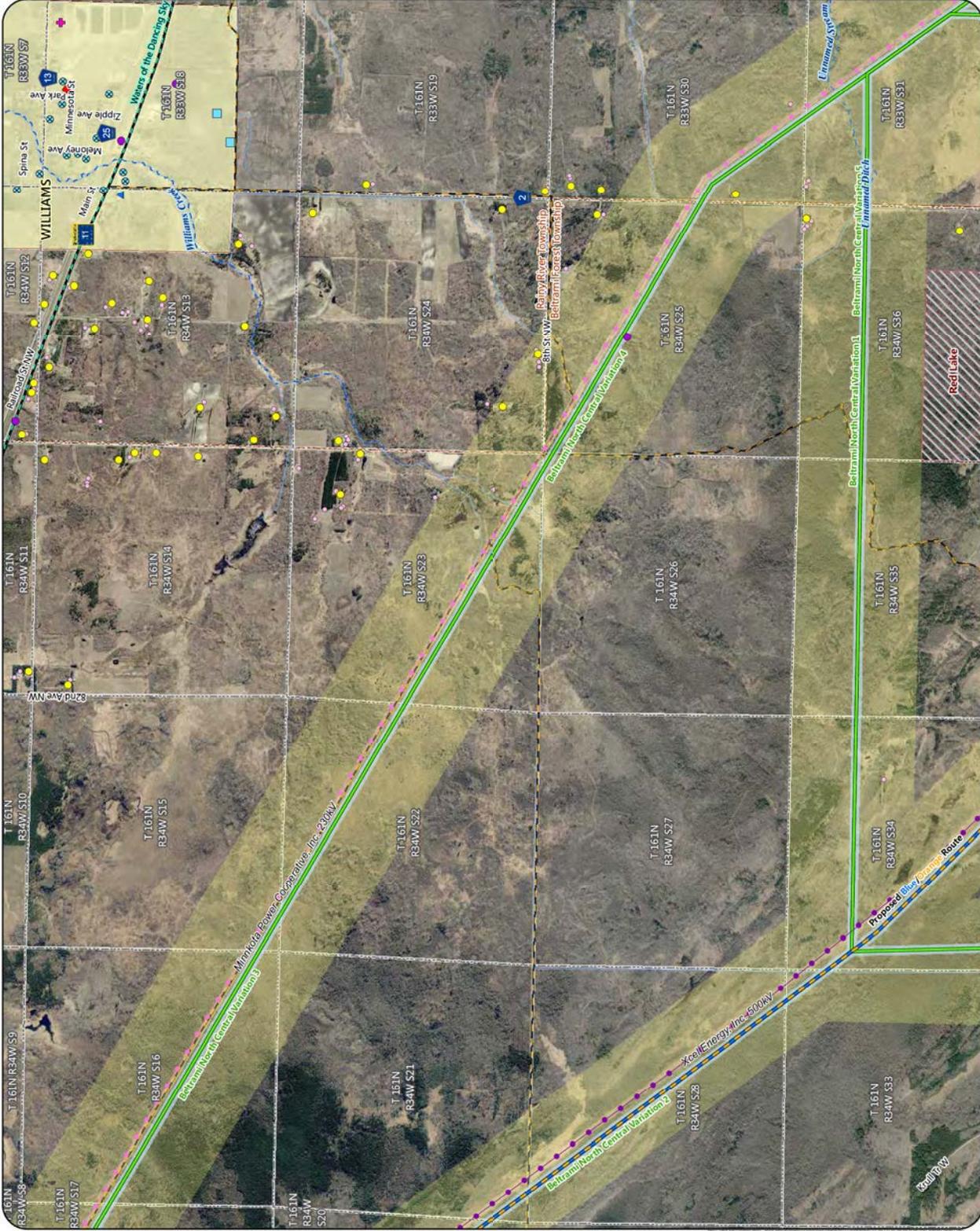
500 KV



Appendix S - Map 13

MAP BOOK - WEST SECTION

Great Northern Transmission Line
Final Environmental Impact Statement



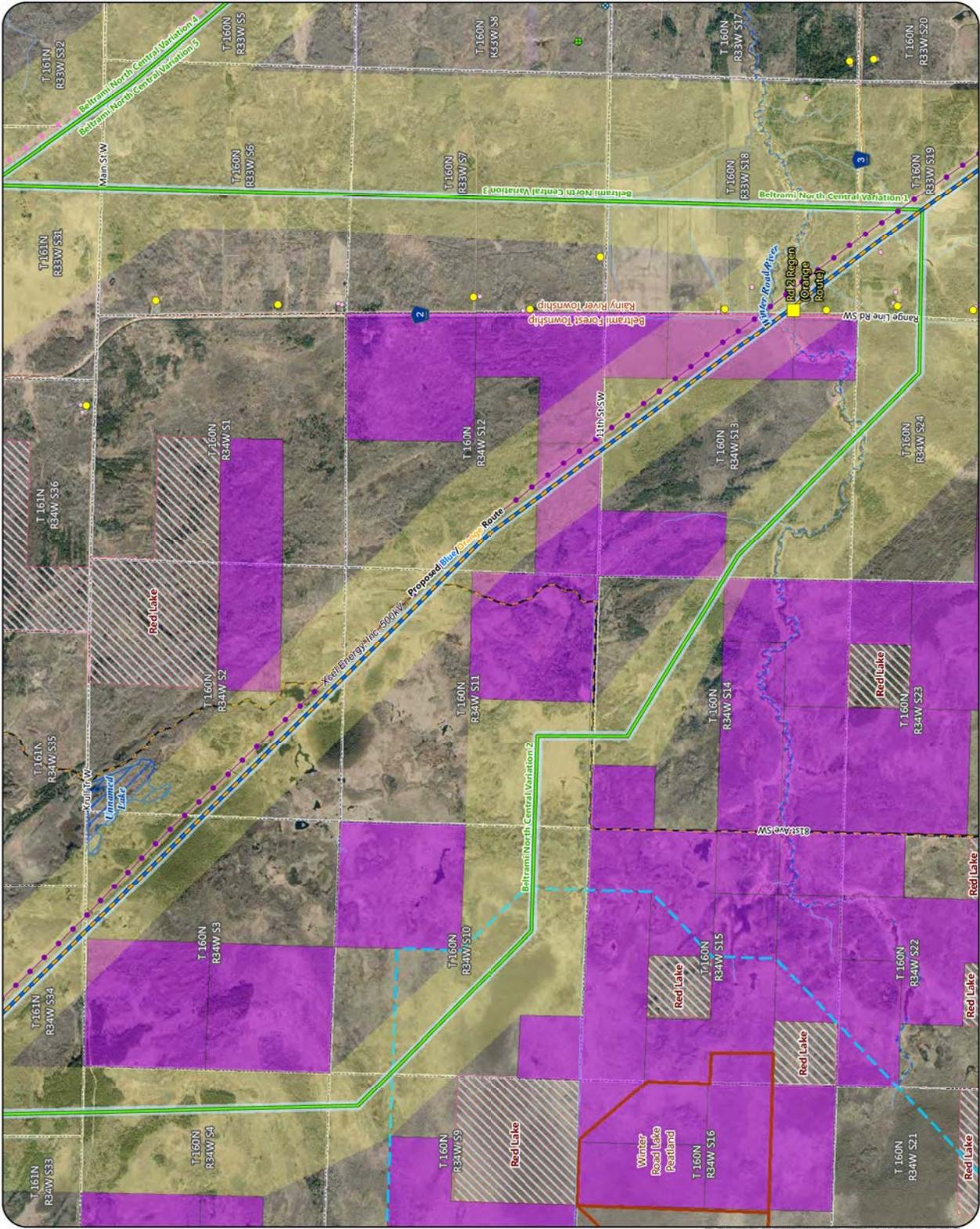


- Proposed Regeneration Site
- Proposed Routes
- Blue/Orange Route
- Alternatives**
- Route Variation
- Anticipated Right-of-Way
- Anticipated Route Width
- Residences
- Commercial or Non-Residential Structure
- County Well Index
- Mineral Exploration or Engineering Drillhole
- NHD Watercourse
- PWI Watercourse
- PWI Waterbody
- Scientific and Natural Area (SNA)
- Preliminary Peatland SNA Watershed
- Protection Area
- USFWS Interest Lands
- Indian Reservation Land
- Snowmobile Trail
- Civil Township
- Public Land Survey Section
- Existing Transmission Lines**
- 230 KV
- 500 KV



Appendix S - Map 14

MAP BOOK - WEST SECTION
Great Northern Transmission Line
Final Environmental Impact Statement



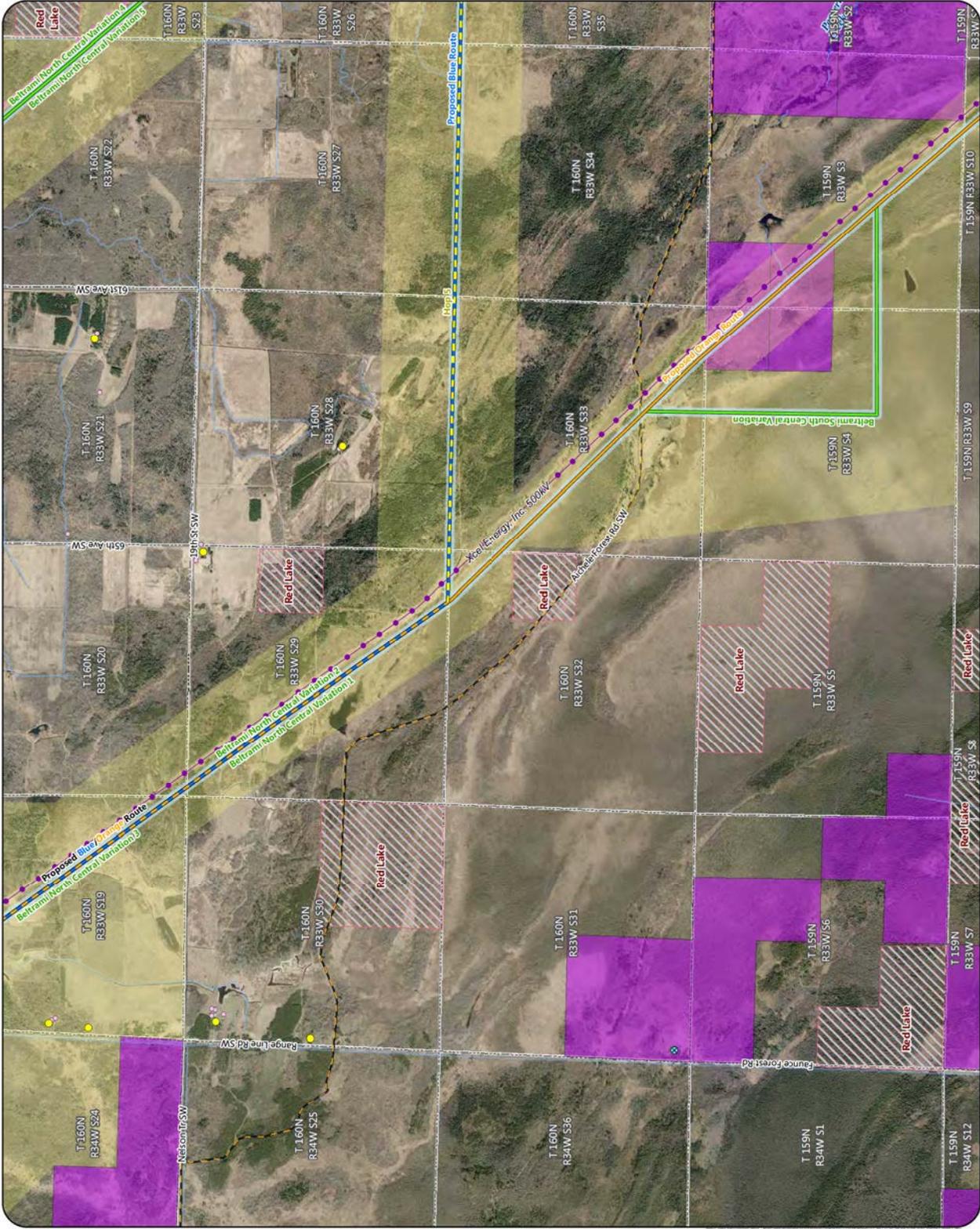


- Proposed Routes**
- Blue Route
 - Orange Route
 - Blue/Orange Route
- Alternatives**
- Route Variation
 - Route Variation Hop
 - Anticipated Right-of-Way
 - Anticipated Route Width
 - Residences
 - Commercial or Non-Residential Structure
 - County Well Index
 - Mineral Exploration or Engineering Drillhole
 - NHD Watercourse
 - PWI Watercourse
 - USFWS Interest Lands
 - Indian Reservation Land
 - Snowmobile Trail
 - Public Land Survey Section
- Existing Transmission Lines**
- 230 KV
 - 500 KV



Appendix S - Map 15

MAP BOOK - WEST SECTION
Great Northern Transmission Line
Final Environmental Impact Statement



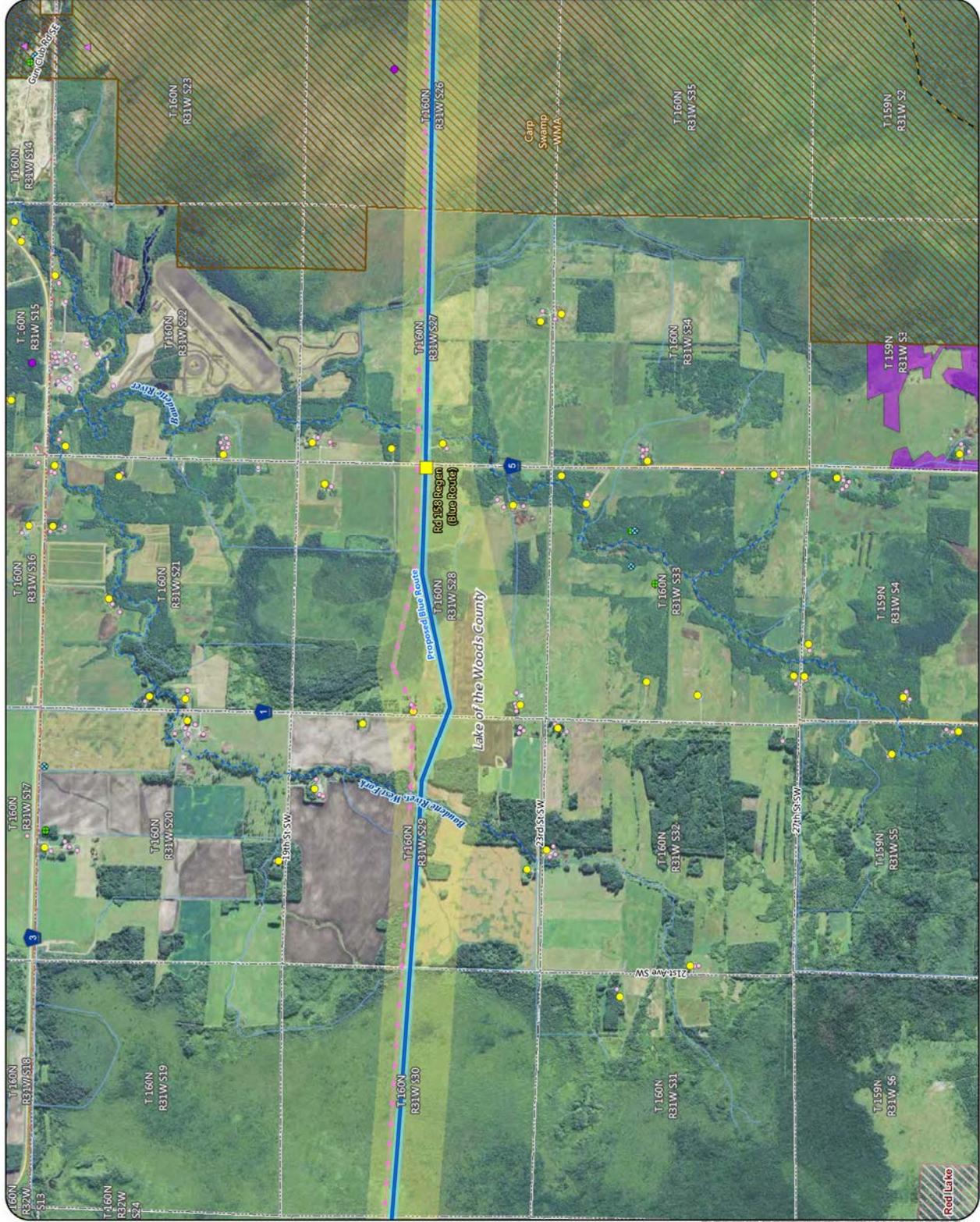


- Proposed Regeneration Site
- Blue Route
- Anticipated Route Width
- Anticipated Right-of-Way
- Residences
- Commercial or Non-Residential Structure
- Aggregate Source Location
- County Well Index
- Mineral Exploration or Engineering Drillhole
- NHD Watercourse
- PWI Watercourse
- Wildlife Management Area (WMA)
- USFWS Interest Lands
- Indian Reservation Land
- Snowmobile Trail
- Public Land Survey Section
- MPCA Database
- Multiple Activities
- Besting Transmission Lines
 - 69 or 115 KV
 - 230 KV



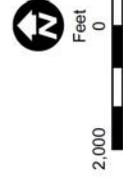
Appendix S - Map 34

MAP BOOK - CENTRAL SECTION
Great Northern Transmission Line
Final Environmental Impact Statement





- Proposed Routes**
- Blue Route
- Alternatives**
- Alignment Modification
 - Anticipated Route Width
 - Anticipated Right-of-Way
- Residences**
- Commercial or Non-Residential Structure
 - Aggregate Source Location
 - County Well Index
 - Mineral Exploration or Engineering Drillhole
 - NHD Watercourse
 - PWI Watercourse
 - Wildlife Management Area (WMA)
 - USFWS Interest Lands
 - Indian Reservation Land
 - Snowmobile Trail
 - Public Land Survey Section
- MPCA Database**
- Multiple Activities
- Existing Transmission Lines**
- 69 or 115 kV
 - 230 kV



Appendix S - Map 35

MAP BOOK - CENTRAL SECTION
Great Northern Transmission Line
Final Environmental Impact Statement





Proposed Routes

Blue Route

Alternatives

- Alignment Modification
- Anticipated Route Width
- Anticipated Right-of-Way
- Residences
- Commercial or Non-Residential Structure
- Aggregate Source Location
- Mineral Exploration or Engineering Drillhole
- NHD Watercourse
- PWI Watercourse
- Wildlife Management Area (WMA)
- USFWS Interest Lands
- Indian Reservation Land
- Civil Township
- Public Land Survey Section
- Existing Transmission Lines
- 69 or 115 KV
- 230 KV



Appendix S - Map 36

MAP BOOK - CENTRAL SECTION
Great Northern Transmission Line
Final Environmental Impact Statement





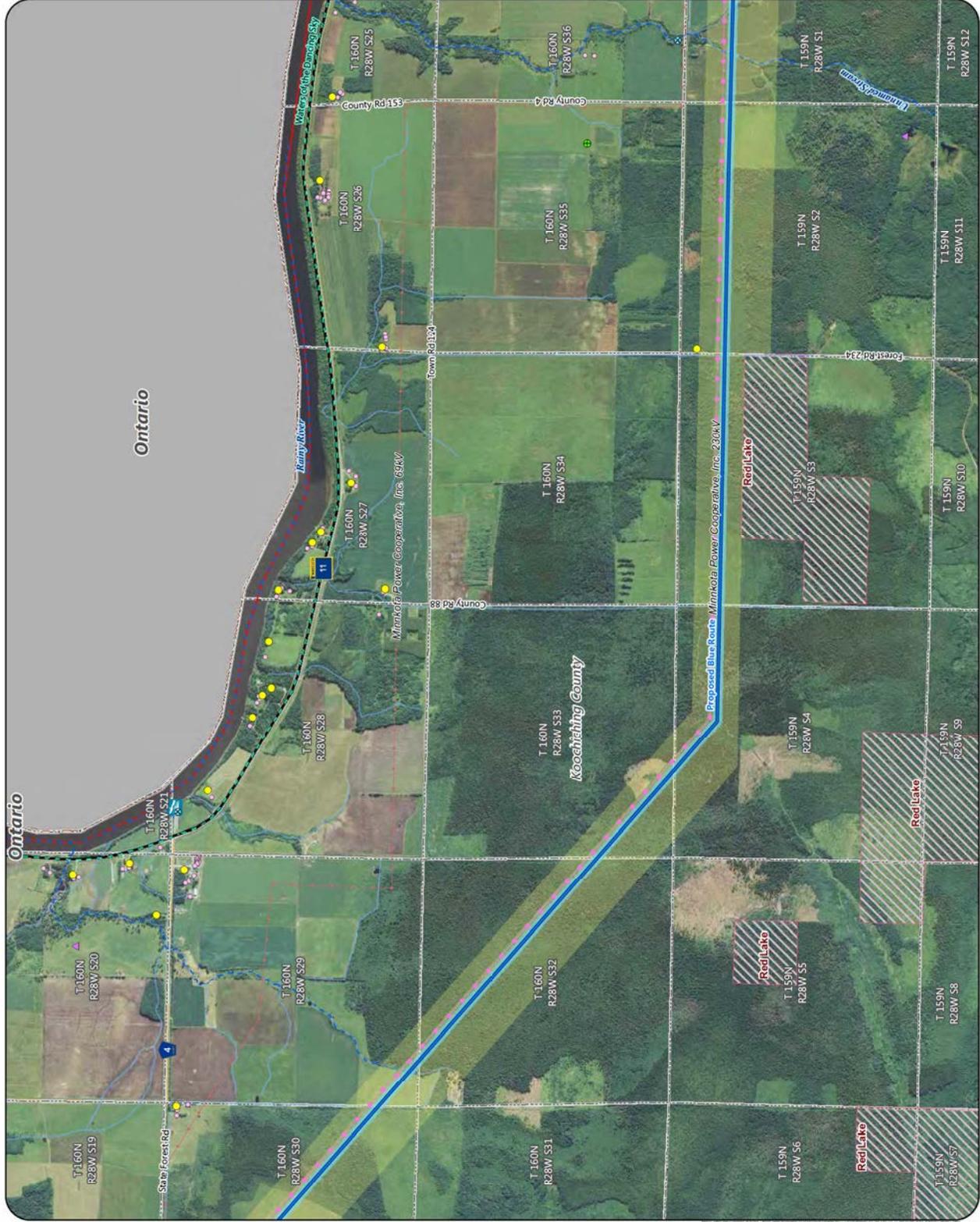
- Proposed Routes**
- Blue Route
 - Anticipated Route Width
 - Anticipated Right-of-Way
 - Residences
 - Commercial or Non-Residential Structure
 - Aggregate Source Location
 - NHD Watercourse
 - PWI Watercourse
 - Indian Reservation Land
 - Public Land Survey Section
 - Existing Transmission Lines
 - 69 or 115 kV
 - 230 kV



Appendix S - Map 37

MAP BOOK - CENTRAL SECTION
Great Northern Transmission Line
Final Environmental Impact Statement





- Proposed Routes**
- Blue Route
 - Anticipated Route Width
 - Residences
 - Commercial or Non-Residential Structure
 - Aggregate Source Location
 - County Well Index
 - Mineral Exploration or Engineering Drillhole
 - Trailer Launch Water Access
 - NHD Watercourse
 - PMW Watercourse
 - MPCA Impaired Stream
 - Indian Reservation Land
 - Scenic Byway
 - Civil Township
 - Public Land Survey Section
 - County Boundary
 - International Boundary
 - Existing Transmission Lines
 - 69 or 115 KV
 - 230 KV



Appendix S - Map 38

MAP BOOK - CENTRAL SECTION
Great Northern Transmission Line
Final Environmental Impact Statement





- Proposed Routes**
- Blue Route
 - Alternatives
 - Route Variation
 - Anticipated Route Width
 - Anticipated Right-of-Way
 - Residences
 - Commercial or Non-Residential Structure
 - Cemetery
 - Aggregate Source Location
 - County Well Index
 - Mineral Exploration or Engineering Drillhole
 - NHD Watercourse
 - PWI Watercourse
 - Indian Reservation Land
 - Scenic Byway
 - Snowmobile Trail
 - Public Land Survey Section
 - MPCA Database
 - Hazardous Waste
 - Tanks and Leaks
 - Multiple Activities
 - Existing Transmission Lines
 - 69 or 115 KV
 - 230 KV



Appendix S - Map 39

MAP BOOK - CENTRAL SECTION
Great Northern Transmission Line
Final Environmental Impact Statement





- Proposed Routes**
- Blue Route
- Alternatives**
- Route Variation
 - Anticipated Route Width
 - Anticipated Right-of-Way
- Residences**
- Commercial or Non-Residential Structure
 - County Well Index
 - Mineral Exploration or Engineering Drillhole
 - NHD Watercourse
 - PWI Watercourse
 - Preliminary Peatland SNA Watershed Protection Area
 - Indian Reservation Land
 - Snowmobile Trail
 - Public Land Survey Section
- MPCA Database**
- Multiple Activities
- Existing Transmission Lines**
- 69 or 115 KV
 - 230 KV



Appendix S - Map 40

MAP BOOK - CENTRAL SECTION
Great Northern Transmission Line
Final Environmental Impact Statement

